PRIMERGY TX100 S3 Server

Upgrade and Maintenance Manual

Edition May 2012

Comments… Suggestions… Corrections…

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

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

Certified documentation
according to DIN EN ISO 9001:2008

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 9001:2008.

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

Before reading this manual

For your safety

This manual contains important information for safely and correctly using this product.

Carefully read the manual before using this product. Pay particular attention to the accompanying manual "Safety Notes and Regulations" and ensure these safety notes are understood before using the product. Keep this manual and the manual "Safety Notes and Regulations" in a safe place for easy reference while using this product.

Radio interference

This product is a "Class A" ITE (Information Technology Equipment). In a domestic environment this product may cause radio interference, in which case the user may be required to take appropriate measures.   VCCI-A

Aluminum electrolytic capacitors

The aluminum electrolytic capacitors used in the product's printed circuit board assemblies and in the mouse and keyboard are limited-life components. Use of these components beyond their operating life may result in electrolyte leakage or depletion, potentially causing emission of foul odor or smoke.

As a guideline, in a normal office environment (25°C) operating life is not expected to be reached within the maintenance support period (5 years). However, operating life may be reached more quickly if, for example, the product is used in a hot environment. The customer shall bear the cost of replacing replaceable components which have exceeded their operating life. Note that these are only guidelines, and do not constitute a guarantee of trouble-free operation during the maintenance support period.

High safety use

This product has been designed and manufactured for general uses such as general office use, personal use, domestic use and normal industrial use. It has not been designed or manufactured for uses which demand an extremely high level of safety and carry a direct and serious risk to life or body if such safety cannot be ensured.

These uses include control of nuclear reactions in nuclear power plants, automatic airplane flight control, air traffic control, traffic control in mass transport systems, medical devices for life support, and missile guidance control in weapons systems (hereafter, "high safety use"). Customers should not use this product for high safety use unless measures are in place for ensuring the level of safety demanded of such use. Please consult the sales staff of Fujitsu if intending to use this product for high safety use.

Measures against momentary voltage drop

This product may be affected by a momentary voltage drop in the power supply caused by lightning. To prevent a momentary voltage drop, use of an AC uninterruptible power supply is recommended.

(This notice follows the guidelines of Voltage Dip Immunity of Personal Computer issued by JEITA, the Japan Electronics and Information Technology Industries Association.)

Technology controlled by the Foreign Exchange and Foreign Trade Control Law of Japan

Documents produced by Fujitsu may contain technology controlled by the Foreign Exchange and Foreign Trade Control Law of Japan. Documents which contain such technology should not be exported from Japan or transferred to non-residents of Japan without first obtaining authorization in accordance with the above law.

Harmonic Current Standards

This product conforms to harmonic current standard JIS C 61000-3-2.

Only for the Japanese market: About SATA hard disk drives

The SATA version of this server supports hard disk drives with SATA / BC-SATA storage interfaces. Please note that the usage and operation conditions differ depending on the type of hard disk drive used.

Please refer to the following internet address for further information on the usage and operation conditions of each available type of hard disk drive:

http://jp.fujitsu.com/platform/server/primergy/harddisk/

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Version history

Issue number	Reason for update
1.0 / August 2011	Initial release
2.0 / December 2011	Deleted: – 4.6.1 Switching on the server with a 0-Watt device (is described in OM) Inserted/changed: – Chapter 6 structure changed – 6.2 Average task duration increased – 6.2.2 Removing HDD cage inserted – 7.3.3 Note inserted (disconnecting SATA cables) – 11.2.6 Note inserted – 14.1 CMOS battery: Average task duration increased – 14.1.1 Required tools changed – 14.3.3 Note inserted (disconnecting SATA cables) – 14.1.4, 14.3.2, 14.3.5 Backup and restore BIOS settings manually procedure inserted – 15.2 Figure 193 Power cable, numbered and links set in the document – Editorial corrections
3.0 / May 2012	New model TX100 S3p, FBU, slimline ODD, changed system fan, new heat sink, changed handling thermal paste

1   Introduction

This Upgrade and Maintenance Manual provides instructions for the following procedures:

● Upgrading the server configuration by adding optional hardware components

● Upgrading the server configuration by replacing existing hardware components with superior ones.

● Replacing defective hardware components

This manual focuses on on-site maintenance tasks. It is recommended to prepare each service assignment following remote diagnostics procedures, as described in the "ServerView Suite Local Service Concept (LSC)" manual.

> **i** The "ServerView Suite Local Service Concept (LSC)" manual is available from the ServerView Suite DVD 2 supplied with your PRIMERGY server or online at *http://manuals.ts.fujitsu.com* (EMEA market) or *http://jp.fujitsu.com/platform/server/primergy/manual/* (Japanese market).

This manual is included on your ServerView Suite DVD 2 or available from the Fujitsu Technology Solutions manuals server at *http://manuals.ts.fujitsu.com*.

For the Japanese market please use the following URL:
http://jp.fujitsu.com/platform/server/primergy/manual/

> ⚠ **CAUTION!**
>
> The document at hand comprises procedures of a wide range of complexity. Check the profile of qualification for technicians before assigning tasks. Before you start, carefully read "Classification of procedures" on page 22.

Model lines for TX100 S3

There are two model lines for the TX100 S3 server:

– TX100 S3
– TX100 S3p

The following table provides an overview of the different features:

	TX100 S3	TX100 S3p
System board	D3009-Axx	D3009-Bxx
Processors	Intel® XEON® E3-1200 processor series	Intel® XEON® E3-1200v2 processor series
	Intel® Pentium® / Celeron® processor series	Intel® Pentium® / Celeron® processor series
	Intel® Core™ i3-2100 processor series	Intel® Core™ i3 processor series
Main Memory	DDR3 UDIMM with 1333 MHz speed	DDR3 UDIMM with 1600 MHz speed
	up to 21 GB/s bandwidth in dual channel mode and 10.6 GB/s in single channel mode	up to 25.6 GB/s bandwidth in dual channel mode and 12.8 GB/s in single channel mode
PCI slots	2x PCIe x8 Gen 2 (one mechanical x16)	2x PCIe x8 Gen 3 (one mechanical x16)
	1x PCIe x4 Gen 2 (mechanical x4 notched)	1x PCIe x4 Gen 2 (mechanical x4 notched)
	1x PCIe x1 Gen 2 (mechanical x4 notched)	1x PCIe x1 Gen 2 (mechanical x4 notched)

Table 1: Differences between TX100 S3 and TX100 S3p

i	**For the European market:**
	You can identify the model line by the model name "TX100 S3p" printed on the identification rating plate.

i	**For the Japanese market:**
	"TX100 S3p" is not used as the model name in the Japanese market.

You can identify the model line by the product number; The product number "PYT10**P**xxx" means TX100 S3p.

1.1 Where to find which information?

While the Upgrade and Maintenance Manual focuses on upgrade and maintenance procedures to bring the server back to normal operation, additional manuals provide detailed background information on server components and BIOS settings.

For information on documents you need to have with you when leaving for maintaining a server see "Documents you need at hand" on page 27.

i	PRIMERGY manuals are available in PDF format on the ServerView Suite DVD 2. The ServerView Suite DVD 2 is part of the 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 order number for the Japanese market: please refer to the configurator of the server *http://jp.fujitsu.com/platform/server/primergy/system/*).

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 (for EMEA market): *http://manuals.ts.fujitsu.com*. The PRIMERGY server documentation can be accessed using the *Industry standard servers* navigation option.

For the Japanese market:

Please refer to the following URL for the latest product manuals: *http://jp.fujitsu.com/platform/server/primergy/manual/*

Before using the product, please check for additional information that may be available under the following URL: *http://jp.fujitsu.com/platform/server/primergy/products/note/*

1.2   Notational conventions

The following notational conventions are used in this manual:

Text in italics	indicates commands or menu items
`fixed font`	indicates system output
`semi-bold fixed font`	indicates text to be entered by the user
"Quotation marks"	indicate names of chapters and terms that are being emphasized
►	describes activities that must be performed in the order shown
Abc	indicates keys on the keyboard
⚠ **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.
i	indicates additional information, notes and tips
🔧 🔧 🔧	indicates the procedure category in terms of complexity and qualification requirements, see "Classification of procedures" on page 22
🕐	indicates the average task duration, see "Average task duration" on page 25

2 Before you start

Before you start any upgrade or maintenance task, please proceed as follows:

► Carefully read the safety instructions in chapter "Important information" on page 29.

► Make sure that all necessary manuals are available. Refer to the documentation overview in section "Documents you need at hand" on page 27. Print the PDF files if required.

► Make yourself familiar with the procedure categories introduced in section "Classification of procedures" on page 22.

► Ensure that all required tools are available according to section "Tools you need at hand" on page 26.

Installing optional components

The "PRIMERGY TX100 S3 Server Operating manual" gives an introduction to server features and provides an overview of available hardware options.

Use the Fujitsu ServerView Suite management software to prepare hardware expansions. ServerView Suite documentation is available online at *http://manuals.ts.fujitsu.com* (*http://jp.fujitsu.com/platform/server/primergy/system/* for the Japanese market) or from the ServerView Suite DVD 2 supplied with your PRIMERGY server. Please refer to the following ServerView Suite topics:

– Operation
– Virtualization
– Maintenance

i For the latest information on hardware options, refer to your server's hardware configurator available online at the following address:

for the EMEA market:
http://ts.fujitsu.com/products/standard_servers/tower/primergy_tx100s3.html

for the Japanese market:
http://jp.fujitsu.com/platform/server/primergy/system/

Please contact your local Fujitsu customer service partner for details on how to order expansion kits or spare parts. Use the Fujitsu Illustrated Spares Catalog to identify the required spare part and obtain technical data and order information. Illustrated Spares catalogs are available online at *http://manuals.ts.fujitsu.com/illustrated_spares* (EMEA market only).

Replacing a defective component

It is recommended to prepare local maintenance tasks using remote diagnostics procedures, as described in the "ServerView Suite Local Service Concept (LSC)" manual.

> **i** The "ServerView Suite Local Service Concept (LSC)" manual is available from the ServerView Suite DVD 2 supplied with your PRIMERGY server or online at:
> *http://manuals.ts.fujitsu.com* (EMEA market) or
> *http://jp.fujitsu.com/platform/server/primergy/manual/* (Japanese market).

2.1 Classification of procedures

The complexity of maintenance procedures varies significantly. Procedures have been assigned to one of three unit categories, indicating the level of difficulty and required qualification.

At the beginning of each procedure, the involved unit type is indicated by one of the symbols introduced in this section.

> **i** Please ask your local Fujitsu service center for more detailed information.

2.1.1 Customer Replaceable Units (CRU)

Customer Replaceable Units (CRU)

Customer Replaceable Units are intended for customer self service.

> **i** Components that the customer is entitled to replace may differ according to the service form in his country.

Peripherals that are handled as Customer Replaceable Units

– Keyboard
– Mouse

2.1.2   Upgrade and Repair Units (URU)

Upgrade and Repair Units (URU)

Upgrade and Repair Units are non hot-plug components that can be ordered separately to be installed as options (Upgrade Units) or are available to the customer through customer self service (Repair Units).

i Server management error messages will report defective *Upgrade and Repair Units*.

Upgrade and repair procedures involve shutting down and opening the server.

CAUTION!
The device may be seriously damaged or cause damage if it is opened without authorization or if repairs are attempted by unauthorized and untrained personnel.

Components that are handled as Upgrade Units

– Processors (upgrade kits)
– Optical disk drives
– Backup drives
– Expansion cards
– Battery backup units
– Memory modules

Components that are handled solely as Repair Units

– CMOS battery
– Non hot-plug fans
– Non hot-plug hard disk drives

2.1.3   Field Replaceable Units (FRU)

Field Replaceable Units (FRU)

Removing and installing *Field Replaceable Units* involves complex maintenance procedures on integral server components. Procedures will require shutting down, opening and disassembling the server.

⚠ **CAUTION!**

Maintenance procedures involving *Field Replaceable Units* must be performed exclusively by Fujitsu service personnel or technicians trained by Fujitsu. Please note that unauthorized interference with the system will void the warranty and exempt the manufacturer from all liability.

Components that are handled as Field Replaceable Units

– Processors (replacements)
– Front panel and front LAN connection
– System board
– Standard power supply unit
– Trusted Platform Module (TPM)

i Please ask your local Fujitsu service center for more detailed information.

2.2 Average task duration

Average task duration: 10 minutes

The average task duration including preliminary and concluding steps is indicated at the beginning of each procedure next to the procedure class.

Refer to table 2 on page 25 for an overview of steps taken into account for calculating the average task duration:

Step	included	Explanation
Server shutdown	no	Shutdown time depends on hardware and software configuration and may vary significantly. Software tasks necessary before maintenance are described in section "Starting the maintenance task" on page 69".
Disassembly	**yes**	Making the server available
Transport	no	Transporting the server to the service table (where required) depends on local customer conditions.
Maintenance procedures	**yes**	Maintenance procedures including preliminary and concluding software tasks
Transport	no	Returning the server to its installation site (where required) depends on local customer conditions.
Assembly	**yes**	Reassembling the server
Starting up	no	Booting time depends on hardware and software configuration and may vary significantly.

Table 2: Calculation of the average task duration

2.3   Tools you need at hand

When preparing the maintenance task, ensure that all required tools are available according to the overview below. You will find a list of required tools at the beginning of each procedure.

Screw driver / Bit insert	Screw	Usage	Type
Phillips PH2 / (+) No. 2 hexagonal cross SW5 / PZ2		System board, slot bracket, chassis	M3 x 4.5 mm (silver) C26192-Y10-C67
Phillips PH0 / (+) No. 0		Slimline ODD	M2 x 2.5 mm (silver) C26192-Y10-C62
TPM bit insert Dedicated TPM screw driver / TPM module fixing tool (for the Japanese market)		TPM screw One way head (black)	REM 3 x 15 mm (black) C26192-Y10-C176
Phillips PH1 / (+) No. 1		TFM	M2.5 x 4 mm (silver) C26192-Y10-C103
Phillips PH2 hexagonal cross SW5		System fans	M5.0 x 16 mm (silver) C26361-K1015-C98

Table 3: List of required tools and used screws

2.4   Documents you need at hand

Maintenance procedures may include references to additional documentation. When preparing the maintenance task, ensure that all required manuals are available according to the overview below.

i – Ensure to store all printed manuals enclosed with your server in a save place for future reference.

– Unless stated otherwise, all manuals are available online at *http://manuals.ts.fujitsu.com* under *Industry standard servers* or from the ServerView Suite DVD 2 supplied with your PRIMERGY server.

For the Japanese market please use the following address: *http://jp.fujitsu.com/platform/server/primergy/manual/*

Document	Description
"Quick Start Hardware - PRIMERGY TX100 S3" leaflet " はじめにお読みください - PRIMERGY TX100 S3 " リーフレット for the Japanese market	Quick installation poster for initial operation, available only in printed form.
"PRIMERGY ServerView Suite - Overview & Installation" DVD booklet	DVD booklet on initial software configuration included as a printed copy with the ServerView Suite.
"Safety notes and regulations" manual " 安全上のご注意 " for the Japanese market	Important safety information, available from the ServerView Suite DVD 2 and as a printed copy.
"PRIMERGY TX100 S3 Server Operating Manual"	available from the ServerView Suite DVD 2.
"System Board D3009 for PRIMERGY TX100 S3 Technical Manual"	Information on system board features, layout, connectors and indicators, available from the ServerView Suite DVD 2.
"System Board D3009 for PRIMERGY TX100 S3 BIOS Setup Manual"	Information on configurable BIOS options and parameters, available from the ServerView Suite DVD 2.

Table 4: Documentation you need at hand

Document	Description
Software documentation	– "ServerView Suite Local Service Concept (LSC)" user guide – "ServerView Operations Manager - Server Management" user guide
Illustrated Spares catalog	Spare parts identification and information system (EMEA market only), available for online use or download (Windows OS) at *http://manuals.ts.fujitsu.com/illustrated_spares* or from the CSS component view of the ServerView Operations Manager.
Glossary	Available from the ServerView Suite DVD 2.
"Warranty" manual " 保証書 " for the Japanese market	Important information on warranty regulations, recycling and service, available from the ServerView Suite DVD 2, online, or as a printed copy
"Returning used devices" manual	Recycling and contact information, available from the ServerView Suite DVD 2, online, or as a printed copy
"Service Desk" leaflet " サポート＆サービス " for the Japanese market	
Additional documentation	– "Modular RAID Controller Installation Guide" (on ServerView Suite DVD 2 under *Industry Standard Servers - Expansion Cards - Storage Adapters - LSI RAID / SCSI Controllers*).
Third party documentation	– Operating system documentation, online help – Peripherals documentation

Table 4: Documentation you need at hand

3 Important information

⚠️ **CAUTION!**

Before installing and starting up a device, please observe the safety instructions listed in the following section. This will help you to avoid making serious errors that could impair your health, damage the device and endanger the data base.

ℹ️ Keep this manual and the other documentation (such as the technical manual, documentation DVD) close to the device. All documentation must be included if the equipment is passed on to a third party.

3.1 Safety instructions

ℹ️ The following safety instructions are also provided in the manual "Safety Notes and Regulations" or " 安全上のご注意 ".

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.

● The actions described in this manual shall be performed by technical specialists. A technical specialist is a person who is trained to install the server including hardware and software.

● Repairs to the device that do not relate to CSS failures shall be performed by service personnel. Please note that unauthorized interference with the system will void the warranty and exempt the manufacturer from all liability.

● Any failure to observe the guidelines in this manual, and any improper repairs could expose the user to risks (electric shock, energy hazards, fire hazards) or damage the equipment.

● Before installing/removing internal options to/from the server, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cords from the power outlet. Failure to do so can cause electric shock or damage.

Before starting up

● During installation and before operating the device, observe the instructions on environmental conditions for your device.

● If the device is brought in from a cold environment, condensation may form both inside and on the outside of the device.

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

● Transport the device only in the original packaging or in packaging that protects it from knocks and jolts.
   For the Japanese market, transporting the device in its original packaging does not apply.

Installation and operation

● 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 VAC to 240 VAC. Ensure that the local mains voltage lies within these limits.

● This device must only be connected to properly grounded power outlets or connected to the grounded rack internal power distribution system with tested and approved power cords.

● Ensure that the device is connected to a properly grounded power outlet close to the device.

● Ensure that the power sockets on the device and the properly grounded power outlets are easily accessible.

● The On/Off button or the main power switch (if present) does not isolate the device from the mains power supply. In case of repair or servicing disconnect the device completely from the mains power supply, unplug all power plugs from the properly grounded power outlets.

● 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.

- Ethernet cabling has to comply with EN 50173 and EN 50174-1/2 standards or ISO/IEC 11801 standard respectively. The minimum requirement is a Category 5 shielded cable for 10/100 Ethernet, or a Category 5e cable for Gigabit Ethernet.

- 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 hazard).

- Make sure that no objects (e.g. jewelry, paperclips etc.) or liquids can get inside the server (risk of electric shock, short circuit).

- In emergencies (e.g. damaged casing, controls or cables, penetration of liquids or foreign bodies), contact the system administrator or your customer service team. Only disconnect the system from the mains power supply if there is no risk of harming yourself.

- Proper operation of the system (in accordance with IEC 60950-1 resp. 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: CSS components can be replaced.

- The warranty is void if the server is damaged during installation or replacement of system expansions.

- Only set screen resolutions and refresh rates that are specified in the operating manual for the monitor. Otherwise, you may damage your monitor. If you are in any doubt, contact your sales outlet or customer service center.

- Before installing/removing internal options to/from the server, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cords from the outlet. Failure to do so can cause electric shock.

Important information

- Do not damage or modify internal cables or devices. Doing so may cause a device failure, fire, or electric shock and will void the warranty and exempt the manufacturer from all liability.

- Devices inside the server remain hot after shutdown. Wait for a while after shutdown before installing or removing internal options.

- The circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. To ensure reliable protection, if you are wearing an earthing band on your wrist when working with this type of module, connect it to an unpainted, non-conducting metal part of the system.

- Do not touch the circuitry on boards or soldered parts. Hold the metallic areas or the edges of the circuit boards.

- Install the screw removed during installation/detaching internal options in former device/position. To use a screw of the different kind can cause a breakdown of equipment.

- The installation indicated on this document is sometimes changed to the kind of possible options without notice.

Batteries

- 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.

- Do not throw batteries into the trash can.

- Batteries must be disposed of in accordance with local regulations concerning special waste.

- Make sure that you insert the battery the right way round.

- The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not disassemble, heat about 100 °C (212F), or incinerate the battery.

- 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 optical disk drives and media

When working with optical disk drives, these instructions must be followed.

⚠ **CAUTION!**

- Only use CDs/DVDs/BDs that are in perfect condition, in order to prevent data loss, equipment damage and injury.

- Check each CD/DVD/BD 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/BD and cause imbalance and vibrations.

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

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

- High humidity and airborne dust levels are to be avoided. Electric shocks and/or server failures may be caused by liquids such as water, or metallic items, such as paper clips, entering a drive.

- Shocks and vibrations are also to be avoided.

- Do not insert any objects other than the specified CDs/DVDs/BDs.

- Do not pull on, press hard, or otherwise handle the CD/DVD/BD tray roughly.

- Do not disassemble the optical disk drive.

- Before use, clean the optical disk tray using a soft, dry cloth.

- As a precaution, remove disks from the optical disk drive when the drive is not to be used for a long time. Keep the optical disk tray closed to prevent foreign matter, such as dust, from entering the optical disk drive.

- Hold CDs/DVDs/BDs by their edges to avoid contact with the disk surface.

- Do not contaminate the CD/DVD/BD surface with fingerprints, oil, dust, etc. If dirty, clean with a soft, dry cloth, wiping from the center to the edge. Do not use benzene, thinners, water, record sprays, antistatic agents, or silicone-impregnated cloth.

- Be careful not to damage the CD/DVD/BD surface.

- Keep the CDs/DVDs/BDs away from heat sources.

- Do not bend or place heavy objects on CDs/DVDs/BDs.

- Do not write with ballpoint pen or pencil on the label (printed) side.

- When a CD/DVD/BD is moved from a cold place to a warm place, moisture condensation on the CD/DVD/BD surface can cause data read errors. In this case, wipe the CD/DVD/BD with a soft, dry cloth then let it air dry. Do not dry the CD/DVD/BD using devices such as a hair dryer.

- To avoid dust, damage, and deformation, keep the CD/DVD/BD in its case whenever it is not in use.

- Do not store CDs/DVDs/BDs at high temperatures. Areas exposed to prolonged direct sunlight or near heating appliances are to be avoided.

i You can prevent damage from the optical disk drive and the CDs/DVDs/BDs, as well as premature wear of the disks, by observing the following suggestions:

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

Laser information

The optical disk drive complies with IEC 60825-1 laser class 1.

CAUTION!

The optical disk 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 optical disk drive casing!

Modules with Electrostatic-Sensitive Devices

Modules with electrostatic-sensitive devices are identified by the following sticker:
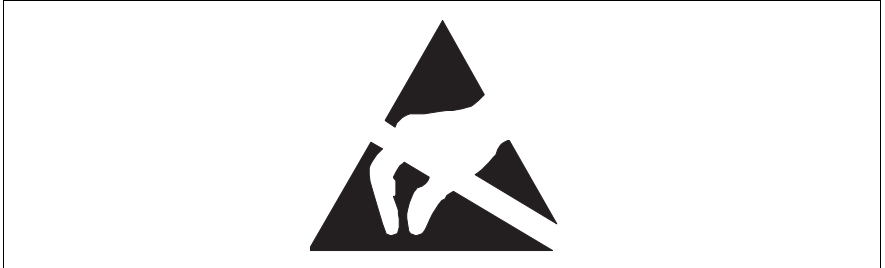
Figure 1: ESD label

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.

● The circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. To ensure reliable protection, you must wear an earthing band on your wrist when working with this type of module and connect it to an unpainted, non-conducting metal part of the system.

● Any devices or tools that are used must be free of electrostatic charge.

● Wear a suitable grounding cable that connects you to the external chassis of the system unit.

● Always hold components with ESDs at the edges or at the points marked green (touch points).

● Do not touch any connectors or conduction paths on an ESD.

● Place all the components on a pad which is free of electrostatic charge.

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

Transporting the server

● Only transport t**he s**erver in its original packaging or in packaging that protects it from impacts and jolts.
For the Japanese market, transporting the device in its original packaging does not apply.

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

3.2   ENERGY STAR

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

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

3.3   CE conformity

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

3.4 FCC Class A Compliance Statement

If there is an FCC statement on the device, it 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 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. The correction of interferences caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

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

WARNING:

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

3.5 Environmental protection

Environmentally-friendly product design and development

This product has been designed in accordance with the Fujitsu 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. Further information can be found at:

– http://ts.fujitsu.com/products/standard_servers/index.html (for the EMEA market)
– http://jp.fujitsu.com/platform/server/primergy/concept/ (for the Japanese market)

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

This packaging information doesn't apply to the Japanese market.

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

Please handle returns, recycling and disposal in accordance with local regulations.

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 *http://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 branch or from our recycling center in Paderborn:

Fujitsu Technology Solutions
Recycling Center
D-33106 Paderborn

Tel.   +49 5251 525 1410
Fax   +49 5251 525 32 1410

4 Basic hardware procedures

4.1 Using diagnostics information

The "PRIMERGY TX100 S3 Server Operating manual" gives an introduction to server features and provides an overview of available hardware options.

Use the Fujitsu ServerView Suite management software to plan the upgrade or replacement of hardware components. ServerView Suite documentation is available online at *http://manuals.ts.fujitsu.com* (EMEA market) or *http://jp.fujitsu.com/platform/server/primergy/manual/* (Japanese market) or from the ServerView Suite DVD 2 supplied with your PRIMERGY server. Please refer to the following ServerView Suite topics:

– Operation
– Maintenance

It is recommended to prepare local maintenance tasks using remote diagnostics procedures, as described in the "ServerView Suite Local Service Concept (LSC)" manual available from the ServerView Suite DVD 2 supplied with your PRIMERGY server or online at *http://manuals.ts.fujitsu.com* (EMEA market) or *http://jp.fujitsu.com/platform/server/primergy/manual/* (Japanese market).

Please contact your local Fujitsu customer service partner for details on the service concept and on how to order expansion kits or spare parts. Use the Fujitsu Illustrated Spares Catalog to identify the required spare part and obtain technical data and order information. Illustrated Spares catalogs are available online at *http://manuals.ts.fujitsu.com/illustrated_spares* (EMEA market only).

4.1.1 Locating the defective component

► Use remote diagnostics procedures to identify the defective component, as described in the "ServerView Suite Local Service Concept (LSC)" manual, see "Documents you need at hand" on page 27.

4.2   Shutting down the server

⚠ **CAUTION!**

For further safety information, please refer to chapter "Important information" on page 29.

► Inform the system administrator that the server will be shut down and put offline.

► Terminate all applications.

Figure 2: Power button on the front panel

► Shut down the server.

ⓘ If the system is running an ACPI-compliant operating system, pressing of the On / Off button will perform a graceful shutdown.

4.2.1   Disconnecting power cord
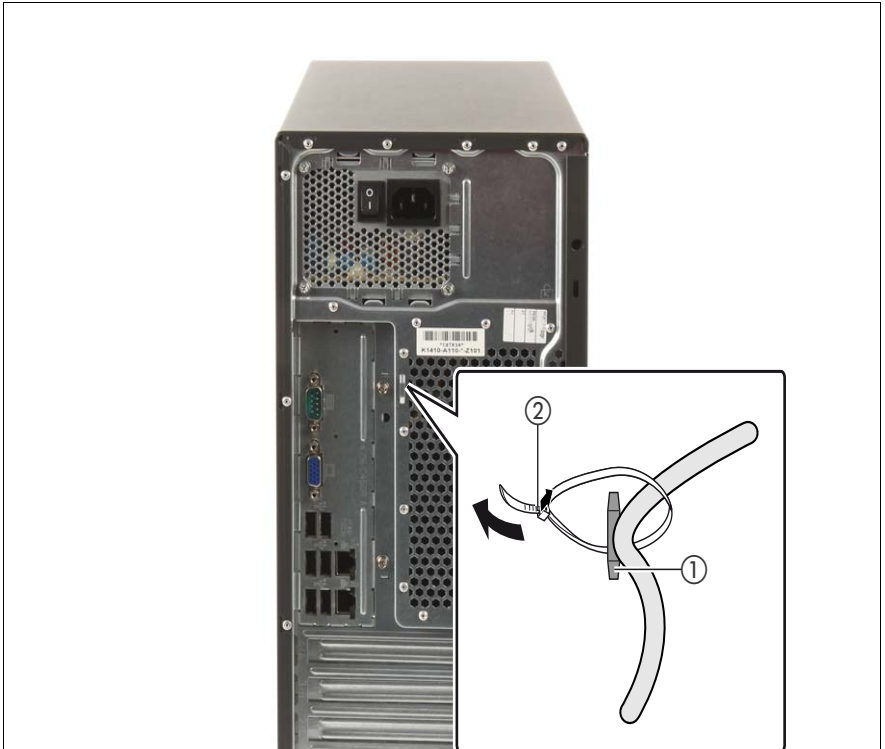
Figure 3: Removing the power cord from the PSU cable tie

► Pull out the locking lever on the PSU cable tie (1) and loosen the loop (2).

► Disconnect the power cord from the PSU and remove it from the cable tie.

4.3   Opening the server

CAUTION!

- Before removing or installing covers, turn off the server and all peripheral devices. Also unplug all power cables from the outlet. Failure to do so can cause electric shock.

- In order to comply with applicable EMC regulations (regulations on electromagnetic compatibility) and satisfy cooling requirements, the PRIMERGY TX100 S3 server must not run while the side cover is removed.

- For further safety information, please refer to chapter "Important information" on page 29.

4.3.1   Removing the side cover

Figure 4: Removing the side cover

► Pull the locking lever as far as it will go (1).
This will disengage the locking mechanism.

Figure 5: Removing the side cover

► Open the side cover (2).

► Remove the side cover (3).

4.3.2 Removing accessible drives

4.3.2.1 Removing the optical disk drive (ODD)

Figure 6: Disconnecting cables to the optical disk drive

▶ Disconnect all cables from the optical disk drive.

1 Power cable connector P8 (see figure 224 on page 330)

2 SATA cable

Figure 7: Removing the optical disk drive

► Press the locking latch in the direction of the arrow (1) and press out the accessible drive from behind (2).

► Remove the accessible drive out of its bay.

4.3.2.2   Removing the backup drive
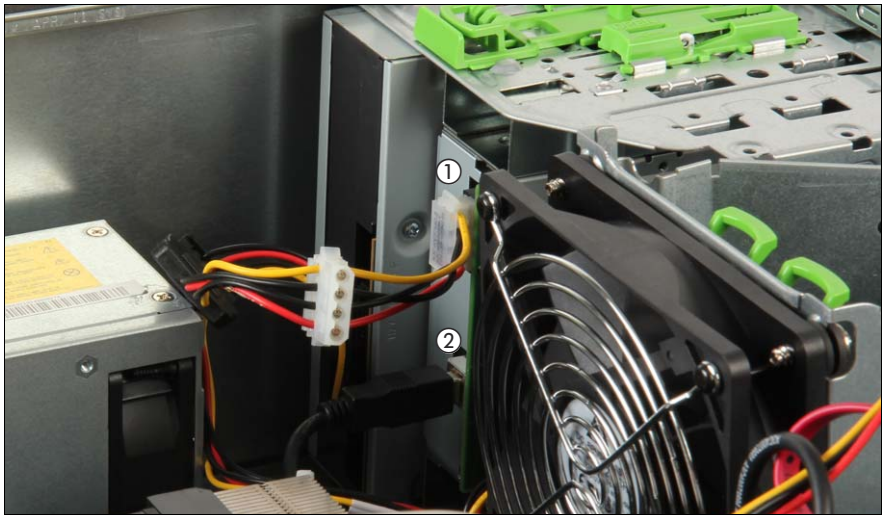
Figure 8: Disconnecting cables from the backup drive

► Disconnect all cables from the backup drive.

1   Power adapter cable

2   USB cable

Figure 9: Removing the backup drive

► Press the locking latch in the direction of the arrow (1) and press out the backup drive from behind (2).

► Remove the backup drive out of its bay.

4.3.3   Removing the front cover

Figure 10: Removing the front cover

► Disengage the three locking tabs on the front cover by pulling it forwards (1).

► Carefully rotate open (2) and unhook the front cover (3).

4.4   Closing the server

⚠ **CAUTION!**

● Before attaching the covers, make sure no unnecessary parts or tools are left inside the server.

● In order to comply with applicable EMC regulations (regulations on electromagnetic compatibility) and satisfy cooling requirements, the PRIMERGY TX100 S3 server must not run while the side cover is removed.

● For further safety information, please refer to chapter "Important information" on page 29.

4.4.1   Installing the front cover

Figure 11: Installing the front cover

► Hook the three tabs on the front bezel into the notches in the chassis (1).

► Carefully close the front bezel (2). Make sure that all three locking latches properly engage (3).

4.4.2   Installing the optical disk drive (ODD)

Figure 12: Installing the optical disk drive

► Insert the optical disk drive into its installation bay and carefully push in until it locks in place.

> **i** Make sure that the fixation plate is attached on the left side of the accessible drive.

► If applicable, check the position of the EMI spring in the backup drive bay after installing the ODD.

If the EMI spring is not in correct position, please remove the front cover (see "Removing the front cover" on page 51), correct the position of the EMI spring, and install the front cover again (see "Installing the front cover" on page 53)."
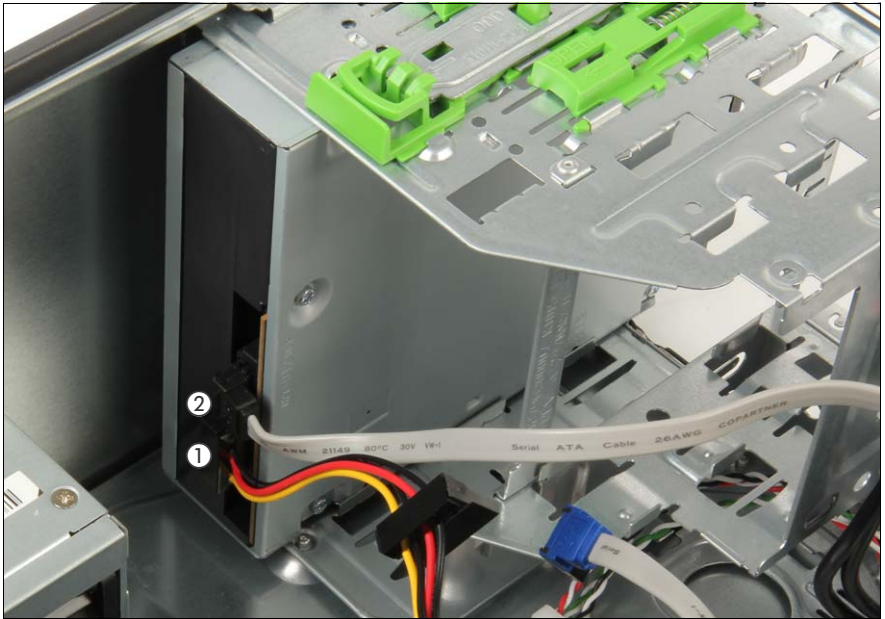
Figure 13: Connecting cables to the optical disk drive

▶   Connect cables to the optical disk drive.

   1   Power cable connector P8 (see figure)

   2   SATA cable

4.4.3   Installing the backup drive

Figure 14: Installing the backup drive

► Insert the backup drive into its installation bay and carefully push in until it locks in place.

> **i** Make sure that the fixation plate is attached on the left side of the accessible drive.
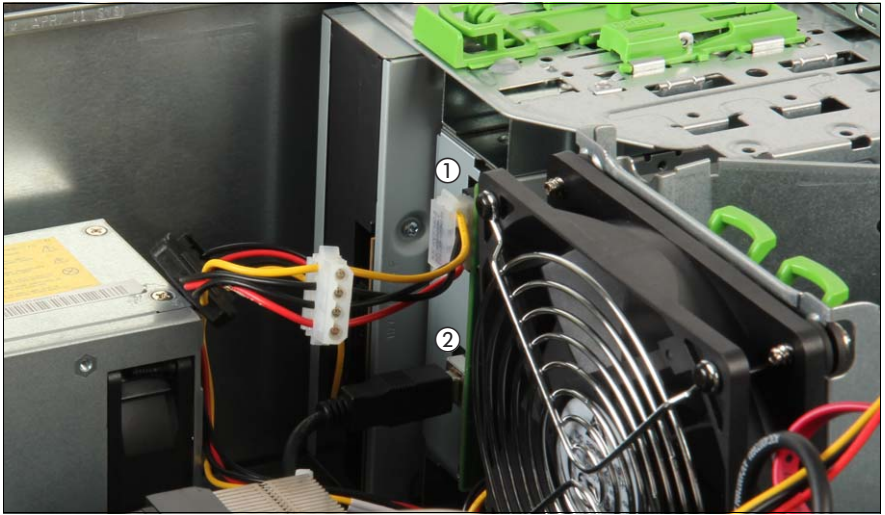
Figure 15: Connecting cables from the backup drive

► Connect all cables from the backup drive.

    1   Power adapter cable

    2   USB cable

4.4.4 Installing the side cover

Figure 16: Installing the side cover (A)

► Hook the side cover in the bottom side cant of the chassis (1).

► Push the side cover against the chassis until the locking mechanism engages (2).

4.5 Connecting the server to the mains

The PRIMERGY TX100 S3 server is equipped with a standard power supply unit that automatically adjusts to any mains voltage in the range of 100 VAC to 240 VAC.

⚠️ **CAUTION!**

The power supply automatically adjusts to any mains voltage in the range of 100 VAC to 240 VAC. You may only operate the server if its rated voltage range corresponds to the local mains voltage.

► Connect the power cord to the power supply unit.

► Connect the mains plug to a grounded mains outlet in the in-house power supply network.

Securing power cord

Figure 17: Securing the power cord

► Loop the cable past the cable tie mounting bracket as shown.

▶ Close the cable tie around the power cord (1) and pull tight (2) to secure the power cord.

4.6   Switching on the server

⚠ **CAUTION!**

● Before switching on the server, make sure the side cover is closed. In order to comply with applicable EMC regulations (regulations on electromagnetic compatibility) and to satisfy cooling requirements, the PRIMERGY TX100 S3 server must not run while the side cover is removed

● Follow the safety instructions in chapter "Important information" on page 29.

▶ Connect all peripheral cables to the server.

Figure 18: Power button on the front panel

▶ Press the On / Off button to start up the server.

▶ Ensure that the LED in the On / Off button is lit green.

> ℹ For more information see "Front panel and external connectors" on page 275.

> ℹ **For the 0-Watt device**
>
> When the server does not start even if the On / Off button is pressed, press the push button mains switch on the 0-Watt device one-time (on the rear of the server). Then press the On / Off button again.

4.7   Removing the HDD cage

4.7.1   Preliminary steps

Before replacing the system fan module, perform the following steps:

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Open the side cover as described in section "Removing the side cover" on page 45.

► Remove the HDDs as described in section "Removing 3.5-inch HDDs" on page 118.

i   Take care, that you notice all detached cables for future reconnecting.
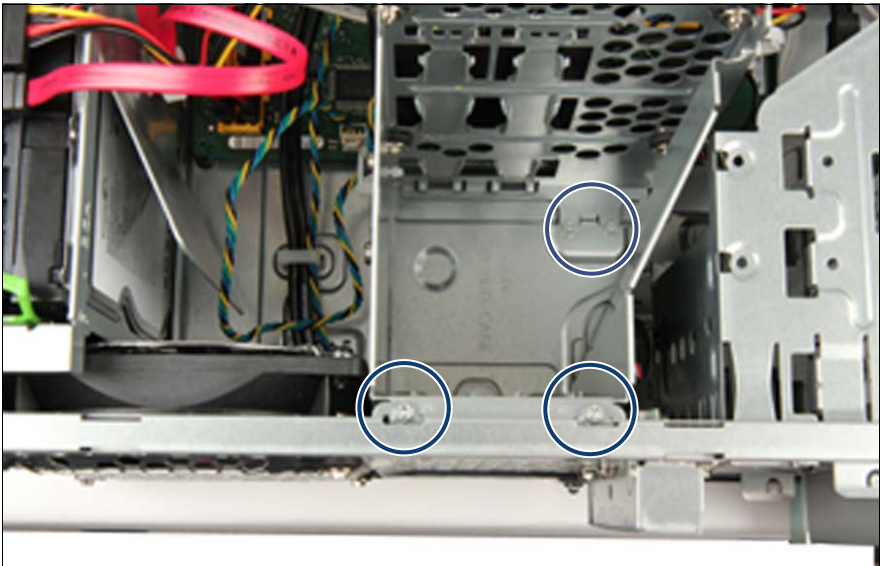
Figure 19: Remove the screws

► Remove the four screws (see circles).
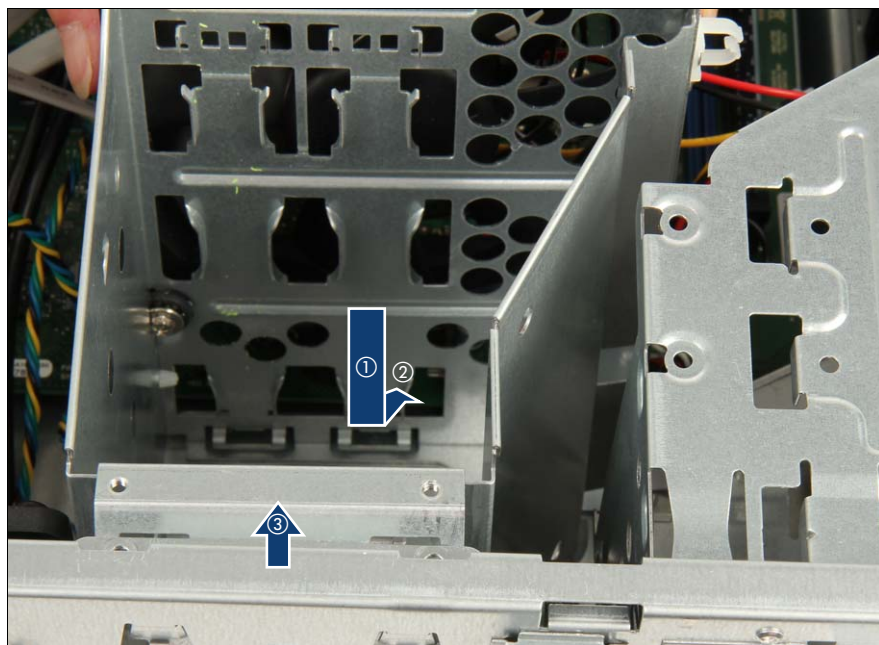
Figure 20: Lifting up the HDD cage

► Push down the HDD cage to release it (1).

► Push the HDD cage inwards (2).

► Carefully lift up the HDD cage (3).

i Do not completely lift up the HDD cage out of the chassis. First, disconnect the fan cable which is located under the fan before you lift up the HDD cage out of the chassis.

Figure 21: Connector for the fan2 cable

▶ Disconnect the cable from system board connector FAN2 SYS (see circle).

4.8 Installing the HDD cage

> **i** Do not completely place down the HDD cage into the chassis. First, connect the fan cable which is located close to the HDD cage before you place down the HDD cage into the chassis.
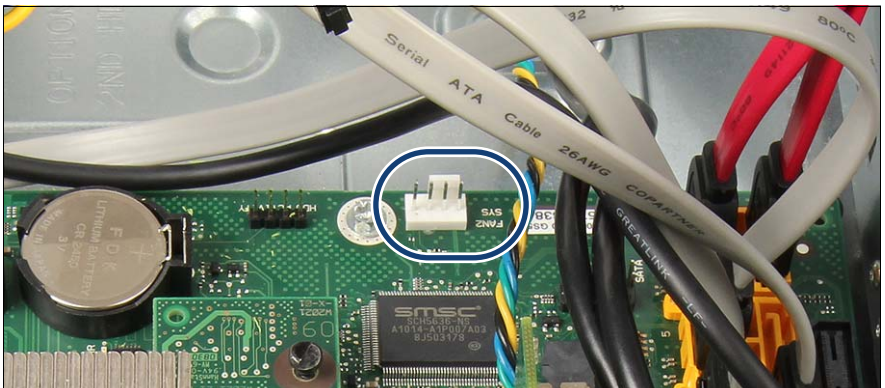
Figure 22: Connector for the fan2 cable

▶ Connect the fan cable of system fan 2 to system board connector FAN2 SYS (see circle).
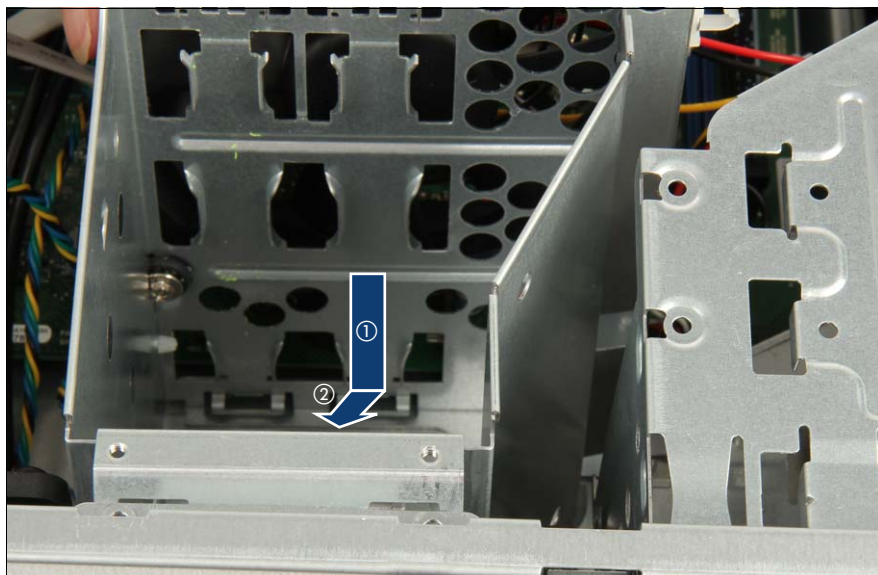
Figure 23: Placing the HDD cage

► Place down the HDD cage into the chassis (1).

► Push the HDD cage to the front side of the chassis (2).
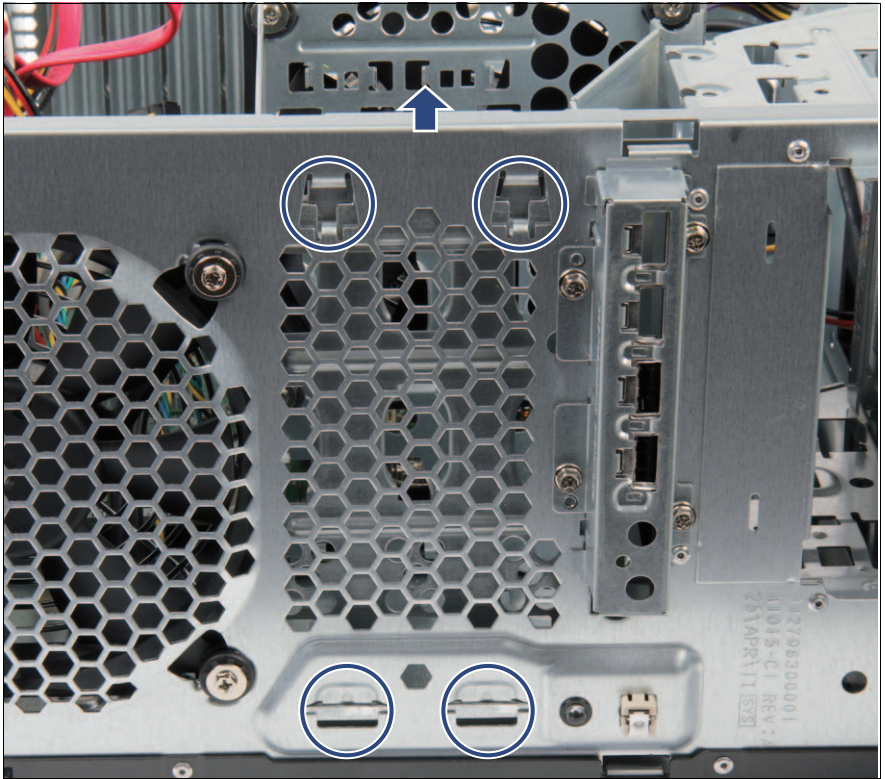
Figure 24: Recesses of the HDD cage

► Pull up the HDD cage until the upper hooks engage in the recesses (see circles).

> ⓘ This view is only visible, if the front cover is removed.
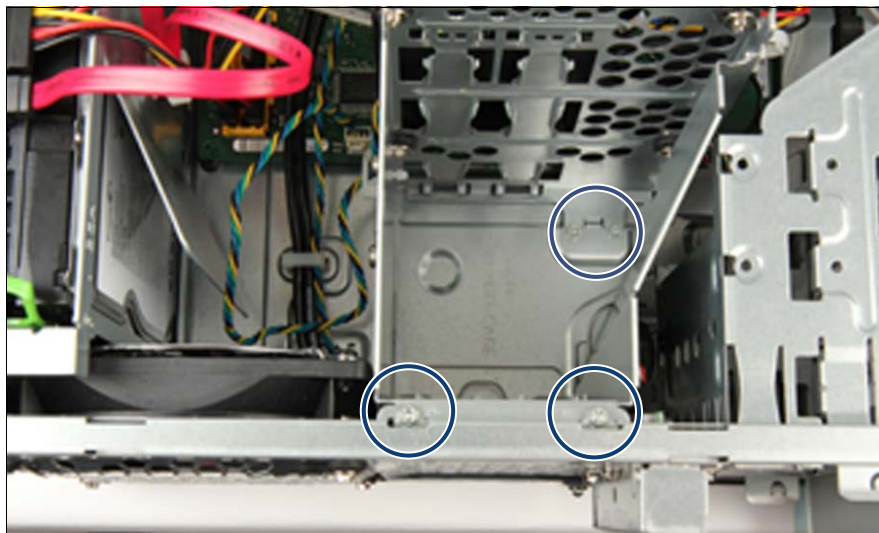
Figure 25: Fastening the screws

► Ensure that the noses engage under the guides (see circles) and all screw holes are matching.

► Fasten the four screws (see circles) of the HDD cage.

4.8.1   Concluding steps

Perform the following procedures to complete the task:

► Install the HDDs as described in section "Installing 3.5-inch HDDs" on page 107.

► For reconnecting the detached cables to the HDDs refer to "Connecting power" on page 112.

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

4.9 Concluding software tasks

► Perform the following software tasks to put the server back in operation:

   – "Verifying the system time settings" on page 78

   – "Viewing and clearing the System Event Log (SEL)" on page 79

   – "Updating the NIC configuration file in a Linux environment" on page 80

   – "Enabling BitLocker functionality" on page 82

   – "Performing a RAID array rebuild" on page 83

   – "Looking up changed MAC / WWN addresses" on page 83

5 Basic software procedures

5.1 Starting the maintenance task

5.1.1 Disabling BitLocker functionality

BitLocker Drive Encryption provides protection for operating system and data drives by encrypting the contents and requiring users to authenticate their credentials to access the information. On the operating system drive, BitLocker uses the compatible Trusted Platform Module (TPM) to detect if the computer's startup process has been modified from its original state.

Disabling BitLocker Drive Encryption is a temporary method for removing BitLocker protection without decrypting the drive Windows is installed on. Disable BitLocker before modifying the server's hardware configuration or startup files. Enable BitLocker again after the maintenance procedure is complete.

⚠ **CAUTION!**

– With BitLocker features enabled, modifying the system configuration (hardware or firmware settings) may render the system inaccessible. The system may enter Recovery Mode and require a 48-digits recovery password to return to normal operation.

Ensure to disable BitLocker drive encryption before maintaining the server.

– When disabled, BitLocker uses a plain text key instead of the Trusted Platform Module (TPM) to read encrypted files. Keep in mind that information on this drive is not secure until BitLocker has been re-enabled.

► Ask the system administrator to disable BitLocker-protection on the operating system drive, using the BitLocker setup wizard available either from the Control Panel or Windows Explorer:

  ► Open BitLocker Drive Encryption by clicking the *Start* button, clicking *Control Panel*, clicking *Security*, and then clicking *Bitlocker Drive Encryption*.

| i | Administrator permission required: If you are prompted for an administrator password or confirmation, type the password or provide confirmation. |

► To temporarily disable BitLocker, click *Turn Off BitLocker*, and then click *Disable BitLocker Drive Encryption*.

| i | In order to determine which features are accessible through the BitLocker setup wizard, modify the BitLocker Group Policy settings. |

For further information on how to disable BitLocker drive encryption, please refer to the Microsoft Knowledge Base.

Fujitsu service partners will find additional information (also available in Japanese) on the Fujitsu Extranet web pages.

5.1.2   Removing backup and optical disk media

► Ask the system administrator to eject all remaining backup or optical media from the backup or optical disk drive before removing it from the server.

► If the backup media cannot be ejected by conventional means, and it is mandatory that the cartridge be removed prior to returning the drive for repair or disposing it, a manual tape extraction needs to be performed.

For further information on "forcible" tape ejection, please refer to the "Tape Facts" guide available to Fujitsu service partners from the following https address:

https://partners.ts.fujitsu.com/com/service/ps/Servers/PRIMERGY/Pages/TapeFacts.aspx

For the Japanese market, please contact Fujitsu support, if "forcible" tape ejection is necessary.

| i | Fujitsu does not assume responsibility for any damage to the tape drive, the data cartridge / tape or for the loss of any data resulting from manual tape extraction procedures. |

5.1.3 Verifying and configuring the backup software solution

| i | This task only applies to the Japanese market.

Depending on the backup software solution, it may be necessary to disable or delete the backup drive from the backup software drive list before starting the maintenance task.

This is the case for the following backup software solution:

– BackupExec

| i | Procedures may differ depending on the backup software. For details, refer to the dedicated documentation provided separately.

Further information on suitable backup software solutions and related documentation is available to Fujitsu service partners from the Fujitsu Extranet pages.

5.1.4 Note on server maintenance in a Multipath I/O environment

When booting your server offline from the ServerView Suite DVD 1 to perform an offline driver update using the ServerView Update DVD or collect diagnostic data using PrimeCollect in a Multipath I/O environment, there is a risk of damaging the system configuration which may leave the system unable to boot.

This is a known restriction of Windows PE with Multipath drivers.

Before using the ServerView Update DVD or PrimeCollect in an offline environment, Fujitsu recommends to properly shut down the server and to disconnect all external I/O connections (like LAN or FC cables) from the system. Only keep mouse, keyboard, video cable and AC power cord connected.

Continue as follows:

► If performing an offline driver update, first of all prepare the ServerView Update DVD:

  ► Download the latest ServerView Update DVD image from the Fujitsu FTP server at:

    ftp://ftp.ts.fujitsu.com/images/serverview

  ► Burn the image to a DVD.

  For the Japanese market:

  ► Locate, download and burn the ServerView Update DVD image available from the following URL:

    http://jp.fujitsu.com/platform/server/primergy/products/note/svsdvd/dvd/

► Ensure that all external I/O connections have been removed from the server.

  > **i** Ensure that all external I/O connections are uniquely identified so that you can reconnect them into their original locations after concluding the task.

► Switch on the server.

► Right after switching on the server, insert the ServerView Suite DVD 1 into the DVD drive and close the drive tray.
  The server will now boot from the DVD.

► After the boot process is complete, select your preferred GUI language.

► In the initial Installation Manager startup window, choose either *Update Manager Express* or *PrimeCollect* from the *Installation Manager mode* section.

► Click *Continue* to proceed.

  If *Update Manager Express* has been selected, insert the ServerView Update DVD into the DVD drive before proceeding.

► Finish the intended maintenance task. For further information, refer to the following manuals available online at *http://manuals.ts.fujitsu.com* (EMEA market) or *http://jp.fujitsu.com/platform/server/primergy/manual/* (Japanese market) or from the ServerView Suite DVD 2 supplied with your PRIMERGY server:

  – ServerView Update Manager Express:
    "Local System Update for PRIMERGY Servers" user guide

- PrimeCollect:
  "PrimeCollect" user guide

▶ After the update or diagnostic procedure has been completed, shut down the server, reconnect all external I/O connections and bring the system back to normal operation.

▶ If necessary, perform this procedure for all remaining servers within the Multipath environment.

5.2 Completing the maintenance task

5.2.1 Updating the system board BIOS

After replacing the system board, it is essential to upgrade the BIOS to the latest version.

The latest BIOS versions are available from the Fujitsu support internet pages at:

http://ts.fujitsu.com/support/ (EMEA market)
http://jp.fujitsu.com/platform/server/primergy/downloads/ (Japanese market)

> **i** Fujitsu does not assume responsibility for any damage done to the server or for the loss of any data resulting from BIOS updates.

BIOS recovery procedure

> **i** For the Japanese market, follow the instructions provided separately.

▶ Prepare a USB stick with the following files:

- Update tool

- *Startup.nsh* (which will execute the update tool)

- BIOS image file for update (16 MB with header information)

▶ Ensure that the server has been shut down and disconnected from the mains as described in sections .

▶ Open the side cover as described in section .

► Enter BIOS recovery mode using the onboard jumpers.

> **i** For detailed information on jumper settings, refer to section "Onboard settings" on page 345 or the "System Board D3009 Technical Manual".

► Close the side cover as described in section "Closing the server" on page 52.

► Connect the USB stick to the USB port.

► Connect the server to the mains as described in section "Connecting the server to the mains" on page 59.

► Press the On / Off button to start up the server.

The system will detect the USB stick and the BIOS recovery process will be performed.

> ⚠ **CAUTION!**
> Do not interrupt the BIOS upgrade process after it has started. If the process is interrupted, the system BIOS may be permanently corrupted.

► After completion of the flash process, shut down the server.

► Open the side cover as described in section "Opening the server" on page 44.

► Disable BIOS recovery mode using the onboard jumpers:

> **i** For detailed information on jumper settings, refer to section "Onboard settings" on page 345 or the "System Board D3009 Technical Manual".

► Close the side cover as described in section "Closing the server" on page 52.

5.2.2 Updating RAID controller firmware

After replacing the RAID controller, it is essential to upgrade the firmware to the latest version. The latest RAID controller firmware version is available from the Fujitsu support web pages at:

http://ts.fujitsu.com/support/ (EMEA market)
http://jp.fujitsu.com/platform/server/primergy/downloads/ (Japanese market)

> **i** Fujitsu does not assume responsibility for any damage done to the server or for the loss of any data resulting from firmware updates.
> For the Japanese market, follow the instructions provided separately.

Using the ServerView Update Manager

For a detailed description on how to update the RAID controller firmware using the ServerView Update Manager or Update Manager Express (UME), please refer to the following manuals available online at *http://manuals.ts.fujitsu.com* (*http://jp.fujitsu.com/platform/server/primergy/manual/* for the Japanese market) or from the ServerView Suite DVD 2 supplied with your PRIMERGY server:

– ServerView Update Manager:
"ServerView Update Management" user guide
– ServerView Update Manager Express:
"Local System Update for PRIMERGY Servers" user guide

Using the flash tool

The latest firmware files are available as ASPs (Autonomous Support Packages) for Windows or as DOS tools from the Fujitsu support web pages at:

http://ts.fujitsu.com/support/ (EMEA market)
http://jp.fujitsu.com/platform/server/primergy/downloads/ (Japanese market)

► Select *Drivers & Downloads*.

► From the *Select Product* drop down lists, choose your PRIMERGY server or enter its serial or ident number into the search field.

► Select your operating system and version.

► Select the desired component type (e.g. SAS RAID).

► Select your controller from the device list to expand a compilation of available drivers and firmware.

► Select the desired file and click *Download* for further instructions.

5.2.3   Enabling Option ROM scan

In order to configure an expansion card that has been installed or replaced, the card's Option ROM has to be enabled in the system board BIOS. The card's firmware is called by the system BIOS upon reboot and can be entered and configured.

Option ROM can be enabled permanently (e.g. in case of a boot controller that may require frequent setup) or temporarily for one-time configuration. When permanently enabling a controllers's Option ROM, keep in mind that only two Option ROMs can be activated in the system board BIOS at a time.

► Enter the BIOS.

► From the *Advanced* menu select *Option ROM Configuration*.

► Identify the desired PCI slot and set its *Launch Slot # OpROM* setting to *Enabled.*

► Save your changes and exit the BIOS.

> **i** Up to two Option ROMs can be activated in the system board BIOS at a time.
>
> For detailed information on how to access the BIOS and modify settings, refer to the "System Board D3009 BIOS Setup Utility" reference manual.

When the enabled expansion card is initialized during the POST phase of the boot sequence, a key combination is displayed temporarily to enter the expansion card's firmware.

► Press the displayed key combination.

► Modify the expansion card firmware options as desired.

► Save your changes and exit the firmware.

> **i** The expansion card's option ROM can now be disabled in the system board BIOS.
>
> Exception: If the expansion card controls a permanent boot device, the card's Option ROM has to remain enabled.

5.2.4 Verifying and configuring the backup software solution

| i | This task only applies to the Japanese market.

Disabling backup drives

Depending on the backup software solution, it may be necessary to disable or delete the backup drive from the backup software drive list and reconfigure backup jobs after completing the maintenance task.

This is the case for the following backup software solutions:

– Netvault for Windows
– ARCServe
– BackupExec

| i | Procedures may differ depending on the backup software. For details, refer to the dedicated documentation provided separately.

Further information on suitable backup software solutions and related documentation is available to Fujitsu service partners from the Fujitsu Extranet pages.

Re-enabling backup drives

If a backup drive has been disabled or deleted from the backup software drive list as described in section , it has to be re-enabled to complete the maintenance task.

► Re-enable backup drives and revise backup software settings and cronjobs.

| i | Detailed information on suitable backup software solutions and related documentation is available to Fujitsu service partners from the Fujitsu Extranet pages

5.2.5   Enabling replaced components in the system BIOS

When a processor, an expansion card, or a memory module fails, the defective component will be set to *Disabled* or *Failed* in the system BIOS. The server will then reboot with only the intact hardware components remaining in the system configuration. After replacing the defective component, it needs to be re-enabled in the system board BIOS.

► Enter the BIOS.

► Select the *Advanced* menu.

► Select the status menu of the desired component:

– Processors: *CPU Status*

i	This option is only available for multi-processor systems.

– Memory: *Memory Status*

– Expansion cards: *PCI Status*

► Reset replaced components to *Enable*.

► Save your changes and exit the BIOS.

i	For detailed information on how to access the BIOS and modify settings, refer to the "System Board D3009 BIOS Setup Utility" reference manual.

5.2.6   Verifying the system time settings

i	This task only applies to Linux environments.

► After replacing the system board, ask the system administrator whether the RTC or UTC time standard is to be used as system time.

i	If the system time (RTC) is set to UTC, the SEL (System Event Log) time stamps may differ from the local time.

► Check the system time set in the RTC (Real Clock Time), and if applicable, correct it in the BIOS.

► Enter the BIOS.

► Select the *Main* menu.

▶ Under *System Time* and *System Date* specify the correct time and date.

> **i** By default, the system time set in the BIOS is RTC (Real Time Clock) local time. If your IT infrastructure relies on universally accepted time standards, set the *System Time* to UTC (Universal Time, Coordinated) instead. Greenwich Mean Time (GMT) can be considered equivalent to UTC.

▶ Save your changes and exit the BIOS.

> **i** For detailed information on how to access the BIOS and modify settings, refer to the "System Board D3009 BIOS Setup Utility" reference manual.

5.2.7 Viewing and clearing the System Event Log (SEL)

5.2.7.1 Viewing the SEL

You can view the System Event Log (SEL) using the ServerView Operations Manager:

Viewing the SEL in ServerView Operations Manager

▶ In ServerView Operations Manager *Single System View* select *Maintenance* from the *Information / Operation* menu.

▶ Under *Maintenance* select *System Event Log*.

▶ Select the message type(s) you want to display:

– Critical events
– Major events
– Minor events
– Informational events

> **i** For detailed information on how to view and sort the SEL using ServerView Operations Manager, refer to the "ServerView Operations Manager - Server Management" user guide.

5.2.8 Updating the NIC configuration file in a Linux environment

In order to prevent errors caused by changing network device names (*eth<x>*), it is recommended to store the MAC address (hardware address) of a network interface card in the related NIC configuration file of the Linux OS.

When replacing a network controller or the system board with onboard LAN controllers in a server running Linux OS, the MAC address will change but not automatically be updated in the definition file.

In order to prevent communication problems, it is necessary to update the changed MAC address stored in the related *ifcfg-eth<x>* definition file.

To update the MAC address, proceed as follows:

> **i** Procedures may differ depending on your Linux OS or the definition file on the client system. Use the following information as reference. Ask the system administrator to change the definition file.

► After replacing a network controller or the system board, switch on and boot the server as described in section "Switching on the server" on page 60.

kudzu, the hardware configuration tool for Red Hat Linux, will launch at boot and detect the new and / or changed hardware on your system.

> **i** *kudzu* may not launch at boot depending on the client's environment.

► Select *Keep Configuration* and *Ignore* to complete the boot process.

► Use the *vi* text editor to specify the MAC address in the HWADDR section of the *ifcfg-eth<x>* file:

> **i** The MAC address can be found on the type label attached to the system board or network controller.

Example:

In order to modify the definition file for network controller 1, enter the following command:

`# vi /etc/sysconfig/network-scripts/ifcfg-eth1`

In *vi*, specify the new MAC address as follows:

`HWADDR=xx:xx:xx:xx:xx:xx`

► Save and close the definition file.

► For the changes to take effect, you need to reboot the network by entering the following command:

```
# service network restart
```

> **i** If the system board or network controller offers multiple LAN ports, it is necessary to update the remaining *ifcfg-eth<x>* definition files accordingly.

► Update the NIC configuration file to reflect the new card sequence and MAC address.

5.2.9 Enabling BitLocker functionality

If BitLocker Drive Encryption has been disabled for maintenance purposes (see section "Disabling BitLocker functionality" on page 69), it has to be re-enabled to complete the service task.

> **i** If BitLocker Drive Encryption has been disabled prior to replacing components you won't be asked for a recovery key when rebooting the server after the maintenance task. However, if BitLocker functionality has not been disabled, Windows will enter recovery mode and ask you to input recovery key for further booting.
>
> ▶ In this case, ask the system administrator to enter the recovery key in order to boot the operating system.

▶ Ask the system administrator to enable BitLocker-protection on the operating system drive, using the BitLocker setup wizard available either from the Control Panel or Windows Explorer.

   ▶ Open Bitlocker Drive Encryption by clicking the *Start* button, clicking *Control Panel*, clicking *Security*, and then clicking *Bitlocker Drive Encryption*.

   > **i** Administrator permission required: If you are prompted for an administrator password or confirmation, type the password or provide confirmation.

   ▶ To enable a temporarily disabled BitLocker, click *Turn On BitLocker*.

   ▶ Follow the instructions in the BitLocker Setup wizard.

> **i** For further information on how to enable BitLocker drive encryption, please refer to the Microsoft Knowledge Base.
>
> Fujitsu service partners will find additional information (also available in Japanese) on the Fujitsu Extranet web pages.

5.2.10 Performing a RAID array rebuild

After replacing a hard disk drive that has been combined into a RAID array, RAID rebuild will be performed completely unattended as a background process.
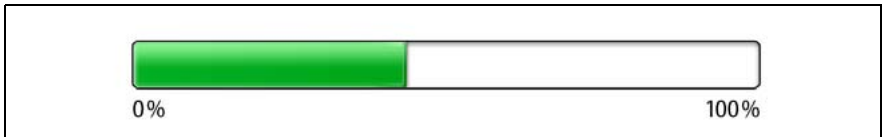
Figure 26: Progress bar (RAID array rebuild)

⚠ **CAUTION!**

The system is now operational, however, data redundancy will not be available until the RAID array rebuild is complete. Depending on the hard disk drive capacity the overall process can take up to several hours, in some cases even days.

ⓘ You may notice a slight performance impact during rebuild.

5.2.11 Looking up changed MAC / WWN addresses

When replacing a network controller or SFP+ transceiver module, the MAC (Media Access Control) and WWN (World Wide Name) addresses will change.

ⓘ In addition to the procedures described below, MAC / WWN addresses can also be found on the type label attached to a network controller or system board.

5.2.11.1 Looking up MAC addresses

► Enter the BIOS.

► Depending on the number of network controllers in your system, you will find one or several *Port Configuration* menu items.

Use the arrow key ⇥ to scroll to the right and browse all available tabs.

Each *Port Configuration* tab will display detailed information on the related network controller, including its MAC address.

► Note down the new 12-digit MAC address.

▶ Press ⌑Esc⌑ to exit the BIOS.

▶ Inform the customer about the changed MAC address.

5.2.12 Using the Chassis ID Prom Tool

The Chassis ID EPROM located on the system board contains system information like server name and model, housing type, serial number and manufacturing data.

In order to integrate your system into the ServerView management environment and to enable server installation using the ServerView Installation Manager, system data needs to be complete and correct.

After replacing the system board, system information has to be entered using the *ChassisID_Prom* Tool. The tool and further instructions are available to maintenance personnel from Fujitsu Technology Solutions Extranet:

https://partners.ts.fujitsu.com/com/service/intelservers/tools

> **i** For the Japanese market, follow the instructions provided separately.
>
> The device name that should be selected in the tool is different according to model line (PYT103***/PYT10P***).

5.2.13 Configuring LAN teaming

Use ServerView Operations Manager to obtain detailed information on existing LAN teams:

▶ In ServerView Operations Manager *Single System View* select *System Status* from the *Information / Operation* menu.

▶ Under *Network Interfaces* select *LAN Teaming*.

▶ The *Network Interfaces (Summary)* overview shows all configured LAN teams and their components. Choose a LAN team to display further details:

– *LAN Team Properties*: Properties of the selected LAN team
– *LAN Team Statistics*: Available statistics about the selected LAN team

> **i** For more detailed information, refer to the "ServerView Operations Manager - Server Management" user guide.

5.2.13.1 After replacing / upgrading LAN controllers

Please note when re-using a replaced LAN controller:

► Confirm with the customer whether the LAN controller you have replaced has been used as part of a LAN teaming configuration.

► If LAN teaming has been active, you will need to restore the configuration using the LAN driver utility after replacing the LAN controller.

  Ensure that the controllers have been assigned as primary or secondary according to your requirements.

i	For details, refer to the relevant LAN driver manual.

5.2.13.2 After replacing the system board

► Confirm with the customer whether the onboard LAN controller you have replaced has been used as part of a LAN teaming configuration.

► If LAN teaming has been active, you will need to restore the configuration using the LAN driver utility after replacing the system board.

i	For details, refer to the relevant LAN driver manual.

6   Power supply

The PRIMERGY TX100 S3 server is equipped with a standard power supply unit that automatically adjusts to any mains voltage in the range of 100 VAC to 240 VAC.

CAUTION!

The server supports a mains voltage in the range of 100 VAC to 240 VAC. You may only operate the server if its rated voltage range corresponds to the local mains voltage.

Safety notes

CAUTION!

● Do not disassemble the power supply unit. Doing so may cause electric shock.

● Areas around the power supply unit may remain extremely hot after shutdown. After shutting down the server, wait for hot components to cool down before removing the power supply unit.

● The power supply unit is heavy, so handle it carefully. If you drop it by mistake, injuries may result.

● For further safety information, please refer to chapter "Important information" on page 29.

6.1   Replacing the standard power supply unit

Field Replaceable Units (FRU)

Average task duration: 10 minutes

6.1.1   Required tools

● Preliminary and concluding steps: tool-less

● Replacing the power supply unit:

– Phillips PH2 / (+) No. 2 screw driver

6.1.2   Preliminary steps

Before replacing the power supply unit (PSU), perform the following steps:

i   You are advised to perform this routine with the server in a horizontal position.

► Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Open the side cover as described in section "Removing the side cover" on page 45.

6.1.3   Disconnecting power cables

Figure 27: Disconnecting power cable

► While pressing the release latch on the connector, disconnect the PSU ATX power connector from system board connector POWER.

6.1.4   Removing the power supply unit

Figure 28: Detaching the PSU

► Remove the four screws from the PSU (see circles).

Figure 29: Removing the PSU

► Slide the defective PSU inside the chassis by 3 cm (1).

► Lift the defective PSU out of the chassis (2).

6.1.5   Installing the power supply unit

Figure 30: Hooks for fastening the PSU

i	Take care, that the PSU is fastening into the hooks (see circles).

Figure 31: Installing the PSU

► Insert the new PSU into the chassis (1).

► Slide the new PSU towards the rear of the chassis (2).

Figure 32: Securing the PSU

► Secure the PSU to the chassis with four screws (M3 x 4.5 mm, see circles).

6.1.6   Reconnecting power cables

Figure 33: Connecting power cable

► Connect the PSU ATX power connector to system board connector POWER.

6.1.7   Concluding steps

Perform the following procedures to complete the task:

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

6.2 Replacing the 0-Watt power supply unit

Field Replaceable Units (FRU)

Average task duration: 20 minutes

6.2.1 Required tools

● Preliminary and concluding steps:

– Phillips PH2 / (+) No. 2 screw driver

● Replacing the power supply unit:

– Phillips PH2 / (+) No. 2 screw driver

6.2.2 Preliminary steps

Before replacing the power supply unit (PSU), perform the following steps:

i You are advised to perform this routine with the server in a horizontal position.

► Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Open the side cover as described in section "Removing the side cover" on page 45.

► Remove the HDD cage as described in section "Removing the HDD cage" on page 61.

6.2.3   Disconnecting power cables

Figure 34: Disconnecting power cable

►   While pressing the release latch on the connector, disconnect the PSU ATX power connector from system board connector POWER.

Figure 35: Disconnecting power cable

► Disconnect the PSU power management connector from system board connector PC2009.

6.2.4   Removing the power supply unit
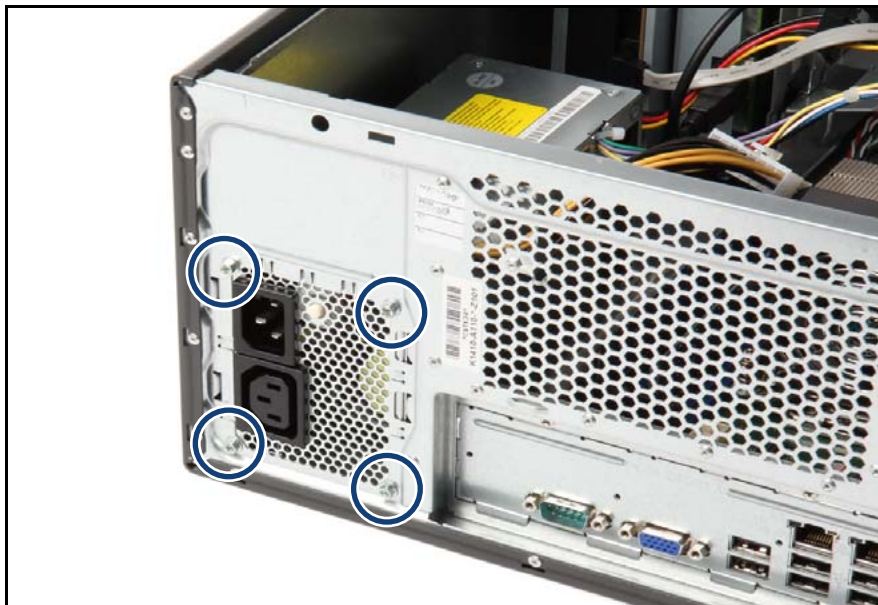
Figure 36: Detaching the PSU
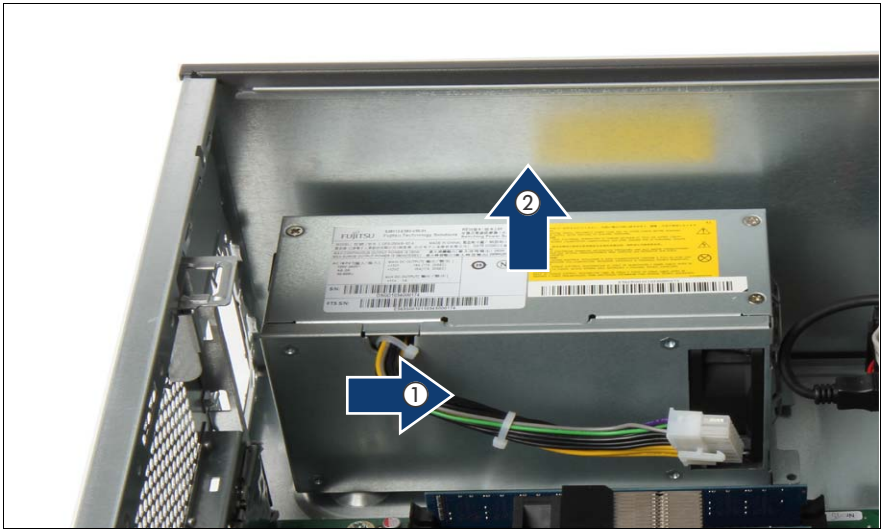
► Remove four screws from the PSU (see circles).

Figure 37: Removing the PSU

▶ Slide the defective PSU inside the chassis by 3 cm (1).

▶ Lift the defective PSU out of the chassis (2).

6.2.5   Installing the power supply unit

Figure 38: Hooks for fastening the PSU

| i | Take care, that the PSU is fastening into the hooks (see circles). |
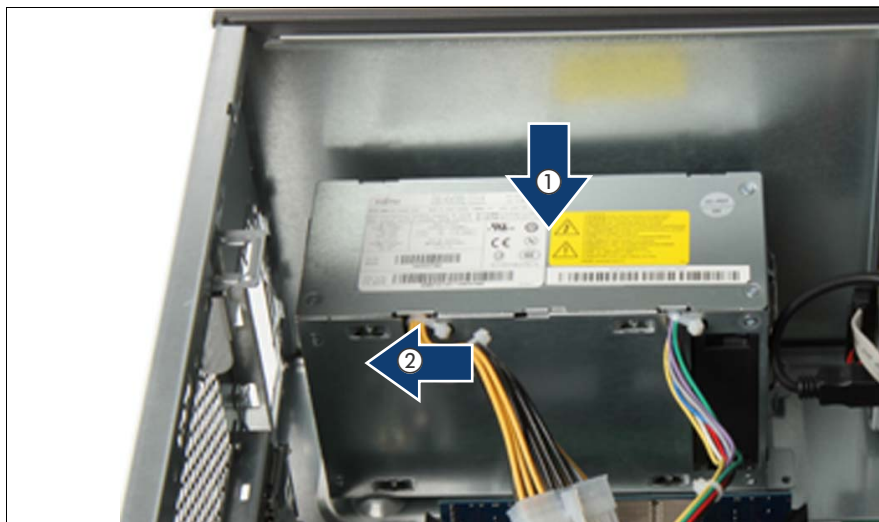
Figure 39: Installing the PSU

► Insert the new PSU into the chassis (1).

► Slide the new PSU towards the rear of the chassis (2).
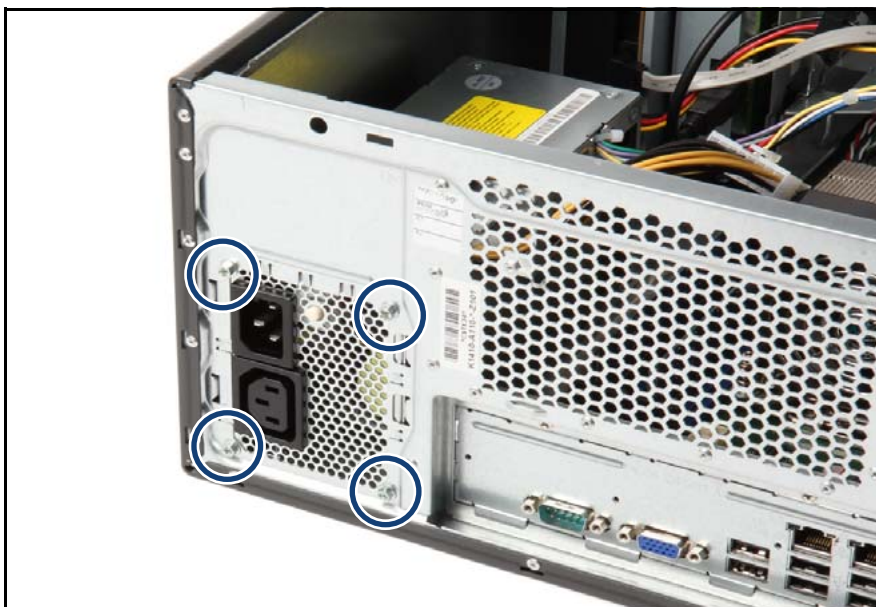
Figure 40: Securing the PSU

► Secure the PSU to the chassis with four screws (M3 x 4.5 mm, see circles).

6.2.6   Reconnecting power cables

Figure 41: Connecting power cable

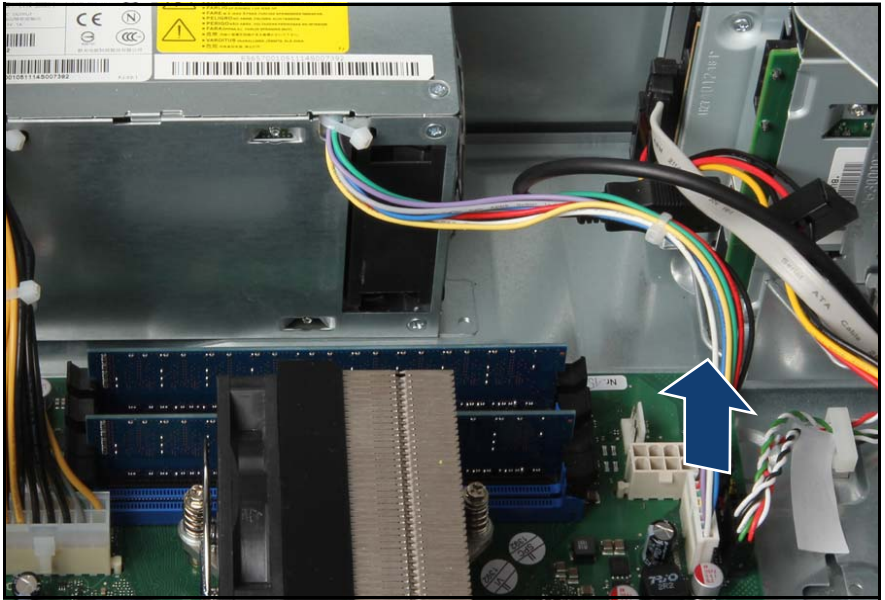► Connect the PSU ATX power connector to system board connector POWER.
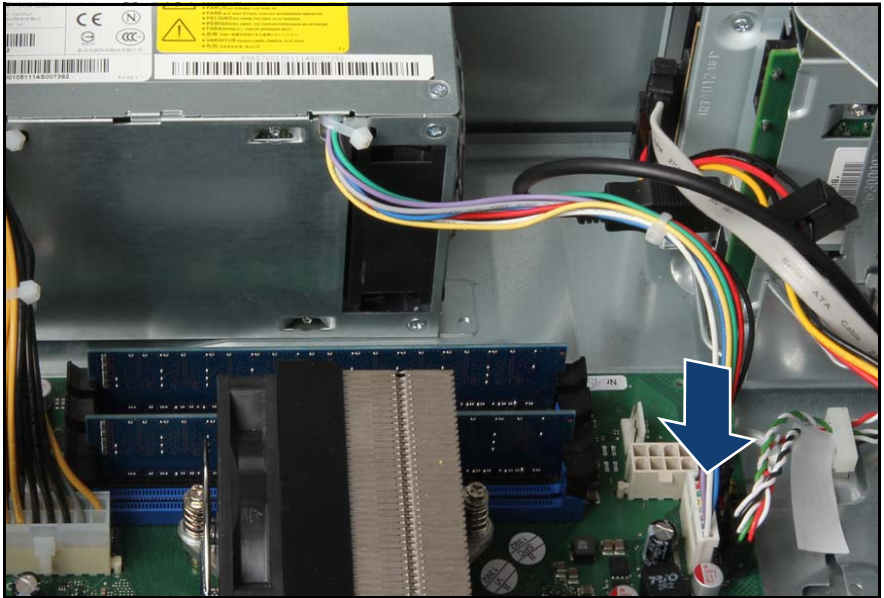
Figure 42: Connecting power cable

▶ Connect the PSU power management connector to system board connector PC2009.

6.2.7 Concluding steps

Perform the following procedures to complete the task:

▶ Install the HDD cage as described in section "Installing the HDD cage" on page 63.

▶ Close the side cover as described in section "Installing the side cover" on page 58.

▶ Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

▶ If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

Power supply

7 Hard disk drives

> **i** For information on RAID controllers, please refer to chapter "Expansion cards and backup units" on page 147.

Safety notes

> ⚠ **CAUTION!**
>
> - The hard disk 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.
>
> - Do not touch the circuitry on boards or soldered parts. Hold the metallic areas or the edges of the circuit boards.
>
> - Before removing a hard disk drive, wait for about 30 seconds until the disk has stopped spinning completely.
>
> - When a hard disk drive is starting up, a resonant noise may be audible for a short while. This does not indicate a failure.
>
> - Depending on the OS, you can configure the write cache settings for the hard disk drives. If a power failure should occur while the write cache is enabled, cached data may be lost.
>
> - When disposing of, transferring, or returning a hard disk drive, wipe out the data on the drive for your own security.
>
> - Rough handling of hard disk drives may damage the stored data. To cope with any unexpected problems, always back up important data. When backing up data to another hard disk drive, you should make backups on a file or partition basis.
>
> - Handle the device on a shock and vibration free surface.
>
> - Do not use the device in extremely hot or cold locations, or locations with extreme temperature changes.
>
> - Never attempt to disassemble a hard disk drive.
>
> - For further safety information, please refer to chapter "Important information" on page 29.

7.1 Mounting order for 3.5-inch HDDs

– Hard disk drives with different capacities are installed from highest to lowest capacity.

– Hard disk drives with different rotation speeds are installed from highest to lowest speed.

– Maximum configuration: 4x 3.5-inch HDDs

Figure 43: 3.5-inch HDD mounting order

SATA connectivity

Controller	Channel	Connection
PCI SATA controller	1	Drives 1-4

7.2   Installing 3.5-inch HDDs

Customer Replaceable Units (CRU)

Average task duration: 5 minutes

7.2.1   Required tools

● Preliminary and concluding steps: tool-less

● Installing a 3.5-inch HDD: tool-less

7.2.2   Preliminary steps

Before installing a 3.5-inch HDD, perform the following steps:

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Open the side cover as described in section "Removing the side cover" on page 45.

► Locate the correct installation bay as described in section "Mounting order for 3.5-inch HDDs" on page 106.

7.2.3   Installing a 3.5-inch HDD

Figure 44: Removing the Easyclick rails out of the bay

► Press the green handle of the Easyclick rail a little inwards (1) and pull the rail out of the desired 3.5-inch HDD installation bay (2).

Figure 45: Aligning the Easyclick rails

► Align the three pins on the Easyclick rails with the screw holes on the new hard disk drive.

Figure 46: Attaching the Easyclick rails

▶   Attach an Easyclick rail on each side of the new hard disk drive.

Figure 47: Inserting the 3.5-inch HDD

► Insert the hard disk drive into its installation bay.

► Slide the hard disk drive into its installation bay until the Easyclick rails click in place.

7.2.4   Connecting power
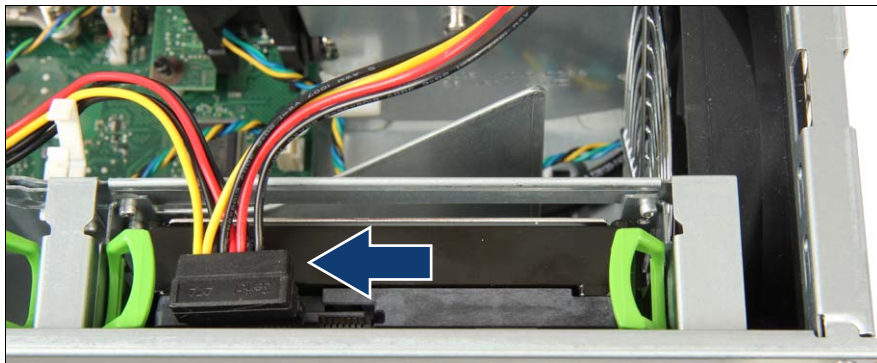
Figure 48: Connecting the power cable

► Connect the 15-pin SATA power connector P4 of the SATA power cable to the HDD 1 (see figure 224 on page 330).

> **i**   P5 is used for HDD 2
>
> P6 is not used
>
> P3 is used for HDD3
>
> P2 is used for HDD4

► For further cabling information, please refer to section "Cabling" on page 323.

7.2.5   SATA cabling to onboard controller
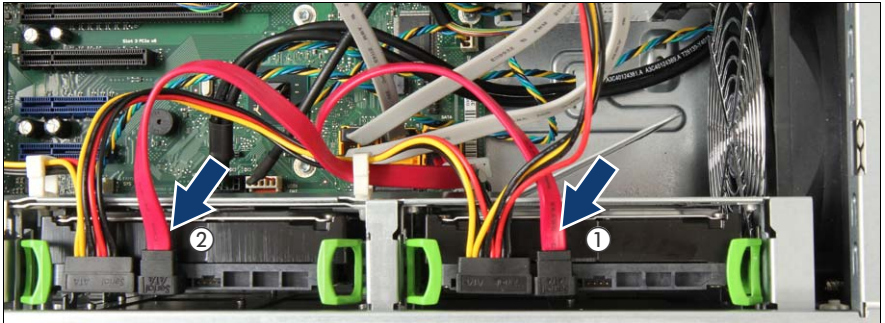
Figure 49: Connecting SATA cables to HDD1/2

► Connect the SATA cable connected to SATA 1 to the HDD 1 (1).

► Connect the SATA cable connected to SATA 2 to the HDD 2 (2).
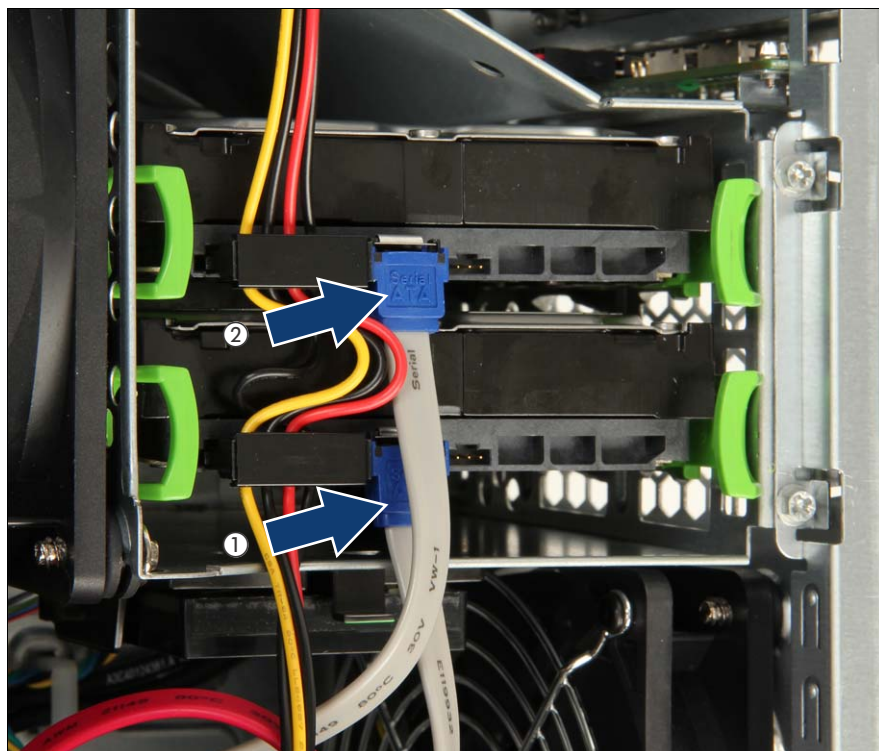
Figure 50: Connecting SATA cables to HDD 3/4

► Connect the SATA cable connected to SATA 3 to the HDD 3 (1).

► Connect the SATA cable connected to SATA 4 to the HDD 4 (2).
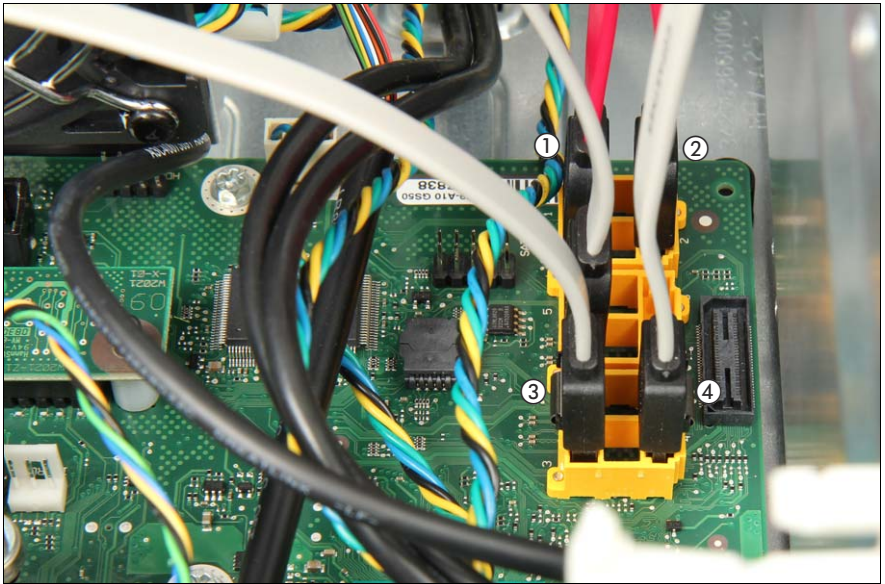
Figure 51: Connecting SATA cables to the system board

► Connect the following cables to the system board.

    1   SATA cable to connector SATA 1

    2   SATA cable to connector SATA 2

    3   SATA cable to connector SATA 3

    4   SATA cable to connector SATA 4

► For further cabling information, please refer to section "Cabling" on page 323.

7.2.6   SATA cabling to SATA RAID controller
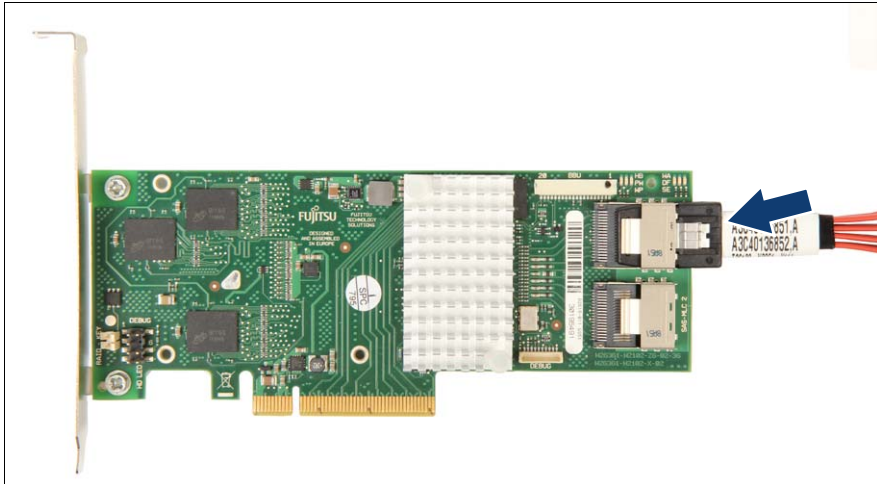
Figure 52: Connecting SATA cable to RAID controller

► Connect the SATA cable to connector MLC1 of the SATA RAID controller.

► Install the SATA RAID controller in slot 3 as described in section "Expansion cards and backup units" on page 147.
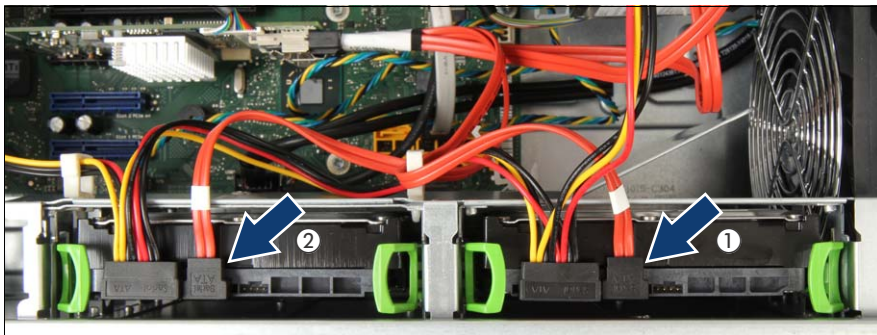
Figure 53: Connecting SATA cables to HDD 1/2

► Connect the SATA cable connector P1 to HDD 1 (1). See figure 224 on page 330.

► Connect the SATA cable connector P2 to HDD 2 (2). See figure 224 on page 330.
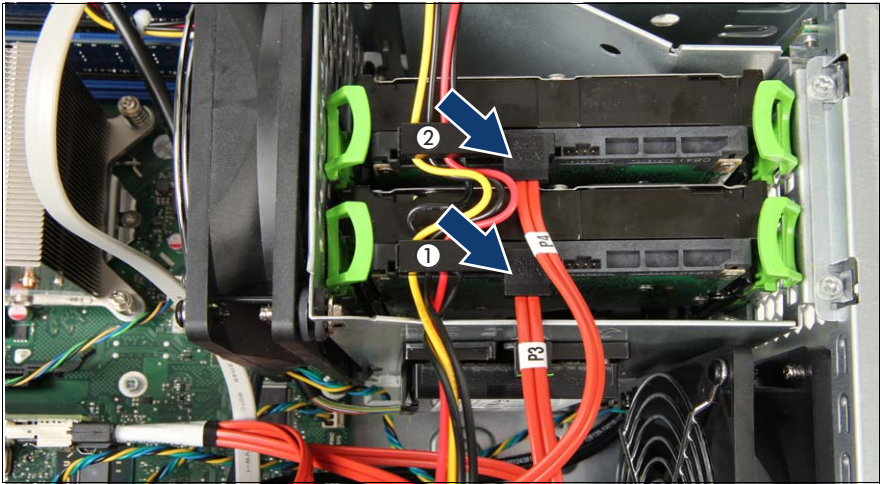
Figure 54: Connecting SATA cables to HDD3/4

► Connect the SATA cable connector P3 to HDD 3 (1). See figure 224 on page 330.

► Connect the SATA cable connector P4 to HDD 4 (2). See figure 224 on page 330.

7.2.7   Concluding steps

Perform the following procedures to complete the task:

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► Please observe the notes on RAID rebuild in section "Performing a RAID array rebuild" on page 83.

7.3   Removing 3.5-inch HDDs

🔧   **Customer Replaceable Units (CRU)**

🕐   **Average task duration: 5 minutes**

7.3.1   Required tools

● Preliminary and concluding steps: tool-less

● Removing a 3.5-inch HDD: tool-less

7.3.2   Preliminary steps

Before removing a 3.5-inch HDD, perform the following steps:

► Ensure that the HDD to be removed is not combined into a RAID array. If the drive is part of a RAID array, you first need to delete the array using ServerView RAID Manager.

⚠ **CAUTION!**
All data on all HDDs in the array will be lost! Be sure to back up your data before deleting a RAID array.

ℹ For further information, please refer to the "ServerView Suite RAID Management" user guide, available online at *http://manuals.ts.fujitsu.com* (EMEA market) or *http://jp.fujitsu.com/platform/server/primergy/manual/* (Japanese market) or from the ServerView Suite DVD 2 supplied with your PRIMERGY server.

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Open the side cover as described in section "Removing the side cover" on page 45.

7.3.3 Removing a 3.5-inch HDD
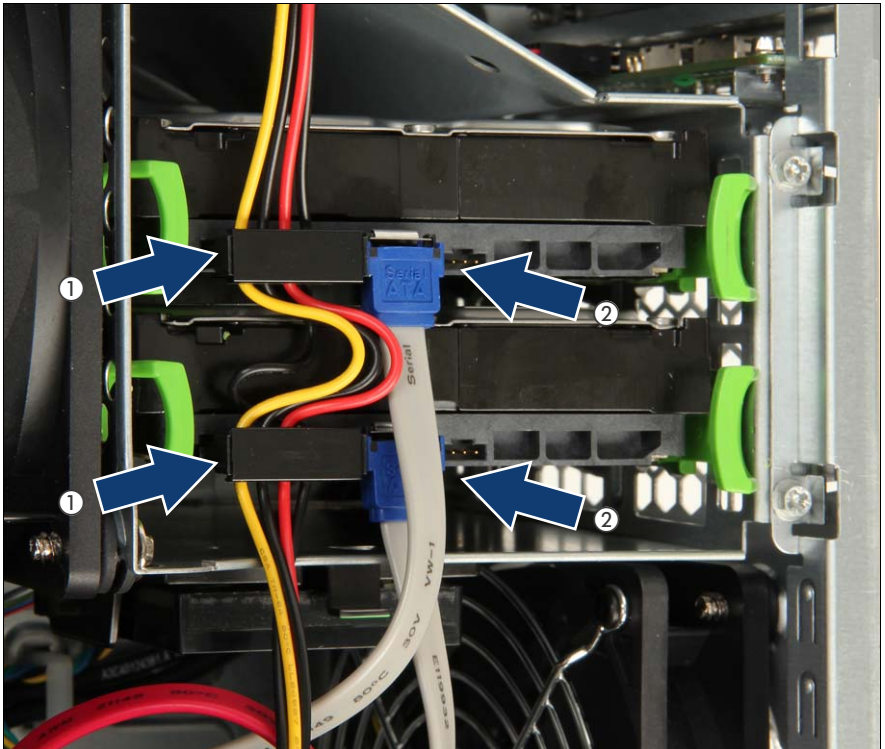
Figure 55: Disconnecting the cables

▶ Disconnect the power cable (1) and the SATA cable (2).
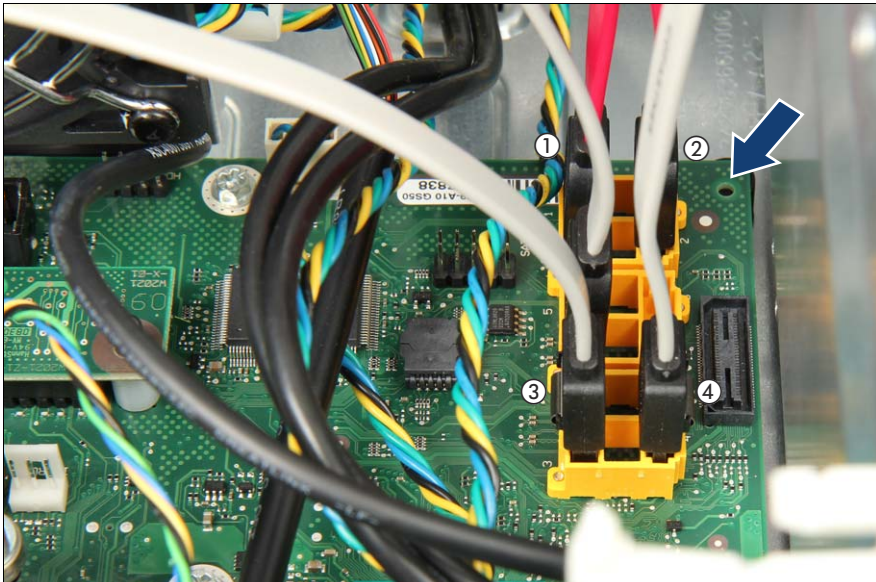
Figure 56: Disconnecting SATA cables from the system board

► Disconnect the corresponding SATA cable(s) from the system board.

> **i** Push the edge (see arrow) of the system board with the finger to avoid bending up the system board.

1   SATA cable to connector SATA 1

2   SATA cable to connector SATA 2

3   SATA cable to connector SATA 3

4   SATA cable to connector SATA 4

► For further cabling information, please refer to section "Cabling" on page 323.
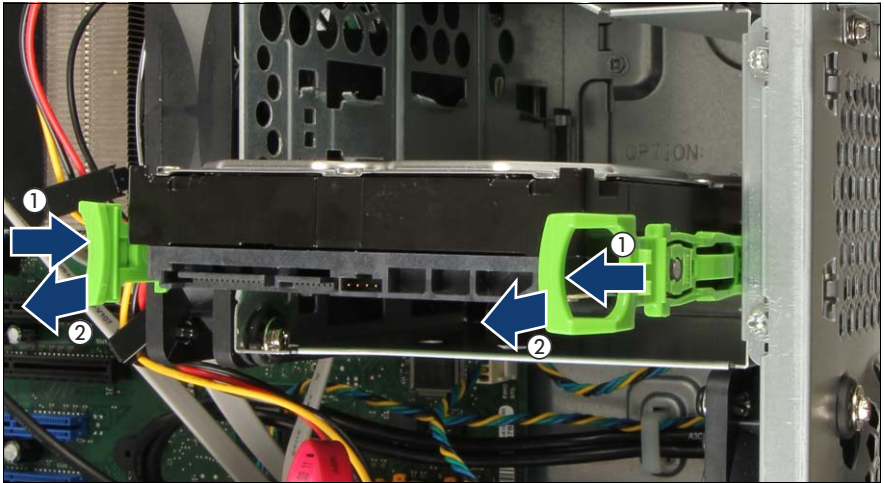
Figure 57: Removing a 3.5-inch HDD

► Press the green handles of the Easyclick rails inwards (1) to release the locking mechanism and pull the HDD completely out of its bay (2).

Figure 58: Detaching the Easyclick rails

▶   Detach the Easyclick rails from the HDD.
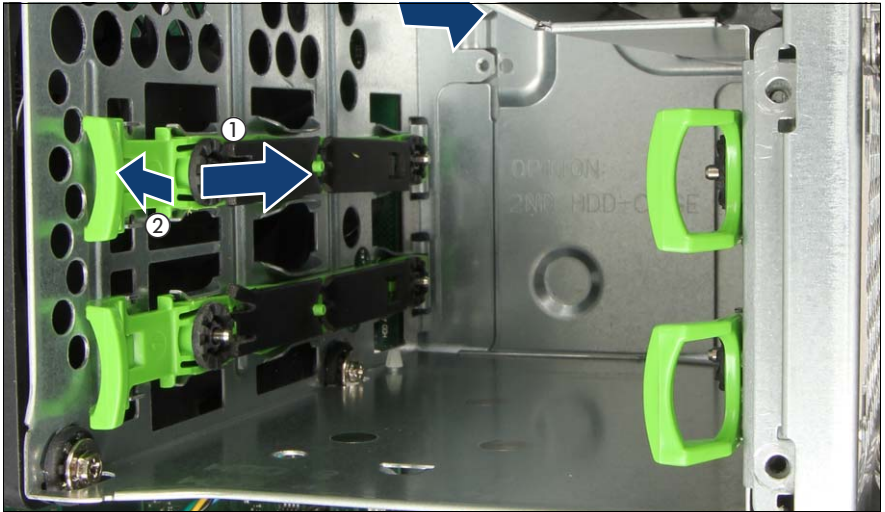
Figure 59: Inserting the Easyclick rails in the bay

► Push the Easyclick rails completely into the bay (1).

► Press the green handle outwards until it locks in place (2)

7.3.4 Concluding steps

Perform the following procedures to complete the task:

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

7.4 Replacing a 3.5-inch HDD

Customer Replaceable Units (CRU)

Average task duration: 5 minutes

CAUTION!
All HDDs 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.

7.4.1 Required tools

● Preliminary and concluding steps: tool-less

● Replacing a 3.5-inch HDD: tool-less

7.4.2 Preliminary steps

Before replacing a 3.5-inch HDD, perform the following steps:

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Open the side cover as described in section "Removing the side cover" on page 45.

► Locate the defective HDD as described in section "Locating the defective component" on page 41.

Only applicable for removing intact HDDs:

► Before removing a non-defective HDD, put the drive into "Offline" mode using your RAID configuration software.

| i | For further information, please refer to the "ServerView Suite RAID Management" user guide, available online at *http://manuals.ts.fujitsu.com* (EMEA market) or *http://jp.fujitsu.com/platform/server/primergy/manual/* (Japanese market) or from the ServerView Suite DVD 2 supplied with your PRIMERGY server. |

7.4.3   Removing a 3.5-inch HDD

▶ Remove the HDD to be replaced from the server as described in section "Removing 3.5-inch HDDs" on page 118.

7.4.4   Installing a 3.5-inch HDD

▶ Install the new HDD into the empty drive bay as described in section "Installing 3.5-inch HDDs" on page 107.

7.4.5   Concluding steps

Perform the following procedures to complete the task:

▶ Close the side cover as described in section "Installing the side cover" on page 58.

▶ Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

▶ Please observe the notes on RAID rebuild in section "Performing a RAID array rebuild" on page 83.

8 System fan modules

i Additional fans in power supply units cannot be replaced individually.

Safety notes

CAUTION!

● Do not damage or modify internal cables or devices. Doing so may cause a device failure, fire, or electric shock.

● Devices and components inside the server remain hot after shutdown. After shutting down the server, wait for hot components to cool down before installing or removing internal options.

● Circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. Always discharge static build-up (e.g. by touching a grounded object) before handling electrostatic-sensitive devices (ESDs).

● Do not touch the circuitry on boards or soldered parts. Hold circuit boards by their metallic areas or edges.

● If devices are installed or disassembled using methods other than those outlined in this chapter, the warranty will be invalidated.

● For further information, please refer to chapter "Important information" on page 29.

8.1 Basic information

⚠ **CAUTION!**

Since the system fans are not redundant they have to be replaced immediately in case of defects or pre-failure events.
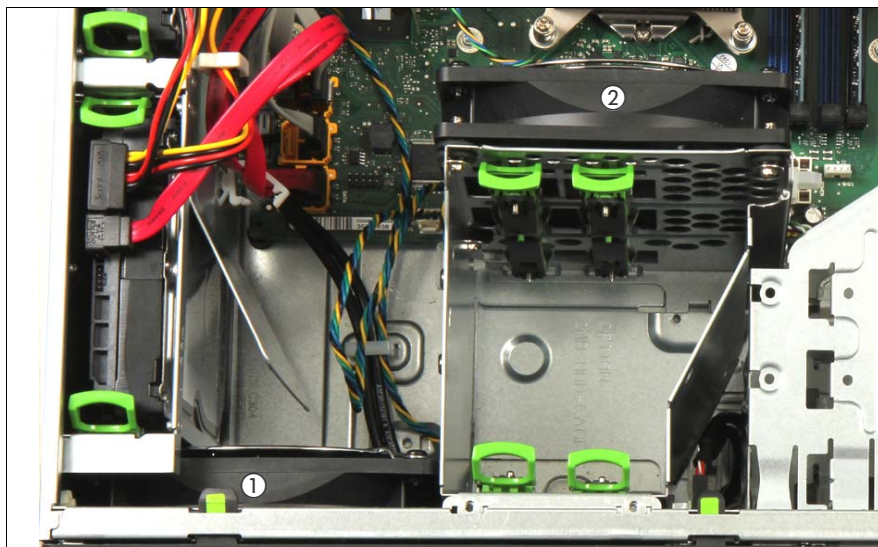
Figure 60: Positions of the system fan modules

> **i** In the latest chassis version the system fan 1 comes without a fan guard.
> A corresponding warning label is added. (1). The pictures doesn't always
> show the current version.
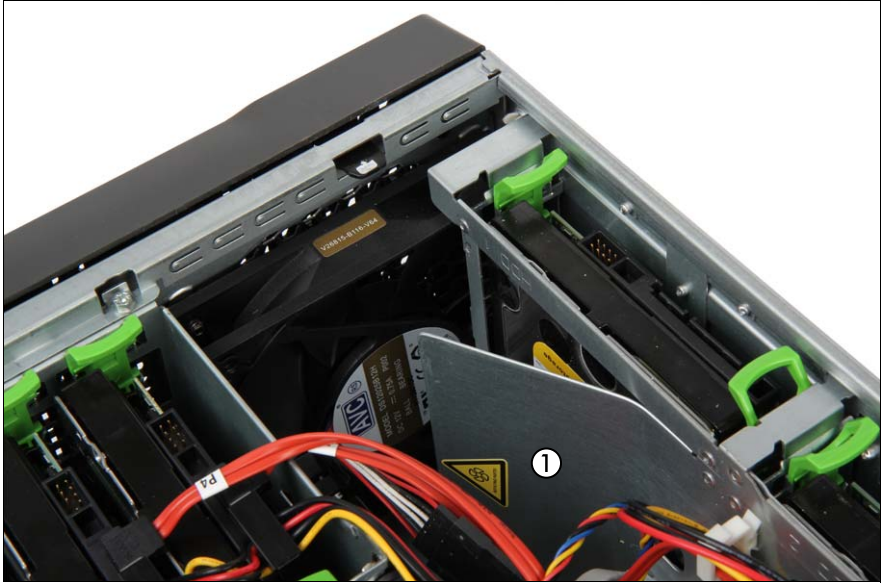
Figure 61: Fan without guard

8.2   Replacing the system fan module 1

Upgrade and Repair Units (URU)

Average task duration: 15 minutes

8.2.1   Required tools

● Preliminary and concluding steps:

– Phillips PH2 / (+) No. 2 screw driver

● Replacing the system fan module:

– Phillips PH2 / (+) No. 2 screw driver

8.2.2   Preliminary steps

Before replacing the system fan module, perform the following steps:

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Open the side cover as described in section "Removing the side cover" on page 45.

► Remove the HDD cage as described in section "Removing the HDD cage" on page 61.

8.2.3   Removing the system fan module 1

Figure 62: Removing the fan screws

► Remove the fan screws (see circles).

Figure 63: Disconnecting the fan cable

► Disconnect the fan cable from system board connector FAN1 SYS.

Figure 64: Cable clamp of the fan cable

► Open the cable clamp and remove the fan cable.
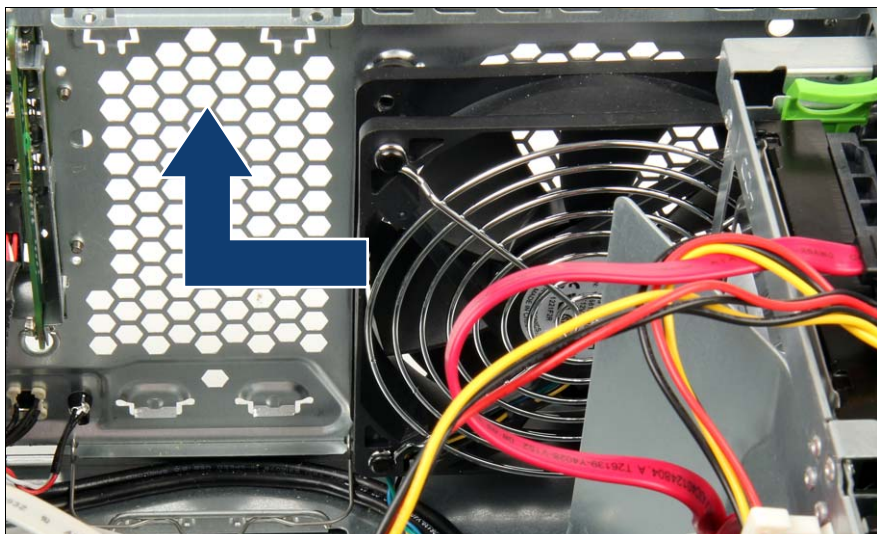
Figure 65: Removing the system fan module 1

► Push the system fan module 1 in the direction of arrow.

► Lift the system fan module 1 out of the chassis.

8.2.4   Installing the system fan module 1
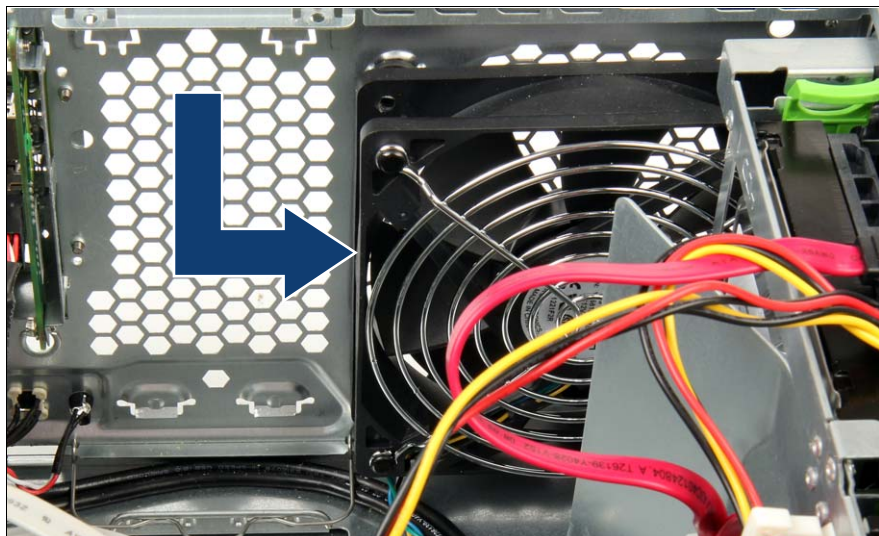
Figure 66: Installing the system fan module 1

| i | Check the position of the four fan bushings. Adjust the bushings in the chassis, if necessary. |

► Slide the system fan module 1 to the right as far as it will go.

Figure 67: Fastening the screws of the system fan module 1

> **i** The figure 67 on page 135 shows the correct position of the four fan bushings.

► Fasten the fan screws.
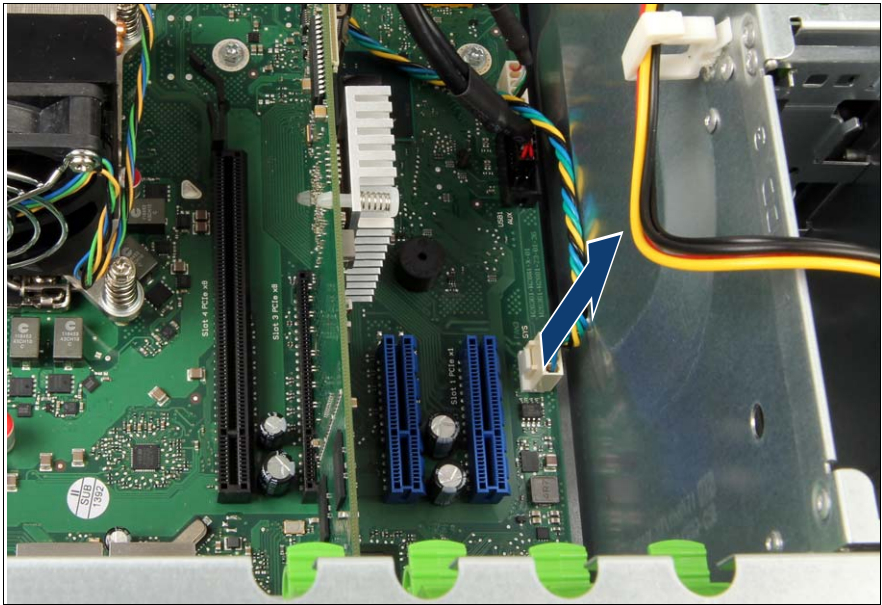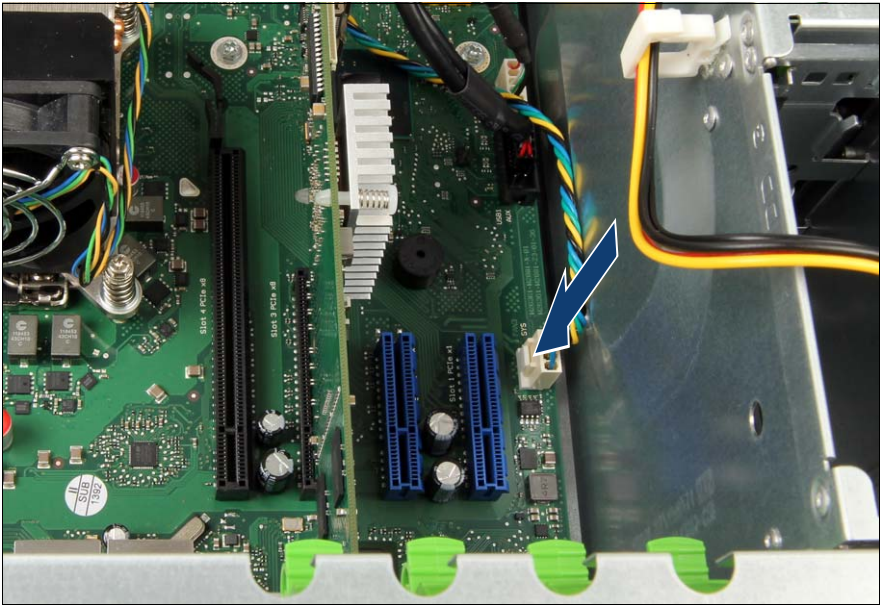
Figure 68: Connecting the fan cable

► Connect the fan cable to system board connector FAN1 SYS.

Figure 69: Cable clamp of the fan cable

► Open the cable clamp and insert the fan cable.

8.2.5   Concluding steps

Perform the following procedures to complete the task:

► Install the HDD cage as described in section"Installing the HDD cage" on page 63.

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

8.3   Replacing the system fan module 2

🔧 **Upgrade and Repair Units (URU)**

🕐 **Average task duration: 5 minutes**

8.3.1   Required tools

● Preliminary and concluding steps:

– Phillips PH2 / (+) No. 2 screw driver

● Replacing the system fan module:

– Phillips PH2 / (+) No. 2 screw driver

8.3.2   Preliminary steps

Before replacing the system fan module, perform the following steps:

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Open the side cover as described in section "Removing the side cover" on page 45.

► Remove the HDD cage as described in section "Removing the HDD cage" on page 61.

8.3.3 Removing the system fan module 2
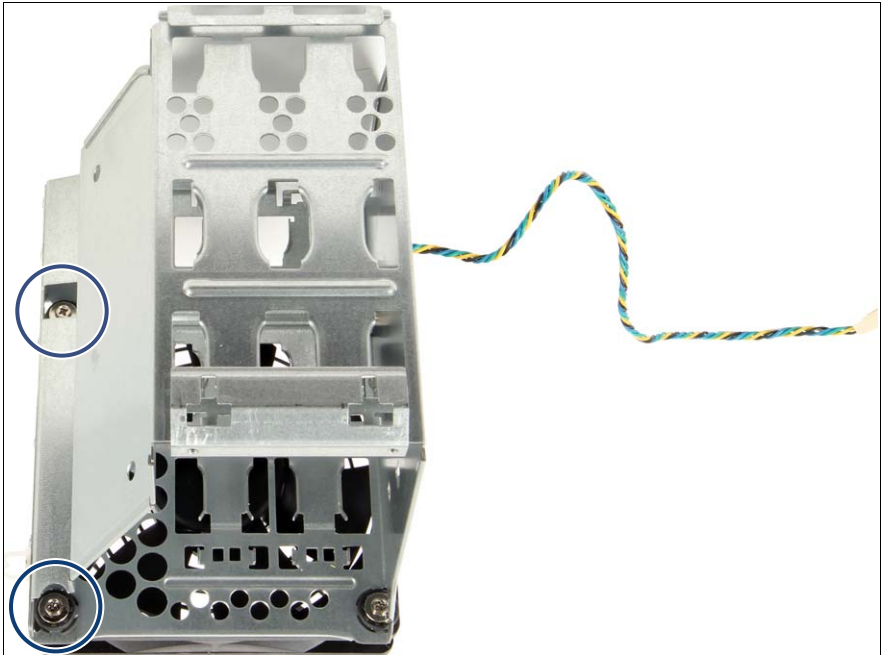
Figure 70: HDD cage with system fan module 2

| i | The only two screws to remove are those which are marked with circles. |

► Remove the screws (see circles).
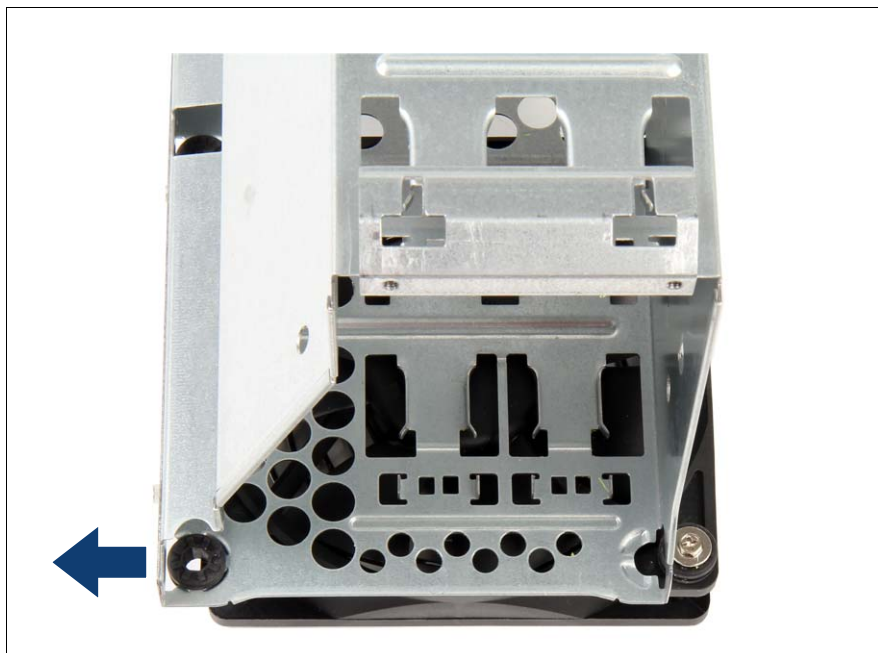
Figure 71: Pushing the HDD cage from the system fan module 2

► Push the HDD cage in the direction of the arrow to loosen the system fan module 2.

Figure 72: Position of the bushings

The bushings remain at the HDD cage. It is not necessary to remove them.
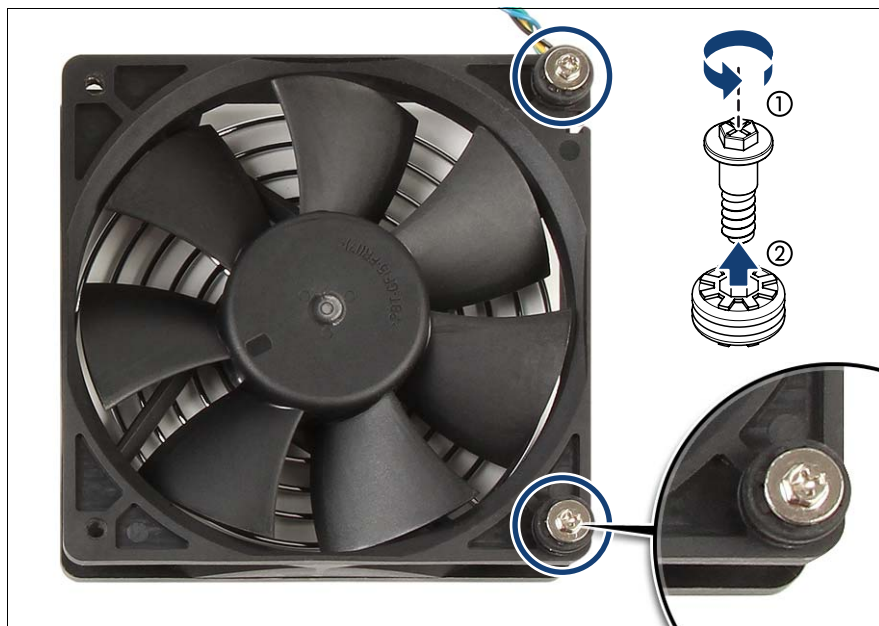
Figure 73: Removal of the bushings

► Remove the two fan screws from the fan (1).

► Remove the fan bushings from the fan (2).

| i | Keep the fan screws and fan bushings for further use. You will need both to prepare the replacement fan. |

8.3.4   Installing the system fan module 2
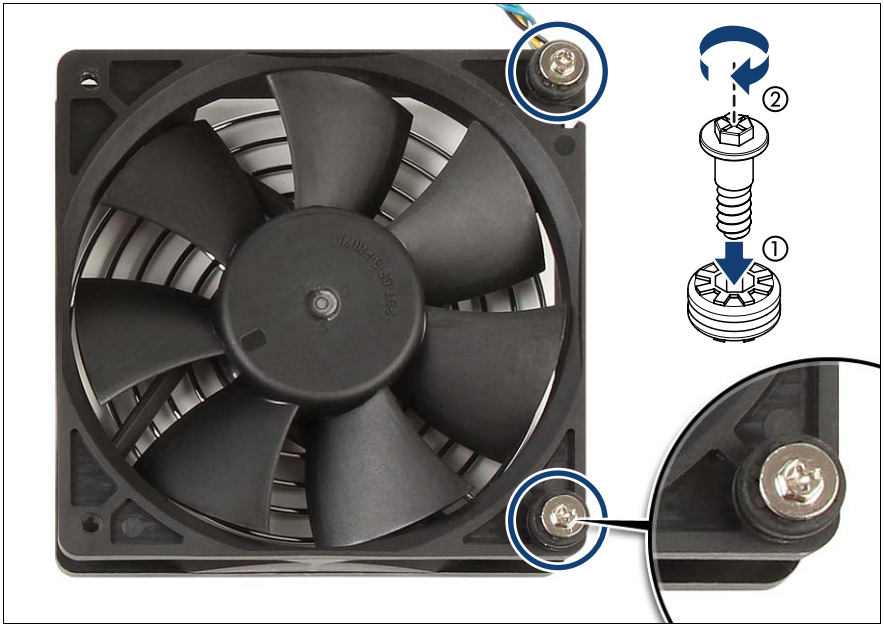
Figure 74: Installation of the bushings

► Place the two fan bushings (C26361-K1015-C29) on the fan (1, see circles).

► Secure each fan bushing on the fan with one fan screw (C26361-K1015-C98) (2).
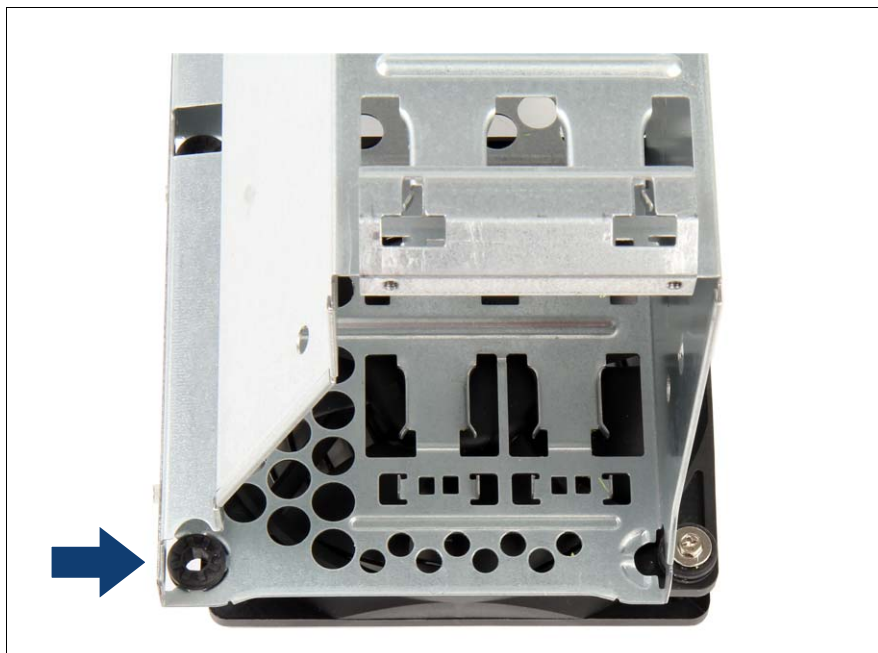
Figure 75: Pushing the HDD cage over the system fan module 2

► Slide the HDD cage in the direction of the arrow as far as it will go.

> **i** Check the correct position of the bushings.
>
> The bushings remain at the HDD cage. It is not necessary to remove them.
>
> Take care that the bushings are not shifted while the HDD cage is slided.
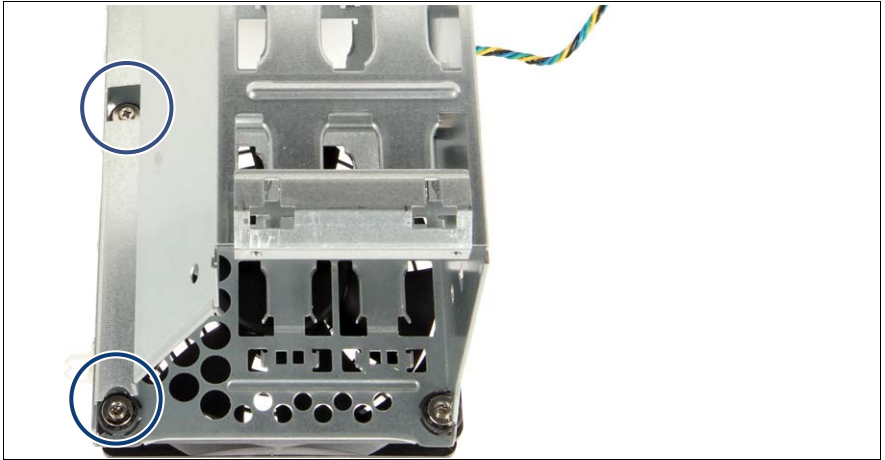
Figure 76: Installing the system fan module 2

► Fasten the screws (see circles).

8.3.5 Concluding steps

Perform the following procedures to complete the task:

► Install the HDD cage as described in section "Installing the HDD cage" on page 63.

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

9 Expansion cards and backup units

Safety notes

⚠️ **CAUTION!**

- Do not damage or modify internal cables or devices. Doing so may cause a device failure, fire, or electric shock.

- Devices and components inside the server remain hot after shutdown. After shutting down the server, wait for hot components to cool down before installing or removing internal options.

- Circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. Always discharge static build-up (e.g. by touching a grounded object) before handling electrostatic-sensitive devices (ESDs).

- Do not touch the circuitry on boards or soldered parts. Hold circuit boards by their metallic areas or edges.

- If devices are installed or disassembled using methods other than those outlined in this chapter, the warranty will be invalidated.

- For further information, please refer to chapter "Important information" on page 29.

9.1 Basic information

| i | Depending on your server model the type of the PCI slots can differ, see "Model lines for TX100 S3" on page 18.

The system board is equipped with four expansion card slots:
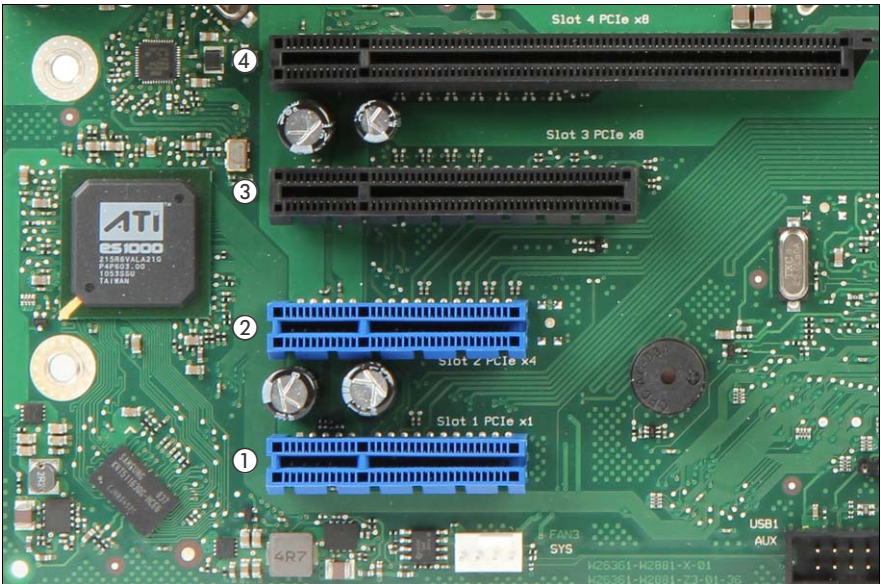
Figure 77: PCI slot overview

PCI slot	Type	Function
1	PCIe x1	PCIe x1 slot Gen 2 (mechanically x4, notched)
2	PCIe x4	PCIe x4 slot Gen 2 (mechanically x4, notched)
3	PCIe x8	PCIe x8 slot Gen 2/3
4	PCIe x8	PCIe x8 slot Gen 2/3 (mechanically x16)

Expansion card overview

1. Controller for special slots	PCI bus type	Max pcs per system	Preferred slot			Forbidden slot
			1	2	3	
S26361-D2616-A** (boot controller)	PCIe	1	3			1, 2, 4
S26361-D3116-B**	PCIe	1	3			1, 2, 4

2. Graphic controller	PCI bus type	Max pcs per system	Preferred slot			Forbidden slot
			1	2	3	
Nvidia NVS300 PCIe x1	PCIe	1	2			1, 3, 4

3. PCI-Express controller	PCI bus type	Max pcs per system	Preferred slot			Forbidden slot
			1	2	3	
Intel Pro 1000CT Desktop Adapter PCIe x1	PCIe	2	1	2	4	3
FTS: S26361-D2735 (Kawela) Intel Dual Port PCIe x4	PCIe	1	2	4	1	3

i For the latest information on supported expansion cards, refer your server's hardware configurator available online at the following address:

for the EMEA market:
http://ts.fujitsu.com/products/standard_servers/tower/primergy_tx100s3.html

for the Japanese market:
http://jp.fujitsu.com/platform/server/primergy/system/

9.2 Expansion cards

9.2.1 Installing expansion cards

Upgrade and Repair Units (URU)

Average hardware task duration: 5 minutes

Average software task duration: 5 minutes

9.2.1.1 Required tools

● Preliminary and concluding steps: tool-less

● Installing expansion cards: tool-less

● Mounting slot brackets:

   – Phillips PH2 / (+) No. 2 screw driver

9.2.1.2 Preliminary steps

Before installing an expansion card, perform the following steps:

► Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

9.2.1.3   Removing PCI slot bracket
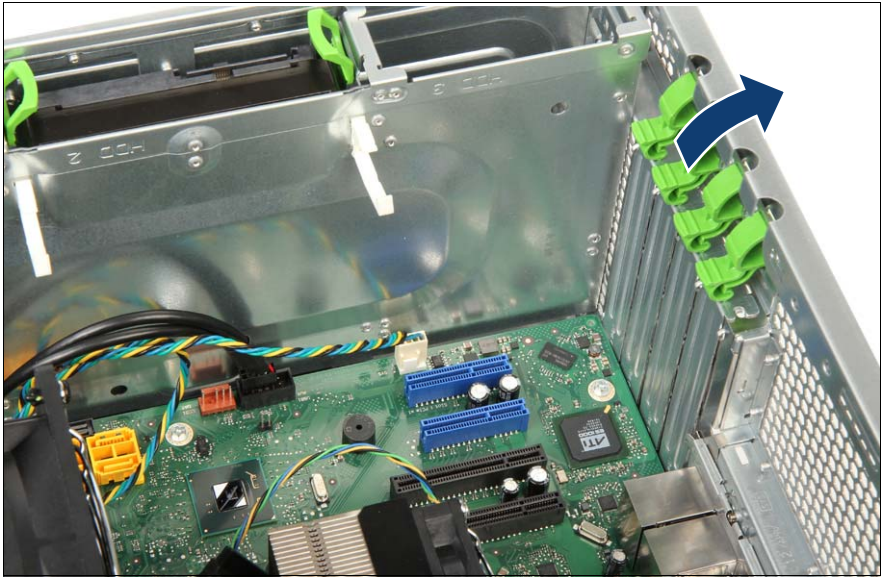
Figure 78: Removing the PCI slot bracket (A)

►   Press slightly on the upper end and swing outwards.

►   Open the slot bracket clamp.
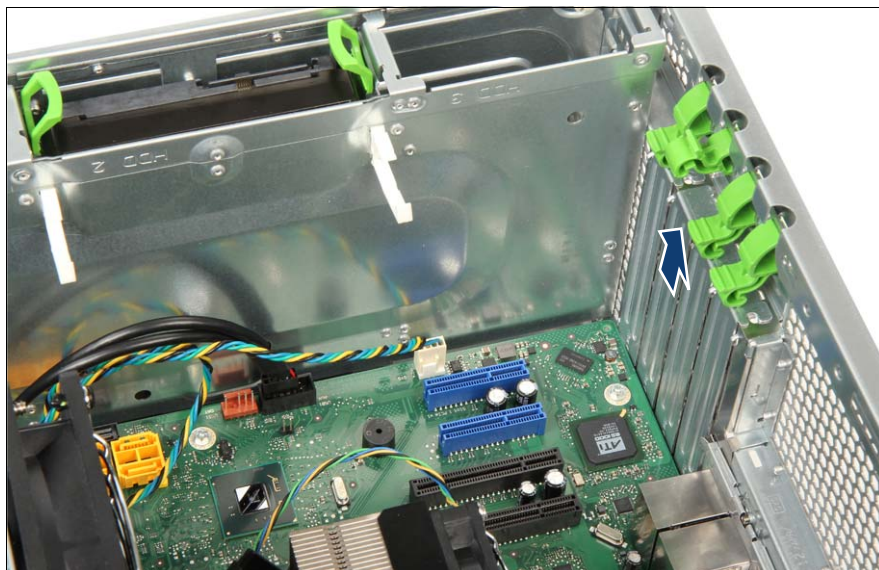
Figure 79: Removing the PCI slot bracket (B)

► Remove the slot bracket.

⚠ **CAUTION!**

Keep the slot bracket for further use.

Always replace slot brackets into unused PCI slot openings to comply with applicable EMC regulations and satisfy cooling requirements.

9.2.1.4   Installing an expansion card

► Remove the expansion card from its protective packaging.

> **i** For further instructions regarding controller settings, please refer to the accompanying documentation.

► If applicable, attach the required slot bracket to the expansion card as described in section "Mounting expansion card slot brackets" on page 193.
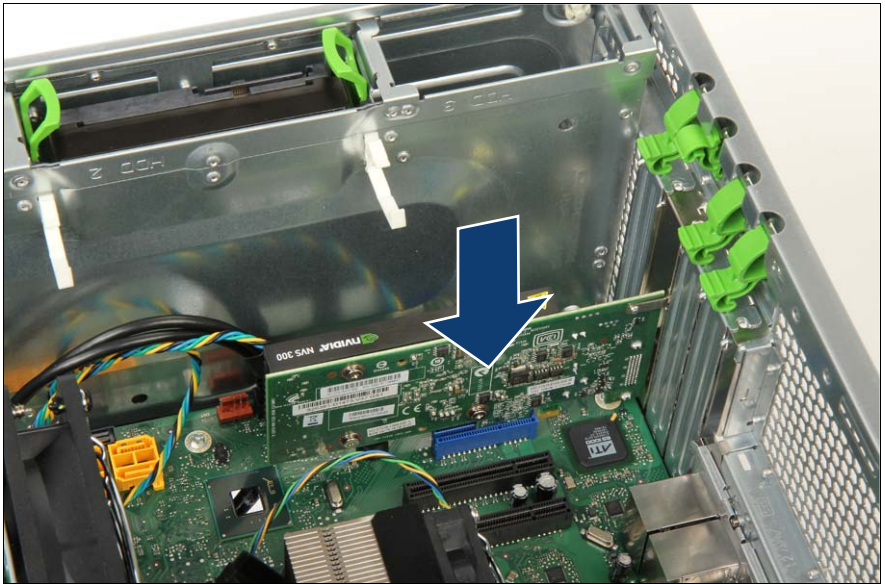
Figure 80: Installing the expansion card (A)

► Carefully insert the expansion card into the desired PCI slot and press down firmly until it is fully seated in the slot.
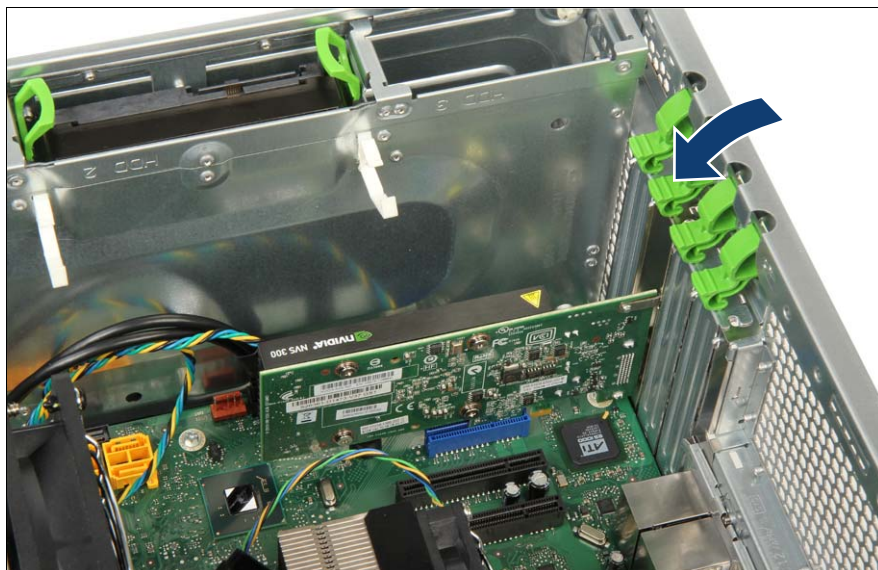
Figure 81: Installing the expansion card (B)

► Close the slot bracket clamp.

9.2.1.5 Connecting cables to the expansion card

► If applicable, connect internal cables to the expansion card.

> **i** For a complete cabling overview, please refer to section "Cabling overview" on page 324.

9.2.1.6 Connecting a battery backup unit to the expansion card

► If applicable, connect a BBU to the expansion card as described in section "Installing a BBU" on page 166.

9.2.1.7   Concluding steps

Perform the following procedures to complete the task:

► Route the cable carefully and close the cable holders.

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect all external cables to the replaced expansion card.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► After installing or replacing a Modular RAID controller, update the firmware as described in section "Updating RAID controller firmware" on page 75.

► In order to configure an expansion card that has been installed or replaced, the card's Option ROM has to be enabled in the system board BIOS. If applicable, proceed as described in section "Enabling Option ROM scan" on page 76.

► If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

► If applicable, restore LAN teaming configurations as described in section "After replacing / upgrading LAN controllers" on page 85.

9.2.2   Removing expansion cards

 Upgrade and Repair Units (URU)

 Average task duration: 5 minutes

9.2.2.1   Required tools

● Preliminary and concluding steps: tool-less

● Removing expansion cards: tool-less

9.2.2.2   Preliminary steps

Before removing an expansion card, perform the following steps:

► Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Remove all external cables from the expansion card to be removed.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

► If applicable, disconnect internal cables from the expansion card.

9.2.2.3   Removing an expansion card
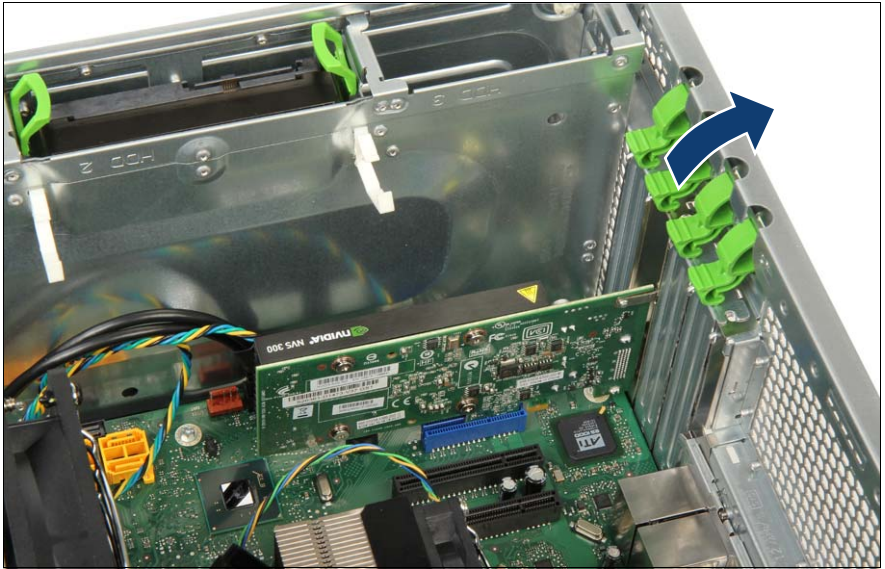
Figure 82: Removing an expansion card (A)

► Press slightly on the upper end and swing outwards.

► Open the slot bracket clamp.
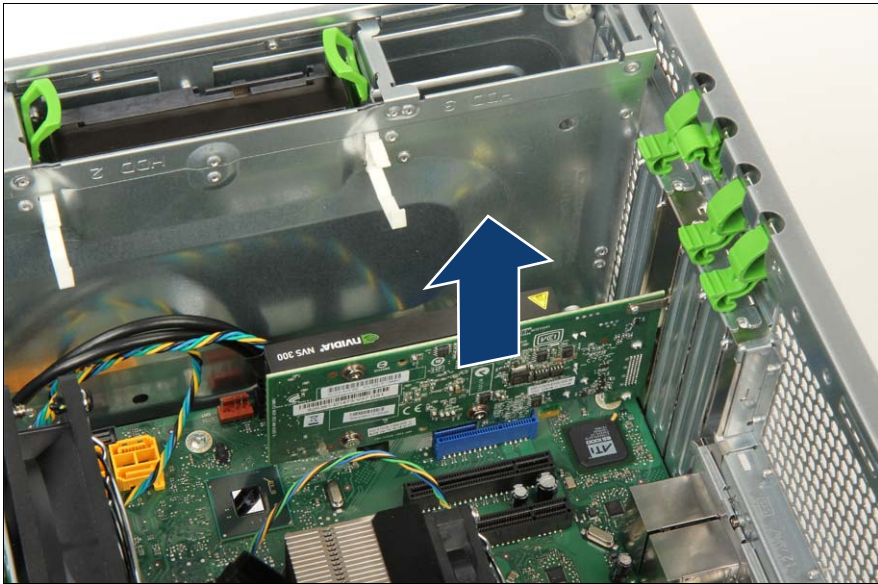
Figure 83: Removing an expansion card (B)

► Carefully remove the expansion card from its slot.

9.2.2.4   Installing a PCI slot bracket

⚠ **CAUTION!**

Always replace slot brackets into unused PCI slot openings to comply with applicable EMC regulations and satisfy cooling requirements.
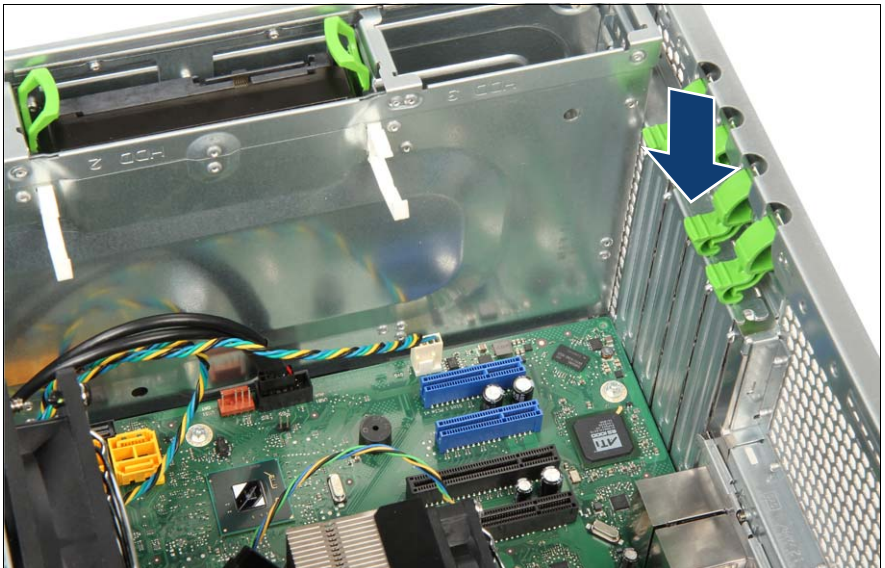
Figure 84: Installing a PCI slot bracket (A)

► Insert a PCI slot bracket into the unused PCI slot opening.
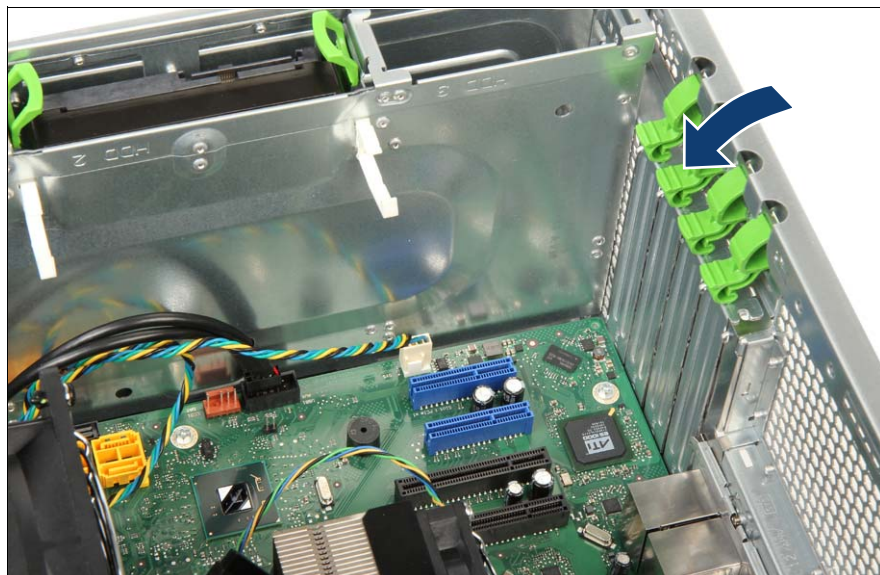
Figure 85: Installing a PCI slot bracket (B)

► Close the slot bracket clamp.

9.2.2.5   Concluding steps

Perform the following procedures to complete the task:

► Close the side cover as described in section "Installing the side cover" on page 58.

► If applicable, connect all external cables to the expansion card installed.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

9.2.3   Replacing expansion cards

Upgrade and Repair Units (URU)

Average hardware task duration: 5 minutes

Average software task duration: 5 minutes

Note on network settings recovery

The following notes are required for TX100 S3p (PYT10Pxxx for Japanese market).

> **i** When replacing network controllers or the system board, network configuration settings in the operating system will be lost and replaced by default values. This applies to all static IP address and LAN teaming configurations.
>
> Ensure to note down your current network settings before replacing a network controller or the system board.

9.2.3.1   Required tools

● Preliminary and concluding steps: tool-less

● Replacing expansion cards: tool-less

● Mounting slot brackets:

– Phillips PH2 / (+) No. 2 screw driver

9.2.3.2   Preliminary steps

Before replacing an expansion card, perform the following steps:

► Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Remove all external cables from the expansion card to be replaced.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

9.2.3.3   Removing an expansion card

► Remove the defective expansion card as described in section "Removing expansion cards" on page 156.

► If the slot bracket on the defective expansion card is to be reused, remove it from the board as described in section "Mounting expansion card slot brackets" on page 193.

9.2.3.4   Installing an expansion card

► If applicable, install a slot bracket on the new expansion card as described in section "Mounting expansion card slot brackets" on page 193.

► Install the new expansion card as described in section "Installing expansion cards" on page 150.

9.2.3.5   Connecting cables to the expansion card

► If applicable, connect internal cables to the expansion card.

> **i** For a complete cabling overview, please refer to section "Cabling overview" on page 324.

9.2.3.6   Connecting a battery backup unit to the expansion card

► If applicable, connect a BBU to the expansion card as described in section "Installing a BBU" on page 166.

9.2.3.7   Concluding steps

Perform the following procedures to complete the task:

► Check carefully the cable routing and close the cable clamps.

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect all external cables to the replaced expansion card.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► Enable the PCI slot of the replaced expansion card as described in section "Enabling replaced components in the system BIOS" on page 78.

► Inform the customer about changed WWN and MAC addresses. For further information, refer to section "Looking up changed MAC / WWN addresses" on page 83.

► After replacing a network controller in a server running Linux OS, "Updating the NIC configuration file in a Linux environment" on page 80.

► If applicable, reconfigure your network settings in the operation system according to the original configuration of the replaced controller (expansion card or onboard).

The following notes are required for TX100 S3p (PYT10Pxxx for Japanese market).

> **i** Configuration of network settings should be performed by the customer.
>
> For further information, please refer to section "Note on network settings recovery" on page 161.

► After installing or replacing a Modular RAID controller, update the firmware as described in section "Updating RAID controller firmware" on page 75.

► If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

► If applicable, restore LAN teaming configurations as described in section "After replacing / upgrading LAN controllers" on page 85.

9.2.4   Replacing TFM

Upgrade and Repair Units (URU)

Average task duration: 10 minutes

9.2.4.1   Required tools

- Preliminary and concluding steps: tool-less

- Replacing an TFM: Phillips PH1 / (+) No.1 screw driver

9.2.4.2   Preliminary steps

Before removing a TFM, perform the following steps:

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

9.2.4.3   Removing the defective TFM

► Remove the depending expansion card as described in section "Removing expansion cards" on page 156.

► Disconnect the FBU adapter cable as described in section "Disconnecting the FBU adapter cable from the TFM" on page 184.
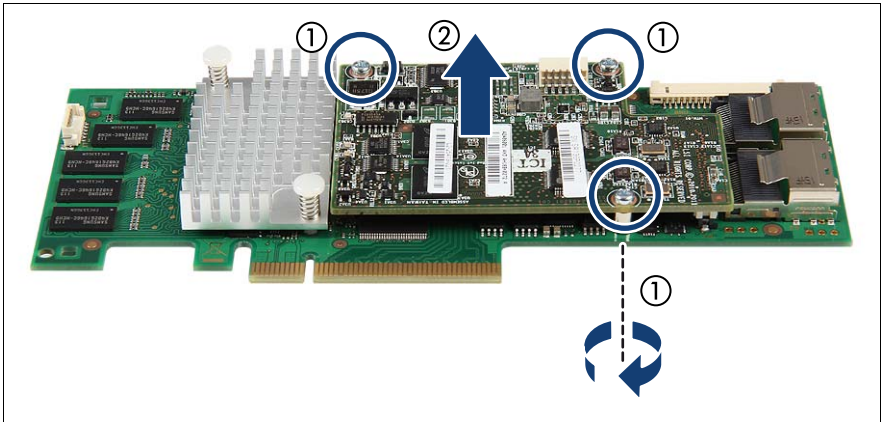
Figure 86: Removing the TFM

► Remove the three screws (1).

► Remove the TFM (2).

9.2.4.4   Installing the new TFM

► Install the new TFM as described in section "Preparing the FBU" on page 176.

► Connect the FBU adapter cable to the TFM as described in section "Connecting the FBU adapter cable to the TFM" on page 179.

► Install the expansion card as described in section "Installing expansion cards" on page 150.

9.2.4.5   Concluding steps

Perform the following procedures to complete the task:

► Check carefully the cable routing and close the cable clamps.

► Close the side cover as described in section "Installing the side cover" on page 58.

► If applicable, connect external cables to the expansion card.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

9.3   Backup Units (BBU/FBU)

A RAID Cache Backup Unit backs up the memory contents of the connected SAS RAID controller in the event of a power failure. The PRIMERGY TX100 S3 server can accommodate either a BBU or an FBU depending on the used RAID controller.

The server offers different backup units:
– BBU (Battery Backup Unit)
– FBU (Flash Backup Unit)

9.3.1   Installing a BBU

Upgrade and Repair Units (URU)

Average task duration: 5 minutes

⚠ **CAUTION!**
For further safety information, please refer to chapter "Important information" on page 29.

9.3.1.1   Required tools

● Preliminary and concluding steps: tool-less

● Installing a BBU: tool-less

9.3.1.2   Preliminary steps

Before installing a BBU, perform the following steps:

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

9.3.1.3   Preparing the BBU
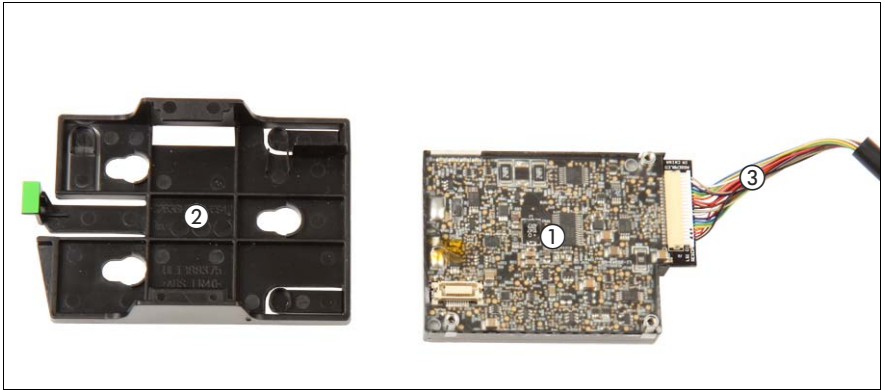
Figure 87: BBU kit

BBU kit (S26361-F3257-L210):

1   LSI iBBU07 / LSI iBBU08
LSZ:L5-25034-** / LSZ:L5-25343-**

2   BBU holder
C26361-K644-C942

3   BBU cable
T26139-Y3987-V2
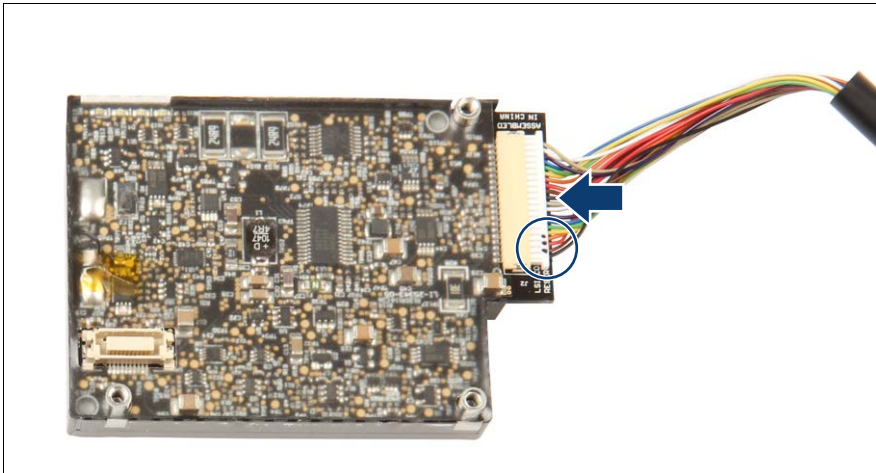
Figure 88: Connecting the BBU cable

► Connect the BBU cable to the BBU board as shown.

| i | The connector side with the three dots points towards you (see circle). |

Figure 89: Installing the BBU in the BBU holder (A)

► At a slight angle, fit the BBU under the right retaining bracket on the BBU holder (C26361-K644-C942) as shown (1).

► Push down the BBU until it locks in place (2).

Figure 90: Installed BBU in BBU holder

9.3.1.4   Installing the BBU holder into the chassis
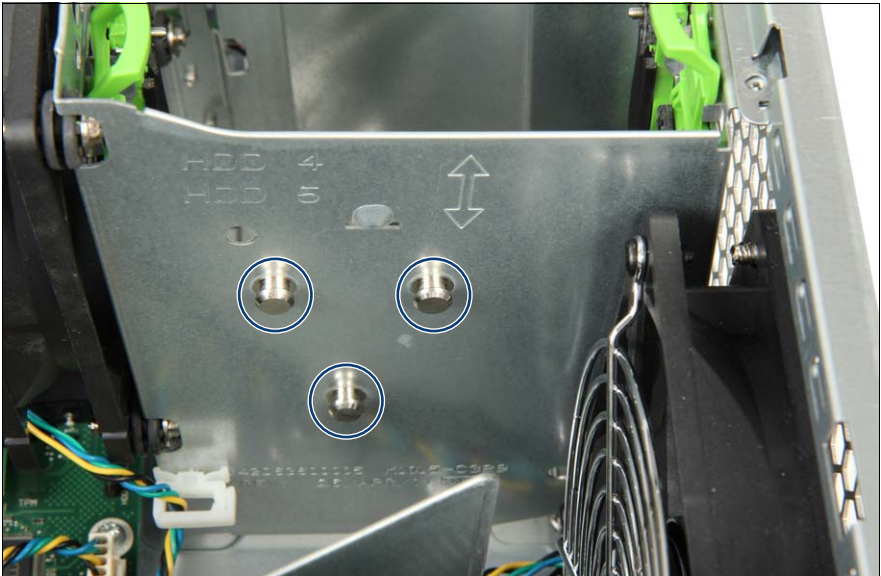
Figure 91: Installing the BBU holder (A)

i	Note the positions of the three bolts on the HDD cage.
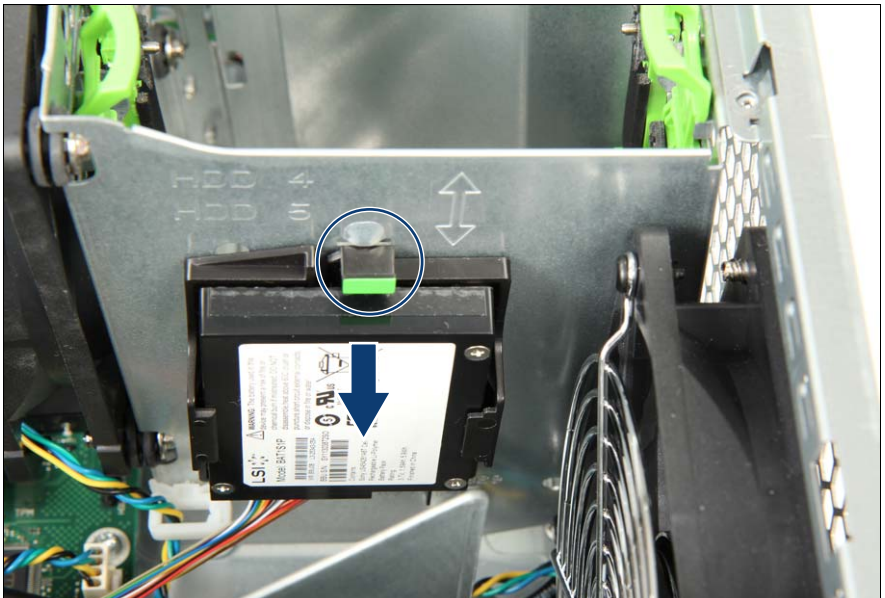
Figure 92: Installing the BBU holder (B)

► Insert the BBU holder into the chassis so that the three bolts rest in the wide ends of the keyhole slots on the bottom side of the BBU holder.

► Slide the BBU holder down until the locking handle of the BBU holder properly snaps in place (see circle).

Figure 93: Connecting the BBU to the controller

► Install a SAS RAID controller as described in section "Installing expansion cards" on page 150.

► Connect the BBU cable to the SAS RAID controller.

> **i** The connector side with the three dots points towards you.

Figure 94: Routing the BBU cable

► Route the BBU cable through the cable clamps as shown.

9.3.1.5   Concluding steps

Perform the following procedures to complete the task:

► Check carefully the cable routing and close the cable clamps.

► Close the side cover as described in section "Installing the side cover" on page 58.

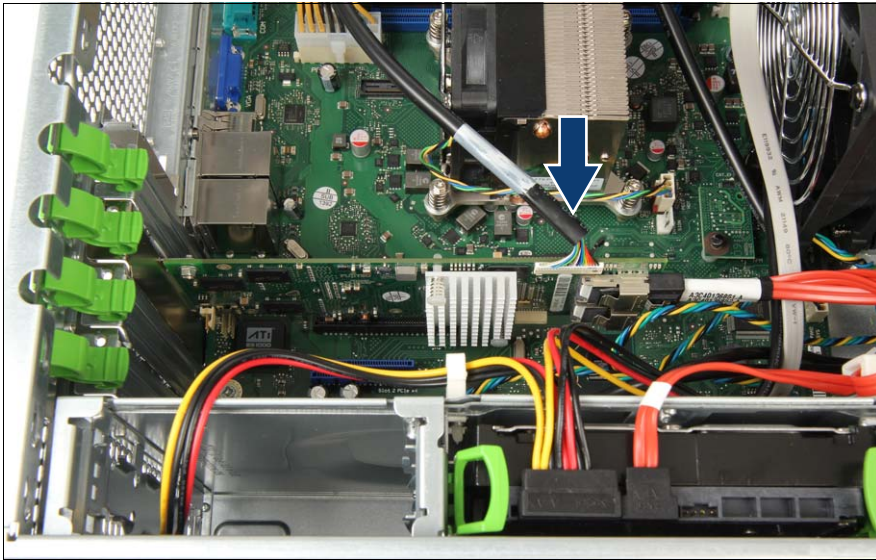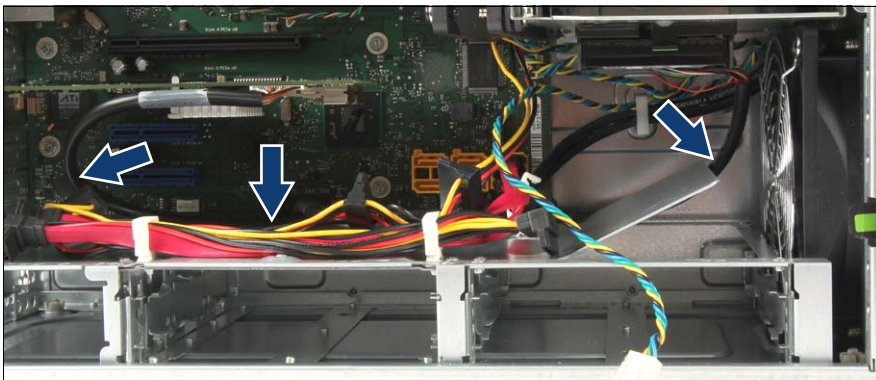► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► If applicable, update the firmware of the RAID controller that has been connected to the BBU as described in section "Updating RAID controller firmware" on page 75.

Note on BBU charging and calibration

The BBU may be deeply discharged due to extended storage time and wrongly show as bad or defective in the ServerView RAID Manager.

In this case, the BBU will automatically enter a trickle charge cycle for recovery. This initial charge cycle may take up to 8 hours before the BBU will initiate a recalibration cycle.

► Enter the ServerView RAID Manager and check the current BBU status.

> **i** For further information, please refer to the "ServerView Suite RAID Management" user guide, available online at
> *http://manuals.ts.fujitsu.com* (EMEA market) or
> *http://jp.fujitsu.com/platform/server/primergy/manual/* (Japanese market) or from the ServerView Suite DVD 2 supplied with your PRIMERGY server.

► If the BBU is shown as bad or defective, do not power off the server for at least 8 hours to allow the charge and calibration cycles to finish.

► If the BBU status does not change after 8 hours, please try to initiate the recalibration process manually using the ServerView RAID Manager.

> **i** If this procedure still does not fix the BBU status, please contact your local Fujitsu customer service partner.

9.3.2   Installing an FBU

🔧 **Upgrade and Repair Units (URU)**

🕐 **Average task duration: 5 minutes**

⚠️ **CAUTION!**

For further safety information, please refer to "Important information" on page 29.

9.3.2.1   Required tools

● Preliminary and concluding steps: tool-less

● Mounting TFM module: Phillips PH1 / (+) No. 1 screw driver

● Installing an FBU: tool-less

9.3.2.2   Preliminary steps

Before installing an FBU, perform the following steps:

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

9.3.2.3   Installing TFM to the RAID controller (if applicable)
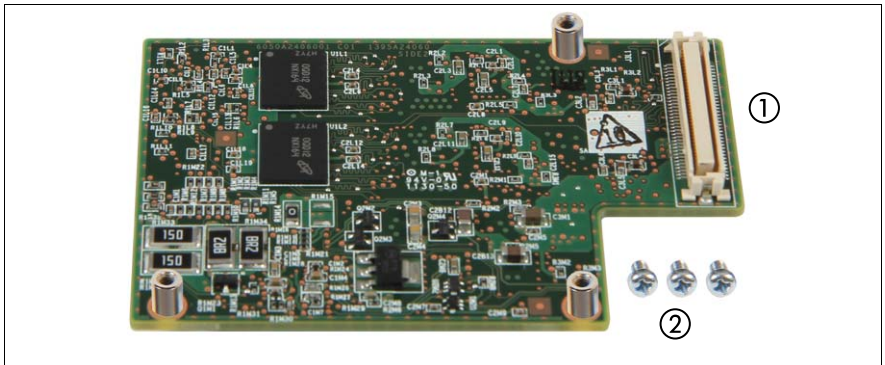
Figure 95: TFM kit

TFM kit (S26361-F3669-L110):

1   LSI TFM Module
         LSZ:L3-25419-**

2   Screws
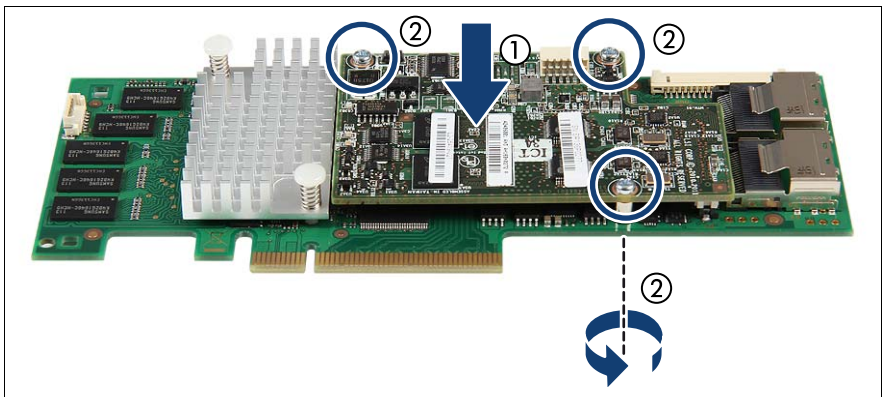
Figure 96: Installing TFM

► Fit the spacer bolts of the TFM on the RAID controller (1).

► Fasten the TFM on the RAID controller with the three screws from the TFM kit (screw torque: 0.4 Nm) (2).

9.3.2.4 Preparing the FBU

Figure 97: FBU kit

FBU kit (S26361-F3257-L210):

1 LSI FBU02
LSZ:L3-00087-**

2 FBU holder
C26361-K644-C970

3 FBU cable
T26139-Y4032-V3
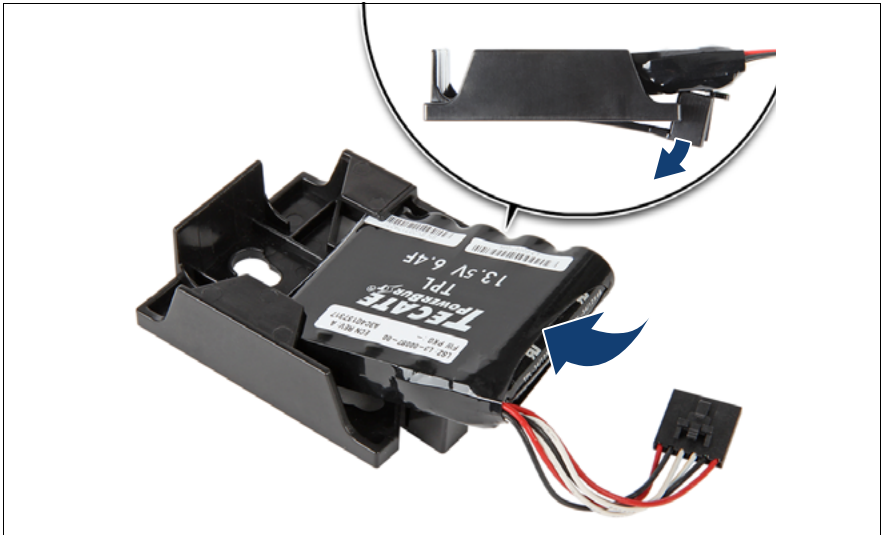
Figure 98: Installing the FBU in the FBU holder (A)

► At a slight angle, fit the FBU under both retaining brackets of the FBU holder as shown.

► Push in the FBU until it locks in place.
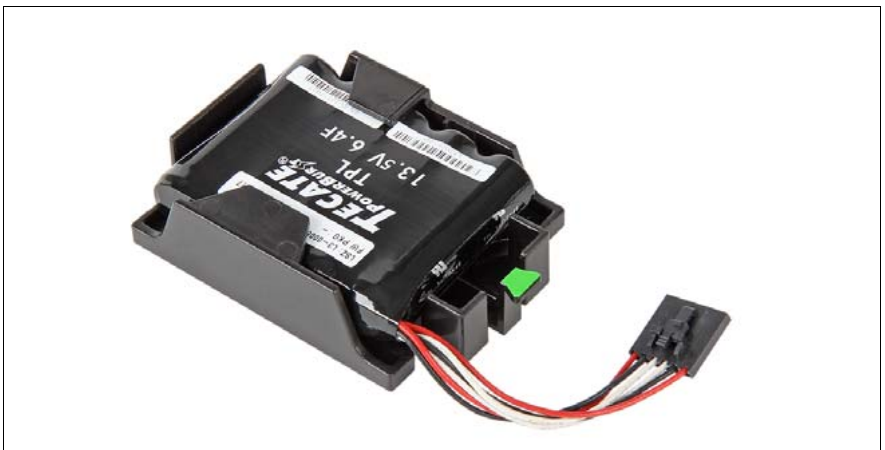
Figure 99: Installing the FBU in the FBU holder (B)

► Ensure that the FBU is properly seated in the FBU holder as shown.
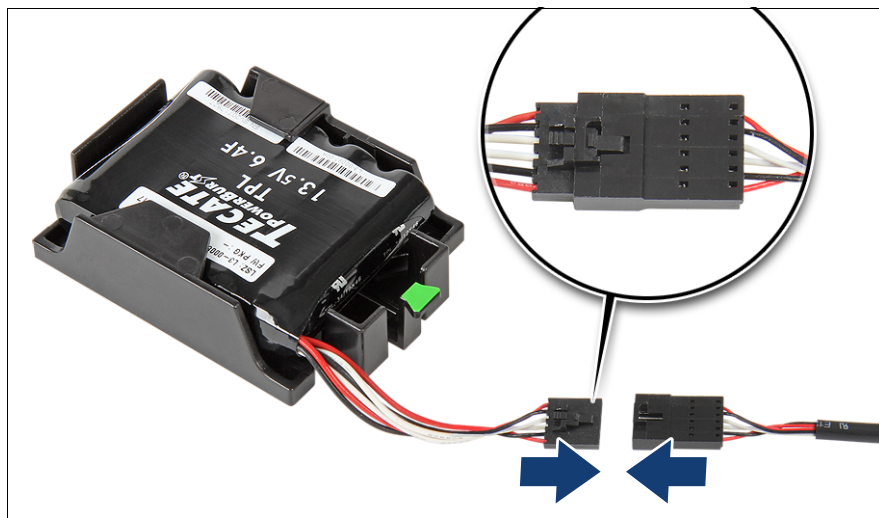
Figure 100: Connecting the FBU adapter cable to the FBU

► Connect the cable end on the FBU to the FBU adapter cable as shown.

9.3.2.5   Installing the FBU holder into the chassis

► Install the FBU holder into the chassis as described in section "Installing the BBU holder into the chassis" on page 170.

9.3.2.6   Connecting the FBU adapter cable to the TFM
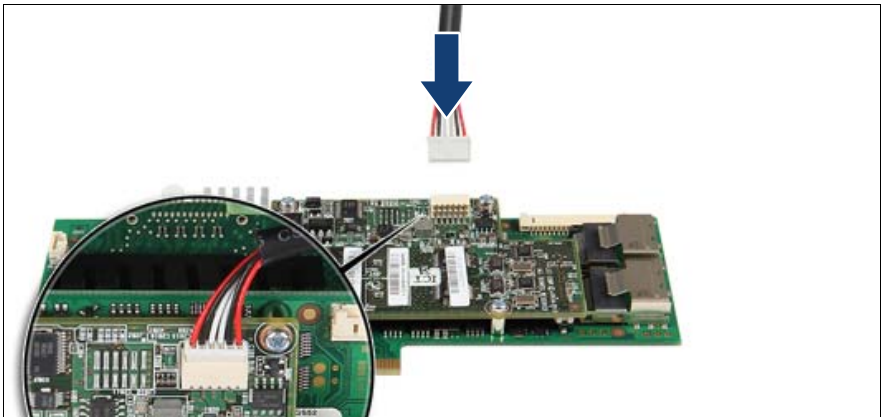
Figure 101: Connecting the FBU to the controller

► Connect the FBU cable to the TFM.

► Install the RAID controller with TFM as described in section "Installing expansion cards" on page 150.

► Route the FBU cable in the same way as the BBU cable.

9.3.2.7   Concluding steps

Perform the following procedures to complete the task:

► Check carefully the cable routing and close the cable clamps.

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► If applicable, update the firmware of the RAID controller that has been connected to the BBU as described in section "Updating RAID controller firmware" on page 75.

9.3.3   Removing a BBU

Upgrade and Repair Units (URU)

Average task duration: 5 minutes

CAUTION!

Do not throw battery backup units into the trash can. Batteries must be disposed of in accordance with local regulations concerning special waste.

For further safety information, please refer to section "Environmental protection" on page 38.

9.3.3.1   Required tools

● Preliminary and concluding steps: tool-less

● Removing a BBU: tool-less

9.3.3.2   Preliminary steps

Before removing a BBU, perform the following steps:

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

9.3.3.3   Removing the BBU holder from the chassis
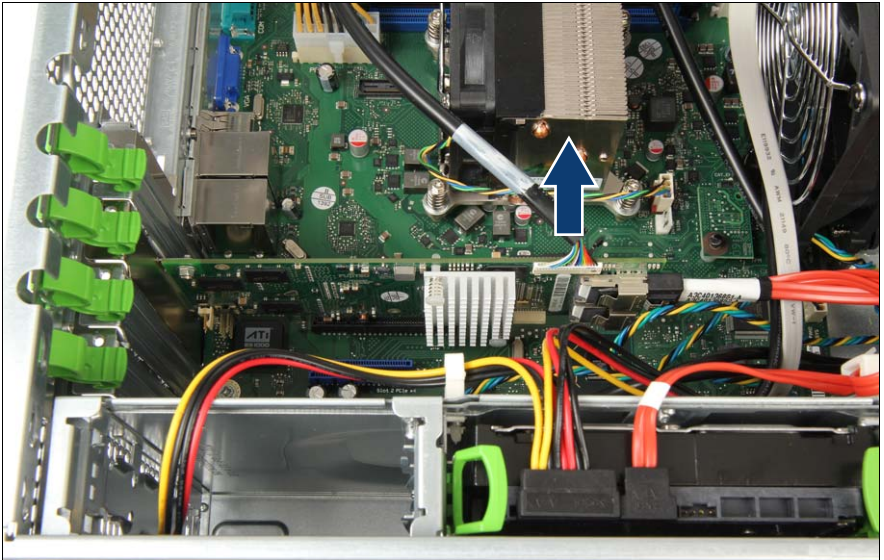
Figure 102: Disconnecting the BBU cable

▶   Carefully disconnect the BBU cable from the SAS RAID controller.

▶   Open the cable clamps and remove the BBU cable.
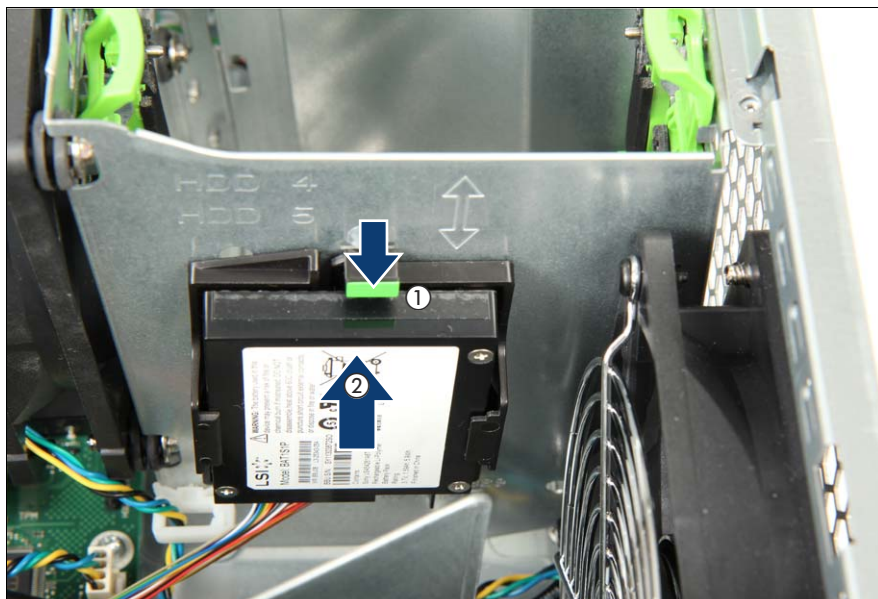
Figure 103: Removing the BBU holder from the chassis

► Press the release lever to disengage the BBU holder (1).

► Slide up the BBU holder and take it out of the chassis (2).

9.3.3.4   Concluding steps

Perform the following procedures to complete the task:

► Close the cable clamps.

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

9.3.4 Removing an FBU

Upgrade and Repair Units (URU)

Average task duration: 5 minutes

CAUTION!

Do not throw battery backup units into the trash can. Batteries must be disposed of in accordance with local regulations concerning special waste.

For further safety information, please refer to section "Environmental protection" on page 38.

9.3.4.1 Required tools

● Preliminary and concluding steps: tool-less

● Installing an FBU: tool-less

9.3.4.2 Preliminary steps

Before removing an FBU, perform the following steps:

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

9.3.4.3   Disconnecting the FBU adapter cable from the TFM
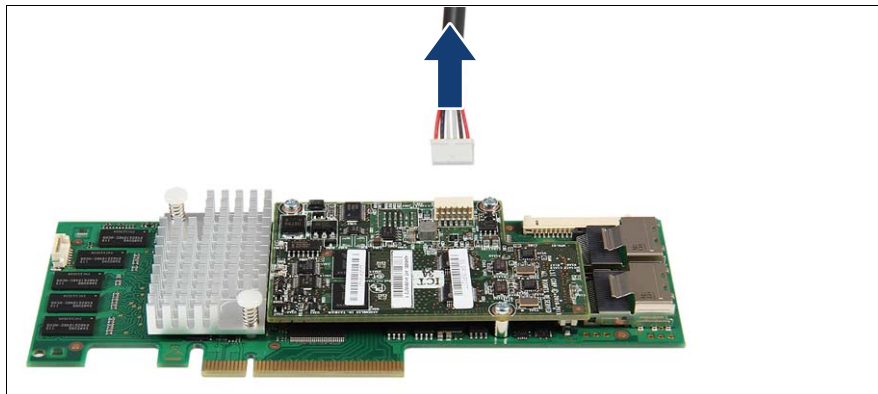
Figure 104: Disconnecting the FBU adapter cable from the TFM

► Disconnect the FBU adapter cable from the TFM.

► Remove the FBU adapter cable (see figure 102).

9.3.4.4   Removing the FBU holder from the chassis

► Remove the FBU holder from the chassis as described in section "Removing the BBU holder from the chassis" on page 181.

9.3.4.5   Concluding steps

Perform the following procedures to complete the task:

► Check carefully the cable routing and close the cable clamps.

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

9.3.5   Replacing a BBU

Upgrade and Repair Units (URU)

Average task duration: 10 minutes

CAUTION!

Do not throw battery backup units into the trash can. Batteries must be disposed of in accordance with local regulations concerning special waste.

For further safety information, please refer to section "Environmental protection" on page 38.

9.3.5.1   Required tools

● Preliminary and concluding steps: tool-less

● Replacing a BBU: tool-less

9.3.5.2   Preliminary steps

Before replacing a BBU, perform the following steps:

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

9.3.5.3   Removing a BBU from the chassis

► Remove the BBU module from the chassis as described in section "Removing a BBU" on page 180.

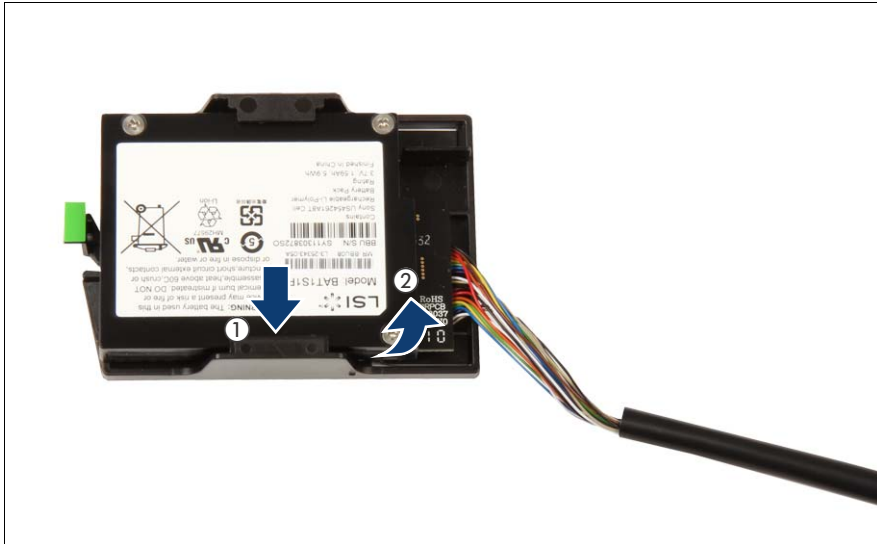### 9.3.5.4 Removing the BBU from the BBU holder

Figure 105: Removing the BBU from the BBU holder

► Press out on the retaining bracket on the BBU holder (1), lift the battery at the bottom side and remove the BBU at a slight angle out of the BBU holder (2).
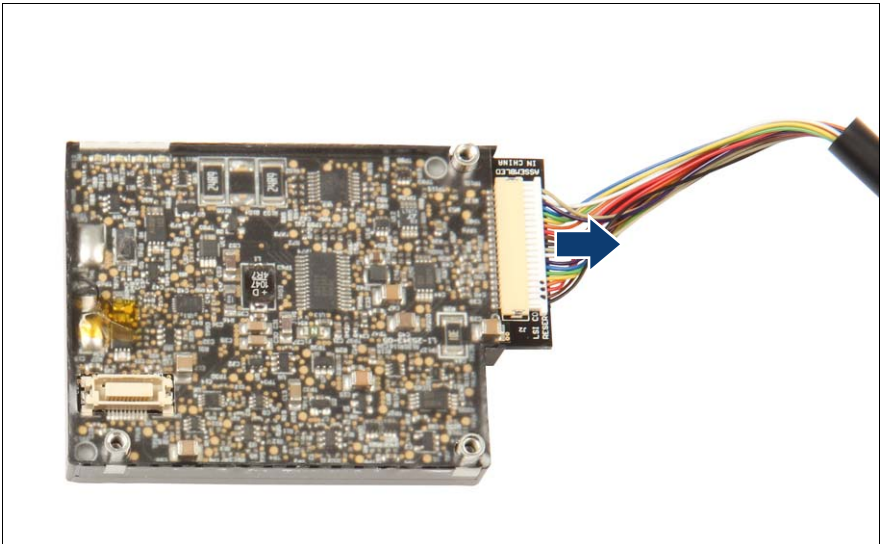
Figure 106: Disconnecting the BBU cable from the BBU

► Carefully disconnect the BBU cable from the BBU.

9.3.5.5   Installing a new BBU

► Install the new BBU into the BBU holder as described in section "Preparing the BBU" on page 167.

► Install the BBU holder into the chassis as described in section "Installing the BBU holder into the chassis" on page 170.

► Connect the BBU to the controller.

9.3.5.6   Concluding steps

Perform the following procedures to complete the task:

► Check carefully the cable routing and close the cable clamps.

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

▶ If applicable, update the firmware of the RAID controller that has been connected to the BBU as described in section "Updating RAID controller firmware" on page 75.

Note on BBU charging and calibration

The BBU may be deeply discharged due to extended storage time and wrongly show as bad or defective in the ServerView RAID Manager.

In this case, the BBU will automatically enter a trickle charge cycle for recovery. This initial charge cycle may take up to 8 hours before the BBU will initiate a recalibration cycle.

▶ Enter the ServerView RAID Manager and check the current BBU status.

> **i** For further information, please refer to the "ServerView Suite RAID Management" user guide, available online at *http://manuals.ts.fujitsu.com* (EMEA market) or *http://jp.fujitsu.com/platform/server/primergy/manual/* (Japanese market) or from the ServerView Suite DVD 2 supplied with your PRIMERGY server.

▶ If the BBU is shown as bad or defective, do not power off the server for at least 8 hours to allow the charge and calibration cycles to finish.

▶ If the BBU status does not change after 8 hours, please try to initiate the recalibration process manually using the ServerView RAID Manager.

> **i** If this procedure still does not fix the BBU status, please contact your local Fujitsu customer service partner.

9.3.6   Replacing an FBU

Upgrade and Repair Units (URU)

Average task duration: 10 minutes

CAUTION!

Do not throw battery backup units into the trash can. Batteries must be disposed of in accordance with local regulations concerning special waste.

For further safety information, please refer to section "Environmental protection" on page 38.

9.3.6.1   Required tools

● Preliminary and concluding steps: tool-less

● Installing an FBU: tool-less

9.3.6.2   Preliminary steps

Before replacing an FBU, perform the following steps:

▶ Shut down the server as described in section "Shutting down the server" on page 42.

▶ Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

▶ Bring the server to its horizontal position.

▶ Open the side cover as described in section "Removing the side cover" on page 45.

9.3.6.3   Removing the FBU from the chassis

▶ Remove the FBU from the chassis as described in section "Removing an FBU" on page 183.

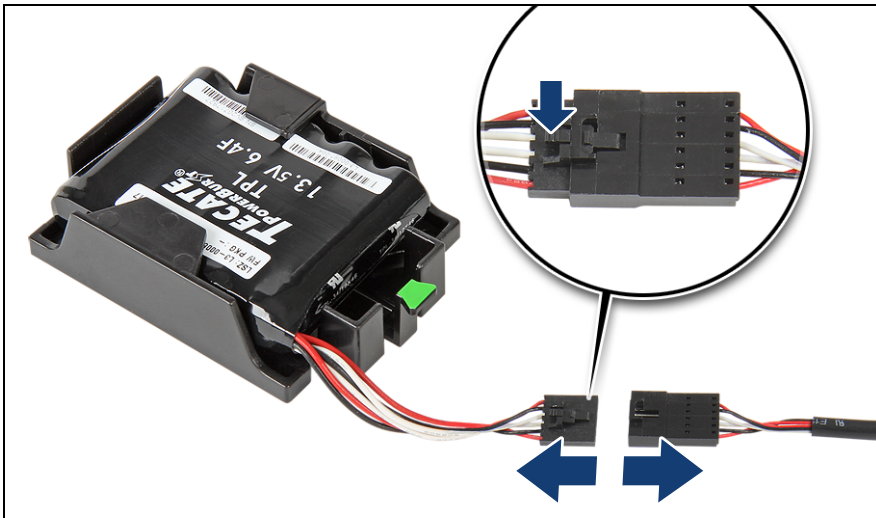**9.3.6.4   Removing the FBU from the FBU holder**

Figure 107: Disconnecting the FBU adapter cable from the FBU

► Press down on the locking latch on the FBU cable (see close-up) and disconnect the FBU adapter cable.
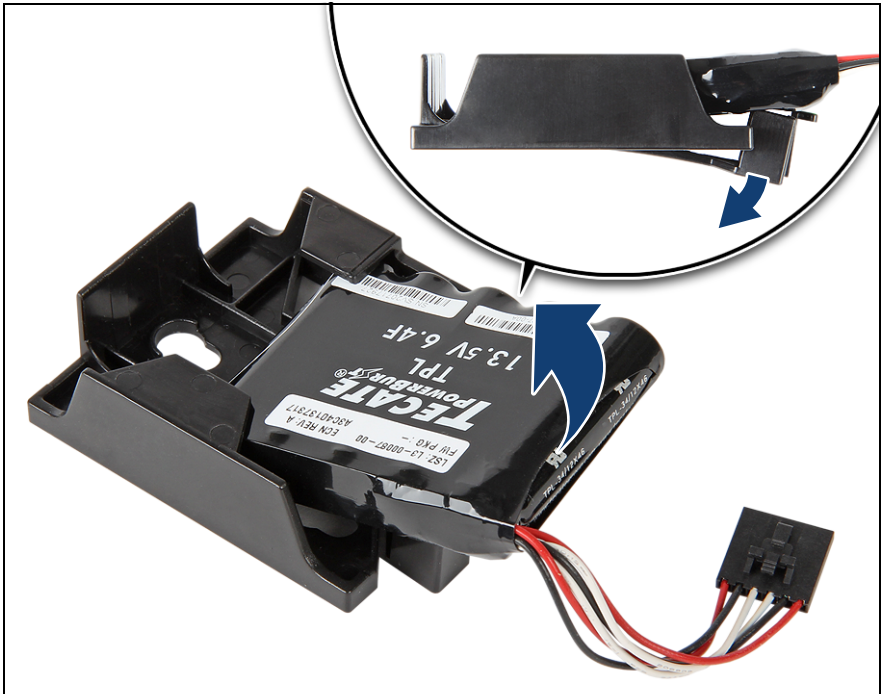
Figure 108: Removing the FBU from the FBU holder

▶ At a slight angle, slide the FBU from under the retaining brackets of the FBU holder and remove it.

9.3.6.5 Installing a replacement FBU

▶ Install the new FBU into the FBU holder as described in section "Preparing the FBU" on page 176.

▶ Install the FBU holder into the chassis as described in section "Installing the FBU holder into the chassis" on page 178.

▶ Connect the FBU adapter cable to the TFM as described in section "Connecting the FBU adapter cable to the TFM" on page 179.

9.3.6.6   Concluding steps

Perform the following procedures to complete the task:

► Check carefully the cable routing and close the cable clamps.

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► If applicable, update the firmware of the RAID controller that has been connected to the FBU as described in section "Updating RAID controller firmware" on page 75.

9.4   Additional tasks

i	For further instructions regarding controller settings, please refer to the accompanying documentation.

9.4.1   Mounting expansion card slot brackets

Upgrade and Repair Units (URU)

Average task duration: 5 minutes

This section provides general instructions on mounting slot brackets as well as specific instructions for the following network adapters:

● "Network adapter D2735" on page 195

● "Network adapter D2745" on page 197

● "Network adapter D2755" on page 199

9.4.1.1   Required tools

● Mounting slot brackets:

– Phillips PH2 / (+) No. 2 screw driver

9.4.1.2 General instructions

► Place the controller on the mounting tabs on the slot bracket.

► Secure the slot bracket to the controller with two M3 x 4.5 mm screws.

> **i** Use the following slot bracket for the ModularRAID controllers based on LSI MegaRAID:
>
> – Full height bracket perforated (preferred)
> – Full height bracket not-perforated (if full height bracket perforated is not available)
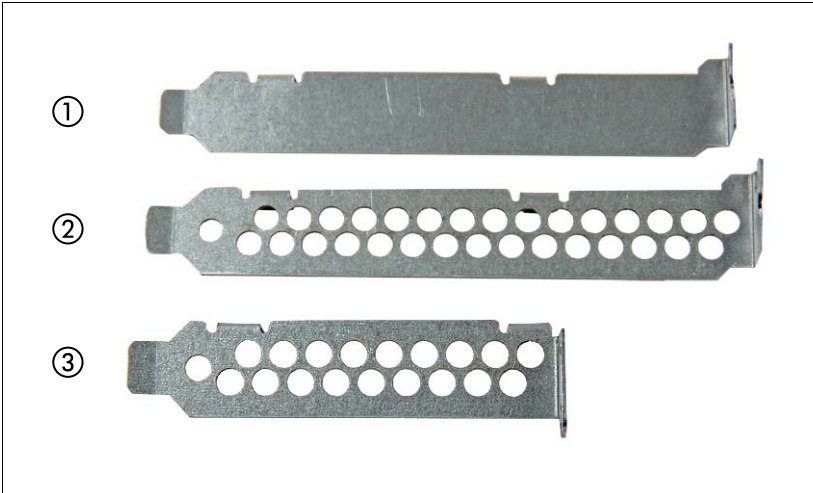
Figure 109: Perforated and non-perforated slot brackets

1	Full height bracket non-perforated
2	Full height bracket perforated
3	Low profile bracket perforated

> **i** For a more detailed description on how to install a slot bracket on a controller, please refer to section "Network adapter D2735" on page 195.
>
> The slot bracket is removed in the reverse order of the installation.

9.4.1.3   Network adapter D2735

Figure 110: Network adapter D2735 - Mounting the slot bracket (A)

► Place the controller on the mounting tabs on the slot bracket (1).

► Carefully shift the slot bracket towards the controller (2) until the plug shells engage with the cut-outs in the slot bracket connector panel (see close-up).

Figure 111: Network adapter D2735 - Mounting the slot bracket (B)

▶ Secure the slot bracket to the controller with two M3 x 4.5 mm screws.

Figure 112: Network adapter D2735 - Mounting the slot bracket (C)

ℹ️ Assembled network adapter D2735

9.4.1.4   Network adapter D2745

Figure 113: Network adapter D2745 - Mounting the slot bracket (A)

► Hinge the slot bracket to the plug shell as shown (1).

► Fold the slot bracket towards the controller until the threaded mounting tab is aligned with the screw hole on the controller (2).

Figure 114: Network adapter D2745 - Mounting the slot bracket (B)

▶ Secure the slot bracket to the controller with one M3 x 4.5 mm screw.

Figure 115: Network adapter D2745 - Mounting the slot bracket (C)

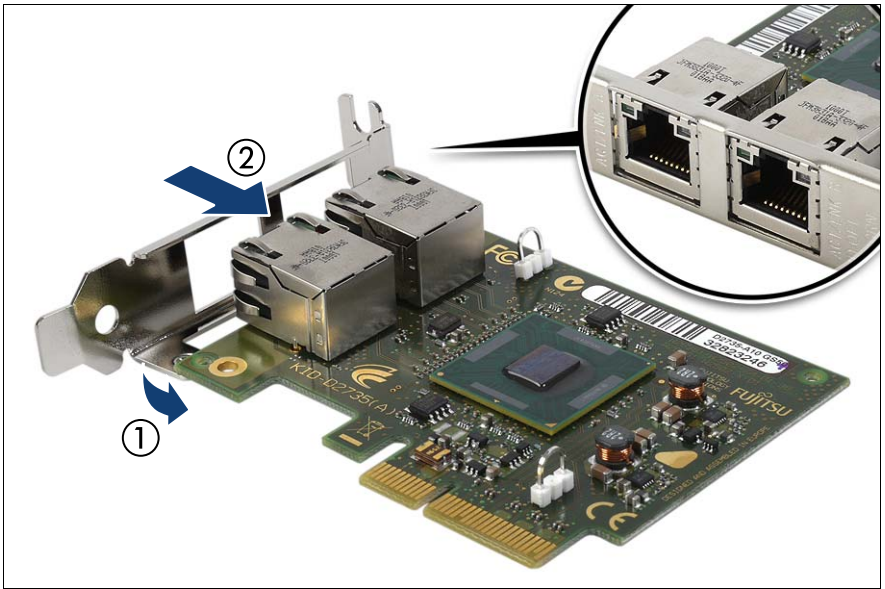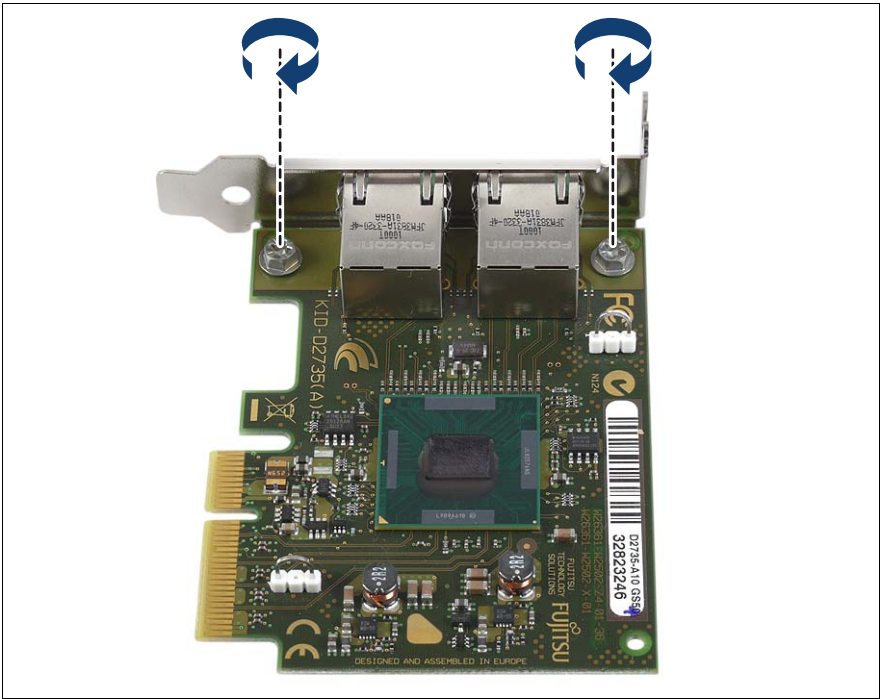| i | Assembled network adapter D2745 |

9.4.1.5   Network adapter D2755
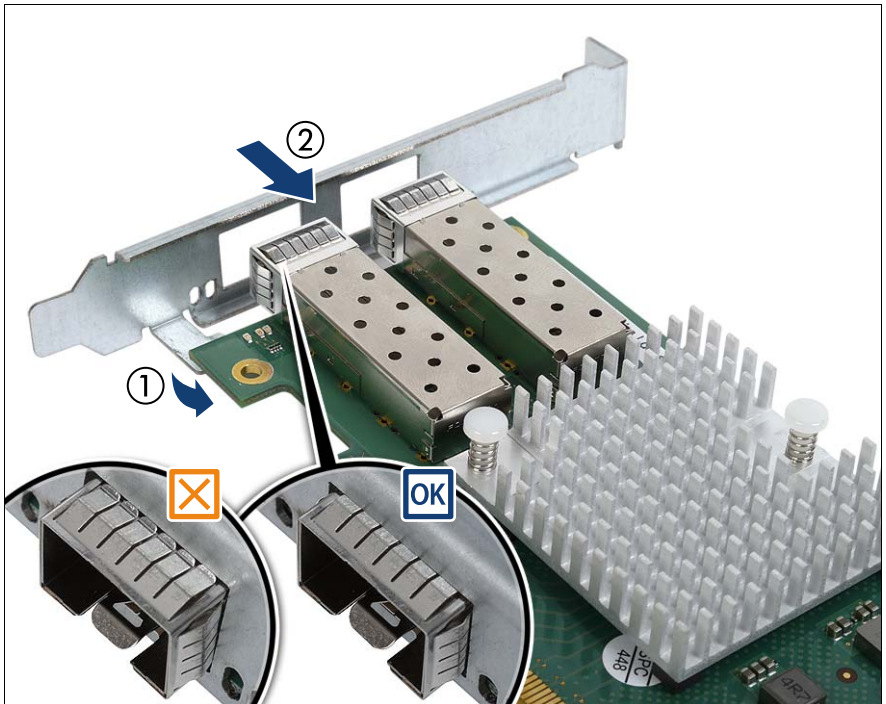
Figure 116: Network adapter D2755 - Mounting the slot bracket (A)

► Place the controller on the mounting tabs on the slot bracket (1).

► Carefully shift the slot bracket towards the controller until the plug shells engage with the cut-outs in the slot bracket connector panel (2).

► Ensure that the ESD springs on the plug shells properly engage with the slot bracket as shown (see close-ups).
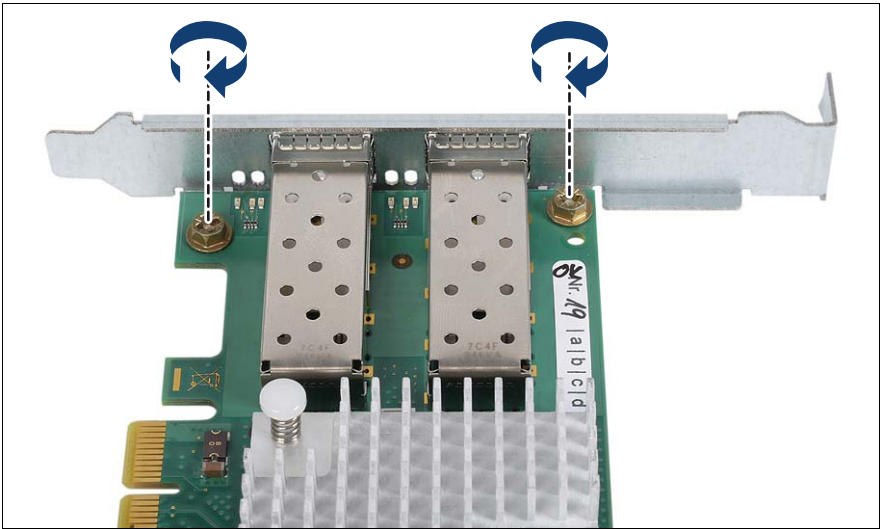
Figure 117: Network adapter D2755 - Mounting the slot bracket (B)

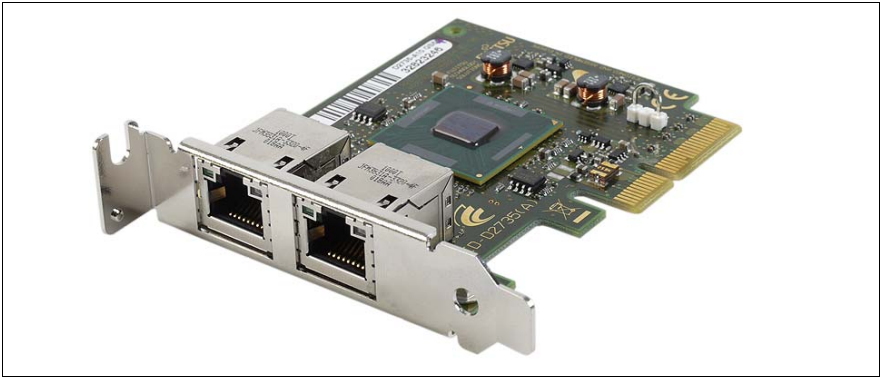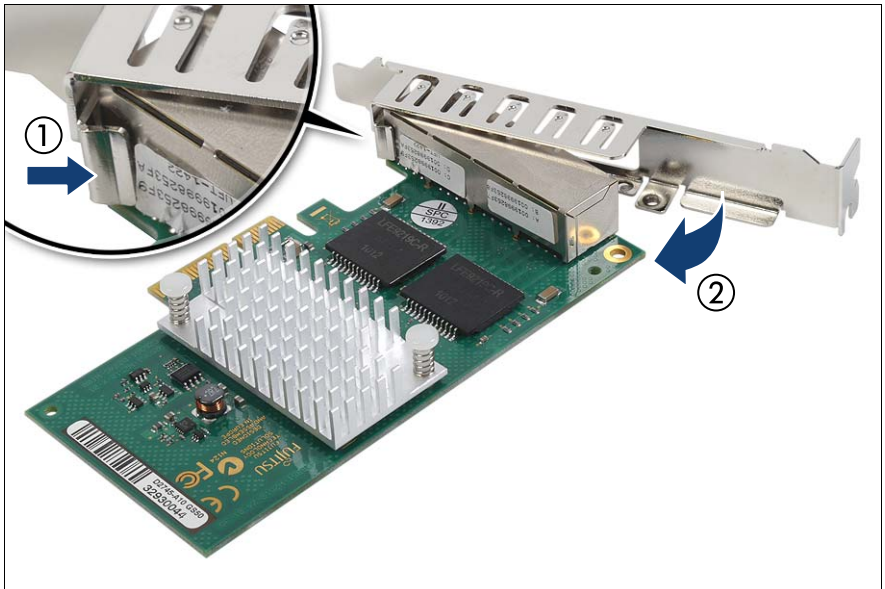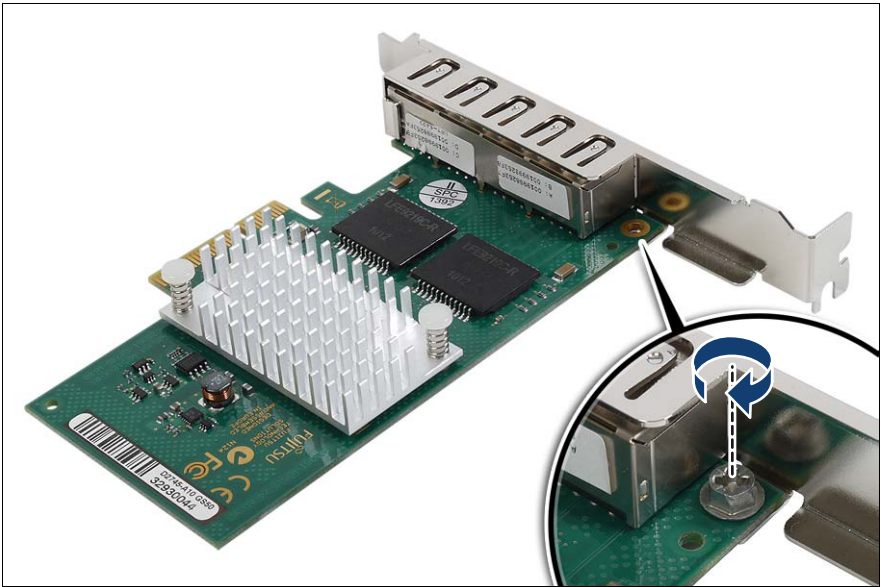► Secure the slot bracket to the controller with two M3 x 4.5 mm screws.
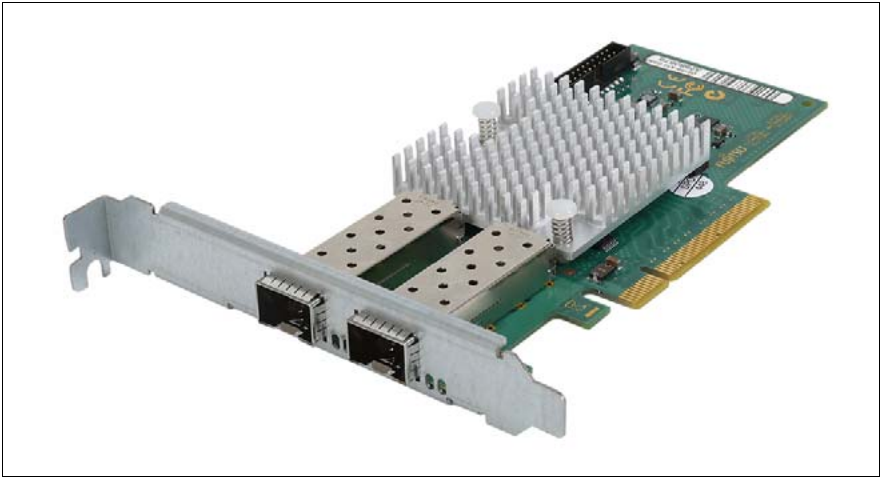
Figure 118: Network adapter D2755 - Mounting the slot bracket (C)

> **i** Assembled network adapter D2755

10   Main memory

Safety notes

⚠ **CAUTION!**

- Do not install unsupported third party memory modules. For further information on supported memory modules, refer to section "Basic information" on page 202.

- Memory modules remain hot after shutdown. Wait for components to cool down before installing or removing memory modules to prevent burns.

- Do not insert and remove memory modules repeatedly. Doing so may cause failures.

- Pressing out the securing clips on the memory module connector will eject the installed memory module. To prevent damage and injuries eject memory modules carefully without applying excessive force.

- For further information, please refer to chapter "Important information" on page 29.

10.1 Basic information

> **i** Depending on your server model different memory modules are supported, see "Model lines for TX100 S3" on page 18.

– The system board is equipped with four memory slots.

– The system has to be equipped with at least one memory module. Populate memory slot 1 / channel A (DIMM-1A) first.

10.1.1 Memory sequence

– Populate memory slot 1 / channel A (DIMM-1A) first.

– Within both channels, memory slot 1 must be populated prior to slot 2.

– If memory modules with different capacities are used:

  – Install modules with higher capacities first.
  – Within a channel, install modules in descending order of capacity.

– If memory modules with different speeds are used, the lowest clock rate applies for all DIMMs.
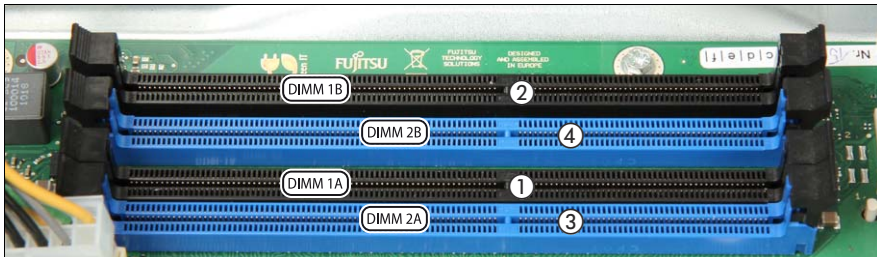
Figure 119: Memory overview

Channel		A		B	
Slot ID		**2A**	**1A**	**2B**	**1B**
DIMM #	1		o		
	2		o		o
	3	o	o		o
	4	o	o	o	o

Table 5: Mounting order - Mirrored Channel Mode: Single CPU

10.1.2 Operation modes

– The maximum performance can be achieved in a symmetric dual-channel configuration. Therefore both channels have to be populated with the same amount of memory. The DRAM device technology (1 Gbit / 2 Gbit / 4 Gbit) may vary from one channel to the other.

– If the amount of memory differs between the two channels, the system board will run in dual-channel asymmetric mode.

– Regardless of the mode, all DIMMs will run at the highest common frequency that is allowed by the SPD Data of the DIMMs and the maximum speed of the selected configuration.

– Single-channel mode is used if one memory module is populated in DIMM 1A.

10.2 Installing memory modules

🛠 **Upgrade and Repair Units (URU)**

🕐 **Average task duration: 5 minutes**

10.2.1 Required tools

● Preliminary and concluding steps: tool-less

● Installing memory modules: tool-less

10.2.2 Preliminary steps

Before installing a memory module, perform the following steps:

► Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

10.2.3 Installing a memory module

▶ Identify the correct memory slot according to the mounting order described in section .
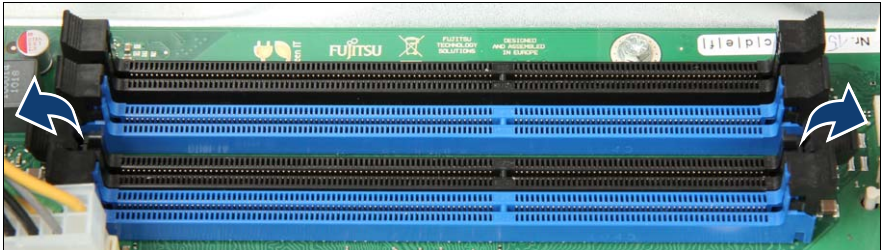

Figure 120: Installing memory modules (A)

▶ Press out the securing clip at each end of the memory module connector.
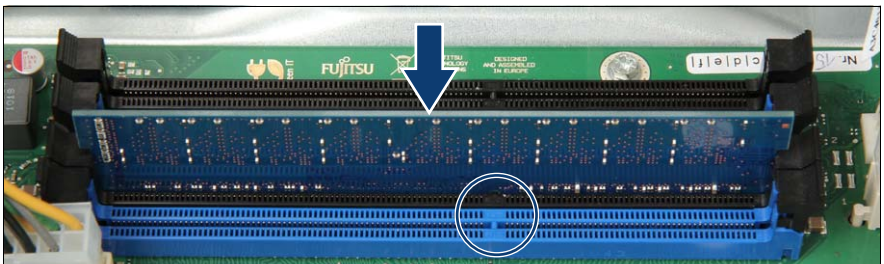
Figure 121: Installing memory modules (B)

▶ Align the notch on the bottom of the module with the crossbar in the connector (see circle).
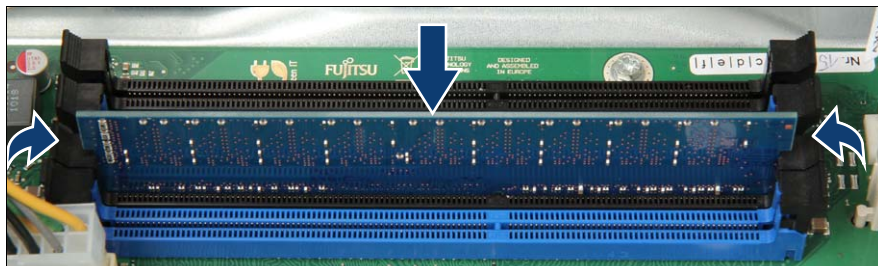
Figure 122: Installing memory modules (C)

► Press down on the memory module until the securing clips snap into the cutouts at each end of the module.

10.2.4 Concluding steps

Perform the following procedures to complete the task:

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► If available, update the system board BIOS to the latest version as described in section "Updating the system board BIOS" on page 73.

► If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

10.3 Removing memory modules

Upgrade and Repair Units (URU)

Average task duration: 5 minutes

10.3.1 Required tools

● Preliminary and concluding steps: tool-less

● Removing memory modules: tool-less

10.3.2 Preliminary steps

Before removing a memory module, perform the following steps:

▶ Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

▶ Shut down the server as described in section "Shutting down the server" on page 42.

▶ Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

▶ Bring the server to its horizontal position.

▶ Open the side cover as described in section "Removing the side cover" on page 45.

10.3.3 Removing a memory module

► Identify the desired memory slot according to the mounting order described in section "Memory sequence" on page 202.

⚠ **CAUTION!**

Ensure to maintain an operational configuration when removing memory modules. For additional information, please refer to section "Operation modes" on page 203.
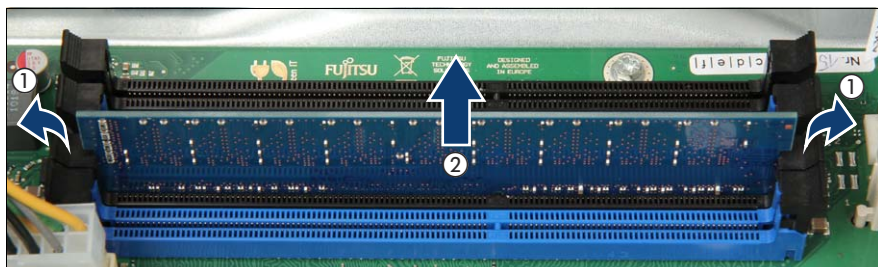
Figure 123: Removing memory modules

► Eject the desired memory module by pressing out the securing clips at each end of the memory module connector (1).

► Remove the ejected memory module (2).

10.3.4 Concluding steps

Perform the following procedures to complete the task:

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► If available, update the system board BIOS to the latest version as described in section "Updating the system board BIOS" on page 73.

► If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

10.4 Replacing memory modules

Upgrade and Repair Units (URU)

Average task duration: 5 minutes

Average software task duration: 5 minutes

10.4.1 Required tools

● Preliminary and concluding steps: tool-less
● Replacing memory modules: tool-less

10.4.2 Preliminary steps

Before replacing a memory module, perform the following steps:

▸ Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

▸ Shut down the server as described in section "Shutting down the server" on page 42.

▸ Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

▸ Bring the server to its horizontal position.

▸ Open the side cover as described in section "Removing the side cover" on page 45.

▸ Locate the defective expansion card using diagnostics information as described in section "Using diagnostics information" on page 41.

10.4.3 Removing a memory module

► Identify the defective memory slot using the server management software.

► Remove the defective memory module as described in section "Removing memory modules" on page 207.

10.4.4 Installing a memory module

► Replace the defective memory module as described in section "Installing memory modules" on page 204.

10.4.5 Concluding steps

Perform the following procedures to complete the task:

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► If available, update the system board BIOS to the latest version as described in section "Updating the system board BIOS" on page 73.

► Enable the replaced memory module(s) as described in section "Enabling replaced components in the system BIOS" on page 78.

► If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

11   Processor

Safety notes

⚠️ **CAUTION!**

● Do not install unsupported processors. For further information on supported processors, refer to section "Basic information" on page 212.

● Circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. Always discharge static build-up (e.g. by touching a grounded object) before handling electrostatic-sensitive devices (ESDs)

● Do not touch the circuitry on boards or soldered parts. Hold circuit boards by their metallic areas or edges.

● When removing or installing the processor, be careful not to touch or bend the spring contacts on the processor socket.

● Never touch the underside of the processor. Even minor soiling such as grease from the skin can impair the processor's operation or destroy the processor.

● For further information, please refer to chapter "Important information" on page 29.

11.1 Basic information

| **i** | Depending on your server model different processors are supported, see "Model lines for TX100 S3" on page 18. |

11.2 Upgrading or replacing the processor

Field Replaceable Units (FRU)

Average hardware task duration: 15 minutes

Average software task duration: 5 minutes

CAUTION!

Processors are extremely sensitive to electrostatic discharge and must be handled with care. After a processor has been removed from its protective sleeve or from its socket, place it upside down on a nonconducting, antistatic surface. Never push a processor over a surface.

11.2.1 Required tools

● Preliminary and concluding steps: tool-less

● Removing and installing the processor heat sink:

– Phillips PH2 / (+) No. 2 screw driver

● Removing and installing the processor: tool-less

11.2.2 Preliminary steps

Before upgrading or replacing the processor, perform the following steps:

► Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

11.2.3 Removing the processor heat sink

i There are two types of heat sinks.

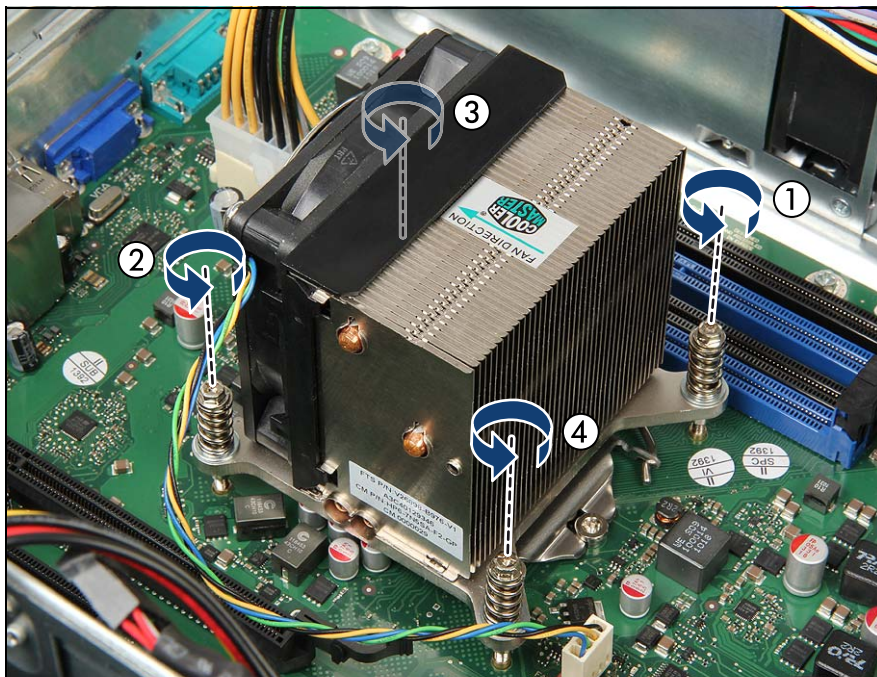### 11.2.3.1 Removing the processor heat sink type A

Figure 124: Removing the processor heat sink type A (A)

► Loosen the four captive screws on the heat sink in a crossover pattern (1-4).

Figure 125: Removing the processor heat sink type A (B)

► Disconnect the heat sink fan connector from the system board connector FAN CPU (1).

► Carefully turn the heat sink back and forth to detach it from the processor (2).

> **i** This may be necessary due to the adhesive quality of the thermal paste located between the heat sink and processor.

> ⚠ **CAUTION!**
> Pay special attention not to damage any system board components surrounding the processor socket.

► Lift the heat sink out of the chassis (3).

► Thoroughly clean residual thermal paste from the surface of the heat sink and the processor using a lint-free cloth.

11.2.3.2   Removing the processor heat sink type B

Figure 126: Removing the processor heat sink type B (A)

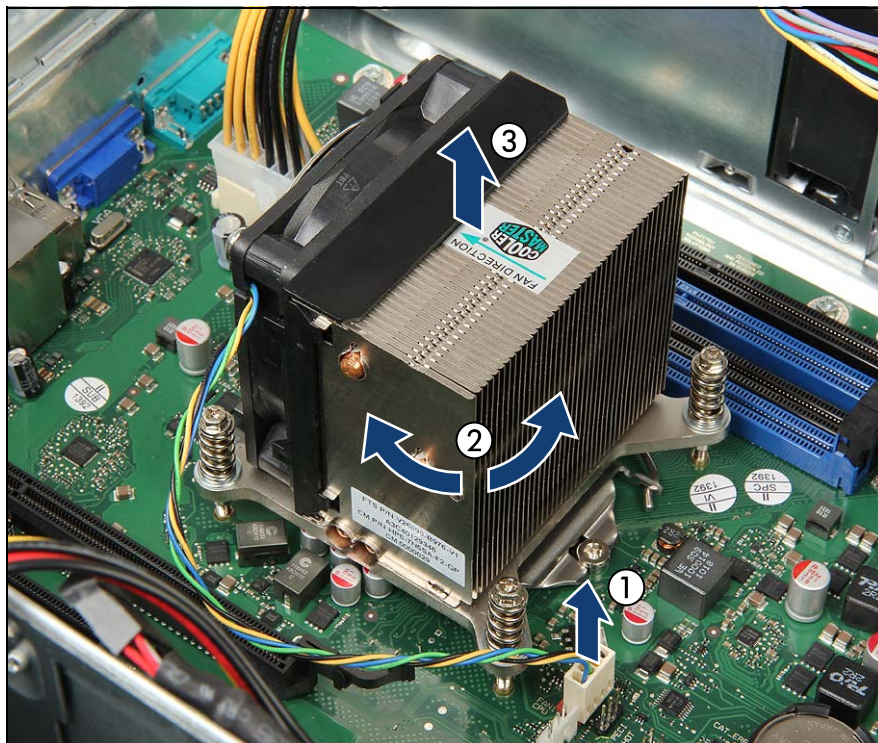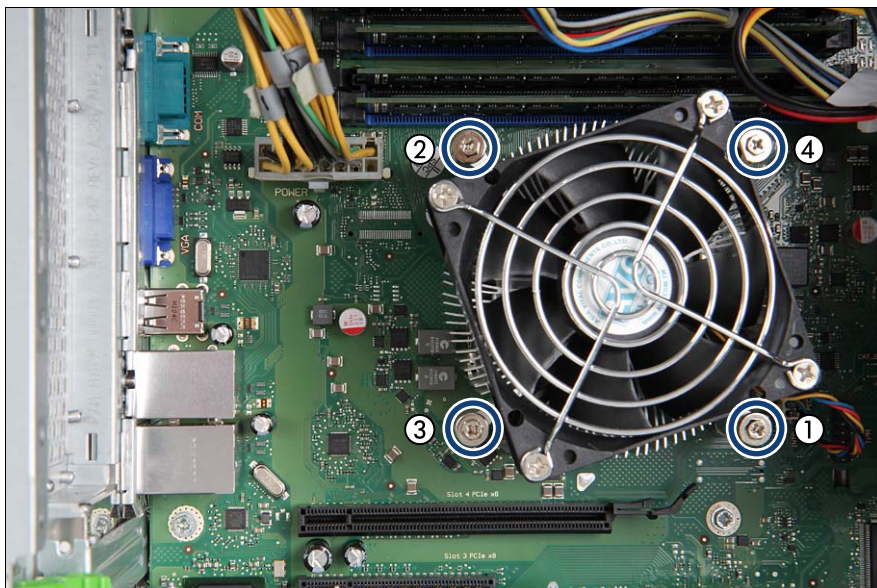► Loosen the four captive screws on the heat sink in a crossover pattern (1-4).
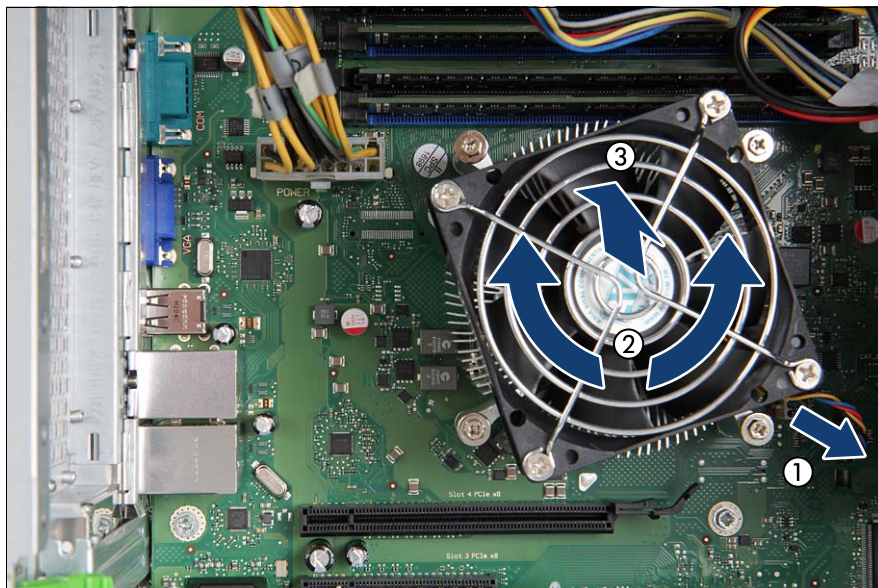
Figure 127: Removing the processor heat sink type B (B)

► Disconnect the heat sink fan connector from the system board connector FAN CPU (1).

► Carefully turn the heat sink back and forth to detach it from the processor (2).

> **i** This may be necessary due to the adhesive quality of the thermal paste located between the heat sink and processor.

> ⚠ **CAUTION!**
>
> Pay special attention not to damage any system board components surrounding the processor socket.

► Lift the heat sink out of the chassis (3).

► Thoroughly clean residual thermal paste from the surface of the heat sink and the processor using a lint-free cloth.
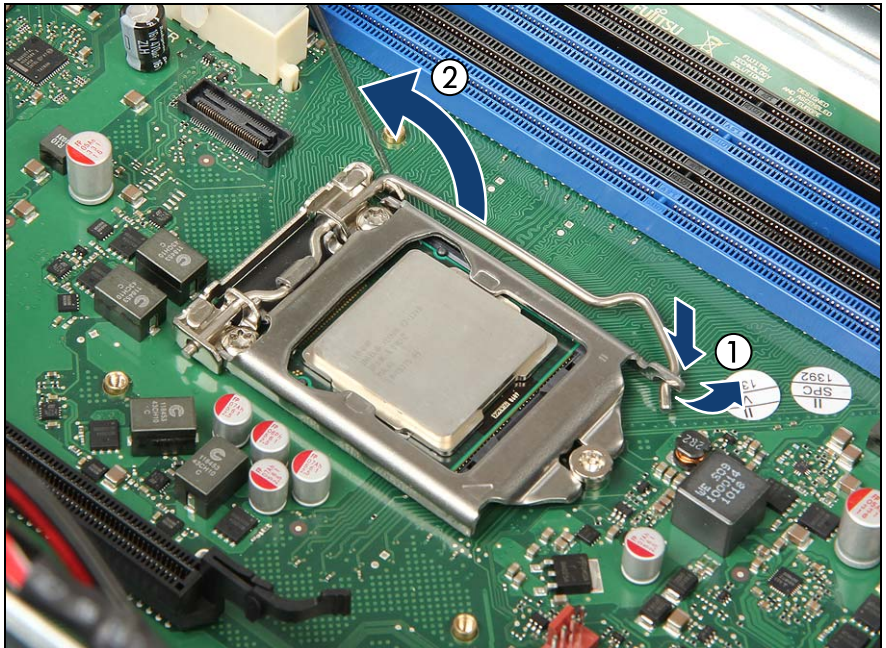
11.2.4   Removing the processor

Figure 128: Unlatching the socket lever

► Unlatch the socket lever by pushing it down and away from the socket (1).
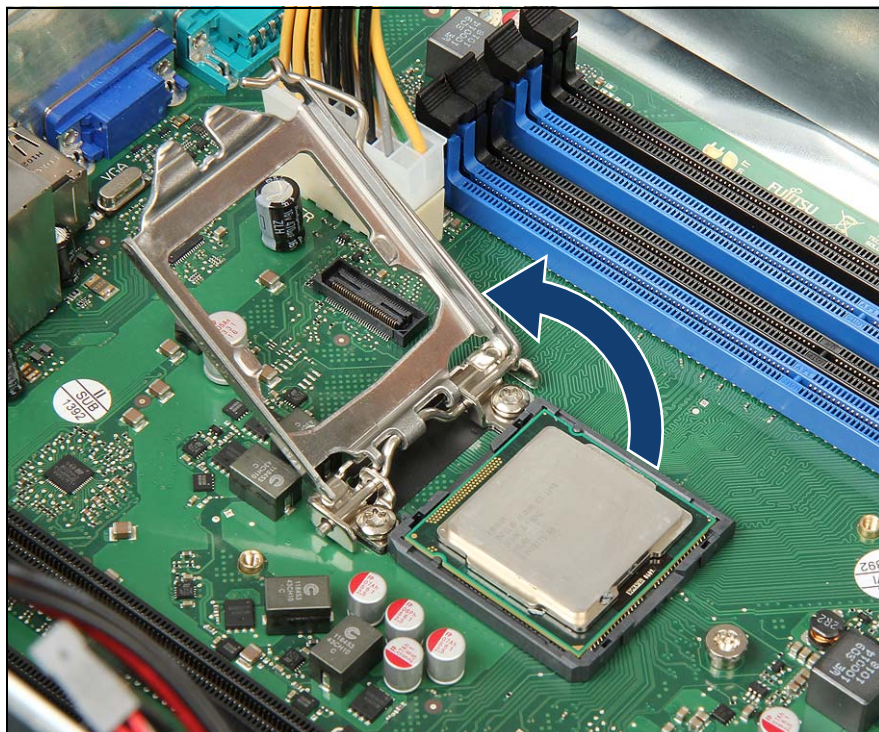
► Fold back the socket release lever (2).

Figure 129: Opening the load plate

► Rotate the socket lever to lift the load plate away from the socket.

► Make sure that the load plate is in the fully open position.

> **i** If the CPU is being transferred after replacing a defective system board (see section "Swapping the processor" on page 315), the protective socket cover on the new system board needs to be removed before proceeding:
>
> ► Place your thumb against the front edge of the protective socket cover and rest your index finger on the rear grip. Lift the front edge of the socket to disengage the cover from the socket and lift the cover up and away from the socket.
>
> Be careful not to touch or bend the pins on the processor socket!
>
> Save the socket cover for future use. Always replace the socket cover if you remove the processor from the socket.
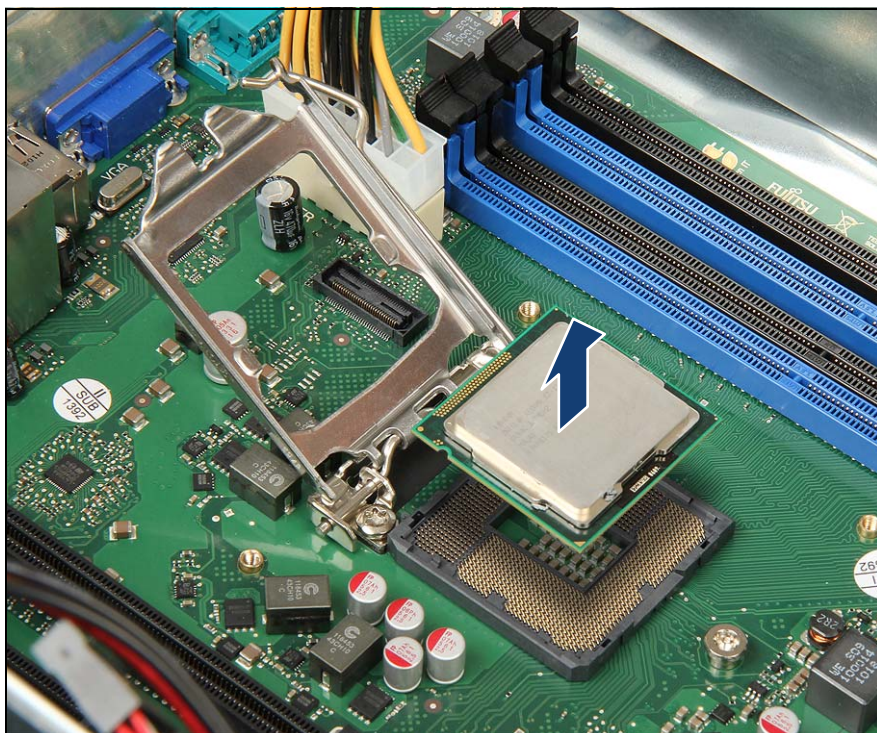
Figure 130: Removing the processor

► Carefully remove the defective processor from its socket in a vertical motion.

⚠ **CAUTION!**

Be careful not to touch or bend the spring contacts on the processor socket.

11.2.5   Installing the processor
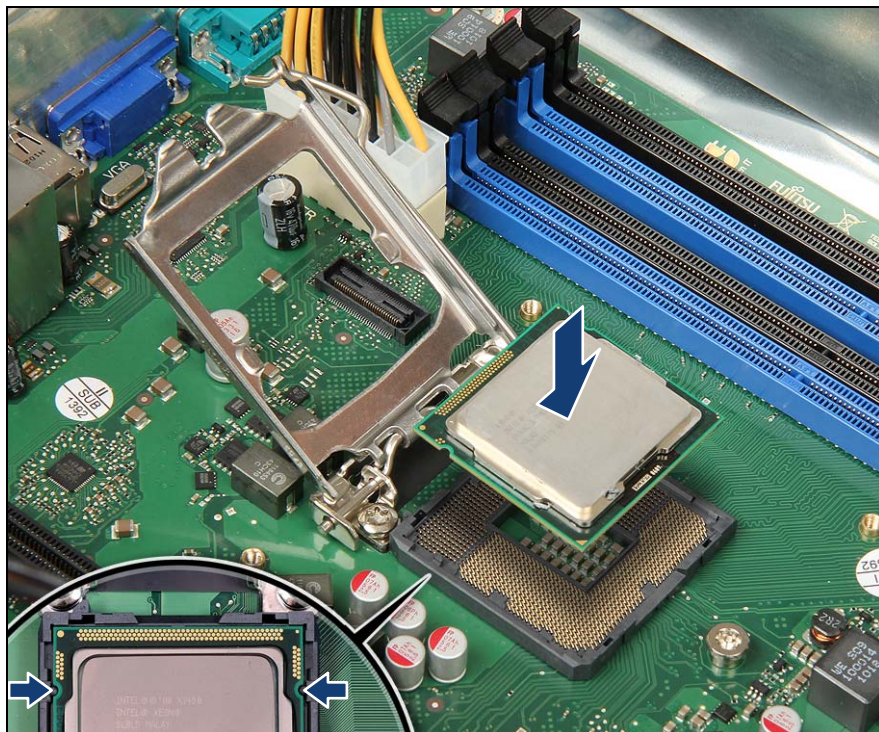
Figure 131: Installing the processor

▶   Hold the processor with your thumb and index finger. Make sure that the notches on the processor align with the posts on the socket (see close-up).

▶   Lower the processor straight down without tilting or sliding it in the socket.

   CAUTION!

–   Ensure that the processor is level in the socket.

–   Be careful not to touch or bend the pins on the processor socket.

–   Never touch the underside of the processor. Even minor soiling such as grease from the skin can impair the processor's operation or destroy the processor.

–   Ensure not to scrape or dent the processor edges.

Figure 132: Closing the load plate (A)

► Lower the load plate over the processor while leaving the socket lever in the open position.
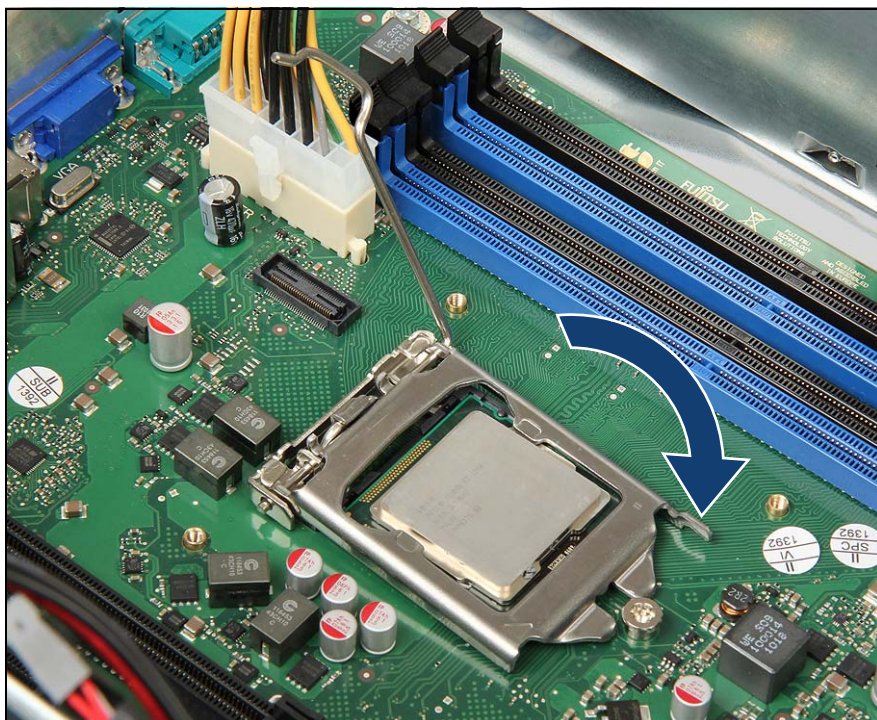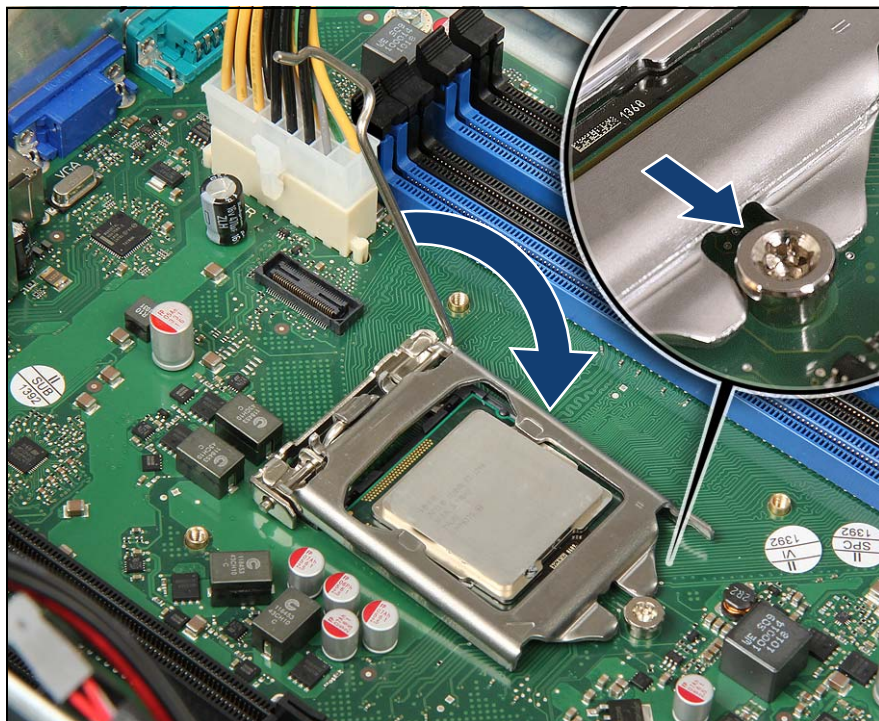
Figure 133: Closing the load plate (B)

► Lower the socket lever while making sure that the front edge of the load plate slides under the shoulder screw cap (see close-up) as the lever is lowered.
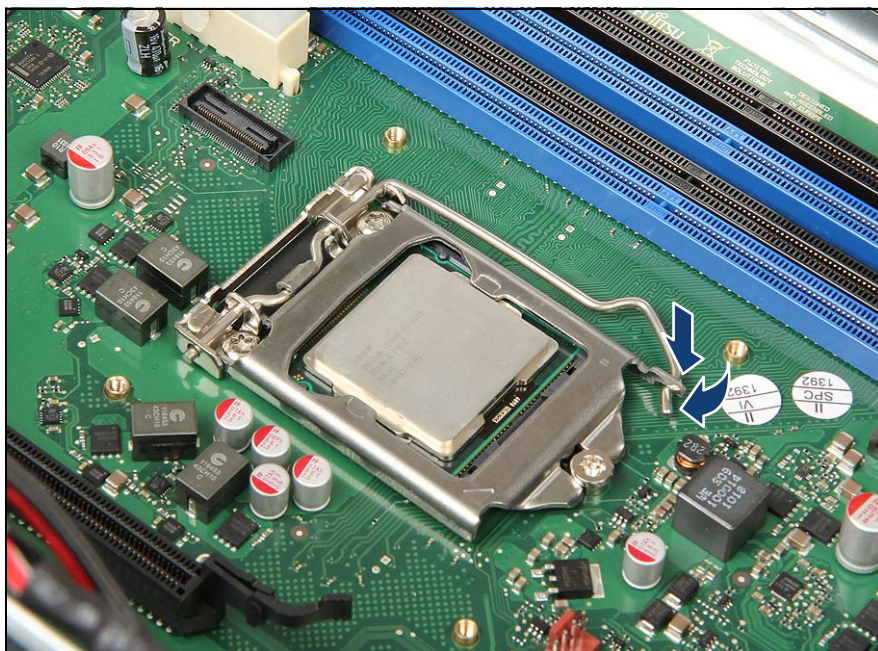
Figure 134: Latching the socket lever

► Latch the socket lever under the load plate tab.

11.2.6 Applying thermal paste

> **i** For the Japanese market, the service engineer must follow the instruction provided separately.

> **i** If the processor upgrade or replacement kit contains a new CPU heat sink, a thin layer of thermal compound has already been pre-applied to its lower surface. In this case, please proceed with section "Installing the processor heat sink" on page 226.
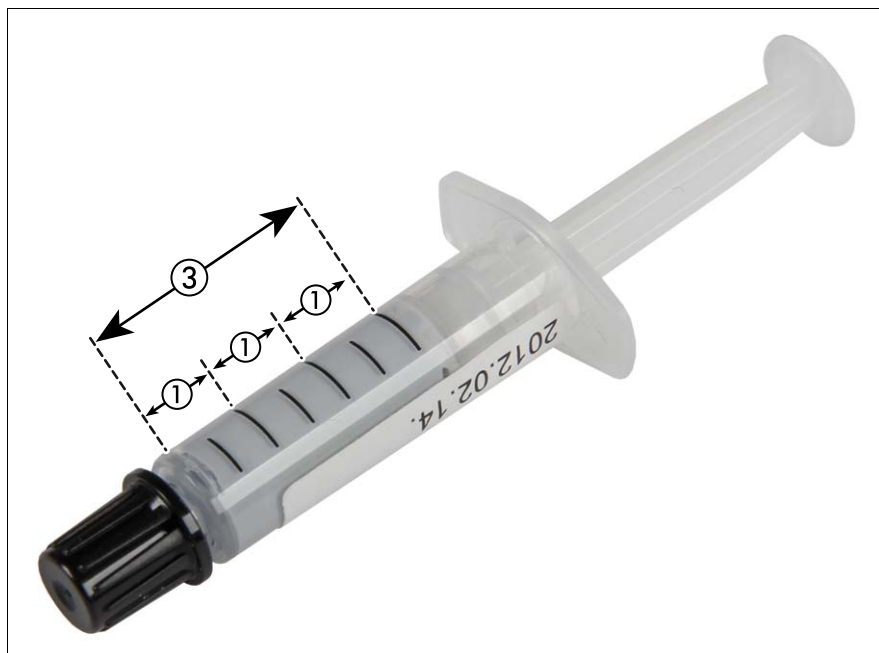
Figure 135: Thermal paste syringe

One thermal compound syringe (FTS-FSP:P304000004) contains thermal paste for three processors.
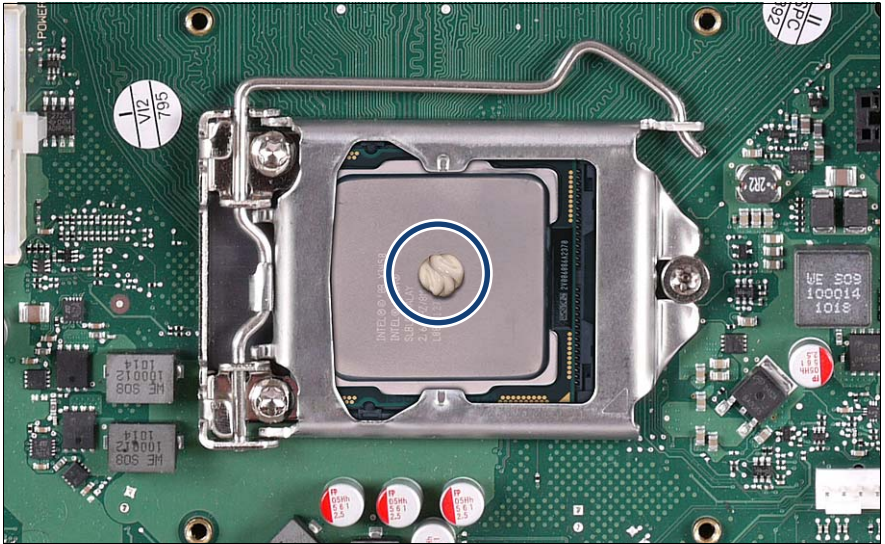
Figure 136: Applying thermal paste

► Apply a small point-shaped amount of thermal paste (1.0 gram, see description above) to the center of the processor surface as shown.

⚠ **CAUTION!**

Do not mix different types of thermal paste.

11.2.7   Installing the processor heat sink

There are two types of heat sinks.

Heat sink type A

Figure 137: Processor heat sink type A V26898-B976-V1

Heat sink type B
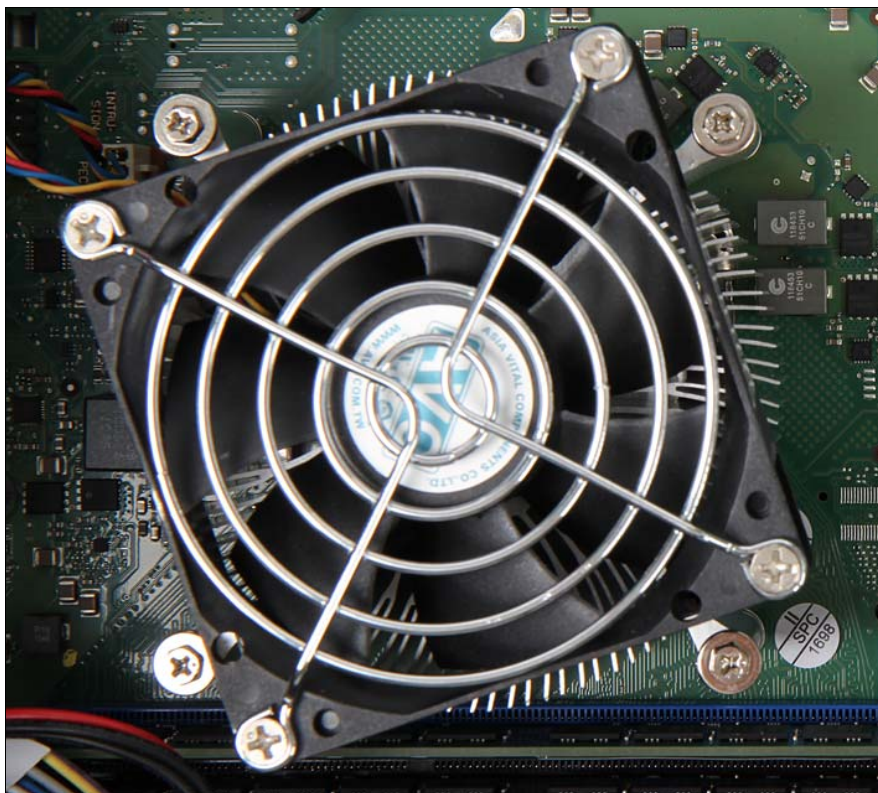
Figure 138: Processor heat sink type B V26898-B963-V300

11.2.7.1   Installing the processor heat sink type A
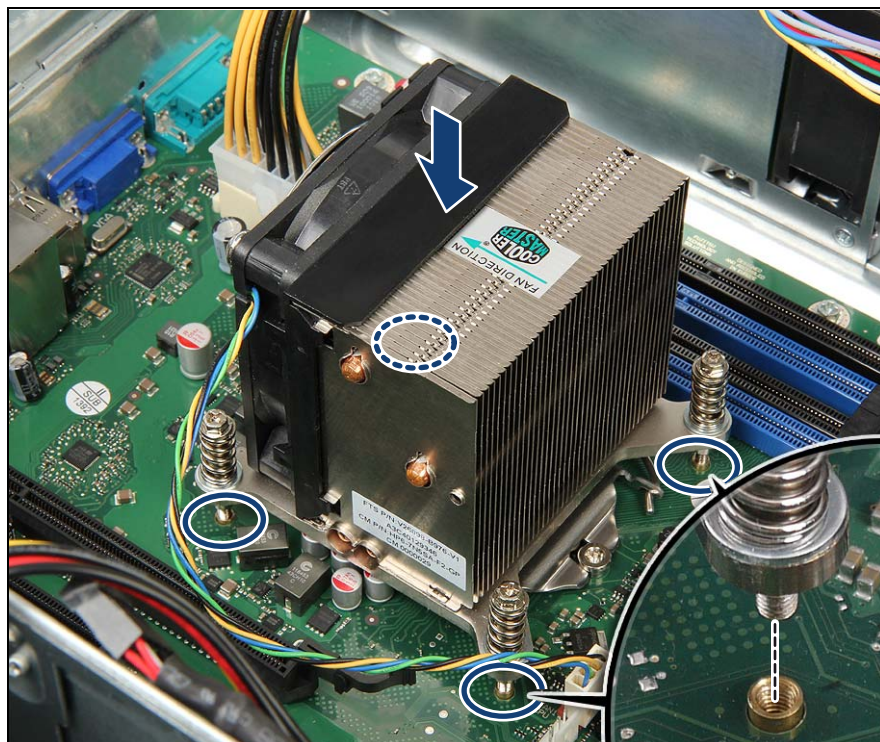
Figure 139: Installing the heat sink type A (A)

► Carefully seat the heat sink on the four threaded holes as shown.

⚠ **CAUTION!**

– Ensure that the screws on the heat sink are properly seated on the threaded holes (see circles).

– Ensure that the heat sink cooling fins match the direction of the airflow!
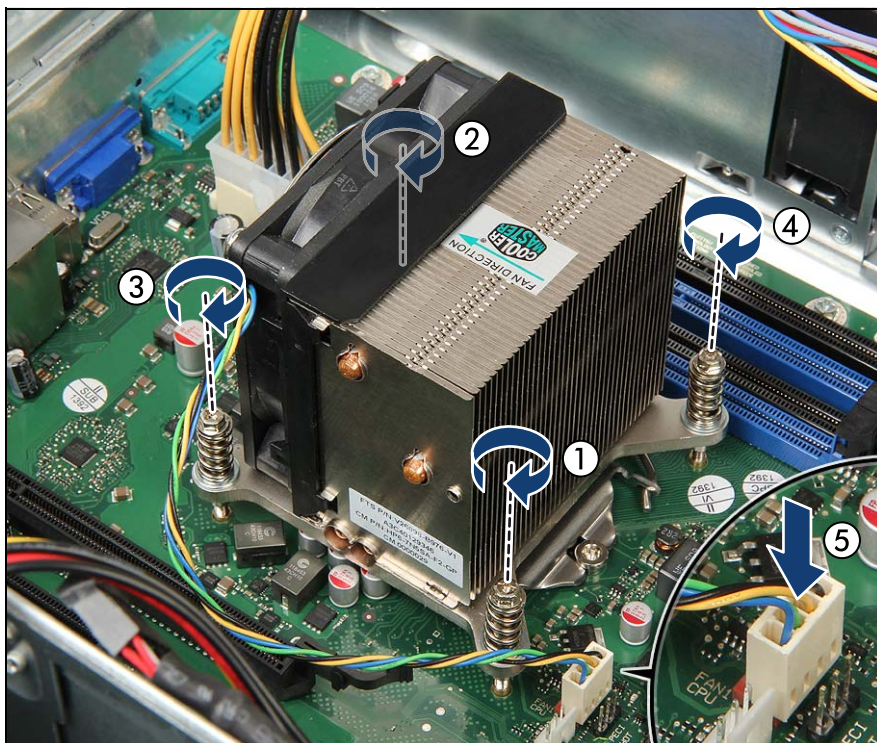
Figure 140: Installing the heat sink type A (B)

► Fasten the four captive screws on the heat sink in a crossover pattern (screw torque: 0.6 Nm, not applicable for the Japanese market) (1-4).

► Connect the heat sink fan connector to system board connector FAN CPU (5).

11.2.7.2   Installing the processor heat sink type B
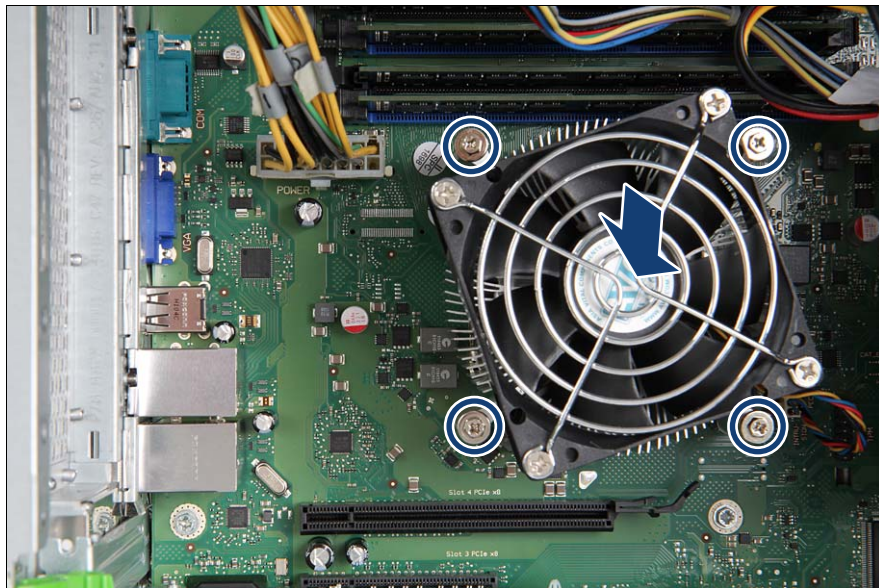
Figure 141: Installing the processor heat sink type B (A)

► Carefully seat the heat sink on the four threaded holes as shown.

⚠ **CAUTION!**

– Ensure that the screws on the heat sink are properly seated on the threaded holes (see circles).

– Ensure that the heat sink cooling fins match the direction of the airflow!
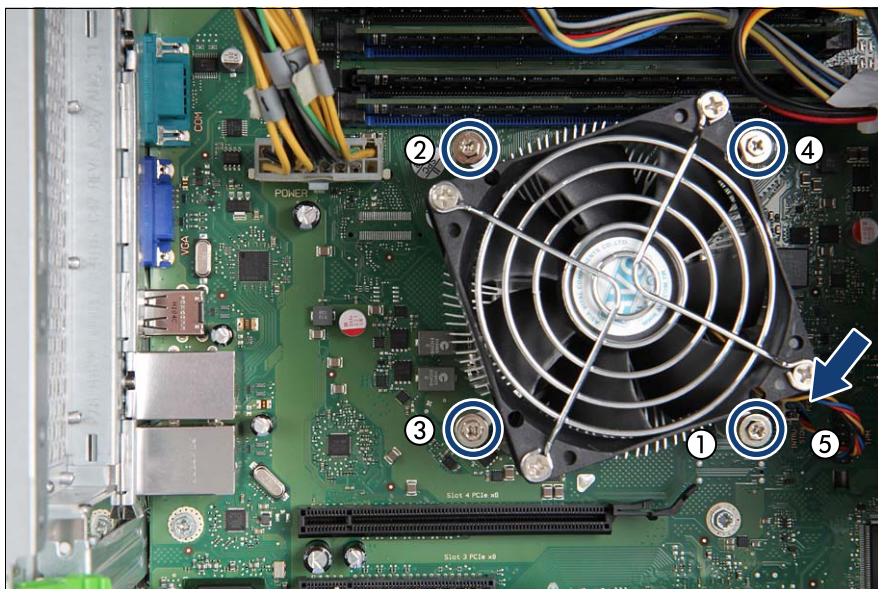
Figure 142: Installing the processor heat sink type B (B)

► Fasten the four captive screws on the heat sink in a crossover pattern (screw torque: 0.6 Nm, not applicable for the Japanese market) (1-4).

► Connect the heat sink fan connector to system board connector FAN CPU (5).

11.2.8 Concluding steps

Perform the following procedures to complete the task:

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► If available, update the system board BIOS to the latest version as described in section "Updating the system board BIOS" on page 73.

► If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

11.3 Replacing the processor heat sink

Field Replaceable Units (FRU)

Average task duration: 15 minutes

11.3.1 Required tools

● Preliminary and concluding steps: tool-less

● Removing and installing the processor heat sink:

  – Phillips PH2 / (+) No. 2 screw driver

11.3.2 Preliminary steps

Before replacing the processor heat sink, perform the following steps:

▶ Shut down the server and disconnect the AC power cord from the system as described in section "Shutting down the server" on page 42.

▶ Bring the server to its horizontal position.

11.3.3 Removing the processor heat sink

▶ Remove the processor heat sink as described in section "Removing the processor heat sink" on page 213.

11.3.4 Applying thermal paste

▶ Apply the thermal paste as described in section "Applying thermal paste" on page 224.

11.3.5 Installing the processor heat sink

▶ Install the processor heat sink as described in section "Installing the processor heat sink" on page 226.

11.3.6 Concluding steps

Perform the following procedures to complete the task:

▶ Close the side cover as described in section "Installing the side cover" on page 58.

▶ Reconnect the AC power cord(s) to the power supply unit(s) as described in section "Switching on the server" on page 60.

▶ Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

12   Accessible drives

Safety notes

⚠️ **CAUTION!**

- Before installing an accessible drive, acquaint yourself with the drive's user documentation.

- When inserting an accessible drive into the server, ensure not to pinch or strain any connected cables.

- When installing an accessible drive, hold it by its sides. Applying force to the top of the casing may cause failures.

- When disposing of, transferring, or returning a backup drive, ensure that all backup media has been removed from the drive.

- Do not touch the circuitry on boards or soldered parts. Hold circuit boards by their metallic areas or edges.

- Circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. Always discharge static build-up (e.g. by touching a grounded object) before handling electrostatic-sensitive devices (ESDs).

- For further safety information, please refer to chapter "Important information" on page 29.

12.1   Basic information

Mounting order for accessible drives

PRIMERGY TX100 S3 server offers two 5.25-inch accessible drive bays for optical disk drives and backup drives:

Figure 143: Accessible drives mounting order

Sequence	Accessible drive	Bay	Max. #
1	Optical disk drive or slimline optical disk drive	Bay 1	1
2	Backup drive LTOx	Bay 2	1

Table 6: Accessible drive mounting sequence

12.2 Installing accessible drives

🔧 **Upgrade and Repair Units (URU)**

🕐 **Average task duration: 10 minutes**

12.2.1 Required tools

● Preliminary and concluding steps: tool-less

● Installing accessible drives: tool-less

12.2.2 Preliminary steps

Before installing an accessible drive, perform the following steps:

► Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

► Remove the optical disk drive as described in section "Removing an optical disk drive (ODD)" on page 259.

12.2.3 Removing the accessible drive dummy cover of bay 2

If bay 2 will be equipped, it is necessary to break out the cover of bay 2 in the front cover and to remove EMI spring in bay 2.

| i | Some chassis do not have any more the EMI spring installed in bay 2. The pictures doesn't always show the current version. |

Figure 144: Removing the cover of bay 2

► Pull out the cover of bay 2.

Figure 145: Removing the dummy cover of bay 2

► If applicable, grip the EMI spring in the holes and push it a little to the right side (1).

► Remove the EMI spring frontward (2).

⚠ **CAUTION!**

Save the EMI spring for future use.
Always replace the EMI spring into the unused drive bays to comply with applicable EMC regulations and satisfy cooling requirements.

12.2.4 Installing an optical disk drive (ODD)

12.2.4.1 Preparing the optical disk drive

i	There are two fixation plates for accessible drives. You need one fixation plate for an accessible drive to be installed.
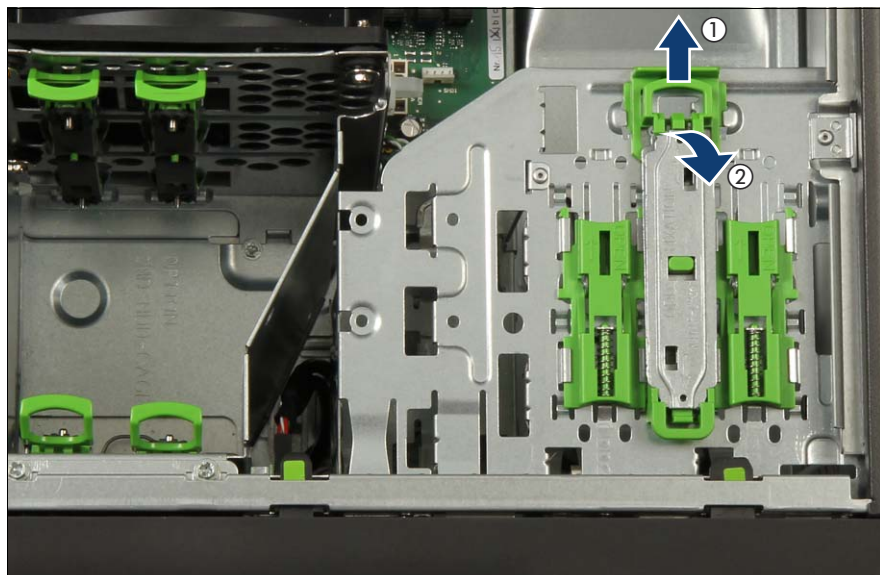
Figure 146: Removing the fixation plate from the chassis

► Pull the green handle outward (1).

► Lift up the fixation plate and take it out (2).

Figure 147: Attaching the fixation plate to the optical disk drive (A)

► Align the four pins of the fixation plate with the screw holes on the optical disk drive.

Figure 148: Attaching the fixation plate to the optical disk drive (B)

► Attach the fixation plate on the left side of the optical disk drive.

12.2.4.2   Installing the optical disk drive

Figure 149: Installing the optical disk drive

► Insert the optical disk drive into its installation bay and carefully push in until it locks in place.

Figure 150: Connecting cables to the optical disk drive

► Connect cables to the optical disk drive.

    1   Power cable connector P8 (see figure 224 on page 330)
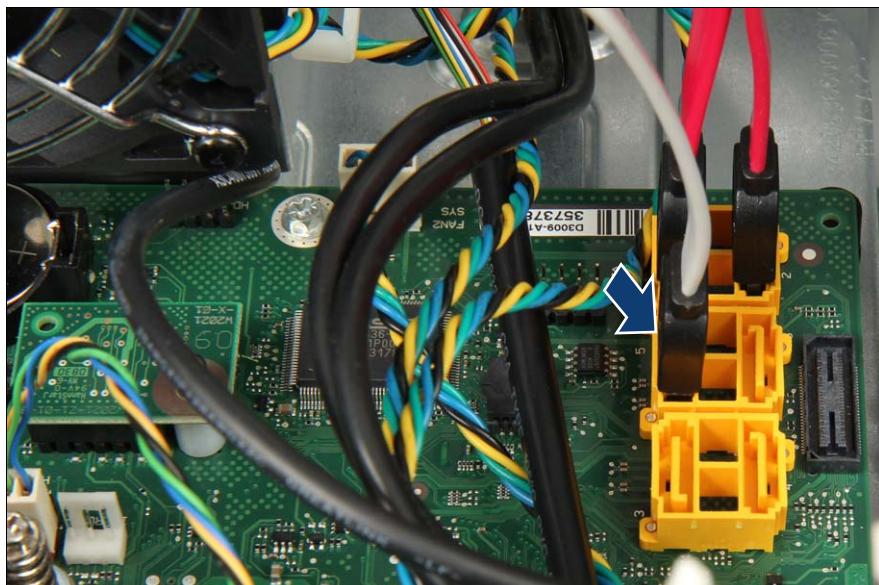
    2   SATA cable

Figure 151: Routing optical disk drive cables

► Connect the SATA cable to connector SATA 5 on the system board.

► Route the SATA cable below system fan 1.

12.2.5 Installing a slimline optical disk drive (ODD)

12.2.5.1 Mounting the slimline drive in the slide-in unit

Figure 152: Slide-in unit for slimline ODD drive
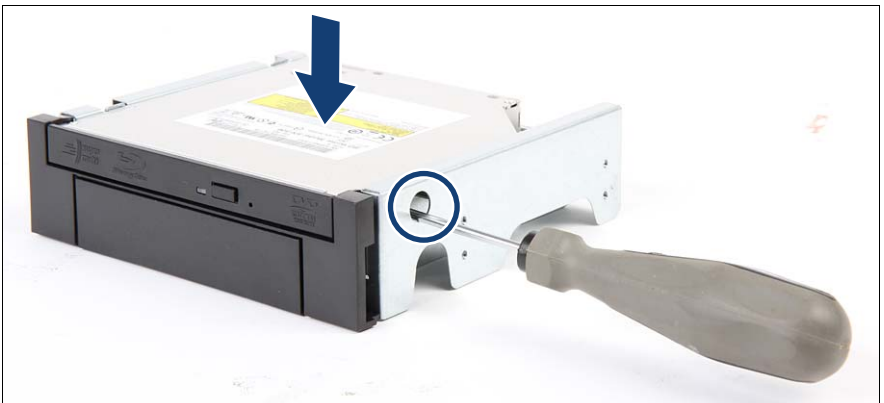
Figure 153: Mounting the slimline ODD in the slide-in unit (A)

► Insert the slimline ODD on the top.

▶ Fasten it with one M2 x 2.5 mm screw (C26192-Y10-C62) to the slide-in unit on the right side.

Figure 154: Mounting the slimline ODD in the slide-in unit (B)

▶ Fasten it with two M2 x 2.5 mm screws to the slide-in unit on the left side.

12.2.5.2 Preparing the slide-in unit

i	There are two fixation plates for accessible drives. You need one fixation plate for an accessible drive to be installed.

Figure 155: Removing the fixation plate from the chassis

▶ Pull the green handle outward (1).

▶ Lift up the fixation plate and take it out (2).

Figure 156: Attaching the fixation plate to the slide-in unit

► Align the four pins on the fixation plate with the screw holes on the left side of the slide-in unit and attach it.

12.2.5.3 Installing the slide-in unit

Figure 157: Installing the slide-in unit

► Insert the slide-in unit into its installation bay and carefully push in until it locks in place.
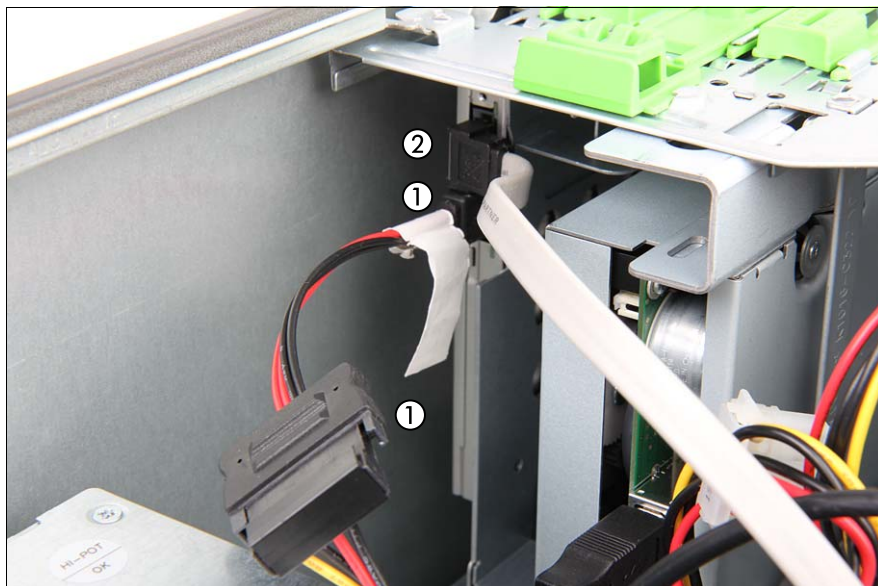
Figure 158: Connecting cables to the slimline optical disk drive

► Connect cables to the optical disk drive.

    1   Power adapter cable (T26139-Y3990-V201) to the power cable connector P8 (see figure 224 on page 330) and the slimline drive
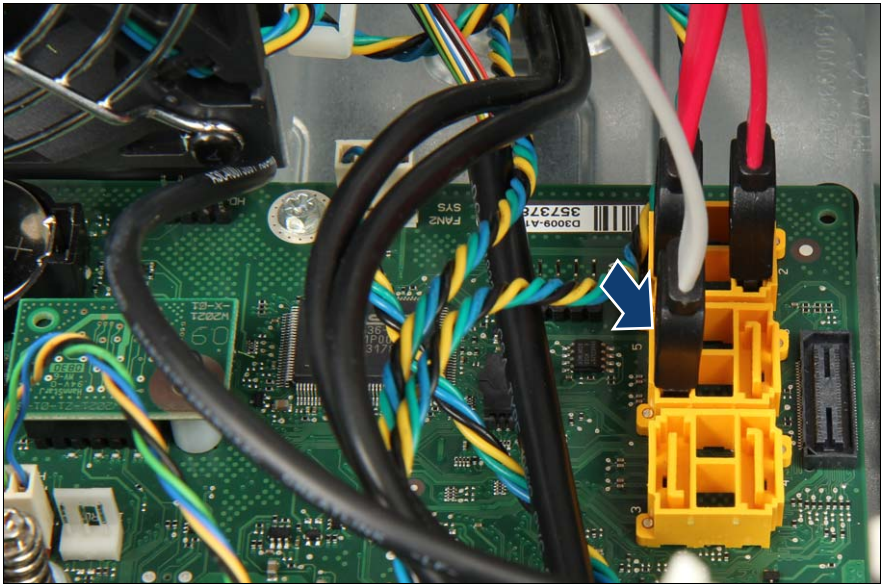
    2   SATA cable

Figure 159: Routing slimline drive cables

► Connect the SATA cable to connector SATA 5 on the system board.

► Route the SATA cable below system fan 1.

12.2.6 Installing a backup drive

12.2.6.1 Preparing the backup drive

Removing fixation plates from the dummy cover

> **i** There are two fixation plates for accessible drives. You need one fixation plate for an accessible drive to be installed.
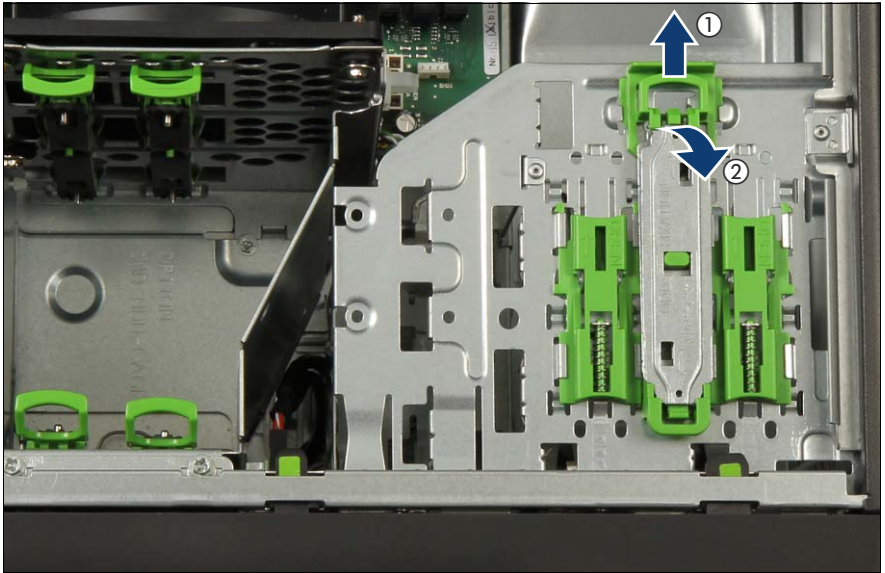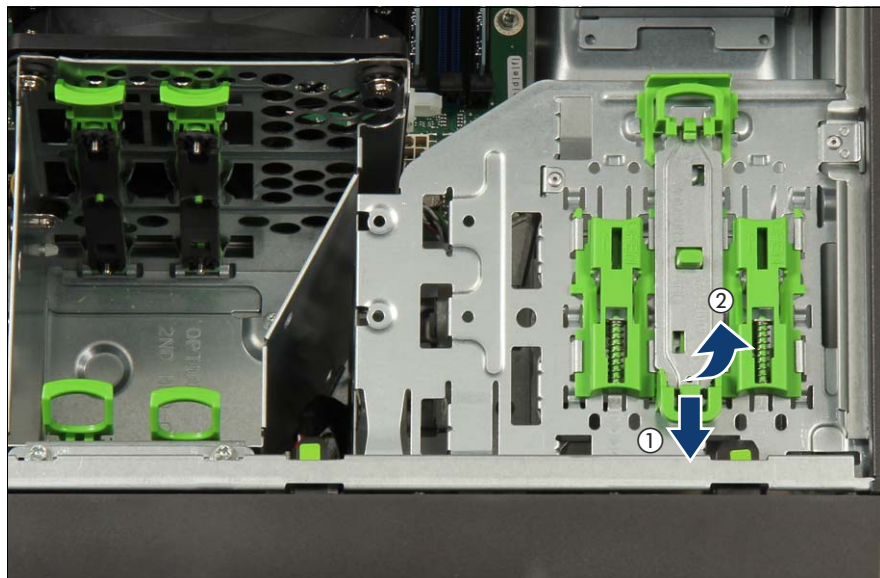

Figure 160: Removing the fixation plate from the chassis

► Pull the green handle outward (1).

► Lift up the fixation plate and take it out (2).

Figure 161: Attaching the fixation plate to the backup drive (A)

► Align the four pins on the fixation plate with the screw holes on the backup drive.

Figure 162: Attaching the fixation plate to the backup drive (B)

► Attach the fixation plate on the left side of the backup drive.

12.2.6.2 Installing the backup drive

Figure 163: Installing the backup drive

► Insert the backup drive into its installation bay and carefully push in until it locks in place.
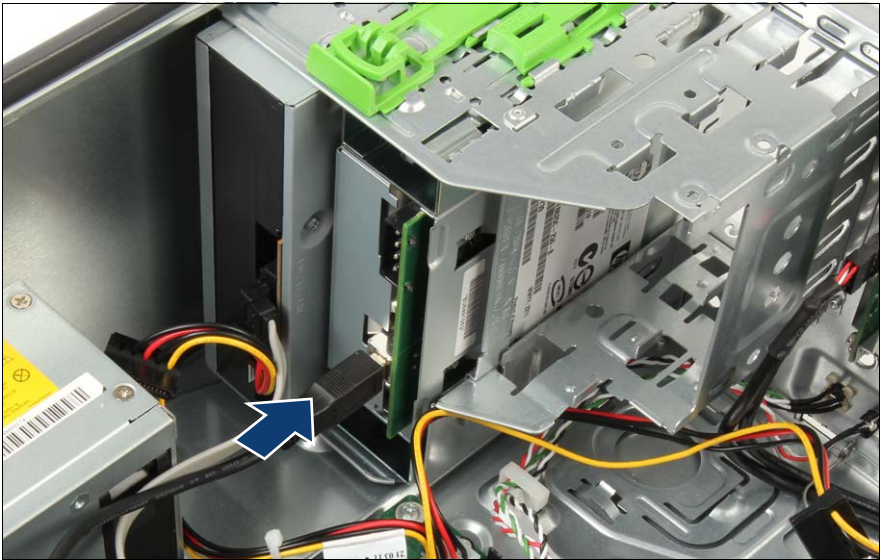
Figure 164: Connecting USB cable to the backup drive

► Connect the USB cable to the backup drive.
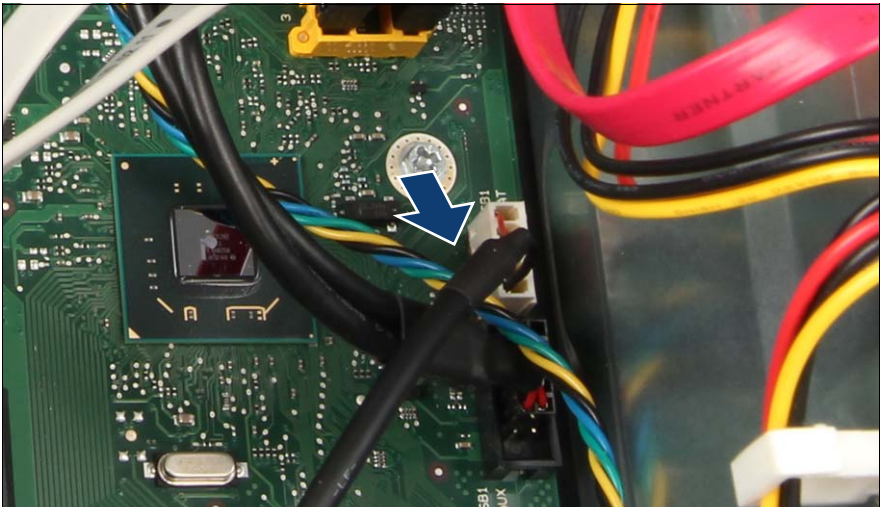
Figure 165: Connecting USB cable to system board

► Connect the USB cable to connector USB DAT on the system board.
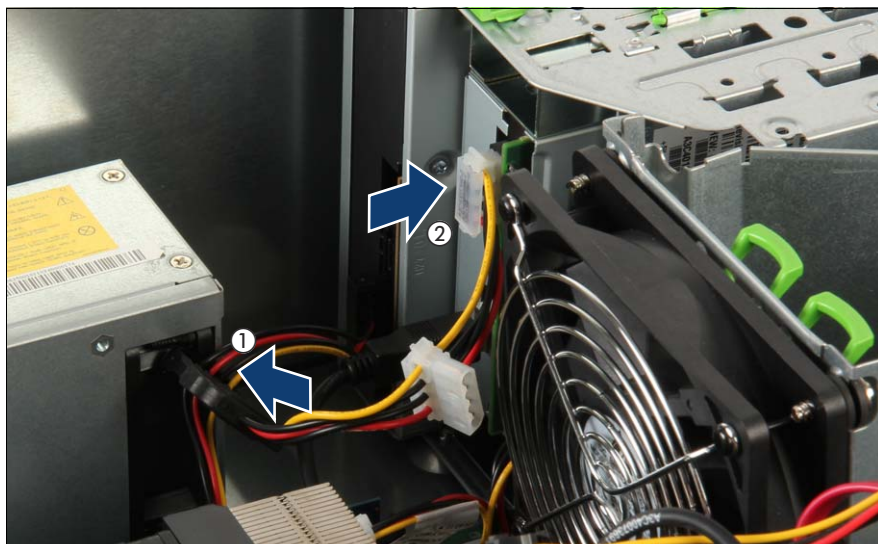
Figure 166: Connecting power cable to the backup drive

► Connect the power adapter cable to the power cable connector P7 (1). See figure 224 on page 330.

► Connect the free end of the power adapter cable to the backup drive (2).

12.2.7 Concluding steps

Perform the following procedures to complete the task:

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► Verify if your backup software solution requires additional configuration after installing, removing or replacing an accessible drive as described in section "Verifying and configuring the backup software solution" on page 77.

► If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

12.3   Removing accessible drives

🔧 **Upgrade and Repair Units (URU)**

🕐 **Average task duration: 10 minutes**

12.3.1   Required tools

● Preliminary and concluding steps: tool-less

● Removing accessible drives: tool-less

12.3.2   Preliminary steps

Before removing an accessible drive, perform the following steps:

► Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

► Remove all backup and optical disk media from backup and optical disk drives as described in section "Removing backup and optical disk media" on page 70.

► Verify if your backup software solution requires preparative configuration before starting the procedure as described in section "Verifying and configuring the backup software solution" on page 71.

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

12.3.3 Removing an optical disk drive (ODD)
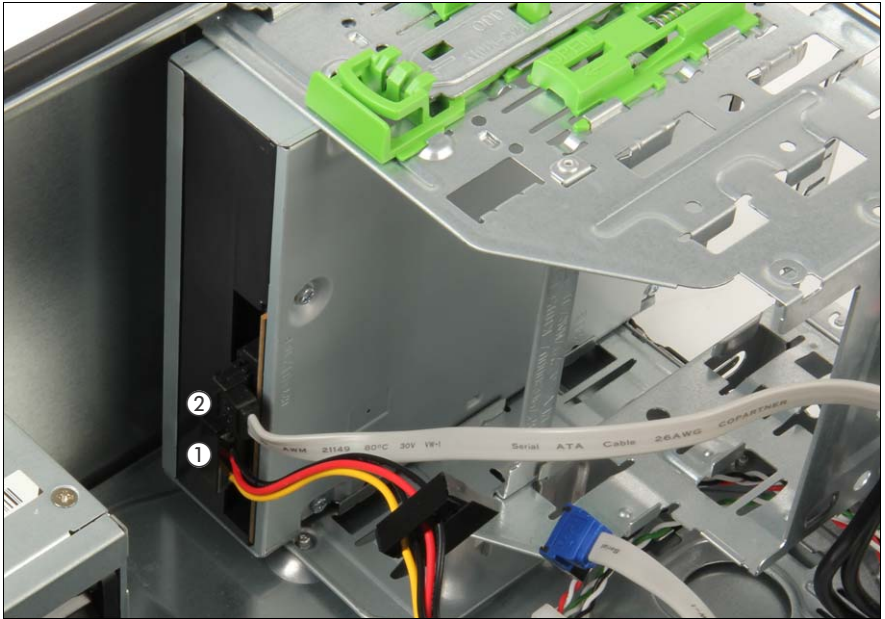
Figure 167: Connecting cables to the optical disk drive

▶ Disconnect all cables from the optical disk drive (see figure 224 on page 330).

    1   Power cable connector P8

    2   SATA cable

Figure 168: Removing the optical disk drive

► Press the locking latch in the direction of the arrow (1) and press out the optical disk drive from behind (2).

► Remove the optical disk drive out of its bay.

12.3.4 Removing a slimline optical disk drive (ODD)
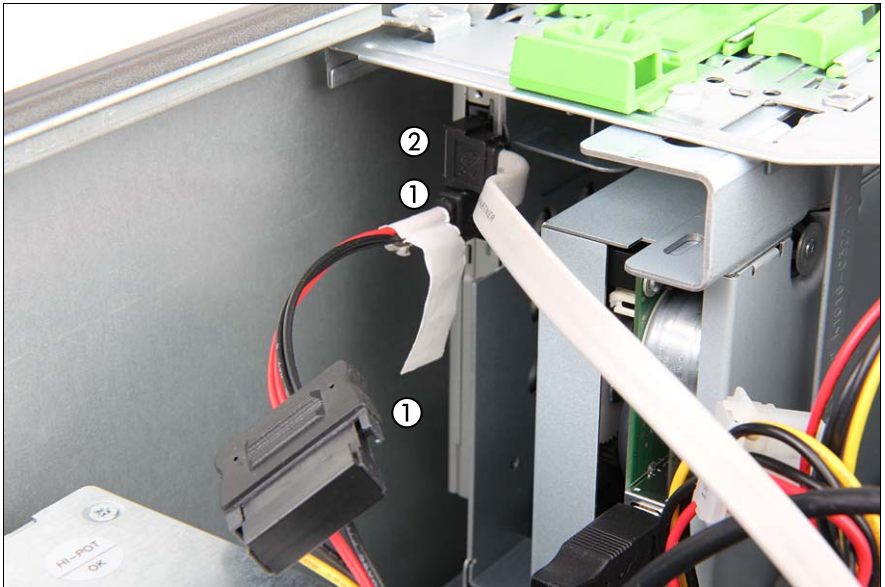
Figure 169: Disconnecting cables to the slimline drive

► Disconnect all cables from the slimline optical disk drive.

1   Power adapter cable (T26139-Y3990-V201) from the power cable connector P8 (see figure 224 on page 330) and the slimline drive.

2   SATA cable

Figure 170: Removing the slide-in unit

► Press the locking latch in the direction of the arrow (1) and press out the slide-in unit from behind (2).

► Pull the slide-in unit out of its bay.

12.3.5 Removing a backup drive
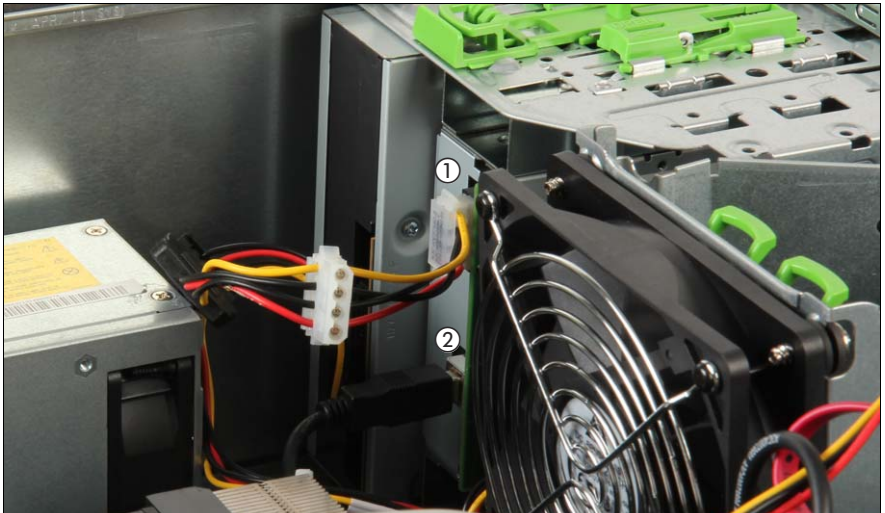
Figure 171: Disconnecting cables from the backup drive

▶ Disconnect all cables from the backup drive.

    1   Power adapter cable

    2   USB cable

Figure 172: Removing the backup drive

▶ Press the locking latch in the direction of the arrow (1) and press out the backup drive from behind (2).

▶ Remove the backup drive out of its bay.

12.3.6 Installing accessible drive dummy cover

⚠️ **CAUTION!**

Always replace the dummy cover into the unused drive bays to comply with applicable EMC regulations and satisfy cooling requirements.

12.3.6.1 Installing the dummy cover in bay 2

Figure 173: Installing the dummy cover in bay 2

► Grip the dummy cover in the holes and insert it in bay 2.

12.3.6.2   Installing the cover in bay 2

Figure 174: Installing the cover of bay 2

► Insert the cover in bay 2 and carefully push in until it locks in place.

12.3.7 Concluding steps

Perform the following procedures to complete the task:

► Secure the fixation plates on the chassis (see section "Installing accessible drives" on page 237).

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► Verify if your backup software solution requires additional configuration after installing, removing or replacing an accessible drive as described in section "Verifying and configuring the backup software solution" on page 77.

► If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

12.4   Replacing accessible drives

🔧   **Upgrade and Repair Units (URU)**

🕐   **Average task duration: 15 minutes**

12.4.1 Required tools

● Preliminary and concluding steps: tool-less

● Removing accessible drives: tool-less

12.4.2 Preliminary steps

Before replacing an accessible drive, perform the following steps:

► Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

► Remove all backup and optical disk media from backup and optical disk drives as described in section "Removing backup and optical disk media" on page 70.

► Verify if your backup software solution requires preparative configuration before starting the procedure as described in section "Verifying and configuring the backup software solution" on page 71.

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

12.4.3 Replacing an optical disk drive (ODD)

► Remove the defective optical disk drive as described in section "Removing an optical disk drive (ODD)" on page 259.

Figure 175: Removing the fixation plate

► Remove the fixation plate from of the left side of the optical disk drive.

Figure 176: Attaching the fixation plate to the optical disk drive

► Attach the fixation plate on the left side of the new optical disk drive.

► Install the new optical disk drive as described in section "Installing an optical disk drive (ODD)" on page 240.

12.4.4 Replacing a slimline optical disk drive (ODD)

► Remove the slide-in unit as described in section "Removing a slimline optical disk drive (ODD)" on page 261.

Figure 177: Removing the fixation plate from the slide-in unit

► Remove the fixation plate from the left side of the slide-in unit.
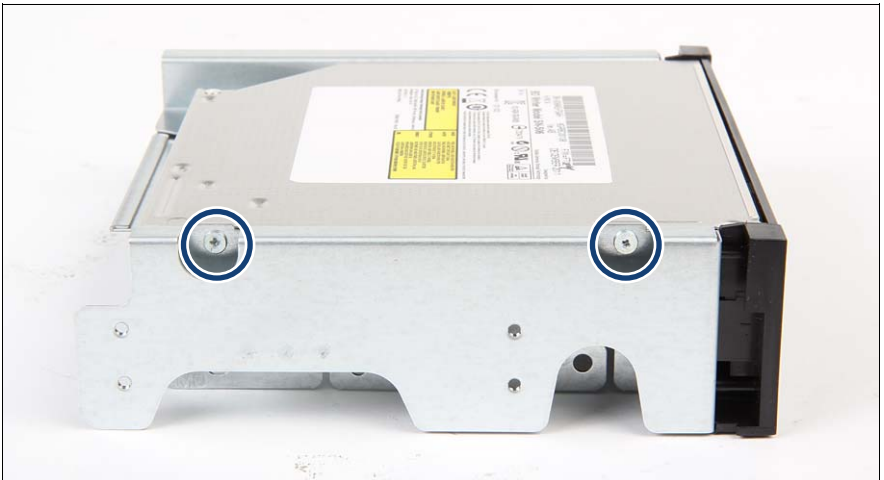
Figure 178: Removing the slimline ODD from the slide-in unit (A)

► Remove the two M2 x 2.5 mm screws from the left side of the slide-in unit.
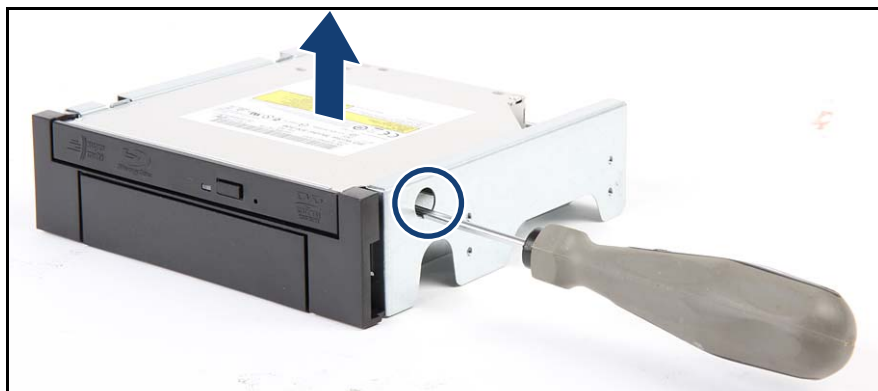
Figure 179: Removing the slimline ODD from the slide-in unit (B)

► Remove the M2 x 2.5 mm screw (C26192-Y10-C62) from the right side of the slide-in unit.

► Remove the slimline ODD drive from the slide-in unit.

► Install the new slimline ODD as described in section "Installing a slimline optical disk drive (ODD)" on page 245.

12.4.5 Replacing a backup drive

► Remove the defective backup drive as described in section "Removing a backup drive" on page 263.

Figure 180: Removing the fixation plate

► Remove the fixation plate from of the left side of the backup drive.

Figure 181: Attaching the fixation plate to the backup drive

► Attach the fixation plate on the left side of the new backup drive.

► Install the new backup drive as described in section "Installing a backup drive" on page 252.

12.4.6 Concluding steps

Perform the following procedures to complete the task:

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► Verify if your backup software solution requires additional configuration after installing, removing or replacing an accessible drive as described in section "Verifying and configuring the backup software solution" on page 77.

► If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

13 Front panel and external connectors

Safety notes

⚠ **CAUTION!**

● For further information, please refer to chapter "Important information" on page 29.

13.1 Replacing the front panel module

The On/Off button and the HDD activity LED are part of the front panel module.

🛠 **Field Replaceable Units (FRU)**

🕐 **Average task duration: 15 minutes**

13.1.1 Required tools

● Preliminary and concluding steps:
    – Phillips PH2 / (+) No. 2 screw driver
● Replacing the front panel module: tool-less

13.1.2   Preliminary steps

Before replacing the front panel cable, perform the following steps:

► Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

► Remove the HDD cage as described in section "Removing the HDD cage" on page 61.

► Remove all accessible drives as described in section "Removing accessible drives" on page 258.

► Remove the front cover as described in section "Removing the front cover" on page 51.

13.1.3 Removing the On/Off button
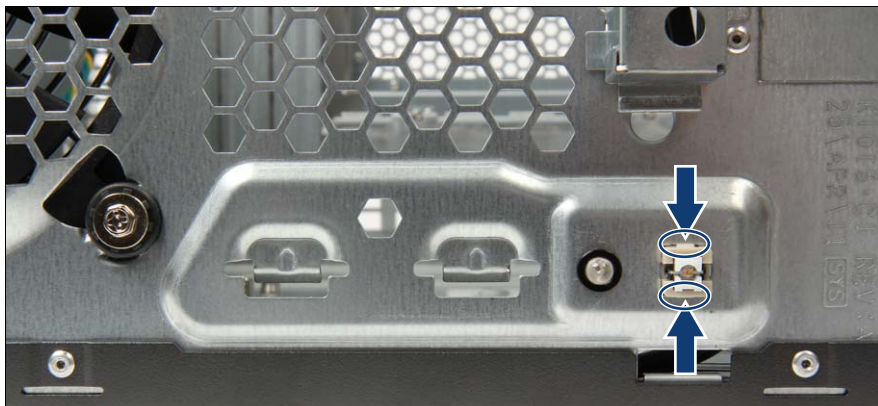
Figure 182: Removing the On/Off button

► Press the two retaining clips together and push the On/Off button backwards in the chassis.

> **i** Note the orientation of the On/Off button. If it is installed in the other direction, it does not work properly.

13.1.4 Removing the HDD activity LED
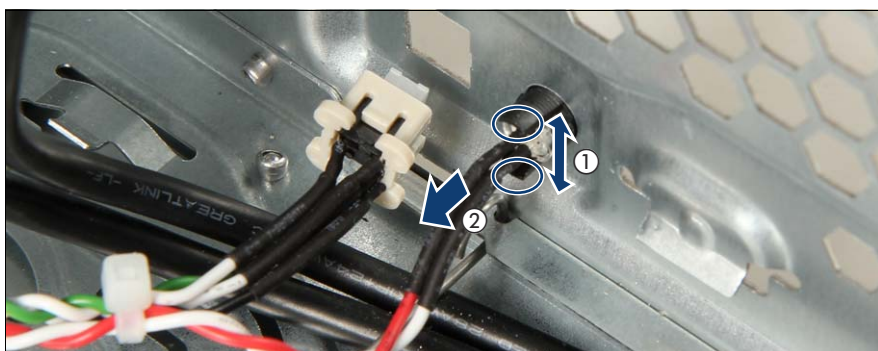
Figure 183: Removing the HDD activity LED

► Push apart the two latches (1) and pull the LED inwards the chassis (2).

Figure 184: On/Off button and LED removed

13.1.5 Removing the front panel cable
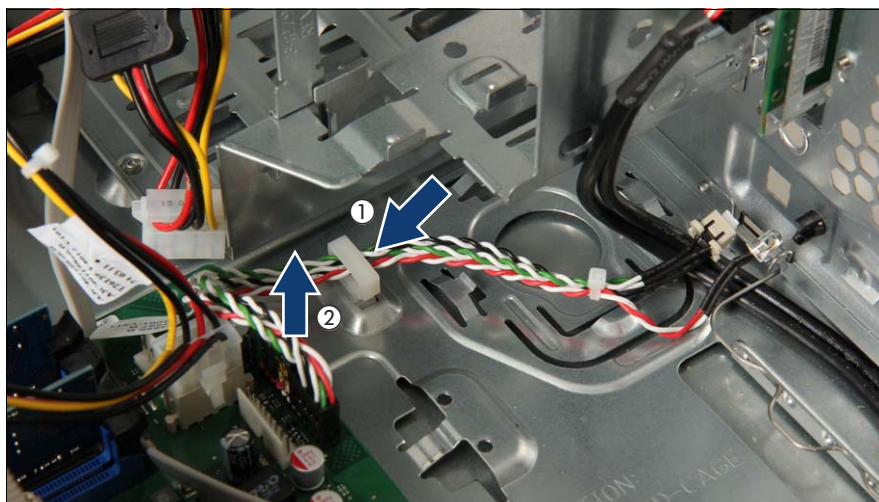
Figure 185: Disconnecting front panel cable

► Open the cable clamp and remove the cable (1).

► Disconnect the front panel cable from system board connector Front panel (2).

13.1.6 Installing the front panel cable
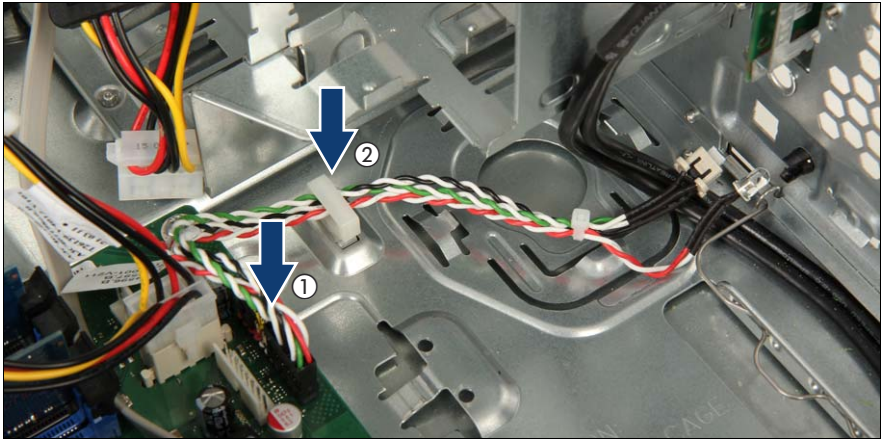
Figure 186: Connecting front panel cable

► Connect the front panel cable to system board connector Front panel (1).

► Route the cable as shown.

► Secure the cable with the cable clamp (2).

13.1.7 Installing the On/Off button and the HDD activity LED
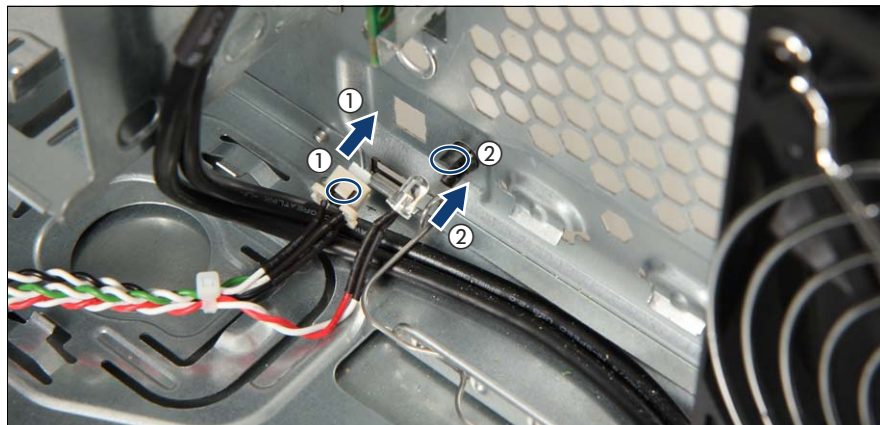
Figure 187: Installing the On/Off button

► Insert the On/Off button in the direction shown until it snaps in place (1).

> **i** Take care of the orientation of the On/Off button. If it is installed in the other direction, it does not work properly.

► Insert the HDD activity LED in the direction shown until it snaps in place (2).
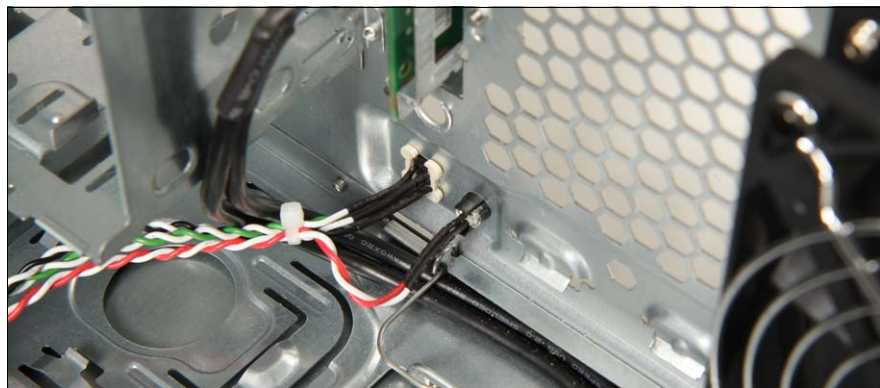
Figure 188: On/Off button and LED installed

13.1.8 Concluding steps

Perform the following procedures to complete the task:

► Insert the HDD cage as described in "Installing the HDD cage" on page 63.

► Install the front cover as described in section "Installing the front cover" on page 53.

► Install accessible drives as described in section "Installing accessible drives" on page 237.

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

13.2   Replacing the front USB module

Field Replaceable Units (FRU)

Average task duration: 15 minutes

13.2.1   Required tools

● Preliminary and concluding steps:
    – Phillips PH2 / (+) No. 2 screw driver
● Replacing the front panel module:
    – Phillips PH2 / (+) No. 2 screw driver

13.2.2   Preliminary steps

Before replacing the front USB module, perform the following steps:

► Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Bring the server to its horizontal position.

► Open the side cover as described in section "Removing the side cover" on page 45.

► Remove all accessible drives as described in section "Removing accessible drives" on page 258.

► Remove the front cover as described in section "Removing the front cover" on page 51.

► Remove the HDD cage as described in section "Removing the HDD cage" on page 61.

13.2.3   Disconnecting the front USB cable
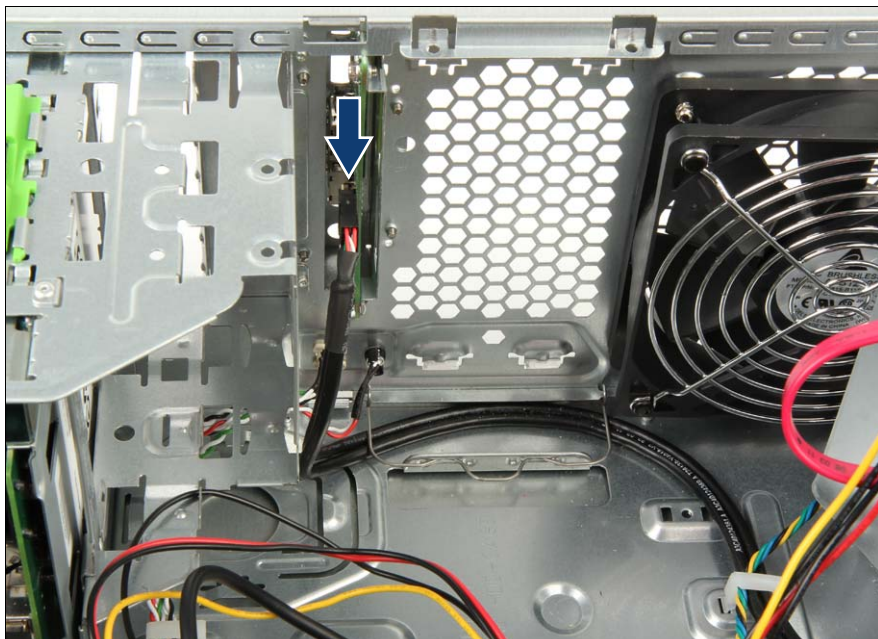
Figure 189: Disconnecting the USB front cable

► Disconnect the front USB cable from the front USB module.

13.2.4 Removing the defective front USB module
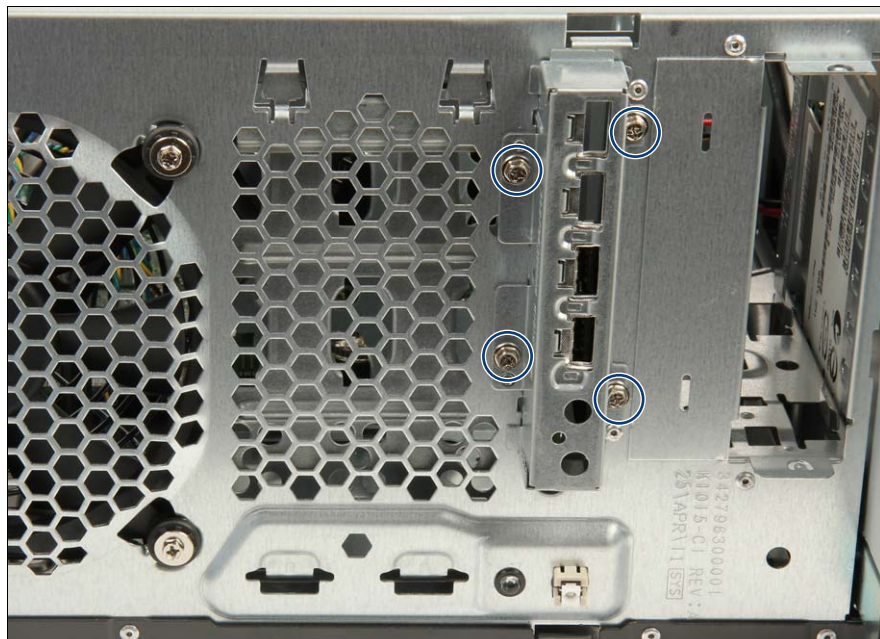
Figure 190: Removing the front USB module

► Remove the four screws of the front USB module (see circles).

► Remove the front USB module.

13.2.5 Removing the defective front USB board
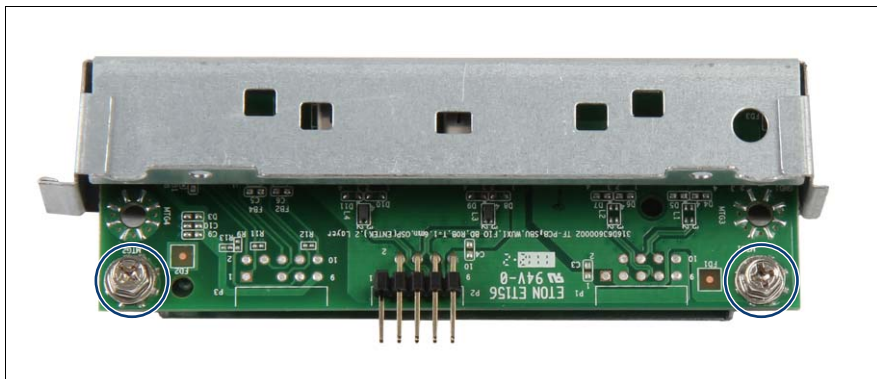
Figure 191: Removing the front USB board from the carrier (A)

► Remove the two screws from the front USB board (see circles).
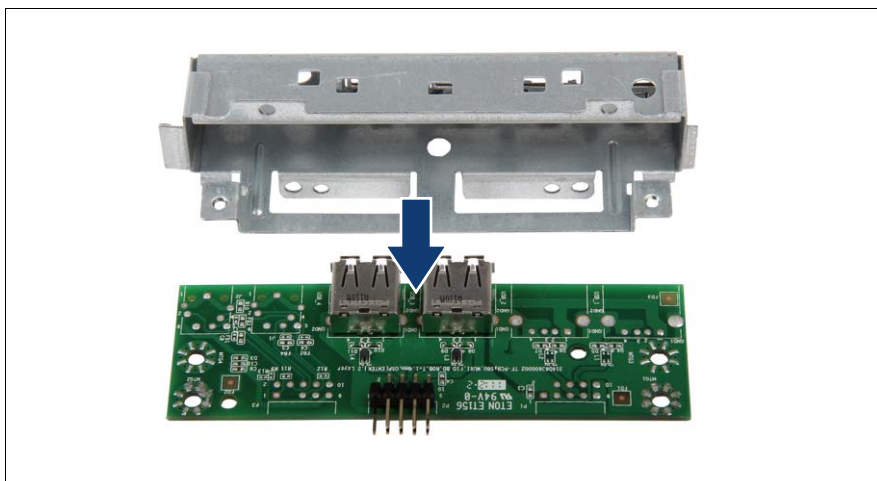
Figure 192: Removing the front USB board from the carrier (B)

► Pull the defective front USB board out of the carrier.

13.2.6   Installing the new front USB board
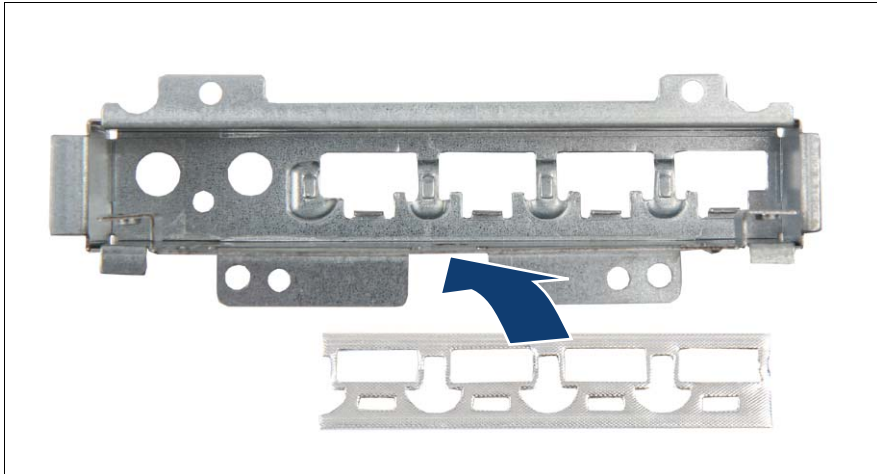
Figure 193: Installing the gasket in the carrier

▶   If applicable, insert the gasket in the carrier.

> **i**   Take care that the gasket fits with the recesses of the carrier.

Figure 194: Gasket installed in the carrier
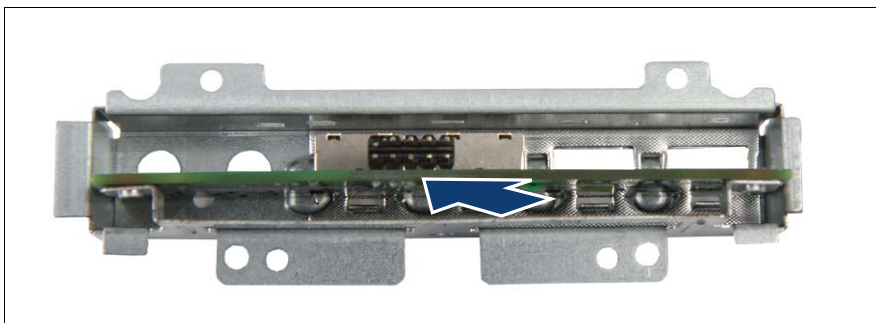
Figure 195: Installing the front USB board into the carrier (A)

► Push the new front USB board in the carrier.
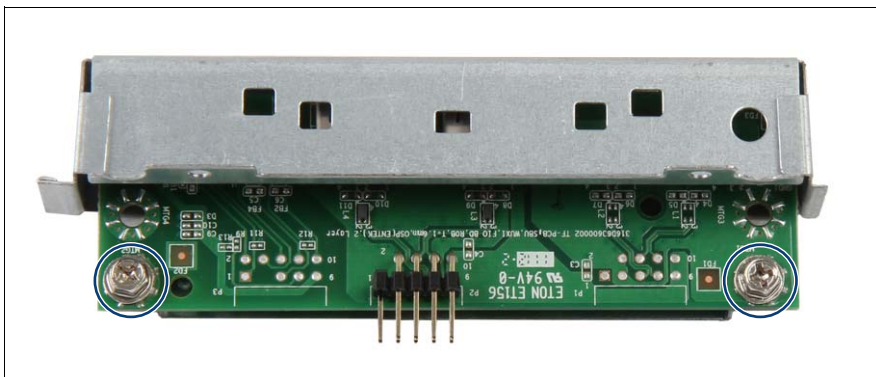
Figure 196: Installing the front USB board into the carrier (B)

► Secure the new front USB board with two screws (see circles).

13.2.7   Installing the new front USB module

Figure 197: Installing the front USB module

► Place the new front USB module in the direction shown and secure it with four screws (see circles).

13.2.8 Installing the front USB cable
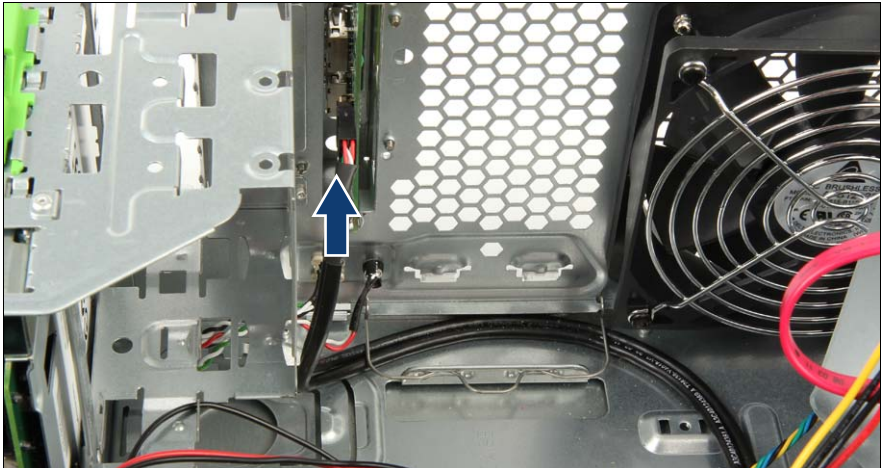
Figure 198: Connecting the USB front cable

► Connect the front USB cable to the front USB module.

13.2.9 Concluding steps

Perform the following procedures to complete the task:

► Insert the HDD cage as described in "Installing the HDD cage" on page 63.

► Close the front cover as described in section "Installing the front cover" on page 53.

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

14 System board and components

Safety notes

⚠️ **CAUTION!**

- Devices and components inside the server remain hot after shutdown. After shutting down the server, wait for hot components to cool down before installing or removing internal options.

- Circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. Always discharge static build-up (e.g. by touching a grounded object) before handling electrostatic-sensitive devices (ESDs).

- Do not touch the circuitry on boards or soldered parts. Hold circuit boards by their metallic areas or edges.

- For further information, please refer to chapter "Important information" on page 29.

14.1 Replacing the CMOS battery

🔧 **Upgrade and Repair Units (URU)**

🕐 **Average task duration: 15 minutes**

CMOS memory (volatile BIOS memory) and the real-time clock are powered by a lithium coin cell (CMOS battery). This cell lasts up to ten years, depending on ambient temperature and use.

If the CMOS battery is depleted or falls below minimum voltage levels, it need to be replaced immediately.

Safety notes

⚠️ **CAUTION!**

- The CMOS battery must be replaced with an identical battery or with a battery type recommended by the manufacturer.

- Keep lithium batteries away from children.

- Do not throw batteries into the trash can. Lithium batteries must be disposed of in accordance with local regulations concerning special waste.

- For further safety information, please refer to section "Environmental protection" in the PRIMERGY TX100 S3 Operating Manual.

- **Ensure to insert the CMOS battery the with the positive pole facing up!**

14.1.1 Required tools

- Preliminary and concluding steps:

  – Phillips PH2 / (+) No. 2 screw driver

- Main steps: tool-less; recommended: tooth pick

14.1.2 Preliminary steps

Before replacing the CMOS battery, perform the following steps:

▶ Shut down the server as described in section "Shutting down the server" on page 42.

▶ Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

▶ Bring the server to its horizontal position.

▶ Open the side cover as described in section "Removing the side cover" on page 45.

▶ Remove the HDD cage as described in section "Removing the HDD cage" on page 61.

14.1.3 Replacing the defective CMOS battery
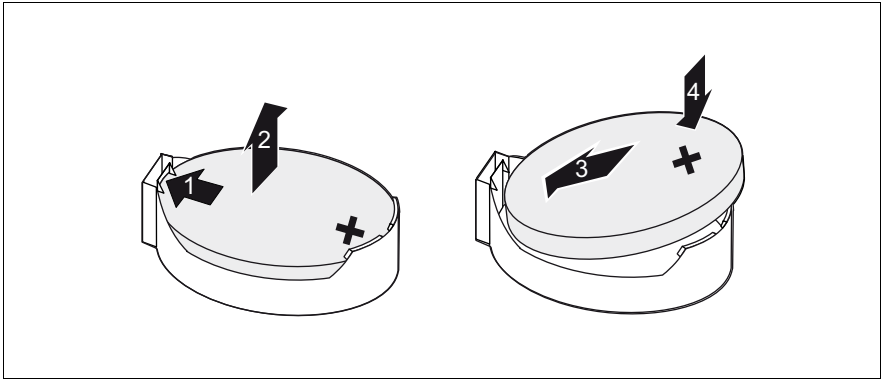
Figure 199: Replacing the CMOS battery

► Press the locking spring into direction of the arrow (1), so that the lithium battery jumps out of its socket.

► Remove the battery (2).

⚠ **CAUTION!**

Sharp tools such as screw drivers might damage system board components in case of slipping.

If the battery cannot be ejected without the help of a tool, it is recommended to use a tooth pick.

► Insert a new lithium battery of the same type into the socket (3) and (4).

14.1.4 Concluding steps

Perform the following procedures to complete the task:

► Dispose of the CMOS battery in accordance with local regulations concerning special waste.

► Install the HDD cage as described in section "Installing the HDD cage" on page 63.

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► Verify and update time settings as described in section "Verifying the system time settings" on page 78.

► If applicable, restore the BIOS settings manually.

14.2 Trusted Platform Module (TPM)

14.2.1 Installing the TPM

Field Replaceable Units (FRU)

Average hardware task duration: 5 minutes

Average software task duration: 5 minutes

14.2.1.1 Required tools

● Preliminary and concluding steps: tool-less

● Installing the TPM:

– Bit screw driver
– TPM bit insert (*)

(*) For the Japanese market:
– TPM module fixing tool (S26361-F3552-L909)

14.2.1.2 Preliminary steps

Before installing the TPM, perform the following steps:

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Open the side cover as described in section "Removing the side cover" on page 45.

14.2.1.3   Installing the TPM
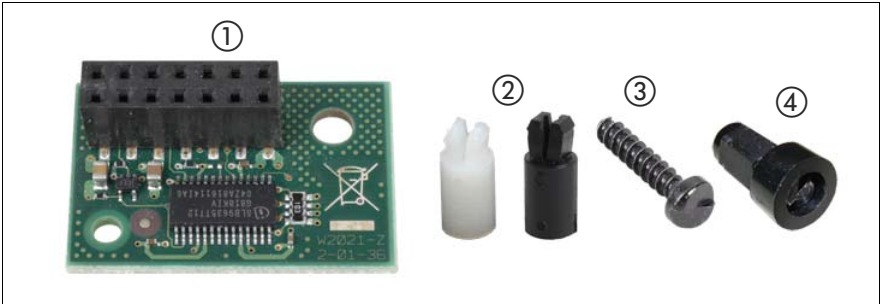
Figure 200: TPM installation kit

1	TPM (Trusted Platform Module)	3	Special screw for TPM
2	TPM spacer **i** The black TPM spacer is not used in this server.	4	TPM bit insert for TPM special screw
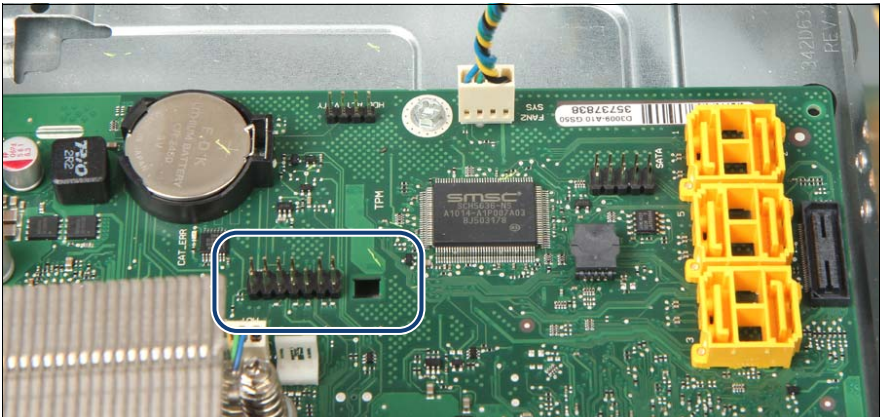
Figure 201: TPM mounting location
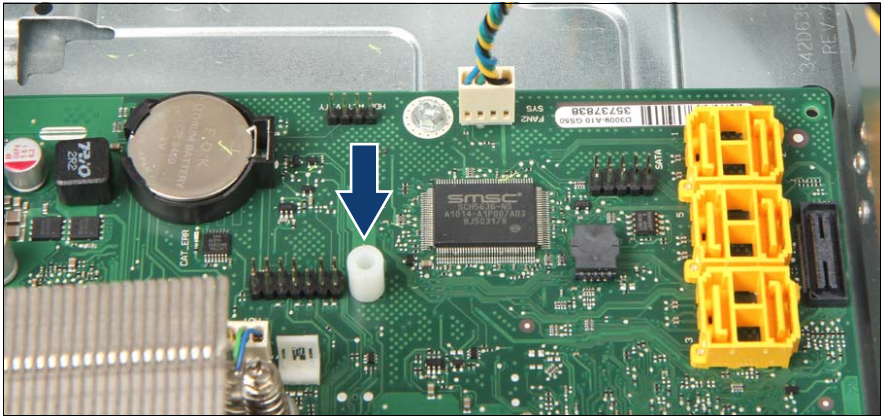
Figure 202: Installing the TPM spacer

▶ Snap the TPM spacer into the cut-out in the system board.

Figure 203: TPM bit insert

▶ Attach the TPM bit insert or TPM module fixing tool (Japanese market) to a bit screw driver.
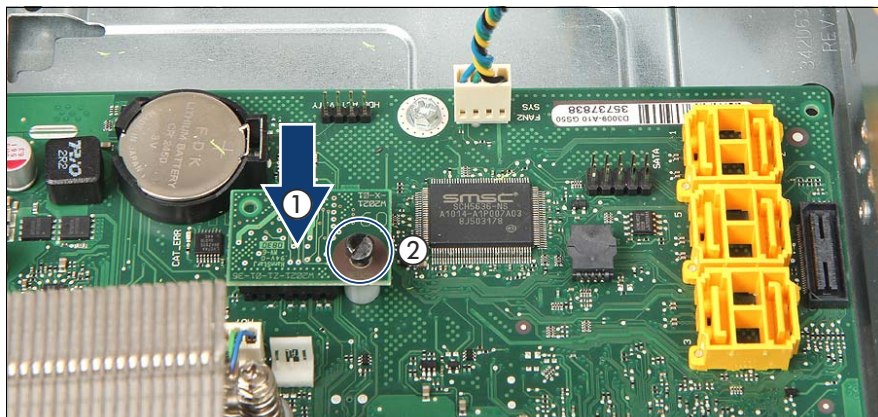
Figure 204: Installing the TPM

▶ Connect the TPM to the system board (1).

▶ Fasten the TPM with the special screw for the TPM using the TPM bit insert or TPM module fixing tool (Japanese market) (2).

⚠ **CAUTION!**
Do not fasten the screw too firmly. Stop it by extent where the head of the screw lightly touches the TPM (torque value of 0.6 Nm).

14.2.1.4 Concluding steps

Perform the following procedures to complete the task:

▶ Close the side cover as described in section "Installing the side cover" on page 58.

▶ Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

▶ Enable TPM in the system board BIOS. Proceed as follows:

  ▶ Switch on or restart your server.

  ▶ As soon as the startup screen appears, press the [F2] function key to enter the BIOS.

  ▶ Select the *Advanced* menu.

  ▶ Select the *Trusted Computing* submenu.

► Set the *TPM Support* and *TPM State* settings to *Enabled*.

► Under *Pending TPM operation*, select the desired TPM operation mode.

► Save your changes and exit the BIOS.

> **i** For detailed information on how to access the BIOS and modify settings, refer to the "System Board D3009 BIOS Setup Utility" reference manual available online at *http://manuals.ts.fujitsu.com* (EMEA market) or *http://jp.fujitsu.com/platform/server/primergy/manual/* (Japanese market) or from the ServerView Suite DVD 2 supplied with your PRIMERGY server.

14.2.2 Removing the TPM

Field Replaceable Units (FRU)

Average task duration: 30 minutes

⚠ **CAUTION!**

Advise your contact persons that they must provide you with TPM backup copies. For security reasons, the TPM must be restored/re-saved by the customer. After installing a new system board, the TPM must be enabled. You may not clear the TPM data.

If the contact persons **DO NOT** have a backup copy available, inform them that replacing the TPM will cause to lose all data.

14.2.2.1   Required tools

● Preliminary and concluding steps: Phillips PH2 / (+) No. 2 screw driver

● Removing the system board:

    – Phillips PH2 / (+) No. 2 screw driver

● Removing the TPM:

    – Thin slotted screw driver (2 x 0.4 mm) [*]

    [*] For the Japanese market:
    – Dedicated TPM screw driver (CWZ8291A)

14.2.2.2   Preliminary steps

Before removing the TPM, perform the following steps:

▶ Before removing the TPM, it is necessary to remove BitLocker-protection from the computer and to decrypt the volume.

Ask the system administrator to turn off BitLocker-protection using the BitLocker setup wizard available either from the Control Panel or Windows Explorer:

    ▶ Open Bitlocker Drive Encryption by clicking the *Start* button, clicking *Control Panel*, clicking *Security*, and then clicking *Bitlocker Drive Encryption*.

    | **i** | Administrator permission required If you are prompted for an administrator password or confirmation, type the password or provide confirmation. |

    ▶ To turn off BitLocker and decrypt the volume, click *Turn Off BitLocker*, and then click *Decrypt the volume*.

    | **i** | Decrypting the volume may be time-consuming. By decrypting the volume, all of the information stored on that computer is decrypted. |

    For further information on how to disable BitLocker drive encryption, please refer to the Microsoft Knowledge Base.

    Fujitsu service partners will find additional information (also available in Japanese) on the Fujitsu Extranet web pages.

▶ Disable TPM in the system board BIOS. Proceed as follows:

  ▶ Switch on or restart your server.

  ▶ As soon as the startup screen appears, press the F2 function key to enter the BIOS.

  ▶ Select the *Advanced* menu.

  ▶ Select the *Trusted Computing* submenu.

  ▶ Set the *TPM Support* and *TPM State* settings to *Disabled*.

  ▶ Save your changes and exit the BIOS.

  i For detailed information on how to access the BIOS and modify settings, refer to the "System Board D3009 BIOS Setup Utility" reference manual available online at *http://manuals.ts.fujitsu.com* (EMEA market) or *http://jp.fujitsu.com/platform/server/primergy/manual/* (Japanese market) or from the ServerView Suite DVD 2 supplied with your PRIMERGY server.

▶ Shut down the server as described in section "Shutting down the server" on page 42.

▶ Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

▶ Open the side cover as described in section "Removing the side cover" on page 45.

▶ Remove the HDD cage as described in section "Removing the HDD cage" on page 61.

14.2.2.3 Removing the TPM

▶ Remove the system board as described in section "Removing the system board" on page 308.

▶ Lay the system board on a soft, antistatic surface with its component side facing down.
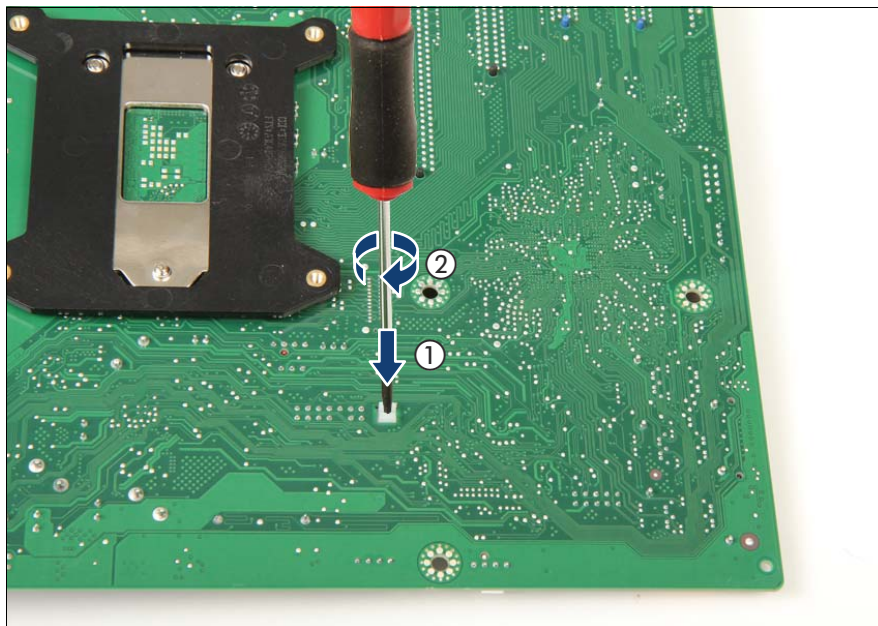
Figure 205: Removing the TPM

► Locate the slotted lower end of the TPM screw (1).

► Carefully loosen the TPM screw using a thin slotted screw driver (e.g. watchmaker's screw driver) or the dedicated TPM screw driver (Japanese market) (2).

⚠ **CAUTION!**

Ensure to turn the screw **clockwise** in order to remove it!

Slowly and carefully increase the pressure on the screw until it begins to turn. The effort when loosing the screw should be as low as possible.

Otherwise the thin metal bar may break, rendering it impossible to loosen the screw.

► Remove the TPM screw.

► Remove the defective TPM on the upper side of the system board.
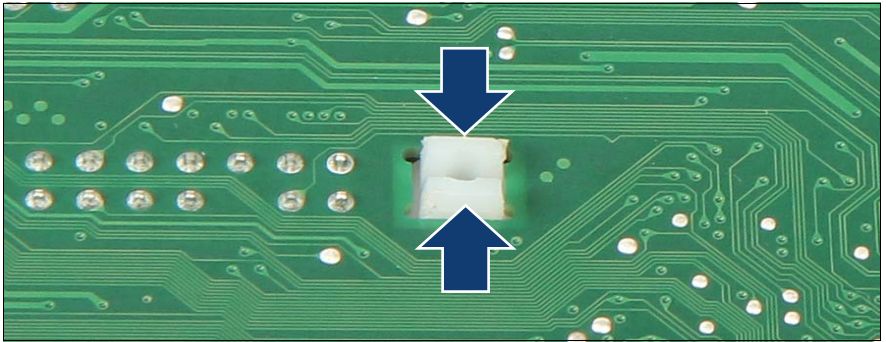
Figure 206: Removing the TPM spacer

► Using a small pair of combination pliers, press together the hooks on the TPM spacer and remove it from the system board.

> **i** If the TPM is to be replaced, the TPM spacer may remain on the system board.

► Install the system board as described in section "Installing the system board" on page 312.

14.2.2.4 Concluding steps

Perform the following procedures to complete the task:

► Install the HDD cage as described in section "Installing the HDD cage" on page 63.

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

14.2.3 Replacing the TPM

Field Replaceable Units (FRU)

Average task duration: 40 minutes

CAUTION!
Advise your contact persons that they must provide you with TPM backup copies. For security reasons, the TPM must be restored/re-saved by the customer. After installing a new system board, the TPM must be enabled. You may not clear the TPM data.

If the contact persons **DO NOT** have a backup copy available, inform them that replacing the TPM will cause to lose all data.

14.2.3.1 Required tools

● Preliminary and concluding steps:

– Phillips PH2 / (+) No. 2 screw driver

● Removing the system board:

– Phillips PH2 / (+) No. 2 screw driver

● Replacing the TPM:

– Bit screw driver
– TPM bit insert [*]
– thin slotted screw driver (2 x 0.4 mm) [*]

[*] For the Japanese market:

– Dedicated TPM screw driver (CWZ8291A)
– TPM module fixing tool (S26361-F3552-L909)

14.2.3.2 Preliminary steps

Before replacing the TPM, perform the following steps:

► Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Open the side cover as described in section "Removing the side cover" on page 45.

► Remove the HDD cage as described in section "Removing the HDD cage" on page 61.

14.2.3.3 Removing the TPM

► Remove the TPM as described in section "Removing the TPM" on page 299.

► Leave the TPM spacer on the system board when removing the defective TPM.

14.2.3.4 Re-installing the TPM

► The TPM spacer is already present on the system board.

► Install the system board as described in section "Installing the system board" on page 312

► Re-install the new TPM as described in section "Installing the TPM" on page 295.

14.2.3.5 Concluding steps

Perform the following procedures to complete the task:

► Install the HDD cage as described in section "Installing the HDD cage" on page 63

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

14.3   Replacing the system board

Field Replaceable Units (FRU)

Average hardware task duration: 50 minutes

Average software task duration: 10 minutes

Note on network settings recovery

The following notes are required for TX100 S3p (PYT10Pxxx for Japanese market).

> **i** When replacing network controllers or the system board, network configuration settings in the operating system will be lost and replaced by default values. This applies to all static IP address and LAN teaming configurations.
>
> Ensure to note down your current network settings before replacing a network controller or the system board.

Note on TPM

> **i** The system board can be equipped with an optional TPM (Trusted Platform Module). This module enables third party programs to store key information (e. g. drive encryption using Windows Bitlocker Drive Encryption).
>
> If the customer is using TPM functionality, the TPM has to be removed from the defective system board and connected to the new system board. For a detailed description, please refer to section "Replacing the TPM" on page 304.

The TPM is activated in the system BIOS.

⚠ **CAUTION!**

– Before replacing the system board, ask the customer whether TPM functionality is used.

– If the customer is using TPM functionality, remove the TPM from the old system board and install it on the new system board.

Advise your contact persons that they must provide you with TPM backup copies. For security reasons, the TPM must be restored / re-saved by the customer. After installing a new system board the TPM must be enabled. You may not clear the TPM data.

If the contact persons **DO NOT** have a backup copy available, inform them that replacing the TPM will cause to lose all data.

14.3.1 Required tools

● Preliminary and concluding steps:

– Phillips PH2 / (+) No. 2 screw driver

● Replacing the system board:

– Phillips PH2 / (+) No. 2 screw driver

● Replacing the system board:

– Magnifying glass for inspecting socket cover springs (recommended)

If a TPM is installed:

– Bit screw driver
– TPM bit insert [*]
– thin slotted screw driver (2 x 0.4 mm) [*]

[*] For the Japanese market:

– Dedicated TPM screw driver (CWZ8291A)
– TPM module fixing tool (S26361-F3552-L909)

14.3.2 Preliminary steps

Before replacing the system board, perform the following steps:

▶ If applicable, backup the BIOS settings manually.

▶ Disable BitLocker functionality as described in section "Disabling BitLocker functionality" on page 69.

▶ Shut down the server as described in section "Shutting down the server" on page 42.

▶ Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

▶ Disconnect all external cables.

▶ Bring the server to its horizontal position.

▶ Open the side cover as described in section "Removing the side cover" on page 45.

▶ Remove the HDD cage as described in section "Removing the HDD cage" on page 61.

14.3.3 Removing the system board

▶ Remove all cables from the system board.

> **i** When disconnecting the SATA cables push the edge of the system board with the finger to avoid bending up the system board (see figure 56 on page 120).

▶ Remove the following components from the system board as shown in the related sections:

– Heat sink: see section "Removing the processor heat sink" on page 213

> **i** Leave the processor on the defective board for now.

– Memory modules: refer to section "Removing memory modules" on page 207

> **i** Ensure to take note of the memory modules' mounting positions for reassembly.

– Expansion cards: refer to section

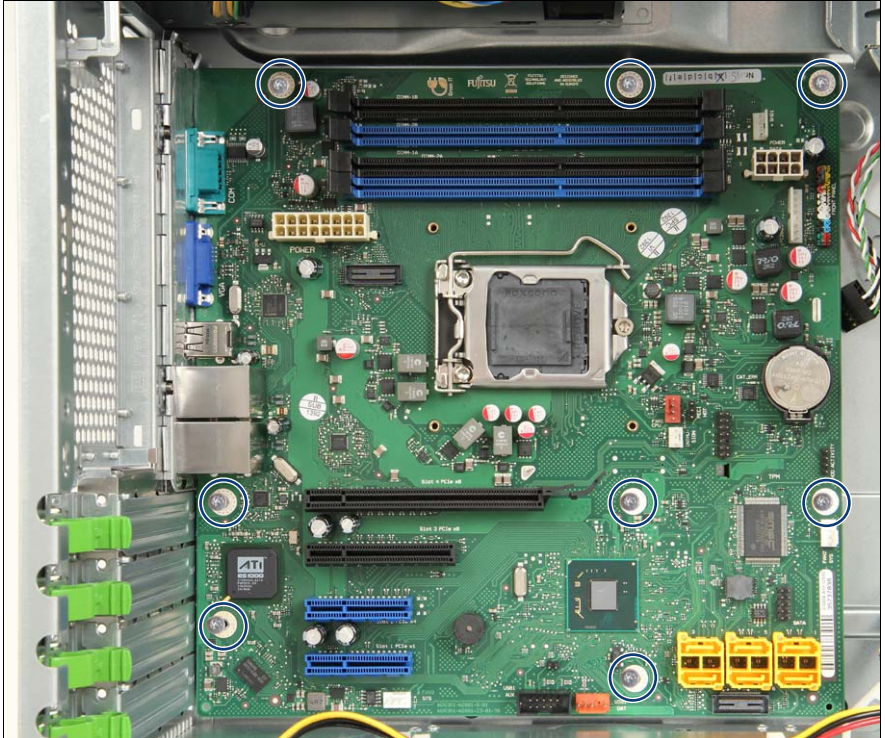> **i** Ensure to take note of the controllers' mounting positions and cable connections for reassembly.

Figure 207: Detaching the system board (A)

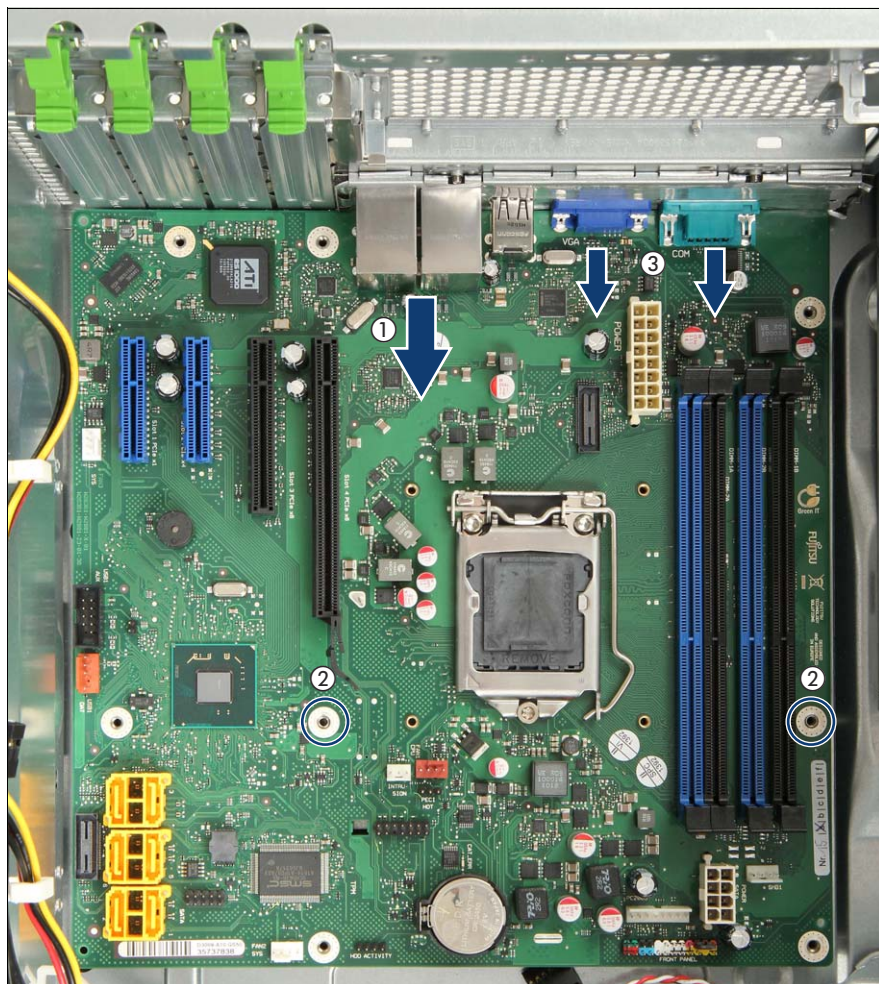► Remove eight screws from the system board (see circles).

Figure 208: Detaching the system board (B)

► Slightly lift up the system board by the memory module ejectors and a PCI slot (1) in order to detach it from the centering bolts (2).

► Carefully shift the system board towards the server front until the plug shells disengage from the cut-outs in the connector panel (3).
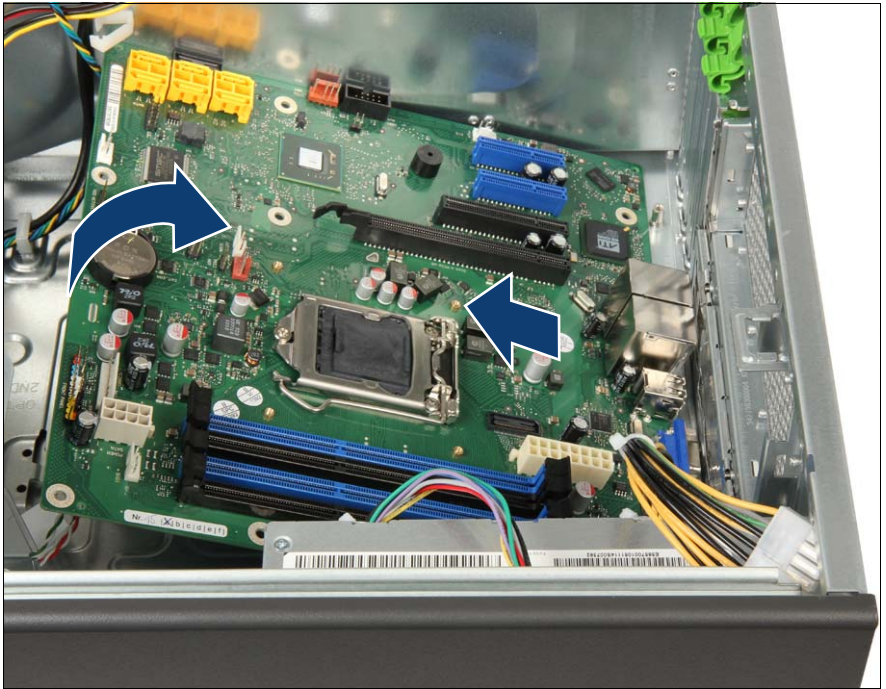
Figure 209: Removing the system board

► Hold the defective system board by the memory module ejectors and a PCI slot and at a slight angle lift it out of the chassis.

► If applicable, remove the TPM as described in section "Removing the TPM" on page 301.

14.3.4 Installing the system board

14.3.4.1 Mounting the system board

Figure 210: Installing the system board (A)

▶ Hold the new system board by the memory module ejectors and a PCI slot.

⚠ **CAUTION!**

 – Do not lift or handle the system board by any of its heat sinks!

 – Ensure not to damage the EMI springs to comply with applicable EMC regulations and satisfy cooling requirements and fire protection measures.

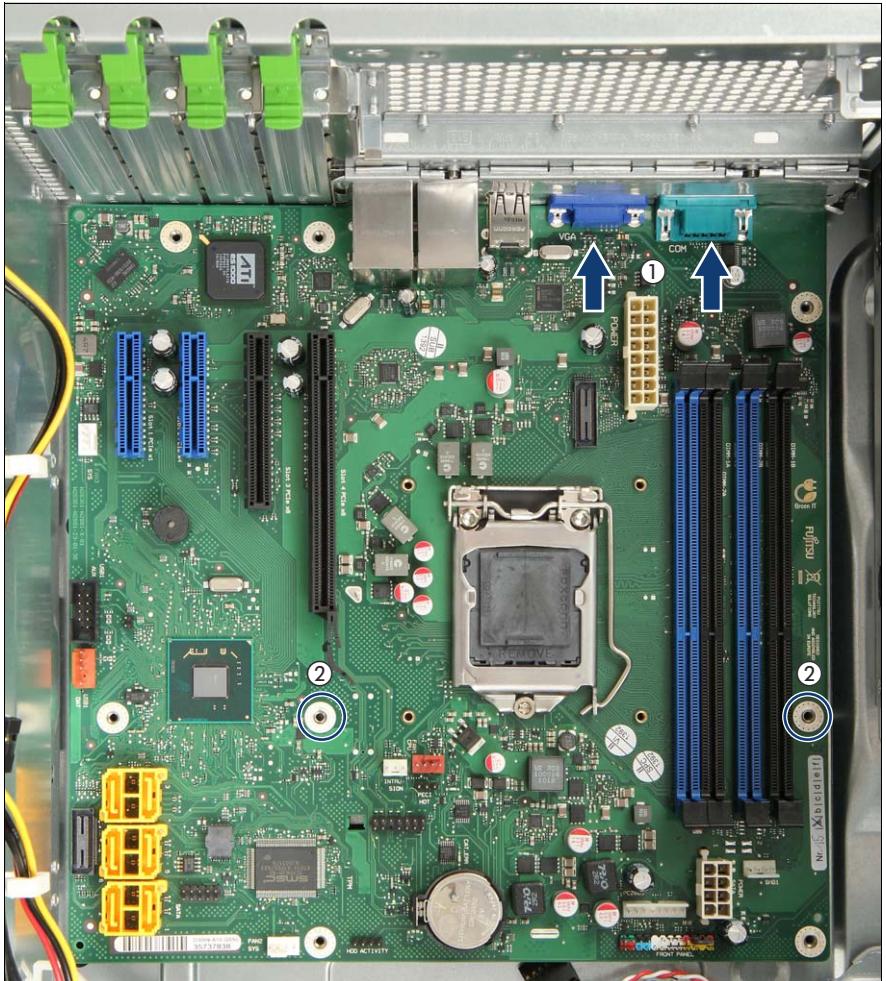▶ At a slight angle, lower the system board into the chassis.

Figure 211: Installing the system board (B)

► Carefully shift the system board towards the server rear until the plug shells engage with the cut-outs in the connector panel (1).

► Lower the system board onto the centering bolts (2).
Ensure that the system board is properly seated on both centering bolts.
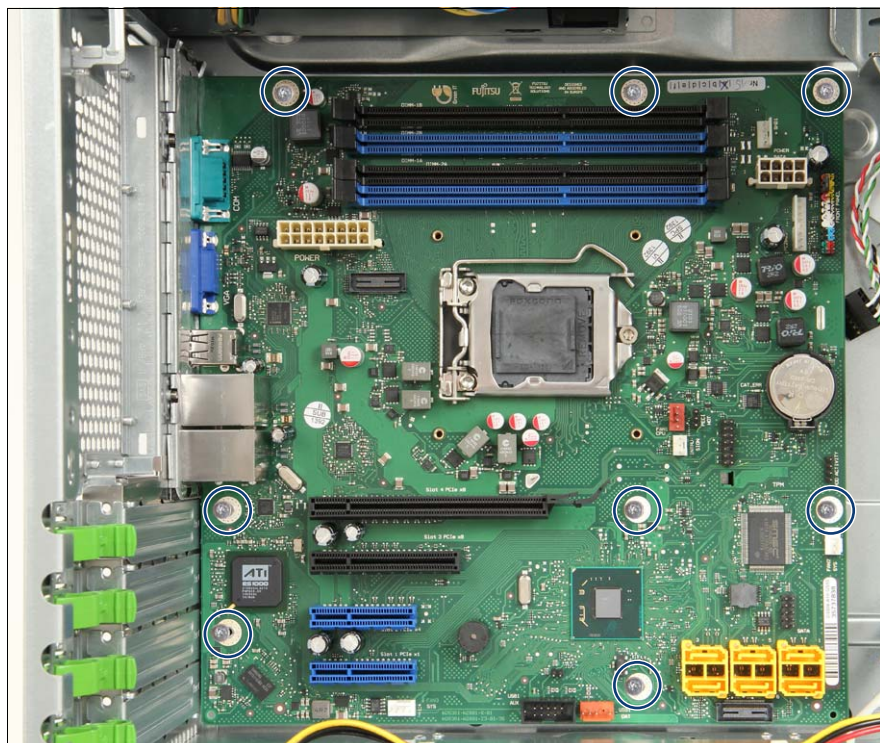
Figure 212: Securing the system board

► Secure the system board with eight screws (M3 x 4.5 mm, C26192-Y10-C67) (see circles).

> **i** Screw torque: 0.6 Nm (not applicable for the Japanese market)
> Tighten the screws in a cross diagonal pattern.

14.3.4.2   Swapping the processor

Figure 213: Unlatching the socket lever (new system board)

► Unlatch the socket lever on the new system board by pushing it down and away from the socket (1).

► Fold back the socket release lever to disengage the load plate (2).

Figure 214: Opening the load plate (new system board)

► Rotate the socket lever to lift the load plate away from the socket.
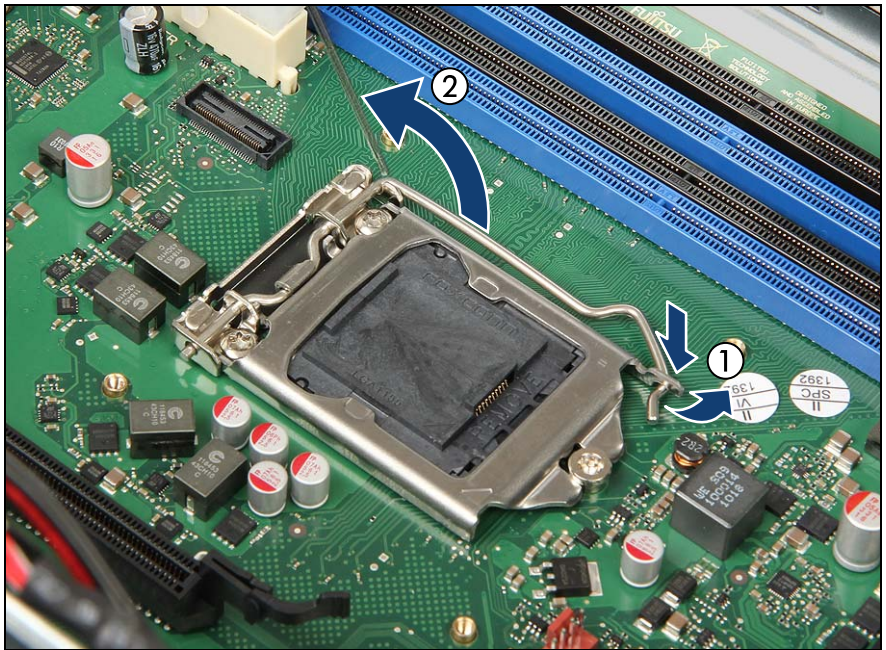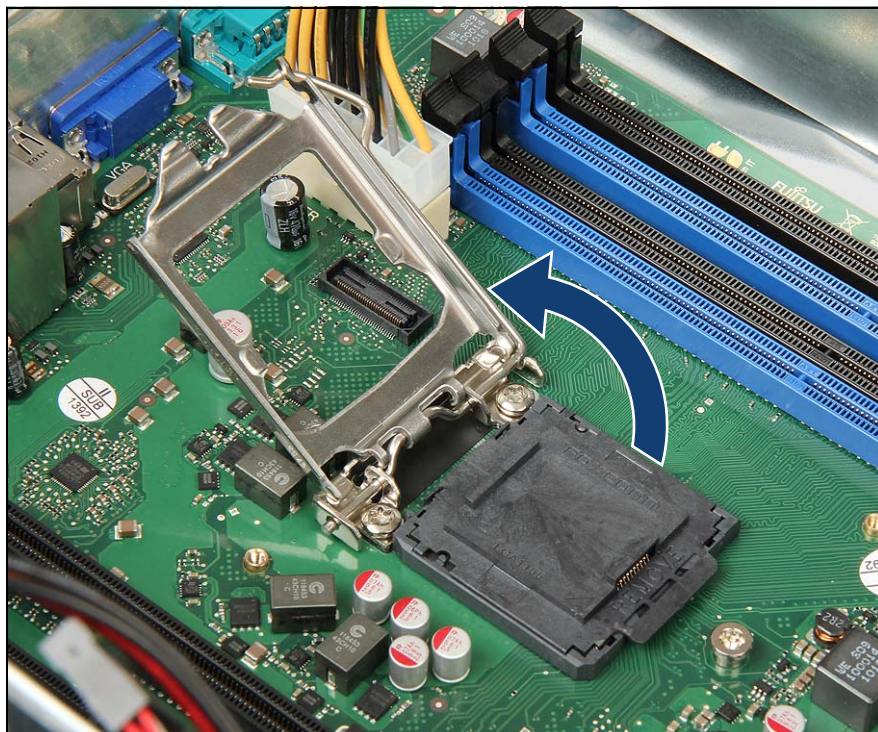
► Make sure that the load plate is in the fully open position.
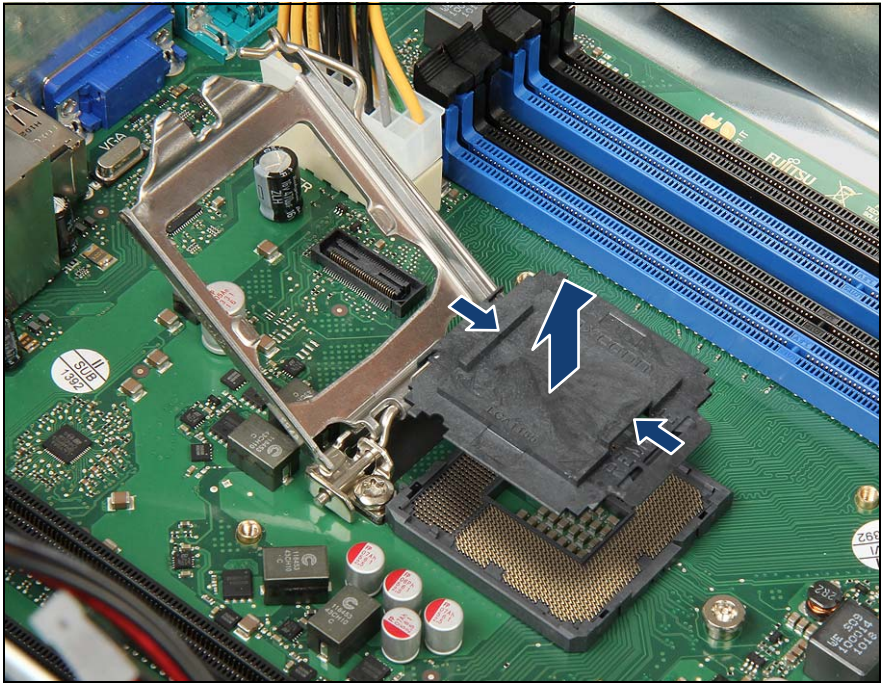
Figure 215: Removing the protective socket cover (new system board)

► Place your thumb against the front edge of the protective socket cover and rest your index finger on the rear grip.

⚠ **CAUTION!**

Be careful not to touch or bend the pins on the processor socket!

ℹ Save the socket cover for future use. Always replace the socket cover if you remove the processor from the socket.

► Use a magnifying glass (recommended) to inspect the socket spring contacts for damages from different angles. Do not use the spare system board if any irregularities are visible. Possible damages:

– Contact spring is bent backwards upon itself
– Contact spring tip position is shifted or out of alignment

⚠ **CAUTION!**

Never not try to fix bent contact springs. Doing so may result in loss of electrical performance and reliability.

▶ Carefully remove the processor from its socket on the defective system board as described in section "Removing the processor" on page 217.

▶ Install the processor on the new system board as described in section "Installing the processor" on page 220.
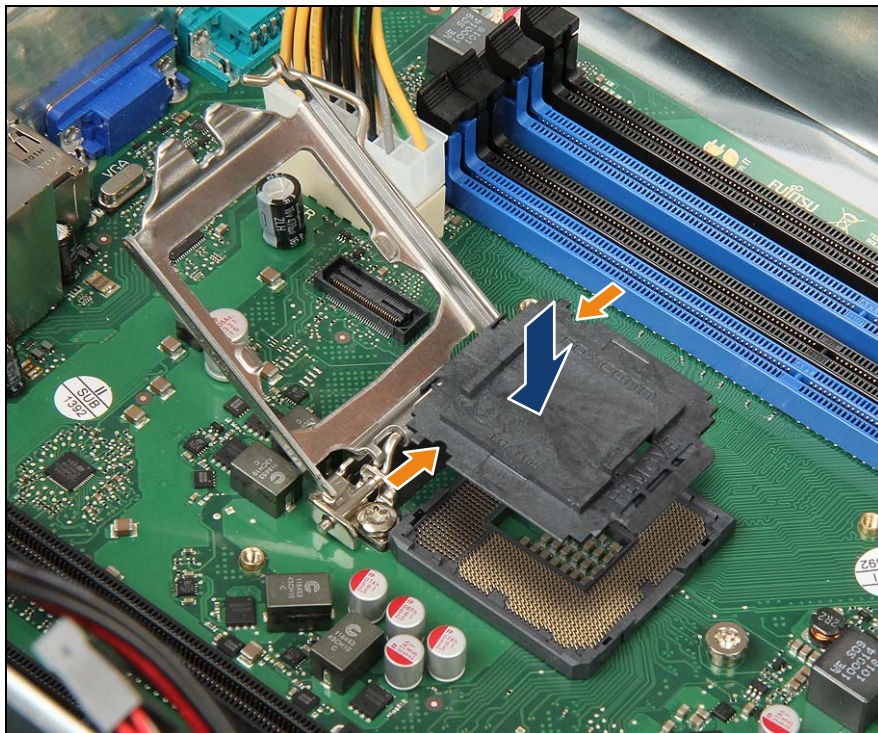
Figure 216: Installing the protective socket cover (defective system board) (A)

i Since the defective system board is sent back for repair, protect the delicate processor socket springs with a socket cover.

▶ Place your thumb against the front edge of the protective socket cover and rest your index finger on the rear grip.

Make sure that the notches on the protective socket cover align with the posts on the socket (see orange arrows).

▶ Lower the protective socket cover straight down onto the socket until it snaps in place.

Figure 217: Installing the protective socket cover (defective system board) (B)

► Lower the load plate over the processor while leaving the socket lever in the open position.

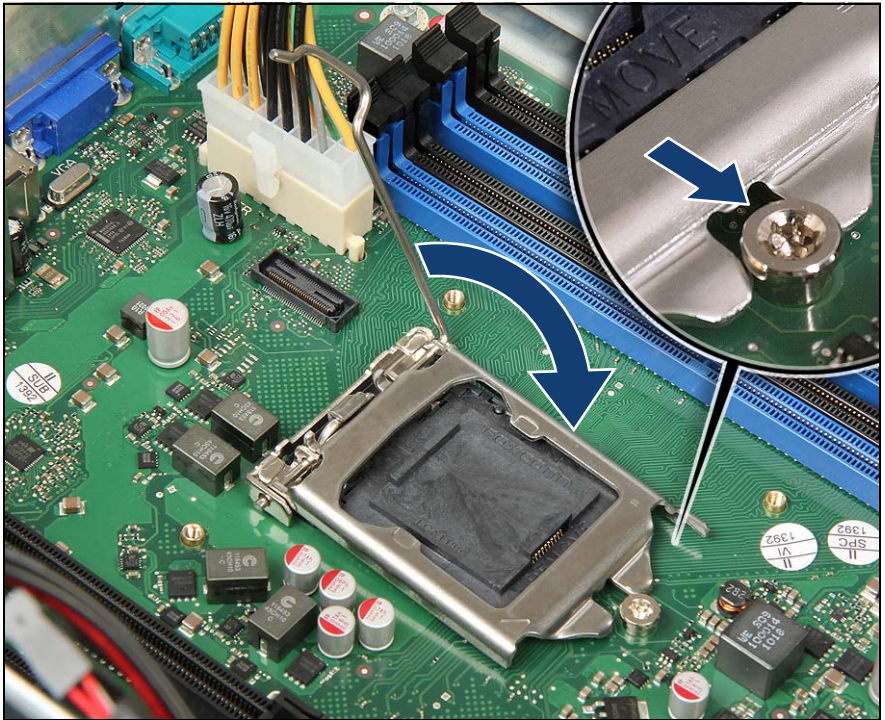► Lower the socket lever while making sure that the front edge of the load plate slides under the shoulder screw cap (see close-up) as the lever is lowered.

Figure 218: Installing the protective socket cover (defective system board) (C)

► Latch the socket lever under the load plate tab.

14.3.5 Concluding steps

► Reconnect all cables to the system board. For a complete cabling overview, please refer to section "Cabling overview" on page 324.

► Reinstall all remaining system board components as shown in the related sections:

    – Heat sinks: refer to section "Installing the processor heat sink" on page 226

    – Memory modules: refer to section "Installing a memory module" on page 205

> **i**   Install all memory modules into their original slots.

    – Expansion cards: refer to section "Expansion cards" on page 150.

> **i**   Install all expansion cards into their original slots.

    – TPM (if applicable): refer to section "Installing the TPM" on page 295

▶ Install the HDD cage as described in section "Installing the HDD cage" on page 63.

▶ Close the side cover as described in section "Installing the side cover" on page 58.

▶ Reconnect all external cables.

▶ Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

▶ If available, update the system board BIOS to the latest version as described in section "Updating the system board BIOS" on page 73.

▶ Verify and update time settings as described in section "Verifying the system time settings" on page 78.

▶ Restore the BIOS settings manually.

▶ If applicable, activate TPM functionality in the system BIOS under *Security* > *TPM (Security Chip) Setting* > *Security Chip*. For more information, refer to the "D3009 BIOS Setup Utility for PRIMERGY TX100 S3 Reference Manual".

▶ Inform the customer about changed WWN and MAC addresses. For further information, refer to section "Looking up changed MAC / WWN addresses" on page 83.

▶ After replacing the system board in a server running Linux OS, update the MAC address of the onboard network controller in the related NIC definition file as described in section "Updating the NIC configuration file in a Linux environment" on page 80.

▶ If BitLocker functionality is used and has been disabled before starting the maintenance task, re-enable BitLocker as described in section "Enabling BitLocker functionality" on page 82.

▶ If applicable, reconfigure your network settings in the operation system according to the original configuration of the replaced controller (expansion card or onboard).

The following notes are required for TX100 S3p (PYT10Pxxx for Japanese market).

| **i** | Configuration of network settings should be performed by the customer. |

For further information, please refer to section "Note on network settings recovery" on page 306.

► Enter the required system information using the ChassisId_Prom Tool as described in section "Using the Chassis ID Prom Tool" on page 84.

► If applicable, restore LAN teaming configurations as described in section "After replacing the system board" on page 85.

15   Cabling

Safety notes

CAUTION!

- Always hold cables by their connectors when disconnecting them. Never pull on the cable to disconnect cables.

- Ensure that none of the cables are scraped, strained or otherwise damaged while replacing system components.

- Immediately replace cables with damaged shielding.

- Always use shielded network cables.

In the following sections only complex cable routings are described.

You will find replacing the front panel cable and replacing the front USB cable in chapter "Front panel and external connectors" on page 275.

15.1 Cabling overview

No.	Name	Cable number	Routing
1	On/Off switch and HDD access LED cable	T26139-Y4001-V211	from On/Off button and HDD access LED to system board
2	SATA power 5HDD cable	T26139-Y4012-V101	from all drives to system board
3	Front USB cable	T26139-Y4018-V2	from front USB to system board
4	SATA data ODD cable	T26139-Y4028-V101	from optical disk drive to system board
5	SATA data HDD 3.5-inch cable (red)	T26139-Y4028-V152	from HDD 1/2 to system board
6	SATA data HDD 3.5-inch cable (grey)	T26139-Y3958-V107	from HDD 3/4 to system board
7	4x SATA connectors to MiniSAS (RAID controller) cable	T26139-Y3964-V111	from all drives to RAID controller
8	SATA data ODD	T26139-Y4028-V101	from ODD to system board
9	If BBU installed: BBU cable	T26139-Y3987-V2	from BBU to RAID controller
	If FBU installed: FBU adapter cable	T26139-Y4032-V3	from FBU to RAID controller
10	Power adapter SATA to 2x PATA (4pins)	T26139-Y3942-V1	from power cable to backup drive
11	USB accessible drive cable	T26139-Y3973-V2	from USB backup drive to system board
12	SATA data ODD (long version)	T26139-Y3958-V205	instead of T26139-Y4028-V101
13	LTG PWR SATA SL	26139-Y3990-V201	power adapter cable for slimline drive

Table 7: List of used cables
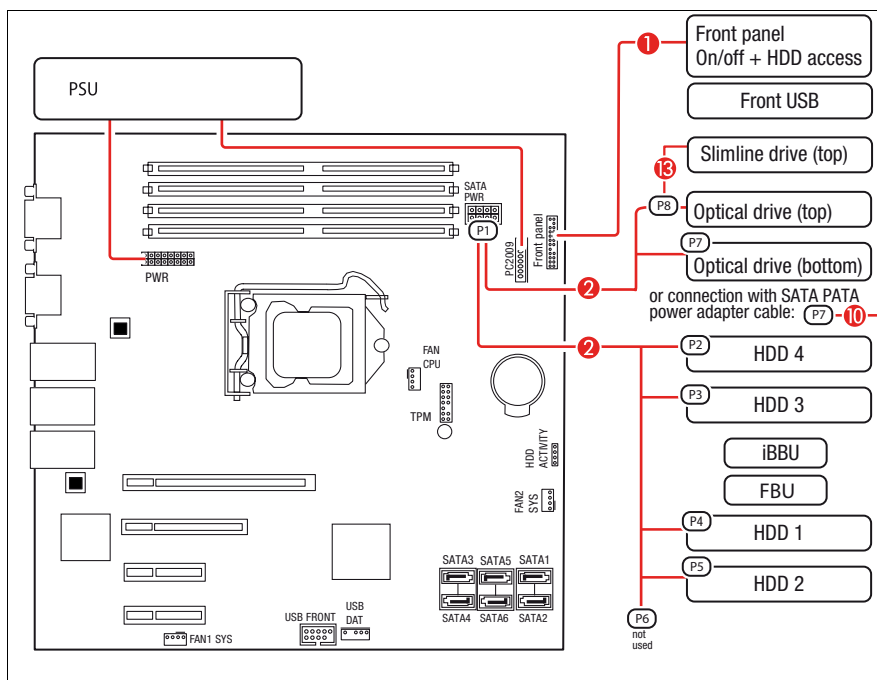
15.1.1 Cable plans

Power cabling

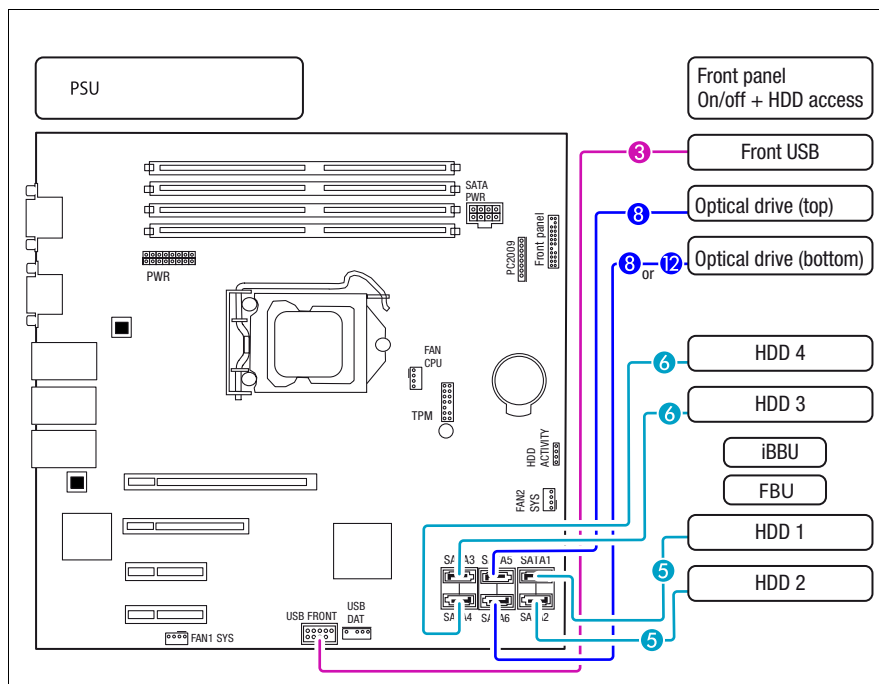Figure 219: Power cabling

SATA cabling and Front USB cable

Figure 220: SATA cabling (4 HDDs) and Front USB cable

SAS RAID controller cabling
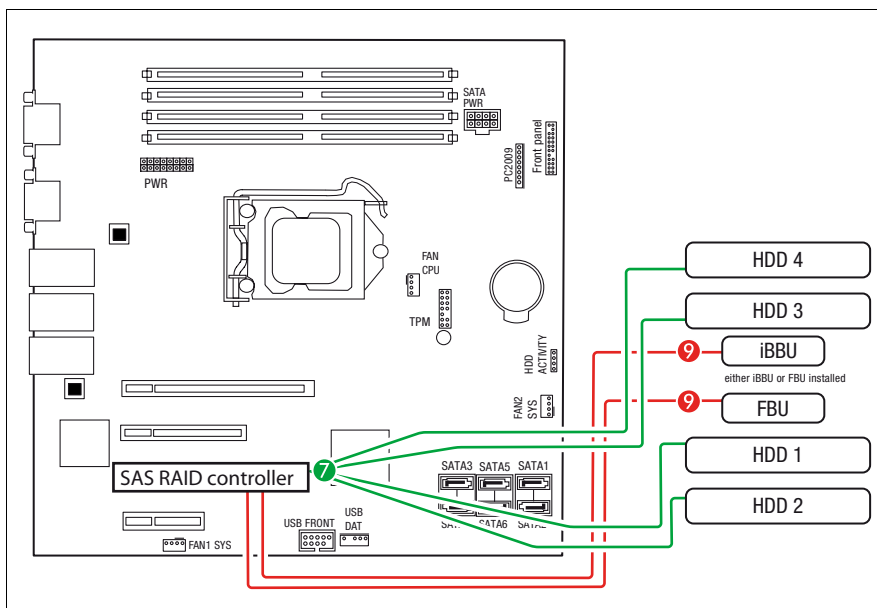
Figure 221: SAS RAID controller cabling (4 HDDs, iBBU)

USB tape device cabling
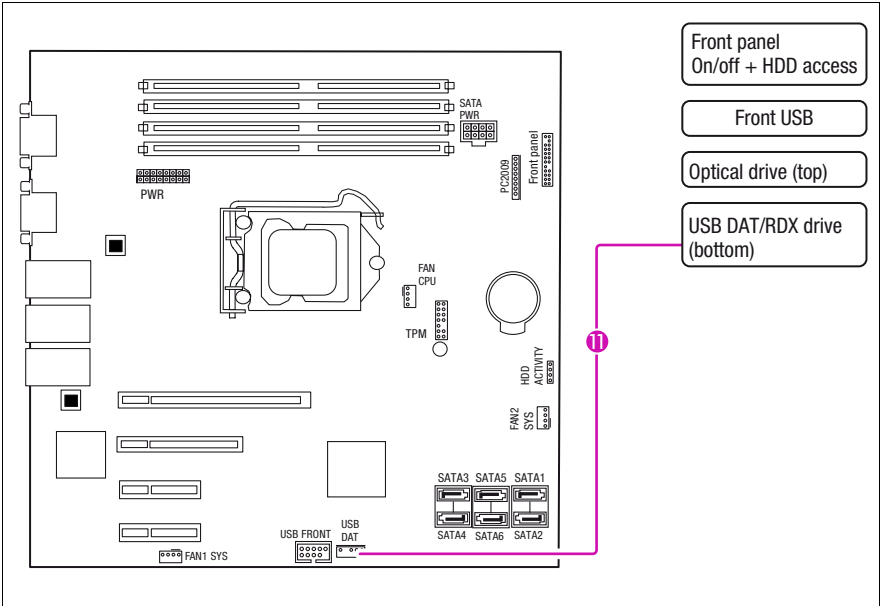
Figure 222: USB tape device cabling

Fan cabling
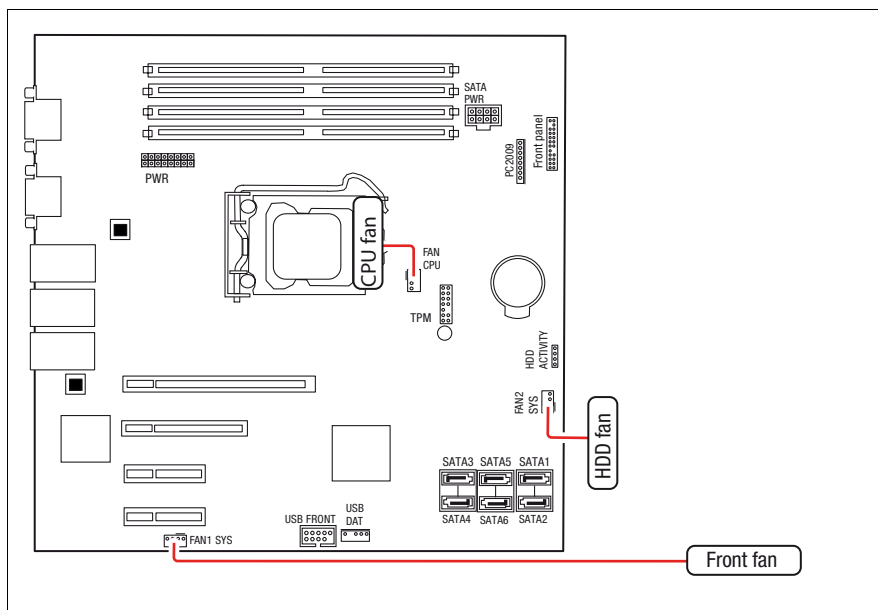
Figure 223: Fan cabling

15.2 Replacing the power cable

Field Replaceable Units (FRU)

Average task duration: 10 minutes
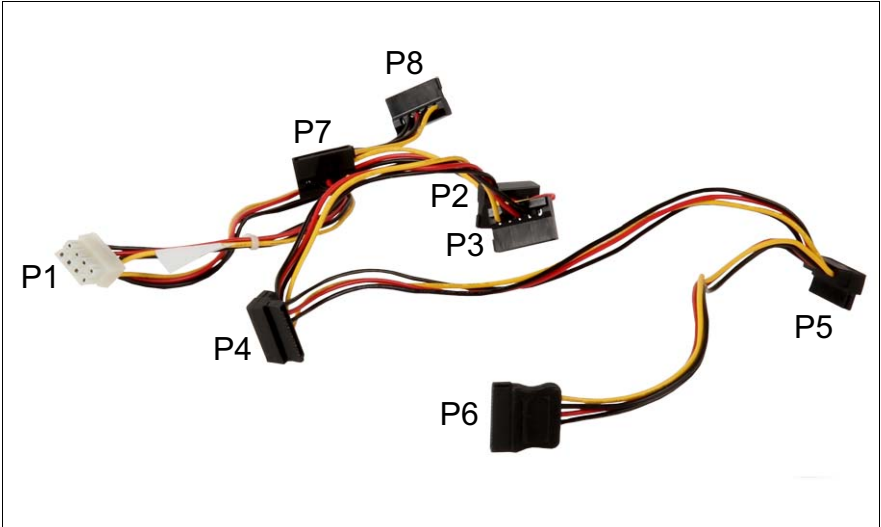
Figure 224: Power cable T26139-Y4012-V101

Connector	Used for
P1	POWER SATA on the system board
P2	HDD 4
P3	HDD 3
P4	HDD 1
P5	HDD 2
P6	not used
P7	optical drive (top)
P8	optical drive (bottom)

15.2.1 Required tools

● Preliminary and concluding steps: tool-less

● Replacing the power cable: tool-less

## 15.2.2 Preliminary steps

Before replacing the power cable, perform the following steps:

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Open the side cover as described in section "Removing the side cover" on page 45.

15.2.3 Disconnecting/connecting the power cable
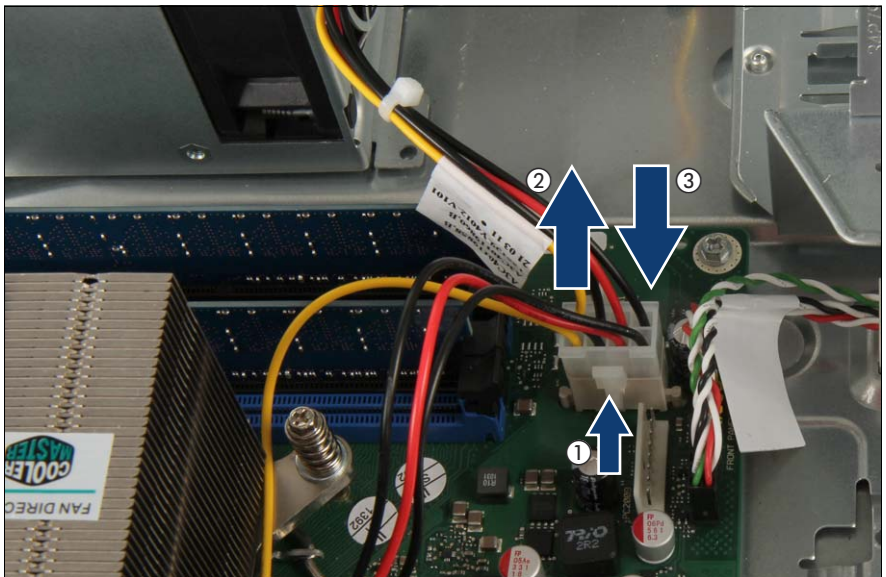
Figure 225: Disconnecting/connecting the power cable on the system board

► While pressing the release latch on the connector (1), disconnect the defective power cable from the SATA POWER connector on the system board (2).

► Connect the new power cable on the SATA POWER connector on the system board (3).

Figure 226: Disconnecting/connecting power cable on the optical disk drive

► Disconnect SATA power cable connector P8 from the optical disk drive. See figure 224 on page 330.

► Connect the new SATA power cable connector P8 to the optical disk drive. See figure 224 on page 330.
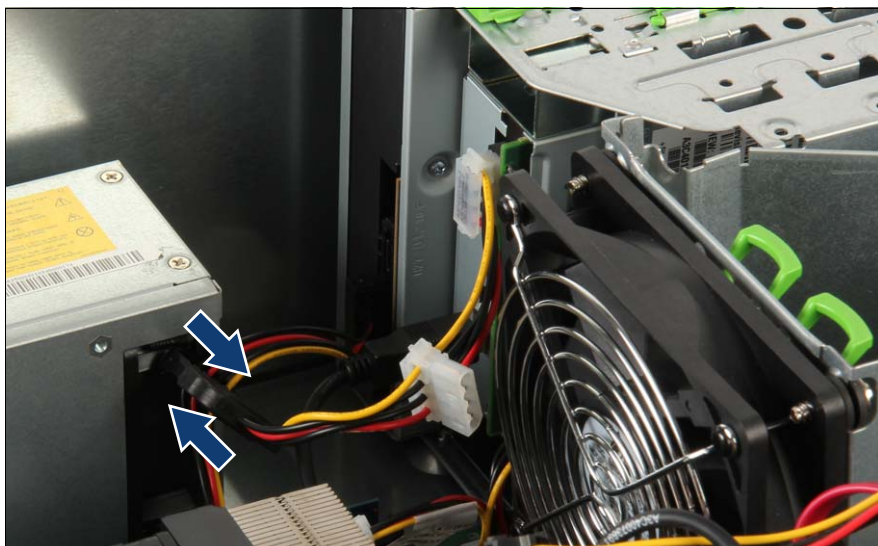
Figure 227: Disconnecting/connecting the power cable on the backup drive

► Disconnect the defective power cable connector P7 from the power adapter cable. See figure 224 on page 330.

> **i** It is not necessary to remove the power adapter cable from the backup drive.

► Connect the new power cable connector P7 to the power adapter cable. See figure 224 on page 330.

Figure 228: Disconnecting/reconnecting power cables on the HDDs

► Disconnect the SATA power cable from the HDDs (see figure 224 on page 330).

i	P4 is used for HDD 1

P5 is used for HDD 2

P3 is used for HDD 3

P2 is used for HDD 4

► Connect the new SATA power cable to the HDDs (see figure 224 on page 330).

     i   P4 is used for HDD 1

          P5 is used for HDD 2

          P3 is used for HDD 3

          P2 is used for HDD 4

15.2.4 Concluding steps

Perform the following procedures to complete the task:

► Close the side cover as described in section "Installing the side cover" on page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

15.3 Replacing the front USB cable

15.3.1 Required tools

● Preliminary and concluding steps:

     – Phillips PH2 / (+) No. 2 screw driver

● Replacing the power cable: tool-less

15.3.2 Preliminary steps

Before replacing the power cable, perform the following steps:

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Open the side cover as described in section "Removing the side cover" on page 45.

► Remove the HDD cage as described in section "Removing the HDD cage" on page 61.
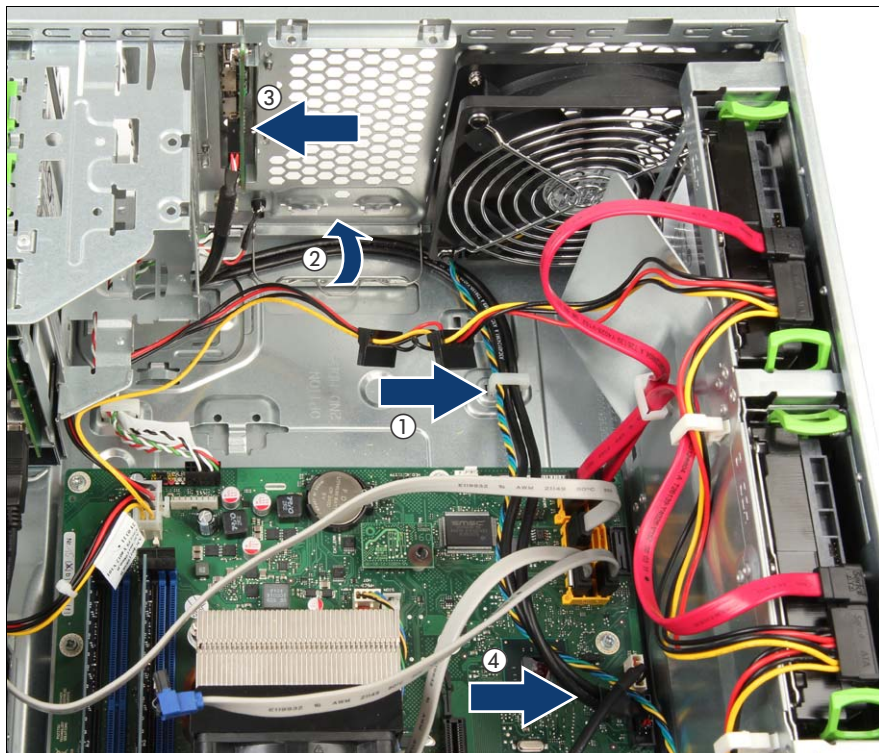
15.3.3 Disconnecting/connecting the front USB cable

Figure 229: Replacing the front USB cable

► Open the cable clamp (1).

► Open the retaining bracket (2).

► Disconnect the defective front USB cable from the front USB module (3).

► Disconnect the defective front USB cable from system board connector USB FRONT (4).

► Remove the defective front USB cable.

► Connect the new front USB cable on the front USB module (3).

► Connect the new front USB cable on system board connector
  USB FRONT (4).

> **i** Make sure that the connector of the USB front cable is properly
> aligned with the connector on the system board.

► Route the cable as shown and fasten it with the cable clamp (1) and the
  retaining bracket (2).

15.3.4 Concluding steps

Perform the following procedures to complete the task:

► Insert the HDD cage as described in section "Installing the HDD cage" on
  page 63.

► Close the side cover as described in section "Installing the side cover" on
  page 58.

► Reconnect the AC power cord to the power supply unit and secure it with a
  cable tie as described in section "Connecting the server to the mains" on
  page 59.

15.4 Storing not used SATA cables
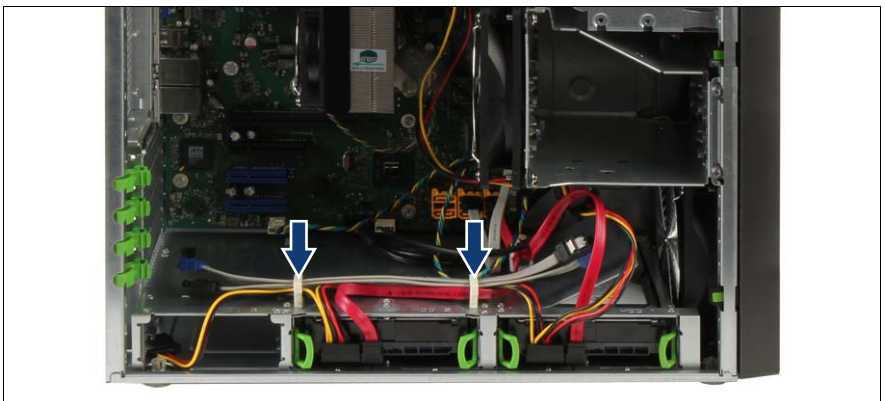
Figure 230: Securing not used SATA cables

i	If only two hard disk drives are installed, secure the unused SATA cables in the cable clamps as shown in the figure.

16 Appendix

16.1 Mechanical overview

16.1.1 Server front

Figure 231: PRIMERGY TX100 S3 front

Pos.	Component
1	Optical disk drive
2	Slot for Backup drive
3	On/Off button
4	Front USB connectors

16.1.2 Server rear
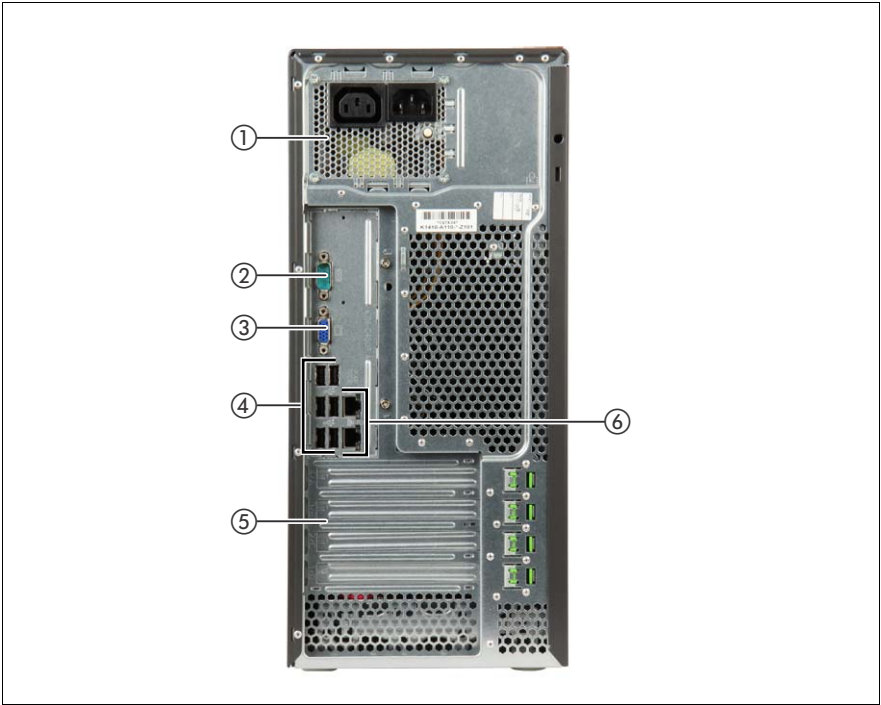
Figure 232: PRIMERGY TX100 S3 rear

Pos.	Component
1	Standard power supply unit or 0-Watt device (photo shows 0-Watt device)
2	Serial connector
3	VGA video connector
4	USB connectors (x 6)
5	Optional expansion cards
6	Standard LAN connectors

16.1.3 Server interior
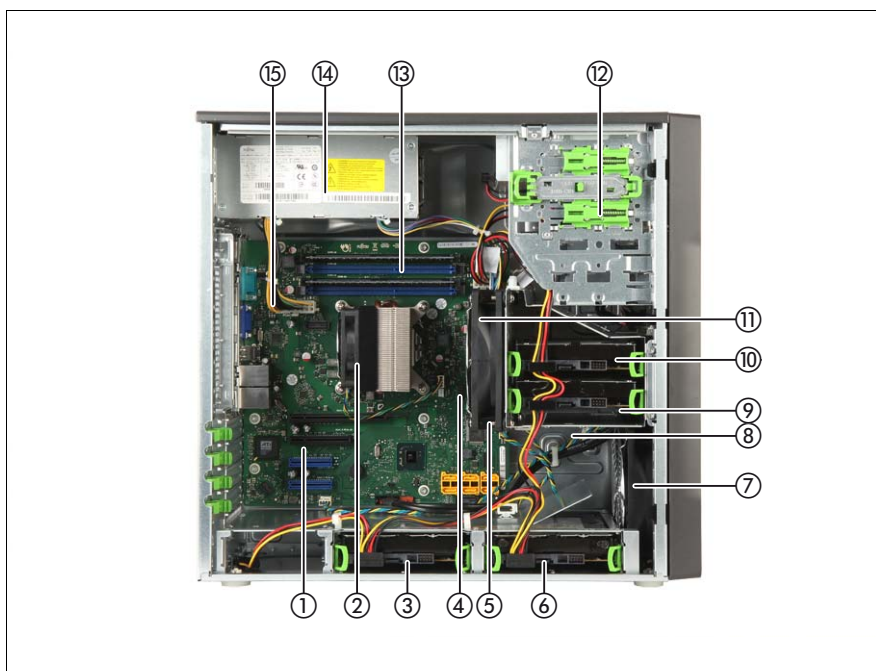
Figure 233: PRIMERGY TX100 S3 server interior

Pos.	Component
1	Expansion card slots
2	Processor / CPU heat sink / CPU fan
3	HDD 2
4	TPM board (if installed)
5	CMOS battery (not visible, located under the system fan 2)
6	HDD 1
7	System fan 1
8	BBU/FBU (if installed)
9	HDD 3
10	HDD 4

Pos.	Component
11	System fan 2
12	Accessible drive bays
13	Memory modules
14	Standard power supply unit or 0-Watt device (photo shows 0-Watt device)
15	System board D3009

16.2   Configuration tables

16.2.1   Hard disk drives mounting order

Please refer to chapter "Hard disk drives" on page 105.

16.2.2   Memory board configuration table

Please refer to chapter "Main memory" on page 201.

16.2.3   Expansion card configuration table

Please refer to chapter "Expansion cards and backup units" on page 147.

16.3 Connectors and indicators

16.3.1 Connectors on the system board
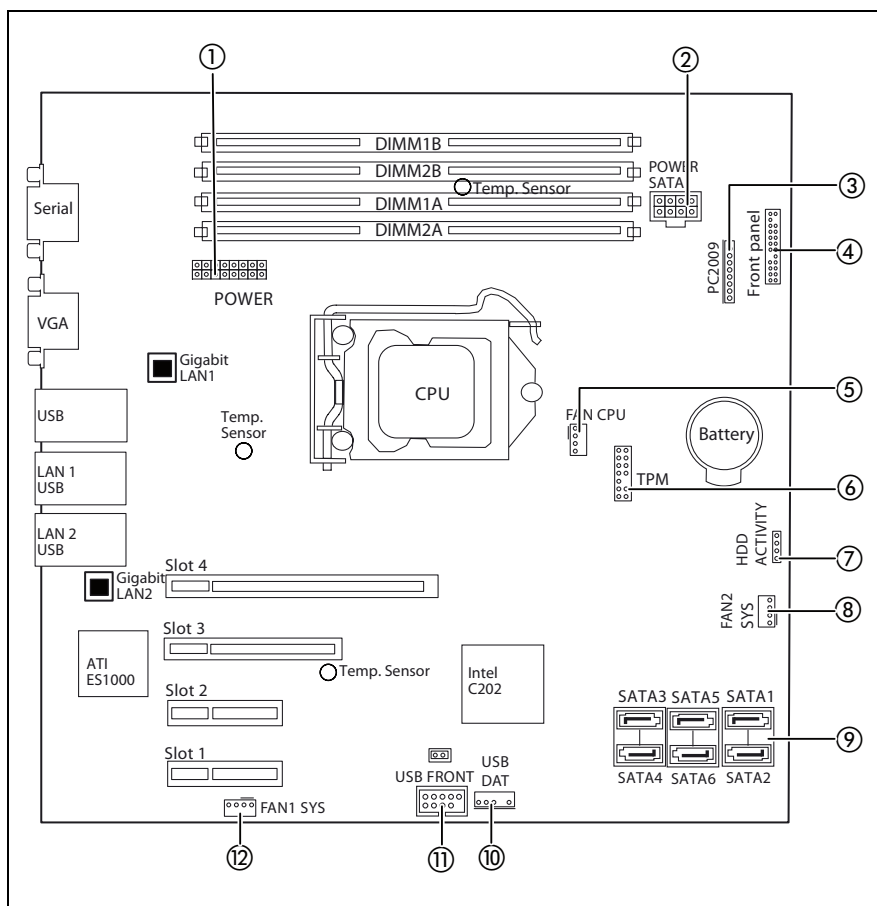
16.3.1.1 Onboard connectors

Figure 234: Internal connectors of the system board D3009

| No.	Print	Description
1	POWER	Power supply connector
2	POWER SATA	Power supply connector
3	PC2009	Power supply connector
4	Front panel	Front panel
5	FAN CPU	Connector for CPU fan
6	TPM	Connector for TPM
7	HDD ACTIVITY	Connector for HDD activity LED
8	FAN2 SYS	Connector for system fan 2
9	SATA 1-6	SATA 1-6 connector
10	USB DAT	USB connector (only for internal USB devices)
11	USB FRONT	Connector for USB on the front side
12	FAN1 SYS	Connector for system fan 1

16.3.1.2 Onboard settings
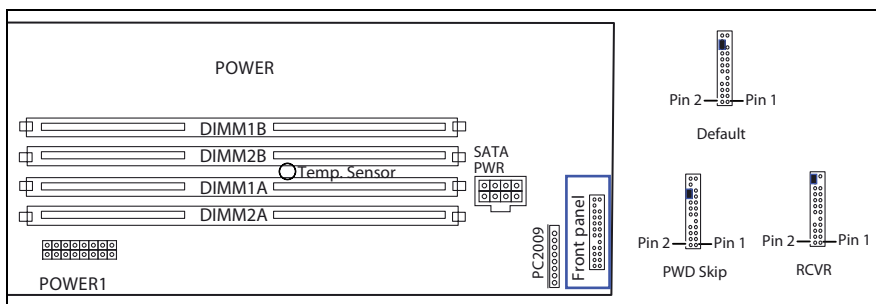
Figure 235: Jumper

Setting	Description
Default	Password skip disabled and recovery BIOS disabled.
PWD Skip	Password skip enabled. The password is deleted and the default BIOS settings are applied after "PWD Skip" jumper was set once.
RCVR	Recovery BIOS enabled. Use this function only if the system BIOS is destroyed. After flashing a new Recovery BIOS from a memory stick the password and all configuration settings are set to default.

When the CMOS battery is removed from a system board, the password set by customers is kept and also other CMOS settings are restored except date/time.

16.3.1.3   I/O panel connectors
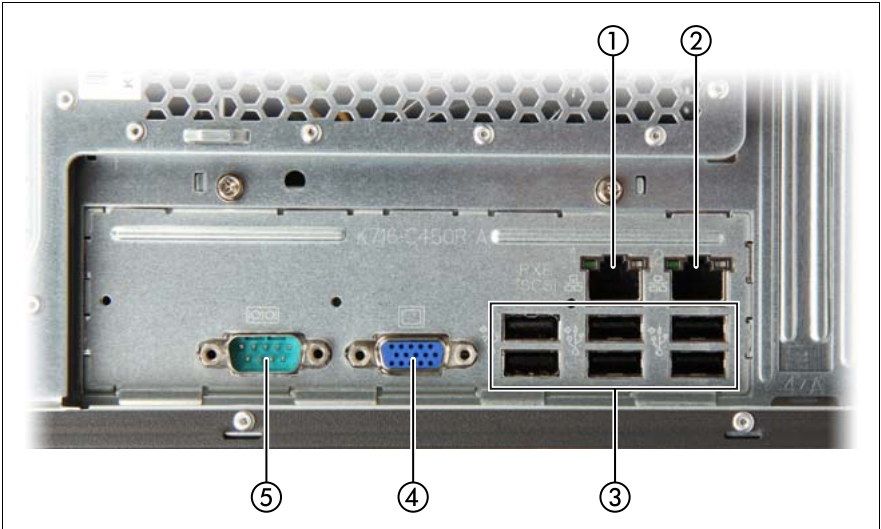
Figure 236: I/O panel connectors

No.	Description
1	Standard LAN1 connector
2	Standard LAN2 connector
3	USB connectors (x 6)
4	Video connector
5	Serial connector COM1

> **i** The chipset offers two integrated USB 2.0 Rate Matching Hubs (RMHs).
> that enable lower power requirements and manages the transition of the
> communication data rate from the high speed of the host controller to the
> lower speed of USB full speed / low speed devices.

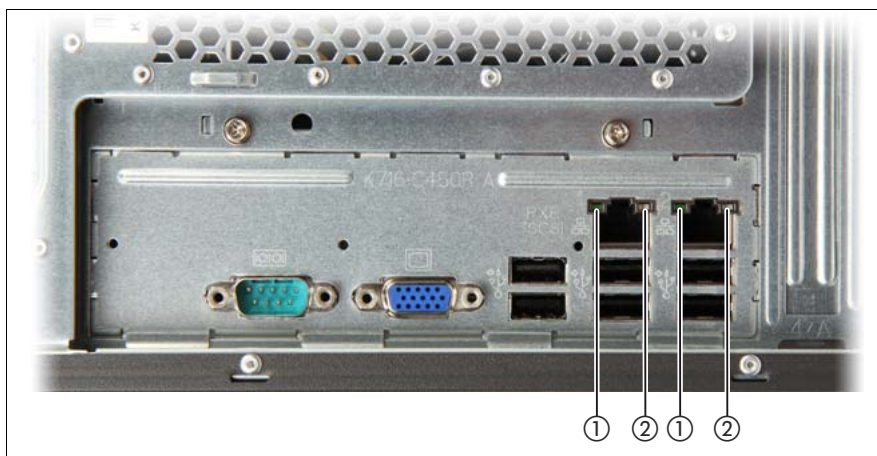#### 16.3.1.4 I/O panel indicators

Figure 237: I/O panel indicators

Indicator		Status	Description
1	LAN link/transfer	green on	LAN connection established
		off	no LAN connection
		green flashing	data transfer in progress
2	LAN speed	yellow on	transfer rate 1 Gbit/s
		green on	transfer rate 100 Mbit/s
		off	transfer rate 10 Mbit/s

i	**Note on the onboard LAN controller**

The system board is equipped with Gigabit Ethernet Controllers of the type Intel® 82574L (LAN1) and 82579LM (LAN2). Both LAN controllers support transmission rates of 10 Mbit/s, 100 Mbit/s and 1 Gbit/s.

The LAN controller (LAN1) supports WOL functionality by means of MagicPacket™. The LAN1 controller also supports features like PXE and iSCSI.

The LAN2 controller supports LAN access only.

16.3.2   Connectors and indicators on the front panel

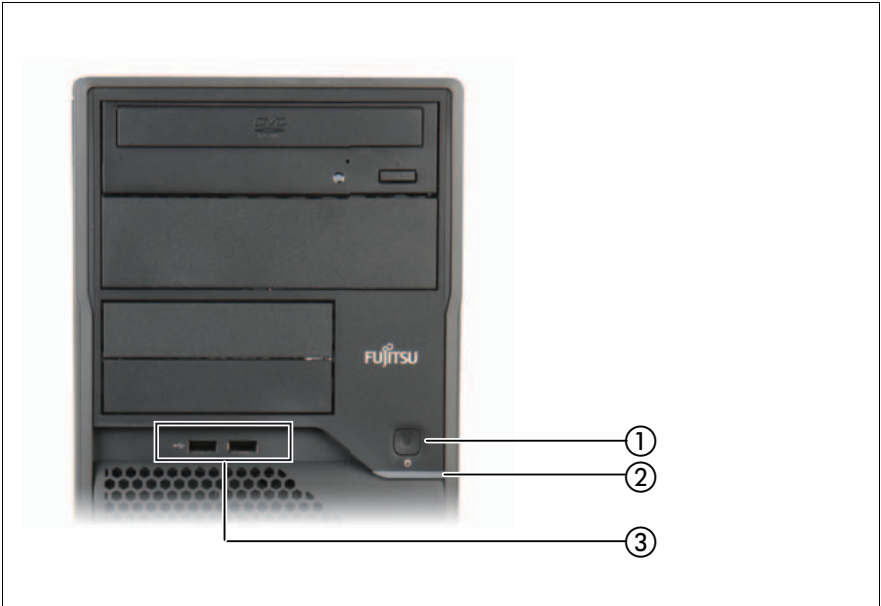### 16.3.2.1   Front panel connectors and indicators

Figure 238: Front panel connectors and indicators

Pos.	Component
1	On/Off button / Power-on indicator
2	HDD activity indicator
3	Front USB connectors (x2)

Status indicators

Indicator	Status	Description
HDD activity indicator	green flashing	data access in progress
Power-on indicator	green on	server is switched on and running
	off	server is switched off, but mains voltage is present (standby mode)

Buttons

Button	Function
On / Off button	This button is used to switch the server on or off. **i** If the system is running an ACPI-compliant operating system, pressing the On / Off button will performs a graceful shutdown.

16.4   Minimum startup configuration

![icon] **Field Replaceable Units (FRU)**

If the server does not start up or other problems occur, it may be necessary to take the system down to its most basic configuration in order to isolate the defective component.

The minimum startup configuration consists of the following components and cables:

Component	Notes
System board	no TPM or expansion cards installed
CPU with CPU heat sink	
CPU fan	
1 memory module	installed in DIMM slot 1A
Power supply unit	
system fan 1	
system fan 2	

Table 8: Minimum startup configuration - components

Cable	Notes and reference
Front panel cable	see section "Installing the front panel cable" on page 279
Power cable	see section "Replacing the power cable" on page 330

Table 9: Minimum startup configuration - cables

► Shut down the server as described in section "Shutting down the server" on page 42.

► Remove the AC power cord from the cable tie and disconnect it from the system as described in section "Disconnecting power cord" on page 43.

► Take the system down to its minimum startup configuration.

► Reconnect the AC power cord to the power supply unit and secure it with a cable tie as described in section "Connecting the server to the mains" on page 59.

► Connect a keyboard, mouse and display to the server.

► Switch on the server as described in section "Switching on the server" on page 60.

> ⚠ **CAUTION!**
>
> Since the fan module is not included in the minimum startup configuration, the server must be shut down immediately after the diagnostic process is complete (POST phase has been passed).
>
> The minimum startup configuration must be used exclusively for diagnostic purposes by maintenance personnel, never in daily operation!

Appendix