

PRIMERGY TX300 S8 / RX350 S8 Server

Upgrade and Maintenance Manual

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

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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.

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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 to be used in commercial and/or industrial areas as a server.

When used as visual display workplace, it must not be placed in the direct field of view to avoid incommoding reflections (applies only to TX server systems).

The device has not been designed or manufactured for uses which demand an extremely high level of safety and carry a direct and serious risk of life or body if such safety cannot be assured.

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.)

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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/>

Only for the Japanese market:



Although described in this manual, some sections do not apply to the Japanese market. These options and routines include:

- CSS (Customer Self Service)

Version history

Issue number	Reason for update
0.5 / 19-07-2013	Preliminary review version
1.0 / 09-2013	Initial version
1.1 / 09-2013	Minor corrections, removed sections on GPGPU cards with active cooling
1.2 / 11-2013	Added Nvidia GRID K1 GPGPU card, revised expansion card and PSU configuration overviews
1.3 / 02-2014	Added Intel Xeon Phi 3120P / 31S1P and Nvidia GRID K2 coprocessor cards, revised cabling plans and expansion card overview
1.4 / 04-2014	Minor corrections, revised expansion card overview, updated cabling plan 16.2.11
1.5 / 07-2014	Added SAS 3.0 topics, added Nvidia K40 coprocessor card, updated power-on indicator modes, updated charging duration for deeply discharged BBUs
1.6 / 11-2014	Updated PSU assembly rules, added CPU- and iRMC-related status signals
1.7 / 12-2014	Added basic software procedure "Resetting the error status after replacing memory modules or processors", revised basic software procedures on disabling and enabling BitLocker, revised information on power supply modules
1.8 / 03-2015	Revised BitLocker software procedures, added section "iRMC microSD card"
1.9 / 08-2015	Minor corrections



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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 (see section "[Documents you need at hand](#)" on page 41).








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 35.

Introduction

Notational conventions

The following notational conventions are used in this manual:

<i>Text in italics</i>	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
	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.
	indicates additional information, notes and tips
	indicates the procedure category in terms of complexity and qualification requirements, see "Classification of procedures" on page 35
	indicates the average task duration, see "Average task duration" on page 38

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 45](#).
- ▶ Make sure that all necessary manuals are available. Refer to the documentation overview in section "[Documents you need at hand](#)" on [page 41](#). Print the PDF files if required.
- ▶ Make yourself familiar with the procedure categories introduced in section "[Classification of procedures](#)" on [page 35](#).
- ▶ Ensure that all required tools are available according to section "[Tools you need at hand](#)" on [page 39](#).

Installing optional components

Your server's operating manual gives an introduction to server features and provides an overview of available hardware options.

Use the Fujitsu ServerView Suite management software and iRMC web frontend to prepare hardware expansions. ServerView Suite documentation is available online at <http://manuals.ts.fujitsu.com> (for the Japanese market: <http://jp.fujitsu.com/platform/server/primergy/manual/>). Please refer to the following ServerView Suite topics:

- Operation
- Virtualization
- Tools for Service & Diagnostics
- Out-Of-Band Management



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/index.htm

for the Japanese market:

<http://jp.fujitsu.com/platform/server/primergy/system/>

Before you start

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

The global error indicators on the front and rear sides of the server as well as local diagnostic LEDs on the front panel report defective hardware components that need to be replaced. For further information on the controls and indicators of your server, refer to your server's operating manual and section "[Connectors and indicators](#)" on page 776.

If the system has been powered off in order to replace a non-hot plug unit, a system of PRIMERGY diagnostic indicators guides you to the defective component. The "Indicate CSS" button enables the indicator next to the defective component even if the server has been switched off and disconnected from the mains. For further information, please refer to sections "[Using diagnostics information](#)" on page 57 and "[Connectors and indicators on the front panel](#)" on page 785.

If the defective component is a customer replaceable unit included in the CSS concept (Customer Self Service, only available for EMEA market), the CSS indicators on the front and rear side of the server will light up.

For further information, refer to the "ServerView Suite Local Service Concept (LSC)" manual available online at <http://manuals.ts.fujitsu.com> (EMEA market) or <http://jp.fujitsu.com/platform/server/primergy/manual/> (Japanese market).

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

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.



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 and may be installed or replaced as hot-plug components during operation.



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

Hot-plug components increase system availability and guarantee a high degree of data integrity and fail-safe performance. Procedures can be carried out without shutting down the server or going offline.

Components that are handled as Customer Replaceable Units

- Hot-plug power supply units
- Hot-plug fan modules
- Hot-plug HDD / SSD modules

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*).



Server management error messages and diagnostic indicators on the front panel and system board will report defective *Upgrade and Repair Units* as customer replaceable CSS components.

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)
- SAS / SATA backplanes
- Power backplane / power distribution board
- Front panel and front LAN connection
- Management and diagnostics modules
- System board
- Standard power supply unit
- Trusted Platform Module (TPM)
- USB Flash Module (UFM)



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 1 on page 38](#) 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 125 ".
Rack removal, disassembly	yes	Making the server available, removing the server from the rack (if applicable)
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, rack installation	yes	Reassembling the server, installing the server in the rack (if applicable)
Starting up	no	Booting time depends on hardware and software configuration and may vary significantly.

Table 1: 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		Backup drives, optical disk drives, chassis	M3 x 4.5 mm (silver) C26192-Y10-C67
Phillips PH2 / (+) No. 2 hexagonal cross SW5 / PZ2		System board	M3 x 6 mm (silver) C26192-Y10-C68
Phillips PH2 / (+) No. 2 hexagonal cross SW5 / PZ2		Backup drives with UNC thread	UNC 6-32 x 4.76 mm (black) C26192-Y10-C75
Phillips PH0 / (+) No. 0		2.5-inch HDDs / SSDs	M3 x 3.5 mm Wafer head screw (silver) C26192-Y10-C102
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

Table 2: List of required tools and used screws


Before you start

Screw driver / Bit insert	Screw	Usage	Type
Phillips PH1 / (+) No. 1		UFM nylon screw	M3 x 4.5 mm (white) A3C40109082
Phillips PH1 / (+) No. 1		TFM module	M2.5 x 4 mm (silver) C26192-Y10-C103
Phillips PH1 / (+) No. 1		Intel Xeon Phi GPGPU cards	M3 x 4 mm flat head screw (silver) (part of GPGPU card kit)
Phillips PH2 / (+) No. 2		USB 3.0 PCI card D3305	M3 x 5 mm (silver) (contained in card kit S26361-D3305-A10)
Hexagon bolt		Front VGA connector	UNC #4-40 (silver) V26827-B408-V989

Table 2: 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.

-  – 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*

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

Document	Description
"Quick Start Hardware - PRIMERGY TX300 S8" leaflet	Quick installation poster for initial operation, available online
"Quick Start Hardware - PRIMERGY RX350 S8" leaflet	
"ServerView Suite Quick Start Guide"	Information on initial server setup and software configuration available online or from the ServerView Suite DVD
"Safety notes and regulations" manual "安全上のご注意" for the Japanese market	Important safety information, available online or as a printed copy
"PRIMERGY TX300 S8 / RX350 S8 Server" Operating Manual	available online
"D2949 BIOS Setup Utility for PRIMERGY TX300 S8 / RX350 S8" Reference Manual	Information on configurable BIOS options and parameters, available online
System board and service labels	Labels inside the side / top server cover outlining connectors, indicators and basic maintenance tasks

Table 3: Documentation you need at hand

Before you start

Document	Description
Software documentation	available online: <ul style="list-style-type: none">– "ServerView Suite Local Service Concept (LSC)" User Guide– "ServerView Operations Manager - Server Management" User Guide– "iRMC S4 - Integrated Remote Management Controller" 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 online
"Warranty" manual " 保証書 " for the Japanese market	Important information on warranty regulations, recycling and service , available online or as a printed copy
"Returning used devices" manual	Recycling and contact information, available online or as a printed copy
"Service Desk" leaflet " サポート & サービス " for the Japanese market	

Table 3: Documentation you need at hand

Document	Description
Additional documentation	<ul style="list-style-type: none"> – RAID documentation, available online at http://manuals.ts.fujitsu.com under <i>Industry standard servers - Expansion Cards - Storage Adapters</i>, e.g.: <ul style="list-style-type: none"> – "Integrated RAID for SAS" User Guide – "LSI MegaRAID - SAS Software" User Guide – "Modular RAID Controller / Modular SAS HBA" Installation Guide <p>For the Japanese market please use the following address: http://jp.fujitsu.com/platform/server/primergy/manual/</p> <ul style="list-style-type: none"> – Rack documentation
Third party documentation	<ul style="list-style-type: none"> – Operating system documentation, online help – Peripherals documentation

Table 3: 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.



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

3.1 Safety instructions



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.

Important information

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. For servers with Cool-safe[®] Advanced Thermal Design the ambient temperature can increase to 40 °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.

Important information

- 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.
- 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, 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.

Important information

- 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.



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, 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).

Important information

- Do not touch any connectors or conduction paths on an ESD.
- Place all the components on a pad which is free of electrostatic charge.



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

Transporting the server

- Only transport the server 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.
- If you need to lift or transport the server, ask other people to help you.
Because the PRIMERGY TX300 S8 / RX350 S8 is large and heavy, at least two people are needed.
- Never lift or carry the device by the handles on the front panel.

Notes on installing the server in the rack

- **For safety reasons, at least two people are required to install the server in the rack because of its weight and size.**
(For the Japanese market, please refer to "安全上のご注意".)
- Never lift the server into the rack using the handles on the front panel.
- When connecting and disconnecting cables, observe the relevant instructions in the "Important Information" chapter of the technical manual for the corresponding rack. The technical manual is supplied with the corresponding rack.
- When installing the rack, make sure that the anti-tilt protection is correctly fitted.
- For safety reasons, no more than one unit may be removed from the rack at any one time during installation and maintenance work.
- If several units are simultaneously removed from the rack, there is a risk that the rack could tip over.
- The rack must be connected to the power supply by an authorized specialist (electrician).

- If the server is integrated into an installation that draws power from an industrial power supply network with an IEC309 type connector, the power supply's fuse protection must comply with the requirements for non-industrial power supply networks for the type A connector.

3.2 CE conformity



The system complies with the requirements of the EC directives 2004/108/EC regarding "Electromagnetic Compatibility" and 2006/95/EC "Low Voltage Directive" and the directive of the European Parliament and Council 2011/65/EU. This is indicated by the CE marking (CE = Communauté Européenne).

3.3 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:

Important information

- 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.

3.4 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 global 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.

Important information

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

Use the Fujitsu ServerView Suite management software to plan the upgrade or replacement of hardware components. 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.

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).

Perform the following diagnostics procedures to identify defective servers and components:

4.1.1 Locating the defective server



Figure 2: ID button and ID indicator on front panel

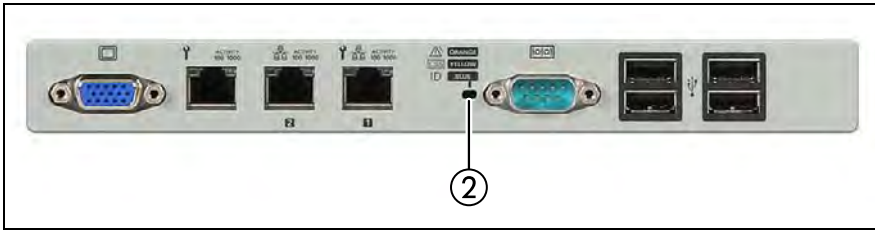


Figure 3: ID indicator on connector panel

When working in a datacenter environment, switch on the ID indicator on the front and rear connector panels of the server for easy identification.

- ▶ Press the ID button on the front panel (1) or use the iRMC web frontend or ServerView Operations Manager user interface to switch on the system ID indicator LEDs (2).

i For further information, refer to the "ServerView Suite Local Service Concept (LSC)" manual and "iRMC S4 - Integrated Remote Management Controller" user guide.

- ▶ When using ServerView Operations Manager to toggle the ID indicator, choose *Single System View* and press the *Locate* button.
- ▶ Remember to switch off the ID indicator after the maintenance task has been concluded successfully.

4.1.2 Determining the error class

The Local Service Concept (LSC) allows you to identify defective server components. Failure events are assigned to one of two error classes:

- **Global Error** events that need to be resolved by maintenance personnel
- **Customer Self Service** (CSS) error events that may be resolved by operating personnel

Global Error and CSS LEDs indicate, if the defective component is a customer replaceable unit or if maintenance personnel needs to be dispatched to replace the part.

i The indicators also light up in standby mode and after a server restart due to a power failure.

4.1.2.1 Global Error indicator

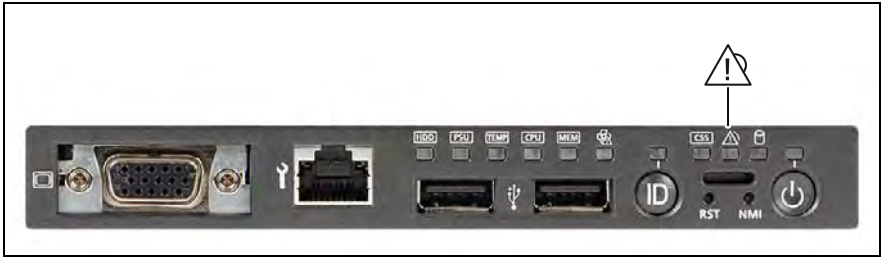


Figure 4: Global Error indicator on front panel

- ▶ Check the Global Error indicator on the front or connector panel of the server:

Indicator	Status	Description
Global error indicator	off	no critical event (non CSS component)
	orange on	prefailure detected (non CSS component), requires (precautionary) service intervention
	orange flashing	non CSS component failure or software / agent related error, requires service intervention

- ▶ For further diagnostics, proceed as follows:

- Hardware errors:

Check the System Event Log (SEL) as described in section "[Viewing the SEL](#)" on page 149.

- Software / agent related errors:

Check the ServerView System Monitor, available on Windows or Linux based servers with ServerView agents installed.



For further information, please refer to the "ServerView System Monitor" user guide.

4.1.2.2 Customer Self Service (CSS) indicator



Figure 5: CSS error indicator in front panel

- ▶ Check the CSS indicator on the front panel or connector panel of the server:

Indicator	Status	Description
CSS indicator	off	no critical event (CSS component)
	yellow on	prefailure detected (CSS component)
	yellow flashing	CSS component failure

4.1.3 Locating the defective component

After determining the error class by the CSS or Global Error indicators (see section [4.1.2 on page 58](#)) local diagnostic indicators on the front panel and system board allow you to identify the defective component.

i For further information, refer to the "ServerView Suite Local Service Concept (LSC)" manual.


4.1.3.1 Local diagnostic indicators on the front

i For a detailed overview of local diagnostic indicators on the server front, please refer to section ["Front panel controls and indicators" on page 786](#).

- ▶ Check the CSS indicator on the front and connector panels of the server:


i In addition to local diagnostic indicators, CSS or Global Error LEDs indicate, if the defective component is a customer or field replaceable unit (see section ["Determining the error class" on page 58](#)).

4.1.3.2 Local diagnostic indicators on the system board

 For a detailed overview of local diagnostic indicators and controls on the system board, please refer to section ["Onboard indicators and controls" on page 779](#).

Using the Indicate CSS button


- ▶ Shut down and power off the server.
- ▶ Disconnect the AC power cord from the system.

 It is mandatory to disconnect power cords in order to use the Indicate CSS functionality.

- ▶ Remove the air duct as described in section ["Removing the system air duct" on page 81](#).
- ▶ Press the Indicate CSS button (see ["Onboard indicators and controls" on page 779](#)) to highlight defective components.

Component LEDs

- ▶ Check the component LEDs on the system board and the server rear (see ["Onboard indicators and controls" on page 779](#)).

 In addition to local diagnostic indicators, CSS or Global Error LEDs indicate, if the defective component is a customer replaceable unit or if a service technician needs to be dispatched to replace the part (see section ["Determining the error class" on page 58](#)).

If the system has been powered off to replace a non hot-plug unit, a system of PRIMERGY diagnostics indicators guides you to the faulty component.

4.2 Shutting down the server



CAUTION!

For further safety information, please refer to chapter ["Important information" on page 45](#).




This step is only required when upgrading or replacing non-hot plug components.

- ▶ Inform the system administrator that the server will be shut down and put offline.
- ▶ Terminate all applications.
- ▶ 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 129](#).
- ▶ In case of Multipath I/O environments, please refer to section ["Note on server maintenance in a Multipath I/O environment" on page 130](#).
- ▶ 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 129](#).



Figure 6: On / Off button on the front panel

- ▶ Shut down the server.
 -  If the system is running an ACPI-compliant operating system, pressing the On / Off button will perform a graceful shutdown.
- ▶ Switch on the ID indicator on the front and rear connector panels of the server as described in section ["Locating the defective server" on page 57](#).

4.3 Disconnecting the server from the mains

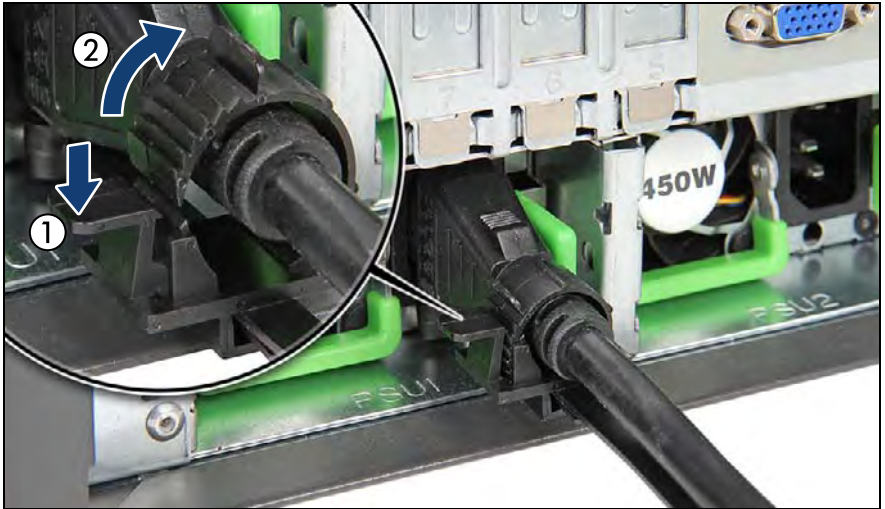


Figure 7: Opening the PSU cable bracket

- ▶ Press down on the release tab (1) until the loop on the PSU cable bracket disengages (2).

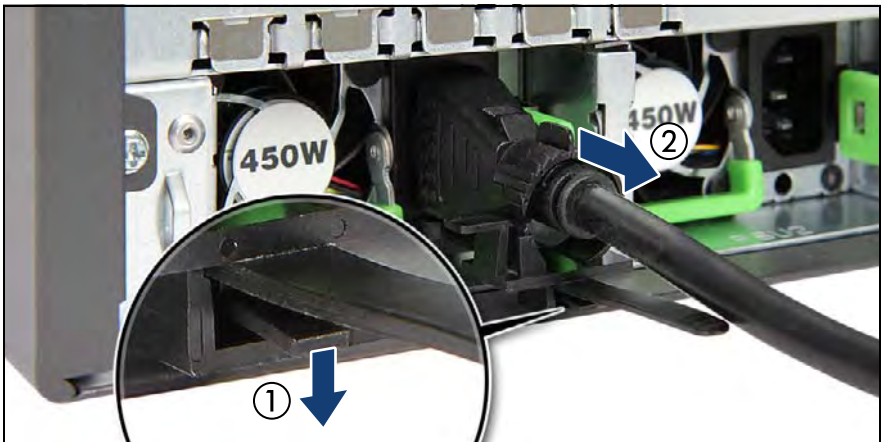


Figure 8: Removing the power cord from the PSU cable bracket (A)

- ▶ Press down on the locking lever on the PSU cable bracket (1) and pull down the loop from the cord grip (2).



Figure 9: Removing the power cord from the PSU cable bracket (B)

- ▶ Pull the loop on the PSU cable bracket further back as shown (1).
- ▶ Remove the power cord from the PSU cable bracket (2) and disconnect it from the PSU.

4.4 Extending / removing the server from the rack

i In most cases maintenance tasks can be performed while the server is extended from the rack. However, depending on accessibility or security guidelines, it may make sense to completely remove the server from the rack cabinet for maintenance purposes.



CAUTION!

- Use the anti-tilt plate to prevent the rack from tipping when installing the rack. Pulling the server out of the rack without having installed the anti-tilt plate may cause the rack to tip over.
- Be careful not to pinch fingers or clothes when sliding out the server or pushing it back. Failure to do so may cause injury.
- For further safety information, please refer to chapter "[Important information](#)" on page 45.

4.4.1 Preliminary steps

- ▶ "Shutting down the server" on page 62
- ▶ "Disconnecting the server from the mains" on page 63
- ▶ Remove all remaining external cables from the rear connector panel and expansion cards. For further information, refer to section "Connectors and indicators" on page 776.

4.4.2 Extending the server out of the rack

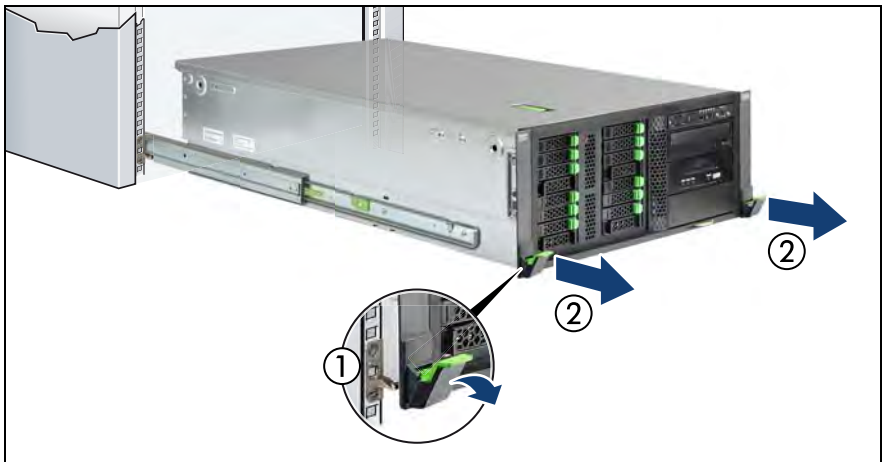


Figure 10: Extending the server out of the rack

- ▶ Shut down the server and remove external cables as described in section "Preliminary steps" on page 65.
- ▶ If you are not using a cable mounting arm (CMA kit), ensure that the rear cables are long enough not to be strained or damaged when extending the server out of the rack.
- ▶ Fold down the two quick release levers on the rack mounting frame (1) and pull the server out of the rack until it locks in place (2).



CAUTION!

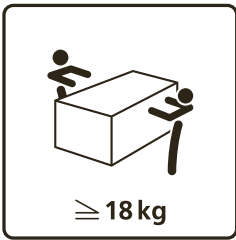
Do not use the extended server as a surface on which to put things or as a work surface, and strictly avoid leaning on or against it.

4.4.3 Removing the server from the rack



CAUTION!

At least two people are needed to lift the server out of the rack cabinet.
(For the Japanese market, please refer to " 安全上のご注意 ".)



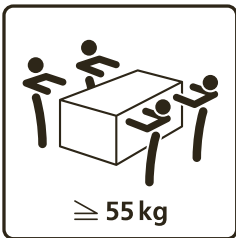
For configurations below 32 kg:

At least two people are needed to lift the server out of the rack cabinet.



For configurations below 55 kg:

At least three people are needed to lift the server out of the rack cabinet.



For configurations above 55 kg:

At least four people are needed to lift the server out of the rack cabinet.

Additionally, a lifter is required in the following cases:

- The server weighs more than 50 kg.
- The server weighs more than 21 kg and is installed above the height of 25 U.

When using a lifter, this removal procedure needs to be carried out by maintenance personnel.

- ▶ Shut down the server and remove external cables as described in section "Preliminary steps" on page 65.
- ▶ Unlatch and pull the server out of the rack as described in section "Extending the server out of the rack" on page 65.

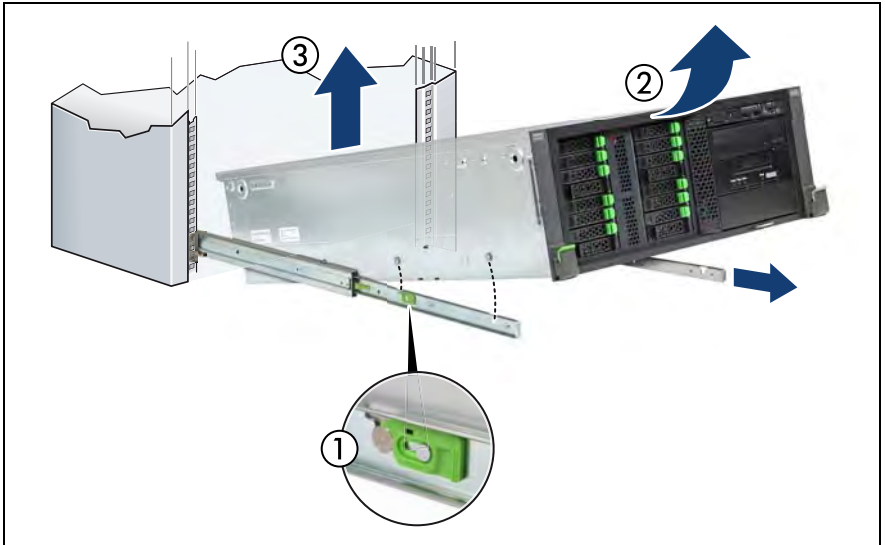


Figure 11: Removing the server from the rack

- ▶ Release the locking bars on both rails (1).
- ▶ Lift up the front of the server as shown so that the front and middle rack mounting bolts are disengaged from the mounting points on the telescopic rails (2).
- ▶ Lift the server out of the rear mounting points (3) and place it on an even surface.

4.5 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 TX300 S8 / RX350 S8 server must not run while the side cover is removed.
- For further safety information, please refer to chapter "[Important information](#)" on page 45.
- **Only valid for the tower servers:** Don't lift the server by its front cover. There is a possibility that the HDD bay cover hook may break.

4.5.1 Rack model

4.5.1.1 Removing the top cover

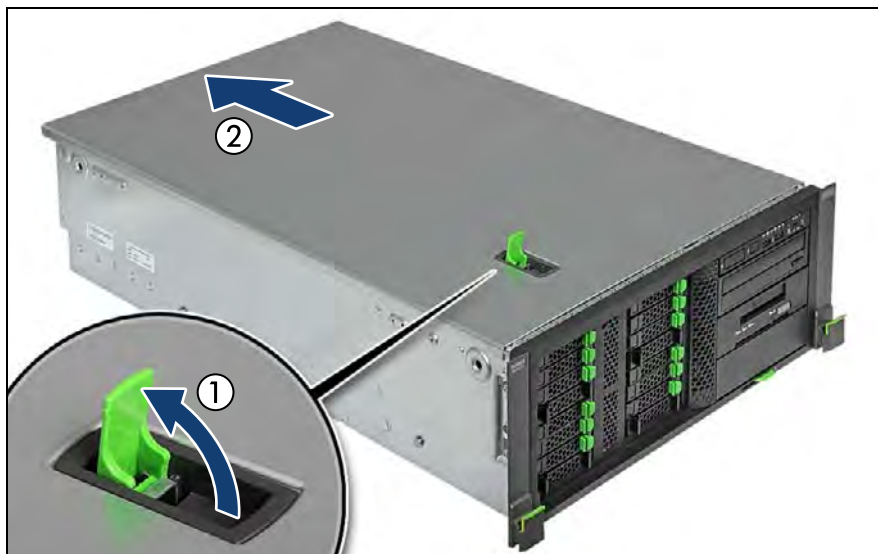


Figure 12: Removing the top cover (rack server)

- ▶ Open the locking lever (1). This will slide the top cover back disengaging the locking mechanism (2).



Figure 13: Removing the top cover (rack server)

- ▶ Remove the top cover.

4.5.1.2 Removing the ID card



Figure 14: Removing the ID card (rack server)

Basic hardware procedures

- ▶ Remove the ID card from the server.

i It may be necessary to pull out on the ID card rather firmly. However, do not apply excessive force.

4.5.1.3 Removing the rack mounting frame

i The rack front cover consists of a plastic frame and two rack mounting brackets. For further information, refer to section "[Assembling the rack front cover](#)" on page 729.

- ▶ Pull out the ID card from the server front as described in section "[Removing the ID card](#)" on page 69.

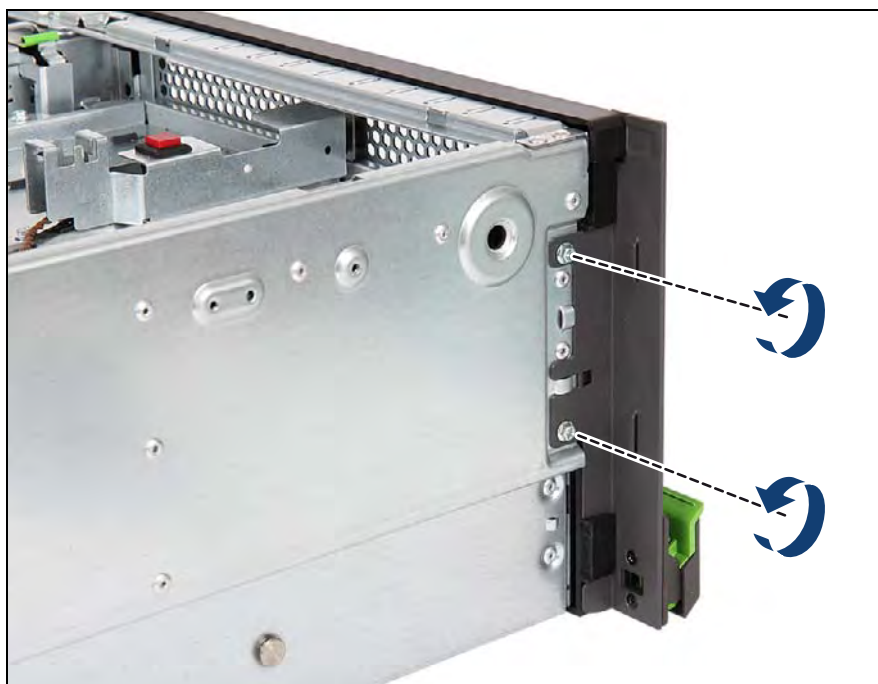


Figure 15: Removing the rack mounting frame (A)

- ▶ Remove two screws from the side brackets on either side of the rack mounting frame.

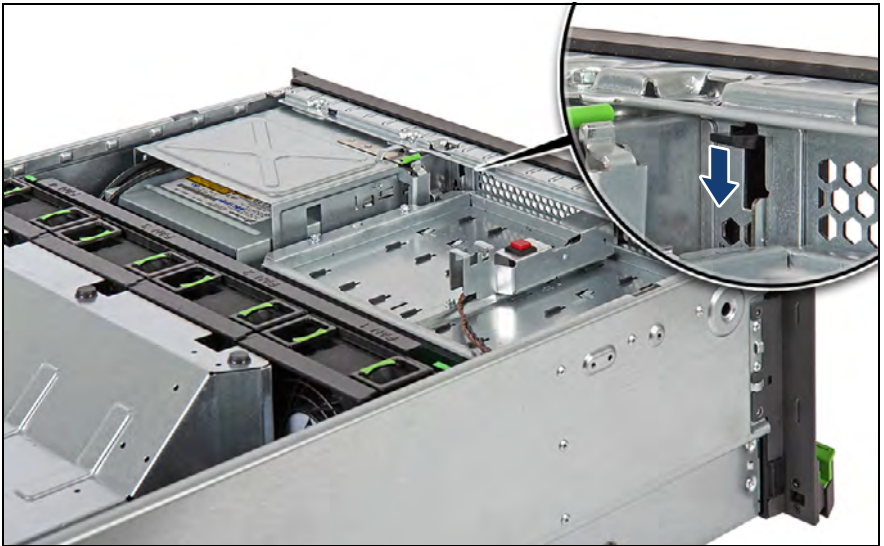


Figure 16: Removing the rack mounting frame (B)

- ▶ Press down on the locking latch while slightly folding out the rack front cover.

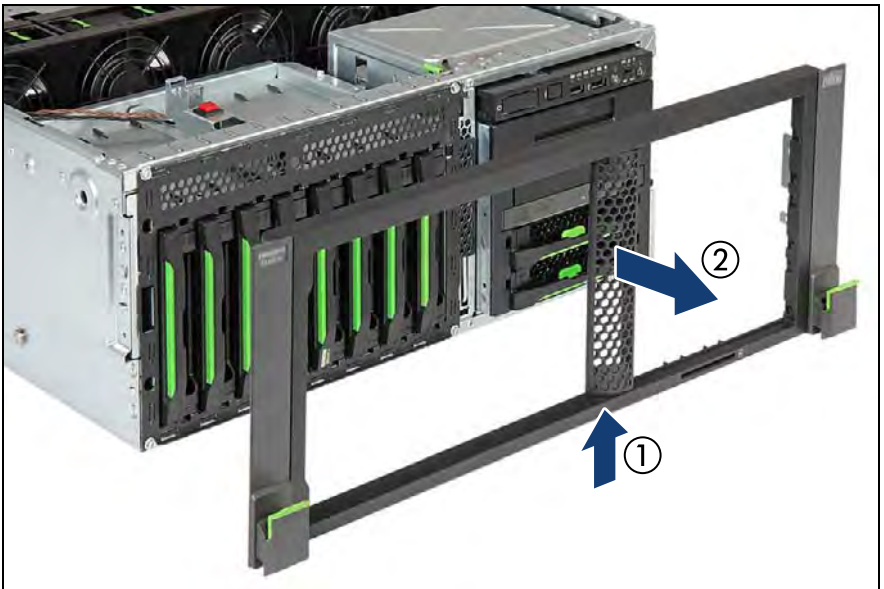


Figure 17: Removing the rack mounting frame (C)

Basic hardware procedures

- ▶ Press up on the plastic frame to disengage the bottom locking latch (1).
- ▶ Detach and remove the rack front cover to the front (2).

4.5.2 Tower model

4.5.2.1 Unlocking the server

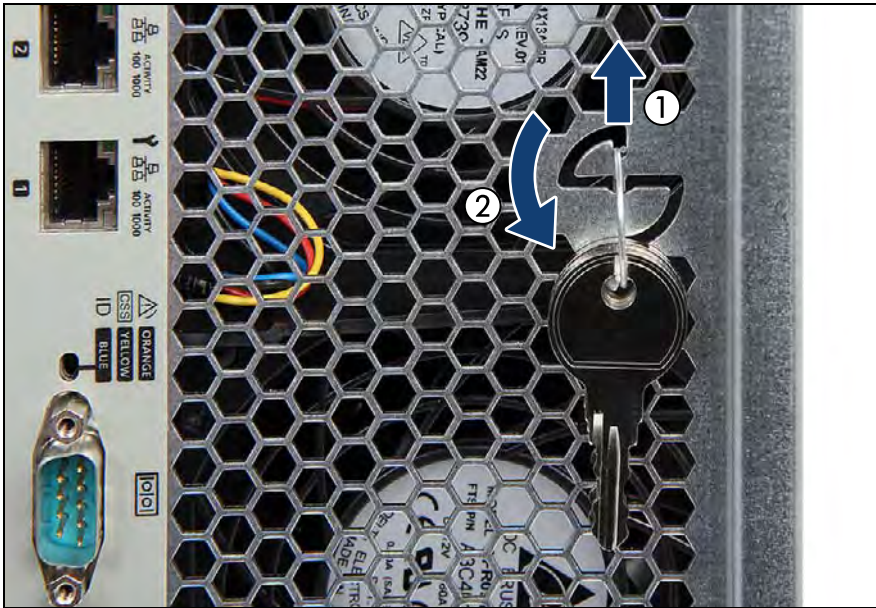


Figure 18: Removing the key (A)

- ▶ Lift the key ring to unlatch it (1).
- ▶ Turn the key ring counter-clockwise by 90 degrees (2).

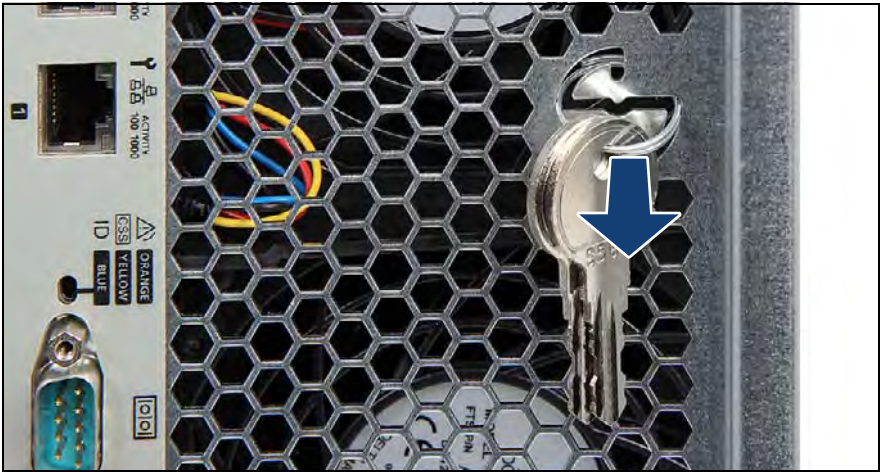


Figure 19: Removing the key (B)

- ▶ Remove the key from the server rear.



Figure 20: Unlocking the server

- ▶ Insert the key into the lock on the server front.
- ▶ Turn the key clockwise to unlock the front and side covers (1).
- ▶ Remove the key from the server front (2) and set aside for later use.

4.5.2.2 Removing the side cover



Figure 21: Removing the side cover (tower server)

- ▶ Open the locking lever (1). This will slide the side cover back disengaging the locking mechanism (2).



Figure 22: Removing the side cover (tower server)

- ▶ Remove the side cover.

4.5.2.3 Removing the ID card



Figure 23: Removing the ID card (tower server)

- ▶ Remove the ID card from the server.



It may be necessary to pull out on the ID card rather firmly. However, do not apply excessive force.

4.5.2.4 Removing accessible drive and HDD bay covers



Figure 24: Removing the accessible drive bay cover

- ▶ Press up on the locking latch (1) and fold out the accessible drive bay cover (2).
- ▶ Remove the accessible drive bay cover from the front cover.



Figure 25: Removing the HDD bay cover

- ▶ Pull out on the handle on the upper edge of the HDD bay cover.
- ▶ Fold out and remove the HDD bay cover from the front cover.

Storing the accessible drive bay cover



Figure 26: Storing the accessible drive bay cover

- ▶ Place the accessible drive bay cover on the HDD bay cover as shown (1).
- ▶ Press in on the bottom edge of the accessible drive bay cover until it snaps in place (2).
- ▶ To remove the accessible drive bay cover from its resting position, carefully pull out on the bottom edge of the cover and lift it off.

4.5.2.5 Removing the front cover

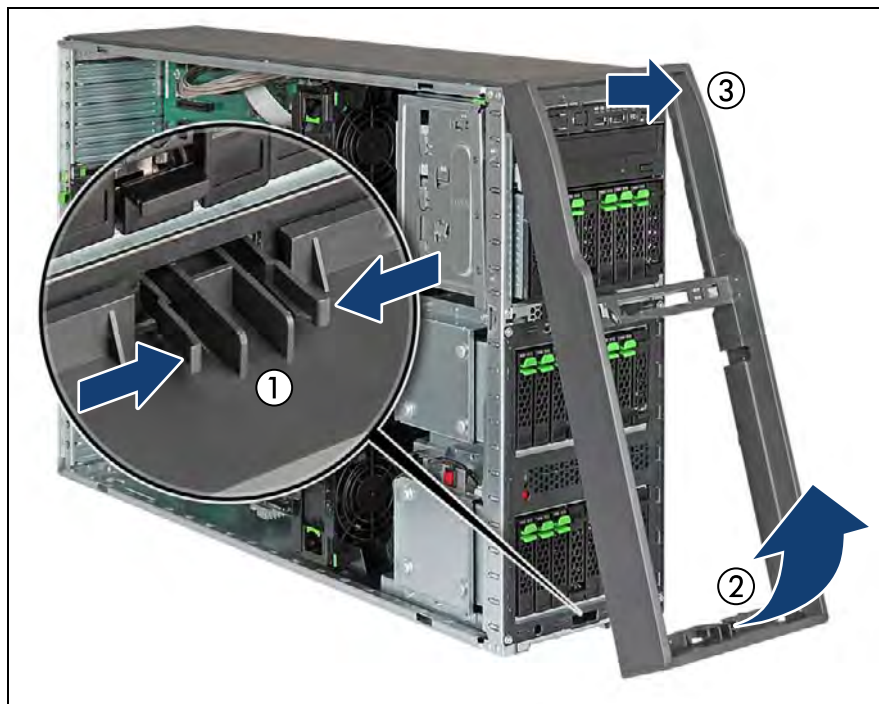


Figure 27: Removing the front cover (tower server)

- ▶ Pinch the locking clips to disengage the front cover (1, see close-up) while slightly pulling out.
- ▶ Carefully fold out the bottom end of the front cover (2).
- ▶ Unhook and remove the front cover (3).

4.6 Handling fan holders

- ▶ Please proceed as described in sections ["Replacing the system fan holder"](#) on page 329 and ["Replacing the rear fan holder"](#) on page 340.

4.7 Handling the system air duct

4.7.1 Removing the system air duct

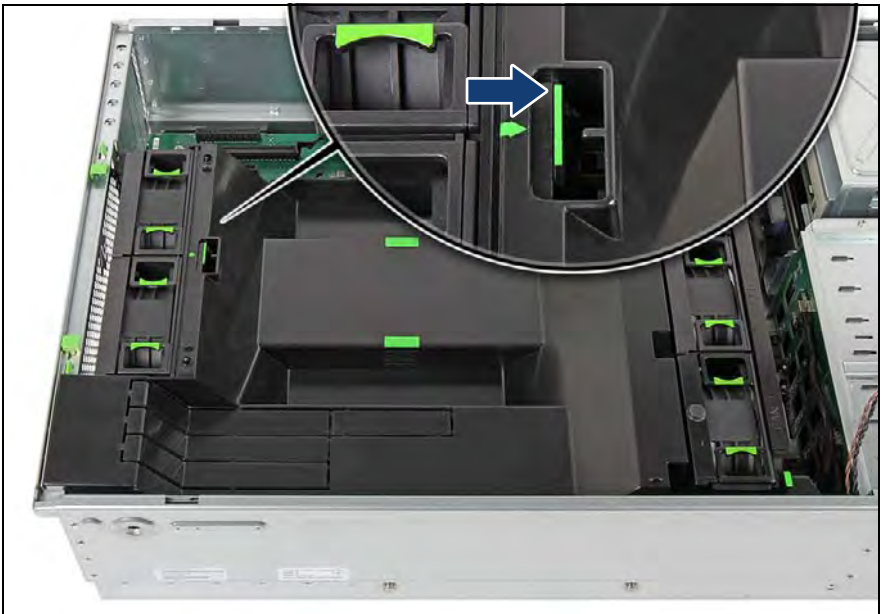


Figure 28: Detaching the system air duct

- ▶ Press in on the locking latch to disengage the system air duct (see close-up).

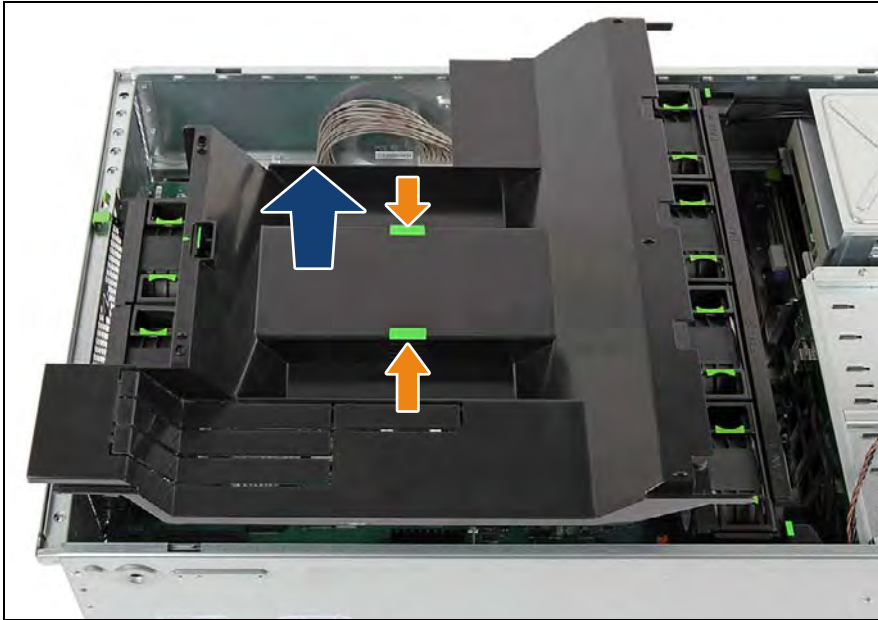


Figure 29: Removing the system air duct

- ▶ Hold the air duct by the two green grips (see orange arrows) and lift it out of the chassis in a vertical motion.

4.7.2 Installing the system air duct

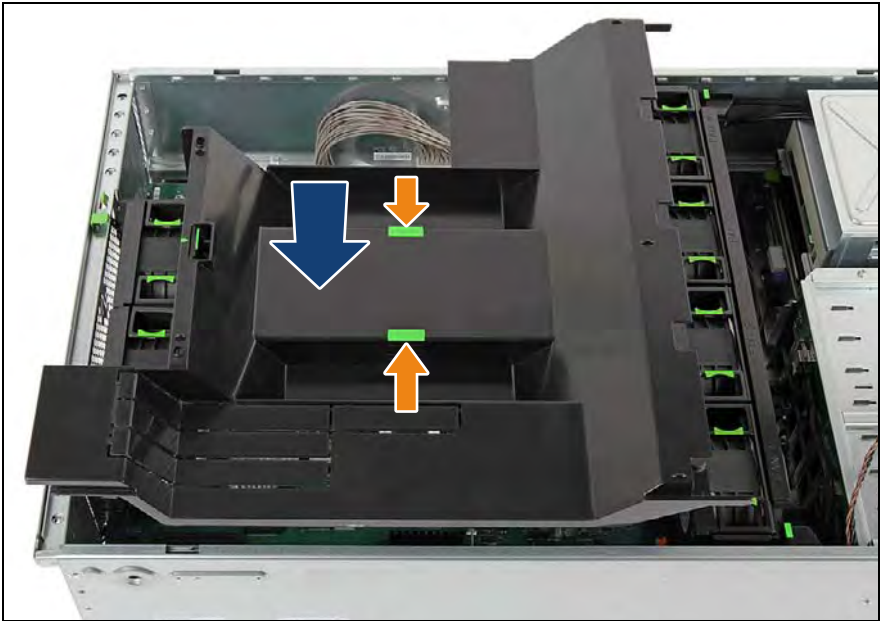


Figure 30: Mounting the system air duct (A)

- ▶ Ensure that the air duct spacer has been installed in the system as described in section "[Mounting the system board](#)" on page 691.
- ▶ Hold the air duct by the two green grips (see orange arrows).
- ▶ Lower the air duct into the chassis as shown.

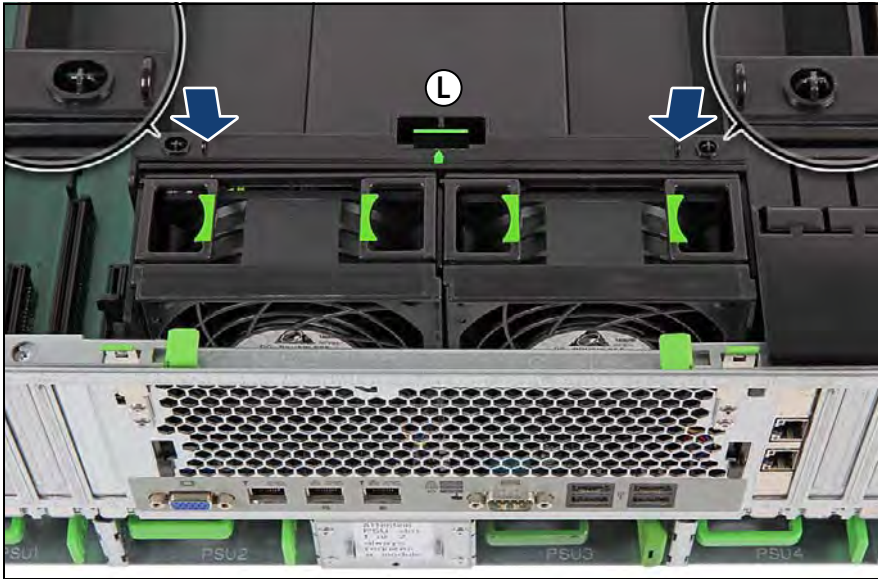


Figure 31: Mounting the system air duct (B)

- ▶ Ensure that the two centering bolts on the rear fan holder properly engage with the center holes on the air duct (see close-ups).
- ▶ Ensure that the locking latch (L) on the air duct has properly engaged.

4.8 Handling the system board carrier

4.8.1 Removing the system board carrier



Figure 32: Removing the system board carrier (A)

- ▶ Remove three screws from the system board carrier.

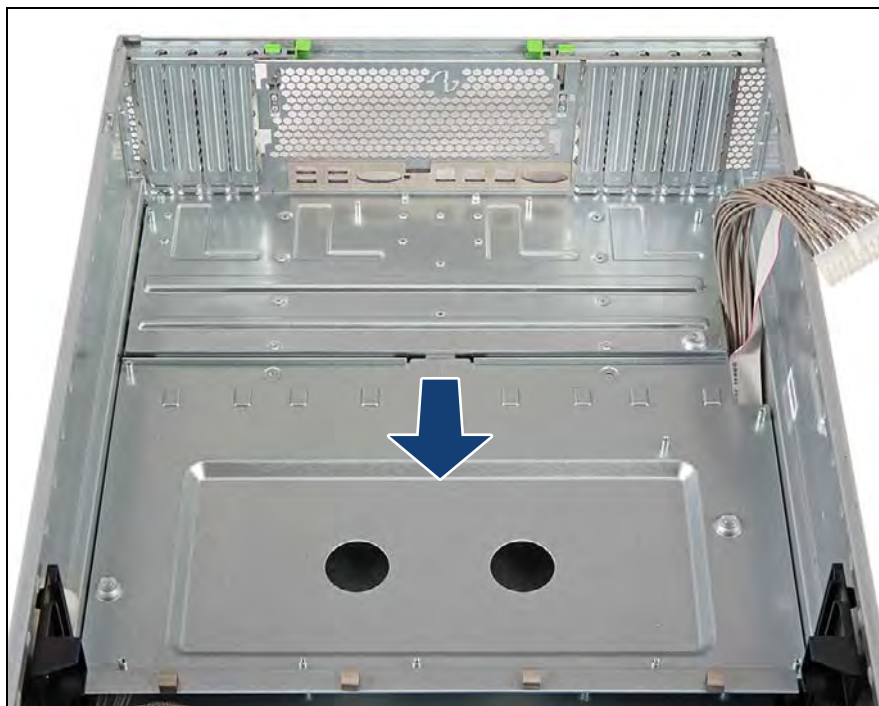


Figure 33: Removing the system board carrier (B)

- ▶ Slide the system board carrier towards the server front as far as it will go.

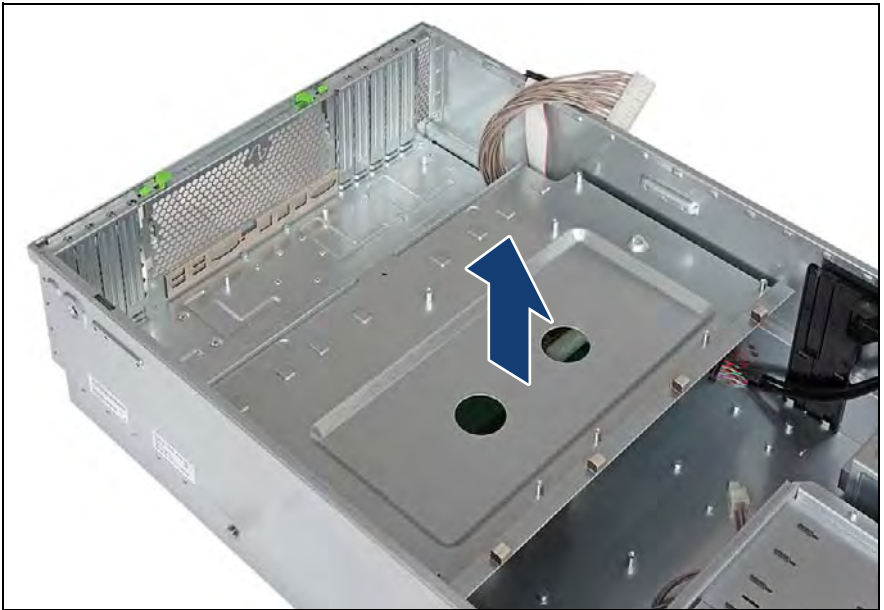


Figure 34: Removing the system board carrier (C)

- ▶ Hold the system board carrier by its two handle recesses and lift it out of the chassis.

4.8.2 Installing the system board carrier

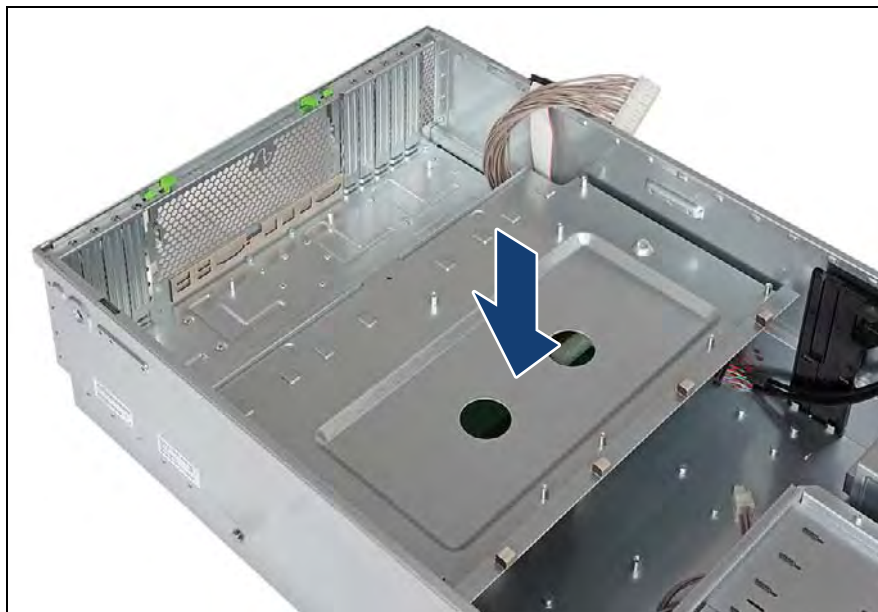


Figure 35: Mounting the system board carrier (A)

- ▶ Hold the system board carrier by its two handle recesses and lower it into the chassis as shown.

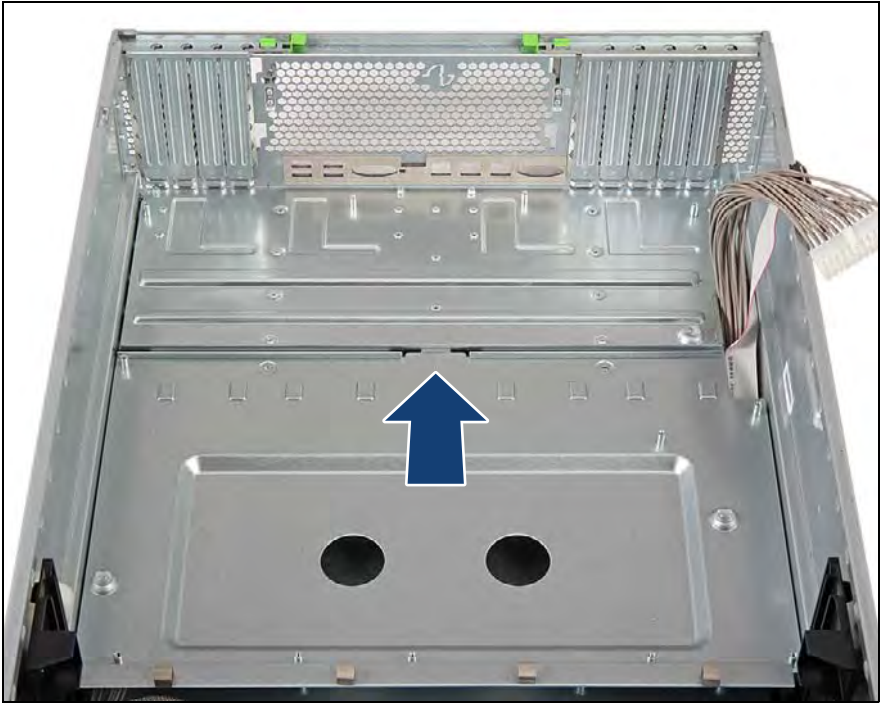


Figure 36: Mounting the system board carrier (B)

- ▶ Slide the system board carrier towards the server rear until the latch on the carrier properly engages in the slot on the rear server floor.



CAUTION!

Ensure not to trap or pinch any cables running through the cable exit from the power backplane.



Figure 37: Mounting the system board carrier (C)

- ▶ Secure the system board carrier with three M3 x 4.5 mm screws.

4.9 Handling accessible drive bays

4.9.1 Opening the accessible drive locking bar

4.9.1.1 Tower servers

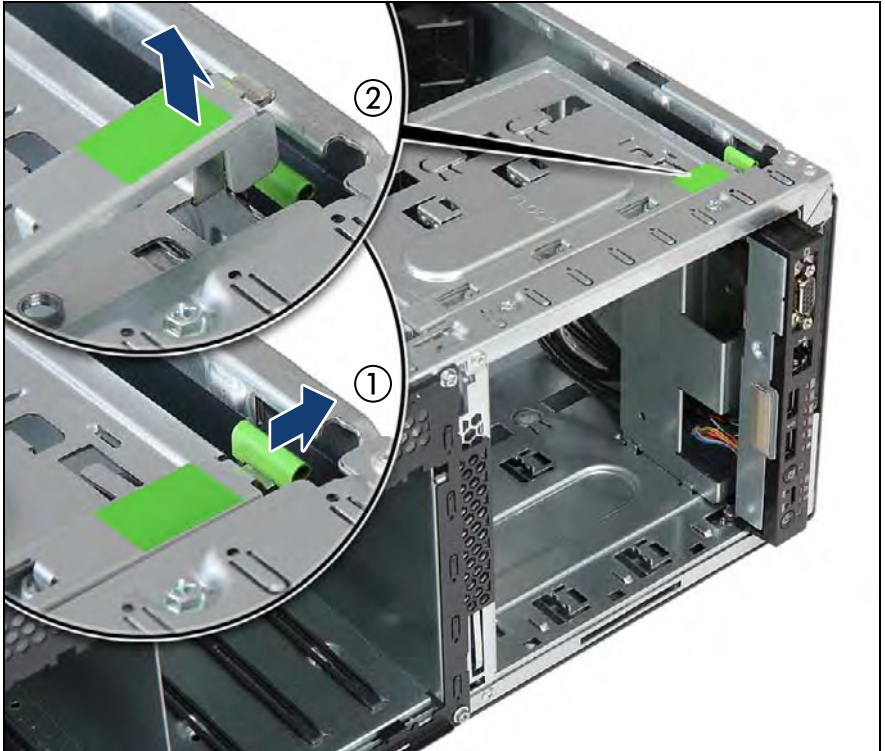


Figure 38: Opening the accessible drive locking bar

- ▶ Press out on the locking latch to disengage the accessible drive locking bar (1).
- ▶ Fold up the accessible drive locking bar (2).

4.9.1.2 Rack servers



Figure 39: Opening the accessible drive locking bar (rack systems)

- ▶ Pull up on the locking latch to disengage the accessible drive locking bar (1).
- ▶ Fold out the accessible drive locking bar (2).

4.9.2 Closing the accessible drive locking bar

4.9.2.1 Tower servers

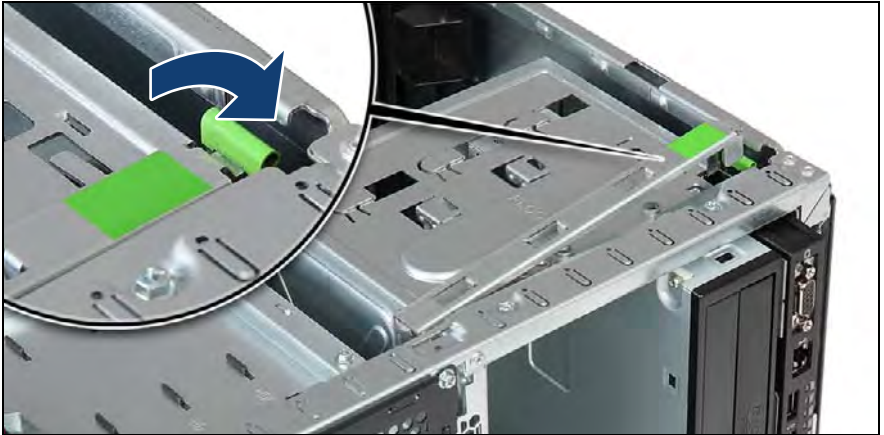


Figure 40: Closing the accessible drive locking bar

- ▶ Close the locking bar until it locks in place (see close-up).

4.9.2.2 Rack servers

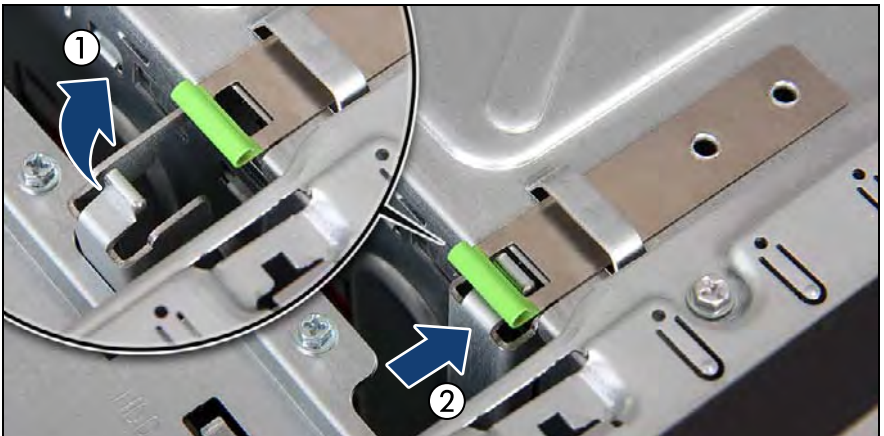


Figure 41: Closing the accessible drive locking bar (rack systems)

- ▶ Fold in the locking bar (1) until it locks in place (2, see close-up).

4.9.3 Accessible drive filler covers

4.9.3.1 Removing accessible drive filler covers



Figure 42: Removing an accessible drive filler cover

- ▶ Hold the accessible drive filler cover by its two handle recesses and pull it out of the desired installation bays.



CAUTION!

Always replace filler covers into unused drive bays to comply with applicable EMC regulations and satisfy cooling requirements.

4.9.3.2 Installing accessible drive filler covers



Figure 43: Installing an accessible drive filler cover

- ▶ Hold the accessible drive filler cover (C26361-K644-C933) by its two handle recesses and insert it into the empty installation bays with the punched-out arrow symbol facing up (see close-up).



CAUTION!

Always replace filler covers into unused drive bays to comply with applicable EMC regulations and satisfy cooling requirements.

4.9.4 Accessible drive covers

4.9.4.1 Removing accessible drive covers

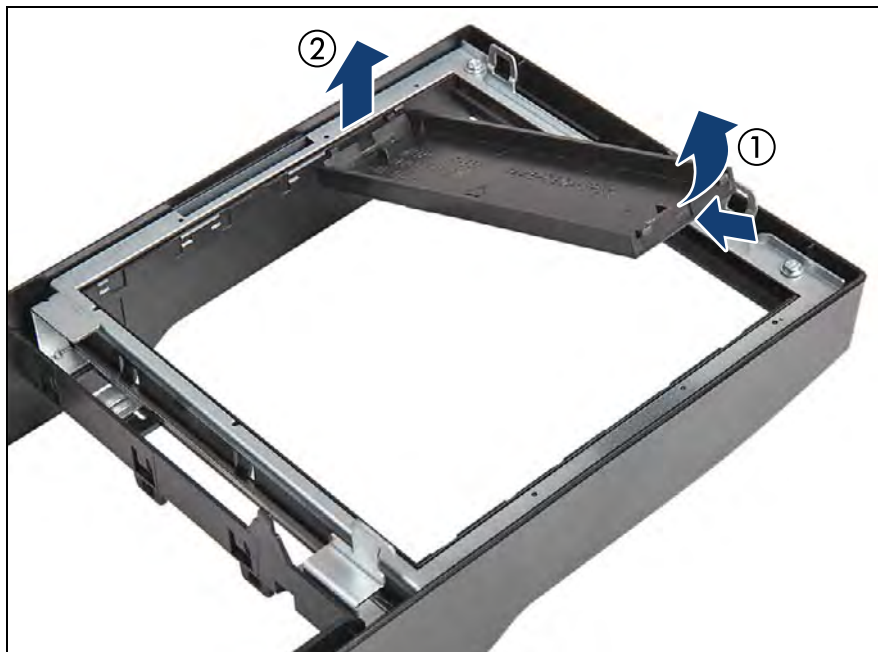


Figure 44: Removing an accessible drive covers

i Removing accessible drive covers is illustrated by the example of the tower server. In case of the rack front cover, the procedure is identical.

- ▶ Turn the front cover face down.
- ▶ Press in on the lugs on either side of the drive cover.
- ▶ Fold up (1) and remove the accessible drive cover (2).

4.9.4.2 Installing accessible drive covers



Figure 45: Installing accessible drive covers

i Installing accessible drive covers is illustrated by the example of the tower server. In case of the rack front cover, the procedure is identical.

- ▶ Ensure that an accessible drive filler cover has been installed in every empty drive bay.
- ▶ Turn the front cover face down.
- ▶ Join the two lugs on one edge of the accessible drive cover (C26361-K644-C60) with the right inner edge of the front cover (1).
- ▶ Fold down the accessible drive cover until it snaps in place (2).

4.10 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 TX300 S8 / RX350 S8 server must not run while the top / side cover is removed.
- For further safety information, please refer to chapter "[Important information](#)" on page 45.

4.10.1 Rack model

4.10.1.1 Installing the rack mounting frame

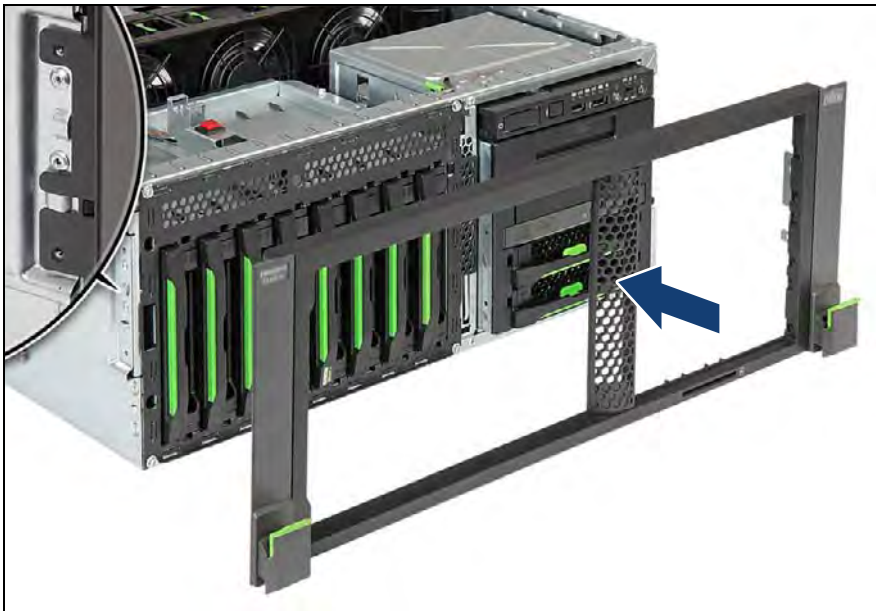


Figure 46: Installing the rack mounting frame (A)

- ▶ Fit the rack mounting frame on the server front.

- ▶ Ensure that the rack mounting brackets properly engage on both sides of the chassis as shown in the close-up.

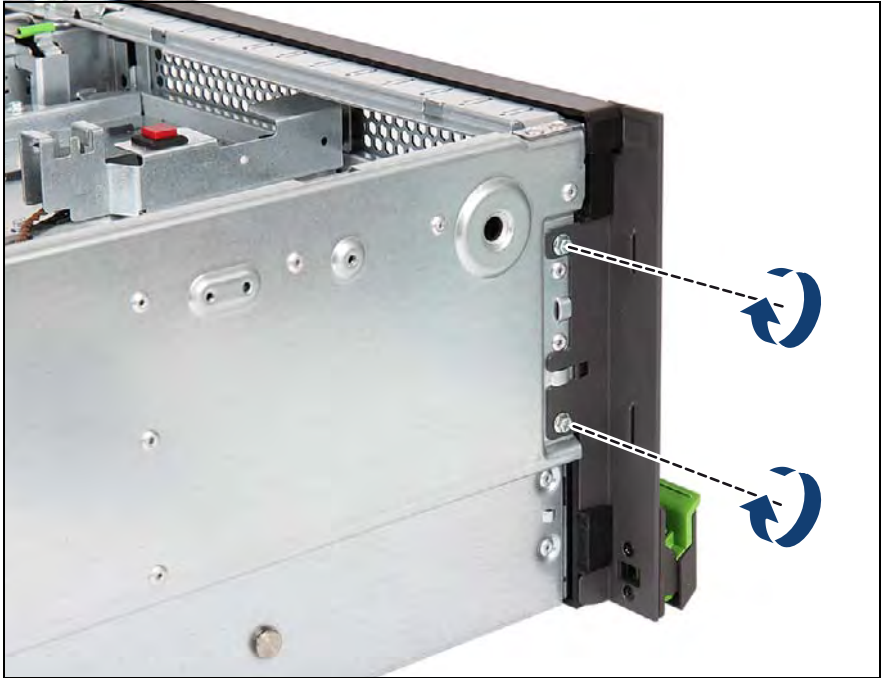


Figure 47: Installing the rack mounting frame (B)

- ▶ Ensure that the rack mounting brackets properly engage on both sides of the chassis as shown.
- ▶ Secure the rack front cover to the chassis with two M3 x 4.5 mm screws on either side.

4.10.1.2 Installing the ID card



Figure 48: Installing the ID card (rack server)

- ▶ Insert and slide the ID card into its slot (1) until it locks in place as shown (2).

4.10.1.3 Mounting the top cover



Figure 49: Mounting the top cover (rack server) (A)

- ▶ Open the locking lever on the top cover.
- ▶ Lower the top cover onto the chassis, recessed by 2 cm.



Figure 50: Mounting the top cover (rack server) (B)

- ▶ Close the locking lever on the top cover (1). This will slide the top cover shut engaging the locking mechanism (2).

4.10.2 Tower model

4.10.2.1 Mounting the front cover



Figure 51: Mounting the front cover (tower server) (A)

- ▶ Hook the two tabs on the upper end of the front cover into the notches in the chassis.



Figure 52: Mounting the front cover (tower server) (B)

- ▶ Fold down the front cover (1) until the locking clip on the bottom edge of the front cover engage (2).

4.10.2.2 Installing accessible drive and HDD bay covers



Figure 53: Installing the HDD bay cover

- ▶ Insert the HDD bay cover into the front cover as shown (1).
- ▶ Fold in the HDD bay cover until it locks in place (2).



Figure 54: Installing the accessible drive bay cover

- ▶ Insert the accessible drive bay cover into the front cover as shown (1).
- ▶ Fold in the accessible drive bay cover until it locks in place (2).

4.10.2.3 Installing the ID card



Figure 55: Installing the ID card (rack server)

- ▶ Insert and slide the ID card into its slot (1) until it locks in place as shown (2).

4.10.2.4 Mounting the side cover



Figure 56: Mounting the side cover (tower server) (A)

- ▶ Open the locking lever on the side cover.
- ▶ Fit the side cover on the chassis, recessed by 2 cm.



Figure 57: Mounting the side cover (tower server) (B)

- ▶ Close the locking lever on the side cover (1). This will slide the top cover shut engaging the locking mechanism (2).

4.10.2.5 Locking the server



Figure 58: Locking the server

- ▶ If required by security regulations, lock the server:
 - ▶ Insert the key into the lock on the server front (1).
 - ▶ Turn the key counter-clockwise to lock the front and side covers (2).
 - ▶ Remove the key from the server front.

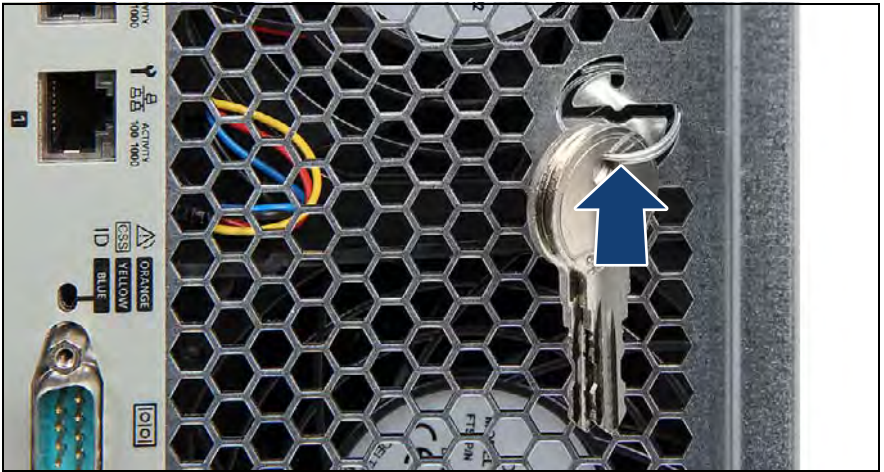


Figure 59: Storing the key ring (A)

- ▶ Insert the key ring into the slot on the server rear as shown.

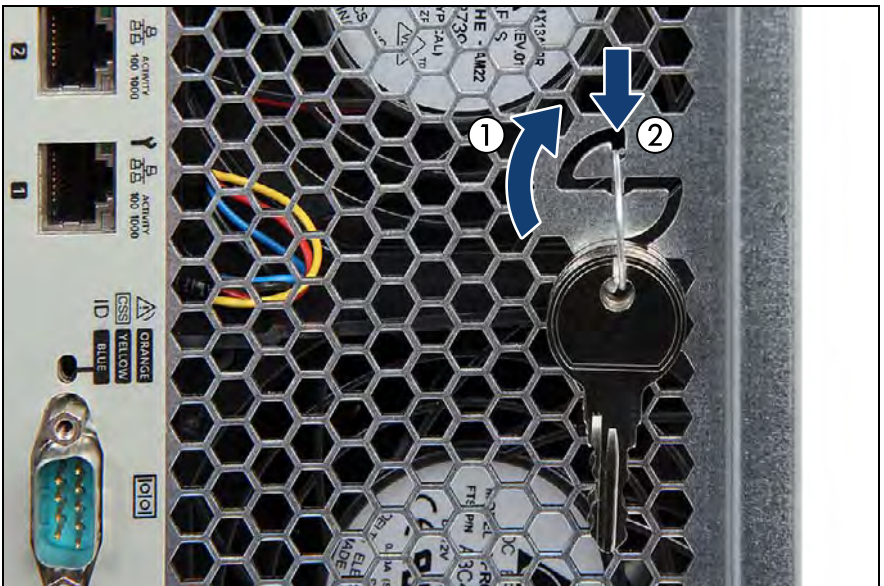


Figure 60: Storing the key ring (B)

- ▶ Turn the key ring clockwise by 90 degrees (1) until it latches in place as shown (2).

4.11 Handling the anti-tilt bracket

4.11.1 Installing the anti-tilt bracket

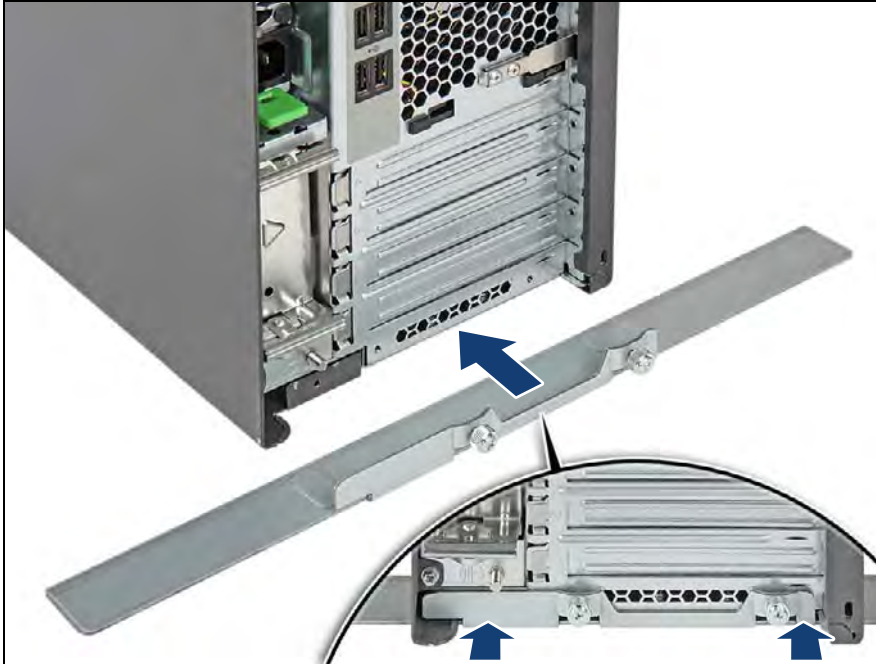


Figure 61: Installing the anti-tilt bracket (A)

- Fit the anti-tilt bracket onto the bottom edge of the server rear as shown.

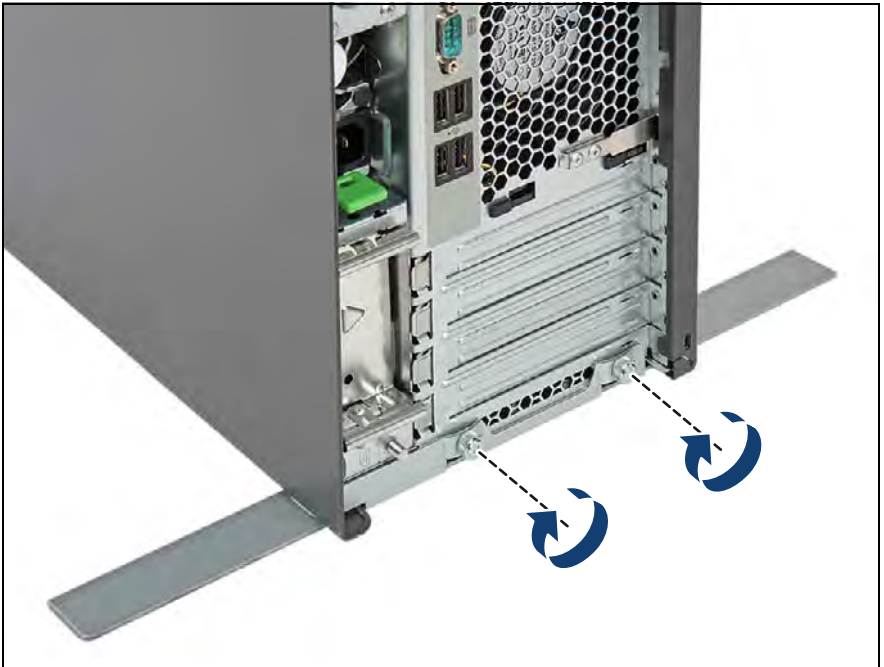


Figure 62: Installing the anti-tilt bracket (B)

- ▶ Secure the anti-tilt bracket on the rear of the server with two knurled thumb screws.

4.11.2 Removing the anti-tilt bracket

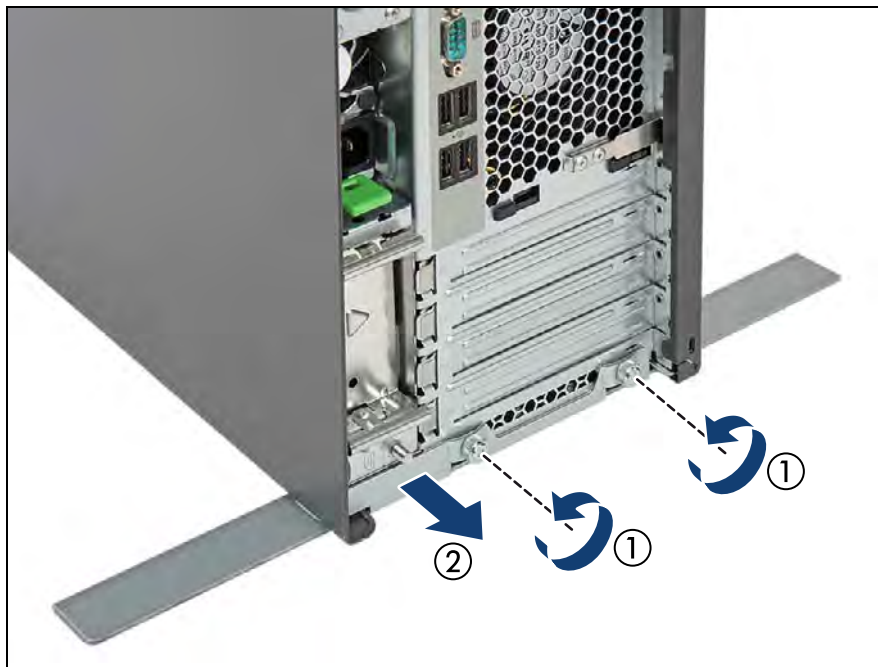


Figure 63: Removing the anti-tilt bracket

- ▶ Loosen the two knurled thumb screws on the anti-tilt bracket (1).
- ▶ Remove the anti-tilt bracket from the rear of the server (2).

4.12 Mounting the server in the rack

4.12.1 Seating the server on the rack rails

**CAUTION!**

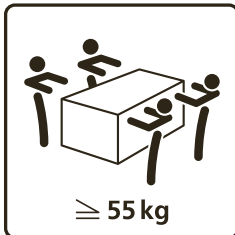
At least two people are needed to position the server on the rack rails.
(For the Japanese market, please refer to "安全上のご注意".)

**For configurations below 32 kg:**

At least two people are needed to lift the server into the rack cabinet.

**For configurations below 55 kg:**

At least three people are needed to lift the server into the rack cabinet.

**For configurations above 55 kg:**

At least four people are needed to lift the server into the rack cabinet.

Basic hardware procedures



CAUTION!

Additionally, a lifter is required in the following cases:

- The server weighs more than 50 kg.
- The server weighs more than 21 kg and is to be installed above the height of 25 U.

When using a lifter, this installation procedure needs to be carried out by maintenance personnel.



Refer to the rack cabinet manuals for more detailed information on other support systems.

- ▶ If required, install the rack mounting bracket and rack system into the rack as described in the "Rack Mounting Kit - RMK-F2 Drop-In" Mounting Instructions.



The printed poster is contained in the rack mounting kit.

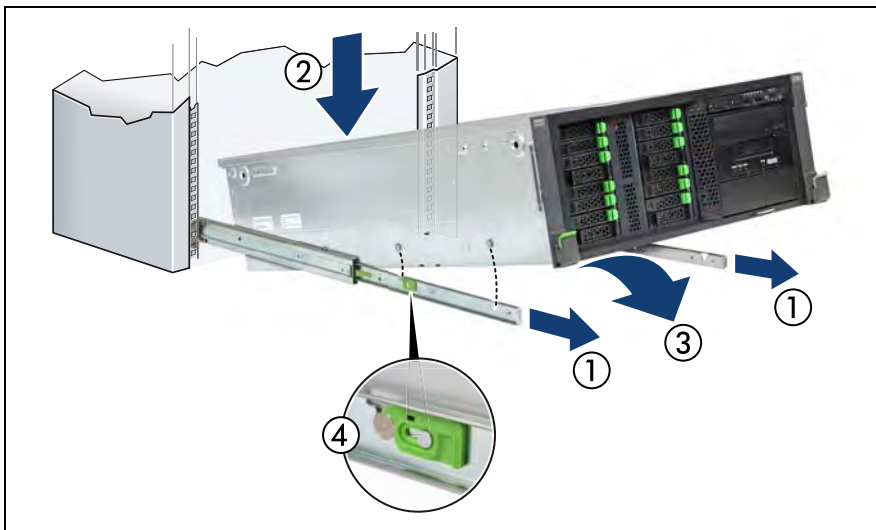


Figure 64: Mounting the server onto the rack rails

- ▶ Fully extend the telescopic rails until they lock in place (1).
- ▶ At a slight angle, lower the server onto the rear mounting point on the telescopic rails (2).

- ▶ Fold down the server (3). Ensure that all six rack mounting bolts are properly seated in the mounting points on the telescopic rails and that the locking bars engage (4).

4.12.2 Sliding the server into the rack

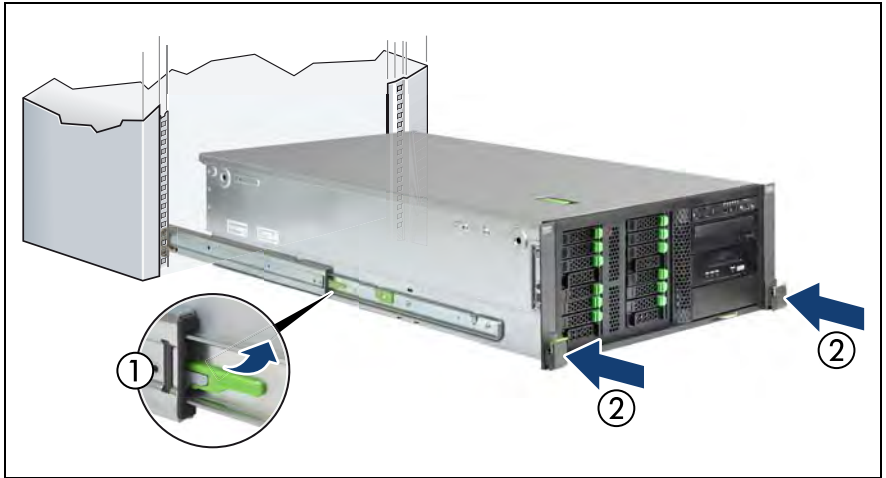


Figure 65: Sliding the server into the rack

- ▶ Pull up on the locking latch on both telescopic rails (1).
- ▶ Slide the server inside the rack as far as it will go (2) until the quick release levers on the rack mounting frame lock into place.
- ▶ Reconnect all cables except the power cord to the server rear.

i If you are not using a cable mounting arm (CMA kit), ensure that the rear cables are long enough not to be strained or damaged when extending the server out of the rack.

Use cable ties to prevent loose cables from blocking the air flow.

For information on connecting and securing the power cord, refer to section ["Connecting the server to the mains" on page 118](#).

4.13 Connecting the server to the mains

The PRIMERGY TX300 S8 / RX350 S8 server can be equipped with up to four hot-plug PSU modules that automatically adjust to any mains voltage in the range of 100 VAC to 240 VAC. Power redundancy is possible in various PSU configurations (see section "[PSU installation sequence](#)" on page 164).



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.

- ▶ Connect the power cords to the power supply units.
- ▶ Connect the mains plugs to grounded mains outlets in the in-house power supply network or power outlets of the rack socket strip (see also "PRIMECENTER Rack System" assembly guide).



It will take about 60 seconds until the server can be powered on.

4.13.1 Securing power cords

4.13.1.1 Mounting a PSU cable bracket

If the PSU cable bracket has not yet been mounted to the power supply module, proceed as follows:

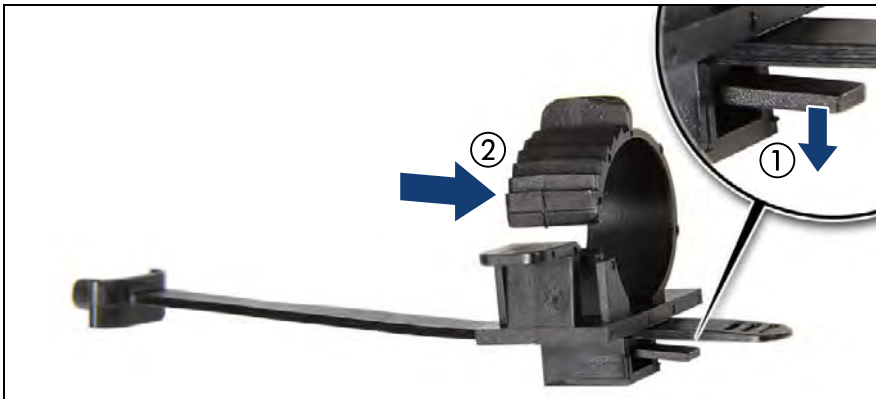


Figure 66: Preparing the PSU cable bracket

- ▶ Press down on the locking lever on the PSU cable bracket (1) and pull the loop away from the PSU cable bracket anchorage as far as it will go (2).

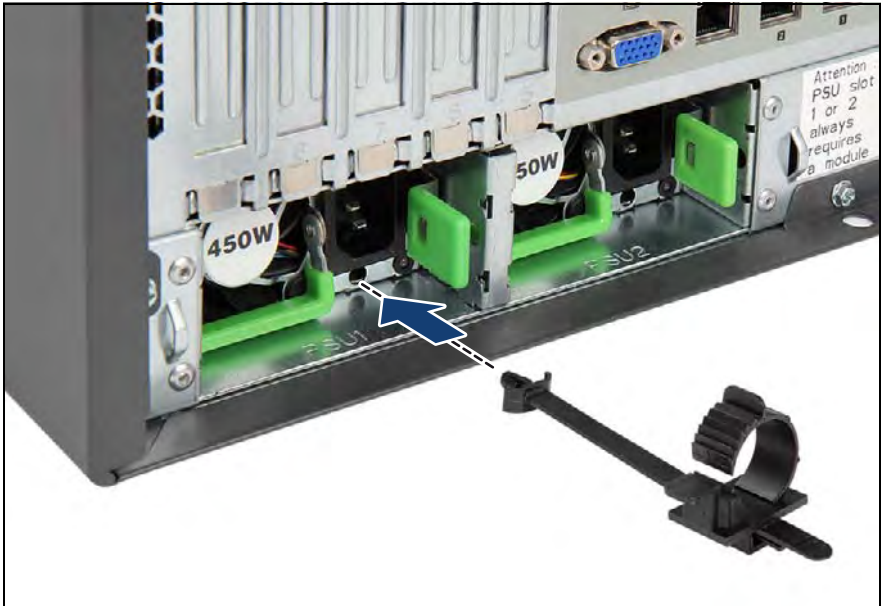


Figure 67: Mounting the PSU cable bracket (A)

- ▶ Locate the mounting hole on the power supply module.

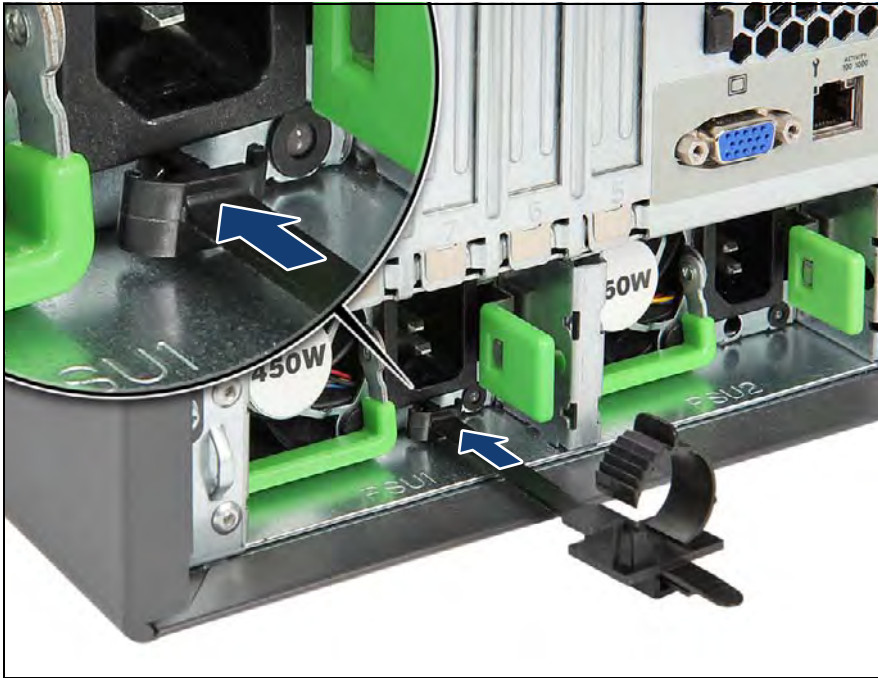


Figure 68: Mounting the PSU cable bracket (B)

- ▶ Clip the PSU cable bracket into the mounting hole on the power supply module as shown (see close-up).

i Once attached, a PSU cable bracket cannot be removed from the PSU module anymore.

- ▶ Proceed as described in section ["Securing a power cord in the PSU cable bracket"](#) on page 121.

4.13.1.2 Securing a power cord in the PSU cable bracket

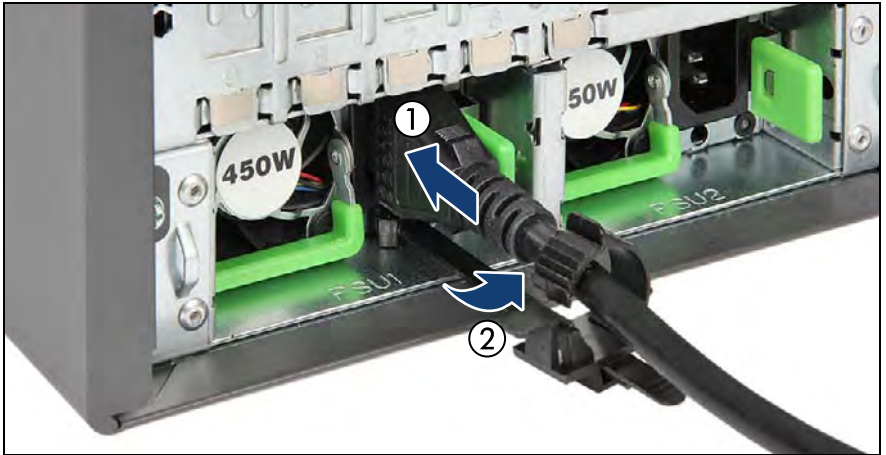


Figure 69: Securing power cords (A)

- ▶ Connect the power cords to the power supply units (1).
- ▶ Run the power cord through the PSU cable bracket as shown (2).
- ▶ Ensure that the PSU indicator on the PSU module lights up green.



For further information on the PSU operation status, refer to section ["PSU indicator" on page 784](#).



Figure 70: Securing power cords (B)

Basic hardware procedures

- ▶ Slide the loop on the PSU cable bracket onto the cord grip as shown.

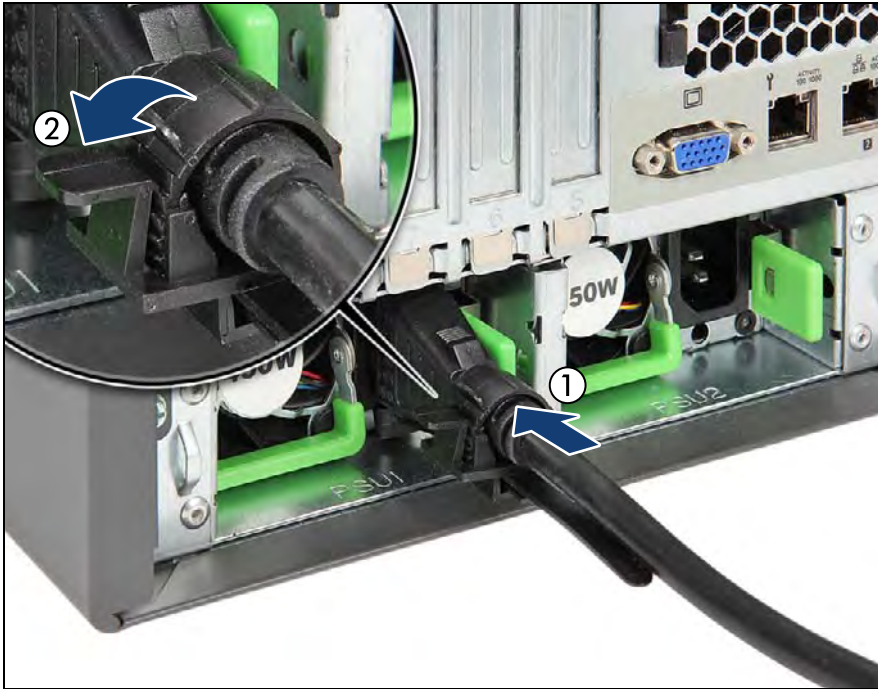


Figure 71: Securing power cords (C)

- ▶ Ensure that the loop on the PSU cable bracket is properly seated on the cord grip (1).
- ▶ Close the loop around the cord grip as shown (2) to secure the power cord.
- ▶ Secure all remaining power cords accordingly.

4.14 Switching on the server



CAUTION!

- Before switching on the server, make sure the top / side cover is closed. In order to comply with applicable EMC regulations (regulations on electromagnetic compatibility) and satisfy cooling requirements, the PRIMERGY TX300 S8 / RX350 S8 server must not run while the top / side cover is removed.
 - After connecting the server to the mains, it will take about 60 seconds until the server will switch into standby mode.
 - Follow the safety instructions in chapter ["Important information" on page 45](#).
- ▶ Connect all peripheral cables to the rear connector panel of the server.
 - ▶ Connect and secure the power cords as described in section ["Connecting the server to the mains" on page 118](#).
 - ▶ Connect all power cords to the power outlets.



To provide true phase redundancy, the second power supply should be connected to a different AC power source from the other supply. If one AC power source should fail, the server will still continue to run.



Figure 72: On / Off button on the front panel

- ▶ Press the On / Off button to start up the server.
- ▶ Ensure that the power-on indicator above the On / Off button is lit green.



For more information, refer to section ["Front panel controls and indicators" on page 786](#).

4.15 Concluding software tasks


- ▶ Perform the following software tasks to put the server back in operation:
 - ["Resetting the boot retry counter" on page 140](#)
 - ["Verifying the system time settings" on page 148](#)
 - ["Viewing and clearing the System Event Log \(SEL\)" on page 149](#)
 - ["Updating the NIC configuration file in a Linux environment" on page 150](#)
 - ["Resuming BitLocker functionality" on page 152](#)
 - ["Performing a RAID array rebuild" on page 153](#)
 - ["Looking up changed MAC / WWN addresses" on page 153](#)

5 Basic software procedures

5.1 Starting the maintenance task

5.1.1 Suspending 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. In the scenario described here, BitLocker uses the compatible Trusted Platform Module (TPM) to detect if the computer's startup process has been modified from its original state.

 For additional information on how to use BitLocker on a computer without a compatible TPM, please refer to the "BitLocker Drive Encryption" documentation page at <http://technet.microsoft.com/library/cc731549.aspx>.

Suspending BitLocker Drive Encryption is a temporary method for removing BitLocker protection without decrypting the drive Windows is installed on. Suspend BitLocker before modifying the server's hardware configuration or startup files. Resume 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 suspend BitLocker drive encryption before maintaining the server.

- When suspended, 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 suspend BitLocker-protection on the system volume, using the *BitLocker Drive Encryption* control panel item.

 This will temporarily disable BitLocker for maintenance purposes. The volume will not be decrypted and no keys will be discarded.

For Windows Server 2008:

- ▶ Open BitLocker Drive Encryption by clicking the *Start* button, clicking *Control Panel*, clicking *Security*, and then clicking *BitLocker Drive Encryption*.
- ▶ Select the system volume, and click *Turn Off BitLocker*.
- ▶ From the *Turn Off BitLocker* dialog box, click *Disable BitLocker*.

For Windows Server 2008 R2 and above:

- ▶ Open BitLocker Drive Encryption by clicking the *Start* button, clicking *Control Panel*, clicking *System and Security*, and then clicking *BitLocker Drive Encryption*.
- ▶ Select the system volume, and click *Suspend Protection*.
- ▶ Click *Yes* to confirm that your data will not be protected while BitLocker is suspended.



In order to determine which features are accessible through the BitLocker setup wizard, it may be necessary to modify the BitLocker Group Policy settings.

For further information on how to suspend BitLocker drive encryption, please refer to the Microsoft TechNet library at <http://technet.microsoft.com/library/cc731549.aspx>.

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

5.1.2 Disabling SVOM boot watchdog functionality

The ServerView Operations Manager boot watchdog determines whether the server boots within a preset time frame. If the watchdog timer expires, the system will automatically reboot.

5.1.2.1 Viewing boot watchdog settings

Viewing boot watchdog settings in the BIOS

- ▶ Enter the BIOS.
- ▶ Select the *Server Mgmt* menu.
- ▶ Under *Boot Watchdog*, you can obtain detailed information about the current watchdog status, time out intervals and actions that are triggered if watchdog time outs are exceeded.



For detailed information on BIOS settings, refer to the corresponding BIOS Setup Utility reference manual.

Viewing boot watchdog settings in the iRMC web frontend

- ▶ Enter the ServerView iRMC web frontend.
- ▶ Select the *Server Management* menu.
- ▶ Under *Watchdog Settings*, you can obtain detailed information about the current watchdog status, time out intervals and actions that are triggered if watchdog time outs are exceeded.



For detailed information on iRMC settings, refer to the "Integrated Remote Management Controller" user guide.

Viewing boot watchdog settings in ServerView Operations Manager

- ▶ In ServerView Operations Manager *Single System View* select *Maintenance* from the *Information / Operation* menu.
- ▶ Under *ASR&R* select the *Watchdog* tab to obtain detailed information about the current watchdog status, time out intervals and actions that are triggered if watchdog time outs are exceeded.



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

5.1.2.2 Configuring boot watchdog settings

If the system is to be started from removable boot media for firmware upgrade purposes, the Boot watchdog needs to be disabled before starting maintenance task. Otherwise, the Boot watchdog might initiate a system reboot before the flash process is complete.



CAUTION!

An incomplete firmware upgrade process may render the server inaccessible or result in damaged / destroyed hardware.

Timer settings can be configured in the BIOS or using the ServerView iRMC web frontend:

Configuring boot watchdog settings in the BIOS

- ▶ Enter the BIOS.
- ▶ Select the *Server Mgmt* menu.
- ▶ Under *Boot Watchdog* set the *Action* setting to *Continue*.
- ▶ Save your changes and exit the BIOS.



For detailed information on how to access the BIOS and modify settings, refer to the corresponding BIOS Setup Utility reference manual.

Configuring boot watchdog settings using the iRMC web frontend

- ▶ Enter the ServerView iRMC web frontend.
- ▶ Select the *Server Management* menu.
- ▶ Under *Watchdog Settings* select *Continue* from the *Boot Watchdog* drop down list.
- ▶ Click *Apply* for the changes to take effect.



For detailed information on iRMC settings, refer to the "Integrated Remote Management Controller" user guide.

5.1.3 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.



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.

5.1.4 Verifying and configuring the backup software solution



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



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 web pages.

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

When booting your server offline from the ServerView Suite DVD to perform an offline BIOS / firmware 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.

Using Update Manager Express

- ▶ If performing an offline BIOS / firmware update, first of all prepare the ServerView Update DVD or USB stick:
 - ▶ Download the latest ServerView Update DVD image from Fujitsu:
for the EMEA market
<ftp://ftp.ts.fujitsu.com/images/serverview>
for the Japanese market:
<http://jp.fujitsu.com/platform/server/primergy/products/note/svsdvd/dvd/>
 - ▶ Burn the image to a DVD.
 - ▶ In order to create a bootable USB stick, please proceed as described in the "Local System Update for PRIMERGY Servers" user guide.
- ▶ Before using the ServerView Update DVD or USB stick in an offline environment, properly shut down the server and disconnect all external I/O connections (like LAN, FC or SAS cables) from the system. Only keep mouse, keyboard, video cable and AC power cord connected.



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

To start Update Manager Express from the (physical) Update DVD or from a USB stick, proceed as follows:


- ▶ Prepare your Update DVD or USB stick as described in the "Local System Update for PRIMERGY Servers" user guide.
- ▶ Boot the server from the prepared Update DVD or USB stick:
 - DVD:** ▶ Switch on the server.
 - ▶ Right after switching on the server, insert the Update DVD into the DVD drive and close the tray.
 - USB:** ▶ Connect the USB stick to the server.
 - ▶ Switch on the server.

If the server does not boot from DVD or USB stick, proceed as follows:

- ▶ Reboot the server, e.g. by pressing the reset button on the front or switching the server off and then on again after a few seconds.
- ▶ Once the server has been started, press **[F12]** to enter the boot menu.
- ▶ Use the **[↑]** and **[↓]** cursor keys to select your DVD drive or USB stick as boot device and press **[ENTER]**.


The server will now boot from the Update DVD or USB stick.
- ▶ After the boot process is complete, select your preferred GUI language.

The Update Manager Express main window will be displayed.
- ▶ Finish the intended maintenance task.

 For further information, refer to the "Local System Update for PRIMERGY Servers" user guide.

Using PrimeCollect

To start PrimeCollect, proceed as follows:

- ▶ Before using PrimeCollect in an offline environment, properly shut down the server and disconnect all external I/O connections (like LAN, FC or SAS cables) from the system. Only keep mouse, keyboard, video cable and AC power cord connected.
 -  Ensure that all external I/O connections are uniquely identified so that you can reconnect them into their original locations after concluding the task.

Basic software procedures

- ▶ Switch on the server.
- ▶ Right after switching on the server, insert the ServerView Suite DVD into the DVD drive and close the drive tray.

If the server does not boot from DVD, proceed as follows:

- ▶ Reboot the server, e.g. by pressing the reset button on the front or switching the server off and then on again after a few seconds.
- ▶ Once the server has been started, press **F12** to enter the boot menu.
- ▶ Use the **↑** and **↓** cursor keys to select your DVD drive as boot device and press **ENTER**.

The server will now boot from the ServerView Suite DVD.

- ▶ After the boot process is complete, select your preferred GUI language.
- ▶ In the initial Installation Manager startup window, choose *PrimeCollect* from the *Installation Manager mode* section.
- ▶ Click *Continue* to proceed.
- ▶ Finish the intended maintenance task.



For further information, refer to the "PrimeCollect" user guide.

Concluding the procedure

- ▶ 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.

5.1.6 Switching on the ID indicator

When working in a datacenter environment, switch on the ID indicator on the front and rear connector panels of the server for easy identification.



For further information, refer to section "[Locating the defective server](#)" on [page 57](#) or to the "ServerView Suite Local Service Concept (LSC)" and "Integrated Remote Management Controller" user guides.

Using the ID button on the front panel

- ▶ Press the ID button on the front panel to switch on the system identification LEDs.



For further information, refer to section "[Front panel controls and indicators](#)" on [page 786](#).

Using the iRMC web frontend

- ▶ Enter the ServerView iRMC web frontend.
- ▶ Under *System Overview*, click *Identify LED On* to switch on the ID indicators.

Using ServerView Operations Manager

- ▶ In ServerView Operations Manager *Single System View* press the *Locate* button in the title bar to switch on the ID indicators.

5.2 Completing the maintenance task

5.2.1 Updating or recovering the system board BIOS and iRMC



For the Japanese market, follow the instructions provided separately.

After replacing the system board, memory or a CPU, it is essential to upgrade the BIOS and iRMC to the latest version. The latest BIOS and iRMC 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)



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

5.2.1.1 Updating or recovering the system board BIOS

BIOS flash procedure

- ▶ Perform the BIOS flash procedure as described in your server's "BIOS Setup Utility" reference manual.

BIOS recovery procedure

- ▶ Perform the BIOS recovery procedure as described in your server's "BIOS Setup Utility" reference manual.

5.2.1.2 Updating or recovering the iRMC

iRMC flash procedure

- ▶ Prepare a USB stick including the bootable iRMC firmware update image.
- ▶ Connect the USB stick to the USB port.



Ensure that only the USB device with the iRMC firmware is connected to the USB port. Remove all other USB devices temporarily.

- ▶ Restart the server.

The system will detect the USB stick.



If the BIOS cannot identify the USB stick, the pop-up message Failed to boot for Emergency flash. Please Reset now. will show up in the center of the screen.

- ▶ Choose one of the following options from the update tool menu to start the iRMC update process:

Normal

Choose this option to update an existing system board.

Initial Choose this option if the system board has been replaced prior to the iRMC update procedure. This option will perform all relevant flash procedures in a row, including the iRMC firmware and bootloader.



CAUTION!

Do not interrupt the iRMC upgrade process after it has started. If the process is interrupted, the iRMC BIOS may be permanently corrupted.



If the iRMC does not work after flashing, disconnect the system from the mains and reconnect it again.

- ▶ After completion of the flash process, remove the USB stick and restart the server.

iRMC recovery procedure

- ▶ Prepare a USB stick including the bootable iRMC firmware update image.
- ▶ Ensure that the server has been shut down and disconnected from the mains as described in section ["Shutting down the server" on page 62](#).
- ▶ Connect the USB stick to the USB port.



Ensure that only the USB device with the iRMC firmware is connected to the USB port. Remove all other USB devices temporarily.

- ▶ Connect the server to the mains while pushing the ID button on the front panel. Ask a second person to help you if necessary.
- ▶ Ensure that the Global Error indicator and the ID indicator are flashing to indicate that the server is entering the iRMC recovery state.

- ▶ Press the Power On / Off button. The system starts the POST process.



In iRMC recovery mode, the “FUJITSU” logo does not show up.

The system will detect the USB stick.



If the BIOS cannot identify the USB stick, the pop-up message `Failed to boot for Emergency flash. Please Reset now.` will show up in the center of the screen.

- ▶ Choose the `Recovery_L` option from the update tool menu to start the iRMC update process.



CAUTION!

Do not interrupt the iRMC upgrade process after it has started. If the process is interrupted, the iRMC BIOS may be permanently corrupted.



If the iRMC does not work after flashing, disconnect the system from the mains and reconnect it again.

- ▶ Shut down the server by pressing the power On / Off button.
- ▶ Disconnect the server from the mains to exit the iRMC recovery state.

5.2.2 Verifying system information backup / restore

To avoid the loss of non-default settings when replacing the system board, a backup copy of important system configuration data is automatically stored from the system board NVRAM to the Chassis ID EPROM. After replacing the system board the backup data is restored from the Chassis ID board to the new system board.

In order to verify whether the backup or restore process has been successful, check the System Event Log (SEL) using the ServerView Operations Manager (see also section ["Viewing and clearing the System Event Log \(SEL\)" on page 149](#)).

After replacing the system board

- ▶ Check the SEL log files as described in section "[Viewing and clearing the System Event Log \(SEL\)](#)" on page 149 to verify whether the backup data on the Chassis ID EPROM has been restored to the system board:

```
Chassis IDPR0M: Restore successful
```

After replacing the Chassis ID EPROM



In case of the PRIMERGY TX300 S8 / RX350 S8 server, the Chassis ID EPROM is integrated on the front panel board.

- ▶ Check the SEL log files as described in section "[Viewing and clearing the System Event Log \(SEL\)](#)" on page 149 to verify whether a backup copy of the system board settings has been transferred to the Chassis ID EPROM:

```
Chassis IDPR0M: Backup successful
```

5.2.3 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)



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:

- 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.

5.2.4 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.



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 your server's "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.

 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.

5.2.5 Verifying and configuring the backup software solution


 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

 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 web pages.

Re-enabling backup drives

If a backup drive has been disabled or deleted from the backup software drive list as described in section [5.1.4 on page 129](#), it has to be re-enabled to complete the maintenance task.

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



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

5.2.6 Resetting the boot retry counter

The boot retry counter is decremented from its preset value every time the POST watchdog initiates a system reboot. When the value has reached '0', the system will shut down and power off.

5.2.6.1 Viewing the boot retry counter

The current boot retry counter status is available in the BIOS:

- ▶ Enter the BIOS.
- ▶ Select the *Server Mgmt* menu.
- ▶ Under *Boot Retry Counter* the current number of remaining boot attempts is displayed. The value is further decremented with every failed boot attempt or system reboot resulting from critical system errors.
- ▶ Exit the BIOS.

5.2.6.2 Resetting the boot retry counter

The boot retry counter should be reset to its original value concluding every service task.



Please note, if the customer does not know about the original boot retry values:

If the system boots up and no further errors occur within 6 hours after that successful boot attempt, the boot retry counter will automatically be reset to its default value. Please take into account, that the specified number of boot attempts can only be determined after this period of time.

If the customer knows about the original boot retry values, proceed as follows to reset or configure the boot retry counter:

Resetting the boot retry counter in the BIOS

- ▶ Enter the BIOS.
- ▶ Select the *Server Mgmt* menu.
- ▶ Under *Boot Retry Counter* press the or keys to specify the maximum number of boot attempts (0 to 7).
- ▶ Exit the BIOS.

Resetting the boot retry counter using the ServerView Operations Manager

- ▶ In the ServerView Operations Manager *Administration* view, select *Server Configuration*.
- ▶ If more than one server is managed in SVOM, select the target server and click *Next*.
- ▶ From the *Server Configuration* menu pane, choose *Restart Options*.
- ▶ Under *Reboot Retries*, specify the maximum number of boot attempts (0 to 7) in the *Default for reboot tries* field.

Resetting the boot retry counter using iRMC web frontend

- ▶ Enter the ServerView iRMC web frontend.
- ▶ Select the *Server Management* menu.
- ▶ The following boot retry counter settings are available under *ASR&R Options*:
 - ▶ Under *Retry counter max* specify the maximum number of attempts to boot the operating system (0 to 7).
 - ▶ Under *Retry counter* the current number of remaining boot attempts is displayed. Overwrite this value with the maximum number of boot attempts specified above in order to reset the boot retry counter.
- ▶ Click *Apply* for the changes to take effect.



For detailed information on iRMC settings, refer to the "Integrated Remote Management Controller" user guide.

5.2.7 Resetting the error status after replacing memory modules or processors

5.2.7.1 Memory modules

ServerView Operations Manager may report a defective memory module in case of a memory error.



Important note

After replacing a defective memory module, please check if the error counter has been reset automatically. If the memory slot is still marked as failed, please reset the error counter manually using one of the methods below.

Using the iRMC web frontend

- ▶ Enter the ServerView iRMC web frontend.
- ▶ Select the *System Information* menu.
- ▶ Under *System Components*, select the check boxes next to the affected memory modules.
- ▶ From the drop down list, select *Reset Error Counter*.
- ▶ Click *Apply* for the changes to take effect.

Using ServerView Maintenance Tools (Windows only)

- ▶ Launch the ServerView Maintenance Tools:
 - Windows Server 2008 R2 and below:
Start > (All) Programs > Fujitsu > ServerView Suite > Agents > Maintenance Tools
 - Windows Server 2012 and above:
Start > Apps > Fujitsu > Maintenance Tools
- ▶ Choose the *Memory* status tab.
- ▶ Select the memory module which shows the pre-failure status.
- ▶ Click on *Reset Status*.




The *Reset Status* button will only be available if the selected memory module contains errors.

- ▶ Ensure that all pre-fail / fail status issues have been resolved in ServerView Operations Manager.

Using the command line interface (Linux only)

The memory error counter can be reset using the `meclear` utility which is part of the ServerView agents for Linux.


 `meclear` (Memory Module Error Counter Reset Utility) allows to reset the error count collected for a memory module, for example after it has been replaced.

For further details, please refer to the `meclear` manual pages.

- ▶ Log in as root.
- ▶ Enter the command below, followed by **ENTER**:
`/usr/sbin/meclear`
- ▶ Select the number of a memory module with a status other than "OK" or "Not available".
- ▶ Repeat the step above until all memory modules show the "OK" status.
- ▶ Ensure that all pre-fail / fail status issues have been resolved in ServerView Operations Manager.

5.2.7.2 Processors

ServerView Operations Manager may report a defective processor in case of a critical error.

 **Important note**
After replacing a defective CPU, the error counter must be reset manually using one of the methods below.

Using ServerView Maintenance Tools (Windows only)

- ▶ Launch the ServerView Maintenance Tools:
 - Windows Server 2008 R2 and below:
Start > (All) Programs > Fujitsu > ServerView Suite > Agents > Maintenance Tools
 - Windows Server 2012 and above:
Start > Apps > Fujitsu > Maintenance Tools

Basic software procedures

- ▶ Choose the *CPU* status tab.
- ▶ Select the CPU which shows the pre-failure status.
- ▶ Click on *Reset Status*.
- ▶ Ensure that all pre-fail / fail status issues have been resolved in ServerView Operations Manager.

Using the command line (Linux only)

Proceed as follows to reset the error counter of a specific processor:

- ▶ Log in as root.
- ▶ Enter the command below, followed by **[ENTER]**:
 - For rack and tower servers (RX and TX server series):
`/usr/sbin/eecdcp -c oc=0609 oi=<CPU#>`
 - For blade and scale-out servers (BX and CX server series):
`/usr/sbin/eecdcp -c oc=0609 oi=<CPU#> cab=<cabinet nr>`

To identify the cabinet number, enter the following command:

```
/usr/sbin/eecdcp -c oc=E204
```



<CPU#> parameters are "0" for CPU 1 and "1" for CPU 2.

- ▶ If the error status cannot be reset with the method above, please use the following procedure for resetting the error counter of all processors:
 - ▶ Log in as root.
 - ▶ Enter the commands below, followed by **[ENTER]**:
 1. `/etc/init.d/srvmagt stop`
`/etc/init.d/srvmagt_scs stop`
`/etc/init.d/eecd stop`
`/etc/init.d/eecd_mods_src stop`
 2. `cd /etc/srvmagt`
 3. `rm -f cehist.bin`
 4. `/etc/init.d/eecd_mods_src start`
`/etc/init.d/eecd start`
`/etc/init.d/srvmagt start`
`/etc/init.d/srvmagt_scs start`

- ▶ Ensure that all pre-fail / fail status issues have been resolved in ServerView Operations Manager.

5.2.8 Performing a fan test after replacing a defective fan

After replacing a defective system fan or power supply unit containing a defective fan, the fan error indicators will stay lit until the next fan test. By default, a fan test is automatically started every 24 hours. The first automatic fan test being performed after replacing a fan will turn off the fan error indicator.

If you want to start the fan test manually, you can do so by following the description below:

Executing the fan test via the iRMC Web interface

- ▶ Log into the iRMC web interface.
- ▶ Under *Sensors* select *Fans*.
- ▶ Select the replaced fan in the system fans group and click *Start Fan Test*.



For detailed information on iRMC settings, refer to the "Integrated Remote Management Controller" user guide.

Executing the fan test via ServerView Operations Manager

- ▶ Open the ServerView Operations Manager and log in.
- ▶ Under *Administration* select *Server Configuration*.
- ▶ In the hierarchy tree of the *Server list* tab, select the server to be configured.
- ▶ In the right-hand side of the window, specify the details on the selected server and confirm your entries by clicking *GO...*

In the left-hand section of the window, the *Configuration* tab is being activated.

- ▶ In the navigation area of the *Configuration* tab, select *Other Settings*.
- ▶ Under *Daily Fan Test*, set the daily fan test time to a few minutes from the current time. (Ensure to note down your previous setting.)
- ▶ Click *Save Page*.
The fan test will be started at the specified time.

- ▶ After the fan test is complete, restore the time setting to its initial value and click *Save Page*.



For more detailed information, refer to the "ServerView Operations Manager" user guide.

For the Japanese market: Executing the fan test via Chassis ID Prom Tool



Please follow the instructions provided separately.

5.2.9 Enabling SVOM boot watchdog functionality

If ServerView Operations Manager boot watchdog functionality has been disabled for firmware upgrade purposes (see section [5.1.2 on page 127](#)), it has to be re-enabled to complete the maintenance task.

Timer settings can be configured in the BIOS or using the ServerView iRMC web frontend:

Configuring boot watchdog settings in the BIOS

- ▶ Enter the BIOS.
- ▶ Select the *Server Mgmt* menu.
- ▶ Under *Boot Watchdog* set the *Action* setting to *Reset*.
- ▶ Save your changes and exit the BIOS.



For detailed information on how to access the BIOS and modify settings, refer to the corresponding BIOS Setup Utility reference manual.

Configuring boot watchdog settings using the iRMC web frontend

- ▶ Enter the ServerView iRMC web frontend.
- ▶ Select the *Server Management* menu.
- ▶ Under *Watchdog Settings* ensure that the check box next to *Boot Watchdog* is selected. From the drop down list choose *Reset* and specify the desired timeout delay.
- ▶ Click *Apply* for the changes to take effect.



For detailed information on iRMC settings, refer to the "Integrated Remote Management Controller" user guide.

5.2.10 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*



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.



For detailed information on how to access the BIOS and modify settings, refer to your server's "BIOS Setup Utility" reference manual.

5.2.11 Verifying the memory mode

If a memory module fails, the server will reboot and the defective module will be disabled. As a result, the current operation mode (e.g. Mirrored Channel mode) may no longer be available due to a lack of identical memory module pairs. In this case, the operation mode will automatically revert to Independent Channel Mode.



For detailed information on memory operation modes available for your server, refer to section "[Memory sequence](#)" on page 468.

After replacing the defective module(s) the memory operation mode is automatically reset to its original state. It is recommended to verify that the operation mode has been correctly.

- ▶ Enter the BIOS.

- ▶ Select the *Advanced* menu.
- ▶ Under *Memory Status* verify that none of the memory modules are marked as *Failed*.
- ▶ Save your changes (if applicable) and exit the BIOS.



For detailed information on how to access the BIOS and modify settings, refer to your server's "BIOS Setup Utility" reference manual.

5.2.12 Verifying the system time settings



This task only applies to Linux environments.

After the system board has been replaced, the system time is set automatically. By default, the RTC (Real Time Clock) time standard is set as the local time.

If a Linux OS is used and the hardware clock has been configured as UTC (Universal Time, Coordinated) in the operating system, the BMC local time may not be mapped correctly.

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



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

- ▶ Enter the BIOS.
- ▶ Select the *Main* menu.
- ▶ Under *System Time* and *System Date* specify the correct time and date.



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.



For detailed information on how to access the BIOS and modify settings, refer to your server's "BIOS Setup Utility" reference manual

5.2.13 Viewing and clearing the System Event Log (SEL)

5.2.13.1 Viewing the SEL

You can view the System Event Log (SEL) using the ServerView Operations Manager or the ServerView iRMC web frontend:

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



Note on the SVOM Driver Monitor

The *Driver Monitor* view gives you an overview of the monitored components as well as the associated events contained in the system event log on the managed server.

Under *Monitored Components* the monitored components are listed. If a component has the status *Warning* or *Error*, you can select it in the list and click *Acknowledge*. This confirms the event on the server side. You may have to log on to the server beforehand. The status of the component will then be reset to *ok*. To see the new status you must refresh the *Driver Monitor* view with *Refresh*.



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.

Viewing the SEL using the iRMC web frontend

- ▶ Enter the ServerView iRMC web frontend.
- ▶ Select the *Event Log* and choose the *Internal Event Log* submenu.
- ▶ Under *Internal Event Log Content* the SEL is being displayed. In order to filter the list, select the check boxes next to the desired event types and press *Apply* for the changes to take effect.



For detailed information on iRMC settings, refer to the "Integrated Remote Management Controller" user guide.

5.2.13.2 Clearing the SEL

You can clear the System Event Log (SEL) using the ServerView iRMC web frontend:

- ▶ Enter the ServerView iRMC web frontend.
- ▶ Select the *Event Log* and choose the *Internal Event Log* submenu.
- ▶ Under *Internal Event Log Information* click *Clear Internal Event Log* to clear the SEL.



For detailed information on iRMC settings, refer to the "Integrated Remote Management Controller" user guide.


5.2.14 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:


 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 123](#).

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

 *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:

 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
```

 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.

5.2.15 Resuming BitLocker functionality

If BitLocker Drive Encryption has been suspended for maintenance purposes (see section "[Suspending BitLocker functionality](#)" on page 125), it has to be re-enabled to complete the service task.


-  If BitLocker Drive Encryption has been suspended 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 suspended, 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 the previously suspended BitLocker-protection on the system volume, using the *BitLocker Drive Encryption* control panel item:

For Windows Server 2008:

- ▶ Open BitLocker Drive Encryption by clicking the *Start* button, clicking *Control Panel*, clicking *Security*, and then clicking *BitLocker Drive Encryption*.
- ▶ Select the system volume, and click *Turn On BitLocker*.

For Windows Server 2008 R2 and above:

- ▶ Open BitLocker Drive Encryption by clicking the *Start* button, clicking *Control Panel*, clicking *System and Security*, and then clicking *BitLocker Drive Encryption*.
- ▶ Select the system volume, and click *Resume Protection*.

-  For further information on how to resume BitLocker drive encryption, please refer to the Microsoft TechNet library at <http://technet.microsoft.com/library/cc731549.aspx>.

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

5.2.16 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.

- ▶ Ensure that the RAID array rebuild has started normally. Wait until the progress bar has reached at least one percent.
- ▶ Inform the customer about the remaining rebuild time, based on the displayed duration estimate.

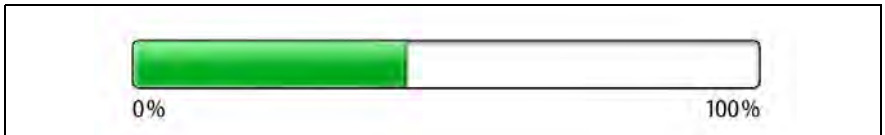


Figure 73: Progress bar (RAID array rebuild)



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.

5.2.17 Looking up changed MAC / WWN addresses

When replacing a network controller, 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.

5.2.17.1 Looking up MAC addresses

- ▶ Enter the ServerView iRMC web frontend.
- ▶ Select the *System Information* menu.
- ▶ Under *Network Inventory*, you will find detailed information on each network controller in the managed PRIMERGY server, including its MAC address.



This information is only available with the iRMC S4 or above.

Only network controllers supporting the Command Line Protocol (CLP) will be displayed.

- ▶ Inform the customer about the changed MAC address.

5.2.17.2 Looking up WWN addresses

Emulex FC / FCoE adapters

- ▶ Enable the network controller's Option ROM in the system board BIOS as described in section ["Enabling Option ROM scan" on page 138](#).
- ▶ Restart the server.
- ▶ During boot, as soon as the Emulex BIOS utility option appears, press **[ALT]+[E]** or **[CTRL]+[E]**.
- ▶ Under *Emulex Adapters in the System* you will find all available Emulex adapters and their WWN addresses.
- ▶ Note down the new 16-digit WWN address.
- ▶ Press **[Esc]** to exit the Emulex BIOS utility.
- ▶ Inform the customer about the changed WWN address.

QLogic FC adapters

- ▶ Enable the network controller's Option ROM in the system board BIOS as described in section ["Enabling Option ROM scan" on page 138](#).
- ▶ Restart the server.
- ▶ During boot, as soon as the QLogic BIOS utility option appears, press **[ALT]+[Q]** or **[CTRL]+[Q]**.
- ▶ Under *Select Host Adapter* use the arrow keys **[↑]/[↓]** to select the desired FC / FCoE adapter and press **[Enter]**.

- ▶ From the *Fast!UTIL Options* menu, select *Configuration Settings*, and press **Enter**.
- ▶ From the *Configuration Settings* menu, select *Adapter Settings*, and press **Enter**.
- ▶ Note down the new 16-digit WWN address found under *Adapter Port Name*.
- ▶ Press **Esc** to return to the main menu and exit the QLogic BIOS utility.
- ▶ Inform the customer about the changed WWN address.

5.2.18 Using the Chassis ID Prom Tool

The Chassis ID EPROM located on a dedicated Chassis ID board or on your server's front panel 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 Chassis ID EPROM, system information has to be entered using the Chassis ID Prom tool. The tool and further instructions are available to maintenance personnel from the Fujitsu Technology Solutions Extranet:


<https://partners.ts.fujitsu.com/com/service/ps/Servers/PRIMERGY/>

- ▶ Select your PRIMERGY system from the main area of the page.
- ▶ From the categories selection, choose *Software & Tools Documentation*.
- ▶ In the *Tools* area click *Tools: Chassis-IDProm Tool* to download the file (*tool-chassis-Idprom-Tool.zip*).



For the Japanese market, follow the instructions provided separately.

Note on Cool-safe® Advanced Thermal Design (ATD)

 If the Cool-safe® Advanced Thermal Design (ATD) option is available and has been enabled for your server, please set information within the Chassis ID Prom Tool accordingly.



The ATD option can only be ordered from the manufacturer as a factory preset. To find out if your server is ATD-enabled, check for the ATD logo on the identification rating plate.

For further information on Cool-safe® Advanced Thermal Design (ATD), please refer to your server's operating manual.




CAUTION!

Please note that you can only set the ATD flag. Resetting the ATD flag using the Chassis ID Prom Tool is not possible!

5.2.19 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

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

5.2.19.1 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.



For details, refer to the relevant LAN driver manual.

5.2.19.2 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.



For details, refer to the relevant LAN driver manual.

5.2.20 Switching off the ID indicator

Press the ID button on the front panel, or use the iRMC web frontend or ServerView Operations Manager to switch off the ID indicator after the maintenance task has been concluded successfully.



For further information, refer to section "[Locating the defective server](#)" on [page 57](#) or to the "ServerView Suite Local Service Concept (LSC)" and "Integrated Remote Management Controller" user guides.

Using the ID button on the front panel

- ▶ Press the ID button on the front panel to switch off the ID indicators.

Using the iRMC web frontend

- ▶ Enter the ServerView iRMC web frontend.
- ▶ Under *System Overview*, click *Identify LED Off* to switch off the ID indicators.

Using ServerView Operations Manager

- ▶ In ServerView Operations Manager *Single System View* and press the *Locate* button in the title bar to switch off the ID indicator.

5.2.21 Specifying the chassis model

In order to have your server displayed correctly as a rack system in the ServerView management user interface after a chassis conversion, the chassis model setting needs to be updated.

This can be accomplished using the ServerView Installation Manager or Maintenance Tools:

Using the ServerView Installation Manager

- ▶ Boot the system from the ServerView Suite DVD. The ServerView Installation Manager is being started.
- ▶ Select your preferred user interface language.
- ▶ Under *Status backup media* select *No status backup* and click *Continue*.
- ▶ Select *Maintenance*.

- ▶ Select *Server Configuration Manager*.
- ▶ Check the box for rack model and save the setting by clicking *Save*.

Using the ServerView Maintenance Tools

On Windows-based servers with ServerView agents installed, proceed as follows:

- ▶ Click *Start*, point to *All Programs*, and then point to *Fujitsu - ServerView Suite - Agents - Maintenance Tools*.
- ▶ In the *Maintenance Tools* menu pane, click the *Chassis Model Configuration* tab.
- ▶ Under *Convert to* click the *Rack Model* button.
- ▶ Click *Exit* to close the *Maintenance Tools* menu pane.



For more detailed information on installing ServerView agents, refer to the "ServerView Operations Manager - Installation ServerView Agents for Windows" user guide.

6 Power supply

This chapter provides information on how to install, remove or replace power supply units (PSU) and how to replace the power backplane.

The PRIMERGY TX300 S8 / RX350 S8 server can be equipped with up to four hot-plug PSU modules. Power redundancy is possible in various PSU configurations (see section ["PSU installation sequence" on page 164](#)).

Safety notes

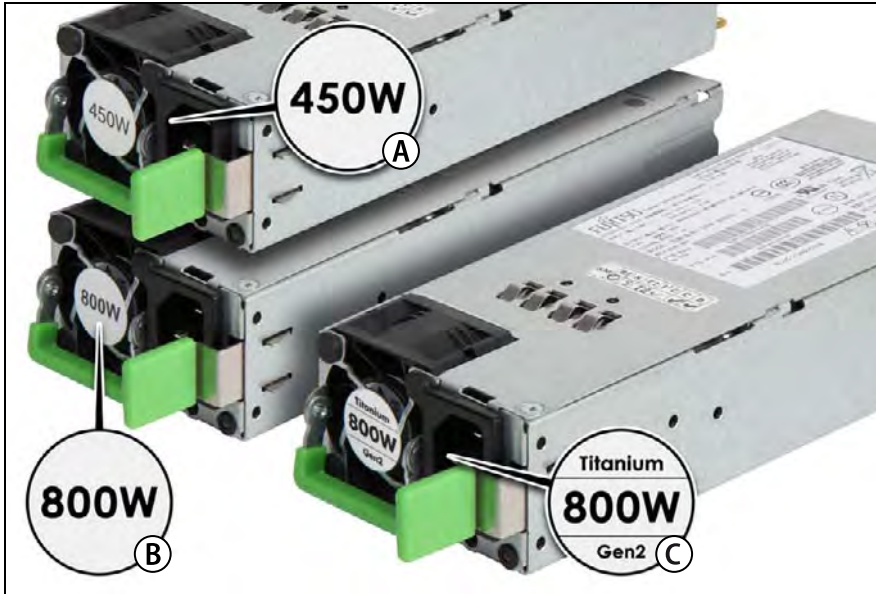


CAUTION!

- 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.
- When installing a power supply unit, ensure that the connector of the power supply unit is not damaged or bent.
- If the power supply unit is hard to remove, do not pull it out by force.
- 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 45](#).

6.1 Basic information

Three different types of PSU modules are available for the TX300 S8 / RX350 S8 server systems:



A	PSU module 450 W	S26113-E575-V52 / A3C40161429
B	PSU module 800 W ("Platinum" model)	S26113-E574-V52 / A3C40161428
C	PSU module 800 W ("Titanium" model)	S26113-E615-V50 / A3C40169522

**CAUTION!**

PSU modules automatically adjust to any mains input voltage within a certain range. You may only operate the server if its rated voltage range corresponds to the local mains voltage. Please note that PSU module types support different mains input voltage ranges:

PSU module type	Mains input voltage range
PSU module 450 W	100 VAC to 240 VAC
PSU module 800 W ("Platinum" model)	100 VAC to 240 VAC
PSU module 800 W ("Titanium" model)	200 VAC to 240 VAC



PSU dummy module	A3C40133955
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6.1.1 PSU installation sequence



Figure 74: PSU overview

Config.	PSU 1	PSU 2	PSU 3	PSU 4	default configuration	alternative configurations
1	450 W	-	-	-	basic configuration	
2	450 W	450 W	-	-	redundant 1+1 / 450 W	non-redundant 900 W
3	450 W	450 W	450 W	-	redundant 2+1 / 900 W	non-redundant 1350 W
4	450 W	450 W	450 W	450 W	redundant 3+1 / 1350 W	redundant (2+2 / 900 W)
						non-redundant 1800 W
5	800 W	-	-	-	basic configuration	
6	800 W	800 W	-	-	redundant 1+1 / 800 W	non-redundant 1600 W
7	800 W	800 W	800 W	-	redundant 2+1 / 1600 W	non-redundant 2400 W
8	800 W	800 W	800 W	800 W	redundant 3+1 / 2400 W	redundant 2+2 / 1600 W
						non-redundant 3200 W

Table 4: PSU configurations¹

¹ This specification applies to the number of PSU modules shipped with the server. It may be necessary to reconfigure the PSU setup if the number of PSUs is altered.

i For detailed information on PSU configuration settings, please refer to the "iRMC S4 - Integrated Remote Management Controller" user guide.

6.1.2 Assembly rules

- Mixed assembly of hot-plug PSU modules with different power ratings (450 W and 800 W) is not supported.
- Mixed assembly of different 800 W hot-plug PSU modules ("Platinum" and "Titanium" models) is not supported.
- PSU slots 1 or 2 always need to be equipped with a PSU module.
- Always install dummy modules into unused PSU slots to comply with applicable EMC regulations and satisfy cooling requirements.

6.1.3 PSU indicator

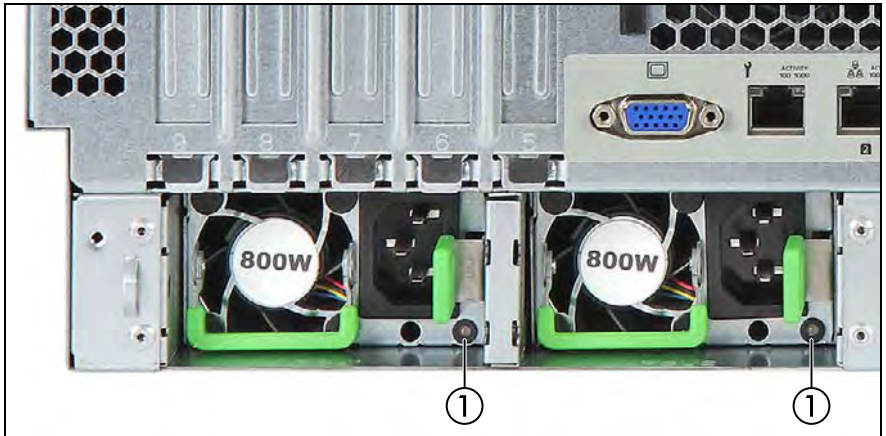


Figure 75: PSU indicator

Power supply

Indicator	Status	Description	
1	PSU operating status	green on	Server is switched on and functioning properly
		green flashing	Server is switched off, main voltage is present (Standby mode)
		orange on	PSU failure (over / under voltage, over temperature or fan failure)
		orange flashing	Overload warning

6.2 Installing PSU modules



Customer Replaceable Unit (CRU)



Average task duration:
5 minutes

Tools: tool-less

6.2.1 Removing the PSU dummy module

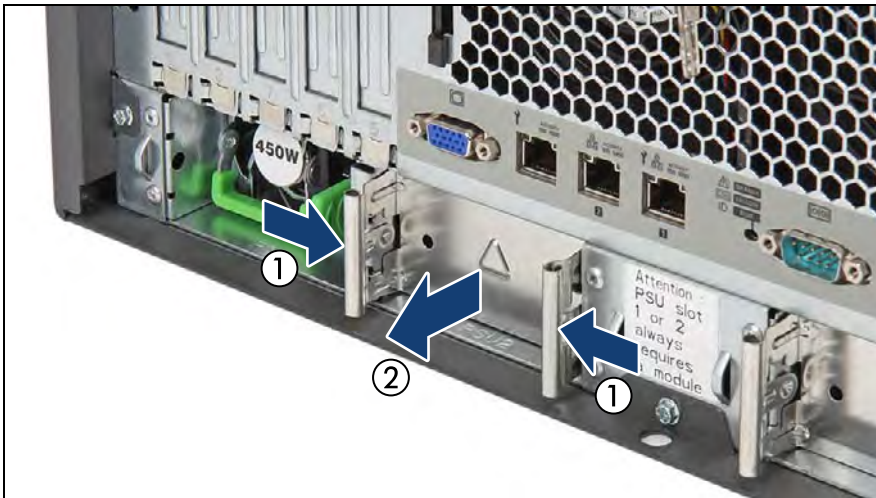


Figure 76: Removing a PSU dummy module (A)

- ▶ Press in on both locking latches on the PSU dummy module (1) and carefully detach the dummy module from its slot (2).

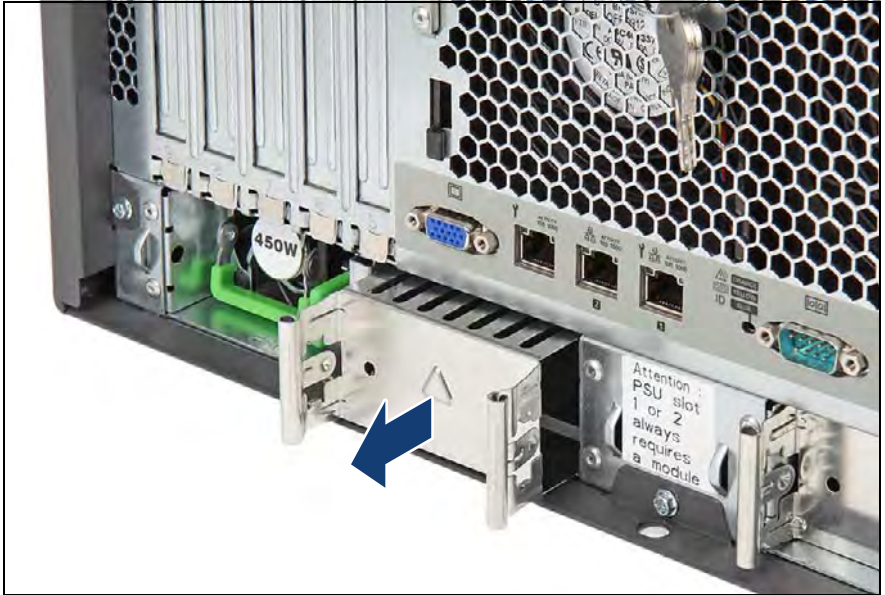


Figure 77: Removing a PSU dummy module (B)

- ▶ Remove the dummy module from its slot.



CAUTION!

Keep the dummy cover for future use. If a power supply module is removed and not immediately replaced by a new one, a PSU dummy cover must be replaced in the slot to comply with applicable EMC regulations and satisfy cooling requirements.

6.2.2 Installing a PSU module



Figure 78: Installing a PSU module

- ▶ Insert the PSU module into its slot.



Figure 79: Installing a PSU module

- ▶ Push the PSU module into its slot (1) as far as it will go until the locking latch snaps in place (2).



CAUTION!

Ensure that the PSU module properly engages in its slot and is locked in position in order to prevent it from sliding out of the chassis during transportation.

- ▶ If applicable, fold down the handle on the PSU module.

6.2.3 Concluding steps

- ▶ Ensure that all PSU modules have been installed as specified in [table 4 on page 164](#).
- ▶ ["Connecting the server to the mains" on page 118](#)

6.3 Removing PSU modules



Customer Replaceable Unit (CRU)



Average task duration: 5 minutes

Tools: tool-less



Note for servers using CMA (Cable Management Arm)

Since the installed CMA is blocking PSU modules, additional steps are required in order to remove or replace PSU modules:

- ▶ Unlock the CMA stopper.
- ▶ Remove the CMA stopper with the mounted crossbar.
- ▶ Support the CMA stopper, the crossbar and the CMA arm including cables with your right hand.
- ▶ Remove the PSU module and install a PSU dummy module into the empty bay.
- ▶ Remount the complete assembly (CMA stopper, crossbar and CMA arm) into the rail.

6.3.1 Preliminary steps

- ▶ Remove the AC power cord from its cable bracket and disconnect it from the PSU module to be removed as described in section ["Disconnecting the server from the mains" on page 63](#).



CAUTION!

In order to ensure uninterrupted operation, observe the following instructions:

- ▶ Before disconnecting a PSU module, ensure that sufficient power supply is available for your system configuration with the remaining PSU module(s).
- ▶ Before disconnecting a power supply, ensure that the power supply module in the first or second slot is still active.

6.3.2 Removing a PSU module

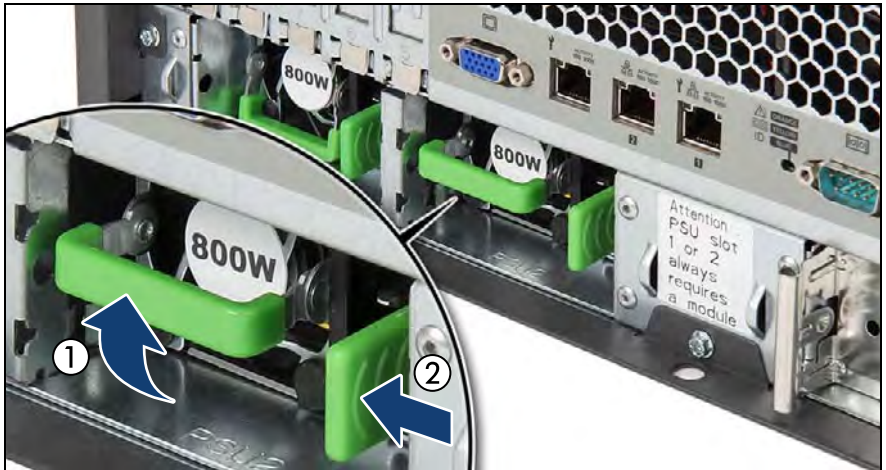


Figure 80: Removing a PSU module (A)

- ▶ Fold up the handle on the PSU module (1).
- ▶ Press in on the green locking latch (2).



Figure 81: Removing a PSU module (B)

- ▶ While keeping the green locking latch pressed, pull the PSU module out of its slot.

6.3.3 Installing a PSU dummy module



Figure 82: Installing a PSU dummy module (A)

- ▶ Insert the PSU dummy module into the empty PSU slot with the impressed arrow symbol facing up (see close-up).

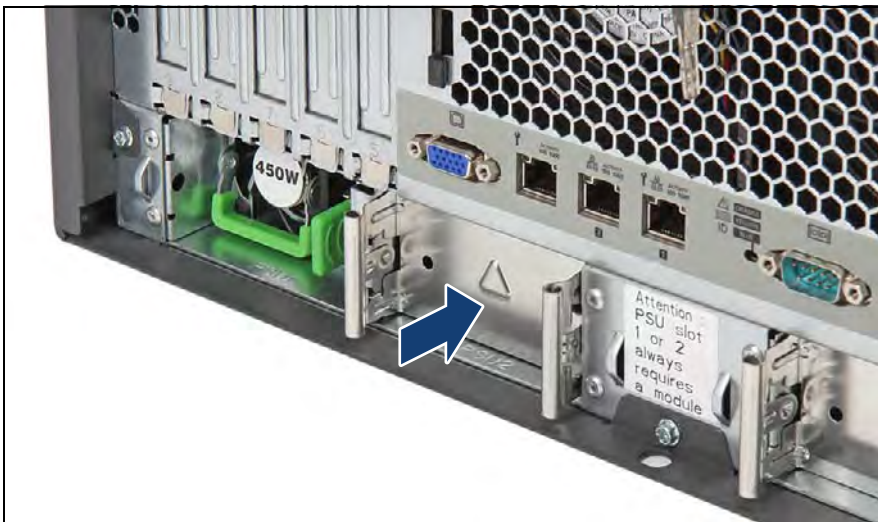


Figure 83: Installing a PSU dummy module

- ▶ Push the PSU dummy module into its slot until it locks in place.

**CAUTION!**

Always install dummy modules into unused PSU slots to comply with applicable EMC regulations and satisfy cooling requirements.

6.4 Replacing PSU modules



Customer Replaceable Unit (CRU)



**Average task duration:
5 minutes**

Tools: tool-less

**CAUTION!**

- When replacing a PSU module in a non-redundant PSU configuration, the server must be switched off first.
- Ensure to replace a defective PSU module by a new module of the same type.

**Note for servers using CMA (Cable Management Arm)**

Since the installed CMA is blocking PSU modules, additional steps are required in order to remove or replace PSU modules:

- ▶ Unlock the CMA stopper.
- ▶ Remove the CMA stopper with the mounted crossbar.
- ▶ Support the CMA stopper, the crossbar and the CMA arm including cables with your right hand.
- ▶ Remove the PSU module and carefully install a new PSU module.
- ▶ Remount the complete assembly (CMA stopper, crossbar and CMA arm) into the rail.

6.4.1 Preliminary steps

- ▶ ["Locating the defective server" on page 57](#)
- ▶ Remove the AC power cord from its cable bracket and disconnect it from the PSU module to be replaced as described in section ["Disconnecting the server from the mains" on page 63](#).

6.4.2 Removing the defective PSU module

- ▶ Identify the defective PSU module using the server management software.
- ▶ Remove the defective PSU module as described in section ["Removing a PSU module" on page 171](#).

6.4.3 Installing the new PSU module

- ▶ Replace the defective PSU module as described in section ["Installing a PSU module" on page 168](#).

6.4.4 Concluding steps

- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If applicable, switch on the server.
- ▶ ["Performing a fan test after replacing a defective fan" on page 145](#)

6.5 Replacing the power backplane



Field Replaceable Unit (FRU)



**Average task duration:
50 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

6.5.1 Preliminary steps



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

- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ Disconnect all external cables.
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ Remove all fan modules and fan holders from the system as described in the related sections:
 - ["Removing system fan modules" on page 325](#)
 - ["Removing the system fan holder" on page 330](#)
 - ["Removing rear fan modules" on page 335](#)
 - ["Replacing the rear fan holder" on page 340](#)
- ▶ Remove all cables from the system board.

Power supply

- ▶ Remove all rear expansion cards from the system board as described in section ["Removing expansion cards" on page 357](#).

i Ensure to take note of the expansion cards' mounting positions and cable connections for reassembly.

The following components may remain on the system board:

- Heat sink and processors
 - Memory modules
 - UFM board
 - TPM boards
- ▶ ["Removing the system board" on page 687](#)
 - ▶ ["Removing the system board carrier" on page 85](#)

6.5.2 Removing the power backplane

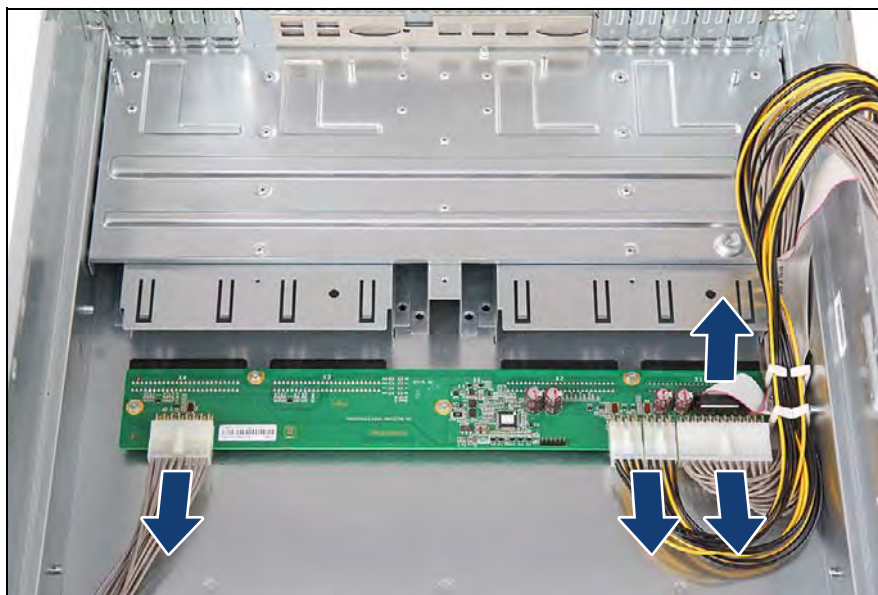


Figure 84: Disconnecting cables from the power backplane

- ▶ Disconnect all cables from the power backplane.

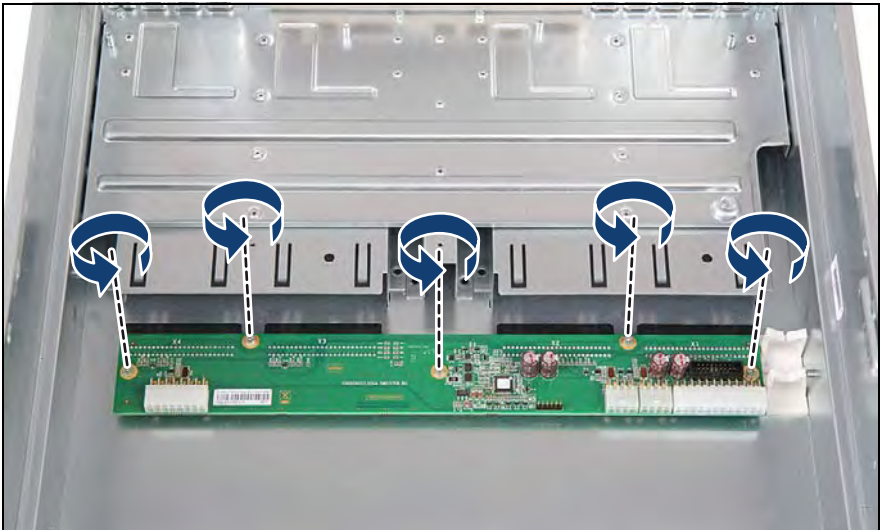


Figure 85: Detaching the power backplane

- ▶ Remove five screws from the power backplane.

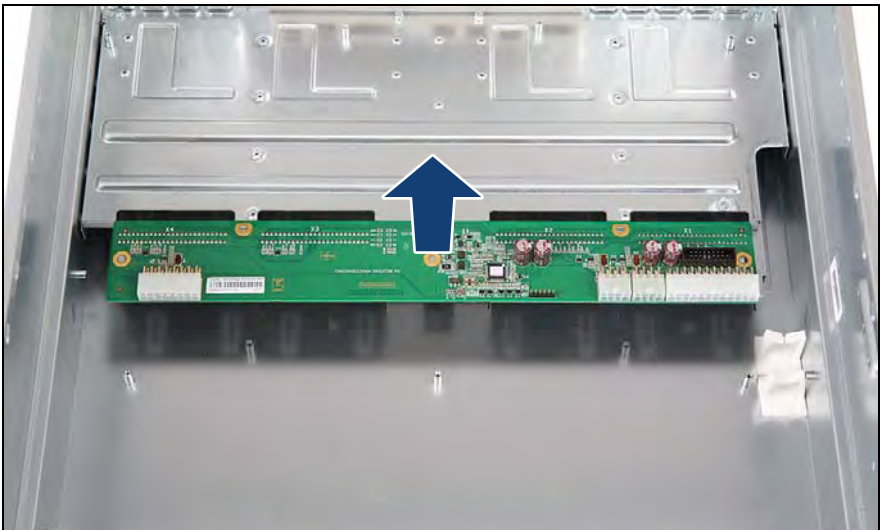
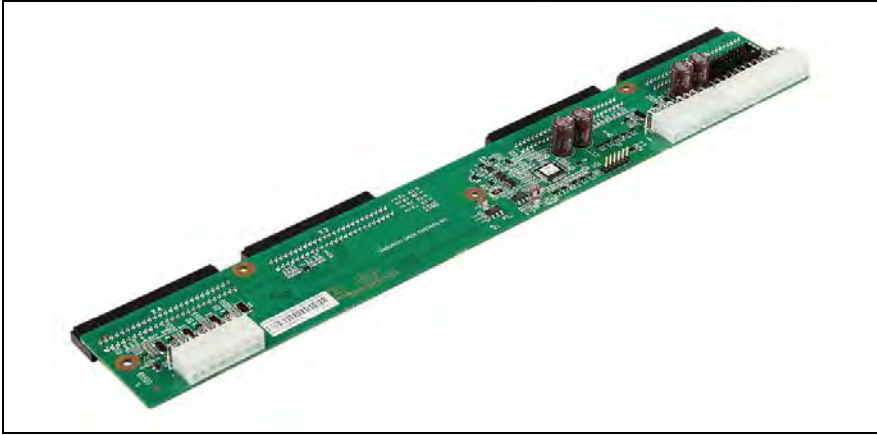


Figure 86: Removing the power backplane

- ▶ Remove the defective power backplane from the chassis.

6.5.3 Installing the power backplane



Power backplane	A3C40141596
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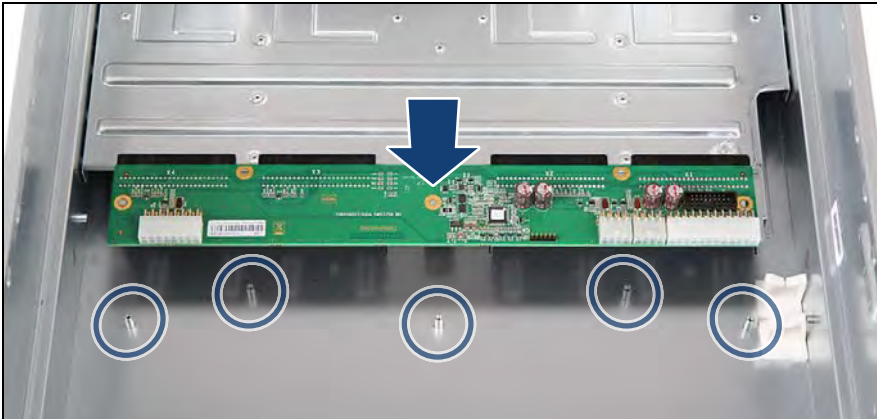


Figure 87: Mounting the power backplane (A)

- ▶ Lower the new power backplane onto the five spacer bolts on the chassis floor (see circles).

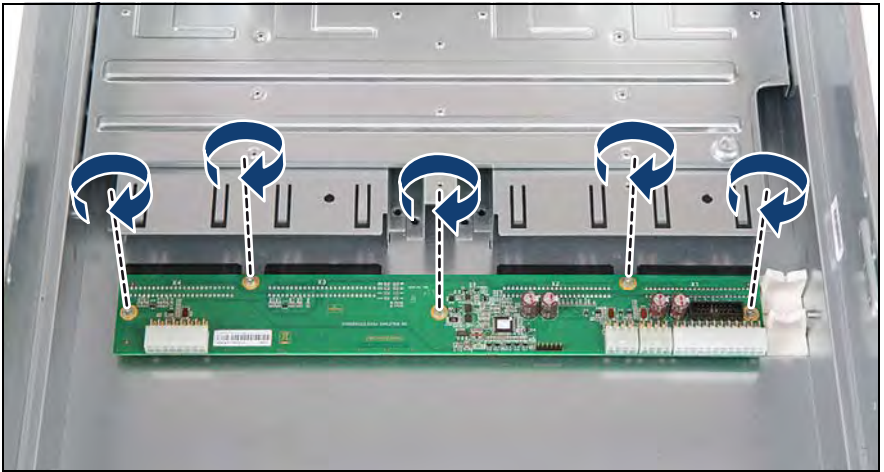


Figure 88: Mounting the power backplane (B)

- ▶ Lower the new power backplane into the chassis.
- ▶ Secure the power backplane on the spacer bolts with five screws (see circles).

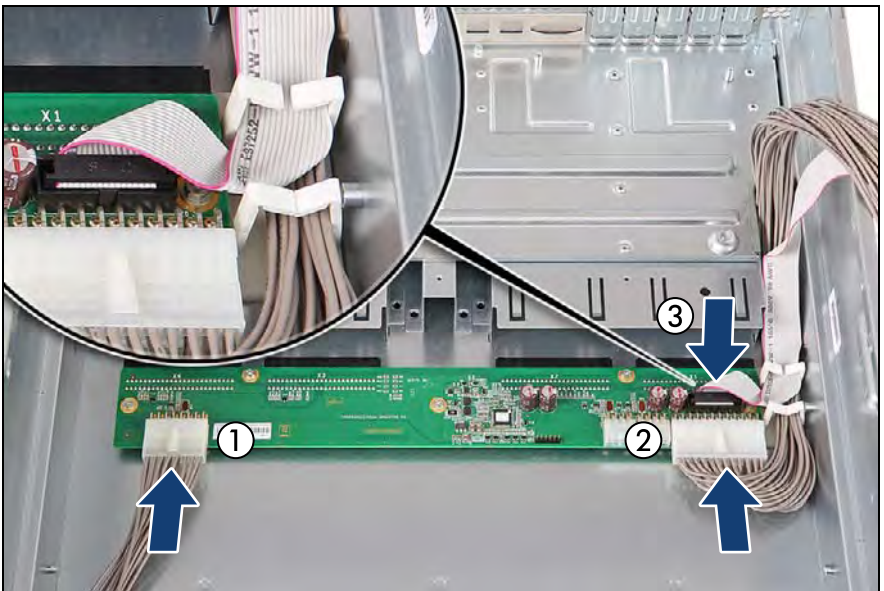


Figure 89: Cabling the power backplane (A)

Power supply

- ▶ Reconnect all cables to the power backplane:

#	Connector	Cable
1	X21	Power cable T26139-Y3952-V601
2	X20	System power cable T26139-Y3758-V9
3	X25	PSU signal cable T26139-Y4027-V1

- ▶ Fold and run the cables through the cable clamps on the server floor as shown (see close-up).

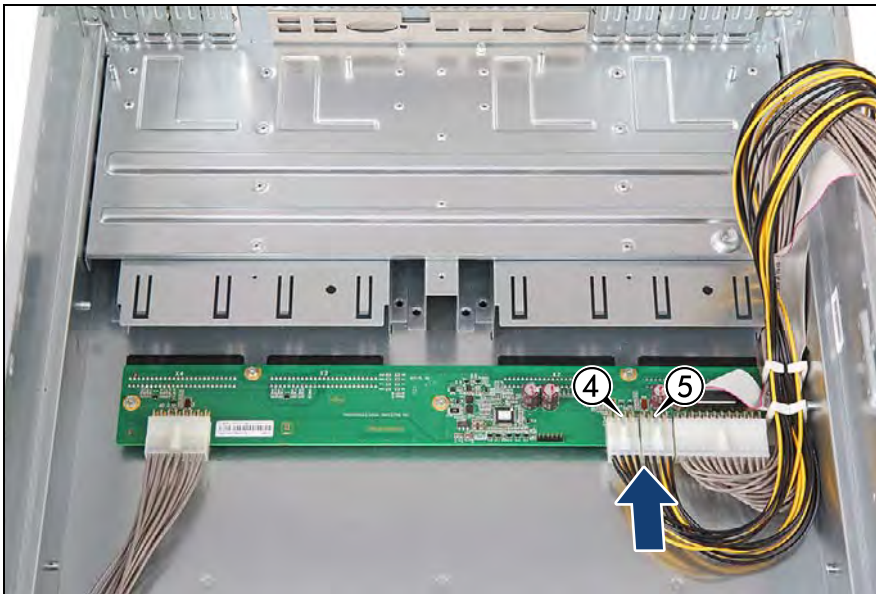


Figure 90: Cabling the power backplane (B)

- ▶ If applicable, reconnect the GPGPU card power cables to the power backplane:

#	Connector	Cable
4	X22	GPGPU card power cable T26139-Y3946-V701
5	X23	

- ▶ Run the GPGPU card power cables through the cable clamps on the server floor as shown.



For further information on GPGPU card installation and cabling, please refer to section ["Installing a GPGPU / coprocessor card" on page 382](#).

6.5.4 Concluding steps

- ▶ ["Installing the system board carrier" on page 88](#)
- ▶ ["Installing the system board" on page 691](#)
- ▶ Reinstall all rear expansion cards into their original slots as described in section ["Installing expansion cards" on page 349](#).
- ▶ Reconnect all cables to the system board. For a complete cabling overview, please refer to section ["Cabling overviews" on page 738](#).
- ▶ Reinstall all fan modules and fan holders as described in the related sections:
 - ["Installing the system fan holder" on page 331](#)
 - ["Installing system fan modules" on page 327](#)
 - ["Installing the rear fan holder" on page 342](#)
 - ["Installing rear fan modules" on page 332](#)
- ▶ ["Installing the system air duct" on page 83](#).
- ▶ ["Closing the server" on page 98](#).
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ Reconnect all external cables.
- ▶ ["Connecting the server to the mains" on page 118](#)

7 Hard disk drives / solid state drives

This chapter provides information on how to install or remove hard disk drive (HDD) or solid state drive (SSD) modules and how to replace SAS backplanes and the SAS expander board.



For information on SAS RAID controllers, please refer to chapter "[Expansion cards and backup units](#)" on page 345.

Safety notes



CAUTION!

- The hard disk drive must not be removed from the installation frame by anyone except a service technician.
- HDD / SSD modules must all be marked clearly so that they can be reinstalled into their original mounting locations after replacement. Otherwise, data may 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 or solid state 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 or solid state drive.
- For further safety information, please refer to chapter "[Important information](#)" on page 45.

7.1 Basic information

For best performance, the following mounting sequence is recommended:

- Solid state drives (SSDs) are always equipped before installing hard disk drives.
- Hard disk drives / solid state 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.
- When installing hard disk drives with different bus technologies (SAS or SATA), first install SAS drives and then SATA drives.
- Please refer to section "[2.5-inch HDD / SSD configurations](#)" on page 185 for a complete overview of the mounting sequence.
- Install dummy modules into unused HDD / SSD bays.

7.2 2.5-inch HDD / SSD configurations

7.2.1 2.5-inch HDD / SSD backplane overview

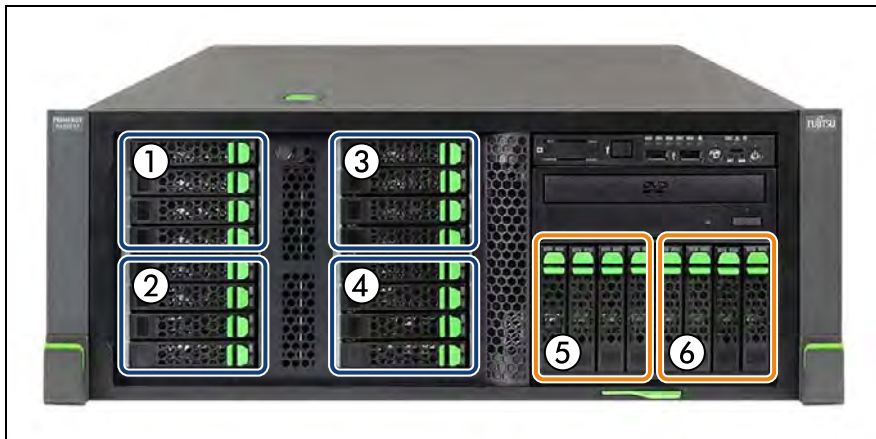


Figure 91: 2.5-inch SAS backplanes - Rack version

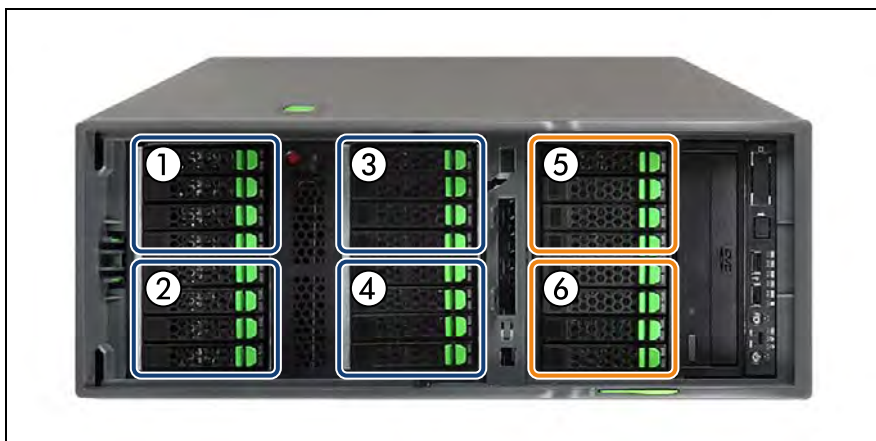


Figure 92: 2.5-inch SAS backplanes - Tower version

1 / 2	SAS backplanes 1 and 2 in HDD cage 1 (basic configuration)
3 / 4	SAS backplanes 3 and 4 in optional HDD cage 2
5 / 6	SAS backplanes 5 and 6 in optional 8x 2.5-inch HDD extension box

7.2.2 SAS 3.0 HDD / SSD backplane cabling

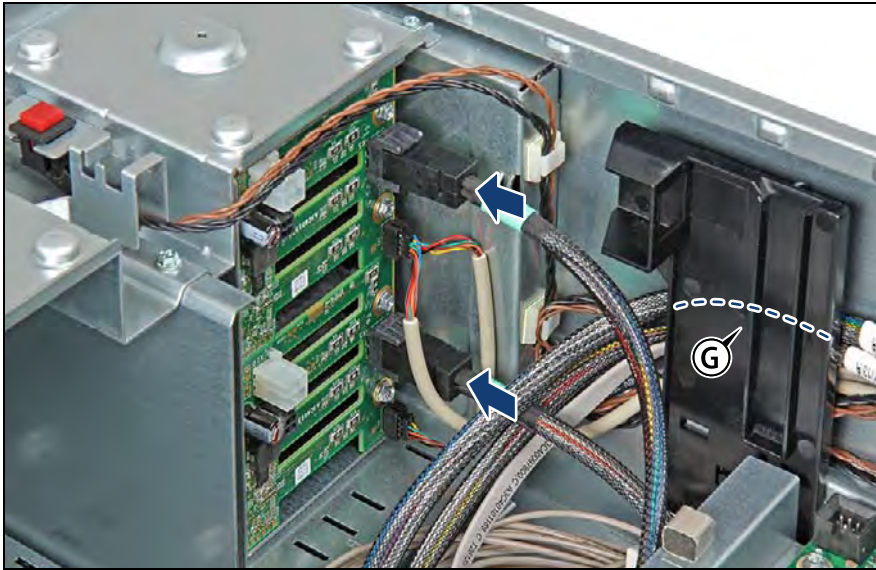


Figure 93: SAS 3.0 backplane cabling

- ▶ Connect the SAS 3.0 cables to connector X5 on each SAS 3.0 backplane:

SAS configuration	required SAS cable	Cabling plan
SAS 2.0 RAID controllers D2616 and D2607	SAS 2.0 / 3.0 cable T26139-Y4040-V14	16.2.13
SAS 3.0 RAID controller D3216 (PRAID EP400i / EP420i)	SAS 3.0 cable T26139-Y4040-V8	16.2.14

- ▶ Run the SAS cables through the cable guide (G) as shown.
- ▶ Connect the SAS cables to the SAS RAID controller in PCI slot 10:

SAS backplane	SAS controller connector
SAS 3.0 backplane 1	Connector MLC 1
SAS 3.0 backplane 2	Connector MLC 2

Out-of-Band cabling

i This step only applies to SAS configurations involving SAS 3.0 backplanes and SAS 2.0 RAID controllers D2616 or D2607.

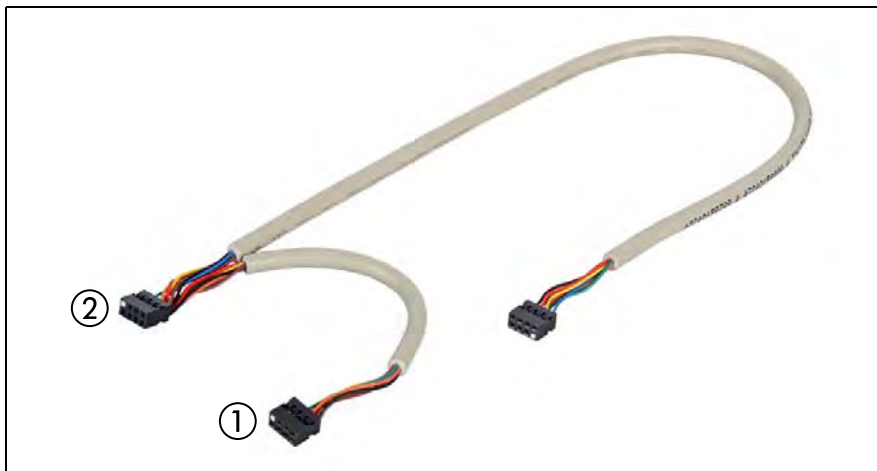


Figure 94: SAS 3.0 Out-of-Band cable T26139-Y4015-V601

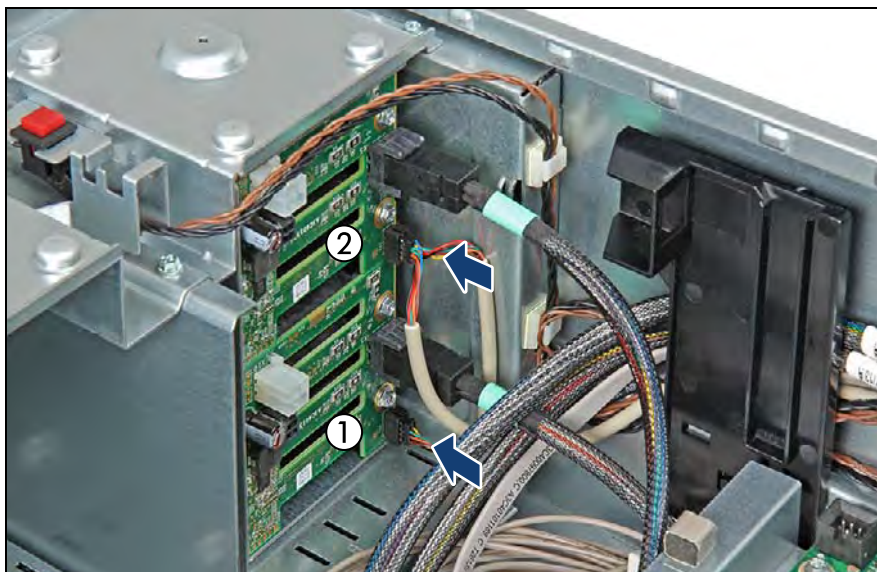


Figure 95: SAS 3.0 Out-of-Band cabling (A)

Hard disk drives / solid state drives

- ▶ Connect the SAS 3.0 Out-of-Band cable T26139-Y4015-V601 to connector X11 on each SAS 3.0 backplane:

	Out-of-Band cable connector	SAS backplane	Cabling plan
1	End connector	SAS 3.0 backplane 1 connector X11	16.2.13
2	Middle connector	SAS 3.0 backplane 2 connector X11	

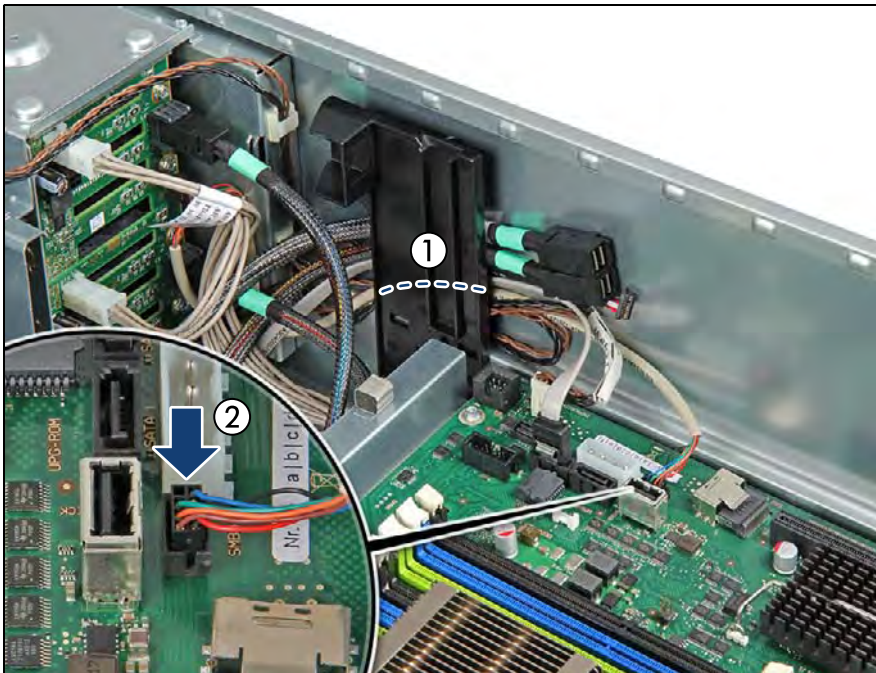


Figure 96: SAS 3.0 Out-of-Band cabling (B)

- ▶ Run the Out-of-Band cable through the cable guide (G) as shown (1).
- ▶ Connect the Out-of-Band cable to system board connector SMB4 (2).

7.2.3 8x 2.5-inch HDDs / SSDs (2 SAS backplanes)

7.2.3.1 Mounting order for 2.5-inch HDDs / SSDs



Figure 97: Mounting order: up to 8x 2.5-inch HDDs / SSDs

7.2.3.2 8x 2.5-inch HDD / SSD SAS backplane cabling

i Before connecting SAS cables to the controller, bend the cables as needed in order to reduce strain on the controller. Bend the SAS cables as close to their shrink tubes as possible.

SAS cabling with two SAS 2.0 backplanes

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS 2.0 cable Y3963-V151/V101	16	Connector MLC 1 on SAS 2.0 controller 1	SAS 2.0 backplane 1 connector X1	16.2.15
SAS 2.0 cable Y3963-V151/V101	16	Connector MLC 2 on SAS 2.0 controller 1	SAS 2.0 backplane 2 connector X1	

Hard disk drives / solid state drives

SAS cabling with SAS 2.0 controller and two SAS 3.0 backplanes



This cabling configuration includes Out-of-Band monitoring with SAS 2.0 RAID controllers D2616 and D2607.

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS 2.0 / 3.0 cable Y4040-V14	28	Connector MLC 1 on SAS 2.0 controller 1	SAS 3.0 backplane 1 connector X5	16.2.13
SAS 2.0 / 3.0 cable Y4040-V14	28	Connector MLC 2 on SAS 2.0 controller 1	SAS 3.0 backplane 2 connector X5	
SAS 3.0 Out-of-Band cable Y4015-V601	29	System board	SAS 3.0 backplane 1/2 connectors X11	

SAS cabling with SAS 3.0 controller and two SAS 3.0 backplanes

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS 3.0 cable Y4040-V8	27	Connector MLC 1 on SAS 3.0 controller 1	SAS 3.0 backplane 1 connector X5	16.2.14
SAS 3.0 cable Y4040-V8	27	Connector MLC 2 on SAS 3.0 controller 1	SAS 3.0 backplane 2 connector X5	

Power cabling

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
HDD power cable Y3952-V601	1	Power backplane connector X21	SAS backplane 1 connector X6 (SAS 2.0) / X10 (SAS 3.0) (HDDs 1, 3, 5, 7) Cable connector P2 SAS backplane 2 connector X6 (SAS 2.0) / X10 (SAS 3.0) (HDDs 2, 4, 6, 8) Cable connector P1	16.2.11

7.2.3.3 HDD / SSD naming scheme



Figure 98: Naming scheme: 8x 2.5-inch HDDs / SSDs (2 SAS backplanes)

Position	Logical drive number	ServerView RAID Manager display name
①	0	HDD vendor name (0)
②	1	HDD vendor name (1)
③	2	HDD vendor name (2)
④	3	HDD vendor name (3)
⑤	4	HDD vendor name (4)
⑥	5	HDD vendor name (5)
⑦	6	HDD vendor name (6)
⑧	7	HDD vendor name (7)

7.2.4 16x 2.5-inch HDDs (4 SAS backplanes)

7.2.4.1 Mounting order for 2.5-inch SAS 2.0 HDDs / SSDs



Figure 99: Mounting order: up to 16x 2.5-inch SAS 2.0 HDDs / SSDs

7.2.4.2 Mounting order for 2.5-inch SAS 2.0 / SAS 3.0 HDDs / SSDs

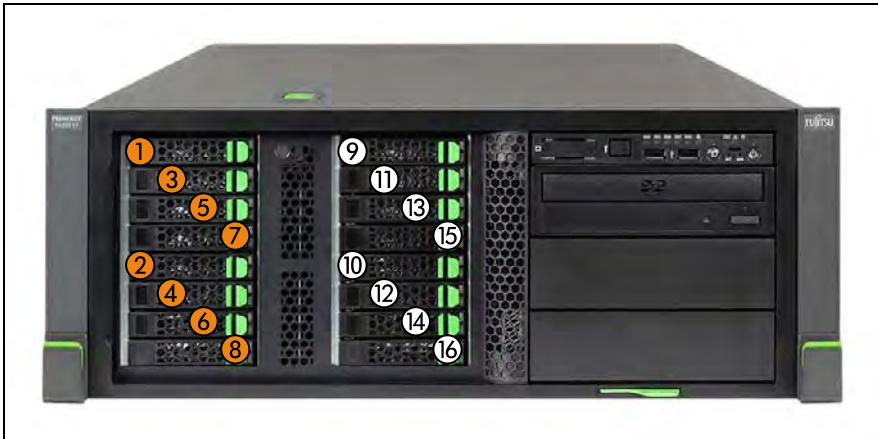


Figure 100: Mounting order: 16x 2.5-inch HDDs / SSDs (8x SAS 3.0 / 8x SAS 2.0)

HDD #	Backplane type
1-8 (orange)	2 SAS 3.0 HDD / SSD backplanes
9-16 (white)	2 SAS 2.0 HDD / SSD backplanes

7.2.4.3 16x 2.5-inch HDD / SSD SAS backplane cabling



Before connecting SAS cables to the controller, bend the cables as needed in order to reduce strain on the controller. Bend the SAS cables as close to their shrink tubes as possible.

SAS cabling with two SAS 2.0 controllers

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS 2.0 cable Y3963-V151/V101	16	Connector MLC 1 on SAS 2.0 controller 1 in PCI slot 10	SAS 2.0 backplane 1 connector X1	16.2.15
SAS 2.0 cable Y3963-V151/V101	16	Connector MLC 2 on SAS 2.0 controller 1 in PCI slot 10	SAS 2.0 backplane 2 connector X1	
SAS 2.0 cable Y3963-V107	18	Connector MLC 1 on SAS 2.0 controller 2 in PCI slot 3	SAS 2.0 backplane 3 connector X1	16.2.15
SAS 2.0 cable Y3963-V107	18	Connector MLC 2 on SAS 2.0 controller 2 in PCI slot 3	SAS 2.0 backplane 4 connector X1	

Hard disk drives / solid state drives

SAS cabling with one SAS 3.0 controller and one SAS 2.0 controller

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS 3.0 cable Y4040-V8	27	Connector MLC 1 on SAS 3.0 controller 1 in PCI slot 10	SAS 3.0 backplane 1 connector X5	16.2.16
SAS 3.0 cable Y4040-V8	27	Connector MLC 2 on SAS 3.0 controller 1 in PCI slot 10	SAS 3.0 backplane 2 connector X5	
SAS 2.0 cable Y3963-V107	18	Connector MLC 1 on SAS 2.0 controller 2 in PCI slot 3	SAS 2.0 backplane 3 connector X1	16.2.16
SAS 2.0 cable Y3963-V107	18	Connector MLC 2 on SAS 2.0 controller 2 in PCI slot 3	SAS 2.0 backplane 4 connector X1	

SAS cabling with one SAS 2.0 controller and SAS expander board

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS 2.0 cable Y3963-V112	15	Connector X1 on SAS expander board	SAS 2.0 backplane 1 connector X1	16.2.17
SAS 2.0 cable Y3963-V112	15	Connector X2 on SAS expander board	SAS 2.0 backplane 2 connector X1	
SAS 2.0 cable Y3963-V151/V101	16	Connector X3 on SAS expander board	SAS 2.0 backplane 3 connector X1	
SAS 2.0 cable Y3963-V151/V101	16	Connector X4 on SAS expander board	SAS 2.0 backplane 4 connector X1	
SAS 2.0 cable Y3963-V151/V101	16	Connector MLC 1 on SAS 2.0 controller 1 in PCI slot 10	Connector MLC 1 on SAS expander board	16.2.17
SAS 2.0 cable Y3963-V151/V101	16	Connector MLC 2 on SAS 2.0 controller 1 in PCI slot 10	Connector MLC 2 on SAS expander board	

Power cabling

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
HDD power cable Y3952-V601	1	Power backplane connector X21	SAS backplane 1 connector X6 (SAS 2.0) / X10 (SAS 3.0) (HDDs 1, 5, 9, 13) Cable connector P2	16.2.12
			SAS backplane 2 connector X6 (SAS 2.0) / X10 (SAS 3.0) (HDDs 2, 6, 10, 14) Cable connector P1	
			SAS backplane 3 connector X6 (SAS 2.0) / X10 (SAS 3.0) (HDDs 3, 7, 11, 15) Cable connector P4	
			SAS backplane 4 connector X6 (SAS 2.0) / X10 (SAS 3.0) (HDDs 4, 8, 12, 16) Cable connector P3	

7.2.4.4 HDD / SSD naming scheme



Figure 101: Naming scheme: 16x 2.5-inch HDDs / SSDs (4 SAS backplanes)

With two SAS controllers

Position	Logical drive number	ServerView RAID Manager display name
1	0	HDD vendor name (0) Ctrl (0)
2	1	HDD vendor name (1) Ctrl (0)
3	2	HDD vendor name (2) Ctrl (0)
4	3	HDD vendor name (3) Ctrl (0)
5	4	HDD vendor name (4) Ctrl (0)
6	5	HDD vendor name (5) Ctrl (0)
7	6	HDD vendor name (6) Ctrl (0)
8	7	HDD vendor name (7) Ctrl (0)
9	0	HDD vendor name (0) Ctrl (1)
10	1	HDD vendor name (1) Ctrl (1)
11	2	HDD vendor name (2) Ctrl (1)
12	3	HDD vendor name (3) Ctrl (1)
13	4	HDD vendor name (4) Ctrl (1)
14	5	HDD vendor name (5) Ctrl (1)
15	6	HDD vendor name (6) Ctrl (1)
16	7	HDD vendor name (7) Ctrl (1)

With SAS expander board

Position	Logical drive number	ServerView RAID Manager display name
1	0	HDD vendor name (1:0)
2	1	HDD vendor name (1:1)
3	2	HDD vendor name (1:2)
4	3	HDD vendor name (1:3)
5	4	HDD vendor name (1:4)
6	5	HDD vendor name (1:5)
7	6	HDD vendor name (1:6)
8	7	HDD vendor name (1:7)
9	8	HDD vendor name (1:8)
10	9	HDD vendor name (1:9)
11	10	HDD vendor name (1:10)
12	11	HDD vendor name (1:11)
13	12	HDD vendor name (1:12)
14	13	HDD vendor name (1:13)
15	14	HDD vendor name (1:14)
16	15	HDD vendor name (1:15)

7.2.5 24x 2.5-inch HDDs / SSDs (6 SAS backplanes)

7.2.5.1 Mounting order for 2.5-inch SAS 2.0 HDDs / SSDs



Figure 102: Mounting order: up to 24x 2.5-inch SAS 2.0 HDDs / SSDs (Rack)

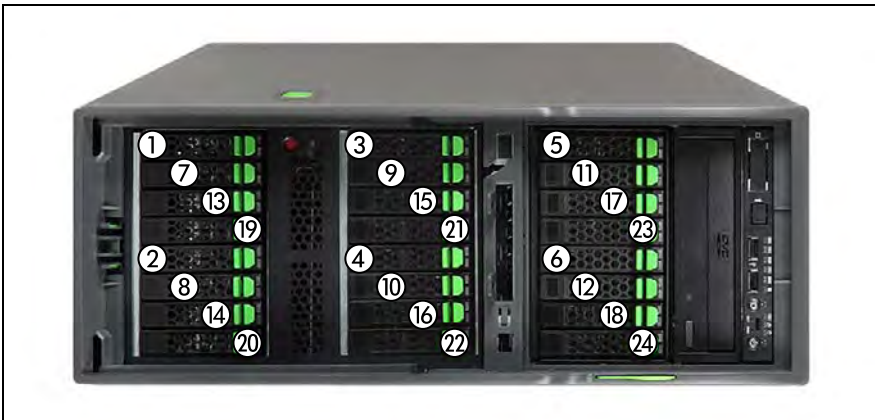


Figure 103: Mounting order: up to 24x 2.5-inch SAS 2.0 HDDs / SSDs (Tower)

7.2.5.2 Mounting order for 2.5-inch SAS 2.0 / SAS 3.0 HDDs / SSDs

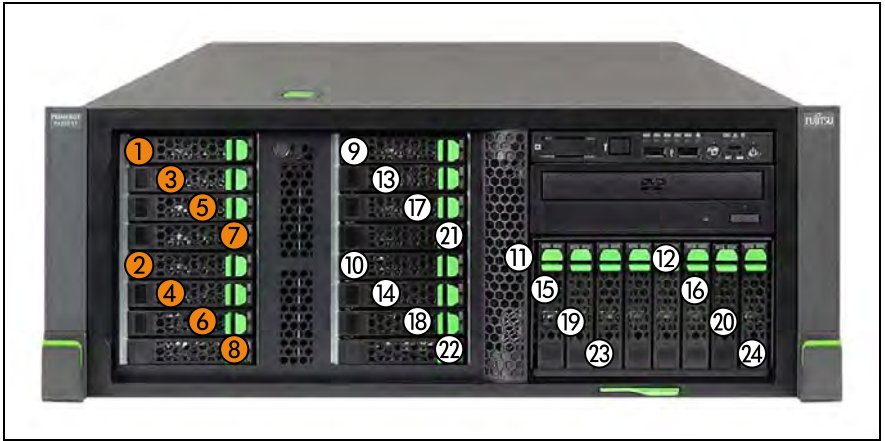


Figure 104: Mounting order: 24x 2.5-inch HDDs / SSDs (8x SAS 3.0 / 16x SAS 2.0) (Rack)

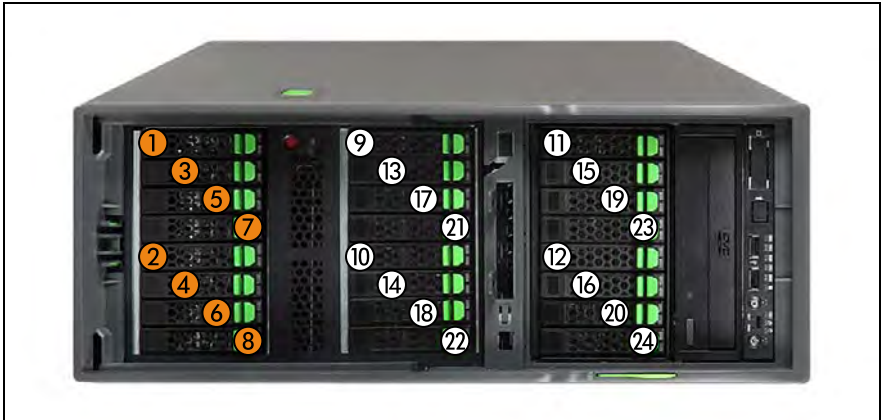


Figure 105: Mounting order: 24x 2.5-inch HDDs / SSDs (8x SAS 3.0 / 16x SAS 2.0) (Tower)

HDD #	Backplane type
1-8 (orange)	2 SAS 3.0 HDD / SSD backplanes
9-16 (white)	4 SAS 2.0 HDD / SSD backplanes

7.2.5.3 24x 2.5-inch HDD / SSD SAS backplane cabling



Before connecting SAS cables to the controller, bend the cables as needed in order to reduce strain on the controller. Bend the SAS cables as close to their shrink tubes as possible.

SAS cabling with SAS expander board and two SAS 2.0 controllers

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS 2.0 cable Y3963-V151/V101	16	Connector MLC 1 on SAS 2.0 controller 1 in PCI slot 10	SAS 2.0 backplane 1 connector X1	16.2.18
SAS 2.0 cable Y3963-V151/V101	16	Connector MLC 2 on SAS 2.0 controller 1 in PCI slot 10	SAS 2.0 backplane 2 connector X1	
SAS 2.0 cable Y3963-V112	15	Connector X3 on SAS expander board	SAS 2.0 backplane 3 connector X1	16.2.18
SAS 2.0 cable Y3963-V112	15	Connector X4 on SAS expander board	SAS 2.0 backplane 4 connector X1	
SAS 2.0 cable Y3963-V151/V101	16	Connector X5 on SAS expander board	SAS 2.0 backplane 5 connector X1	16.2.18
SAS 2.0 cable Y3963-V151/V101	16	Connector X6 on SAS expander board	SAS 2.0 backplane 6 connector X1	
SAS 2.0 cable Y3963-V107	18	Connector MLC 1 on SAS 2.0 controller 2 in PCI slot 3	Connector MLC 1 on SAS expander board	16.2.18
SAS 2.0 cable Y3963-V107	18	Connector MLC 2 on SAS 2.0 controller 2 in PCI slot 3	Connector MLC 2 on SAS expander board	

SAS cabling with SAS expander board, one SAS 3.0 controller and one SAS 2.0 controller

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS 3.0 cable Y4040-V8	27	Connector MLC 1 on SAS 3.0 controller 1 in PCI slot 10	SAS 3.0 backplane 1 connector X5	16.2.19
SAS 3.0 cable Y4040-V8	27	Connector MLC 2 on SAS 3.0 controller 1 in PCI slot 10	SAS 3.0 backplane 2 connector X5	
SAS 2.0 cable Y3963-V112	15	Connector X3 on SAS expander board	SAS 2.0 backplane 3 connector X1	16.2.18
SAS 2.0 cable Y3963-V112	15	Connector X4 on SAS expander board	SAS 2.0 backplane 4 connector X1	
SAS 2.0 cable Y3963-V151/V101	16	Connector X5 on SAS expander board	SAS 2.0 backplane 5 connector X1	16.2.18
SAS 2.0 cable Y3963-V151/V101	16	Connector X6 on SAS expander board	SAS 2.0 backplane 6 connector X1	
SAS 2.0 cable Y3963-V107	18	Connector MLC 1 on SAS 2.0 controller 2 in PCI slot 3	Connector MLC 1 on SAS expander board	16.2.18
SAS 2.0 cable Y3963-V107	18	Connector MLC 2 on SAS 2.0 controller 2 in PCI slot 3	Connector MLC 2 on SAS expander board	

SAS cabling with SAS expander board and one SAS 2.0 controller

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS 2.0 cable Y3963-V112	15	Connector X1 on SAS expander board	SAS 2.0 backplane 1 connector X1	16.2.20
SAS 2.0 cable Y3963-V112	15	Connector X2 on SAS expander board	SAS 2.0 backplane 2 connector X1	
SAS 2.0 cable Y3963-V112	15	Connector X3 on SAS expander board	SAS 2.0 backplane 3 connector X1	
SAS 2.0 cable Y3963-V112	15	Connector X4 on SAS expander board	SAS 2.0 backplane 4 connector X1	
SAS 2.0 cable Y3963-V151/V101	16	Connector X5 on SAS expander board	SAS 2.0 backplane 5 connector X1	16.2.20
SAS 2.0 cable Y3963-V151/V101	16	Connector X6 on SAS expander board	SAS 2.0 backplane 6 connector X1	
SAS 2.0 cable Y3963-V151/V101	16	Connector MLC 1 on SAS 2.0 controller 1 in PCI slot 10	Connector MLC 1 on SAS expander board	16.2.20
SAS 2.0 cable Y3963-V151/V101	16	Connector MLC 2 on SAS 2.0 controller 1 in PCI slot 10	Connector MLC 2 on SAS expander board	

Power cabling

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
HDD power cable Y3952-V601	1	Power backplane connector X21	SAS backplane 1 connector X6 (SAS 2.0) / X10 (SAS 3.0) (HDDs 1, 7, 13, 19) Cable connector P2	16.2.12
			SAS backplane 2 connector X6 (SAS 2.0) / X10 (SAS 3.0) (HDDs 2, 8, 14, 20) Cable connector P1	
			SAS backplane 3 connector X6 (SAS 2.0) / X10 (SAS 3.0) (HDDs 3, 9, 15, 21) Cable connector P4	
			SAS backplane 4 connector X6 (SAS 2.0) / X10 (SAS 3.0) (HDDs 4, 10, 16, 22) Cable connector P3	
HDD / ODD power cable Y4029-V201	3	SAS backplane 3 connector X9 (SAS 2.0) / X14 (SAS 3.0)	SAS backplane 5 connector X8 (HDDs 5, 11, 17, 23)	16.2.12
HDD / ODD power cable Y4029-V201	3	SAS backplane 4 connector X9 (SAS 2.0) / X14 (SAS 3.0)	SAS backplane 6 connector X8 (HDDs 6, 12, 18, 24)	

7.2.5.4 HDD / SSD naming scheme

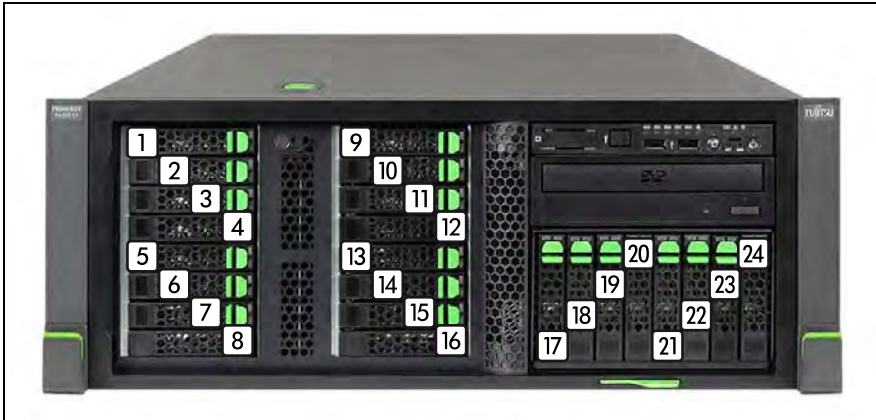


Figure 106: Naming scheme: 24x 2.5-inch HDDs / SSDs (6 SAS backplanes) (Rack)

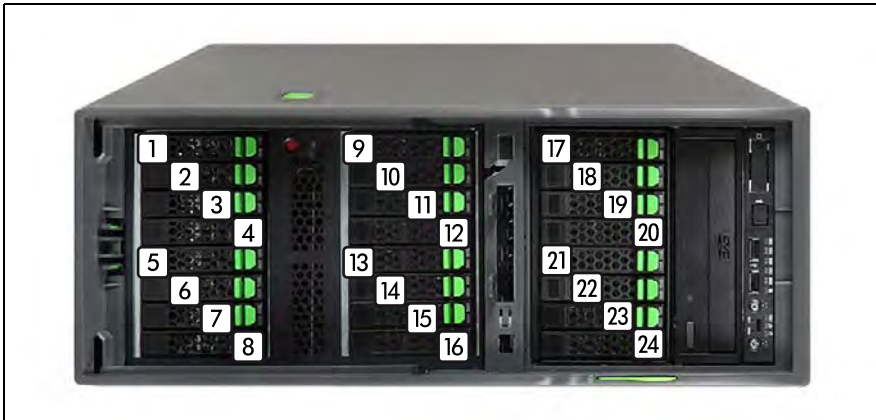


Figure 107: Naming scheme: 24x 2.5-inch HDDs / SSDs (6 SAS backplanes) (Tower)

With SAS expander board and two SAS controllers

Position	Logical drive number	ServerView RAID Manager display name	
1	0	HDD vendor name (0)	Ctrl (0)
2	1	HDD vendor name (1)	Ctrl (0)
3	2	HDD vendor name (2)	Ctrl (0)
4	3	HDD vendor name (3)	Ctrl (0)
5	4	HDD vendor name (4)	Ctrl (0)
6	5	HDD vendor name (5)	Ctrl (0)
7	6	HDD vendor name (6)	Ctrl (0)
8	7	HDD vendor name (7)	Ctrl (0)
9	0	HDD vendor name (1:0)	Ctrl (1)
10	1	HDD vendor name (1:1)	Ctrl (1)
11	2	HDD vendor name (1:2)	Ctrl (1)
12	3	HDD vendor name (1:3)	Ctrl (1)
13	4	HDD vendor name (1:4)	Ctrl (1)
14	5	HDD vendor name (1:5)	Ctrl (1)
15	6	HDD vendor name (1:6)	Ctrl (1)
16	7	HDD vendor name (1:7)	Ctrl (1)
17	8	HDD vendor name (1:8)	Ctrl (1)
18	9	HDD vendor name (1:9)	Ctrl (1)
19	10	HDD vendor name (1:10)	Ctrl (1)
20	11	HDD vendor name (1:11)	Ctrl (1)
21	12	HDD vendor name (1:12)	Ctrl (1)
22	13	HDD vendor name (1:13)	Ctrl (1)
23	14	HDD vendor name (1:14)	Ctrl (1)
24	15	HDD vendor name (1:15)	Ctrl (1)

Hard disk drives / solid state drives

With SAS expander board and one SAS controller

Position	Logical drive number	ServerView RAID Manager display name
1	0	HDD vendor name (1:0)
2	1	HDD vendor name (1:1)
3	2	HDD vendor name (1:2)
4	3	HDD vendor name (1:3)
5	4	HDD vendor name (1:4)
6	5	HDD vendor name (1:5)
7	6	HDD vendor name (1:6)
8	7	HDD vendor name (1:7)
9	8	HDD vendor name (1:8)
10	9	HDD vendor name (1:9)
11	10	HDD vendor name (1:10)
12	11	HDD vendor name (1:11)
13	12	HDD vendor name (1:12)
14	13	HDD vendor name (1:13)
15	14	HDD vendor name (1:14)
16	15	HDD vendor name (1:15)
17	16	HDD vendor name (1:16)
18	17	HDD vendor name (1:17)
19	18	HDD vendor name (1:18)
20	19	HDD vendor name (1:19)
21	20	HDD vendor name (1:20)
22	21	HDD vendor name (1:21)
23	22	HDD vendor name (1:22)
24	23	HDD vendor name (1:23)

7.2.6 Installing 2.5-inch HDD / SSD modules



Customer Replaceable Unit (CRU)



**Average task duration:
5 minutes**

Tools: tool-less

7.2.6.1 Preliminary steps

- ▶ When working on a tower server, open the HDD bay cover as described in section ["Removing accessible drive and HDD bay covers" on page 77](#).
- ▶ Locate the correct drive bay as described in section ["2.5-inch HDD / SSD configurations" on page 185](#).

7.2.6.2 Removing a 2.5-inch HDD / SSD dummy module

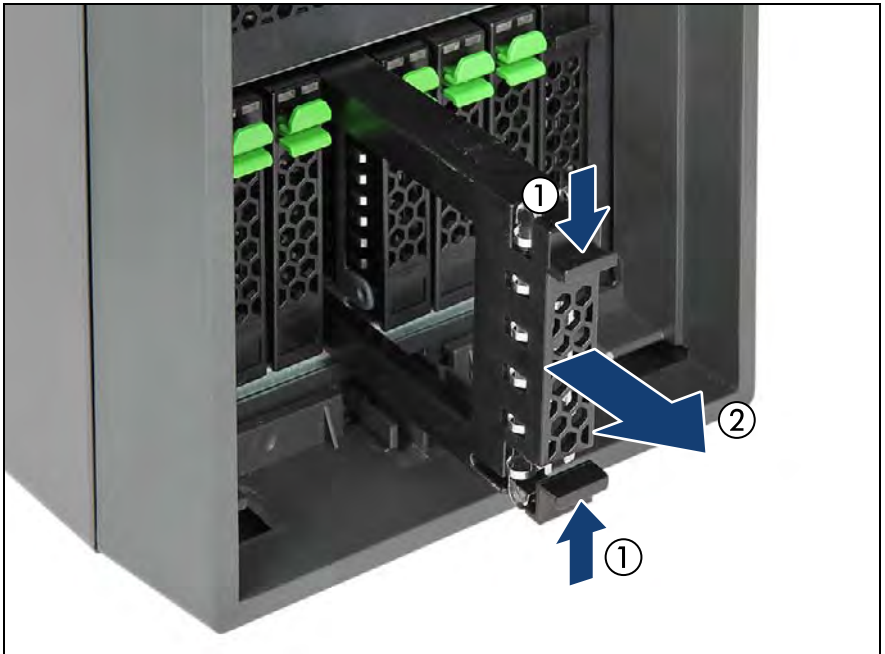


Figure 108: Removing a 2.5-inch dummy module

Hard disk drives / solid state drives



Dummy modules have been installed into unused HDD / SSD bays. Before installing an additional HDD / SSD, the dummy module needs to be removed from the desired drive bay.

- ▶ Press in on the locking clips on left side of the dummy module to disengage the locking mechanism (1).
- ▶ While keeping the locking clip pressed, pull the dummy module out of its bay (2).



CAUTION!

Save the dummy module for future use. Always replace dummy modules into unused HDD / SSD bays to comply with applicable EMC regulations and satisfy cooling requirements.

7.2.6.3 Installing a 2.5-inch HDD / SSD module



Figure 109: Opening the 2.5-inch HDD / SSD module locking lever

- ▶ Pinch the green locking clips (1) and open the locking lever (2).



Figure 110: Inserting the 2.5-inch HDD / SSD module

- ▶ Insert the HDD / SSD module into a drive bay and carefully push back as far as it will go.

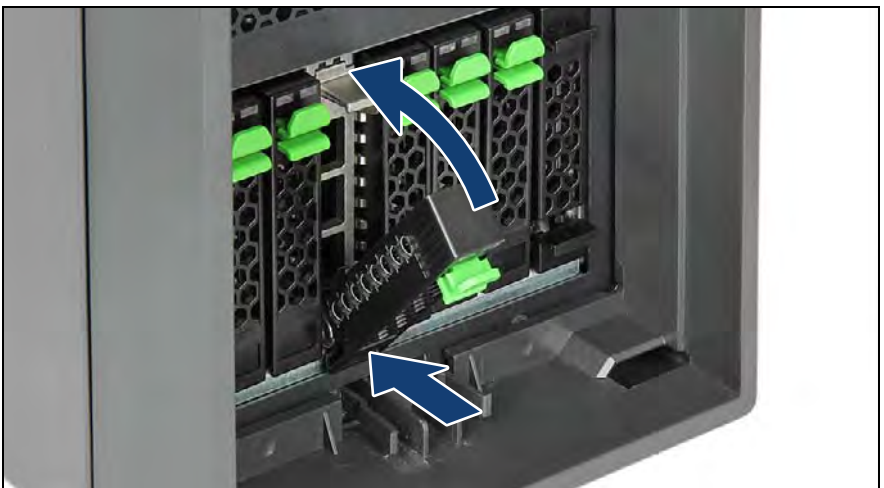


Figure 111: Closing the 2.5-inch HDD / SSD module locking lever

- ▶ Close the locking lever to lock the hard disk drive in place.

7.2.6.4 Concluding steps

- ▶ When working on a tower server, close the HDD bay cover as described in section "[Installing accessible drive and HDD bay covers](#)" on page 105.
- ▶ Please observe the notes on RAID rebuild in section "[Performing a RAID array rebuild](#)" on page 153.

7.2.7 Removing 2.5-inch HDD / SSD modules



Customer Replaceable Unit (CRU)





**Average task duration:
5 minutes**

Tools: tool-less

7.2.7.1 Preliminary steps

- ▶ If the HDD / SSD module to be removed is combined into a RAID array, please proceed as follows:

RAID level	Procedure
RAID 0	<p>Only remove an HDD module combined in a RAID 0 array if defective.</p> <p> CAUTION! Removing an operational HDD module will result in data loss!</p>
RAID 1 RAID 5	<p>Removing an HDD module from a RAID 1 or RAID 5 array will not result in data loss.</p> <p>However, the removed drive needs to be replaced immediately by an HDD module of the same or larger capacity.</p> <p> After replacing the HDD module, RAID rebuild will be performed as a background process as described in section "Performing a RAID array rebuild" on page 153.</p>

In order to permanently remove an operational HDD module that is part of a RAID array from the server, you first need to delete the array using ServerView RAID Manager.



CAUTION!

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

For further information, please refer to the "ServerView Suite RAID Management" user guide.

- ▶ When working on a tower server, open the HDD bay cover as described in section "[Removing accessible drive and HDD bay covers](#)" on page 77.

7.2.7.2 Removing a 2.5-inch HDD / SSD module

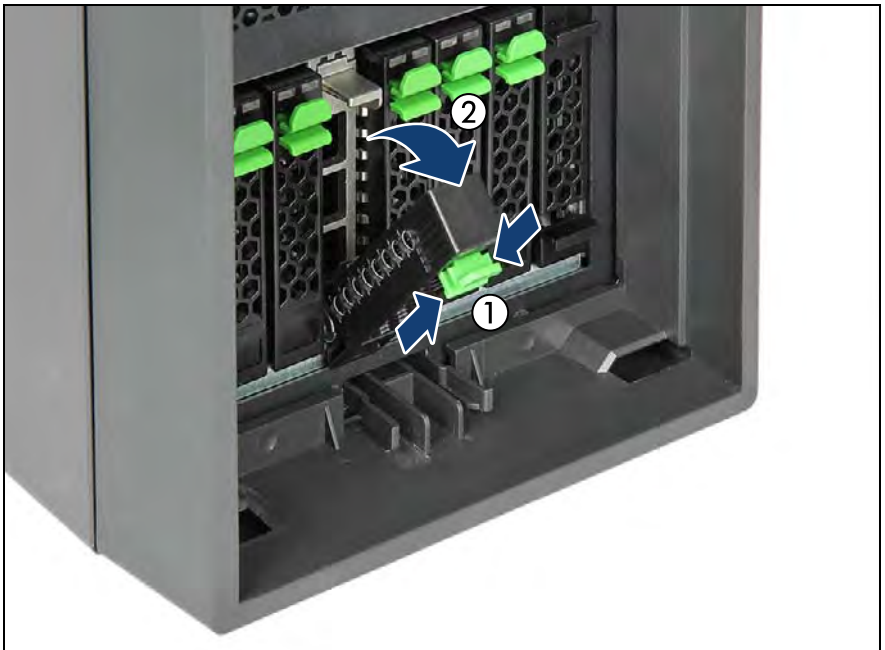


Figure 112: Disconnecting a 2.5-inch HDD / SSD module

- ▶ Pinch the green locking clips (1) and fully open the locking lever (2).



Thereby, the HDD / SSD module is pushed out of its drive bay by about 1 cm and disconnected from the SAS / SATA backplane.

Hard disk drives / solid state drives

- ▶ Wait about 30 seconds to allow the hard disk drive to spin down.



This is not necessary when removing a solid state drive.



Figure 113: Removing a 2.5-inch HDD / SSD module

- ▶ Pull the HDD / SSD module completely out of its bay.

7.2.7.3 Installing a 2.5-inch HDD / SSD dummy module



CAUTION!

If the removed HDD / SSD module is not replaced immediately, always replace a dummy module into the unused HDD / SSD bay to comply with applicable EMC regulations and satisfy cooling requirements.



Figure 114: Installing a 2.5-inch HDD / SSD dummy module

- ▶ Slide the HDD dummy module into the drive bay until it locks in place.

7.2.7.4 Concluding steps

- ▶ When working on a tower server, close the HDD bay cover as described in section ["Installing accessible drive and HDD bay covers"](#) on page 105.

7.2.8 Replacing a 2.5-inch HDD / SSD module



Customer Replaceable Unit (CRU)



**Average task duration:
5 minutes**

Tools: tool-less



CAUTION!

- Only remove an HDD / SSD module during operation if the drive is not currently being accessed. Observe the indicators on the HDD / SSD module, as described in the "PRIMERGY TX300 S8 / RX350 S8 Server" operating manual.
- Under no circumstances should you remove an HDD / SSD module while the system is in operation if you are not sure that the drive is operated by a RAID controller and belongs to a disk array that is operating in RAID level 0, 1, 1E, 10, 5, 50, 6 or 60.

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

7.2.8.1 Preliminary steps

- ▶ ["Locating the defective server" on page 57](#)
- ▶ When working on a tower server, open the HDD bay cover as described in section ["Removing accessible drive and HDD bay covers" on page 77](#).
- ▶ Locate the defective HDD / SSD module as described in section ["Local diagnostic indicators on the front" on page 60](#).

Only applicable for removing intact HDD / SSD modules:

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

7.2.8.2 Removing a 2.5-inch HDD / SSD module

- ▶ Remove the HDD / SSD module to be replaced from the server as described in section ["Removing a 2.5-inch HDD / SSD module" on page 211](#).

7.2.8.3 Installing a 2.5-inch HDD / SSD module

- ▶ Install the new HDD / SSD module into the empty drive bay as described in section ["Installing 2.5-inch HDD / SSD modules" on page 207](#).

7.2.8.4 Concluding steps

- ▶ When working on a tower server, close the HDD bay cover as described in section ["Installing accessible drive and HDD bay covers" on page 105](#).
- ▶ Please observe the notes on RAID rebuild in section ["Performing a RAID array rebuild" on page 153](#).

7.2.9 Replacing a 2.5-inch HDD SAS backplane



Upgrade and Repair Unit (URU)



**Average task duration:
15 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

7.2.9.1 Preliminary steps

- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Remove all HDD modules from the server as described in section ["Removing 2.5-inch HDD / SSD modules" on page 210](#).
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

- ▶ Disconnect all cables from the defective SAS backplane.

7.2.9.2 Removing the 2.5-inch HDD bay top cover

i The 2.5-inch HDD front panel does not need to be removed in order to replace a 2.5-inch HDD SAS backplane. In the figures, the front panel has been removed for illustration purposes only.

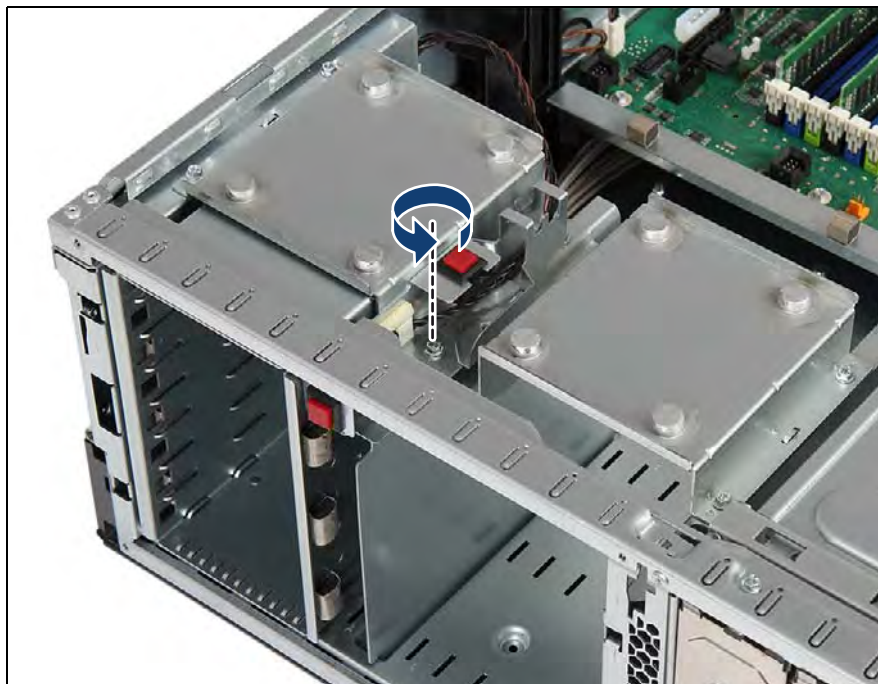


Figure 115: Removing the intrusion switch holder (A)

- ▶ Remove one screw from the intrusion switch holder as shown.

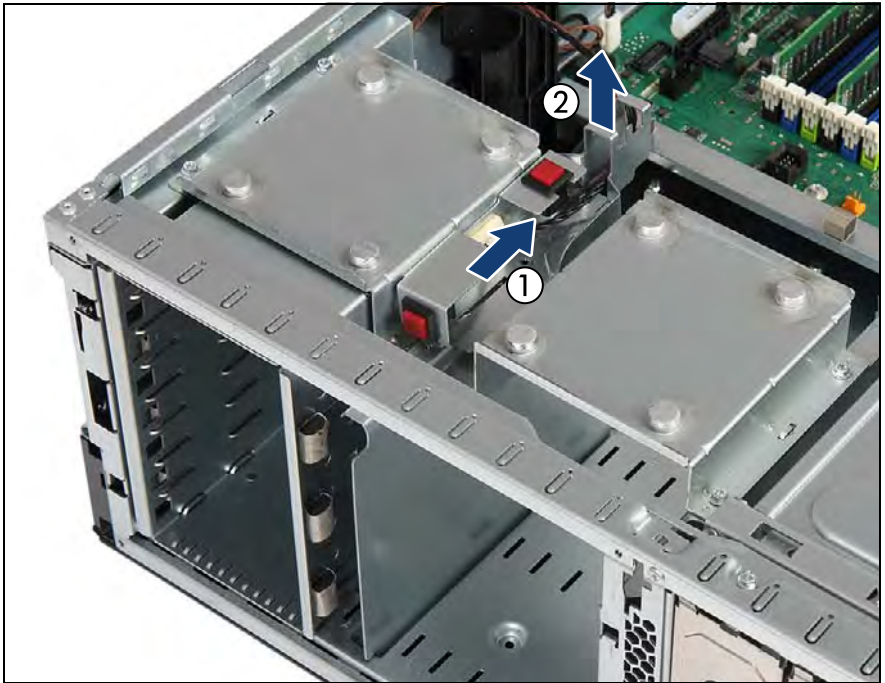


Figure 116: Removing the intrusion switch holder (B)

- ▶ Slide back the intrusion switch holder until it disengages from the HDD bay top cover (1).
- ▶ Remove the intrusion switch holder (2) and set aside.
- ▶ Leave the intrusion switch cable connected to the system board.

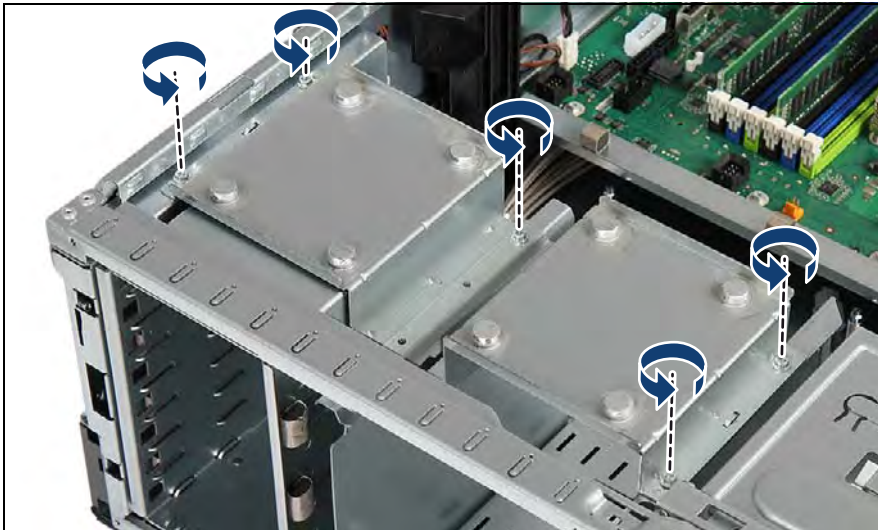


Figure 117: Removing the 2.5-inch HDD bay top cover (A)

- ▶ Remove five screws from the 2.5-inch HDD bay top cover.

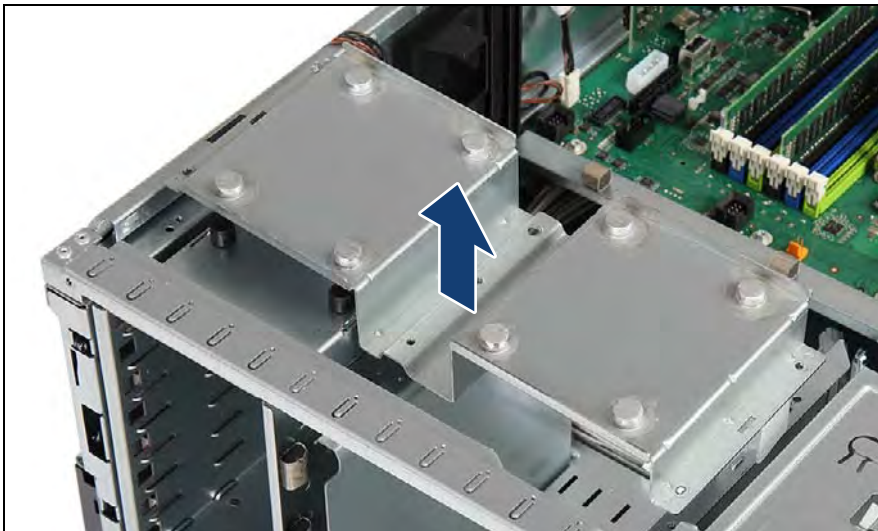


Figure 118: Removing the 2.5-inch HDD bay top cover (B)

- ▶ Remove the 2.5-inch HDD bay top cover from the chassis.

7.2.9.3 Removing a 2.5-inch HDD drive cage

i The 2.5-inch HDD front panel does not need to be removed in order to replace a 2.5-inch HDD SAS backplane. In the figures, the front panel has been removed for illustration purposes only.

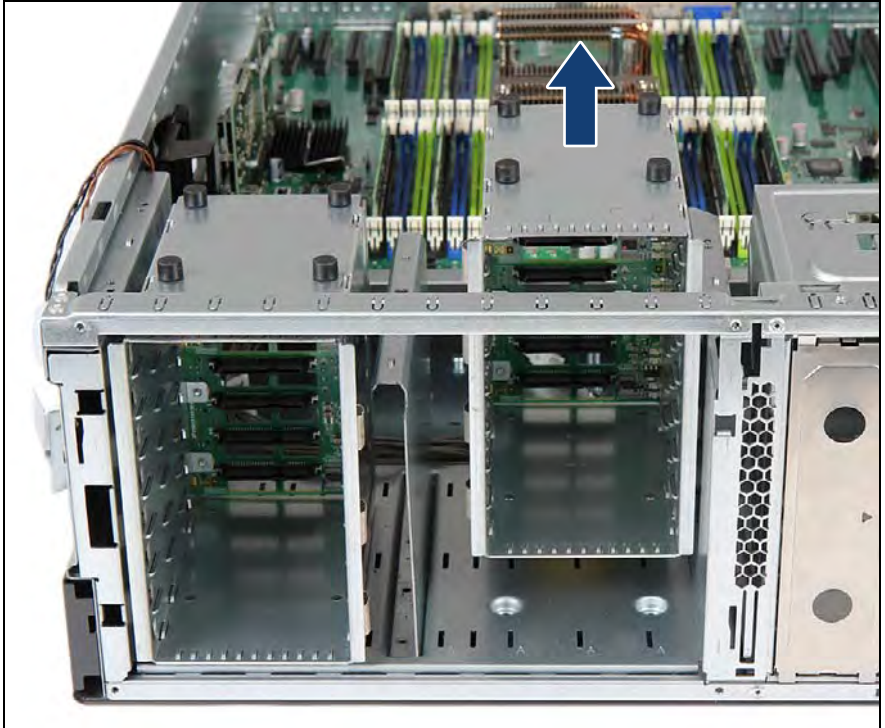


Figure 119: Removing the 2.5-inch HDD drive cage

- ▶ Lift the 2.5-inch HDD cage containing the defective HDD backplane out of the HDD bay.

7.2.9.4 Replacing a 2.5-inch HDD / SSD SAS backplane

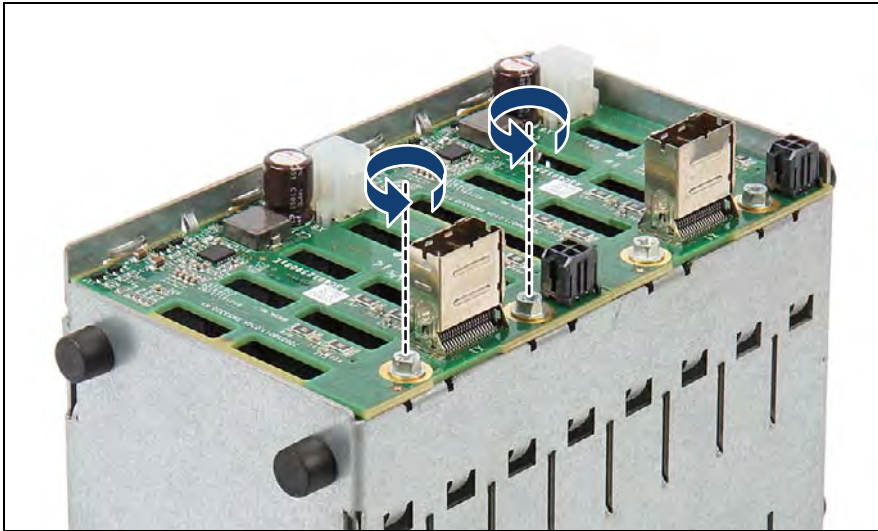


Figure 120: Removing the defective 2.5-inch HDD / SSD SAS backplane (A)

- ▶ Remove two screws from the defective 2.5-inch HDD SAS backplane.

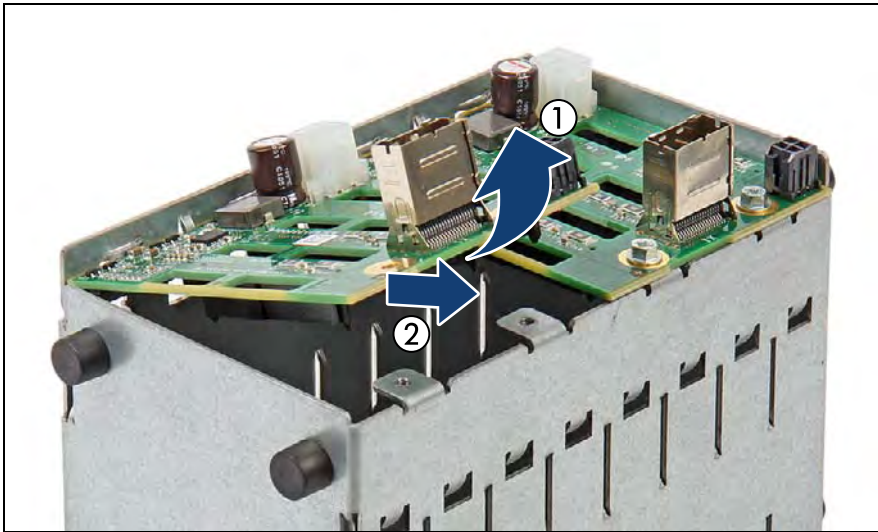


Figure 121: Removing the defective 2.5-inch HDD / SSD SAS backplane (B)

- ▶ Fold up the defective 2.5-inch HDD SAS backplane (1) and at a slight angle, remove it from the guides on the HDD cage (2).

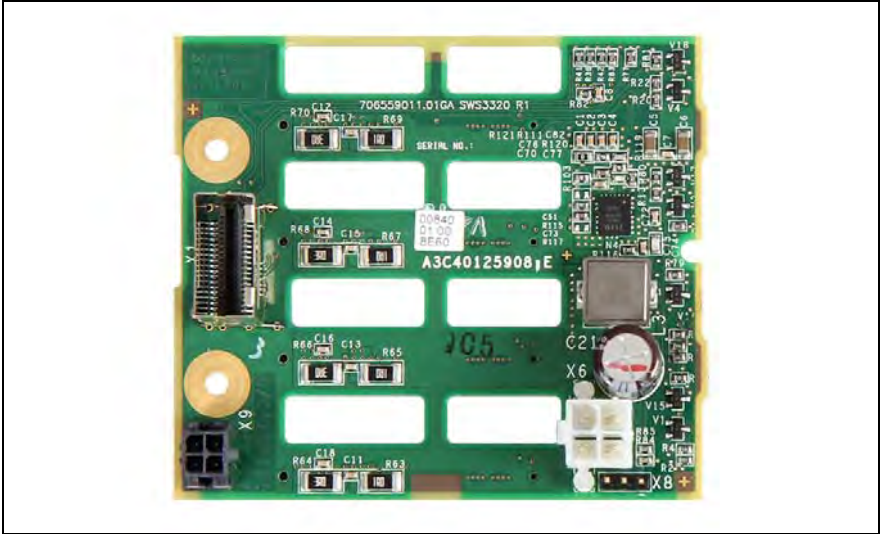


Figure 122: 4x 2.5-inch HDD / SSD SAS 2.0 backplane (A3C40125908)

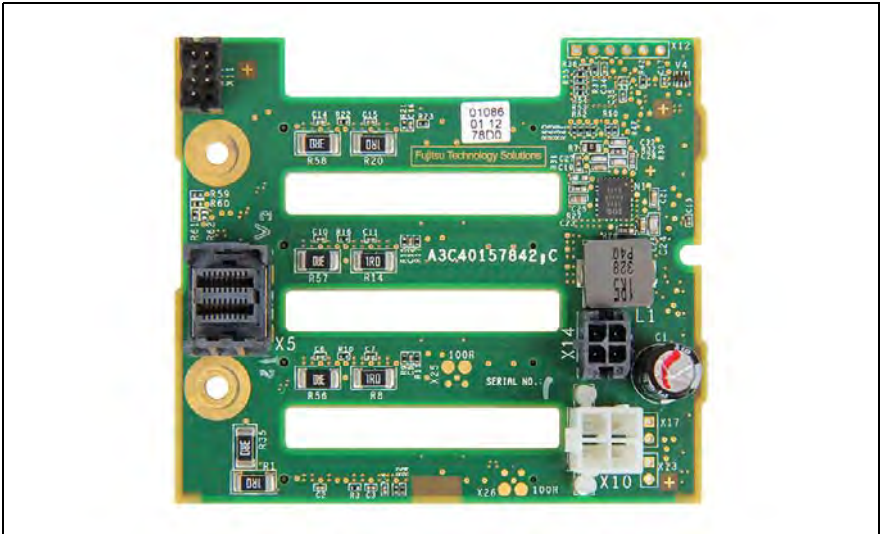


Figure 123: 4x 2.5-inch HDD / SSD SAS 3.0 backplane (A3C40157842)

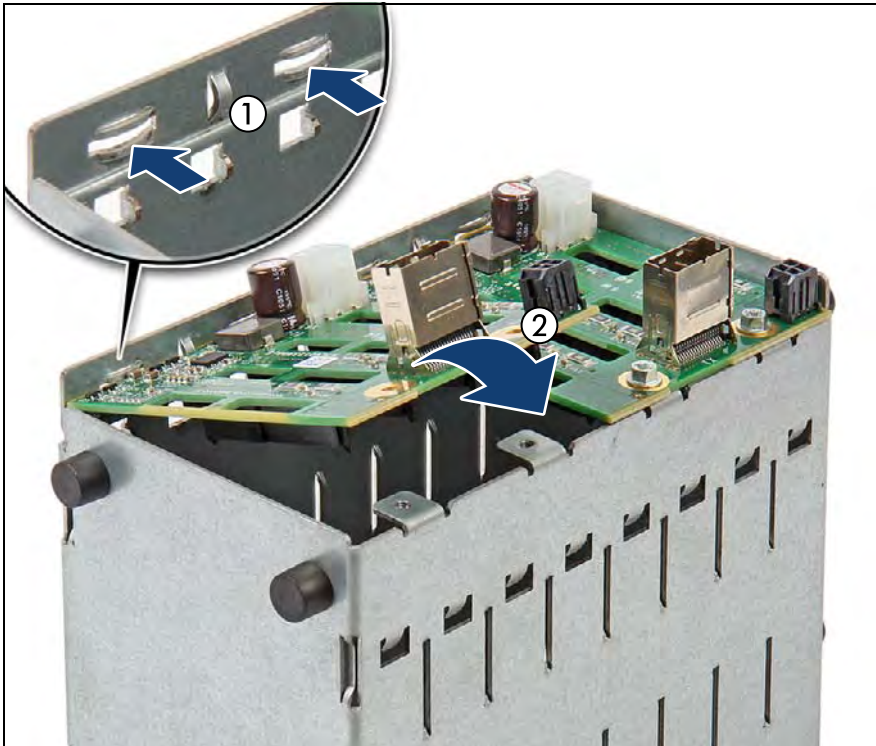


Figure 124: Mounting the new 2.5-inch HDD / SSD SAS backplane (A)

- ▶ At a slight angle, fit the new 2.5-inch HDD SAS backplane into the two guides on the HDD cage (1, see close-up).
- ▶ Fold down the 2.5-inch HDD SAS backplane (2).

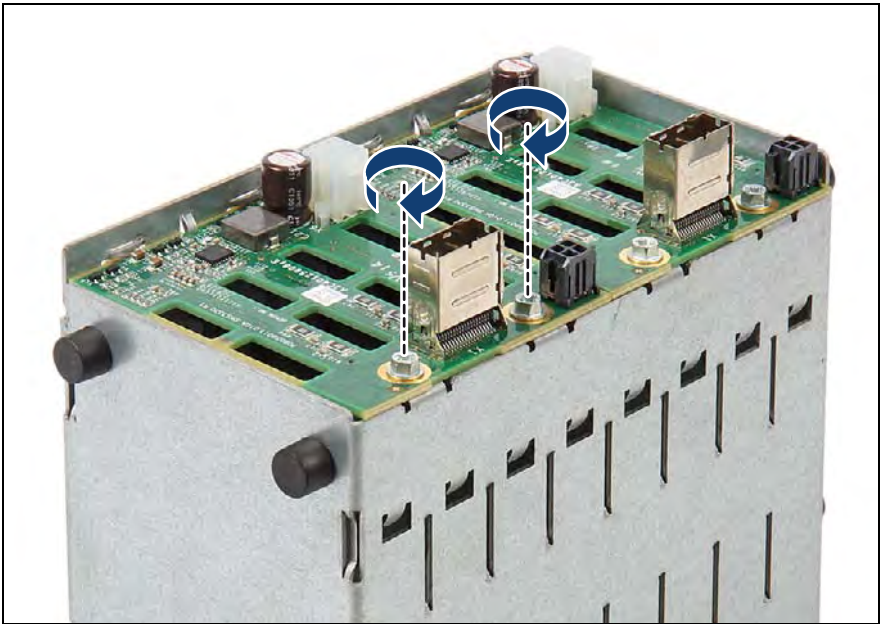


Figure 125: Mounting the new 2.5-inch HDD SAS backplane (B)

- ▶ Secure the 2.5-inch HDD SAS backplane in the extension box with two M3 x 4.5 mm screws.

7.2.9.5 Mounting the second 2.5-inch HDD drive cage

i The 2.5-inch HDD front panel does not need to be removed in order to replace a 2.5-inch HDD SAS backplane. In the figures, the front panel has been removed for illustration purposes only.

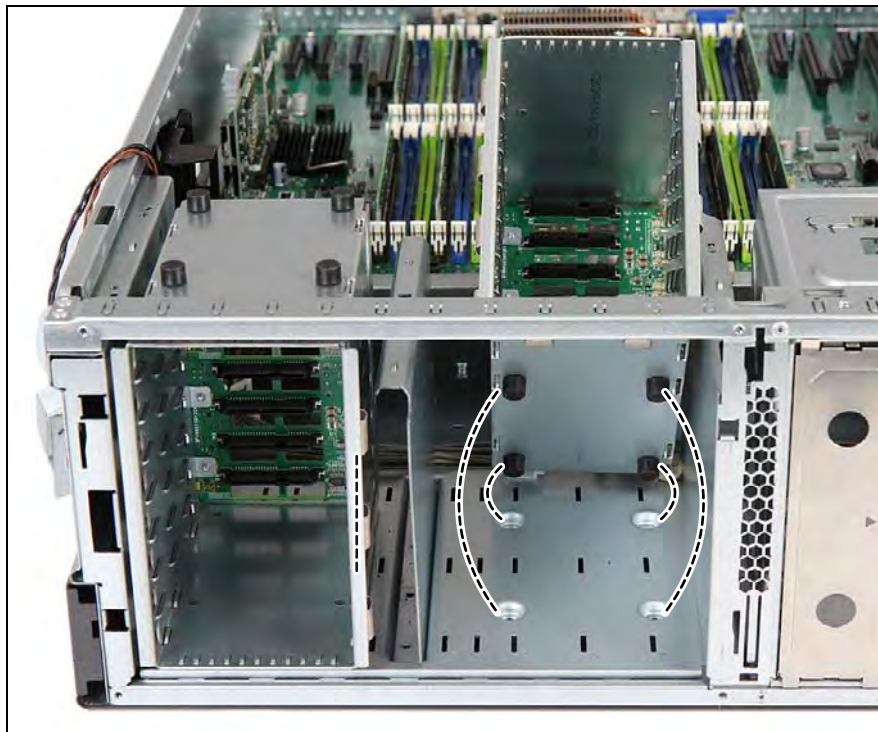


Figure 126: Mounting the second 2.5-inch HDD drive cage (A)

- ▶ Locate the four rubber bolts on the bottom of the cage and the corresponding dents in the chassis floor.

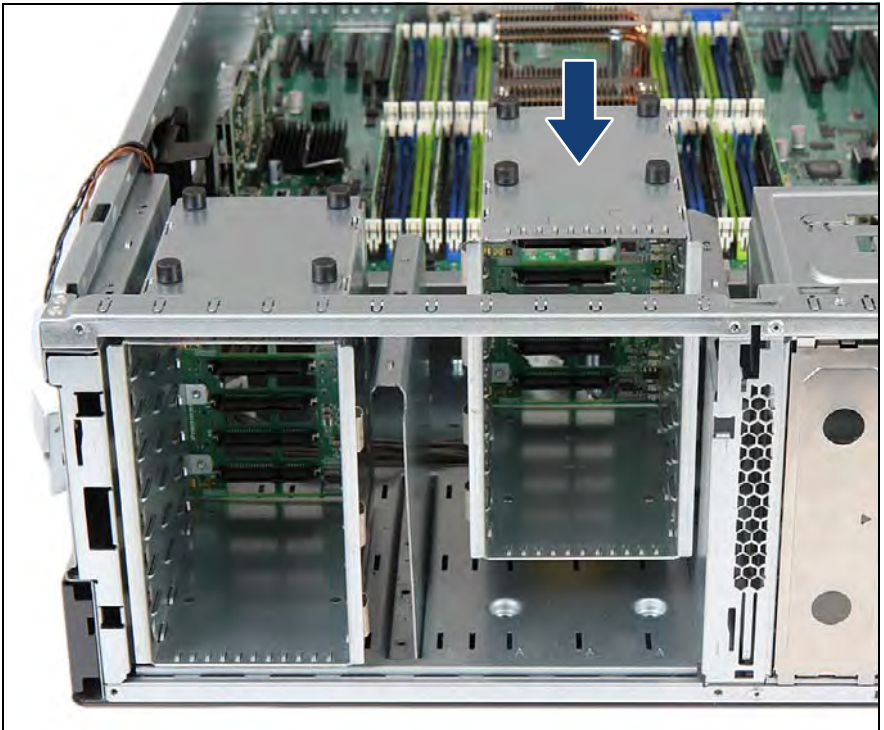


Figure 127: Mounting the second 2.5-inch HDD drive cage (B)

- ▶ Lower the 2.5-inch HDD cage into the right HDD installation bay as shown.
- ▶ Ensure that the four rubber bolts on the bottom of the cage properly engage with the corresponding dents in the chassis floor.

7.2.9.6 Mounting the 2.5-inch HDD bay top cover

i The 2.5-inch HDD front panel does not need to be removed in order to replace a 2.5-inch HDD SAS backplane. In the figures, the front panel has been removed for illustration purposes only.

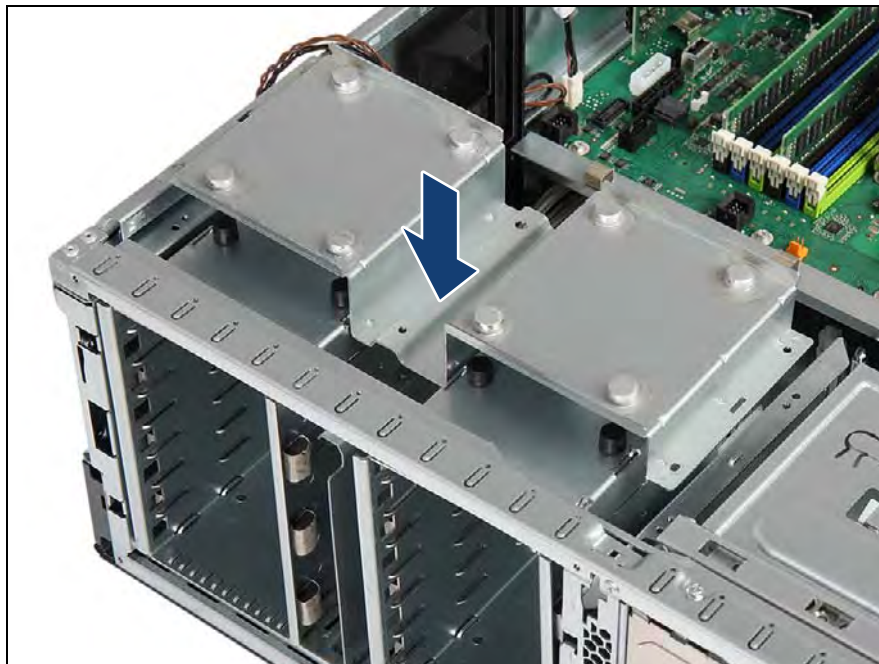


Figure 128: Mounting the 2.5-inch HDD bay top cover (A)

- ▶ Lower the 2.5-inch HDD bay top cover onto the HDD installation bays.
- ▶ Ensure that the four rubber bolts on top of the cage properly engage with the corresponding dents in the HDD bay top cover.

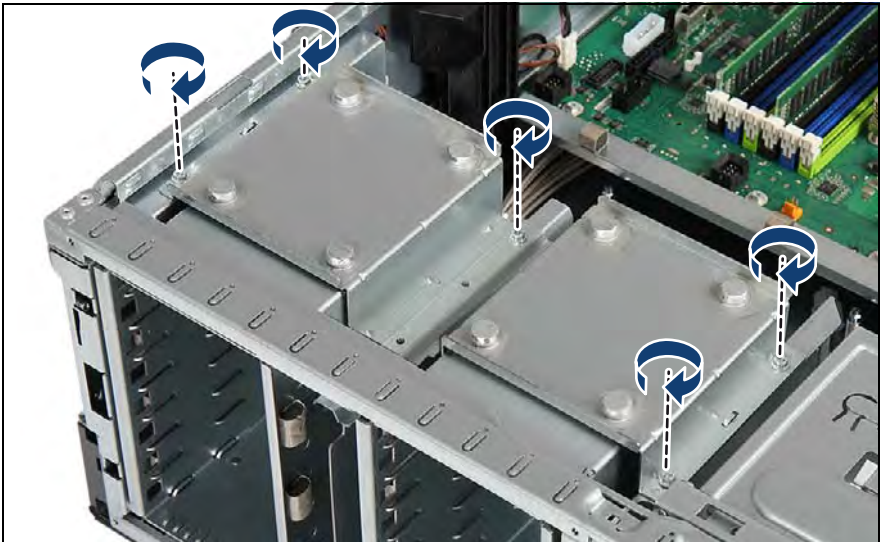


Figure 129: Mounting the 2.5-inch HDD bay top cover (B)

- ▶ Secure the HDD bay top cover to the chassis with five M3 x 4.5 mm screws.

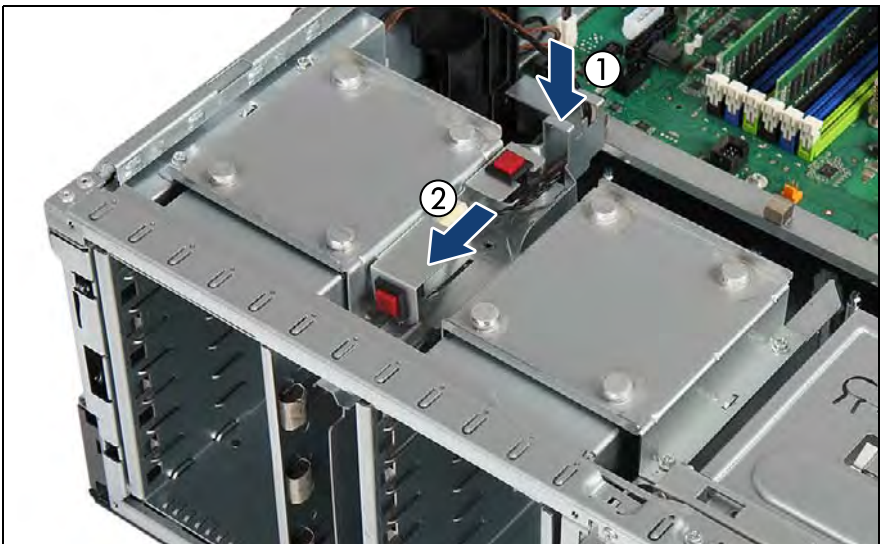


Figure 130: Installing the intrusion switch holder (A)

- ▶ Place the intrusion switch holder on the HDD bay top cover as shown (1).

- ▶ Slide the intrusion switch holder under the front chassis rim as far as it will go (2).



Figure 131: Installing the intrusion switch holder (B)

- ▶ Secure the intrusion switch holder on the HDD bay top cover with one M3 x 4.5 mm screw.

7.2.9.7 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ Install HDD / SSD modules or HDD dummy modules into the additional HDD slots as described in sections ["Installing a 2.5-inch HDD / SSD module" on page 208](#) and ["Installing a 2.5-inch HDD / SSD dummy module" on page 213](#).



For detailed information on HDD mounting order, refer to section ["2.5-inch HDD / SSD configurations" on page 185](#).

- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)

7.2.10 Upgrading to 16x 2.5-inch HDD / SSD configurations



Upgrade and Repair Unit (URU)



**Average task duration:
20 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

7.2.10.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Remove all HDD modules from the server as described in section ["Removing 2.5-inch HDD / SSD modules" on page 210](#).
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

7.2.10.2 Removing the 8x 2.5-inch HDD front panel

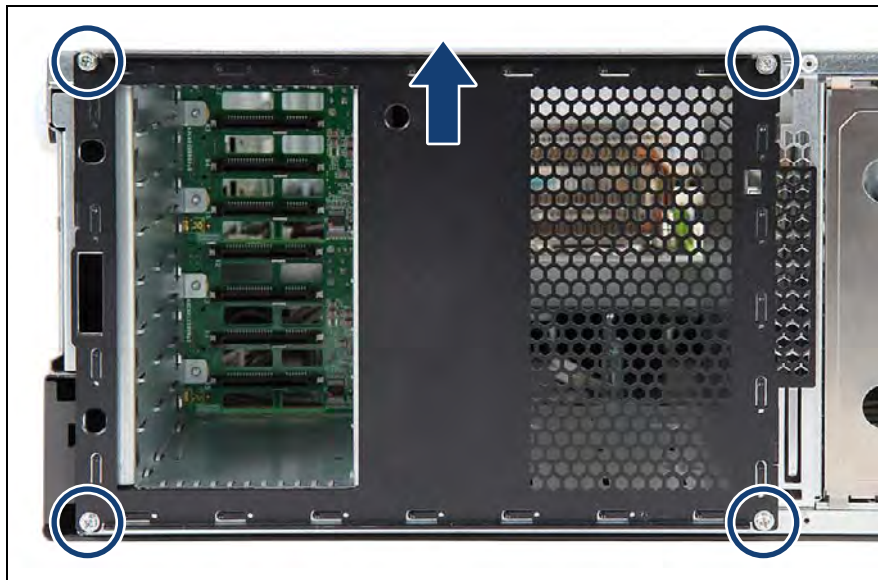


Figure 132: Removing the 8x 2.5-inch HDD front panel

- ▶ Remove four screws from the 8x 2.5-inch HDD front panel.
- ▶ Pull up on the 8x 2.5-inch HDD front panel to disengage it from the chassis.
- ▶ Remove the 8x 2.5-inch HDD front panel.

7.2.10.3 Removing the 2.5-inch HDD bay top cover

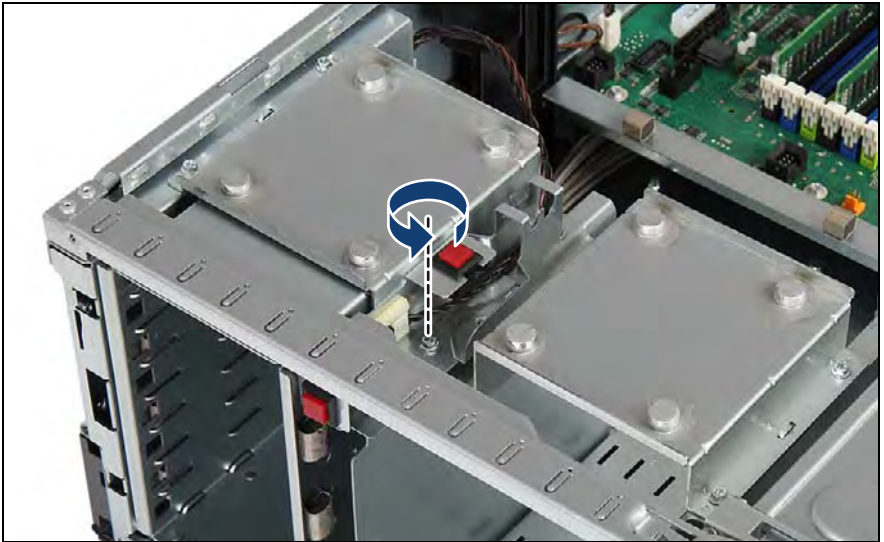


Figure 133: Removing the intrusion switch holder (A)

- ▶ Remove one screw from the intrusion switch holder as shown.

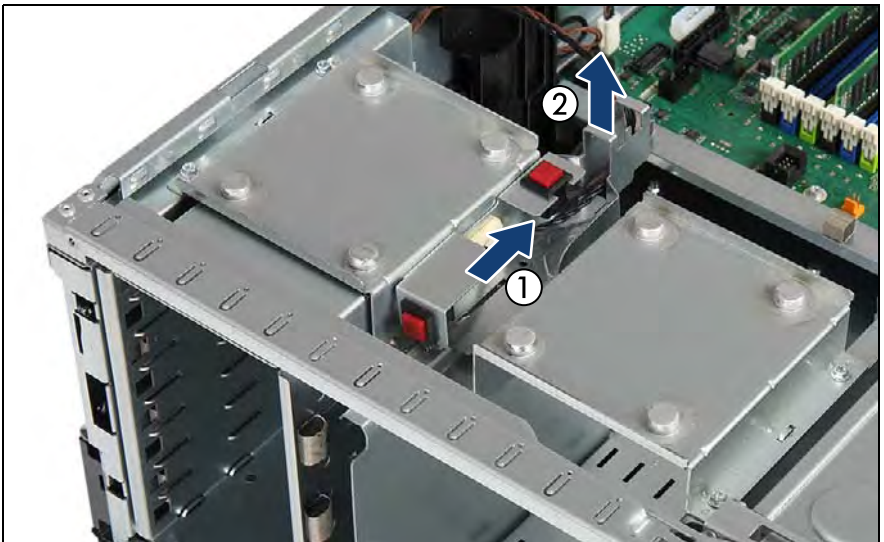


Figure 134: Removing the intrusion switch holder (B)

Hard disk drives / solid state drives

- ▶ Slide back the intrusion switch holder until it disengages from the HDD bay top cover (1).
- ▶ Remove the intrusion switch holder (2) and set aside.
- ▶ Leave the intrusion switch cable connected to the system board.

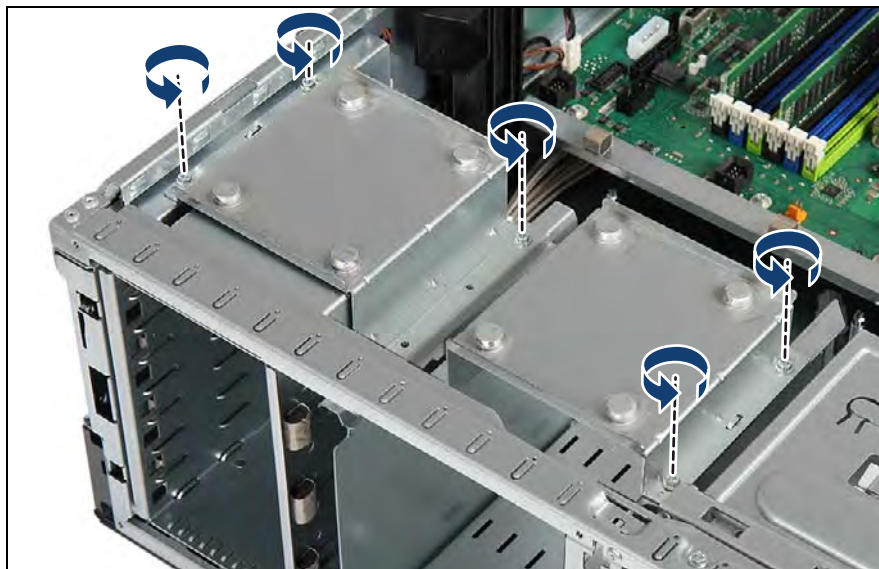


Figure 135: Removing the 2.5-inch HDD bay top cover (A)

- ▶ Remove five screws from the 2.5-inch HDD bay top cover.

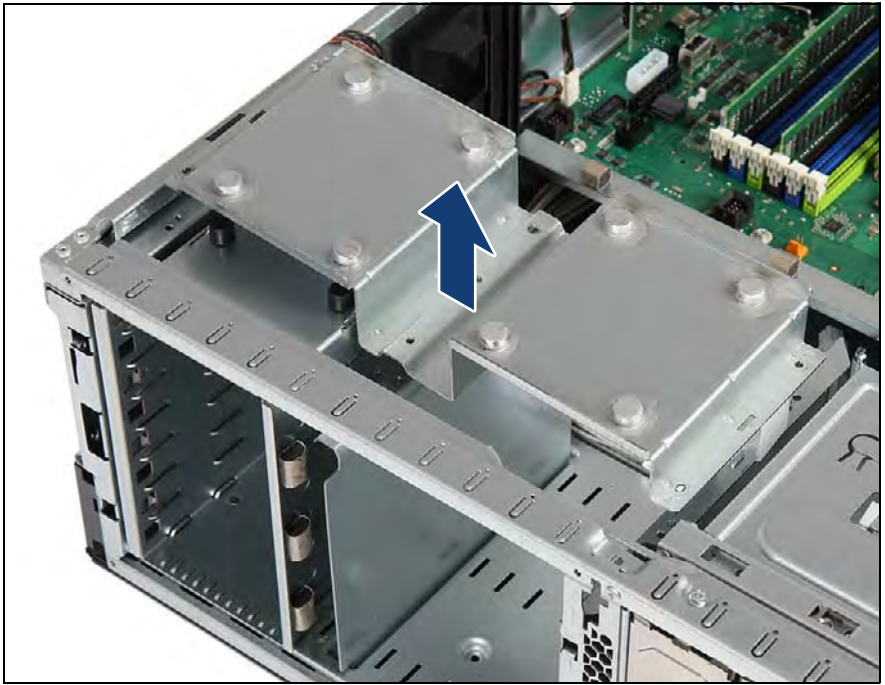


Figure 136: Removing the 2.5-inch HDD bay top cover (B)

- ▶ Remove the 2.5-inch HDD bay top cover from the chassis.

7.2.10.4 Mounting the second 2.5-inch HDD drive cage

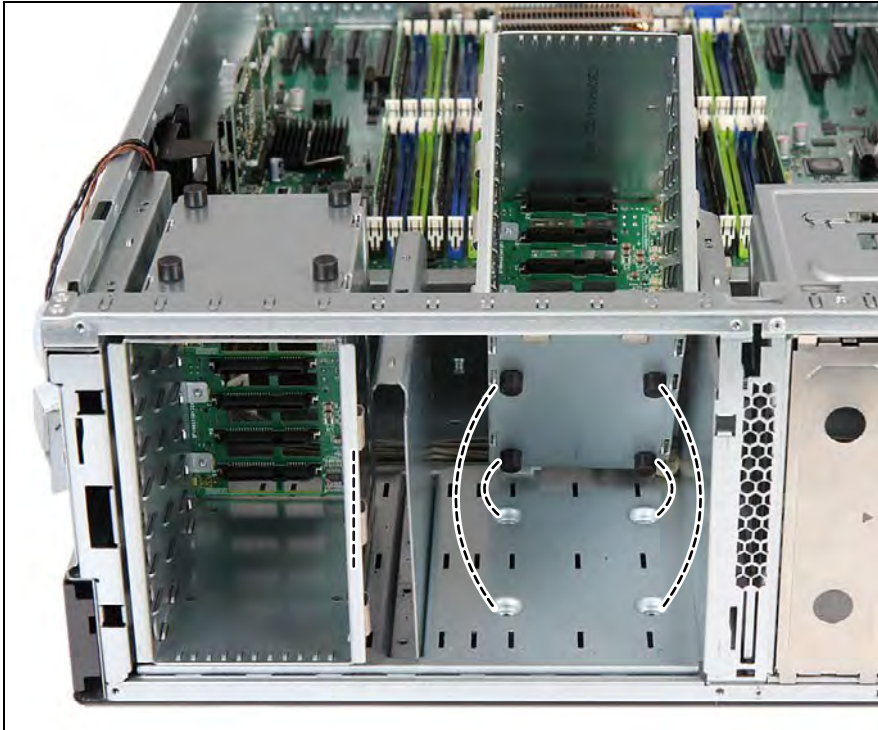


Figure 137: Mounting the second 2.5-inch HDD drive cage (A)

- ▶ Locate the four rubber bolts on the bottom of the cage and the corresponding dents in the chassis floor.

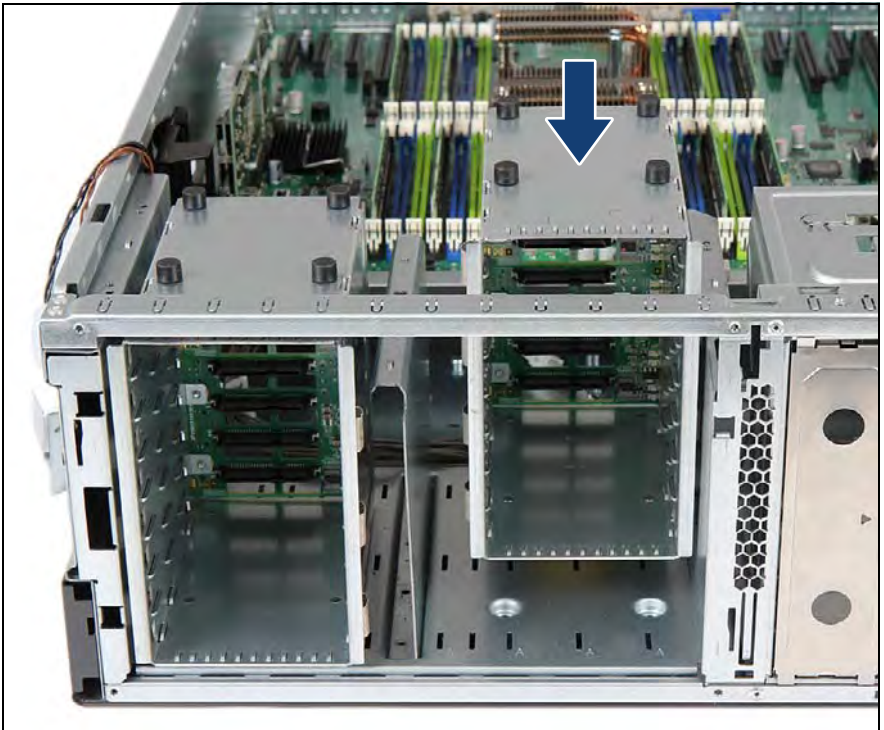


Figure 138: Mounting the second 2.5-inch HDD drive cage (B)

- ▶ Lower the 2.5-inch HDD cage into the right HDD installation bay as shown.
- ▶ Ensure that the four rubber bolts on the bottom of the cage properly engage with the corresponding dents in the chassis floor.

7.2.10.5 Mounting the 2.5-inch HDD bay top cover

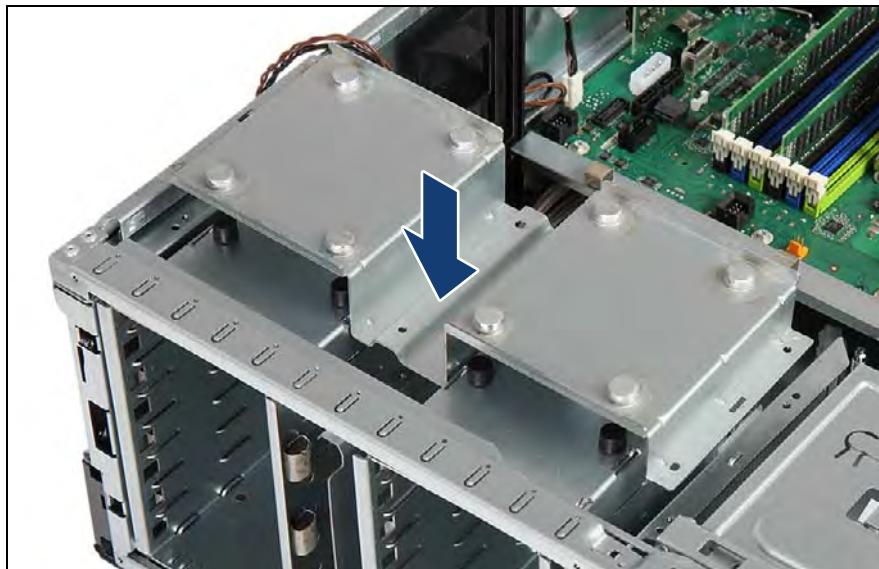


Figure 139: Mounting the 2.5-inch HDD bay top cover (A)

- ▶ Lower the 2.5-inch HDD bay top cover onto the HDD installation bays.
- ▶ Ensure that the four rubber bolts on top of the cage properly engage with the corresponding dents in the HDD bay top cover.

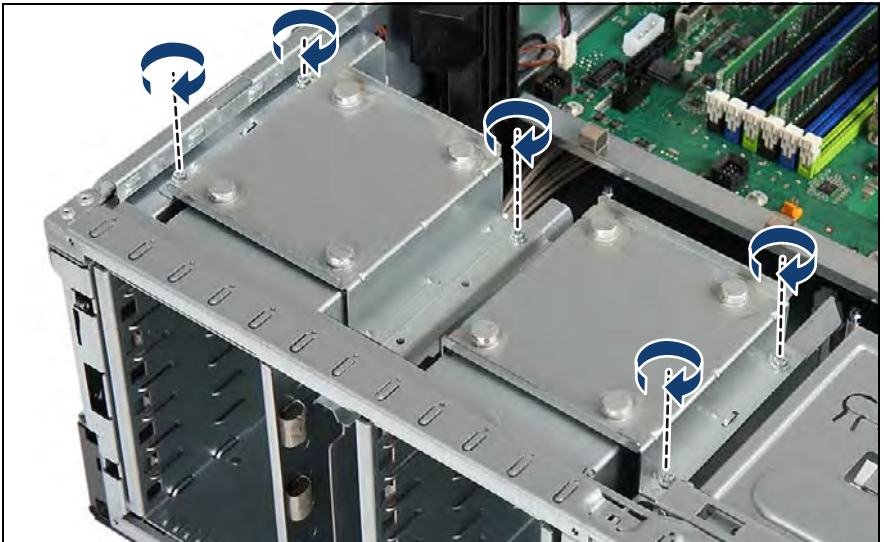


Figure 140: Mounting the 2.5-inch HDD bay top cover (B)

- ▶ Secure the HDD bay top cover to the chassis with five M3 x 4.5 mm screws.

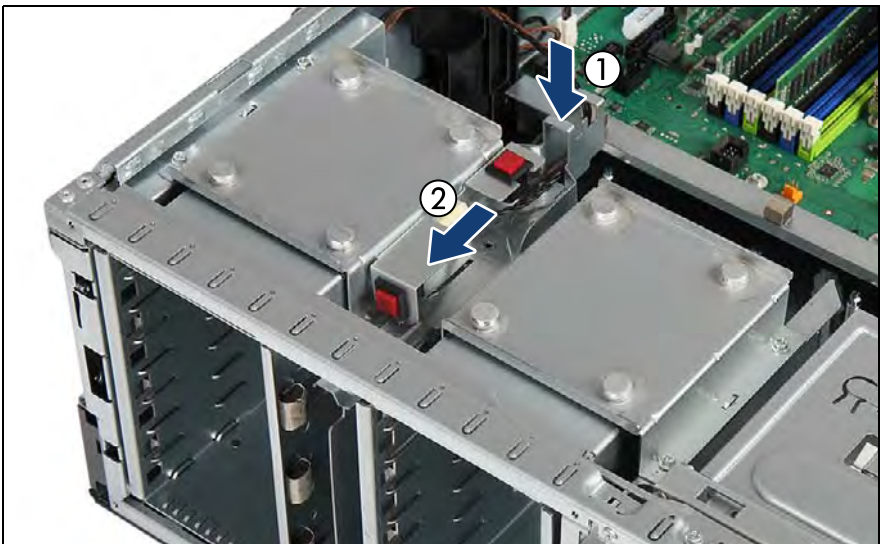


Figure 141: Installing the intrusion switch holder (A)

- ▶ Place the intrusion switch holder on the HDD bay top cover as shown (1).

- ▶ Slide the intrusion switch holder under the front chassis rim as far as it will go (2).

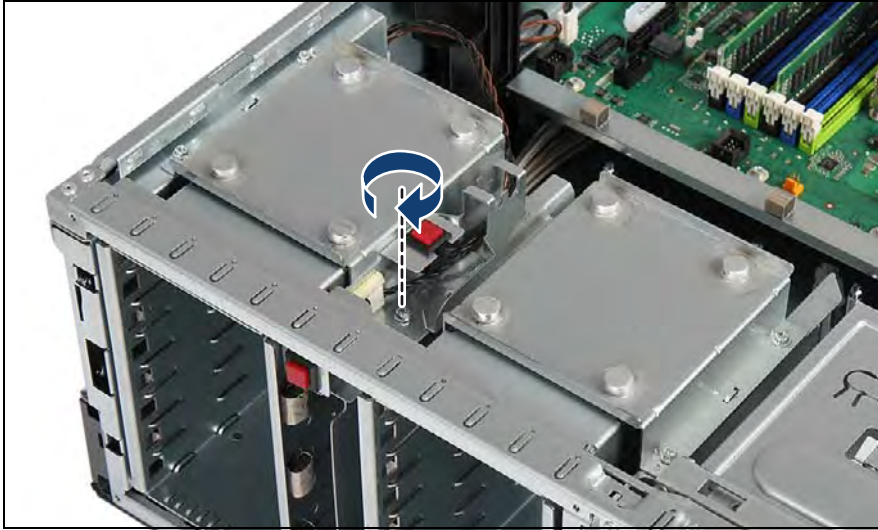


Figure 142: Installing the intrusion switch holder (B)

- ▶ Secure the intrusion switch holder on the HDD bay top cover with one M3 x 4.5 mm screw.

7.2.10.6 Installing the 16x 2.5-inch HDD front panel



Figure 143: 16x 2.5-inch HDD front panel (C26361-K644-B930)

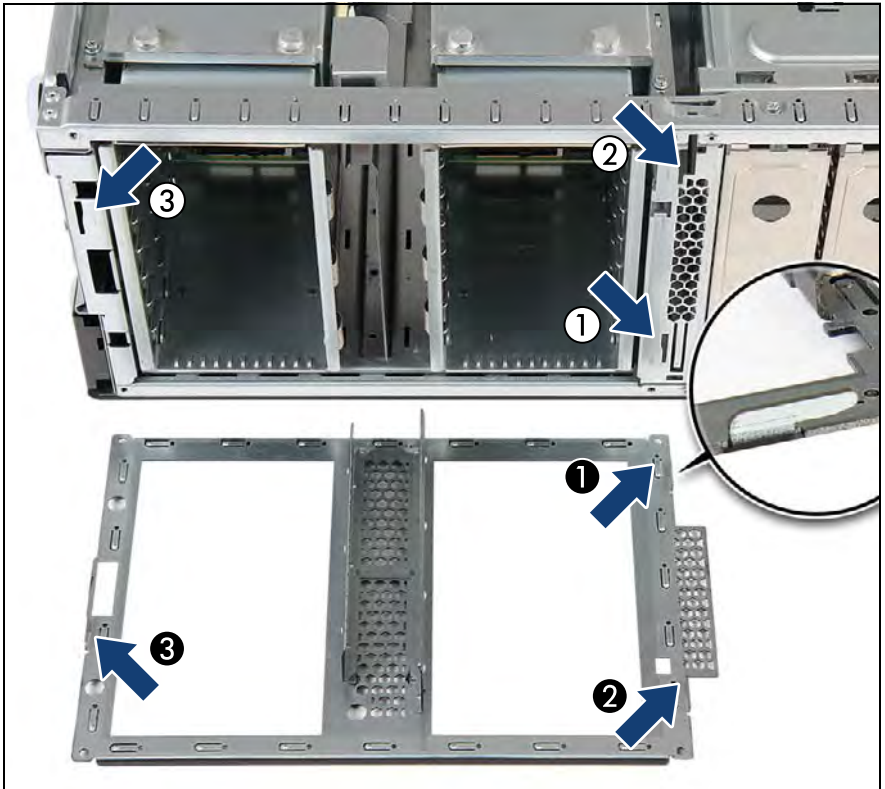


Figure 144: Installing the 16x 2.5-inch HDD front panel

- ▶ Locate the three hooks on the HDD front panel (see close-up and black numbers 1-3).
- ▶ Locate the corresponding installation slots on the server front (see white numbers 1-3).
- ▶ Fit the three hooks on the HDD front panel into the slots in the server front.

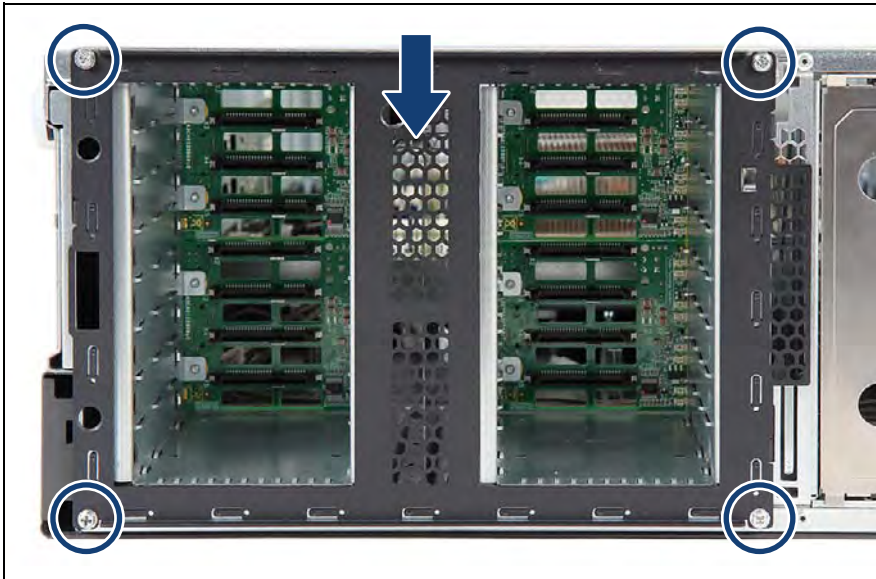


Figure 145: Securing the 16x 2.5-inch HDD front panel

- ▶ Firmly press down on the HDD front panel until its upper edge is flush with the chassis (see arrow).
- ▶ Secure the HDD front panel to the server front with four M3 x 4.5 mm screws (see circles).

7.2.10.7 Cabling the SAS backplanes

- ▶ Connect SAS and power cables to the 2.5-inch SAS backplanes as described in section ["8x 2.5-inch HDD / SSD SAS backplane cabling"](#) on [page 189](#).

7.2.10.8 Concluding steps

- ▶ ["Installing the system fan holder"](#) on [page 331](#).
- ▶ ["Installing the system air duct"](#) on [page 83](#).
- ▶ ["Closing the server"](#) on [page 98](#).

- ▶ Install HDD / SSD modules or HDD dummy modules into the additional HDD slots as described in sections ["Installing a 2.5-inch HDD / SSD module" on page 208](#) and ["Installing a 2.5-inch HDD / SSD dummy module" on page 213](#).



For detailed information on HDD mounting order, refer to section ["2.5-inch HDD / SSD configurations" on page 185](#).

- ▶ When working on a rack-mounted server:
 - ["Mounting the server in the rack" on page 115](#)
 - ["Connecting the server to the mains" on page 118](#).
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

7.3 3.5-inch HDD configurations

7.3.1 3.5-inch HDD backplane overview



Figure 146: 3.5-inch SAS backplanes - Rack version with 2x 3.5-inch HDD extension box



Figure 147: 3.5-inch SAS backplanes - Tower version with 4x 3.5-inch HDD extension box

1	SAS backplane 1 in HDD cage 1 (basic configuration)
2	SAS backplane 2 in HDD cage 2 (optional)
3	SAS backplane 3 in optional 2x / 4x 3.5-inch HDD extension boxes

7.3.2 4x 3.5-inch HDDs (1 SAS backplane)

7.3.2.1 Mounting order for 3.5-inch HDDs



Figure 148: Mounting order: up to 4x 3.5-inch HDDs

7.3.2.2 4x 3.5-inch HDD SAS backplane cabling

i Before connecting SAS cables to the controller, bend the cables as needed in order to reduce strain on the controller. Bend the SAS cables as close to their shrink tubes as possible.

SAS cabling

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS cable Y3963-V151/V101	16	Connector MLC 1 on SAS controller 1	SAS backplane 1 connector X1	16.2.7

Power cabling

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
HDD power cable Y3952-V601	1	Power backplane connector X21	SAS backplane 1 connector X7 (HDDs 1, 2, 3, 4) Cable connector P1	16.2.3

7.3.2.3 HDD naming scheme



Figure 149: Naming scheme: 4x 3.5-inch HDDs (1 SAS backplane)

Hard disk drives / solid state drives

Position	Logical drive number	ServerView RAID Manager display name
①	0	HDD vendor name (0)
②	1	HDD vendor name (1)
③	2	HDD vendor name (2)
④	3	HDD vendor name (3)

7.3.3 8x 3.5-inch HDDs (2 SAS backplanes)

7.3.3.1 Mounting order for 3.5-inch HDDs

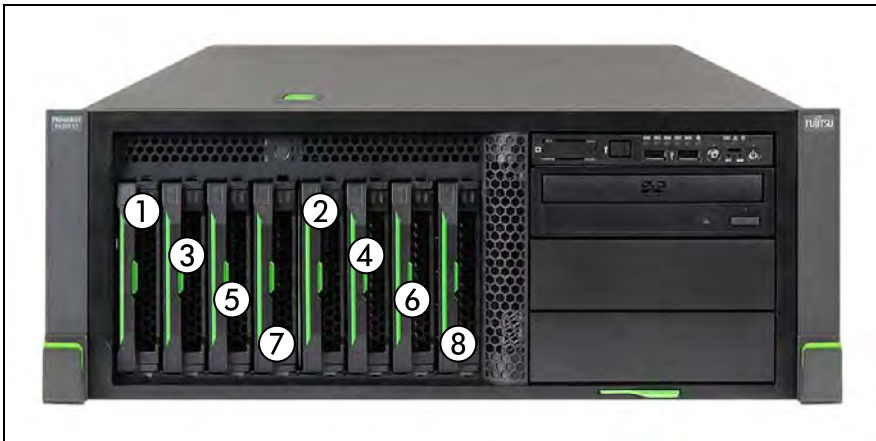


Figure 150: Mounting order: up to 8x 3.5-inch HDDs

7.3.3.2 8x 3.5-inch HDD SAS backplane cabling



Before connecting SAS cables to the controller, bend the cables as needed in order to reduce strain on the controller. Bend the SAS cables as close to their shrink tubes as possible.

SAS cabling

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS cable Y3963-V151/V101	16	Connector MLC 1 on SAS controller 1 in PCI slot 10	SAS backplane 1 connector X1	16.2.7
SAS cable Y3963-V153/V103	17	Connector MLC 2 on SAS controller 1 PCI slot 10	SAS backplane 2 connector X1	16.2.7

Power cabling

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
HDD power cable Y3952-V601	1	Power backplane connector X21	SAS backplane 1 connector X7 (HDDs 1, 3, 5, 7)	16.2.2
			Cable connector P1	
			SAS backplane 2 connector X7 (HDDs 2, 4, 6, 8)	
			Cable connector P2	

7.3.3.3 HDD naming scheme



Figure 151: Naming scheme: 8x 3.5-inch HDDs (2 SAS backplanes)

Position	Logical drive number	ServerView RAID Manager display name
1	0	HDD vendor name (0)
2	1	HDD vendor name (1)
3	2	HDD vendor name (2)
4	3	HDD vendor name (3)
5	4	HDD vendor name (4)
6	5	HDD vendor name (5)
7	6	HDD vendor name (6)
8	7	HDD vendor name (7)

7.3.4 10x 3.5-inch HDDs (3 SAS backplanes)

7.3.4.1 Mounting order for 3.5-inch HDDs

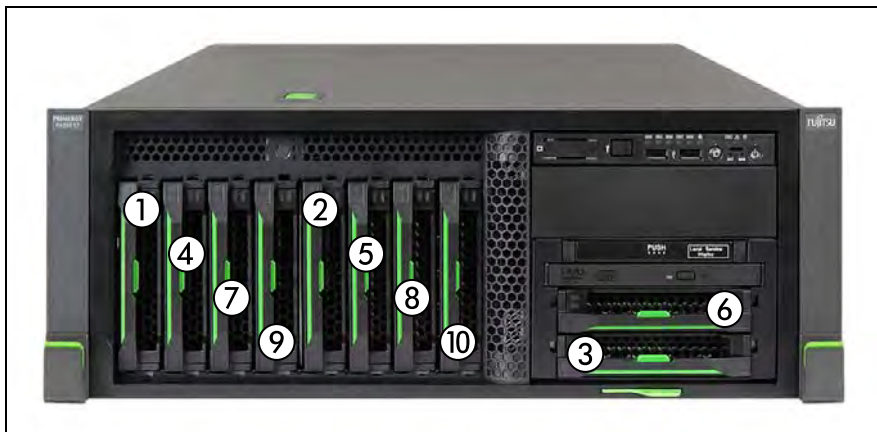


Figure 152: Mounting order: up to 10x 3.5-inch HDDs (Rack)

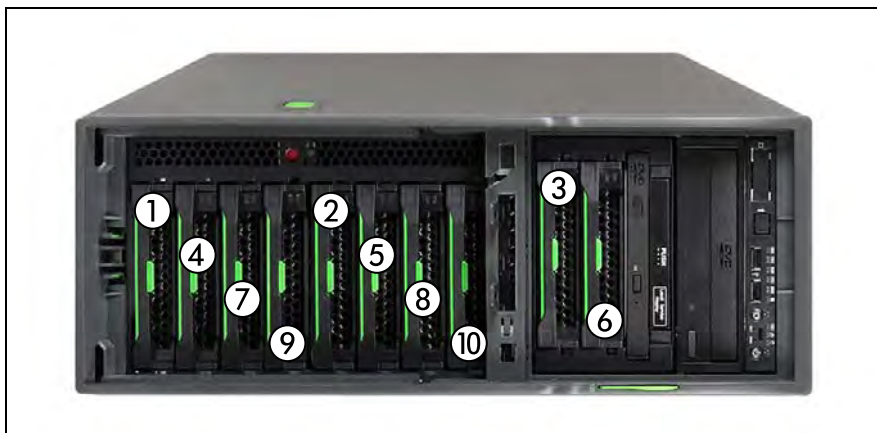


Figure 153: Mounting order: up to 10x 3.5-inch HDDs (Tower)

7.3.4.2 10x 3.5-inch HDD SAS backplane cabling



Before connecting SAS cables to the controller, bend the cables as needed in order to reduce strain on the controller. Bend the SAS cables as close to their shrink tubes as possible.

Hard disk drives / solid state drives

SAS cabling

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS cable Y3963-V151/V101	16	Connector X1 on SAS expander board	SAS backplane 1 connector X1	16.2.8
SAS cable Y3963-V151/V101	17	Connector X2 on SAS expander board	SAS backplane 2 connector X1	
SAS cable Y3963-V201	19	Connector X3 on SAS expander board	2x 3.5-inch HDD extension box SAS backplane connector X1	
SAS cable Y3963-V151/V101	16	Connector MLC 1 on SAS controller 1 in PCI slot 10	Connector MLC 1 on SAS expander board	16.2.8
SAS cable Y3963-V151/V101	16	Connector MLC 2 on SAS controller 1 in PCI slot 10	Connector MLC 2 on SAS expander board	

Power cabling

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
HDD power cable Y3952-V601	1	Power backplane connector X21	SAS backplane 1 connector X7 (HDDs 1, 4, 7, 9)	16.2.6
			Cable connector P1	
			SAS backplane 2 connector X7 (HDDs 2, 5, 8, 10)	
			Cable connector P2	
HDD / ODD power cable Y4029-V201	3	System board connector PWR HDD/ODD	2x 3.5-inch HDD extension box SAS backplane connector X4 (HDDs 3, 6)	16.2.6

7.3.4.3 HDD naming scheme



Figure 154: Naming scheme: 10x 3.5-inch HDDs (3 SAS backplanes) (Rack)



Figure 155: Naming scheme: 10x 3.5-inch HDDs (3 SAS backplanes) (Tower)

Hard disk drives / solid state drives

Position	Logical drive number	ServerView RAID Manager display name
①	0	HDD vendor name (1:0)
②	1	HDD vendor name (1:1)
③	2	HDD vendor name (1:2)
④	3	HDD vendor name (1:3)
⑤	4	HDD vendor name (1:4)
⑥	5	HDD vendor name (1:5)
⑦	6	HDD vendor name (1:6)
⑧	7	HDD vendor name (1:7)
⑨	8	HDD vendor name (1:8)
⑩	9	HDD vendor name (1:9)

7.3.5 12x 3.5-inch HDDs (3 SAS backplanes)

7.3.5.1 Mounting order for 3.5-inch HDDs

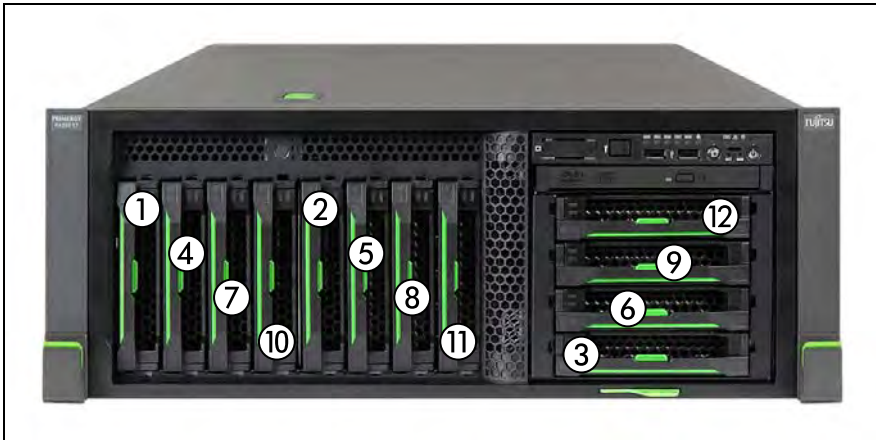


Figure 156: Mounting order: up to 12x 3.5-inch HDDs (Rack)

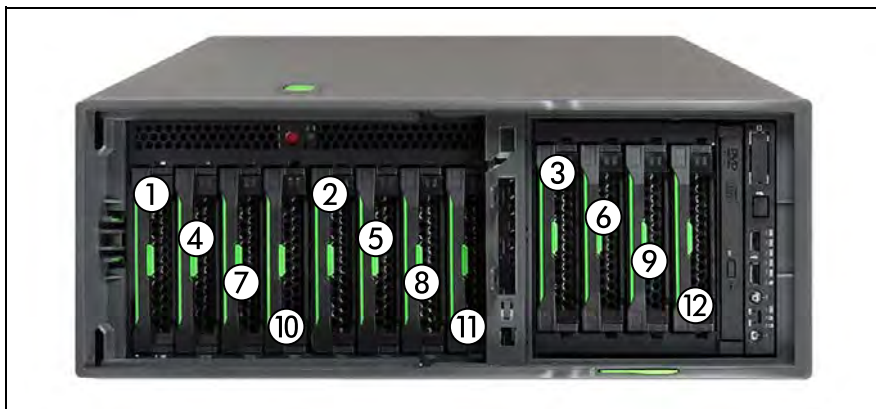


Figure 157: Mounting order: up to 12x 3.5-inch HDDs (Tower)

7.3.5.2 12x 3.5-inch HDD SAS backplane cabling

i Before connecting SAS cables to the controller, bend the cables as needed in order to reduce strain on the controller. Bend the SAS cables as close to their shrink tubes as possible.

SAS cabling

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS cable Y3963-V151/V101	16	Connector X1 on SAS expander board	SAS backplane 1 connector X1	16.2.9
SAS cable Y3963-V151/V101	16	Connector X2 on SAS expander board	SAS backplane 2 connector X1	
SAS cable Y3963-V153/V103	17	Connector X3 on SAS expander board	4x 3.5-inch HDD extension box SAS backplane connector X1	
SAS cable Y3963-V151/V101	16	Connector MLC 1 on SAS controller 1 in PCI slot 10	Connector MLC 1 on SAS expander board	16.2.9
SAS cable Y3963-V151/V101	16	Connector MLC 2 on SAS controller 1 in PCI slot 10	Connector MLC 2 on SAS expander board	

Hard disk drives / solid state drives

Power cabling

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
HDD power cable Y3952-V601	1	Power backplane connector X21	SAS backplane 1 connector X7 (HDDs 1, 4, 7, 10) Cable connector P1	16.2.5
			SAS backplane 2 connector X7 (HDDs 2, 5, 8, 11) Cable connector P2	
			4x 3.5-inch HDD extension box SAS backplane connector X7 (HDDs 3, 6, 9, 12) Cable connector P4	

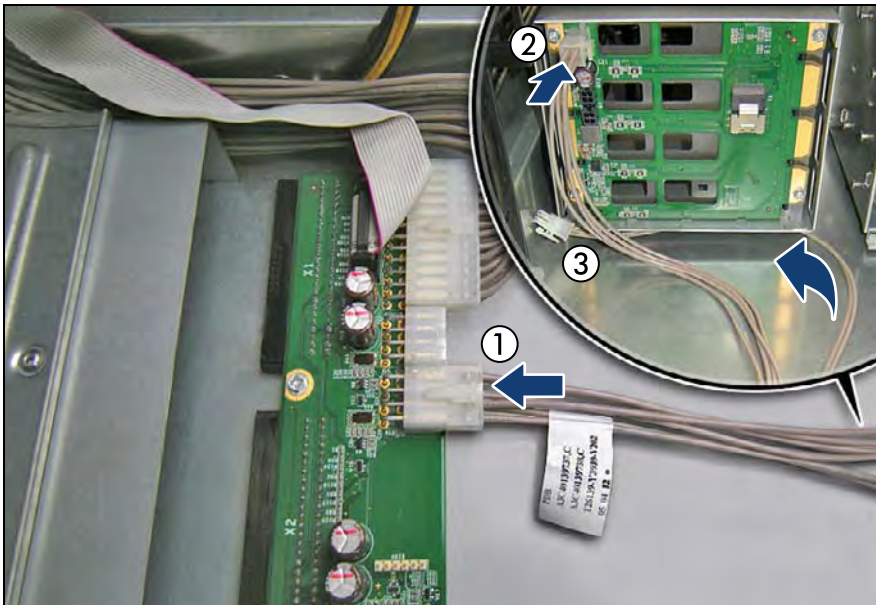


Figure 158: 4x 3.5-inch HDD extension box power cabling

- ▶ Connect the 8-pin connector on power cable T26139-Y3939-V202 to power backplane connector X22 (1).
- ▶ Connect the 4-pin connector X1 to SAS backplane connector X7 (2).
- ▶ Store the remaining cable end (connector X2) under the 4x 3.5-inch HDD extension box as shown (3).

7.3.5.3 HDD naming scheme

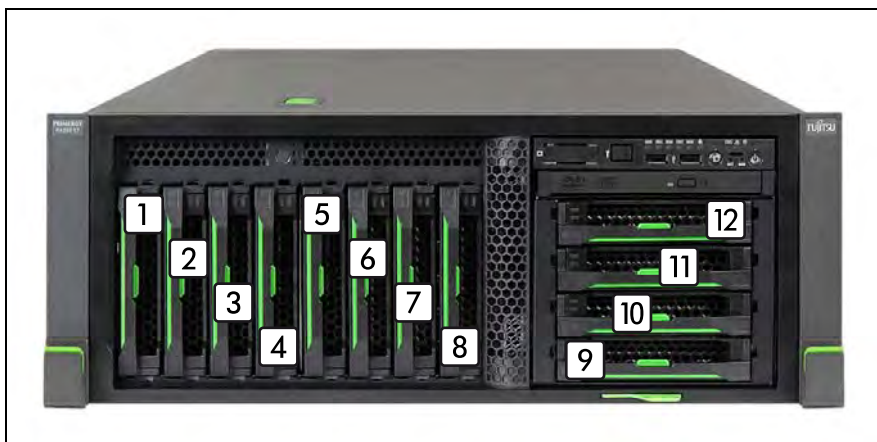


Figure 159: Naming scheme: 12x 3.5-inch HDDs (3 SAS backplanes) (Rack)

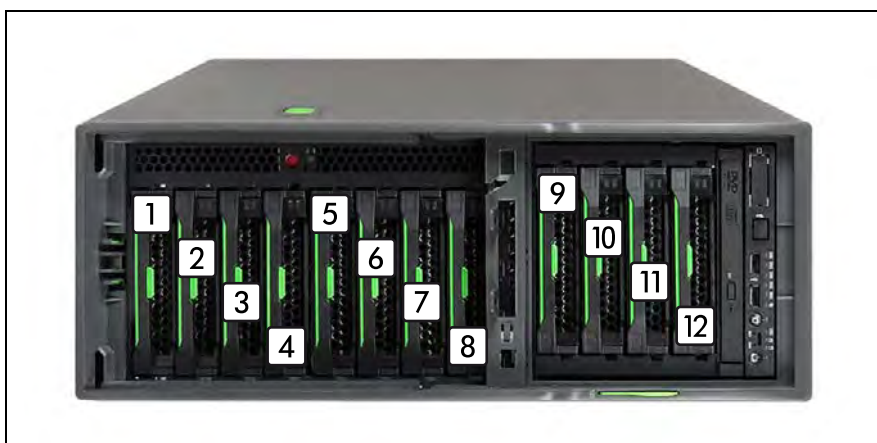


Figure 160: Naming scheme: 12x 3.5-inch HDDs (3 SAS backplanes) (Tower)

Hard disk drives / solid state drives

Position	Logical drive number	ServerView RAID Manager display name
1	0	HDD vendor name (1:0)
2	1	HDD vendor name (1:1)
3	2	HDD vendor name (1:2)
4	3	HDD vendor name (1:3)
5	4	HDD vendor name (1:4)
6	5	HDD vendor name (1:5)
7	6	HDD vendor name (1:6)
8	7	HDD vendor name (1:7)
9	8	HDD vendor name (1:8)
10	9	HDD vendor name (1:9)
11	10	HDD vendor name (1:10)
12	11	HDD vendor name (1:11)

7.3.6 Installing 3.5-inch HDD modules



Customer Replaceable Unit (CRU)



**Average task duration:
5 minutes**

Tools: tool-less

7.3.6.1 Preliminary steps

- ▶ When working on a tower server, open the HDD bay cover as described in section ["Removing accessible drive and HDD bay covers" on page 77](#).
- ▶ Locate the correct drive bay as described in section ["3.5-inch HDD configurations" on page 241](#).

7.3.6.2 Removing a 3.5-inch HDD dummy module

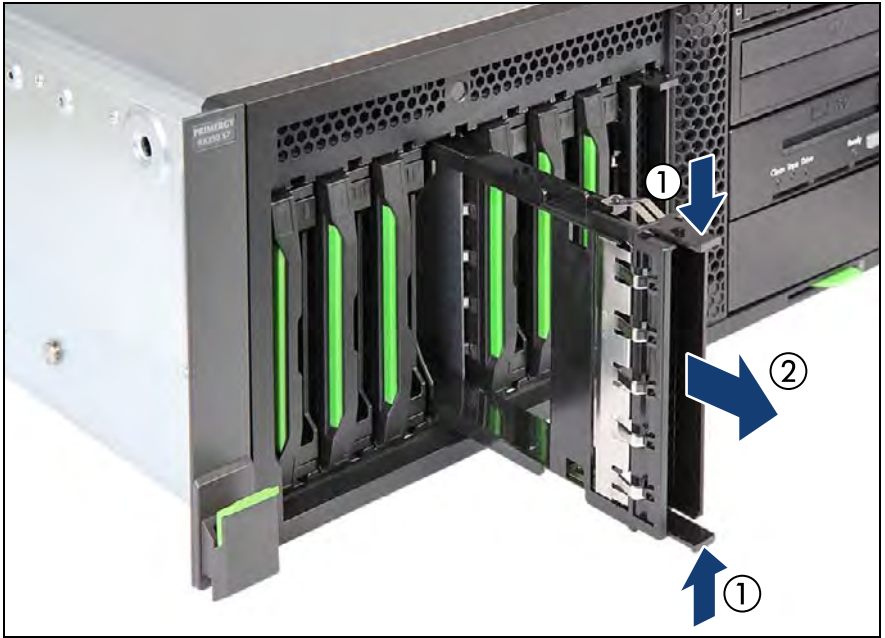


Figure 161: Removing a 3.5-inch dummy module

i Dummy modules have been installed into unused HDD bays. Before installing an additional HDD, the dummy module needs to be removed from the desired drive bay.

- ▶ Press in on the locking tabs on both sides of the dummy module to disengage the locking mechanism (1).
- ▶ While keeping the locking tabs pressed, pull the dummy module out of its bay (2).



CAUTION!

Save the dummy module for future use.

Always replace dummy modules into unused HDD bays to comply with applicable EMC regulations and satisfy cooling requirements.

7.3.6.3 Installing a 3.5-inch HDD module



Figure 162: Opening the 3.5-inch HDD module locking lever

- ▶ While pressing down on the locking button (1) fold up the lever (2).



Figure 163: Inserting the 3.5-inch HDD module

- ▶ Insert the HDD module into a drive bay and carefully push back as far as it will go.



Figure 164: Closing the 3.5-inch HDD module locking lever

- ▶ Fold down the lever to lock the HDD module in place.

7.3.6.4 Concluding steps

- ▶ When working on a tower server, close the HDD bay cover as described in section "[Installing accessible drive and HDD bay covers](#)" on page 105.
- ▶ Please observe the notes on RAID rebuild in section "[Performing a RAID array rebuild](#)" on page 153.

7.3.7 Removing 3.5-inch HDD modules



Customer Replaceable Unit (CRU)





Average task duration: 5 minutes

Tools: tool-less

7.3.7.1 Preliminary steps

- ▶ If the HDD / SSD module to be removed is combined into a RAID array, please proceed as follows:

RAID level	Procedure
RAID 0	<p>Only remove an HDD module combined in a RAID 0 array if defective.</p> <p> CAUTION! Removing an operational HDD module will result in data loss!</p>
RAID 1 RAID 5	<p>Removing an HDD module from a RAID 1 or RAID 5 array will not result in data loss.</p> <p>However, the removed drive needs to be replaced immediately by an HDD module of the same or larger capacity.</p> <p> After replacing the HDD module, RAID rebuild will be performed as a background process as described in section "Performing a RAID array rebuild" on page 153.</p>

In order to permanently remove an operational HDD module that is part of a RAID array from the server, you first need to delete the array using ServerView RAID Manager.



CAUTION!

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

For further information, please refer to the "ServerView Suite RAID Management" user guide.

- ▶ When working on a tower server, open the HDD bay cover as described in section "[Removing accessible drive and HDD bay covers](#)" on page 77.

7.3.7.2 Removing a 3.5-inch HDD module



Figure 165: Disconnecting a 3.5-inch HDD module

- ▶ While pressing down on the locking button (1) fold up the lever (2).



Thereby, the HDD module is pushed out of its drive bay by about 1 cm and disconnected from the SAS / SATA backplane.

- ▶ Wait about 30 seconds to allow the hard disk drive to spin down.



Figure 166: Removing a 3.5-inch HDD module

- ▶ Pull the HDD module completely out of its bay.

7.3.7.3 Installing a 3.5-inch HDD dummy module



CAUTION!

If the removed HDD module is not replaced immediately, always replace a dummy module into the unused HDD / SSD bay to comply with applicable EMC regulations and satisfy cooling requirements.



Figure 167: Installing a 3.5-inch HDD dummy module

- ▶ Slide the HDD dummy module into the drive bay until it locks in place.

7.3.7.4 Concluding steps

- ▶ When working on a tower server, close the HDD bay cover as described in section "[Installing accessible drive and HDD bay covers](#)" on page 105.

7.3.8 Replacing a 3.5-inch HDD module



Customer Replaceable Unit (CRU)



**Average task duration:
5 minutes**

Tools: tool-less



CAUTION!

- Only remove an HDD / SSD module during operation if the drive is not currently being accessed. Observe the indicators on the HDD module, as described in the "PRIMERGY TX300 S8 / RX350 S8 Server" operating manual".
- Under no circumstances should you remove an HDD / SSD module while the system is in operation if you are not sure that the drive is operated by a RAID controller and belongs to a disk array that is operating in RAID level 0, 1, 1E, 10, 5, 50, 6 or 60.

An HDD / SSD module can only be replaced during operation in conjunction with a corresponding RAID configuration.

- All HDD / SSD modules (drives) must be uniquely identified so that they can be reinstalled in their original mounting locations later. If this is not done, existing data can be lost.

7.3.8.1 Preliminary steps

- ▶ ["Locating the defective server" on page 57](#)
- ▶ When working on a tower server, open the HDD bay cover as described in section ["Removing accessible drive and HDD bay covers" on page 77](#).
- ▶ Locate the defective HDD module as described in section ["Local diagnostic indicators on the front" on page 60](#).

Only applicable for removing intact HDD modules:

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



For further information, please refer to the "ServerView Suite RAID Management" user guide.

7.3.8.2 Removing a 3.5-inch HDD module

- ▶ Remove the HDD module to be replaced from the server as described in section ["Removing a 3.5-inch HDD module" on page 259](#).

7.3.8.3 Installing a 3.5-inch HDD module

- ▶ Install the new HDD module into the empty drive bay as described in section ["Installing 3.5-inch HDD modules" on page 254](#).

7.3.8.4 Concluding steps

- ▶ When working on a tower server, close the HDD bay cover as described in section ["Installing accessible drive and HDD bay covers" on page 105](#).
- ▶ Please observe the notes on RAID rebuild in section ["Performing a RAID array rebuild" on page 153](#).

7.3.9 Replacing a 3.5-inch HDD SAS backplane



Upgrade and Repair Unit (URU)



**Average task duration:
15 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

7.3.9.1 Preliminary steps

- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Remove all HDD modules from the server as described in section ["Removing 3.5-inch HDD modules" on page 258](#).
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

- ▶ Disconnect all cables from the defective SAS backplane.

7.3.9.2 Removing the 3.5-inch HDD bay top cover

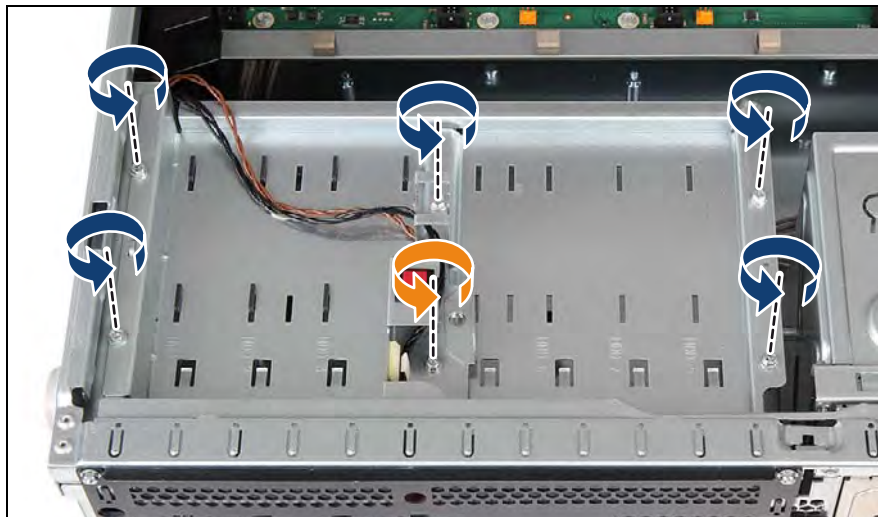


Figure 168: Removing the 3.5-inch HDD bay top cover (A)

- ▶ Remove five screws from the 3.5-inch HDD bay top cover (see blue arrows).
- ▶ Remove one screw from the intrusion switch holder (see orange arrow).

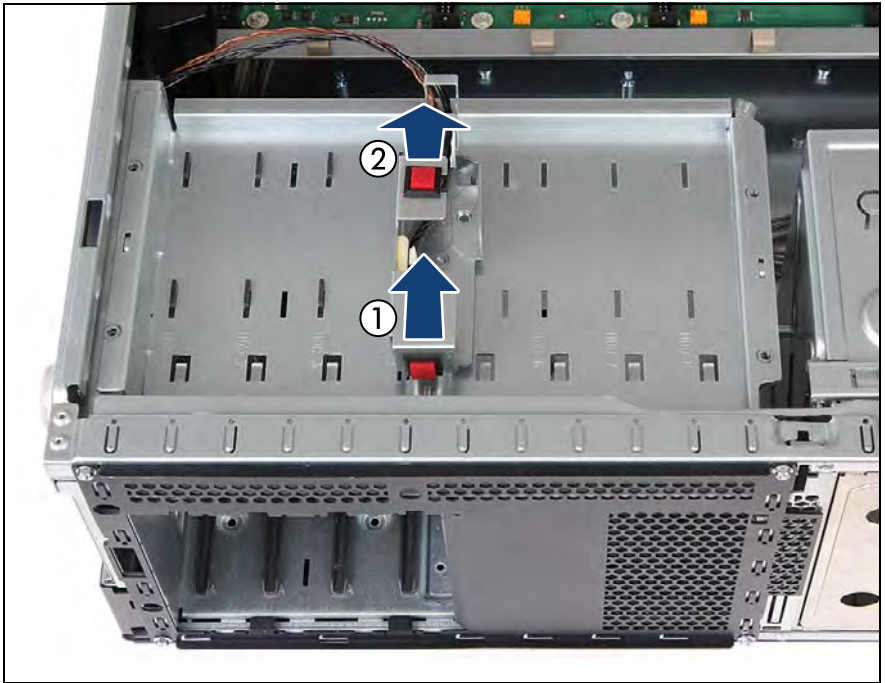


Figure 169: Removing the 3.5-inch HDD bay top cover (B)

- ▶ Slide back the intrusion switch holder until it disengages from the HDD bay top cover (1).
- ▶ Remove the intrusion switch holder (2) and set aside.
- ▶ Leave the intrusion switch cable connected to the system board.

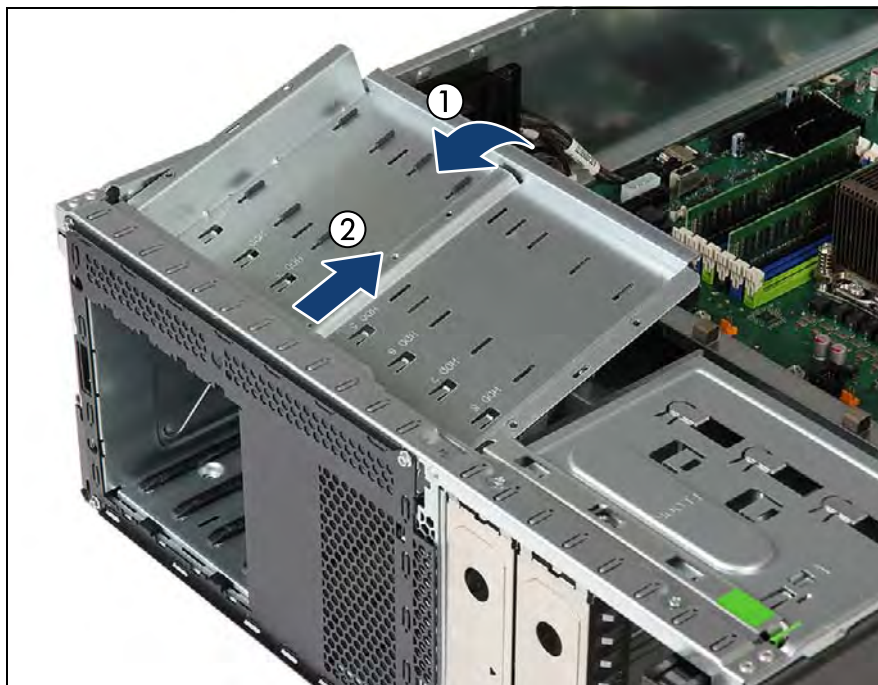


Figure 170: Removing the 3.5-inch HDD bay top cover (C)

- ▶ Carefully fold up the 3.5-inch HDD bay top cover to disengage it from the SAS backplane below (1).
- ▶ Remove the 3.5-inch HDD bay top cover from the chassis (2).

7.3.9.3 Removing the defective 3.5-inch HDD SAS backplane

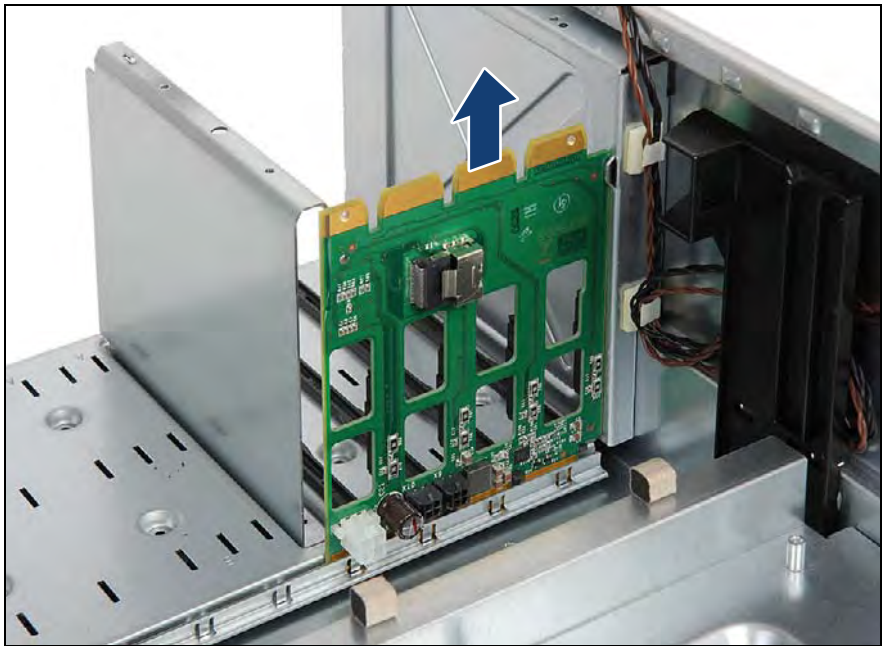


Figure 171: Removing the defective 3.5-inch HDD SAS backplane

- ▶ Pull up on the SAS backplane and remove it from the HDD bay in a vertical motion.

7.3.9.4 Mounting the new 3.5-inch HDD backplane

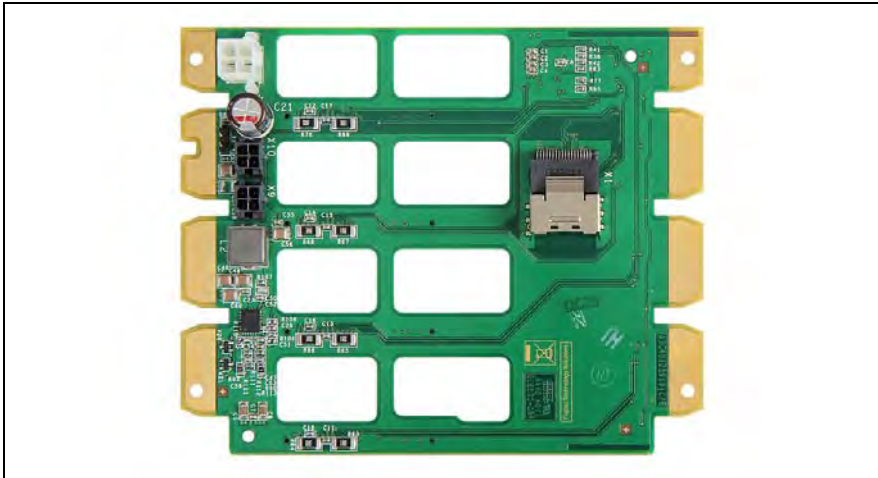


Figure 172: 4x 3.5-inch HDD SAS backplane (A3C40125920)

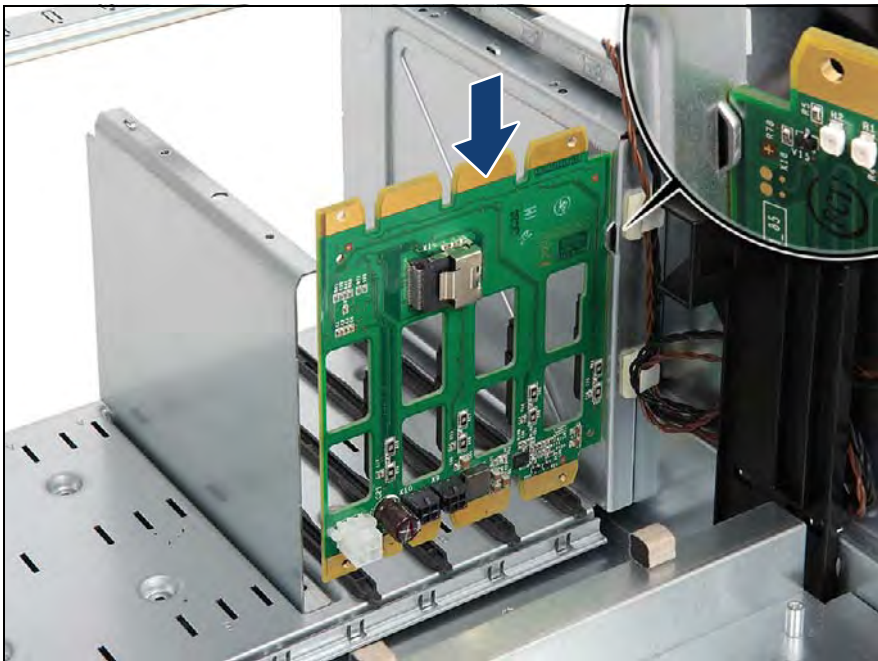


Figure 173: Mounting the new 4x 3.5-inch HDD SAS backplane

- ▶ Fit the HDD backplane into the guide on the outer wall of the HDD bay (see close-up) and lower it into the bottom rim.

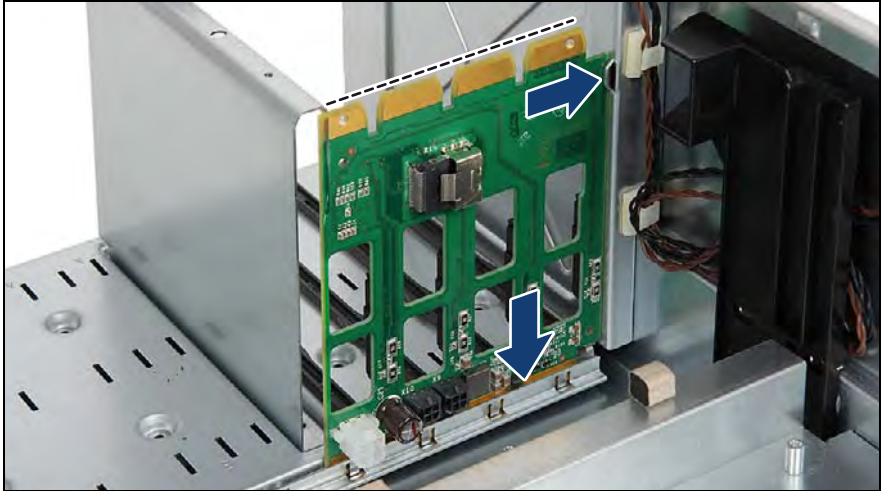


Figure 174: Mounting the new 4x 3.5-inch HDD SAS backplane

- ▶ Ensure that the 4x 3.5-inch HDD SAS backplane is properly seated in the into the bottom rim and side guide (see arrows).
- ▶ Ensure that the upper edge of the SAS backplane is flush with the HDD bay divider wall (see dashed line).

7.3.9.5 Mounting the 3.5-inch HDD bay top cover

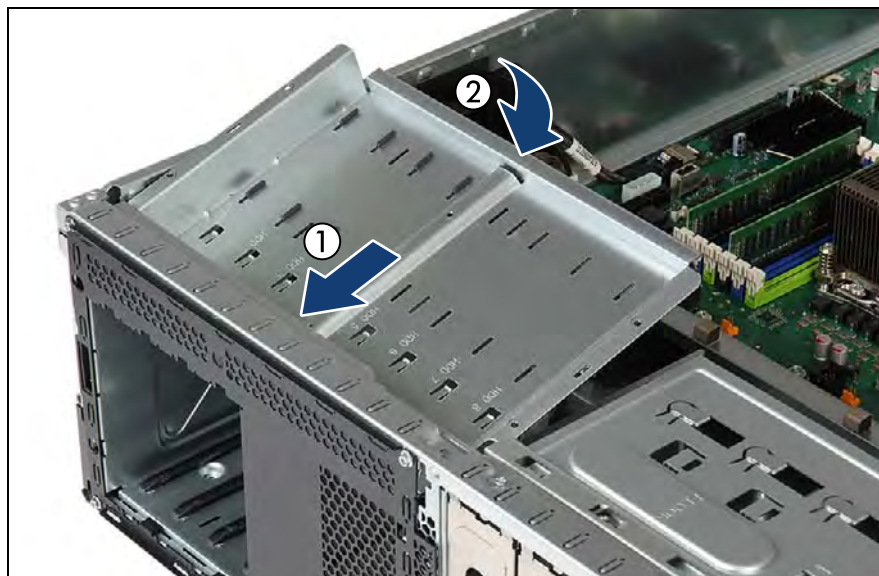


Figure 175: Mounting the 3.5-inch HDD bay top cover (A)

- ▶ At a slight angle, fit the HDD bay top cover under the front chassis rim (1).
- ▶ Fold down the HDD bay top cover (2) until it is properly seated on the HDD bays.



CAUTION!

Ensure that the 4x 3.5-inch HDD backplanes are properly secured in the upper rim of the HDD bay to cover.

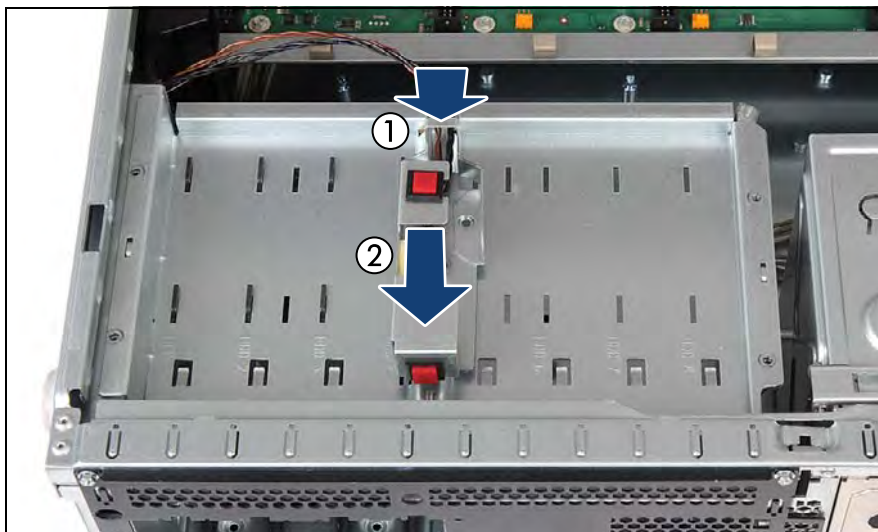


Figure 176: Mounting the 3.5-inch HDD bay top cover (B)

- ▶ Place the intrusion switch holder on the HDD bay top cover as shown (1).
- ▶ Slide the intrusion switch holder under the front chassis rim as far as it will go (2).

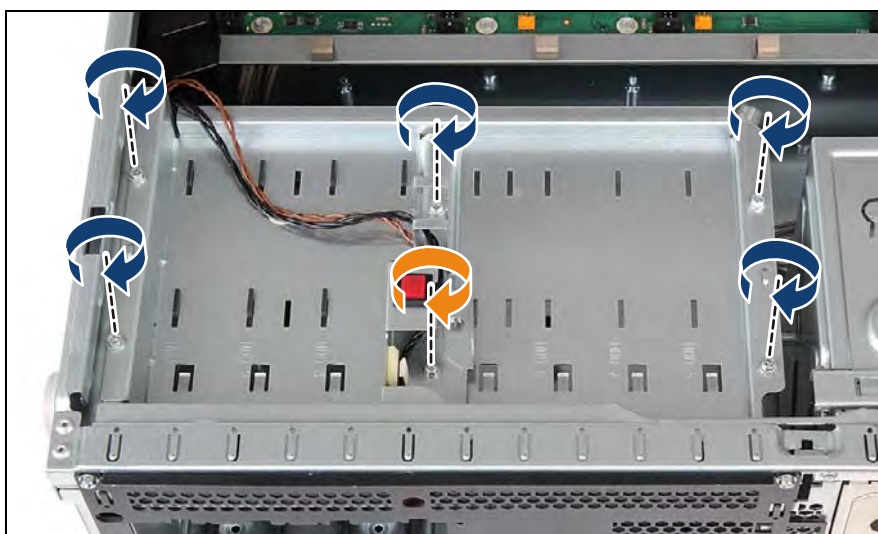


Figure 177: Mounting the 3.5-inch HDD bay top cover (C)

Hard disk drives / solid state drives

- ▶ Secure the HDD bay top cover to the chassis with five M3 x 4.5 mm screws (see blue arrows).
- ▶ Secure the intrusion switch holder on the HDD bay top cover with one M3 x 4.5 mm screw (see orange arrow).

7.3.9.6 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ Install HDD / SSD modules or HDD dummy modules into the additional HDD slots as described in sections ["Installing a 3.5-inch HDD module" on page 256](#) and ["Installing a 3.5-inch HDD dummy module" on page 261](#).



For detailed information on HDD mounting order, refer to section ["3.5-inch HDD configurations" on page 241](#).

- ▶ When working on a rack-mounted server:
 - ▶ ["Mounting the server in the rack" on page 115](#)
 - ▶ ["Connecting the server to the mains" on page 118](#)

7.3.10 Upgrading to 8x 3.5-inch HDD configurations



Upgrade and Repair Unit (URU)



**Average task duration:
20 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

7.3.10.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Remove all HDD modules from the server as described in section ["Removing 3.5-inch HDD modules" on page 258](#).

- ▶ When working on a rack-mounted server:
 - "Extending / removing the server from the rack" on page 64
- ▶ "Opening the server" on page 68
- ▶ "Removing the system air duct" on page 81
- ▶ "Removing the system fan holder" on page 330

7.3.10.2 Removing the 3.5-inch HDD bay top cover

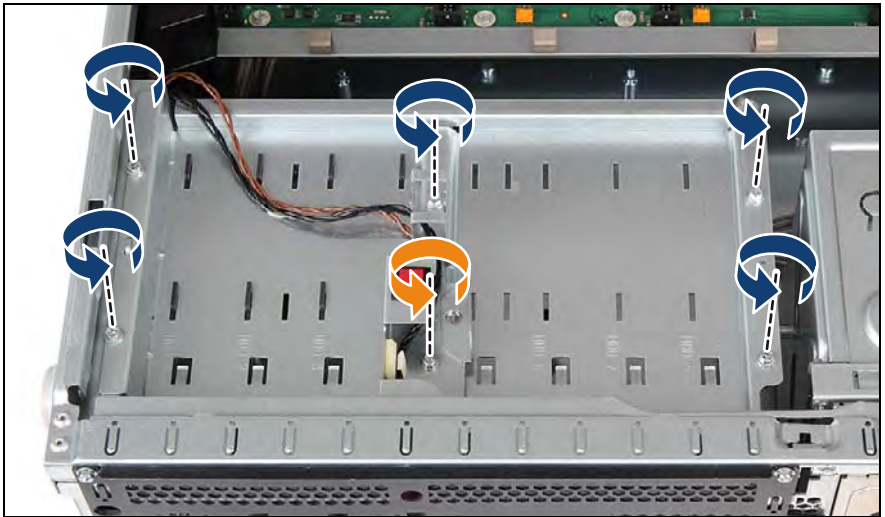


Figure 178: Removing the 3.5-inch HDD bay top cover (A)

- ▶ Remove five screws from the 3.5-inch HDD bay top cover (see blue arrows).
- ▶ Remove one screw from the intrusion switch holder (see orange arrow).

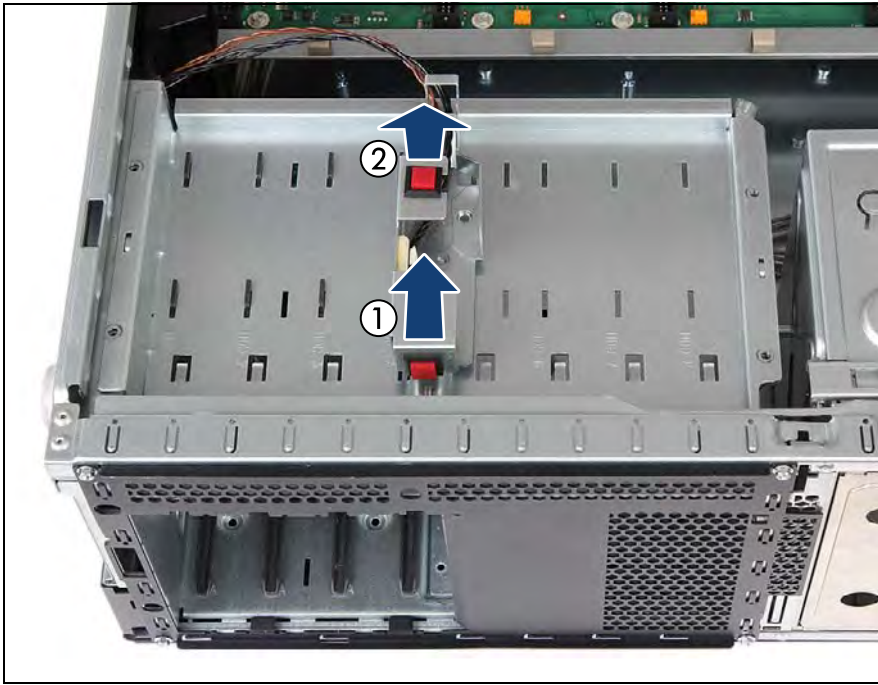


Figure 179: Removing the 3.5-inch HDD bay top cover (B)

- ▶ Slide back the intrusion switch holder until it disengages from the HDD bay top cover (1).
- ▶ Remove the intrusion switch holder (2) and set aside.
- ▶ Leave the intrusion switch cable connected to the system board.

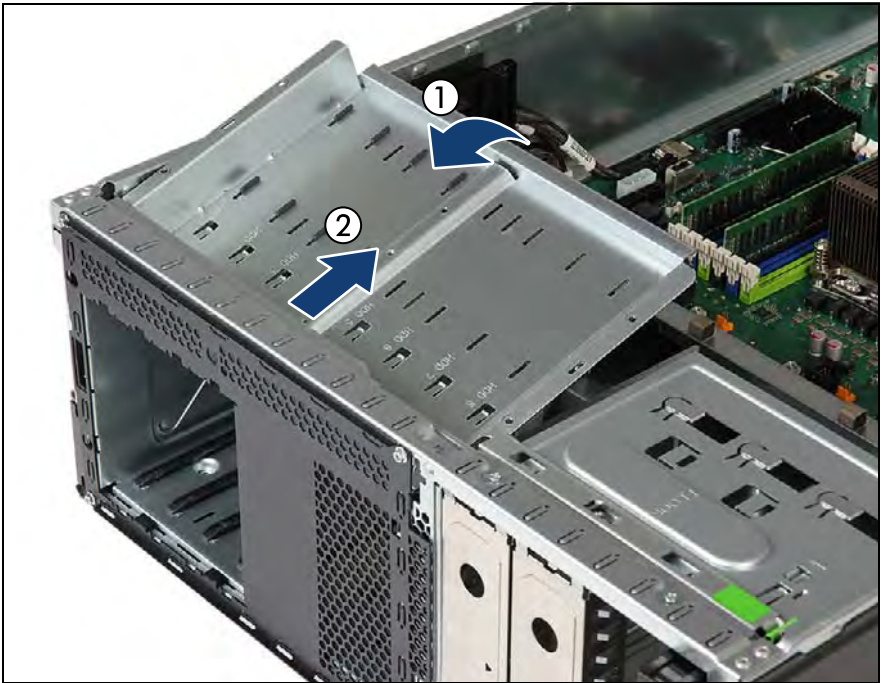


Figure 180: Removing the 3.5-inch HDD bay top cover (C)

- ▶ Carefully fold up the 3.5-inch HDD bay top cover to disengage it from the SAS backplane below (1).
- ▶ Remove the 3.5-inch HDD bay top cover from the chassis (2).

7.3.10.3 Removing the 4x 3.5-inch HDD front panel

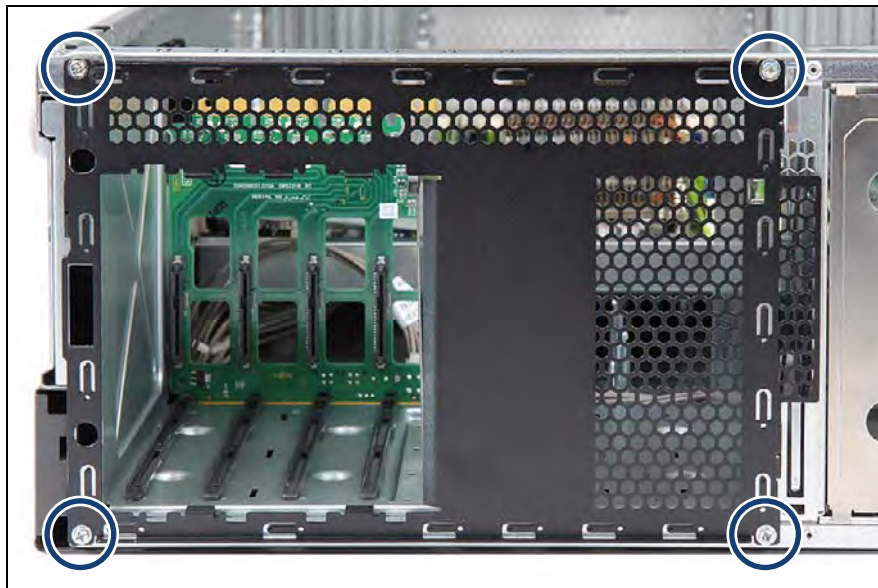


Figure 181: Removing the 4x 3.5-inch HDD front panel (A)

- ▶ Remove four screws from the 4x 3.5-inch HDD front panel.

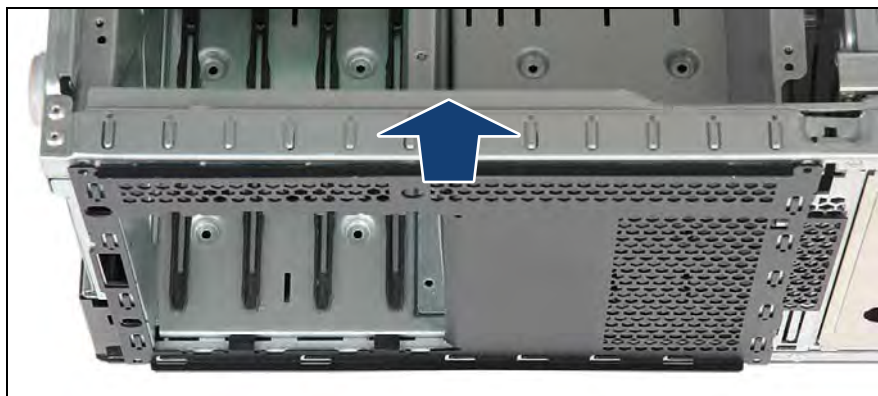


Figure 182: Removing the 4x 3.5-inch HDD front panel (B)

- ▶ Pull up on the 4x 3.5-inch HDD front panel to disengage it from the chassis.
- ▶ Remove the 4x 3.5-inch HDD front panel.

7.3.10.4 Mounting the second 3.5-inch HDD backplane



Figure 183: Adding HDD mounting rails

- ▶ Add eight HDD mounting rails to the HDD bays and HDD bay top cover as shown (see arrows).

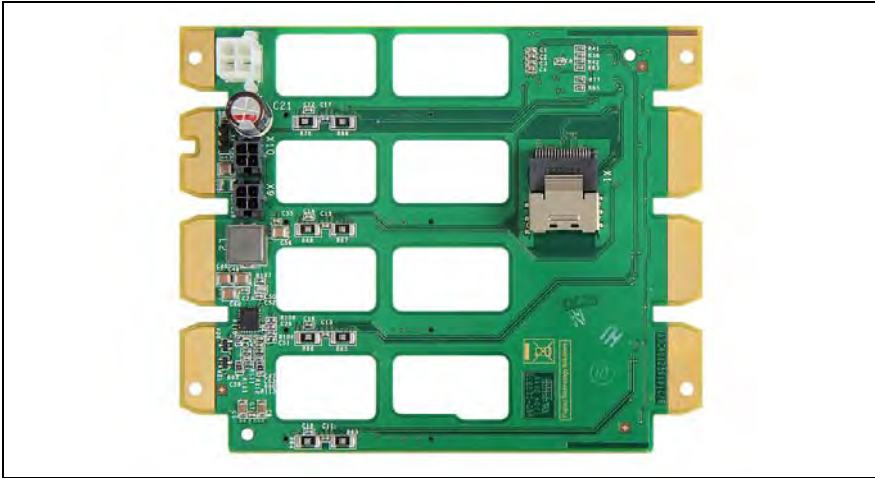


Figure 184: 4x 3.5-inch HDD SAS backplane (A3C40125920)

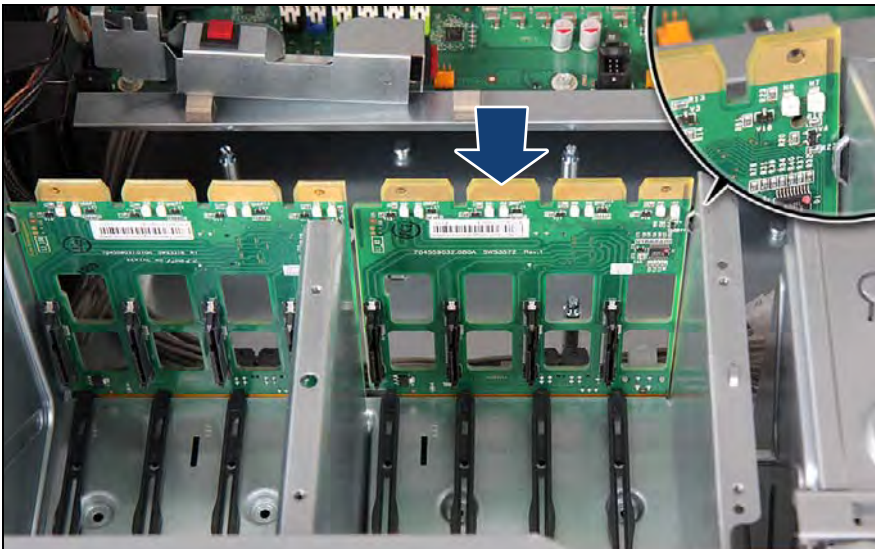


Figure 185: Mounting the second 4x 3.5-inch HDD SAS backplane

- ▶ Fit the HDD backplane into the guide on the outer wall of the right HDD bay (see close-up) and lower it into the bottom rim.
- ▶ Ensure that the 4x 3.5-inch HDD SAS backplane is properly seated in its bay.

7.3.10.5 Installing the 8x 3.5-inch HDD front panel

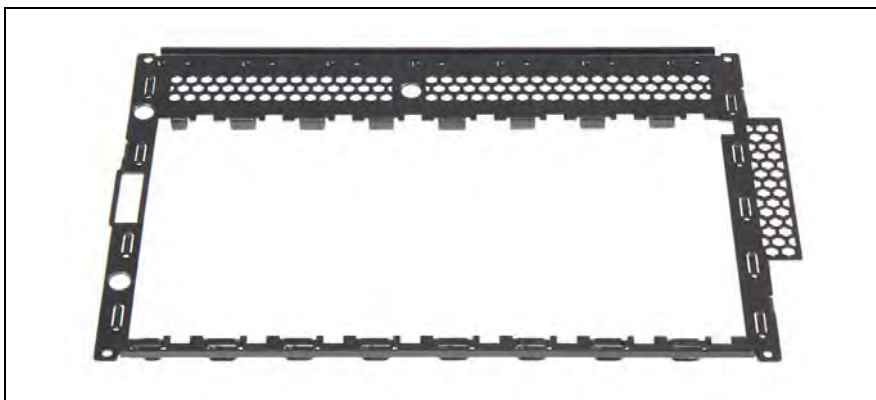


Figure 186: 8x 3.5-inch HDD front panel (C26361-K644-B918)

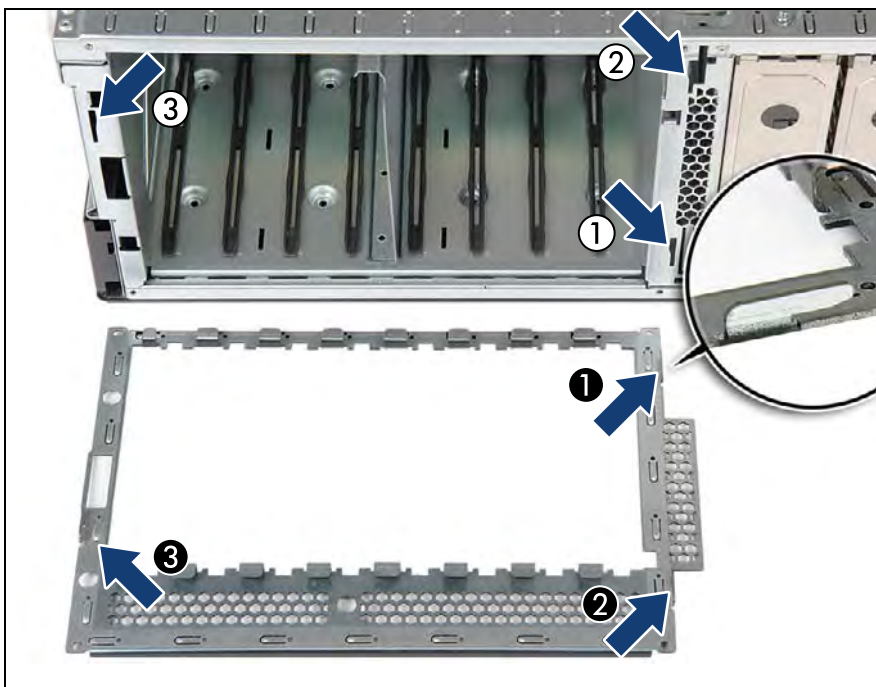


Figure 187: Installing the 8x 3.5-inch HDD front panel

Hard disk drives / solid state drives

- ▶ Locate the three hooks on the HDD front panel (see close-up and black numbers 1-3).
- ▶ Locate the corresponding installation slots on the server front (see white numbers 1-3).
- ▶ Fit the three hooks on the HDD front panel into the slots in the server front.

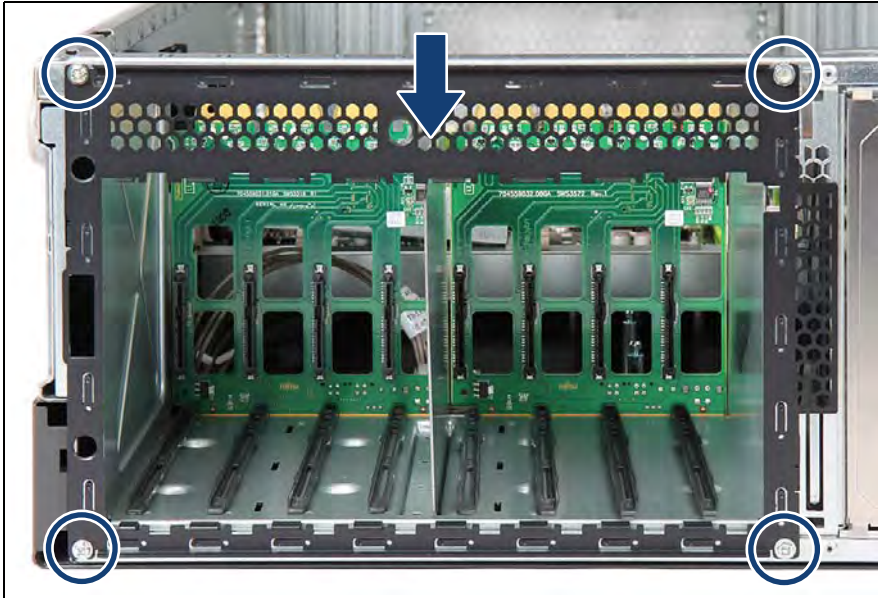


Figure 188: Securing the 8x 3.5-inch HDD front panel

- ▶ Firmly press down on the HDD front panel until its upper edge is flush with the chassis (see arrow).
- ▶ Secure the HDD front panel to the server front with four M3 x 4.5 mm screws (see circles).

7.3.10.6 Mounting the 3.5-inch HDD bay top cover

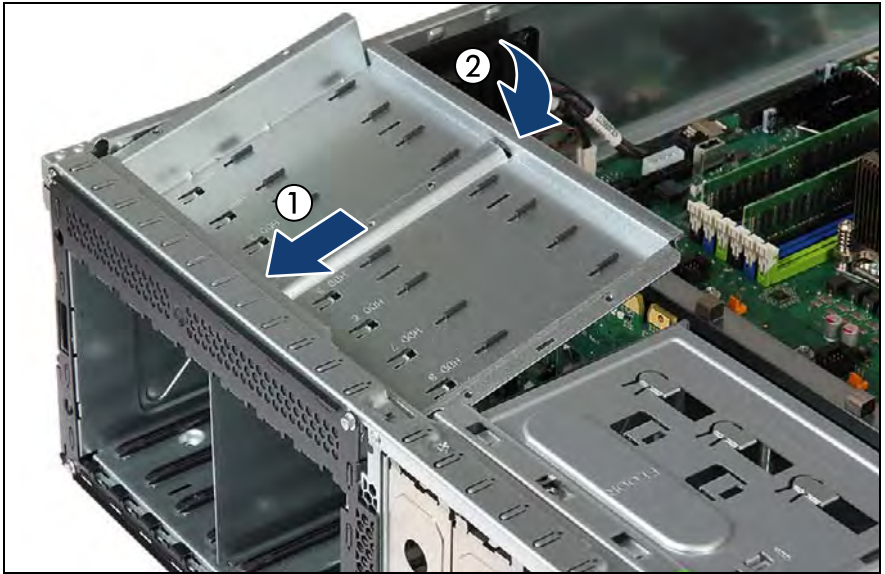


Figure 189: Mounting the 3.5-inch HDD bay top cover (A)

- ▶ At a slight angle, fit the HDD bay top cover under the front chassis rim (1).
- ▶ Fold down the HDD bay top cover (2) until it is properly seated on the HDD bays.



CAUTION!

Ensure that the 4x 3.5-inch HDD backplanes are properly secured in the upper rim of the HDD bay to cover.

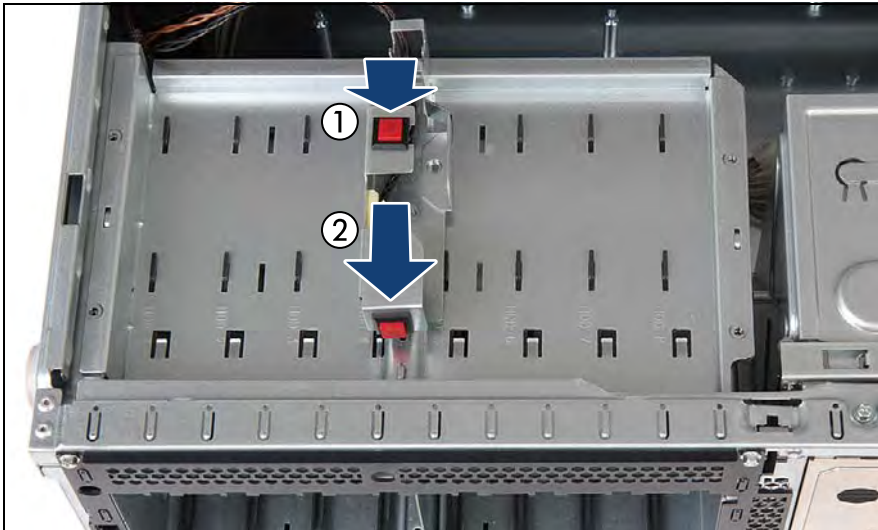


Figure 190: Mounting the 3.5-inch HDD bay top cover (B)

- ▶ Place the intrusion switch holder on the HDD bay top cover as shown (1).
- ▶ Slide the intrusion switch holder under the front chassis rim as far as it will go (2).

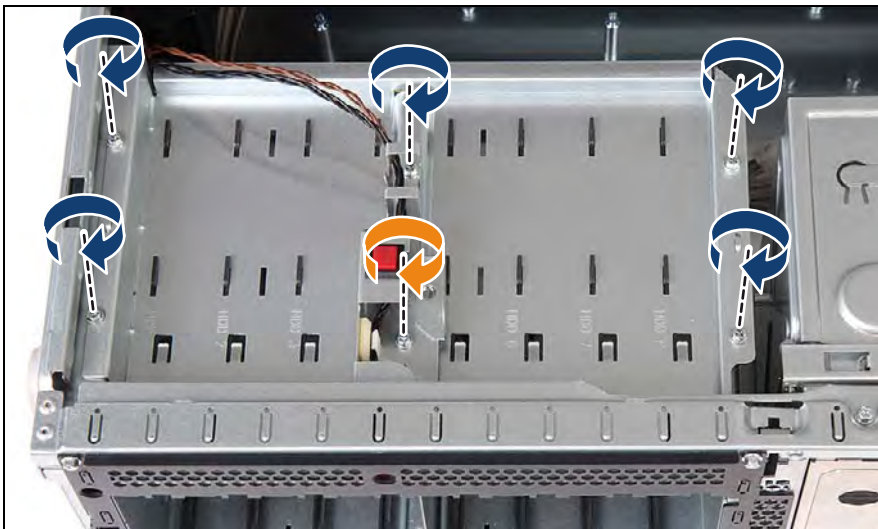


Figure 191: Mounting the 3.5-inch HDD bay top cover (C)

- ▶ Secure the HDD bay top cover to the chassis with five M3 x 4.5 mm screws (see blue arrows).
- ▶ Secure the intrusion switch holder on the HDD bay top cover with one M3 x 4.5 mm screw (see orange arrow).

7.3.10.7 Cabling the SAS backplanes

- ▶ Connect SAS and power cables to the 3.5-inch SAS backplanes as described in section ["8x 3.5-inch HDD SAS backplane cabling" on page 245](#).

7.3.10.8 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ Install HDD modules or HDD dummy modules into the additional HDD slots as described in sections ["Installing a 3.5-inch HDD module" on page 256](#) and ["Installing a 3.5-inch HDD dummy module" on page 261](#).



For detailed information on HDD mounting order, refer to section ["3.5-inch HDD configurations" on page 241](#).

- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

7.4 HDD extension boxes

7.4.1 HDD extension box overview

7.4.1.1 8x 2.5-inch HDD extension box



Figure 192: 8x 2.5-inch HDD extension box - Rack version

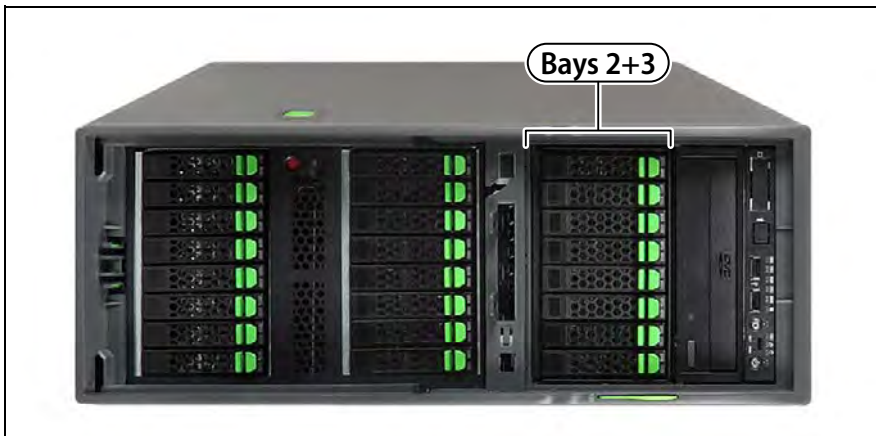


Figure 193: 8x 2.5-inch HDD extension box - Tower version



The 8x 2.5-inch HDD extension box occupies accessible drive bays 2 and 3.

7.4.1.2 2x 3.5-inch HDD extension box



Figure 194: 2x 3.5-inch HDD extension box - Rack version

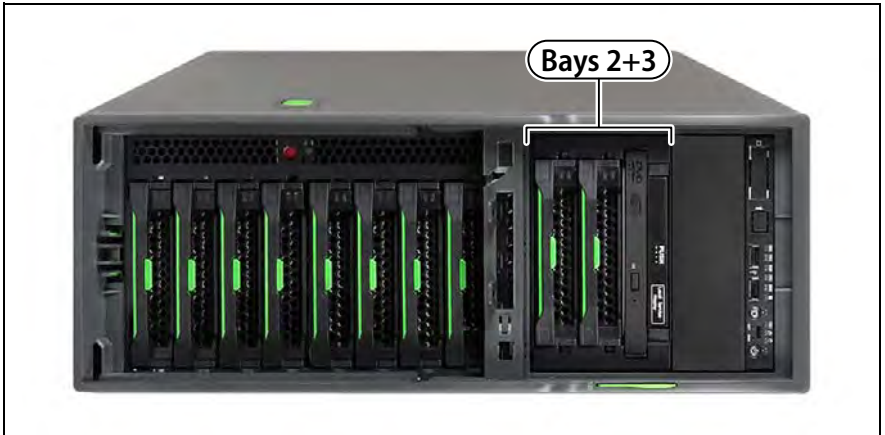


Figure 195: 2x 3.5-inch HDD extension box - Tower version

i The 2x 3.5-inch HDD extension box occupies accessible drive bays 2 and 3.

7.4.1.3 4x 3.5-inch HDD extension box

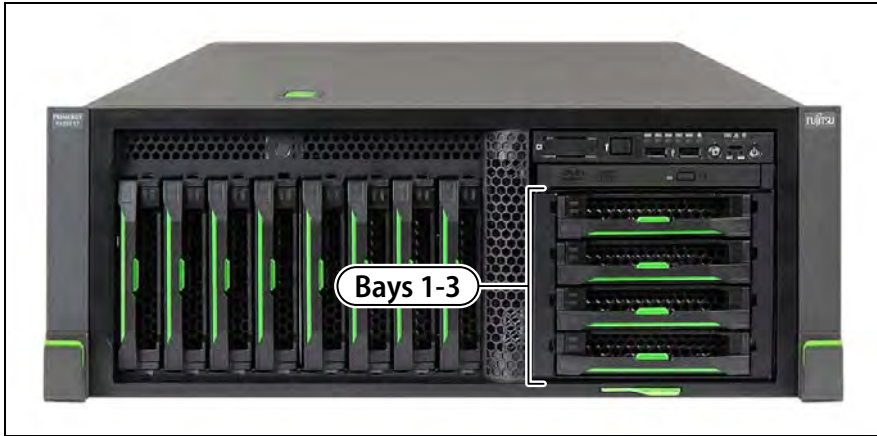


Figure 196: 4x 3.5-inch HDD extension box - Rack version

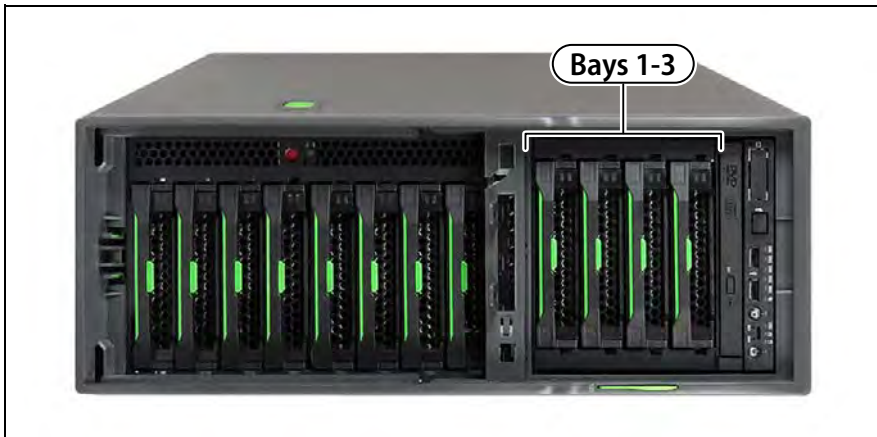


Figure 197: 4x 3.5-inch HDD extension box - Tower version

i The 4x 3.5-inch HDD extension box occupies accessible drive bays 1, 2 and 3.

7.4.2 Installing the 2x 3.5-inch HDD extension box



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: Slotted screw driver (for bending in or out accessible drive mounting brackets)

7.4.2.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63.](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

7.4.2.2 Removing accessible drive dummy covers

- ▶ Remove accessible drive filler covers from the required bays as described in section ["Accessible drive filler covers" on page 94.](#)
- ▶ Remove accessible drive covers as described in section ["Accessible drive covers" on page 96.](#)

7.4.2.3 Installing the slimline ODD and LSD module into the HDD extension box

- ▶ If applicable, install the slimline ODD into the new 2x 3.5-inch HDD extension box as described in section ["Installing the slimline ODD into the extension box" on page 571.](#)
- ▶ If applicable, install the LSD module into the 2x 3.5-inch HDD extension box as described in section ["Installing the LSD module into the HDD extension box" on page 575.](#)

7.4.2.4 Installing the 2x 3.5-inch HDD extension box

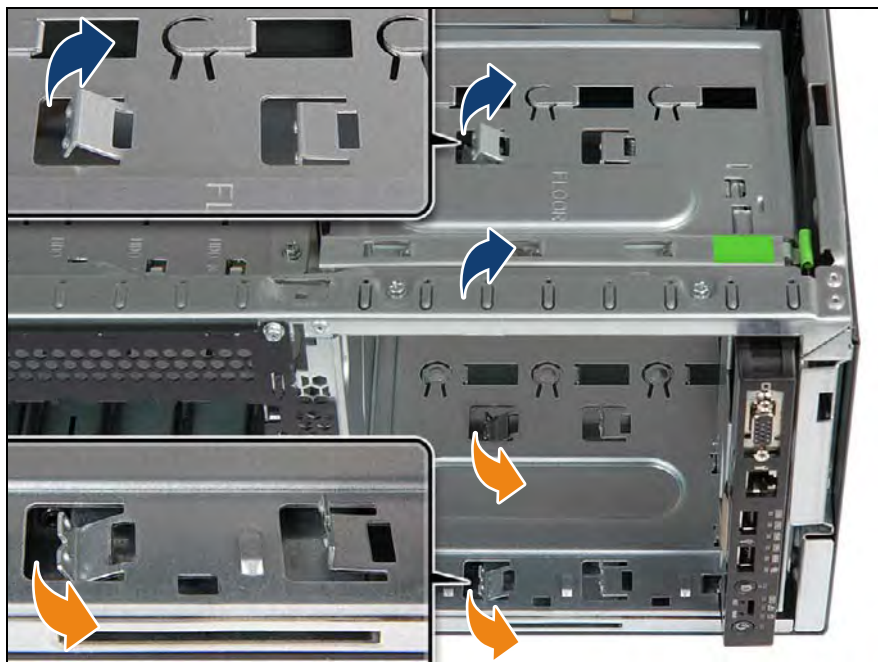


Figure 198: Checking mounting bracket positions

- ▶ Using a screw driver, bend the mounting brackets of the middle installation bay outwards (see close-up):
 - ▶ Bend up the upper two mounting brackets (see blue arrows).
 - ▶ Bend down the lower two mounting brackets (see orange arrows).
- ▶ Disengage the accessible drive locking bar as described in section ["Opening the accessible drive locking bar"](#) on page 91.



Figure 199: Inserting the 2x 3.5-inch HDD extension box

- ▶ Insert the 2x 3.5-inch HDD extension box into installation bays 2 and 3 and carefully push in until its front screw hole lines up with the centering pin on the locking bar.
- ▶ Engage the locking bar as described in section ["Closing the accessible drive locking bar"](#) on page 93.

7.4.2.5 Cabling the 2x 3.5-inch HDD extension box

- ▶ Connect SAS and power cables to the 2x 3.5-inch HDD SAS backplane as described in section ["10x 3.5-inch HDD SAS backplane cabling"](#) on page 247.
- ▶ If applicable, connect slimline ODD and LSD module cables as described in section ["Cabling the slimline ODD and LSD"](#) on page 577.

7.4.2.6 Installing HDD modules into the 2x 3.5-inch HDD extension box

- ▶ ["Closing the server" on page 98](#)
- ▶ Install HDD modules or HDD dummy modules into the additional HDD slots as described in sections ["Installing a 3.5-inch HDD module" on page 256](#) and ["Installing a 3.5-inch HDD dummy module" on page 261](#).



For detailed information on HDD mounting order, refer to section ["3.5-inch HDD configurations" on page 241](#).

7.4.2.7 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

7.4.3 Removing the 2x 3.5-inch HDD extension box



**Upgrade and Repair Unit
(URU)**



**Average task duration:
10 minutes**

Tools: tool-less

7.4.3.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Remove all HDD modules from the HDD extension box as described in section ["Removing 3.5-inch HDD modules" on page 258](#).
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

7.4.3.2 Removing the 2x 3.5-inch HDD extension box

- ▶ Remove all cables from the 2x 3.5-inch HDD extension box backplane.
- ▶ If applicable, remove all cables from the slimline ODD.
- ▶ If applicable, remove the LSD cable from system board connector SMB 1.
- ▶ Disengage the accessible drive locking bar as described in section ["Opening the accessible drive locking bar" on page 91](#).



Figure 200: Removing the HDD extension box

- ▶ Carefully pull the 2x 3.5-inch HDD extension box out of its installation bays.
- ▶ Engage the locking bar as described in section "[Closing the accessible drive locking bar](#)" on page 93.

7.4.3.3 Installing accessible drive dummy covers

- ▶ Install accessible drive filler covers into empty drive bays as described in section "[Accessible drive filler covers](#)" on page 94.
- ▶ Install accessible drive covers into the front cover as described in section "[Accessible drive covers](#)" on page 96.

7.4.3.4 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

7.4.4 Replacing the 2x 3.5-inch HDD extension box



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: tool-less

7.4.4.1 Preliminary steps

- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Remove all HDD modules from the HDD extension box as described in section ["Removing 3.5-inch HDD modules" on page 258](#).
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

7.4.4.2 Removing the 2x 3.5-inch HDD extension box

- ▶ Unlock and pull the 2x 3.5-inch HDD extension box out of its installation bays as described in section ["Removing the 2x 3.5-inch HDD extension box" on page 291](#).

7.4.4.3 Removing the slimline ODD and LSD module from the defective HDD extension box

- ▶ If applicable, remove the slimline ODD from the defective 2x 3.5-inch HDD extension box as described in section ["Removing the slimline ODD from the extension box" on page 580](#).
- ▶ If applicable, remove the LSD module from the defective 2x 3.5-inch HDD extension box as described in section ["Removing the LSD module from the extension box" on page 583](#).

7.4.4.4 Installing the slimline ODD and LSD module into the new HDD extension box

- ▶ If applicable, reinstall the slimline ODD into the new 2x 3.5-inch HDD extension box as described in section ["Installing the slimline ODD into the extension box" on page 571](#).
- ▶ If applicable, install the LSD module into the new 2x 3.5-inch HDD extension box as described in section ["Installing the LSD module into the HDD extension box" on page 575](#).

7.4.4.5 Installing the 2x 3.5-inch HDD extension box

- ▶ Install the new 2x 3.5-inch HDD extension box as described in section ["Installing the 2x 3.5-inch HDD extension box" on page 287](#).

7.4.4.6 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ Reinstall all hard disk drives into their original slots in the HDD extension box as described in section ["Installing 3.5-inch HDD modules" on page 254](#).

- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)

7.4.5 Installing the 4x 3.5-inch HDD extension box



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: Slotted screw driver (for bending in or out accessible drive mounting brackets)

7.4.5.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

7.4.5.2 Removing accessible drive dummy covers

- ▶ Remove accessible drive filler covers from the required bays as described in section ["Accessible drive filler covers" on page 94](#).
- ▶ Remove accessible drive covers as described in section ["Accessible drive covers" on page 96](#).

7.4.5.3 Installing the slimline ODD into the HDD extension box

- ▶ If applicable, install the slimline ODD into the new 2x 3.5-inch HDD extension box as described in section ["Installing the slimline ODD into the HDD extension box" on page 589](#).

7.4.5.4 Installing the 4x 3.5-inch HDD extension box

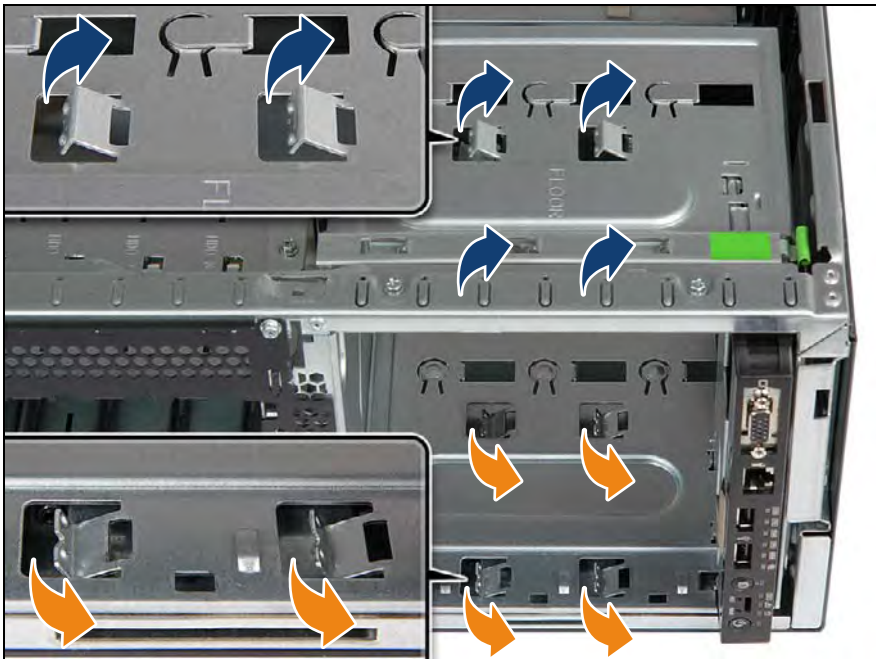


Figure 201: Checking mounting bracket positions

- ▶ Using a screw driver, bend the mounting brackets of the top and middle installation bays outwards:
 - ▶ Bend up the upper four mounting brackets (see blue arrows).
 - ▶ Bend down the lower four mounting brackets (see orange arrows).
- ▶ Disengage the accessible drive locking bar as described in section ["Opening the accessible drive locking bar"](#) on page 91.



Figure 202: Festplatten-Erweiterungsbox einsetzen

- ▶ Insert the 4x 3.5-inch HDD extension box into installation bays 1 to 3 and carefully push in until the front screw hole on the front panel frame lines up with the centering pin on the locking bar.
- ▶ Engage the locking bar as described in section ["Closing the accessible drive locking bar"](#) on page 93.

7.4.5.5 Cabling the 4x 3.5-inch HDD extension box

- ▶ Connect SAS and power cables to the 2x 3.5-inch HDD SAS backplane as described in section ["12x 3.5-inch HDD SAS backplane cabling"](#) on page 251.
- ▶ If applicable, connect slimline ODD and LSD module cables as described in section ["Cabling the slimline ODD on the HDD extension box"](#) on page 593.

7.4.5.6 Installing HDD modules into the 4x 3.5-inch HDD extension box

- ▶ ["Closing the server" on page 98](#)
- ▶ Install HDD modules or HDD dummy modules into the additional HDD slots as described in sections ["Installing a 3.5-inch HDD module" on page 256](#) and ["Installing a 3.5-inch HDD dummy module" on page 261](#).



For detailed information on HDD mounting order, refer to section ["3.5-inch HDD configurations" on page 241](#).

7.4.5.7 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

7.4.6 Removing the 4x 3.5-inch HDD extension box



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: tool-less

7.4.6.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Remove all HDD modules from the HDD extension box as described in section ["Removing 3.5-inch HDD modules" on page 258](#).

- ▶ When working on a rack-mounted server:
 - "Extending / removing the server from the rack" on page 64
- ▶ "Opening the server" on page 68
- ▶ "Removing the system air duct" on page 81
- ▶ "Removing the system fan holder" on page 330

7.4.6.2 Removing the 4x 3.5-inch HDD extension box

- ▶ Remove all cables from the 4x 3.5-inch HDD extension box backplane.
- ▶ If applicable, remove all cables from the slimline ODD.
- ▶ Disengage the accessible drive locking bar as described in section "Opening the accessible drive locking bar" on page 91.



Figure 203: Removing the HDD extension box

- ▶ Carefully pull the 4x 3.5-inch HDD extension box out of its installation bays.
- ▶ Engage the locking bar as described in section "Closing the accessible drive locking bar" on page 93.

7.4.6.3 Installing accessible drive dummy covers

- ▶ Install accessible drive filler covers into empty drive bays as described in section ["Accessible drive filler covers" on page 94](#).
- ▶ Install accessible drive covers into the front cover as described in section ["Accessible drive covers" on page 96](#).

7.4.6.4 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

7.4.7 Replacing the 4x 3.5-inch HDD extension box



**Upgrade and Repair Unit
(URU)**



**Average task duration:
10 minutes**

Tools: tool-less

7.4.7.1 Preliminary steps

- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Remove all HDD modules from the HDD extension box as described in section ["Removing 3.5-inch HDD modules" on page 258](#).
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)

- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

7.4.7.2 Removing the 4x 3.5-inch HDD extension box

- ▶ Unlock and pull the 4x 3.5-inch HDD extension box out of its installation bays as described in section ["Removing the 4x 3.5-inch HDD extension box" on page 298](#).

7.4.7.3 Removing the slimline ODD from the defective HDD extension box

- ▶ If applicable, remove the slimline ODD from the defective 4x 3.5-inch HDD extension box as described in section ["Removing the slimline ODD from the extension box" on page 596](#).

7.4.7.4 Installing the slimline ODD and LSD module into the new HDD extension box

- ▶ If applicable, reinstall the slimline ODD into the new 4x 3.5-inch HDD extension box as described in section ["Installing the slimline ODD into the HDD extension box" on page 589](#).

7.4.7.5 Installing the 4x 3.5-inch HDD extension box

- ▶ Install the new 4x 3.5-inch HDD extension box as described in section ["Installing the 4x 3.5-inch HDD extension box" on page 295](#).

7.4.7.6 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ Reinstall all hard disk drives into their original slots in the HDD extension box as described in section ["Installing 3.5-inch HDD modules" on page 254](#).
- ▶ When working on a rack-mounted server:
 - ▶ ["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)

7.4.8 Installing the 8x 2.5-inch HDD extension box



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: Slotted screw driver (for bending in or out accessible drive mounting brackets)

7.4.8.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

7.4.8.2 Removing accessible drive dummy covers

- ▶ Remove accessible drive filler covers from the required bays as described in section ["Accessible drive filler covers" on page 94](#).
- ▶ Remove accessible drive covers as described in section ["Accessible drive covers" on page 96](#).

7.4.8.3 Installing the 8x 2.5-inch HDD extension box

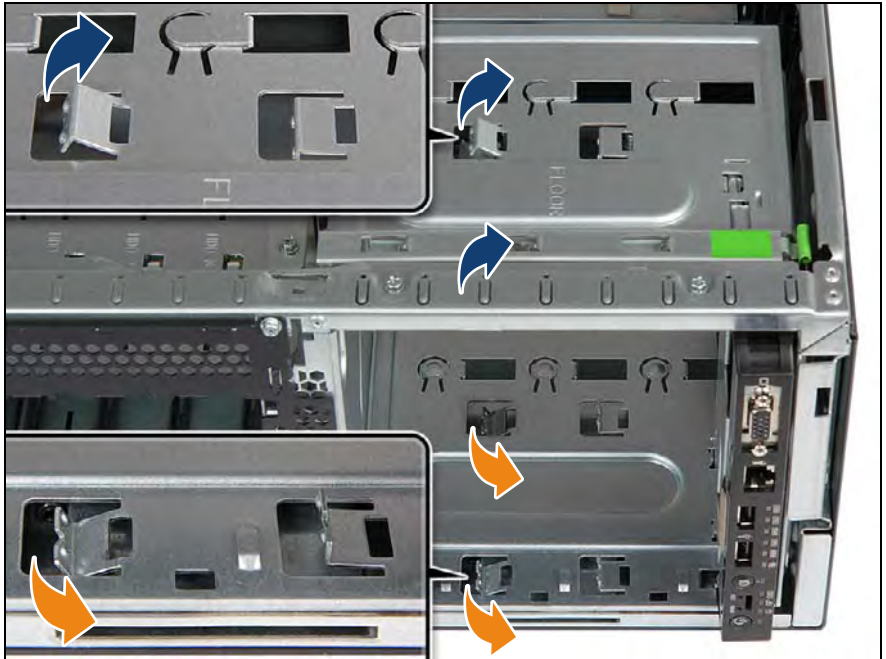


Figure 204: Checking mounting bracket positions

- ▶ Using a screw driver, bend the mounting brackets of the middle installation bay outwards (see close-up):
 - ▶ Bend up the upper two mounting brackets (see blue arrows).
 - ▶ Bend down the lower two mounting brackets (see orange arrows).
- ▶ Disengage the accessible drive locking bar as described in section ["Opening the accessible drive locking bar"](#) on page 91.



Figure 205: Inserting the HDD extension box

- ▶ Insert the 8x 2.5-inch HDD extension box into installation bays 2 and 3 and carefully push in until the front screw hole on the front panel frame lines up with the centering pin on the locking bar.
- ▶ Engage the locking bar as described in section "[Closing the accessible drive locking bar](#)" on page 93.

7.4.8.4 Cabling the 8x 2.5-inch HDD extension box

- ▶ Connect SAS and power cables to the 8x 3.5-inch HDD SAS backplane as described in section "[24x 2.5-inch HDD / SSD SAS backplane cabling](#)" on page 200.

7.4.8.5 Installing HDD modules into the 8x 2.5-inch HDD extension box

- ▶ ["Closing the server" on page 98](#)
- ▶ Install HDD modules or HDD dummy modules into the additional HDD slots as described in sections ["Installing a 2.5-inch HDD / SSD module" on page 208](#) and ["Installing a 2.5-inch HDD / SSD dummy module" on page 213](#).



For detailed information on HDD mounting order, refer to section ["2.5-inch HDD / SSD configurations" on page 185](#).

7.4.8.6 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

7.4.9 Removing the 8x 2.5-inch HDD extension box



**Upgrade and Repair Unit
(URU)**



**Average task duration:
10 minutes**

Tools: tool-less

7.4.9.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Remove all HDD modules from the HDD extension box as described in section ["Removing 2.5-inch HDD / SSD modules" on page 210](#).
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

7.4.9.2 Removing the 2x 3.5-inch HDD extension box

- ▶ Remove all cables from the 2x 3.5-inch HDD extension box backplane.
- ▶ If applicable, remove all cables from the slimline ODD.
- ▶ If applicable, remove the LSD cable from system board connector SMB 1.
- ▶ Disengage the accessible drive locking bar as described in section ["Opening the accessible drive locking bar" on page 91](#).



Figure 206: Removing the HDD extension box

- ▶ Carefully pull the 2x 3.5-inch HDD extension box out of its installation bays.
- ▶ Engage the locking bar as described in section "[Closing the accessible drive locking bar](#)" on page 93.

7.4.9.3 Installing accessible drive dummy covers

- ▶ Install accessible drive filler covers into empty drive bays as described in section "[Accessible drive filler covers](#)" on page 94.
- ▶ Install accessible drive covers into the front cover as described in section "[Accessible drive covers](#)" on page 96.

7.4.9.4 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

7.4.10 Replacing the 8x 2.5-inch HDD extension box



**Upgrade and Repair Unit
(URU)**



**Average task duration:
10 minutes**

Tools: tool-less

7.4.10.1 Preliminary steps

- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Remove all HDD modules from the HDD extension box as described in section ["Removing 2.5-inch HDD / SSD modules" on page 210](#).
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

7.4.10.2 Removing the 8x 2.5-inch HDD extension box

- ▶ Unlock and pull the 8x 2.5-inch HDD extension box out of its installation bays as described in section ["Removing the 8x 2.5-inch HDD extension box" on page 306](#).

7.4.10.3 Installing the 8x 2.5-inch HDD extension box

- ▶ Install the new 8x 2.5-inch HDD extension box as described in section ["Installing the 8x 2.5-inch HDD extension box" on page 302](#).

7.4.10.4 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ Reinstall all hard disk drives into their original slots in the HDD extension box as described in section ["Installing 2.5-inch HDD / SSD modules" on page 207](#).
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)

7.5 SAS expander board

7.5.1 Installing the SAS expander board



Field Replaceable Unit (FRU)



**Average task duration:
10 minutes**

Tools: tool-less

7.5.1.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
 - ▶ ["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

7.5.1.2 Installing SAS expander board spacer bolts



Field Replaceable Unit (FRU)



Average task duration: additional 30 minutes

Tools: Phillips PH2 / (+) No. 2 screw driver



This step is only necessary if SAS expander board spacer bolts are not already mounted in the system. Otherwise, please proceed to section ["Installing the SAS expander board" on page 312](#).

- ▶ Remove the system board as described in section ["Removing the system board" on page 687](#).
- ▶ Remove the system board carrier as described in section ["Removing the system board carrier" on page 85](#).

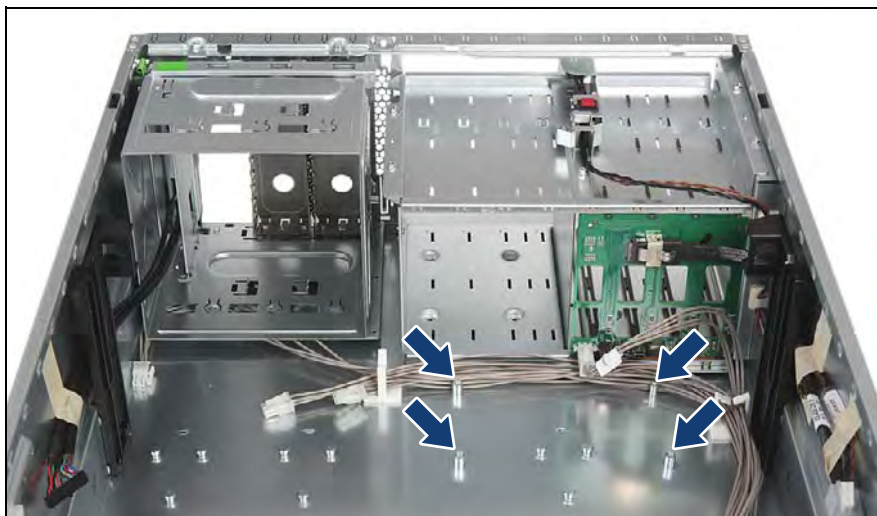


Figure 207: Installing SAS expander board spacer bolts (A)

- Locate the four mounting bolts (see arrows).

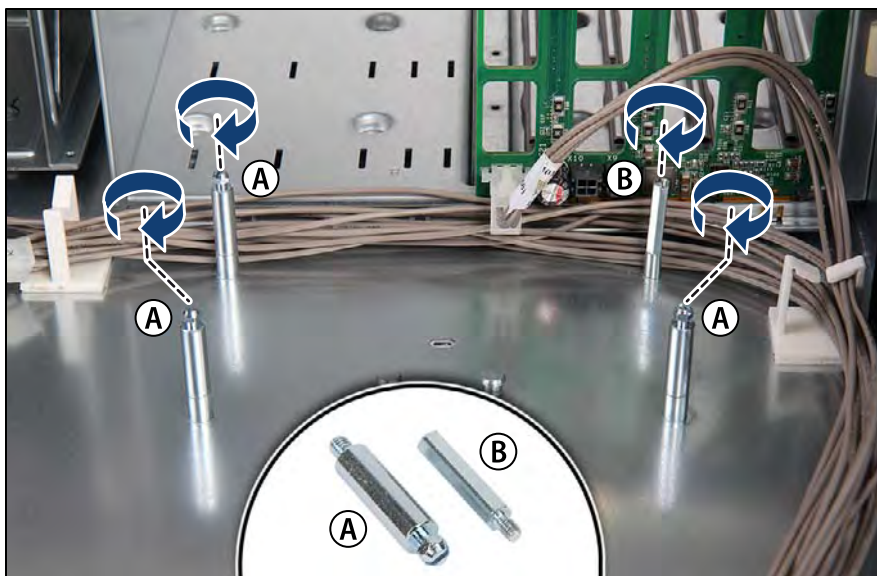


Figure 208: Installing SAS expander board spacer bolts (B)

Hard disk drives / solid state drives

- ▶ Screw the four SAS expander board spacer bolts onto the mounting bolts as shown:

A	Spacer bolts with shoulder screw caps
B	Spacer bolt with screw thread

- ▶ Reinstall the system board carrier as described in section "[Installing the system board carrier](#)" on page 88.
- ▶ Reinstall the system board as described in section "[Installing the system board](#)" on page 691.

7.5.1.3 Installing the SAS expander board

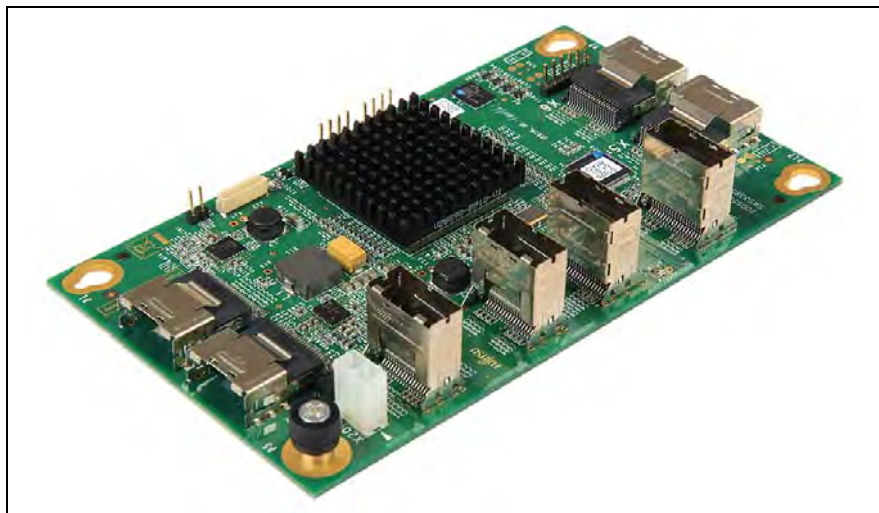


Figure 209: SAS expander board (A3C40125917)

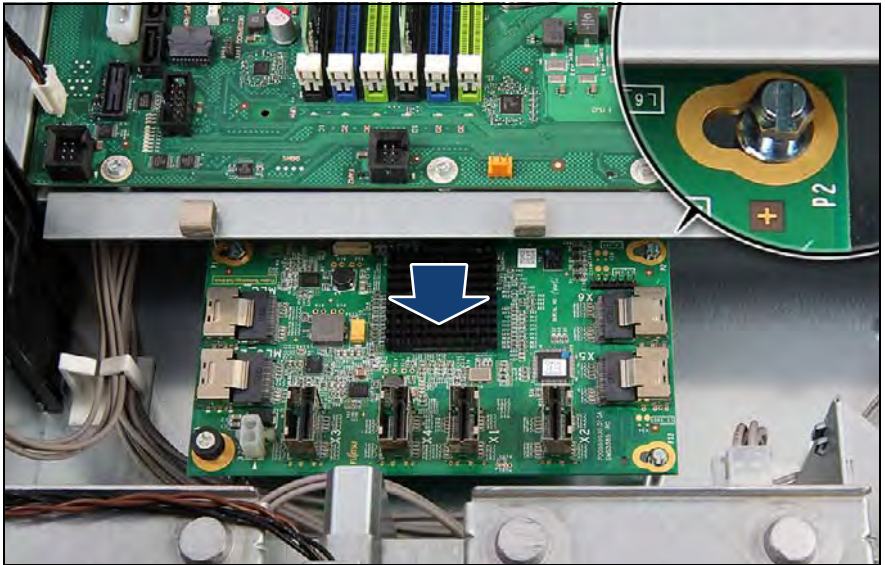


Figure 210: Installing the SAS expander board (A)

- ▶ Ensure that the four expander board spacer bolts have been installed in the chassis as described in section "[Installing SAS expander board spacer bolts](#)" on page 310.
- ▶ Insert the SAS expander board into the chassis so that the three shoulder screw caps on the spacer bolts rest in the wide ends of the keyhole slots on the expander board (see close-up).

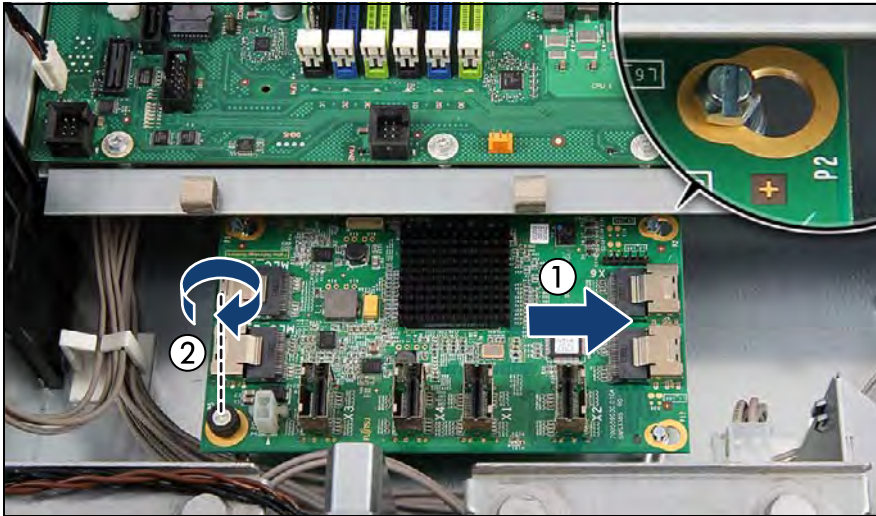


Figure 211: Installing the SAS expander board (B)

- ▶ Slide the expander board to the right as far as it will go (1).
The shoulder screw caps on the expander board spacer bolts will lock in the narrow ends of the keyhole slots on the spacer board (see close-up).
- ▶ Secure the SAS expander board in the chassis with the captive knurled thumb screw on the board (2).
- ▶ Change SAS cabling according to the new server configuration as described in sections ["2.5-inch HDD / SSD configurations" on page 185](#) and ["3.5-inch HDD configurations" on page 241](#).

7.5.1.4 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

7.5.2 Removing the SAS expander board



**Field Replaceable Unit
(FRU)**



**Average task duration:
10 minutes**

Tools: tool-less

7.5.2.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)
- ▶ Remove all cables from the SAS expander board.

7.5.2.2 Removing the SAS expander board

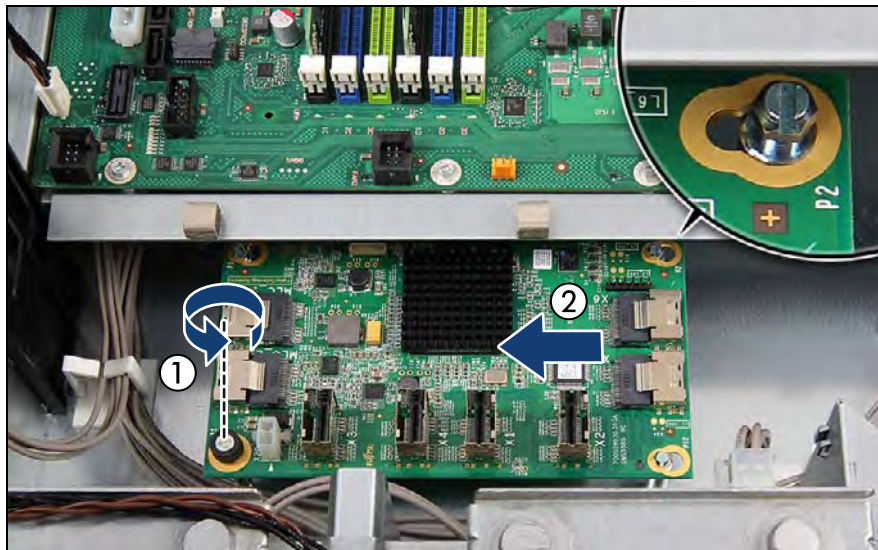


Figure 212: Installing accessible drive covers

- ▶ Loosen the captive knurled thumb screw on the SAS expander board (1).
- ▶ Slide the expander board to the left as far as it will go (2).

The shoulder screw caps on the expander board spacer bolts will rest in the wide ends of the keyhole slots on the spacer board (see close-up).

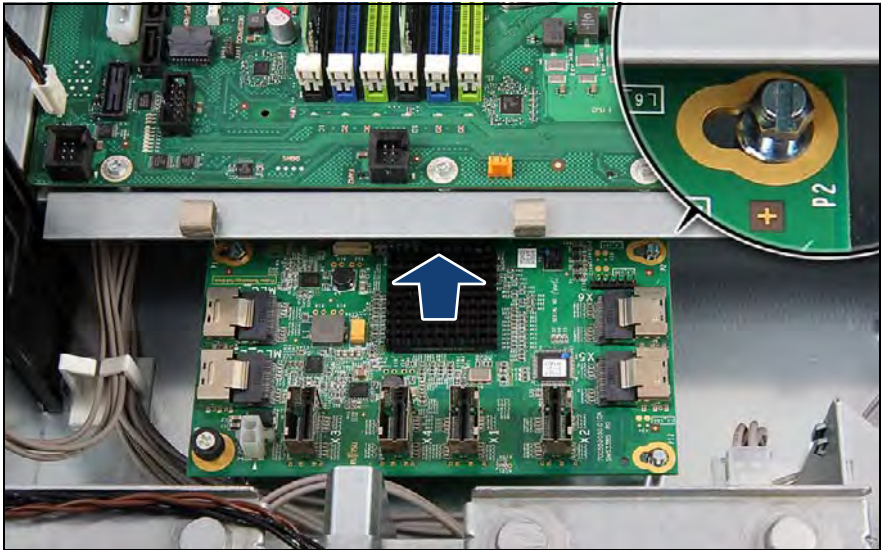


Figure 213: Installing accessible drive covers

- ▶ Remove the SAS expander board from the chassis
- ▶ Change SAS cabling according to the new server configuration as described in sections ["2.5-inch HDD / SSD configurations"](#) on page 185 and ["3.5-inch HDD configurations"](#) on page 241.

7.5.2.3 Concluding steps

- ▶ ["Installing the system fan holder"](#) on page 331
- ▶ ["Installing the system air duct"](#) on page 83
- ▶ ["Closing the server"](#) on page 98
- ▶ When working on a rack-mounted server:
 - ▶ ["Mounting the server in the rack"](#) on page 115
 - ▶ ["Connecting the server to the mains"](#) on page 118
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality"](#) on page 152

7.5.3 Replacing the SAS expander board



**Field Replaceable Unit
(FRU)**



**Average task duration:
10 minutes**

Tools: tool-less

7.5.3.1 Preliminary steps

- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)
- ▶ Remove all cables from the SAS expander board.

7.5.3.2 Removing the defective SAS expander board

- ▶ ["Removing the SAS expander board" on page 315.](#)

7.5.3.3 Installing the new SAS expander board

- ▶ ["Installing the SAS expander board" on page 309.](#)

7.5.3.4 Concluding steps

- ▶ Reconnect all cables on the SAS expander board to their original positions.
- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
 - ["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)

8 Fans

This chapter provides information on how to replace system fan modules and fan holders.

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 45.

8.1 Basic information



Figure 214: Fan module A3C40133739

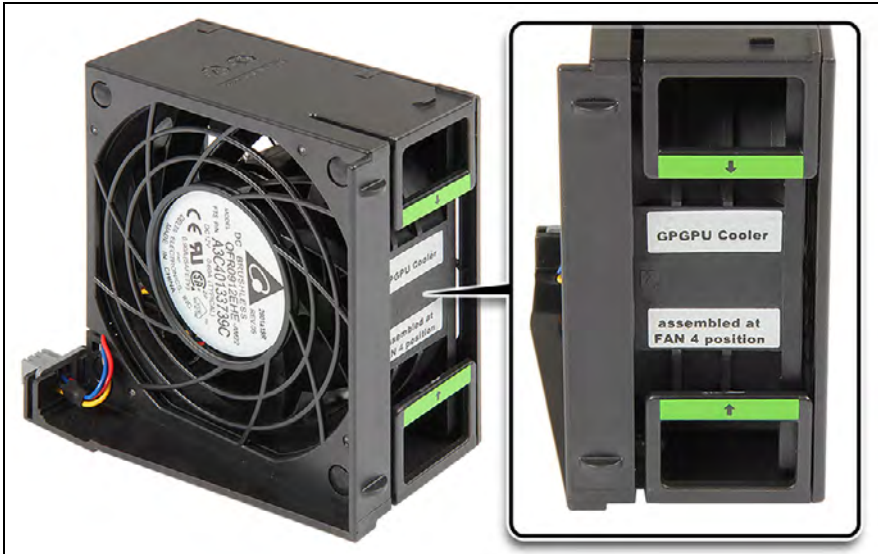


Figure 215: High performance fan module A3C40171937

- The PRIMERGY TX300 S8 / RX350 S8 server contains four hot-pluggable system fan modules.
- Two optional hot-pluggable rear fan modules can be added to the system for fan redundancy.
- An air duct bridging the system and rear fan holders directs the airflow directly onto the CPU heat sinks and memory slots.
- A high performance fan module (A3C40171937) is installed into fan position 4 in some configurations involving one or two GPGPU / coprocessor cards with passive cooling. For further information, please refer to sections ["GPGPU / coprocessor card overview" on page 382](#) and ["Installing the GPGPU air duct" on page 408](#).

i Additional fans in PSU modules are integral parts of the power supply units and cannot be replaced separately.

Fan numbering

Refer to the below figure for the fan numbering scheme in ServerView Operations Manager:

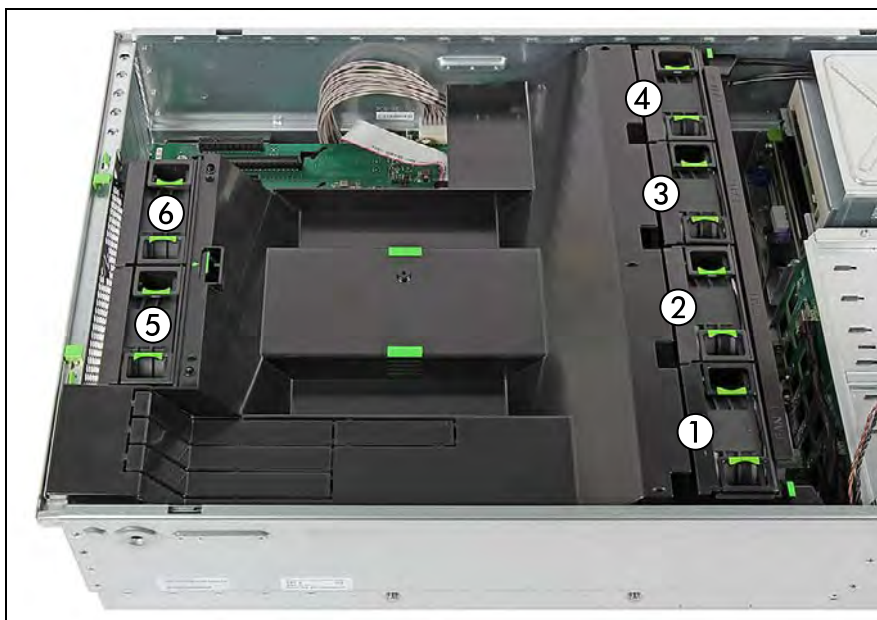


Figure 216: Fan numbering

8.2 System fans

8.2.1 Replacing system fan modules



**Customer Replaceable Unit
(CRU)**



**Average task duration:
5 minutes**

Tools: tool-less

8.2.1.1 Preliminary steps

- ▶ ["Locating the defective server" on page 57](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ Locate the defective fan using the onboard Local Diagnostic LEDs as described in section ["Onboard indicators and controls" on page 779](#).

8.2.1.2 Removing system fan modules



CAUTION!

Do not remove the air duct in order to replace fan modules!

In the below figures, the air duct has only been removed for illustration purposes.

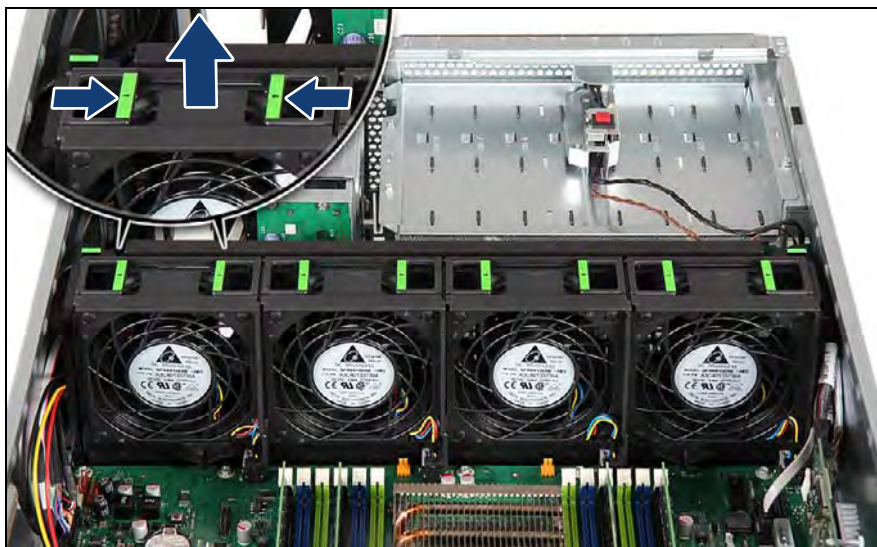


Figure 217: Removing a system fan module (A)

- ▶ Have the replacement fan module ready for immediate installation after the defective module has been removed.
- ▶ Pinch the two green locking tabs on the defective fan module (see close-up) while pulling up.

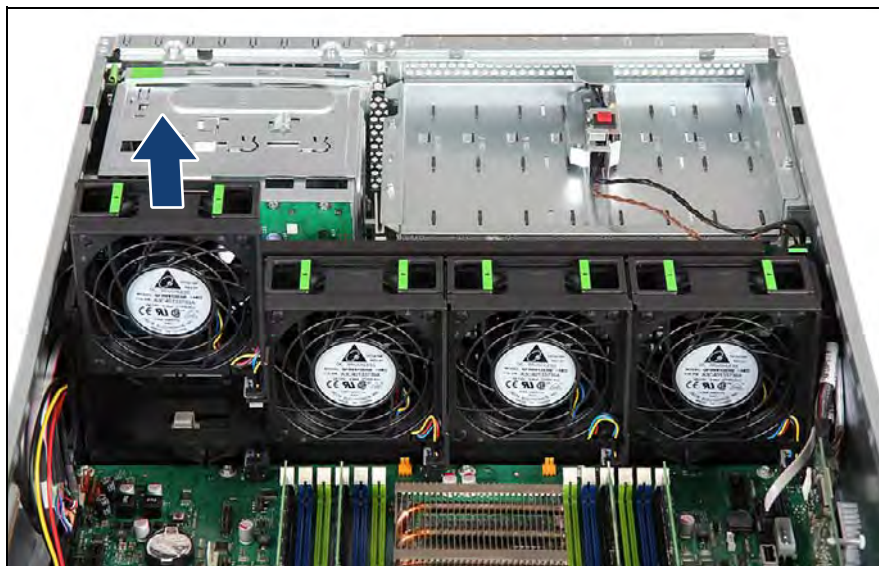


Figure 218: Removing a system fan module (B)

- ▶ Lift the fan module out of its bay in the system fan holder.
- ▶ Install the new fan module immediately as described in section "[Installing system fan modules](#)" on page 327.

8.2.1.3 Installing system fan modules

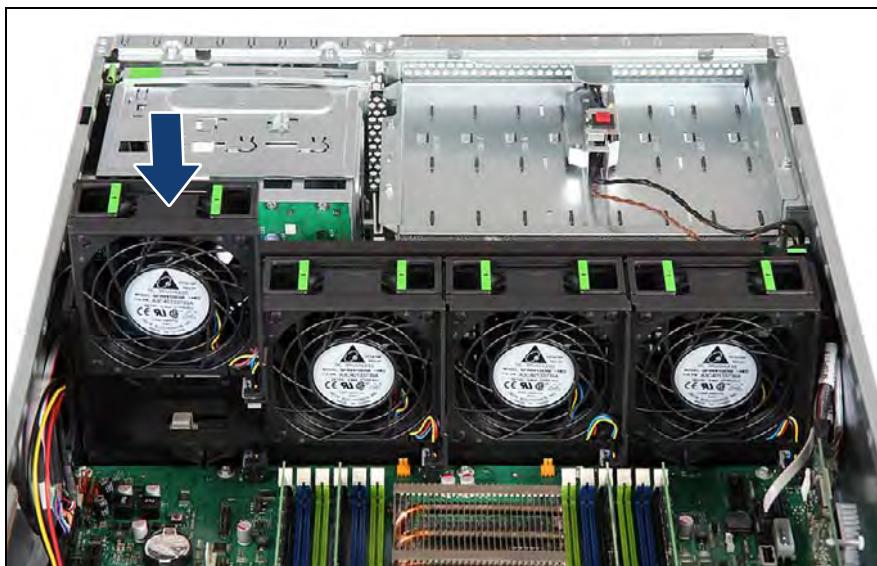


Figure 219: Installing a system fan module (A)

- ▶ Fit the new fan module into its bay in the system fan holder as shown with its label facing the server rear.

i A high performance fan module (A3C40171937) is required in fan position 4 in some configurations involving one or two GPGPU / coprocessor cards. For further information, please refer to sections ["GPGPU / coprocessor card overview" on page 382](#) and ["Installing the GPGPU air duct" on page 408](#).

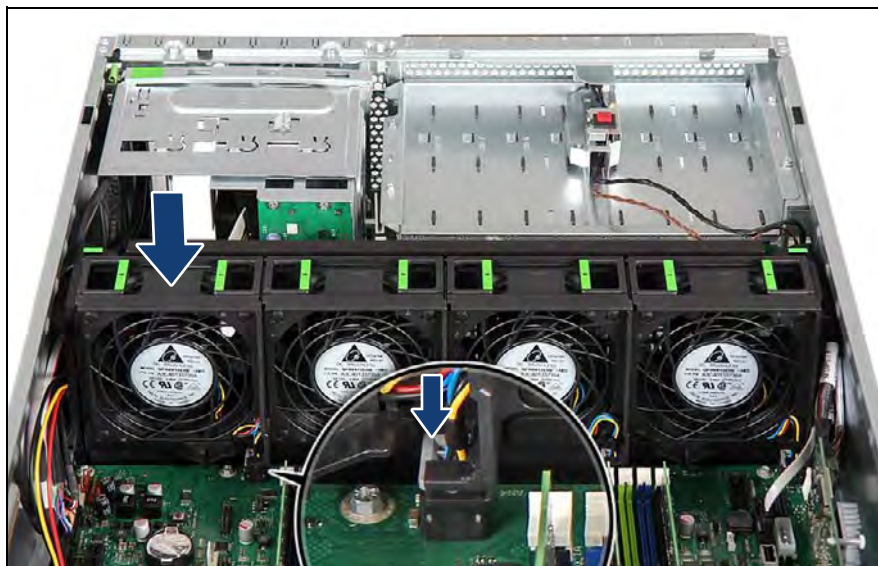


Figure 220: Installing a system fan module (B)

- ▶ Gently press down on the fan module until it locks in place.
- ▶ Ensure that the connector on the fan module properly engages with the fan connector on the system board (see close-up).
- ▶ Ensure that the new fan module spins up.



Please note:

When a system fan module fails, the remaining fans will start operating at full speed. After the defective fan has been replaced, all fans will continue to run at full speed for a couple of minutes, before resetting to a lower speed.

- ▶ Ensure that all system fan modules reset to a normal operating speed before performing concluding steps.

8.2.1.4 Concluding steps

- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ Reconnect all external cables to the server rear.
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ Switch on the server.
- ▶ ["Performing a fan test after replacing a defective fan" on page 145](#)

8.2.2 Replacing the system fan holder



**Upgrade and Repair Unit
(URU)**



**Average task duration:
5 minutes**

Tools: tool-less

8.2.2.1 Preliminary steps

- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

8.2.2.2 Removing the system fan holder

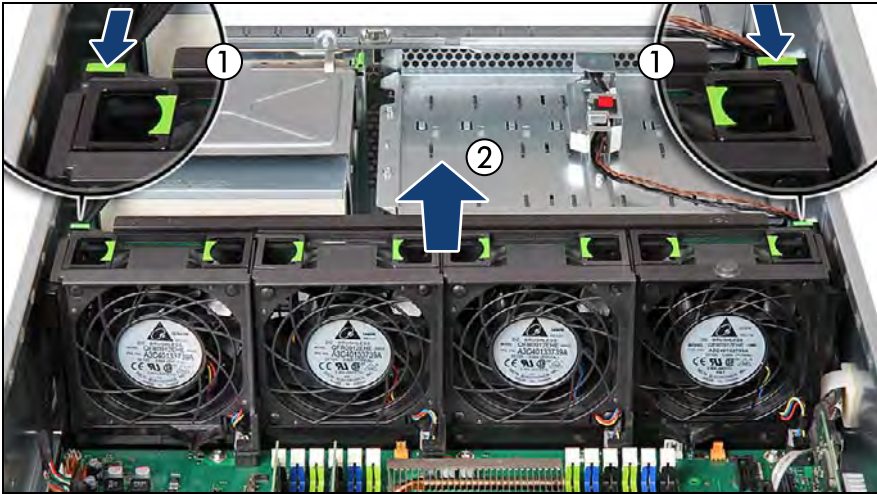


Figure 221: Removing the system fan holder (A)

- ▶ Press in on the two locking tabs (1) while slightly lifting up the system fan holder (2)

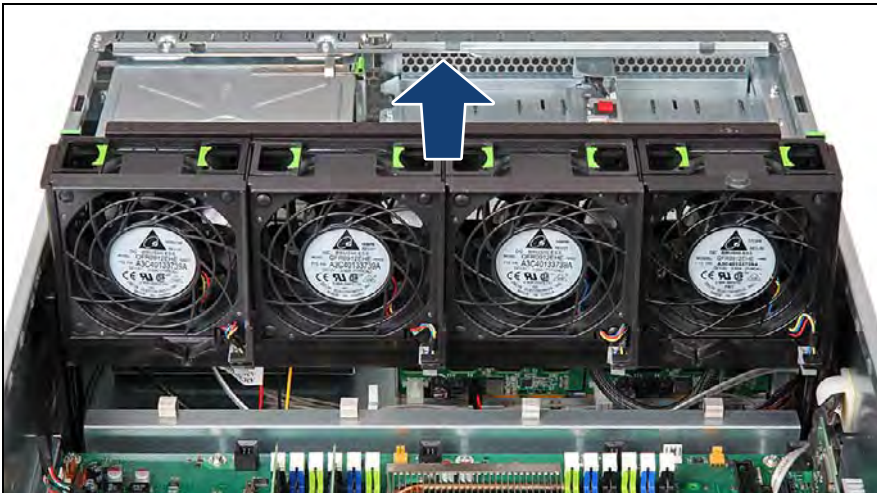


Figure 222: Removing the system fan holder (B)

- ▶ Lift up the system fan holder and remove it from the chassis.

8.2.2.3 Installing the system fan holder

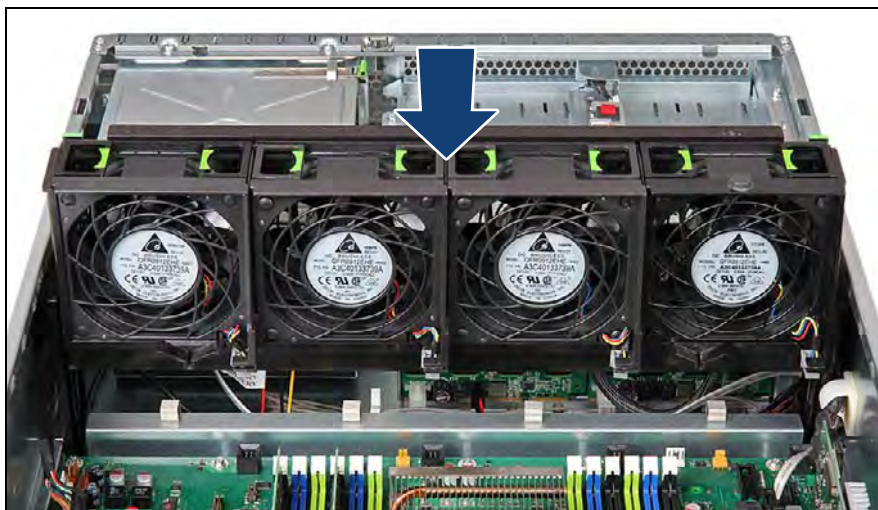


Figure 223: Mounting the system fan holder (A)

- ▶ Insert the system fan holder into its two guides.

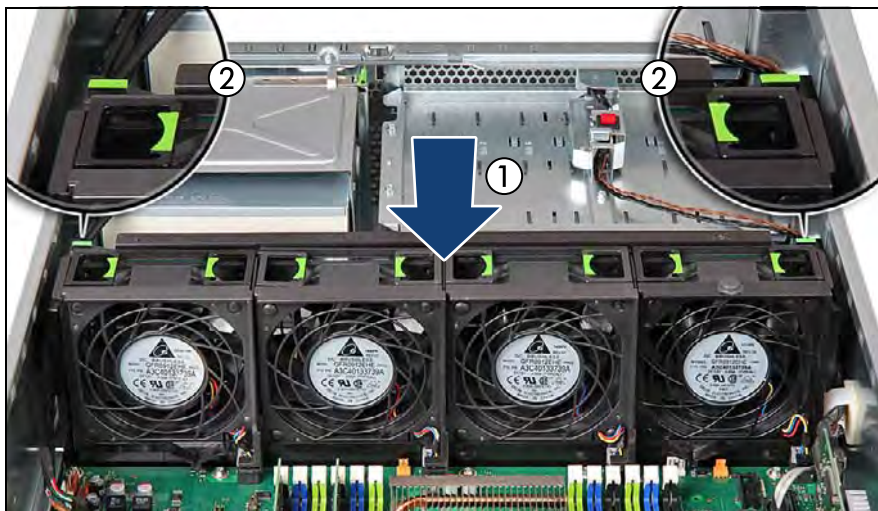


Figure 224: Mounting the system fan holder (B)

Fans

- ▶ Carefully lower the fan holder into the chassis (1) until the two locking tabs (2, see close-ups) engage.
- ▶ Ensure that the connectors on the fan modules properly engage with the fan connectors on the system board.

8.2.2.4 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)

8.3 Rear fans

Two optional hot-pluggable rear fan modules can be added to the system for fan redundancy.



CAUTION!

When equipping rear fans, ensure to always install both rear fan modules in order to satisfy cooling requirements. Operation with only one rear fan module is not possible.

8.3.1 Installing rear fan modules



Customer Replaceable Unit (CRU)



**Average task duration:
5 minutes**

Tools: tool-less

8.3.1.1 Preliminary steps

- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).

8.3.1.2 Installing a rear fan module



CAUTION!

- Do not remove the air duct in order to install fan modules!
In the below figures, the air duct has only been removed for illustration purposes.
- For fan redundancy and in order to satisfy cooling requirements, always install both rear fan modules. Operation with only one rear fan module is not possible.

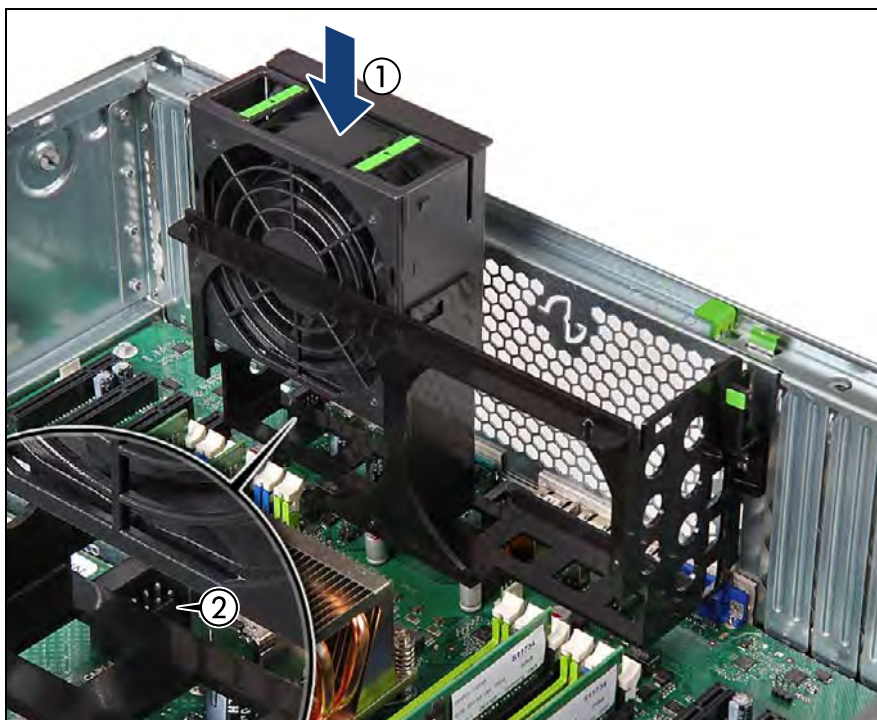


Figure 225: Installing a rear fan module (A)

- ▶ Fit the first fan module into its bay in the rear fan holder as shown with its label facing the server rear.
- ▶ Gently press down on the fan module until it locks in place (1).

Fans

- ▶ Ensure that the connector on the fan module properly engages with the fan connector on the system board (2, see close-up).
- ▶ Ensure that the new fan module spins up.

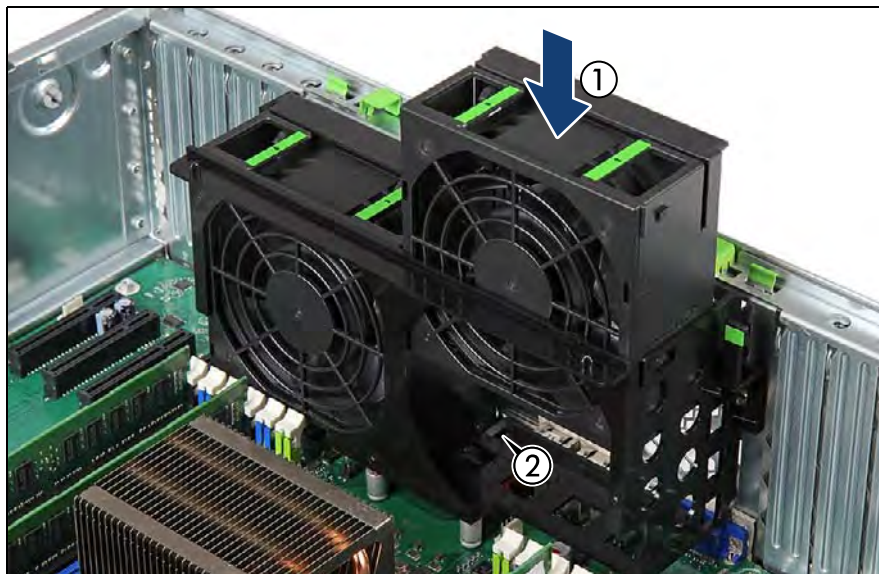


Figure 226: Installing a rear fan module (B)

- ▶ Install the second rear fan module accordingly, with its label facing the server rear (1).
- ▶ Ensure that the connector on the fan module properly engages with the fan connector on the system board (2).
- ▶ Ensure that the new fan module spins up.



Please note:

When a system fan module fails, the remaining fans will start operating at full speed. After the defective fan has been replaced, all fans will continue to run at full speed for a couple of minutes, before resetting to a lower speed.

- ▶ Ensure that all system fan modules reset to a normal operating speed before performing concluding steps.

8.3.1.3 Concluding steps

- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ Reconnect all external cables to the server rear.
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ Switch on the server.
- ▶ ["Performing a fan test after replacing a defective fan" on page 145](#)

8.3.2 Removing rear fan modules



**Customer Replaceable Unit
(CRU)**



**Average task duration:
5 minutes**

Tools: tool-less

8.3.2.1 Preliminary steps

- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).

8.3.2.2 Removing a rear fan module



CAUTION!

Do not remove the air duct in order to remove fan modules!

In the below figures, the air duct has only been removed for illustration purposes.



Figure 227: Removing a rear fan module (A)

- ▶ Have the replacement fan module ready for immediate installation after the defective module has been removed.
- ▶ Pinch the two green locking tabs on the defective fan module (see close-up) while pulling up.

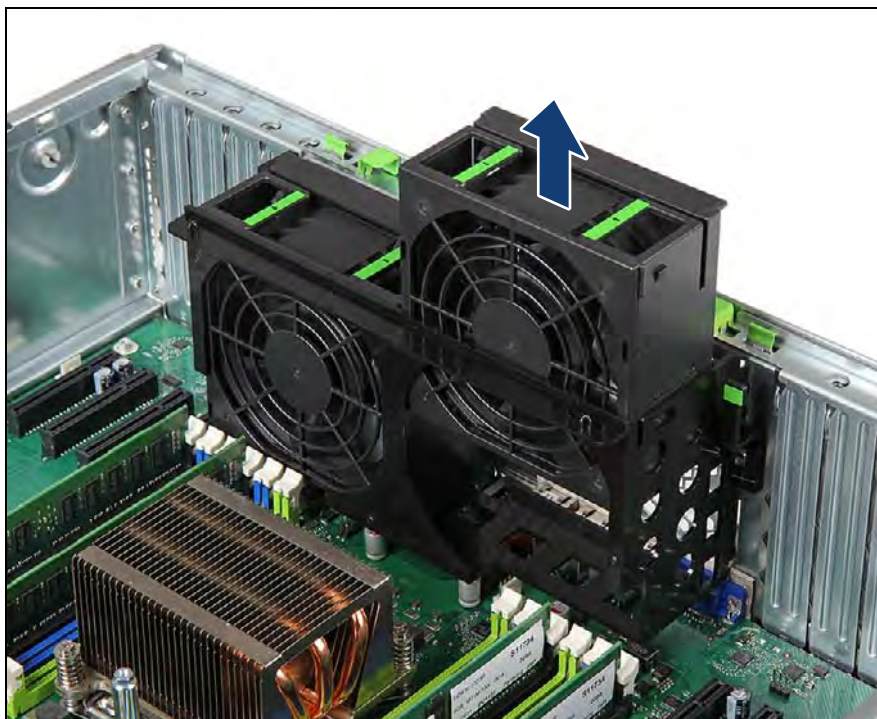


Figure 228: Removing a rear fan module (B)

- ▶ Lift the fan module out of its bay in the system fan holder.
- ▶ Install the new fan module immediately as described in section ["Installing a rear fan module"](#) on page 333.

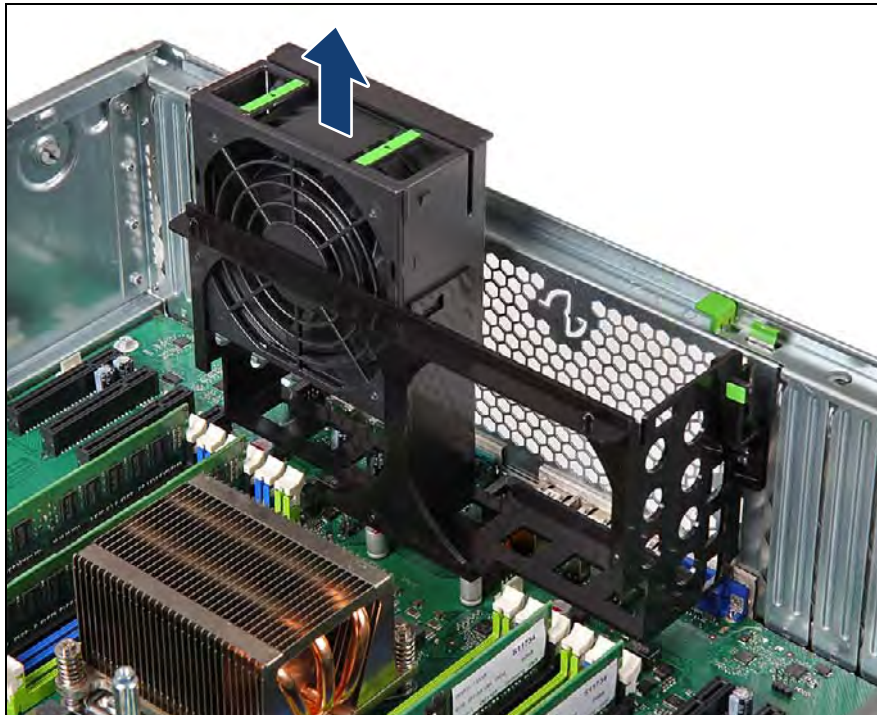


Figure 229: Removing a rear fan module (B)

- ▶ Before replacing the rear fan holder, remove the second rear fan module accordingly.

8.3.2.3 Concluding steps

- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)

8.3.3 Replacing rear fan modules



Customer Replaceable Unit (CRU)



**Average task duration:
5 minutes**

Tools: tool-less

8.3.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 57](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ Locate the defective fan using the onboard Local Diagnostic LEDs as described in section ["Onboard indicators and controls" on page 779](#).

8.3.3.2 Removing rear fan modules

- ▶ Remove the defective rear fan module(s) as described in section ["Removing rear fan modules" on page 335](#).

8.3.3.3 Installing rear fan modules

- ▶ Replace the defective rear fan module(s) as described in section ["Installing rear fan modules" on page 332](#).

8.3.3.4 Concluding steps

- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ Reconnect all external cables to the server rear.
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ Switch on the server.
- ▶ ["Performing a fan test after replacing a defective fan" on page 145](#)

8.3.4 Replacing the rear fan holder



Upgrade and Repair Unit (URU)



Average task duration: 5 minutes

Tools: tool-less

8.3.4.1 Preliminary steps

- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing rear fan modules" on page 335](#)

8.3.4.2 Removing the rear fan holder

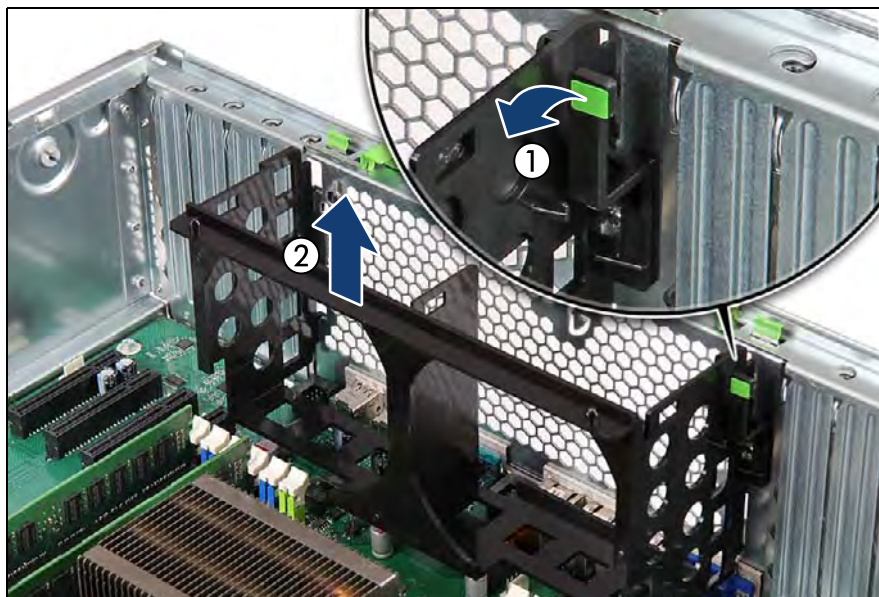


Figure 230: Removing the rear fan holder (A)

- ▶ Pull the locking lever (1) while slightly lifting up the rear fan holder (2).

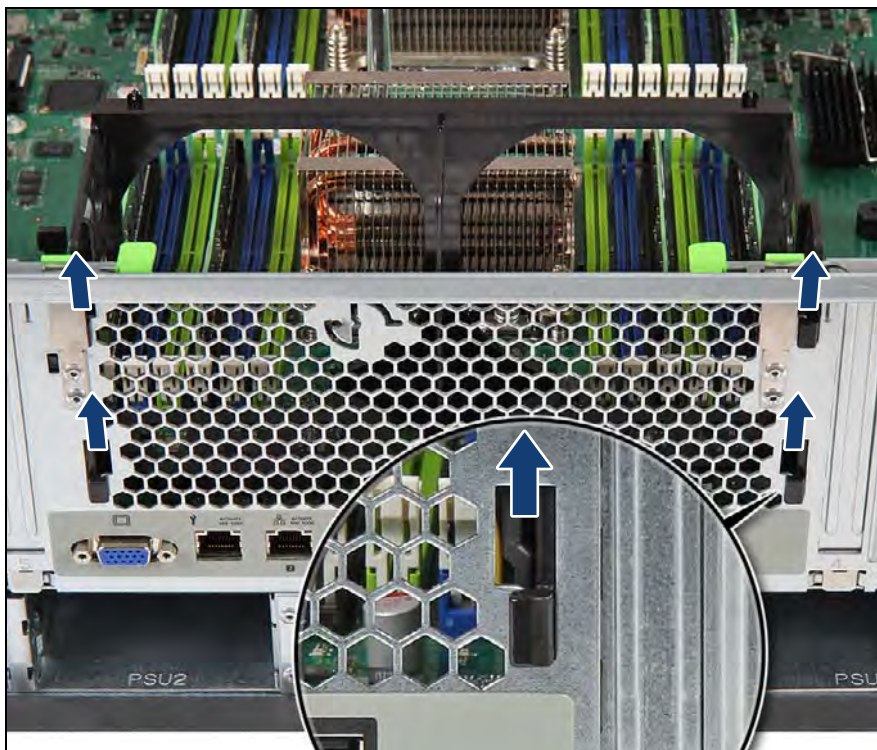


Figure 231: Removing the rear fan holder (B)

- ▶ Lift up and disengage the rear fan holder.
- ▶ Ensure that the four hooks on the fan holder rest in the wide ends of the keyhole slots on the server rear (see close-up).

8.3.4.3 Installing the rear fan holder

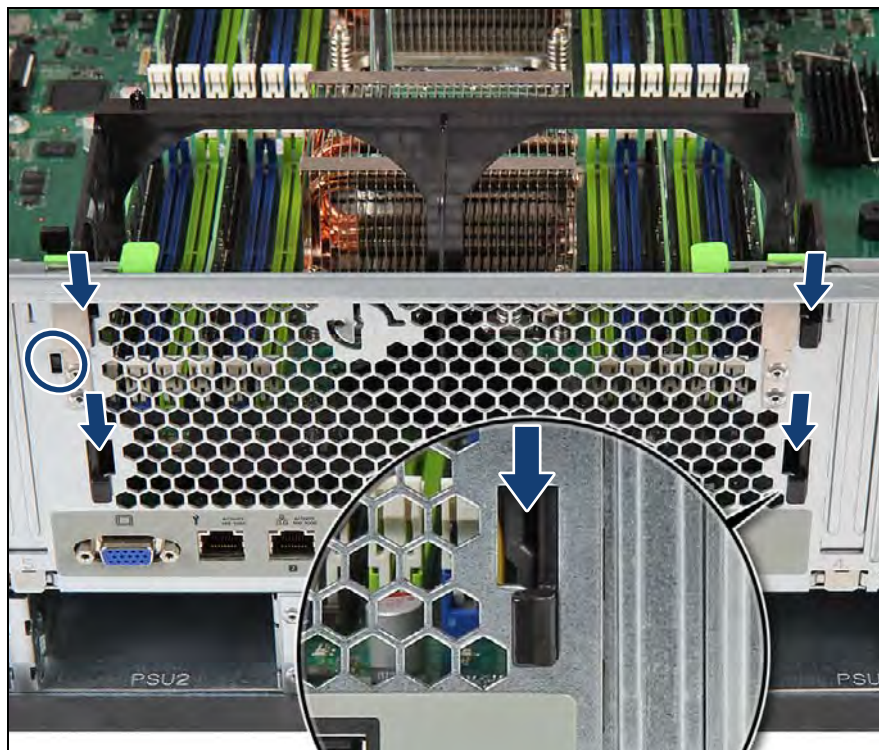


Figure 232: Mounting the rear fan holder (A)

- ▶ Lower the rear fan holder into the chassis.
- ▶ Fit the four hooks on the rear fan holder into the keyhole slots in the chassis.
- ▶ Press down on the rear fan holder until the four hooks lock in the narrow ends of the keyhole slots (see close-up).

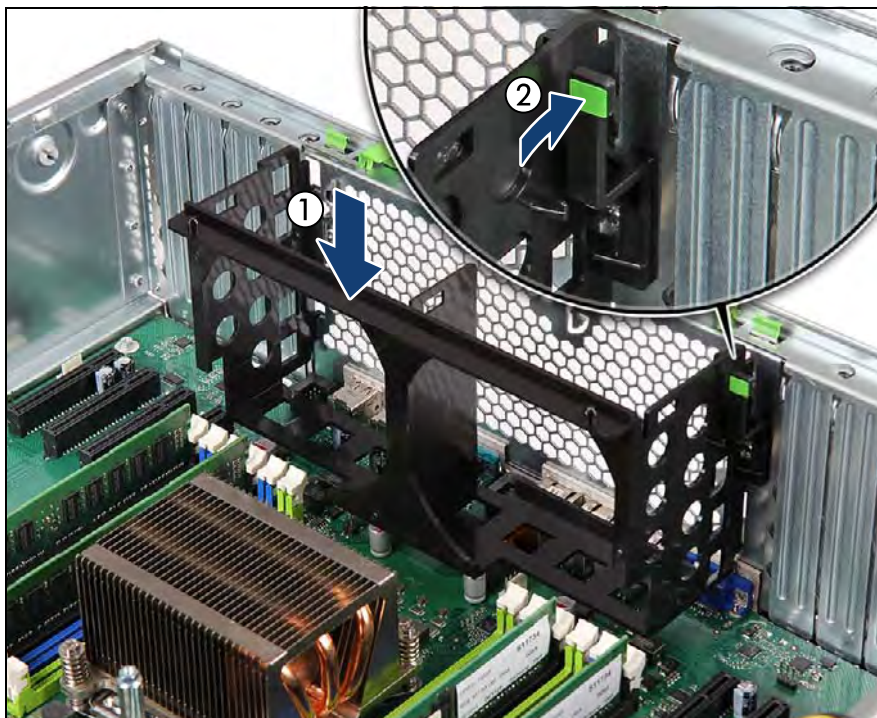


Figure 233: Installing the rear fan holder (B)

- ▶ Ensure that the new rear fan holder is properly seated in the chassis (1) and that the latch on the locking lever (2) has properly engaged in the slot on the server rear.

8.3.4.4 Concluding steps

- ▶ In case of redundant fan configurations, reinstall all rear fan modules as described in section ["Installing rear fan modules" on page 332](#).
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)

9 Expansion cards and backup units

This chapter provides information on how to install, remove or replace 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 45.

9.1 Basic information

The system board is equipped with ten expansion slots:

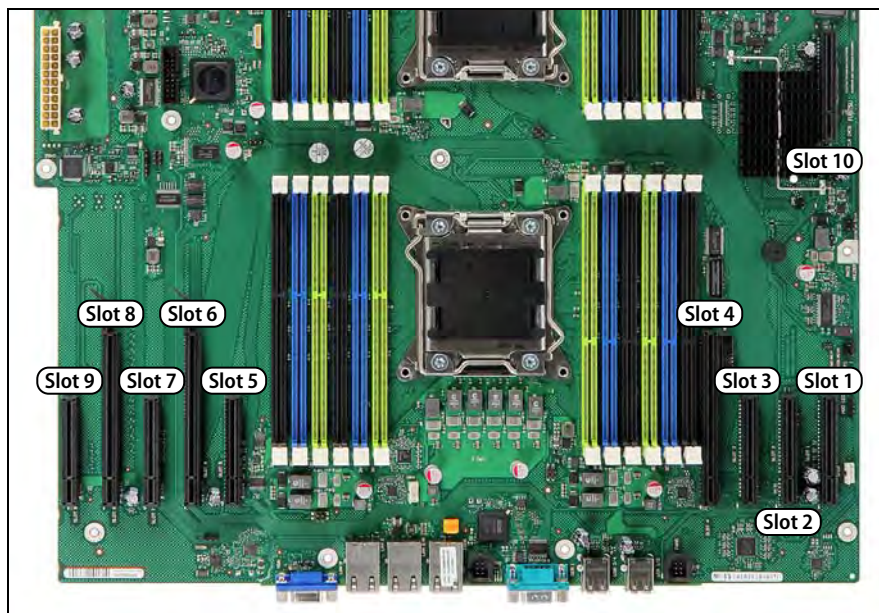


Figure 234: PCI slot overview

PCI slot	Type	Mechanical connector	Electrical interface	Function
1	PCIe Gen 3	x8	x8	preferred slot for Modular LAN controller (with NCSI connector)
2	PCIe Gen 3	x8	x8	
3	PCIe Gen 3	x8	x8	preferred slot for SAS RAID controllers
4	PCIe Gen 3	x16	x8	
5	PCIe Gen 2	x8	x4	available only with CPU 2
6	PCIe Gen 3	x16	x16	preferred slot for primary GPGPU card, available only with CPU 2
7	PCIe Gen 3	x8	x4	available only with CPU 2

PCI slot	Type	Mechanical connector	Electrical interface	Function
8	PCIe Gen 3	x16	x16	preferred slot for secondary GPGPU card, available only with CPU 2
9	PCIe Gen 3	x8	x4	available only with CPU 2
10	PCIe Gen 3	x8	x8	slot for SAS RAID controller

Expansion card overview



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://www.fujitsu.com/fts/products/computing/servers/primergy/tower/tx300/>

<http://www.fujitsu.com/fts/products/computing/servers/primergy/rack/rx350/>

for the Japanese market:

<http://jp.fujitsu.com/platform/server/primergy/system/>

Expansion cards and backup units

Expansion card				Slot number Priority											Fixation
				with 1 CPU					with 2 CPUs						
Card Order	Type	Model	Max. #	Slot 10	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	Slot 7	Slot 8	Slot 9		
1	Graphics cards	Nvidia NVS300	1					2					1	Locking bar	
1	Co-processor cards	Nvidia Tesla K20 / K20X	2						(1)	1	(2)	2		M3 screw	
2		Nvidia Tesla K40	2						(1)	1	(2)	2			
3		Intel Xeon Phi 3120P	2						(1)	1	(2)	2			
4		Intel Xeon Phi 5110P	2						(1)	1	(2)	2			
5		Intel Xeon Phi 7120P	2						(1)	1	(2)	2			
6		Intel Xeon Phi 31S1P	2						(1)	1	(2)	2			
7		Nvidia GRID K1	1						(1)	1	(2)	2			
8		Nvidia GRID K2	2						(1)	1	(2)	2			
1	USB 3.0	D3305 USB 3.0 Interface Card	1			1								Locking bar	
1	SAS / RAID	D3216 PRAID EP400i / EP420i SAS 3.0 RAID Ctrl.	1	1										Locking bar	
2		D3216 PRAID EP420i SAS 3.0 RAID Ctrl.	1	1											
3		D3116 SAS RAID Ctrl. (LSI SAS 2208 V3)	2	1			2								
4		D2616 SAS RAID Ctrl. (LSI SAS 2108)	2	1			2								
5		D2607 SAS RAID Ctrl.	1	1											
6		LSI 9286 CV-8e SAS RAID Ctrl.	4		7	4	1	5		3		2	6		
1	Modular LAN	D2755 2x 10 Gb SFP+	1		1									Locking bar	
2		D3045 4x 1 Gb	1		1										
3		D3035 2x 1 Gb	1		1										
1	PCIe SSD	Fusion I/O 365 GB MLC	4		2	1	3	8	4	6	5	7	2	Locking bar	
2		Fusion I/O 785 GB MLC	4		2	1	3	8	4	6	5	7	2		
3		Fusion I/O 1.2 TB MLC	4		2	1	3	8	4	6	5	7	2		
1/2	Infini-band	IB HCA 40 Gb Single / Dual Port QDR	2		6	5	2	4	9	3	8	1	7	M3 screw	
3/4		IB HCA 56 Gb Single / Dual Port FDR	2		6	5	2	4	9	3	8	1	7		
1	SAS (Backup)	LSI SAS 9200-8e HBA	3		6	2	3	1	6	7	5	8	4	Locking bar	
1	Fibre Channel	LPe 16000 16 Gbit FC Single Port, x8 PCI 3.0	8		6	5	1	4	9	3	8	2	7	Locking bar	
2		LPe 16002 16 Gbit FC Dual Port, x8 PCI 3.0	8		6	5	1	4	9	3	8	2	7		
3		LPe 12002 8 Gbit FC Dual Port, x4 PCI 2.0	8		6	5	1	4	9	3	8	2	7		
4		LPe 1250 8 Gbit FC Single Port, x4 PCI 2.0	8		6	5	1	4	9	3	8	2	7		
5		QLE 2560 8 Gbit	8		6	5	1	4	9	3	8	2	7		
6		QLE 2562 8 Gbit	8		6	5	1	4	9	3	8	2	7		
1	Fibre Channel oE	Fibre Over Ethernet OCE10102-FX-F Dual 10 Gbit / 2-port PCIe	4		6	5	1	4	9	3	8	2	7	Locking bar	
1	Ethernet	D2755 2x 10 Gb SFP+	3		1	6	5	4	9	3	8	2	7	Locking bar	
2		X540-T2 2x 10 Gb	2		1	6	5	4	9	3	8	2	7		
3		Intel I350-T4 4x 1 Gb	3		1	6	5	4	9	3	8	2	7		
4		D3045 4x 1 Gb	3		1	6	5	4	9	3	8	2	7		
5		Intel I350-T2 2x 1 Gb	3		1	6	5	4	9	3	8	2	7		
6		D3035 2x 1 Gb	3		1	6	5	4	9	3	8	2	7		
7		PRO/1000PF LC 1x 1 Gb	4		1	6	5	4	9	3	8	2	7		
8		Gigabit CT DT Cu 1x 1 Gb	4		1	6	5	4	9	3	8	2	7		
9		D2745 4x 1 Gb	3		1	6	5	4	9	3	8	2	7		
10		D2735 2x 1 Gb	3		1	6	5	4	9	3	8	2	7		

Figure 235: Expansion card slot sequence

9.2 Standard expansion cards

9.2.1 Installing expansion cards



**Upgrade and Repair Unit
(URU)**



**Average task duration:
10 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

9.2.1.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

9.2.1.2 Preparing the expansion card

Standard expansion card



CAUTION!

In order to satisfy cooling requirements, ensure to use a perforated full height slot bracket (C26192-Y35-C20).

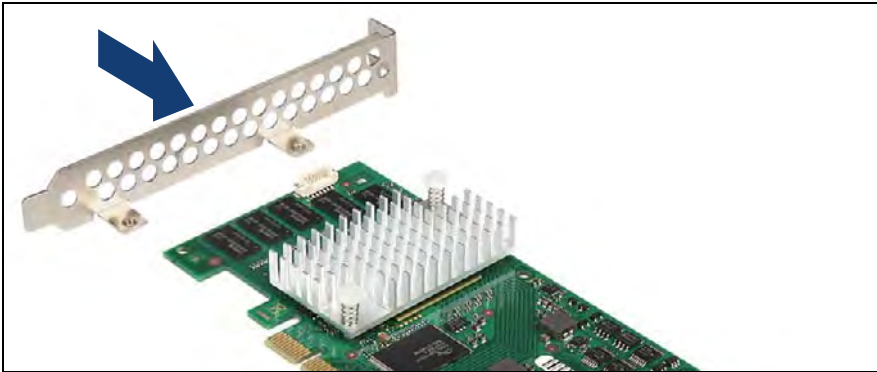


Figure 236: Mounting the PCI slot bracket (A)

- ▶ Place the controller on the mounting tabs on the slot bracket.
- ▶ Carefully shift the slot bracket towards the controller until the plug shells engage with the cut-outs in the slot bracket connector panel.

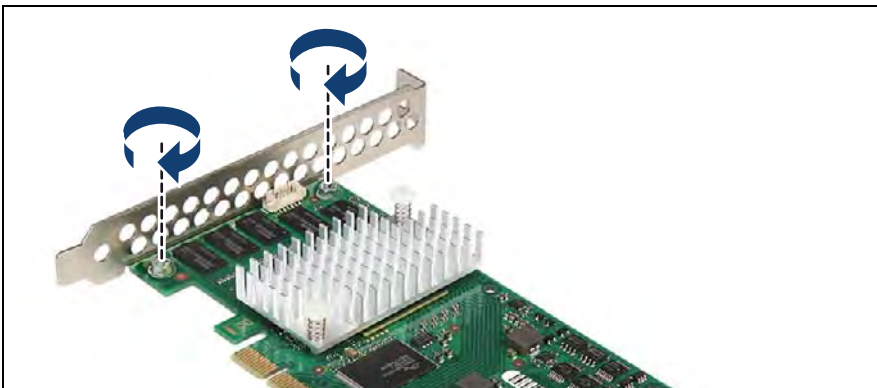


Figure 237: Mounting the PCI slot bracket (B)

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

USB 3.0 interface card D3305



CAUTION!

The USB 3.0 interface card D3305 comes pre-assembled with a full height slot bracket. When replacing the slot bracket, ensure to use the original M3 x 5 mm screws. Standard M3 screws may damage onboard components.

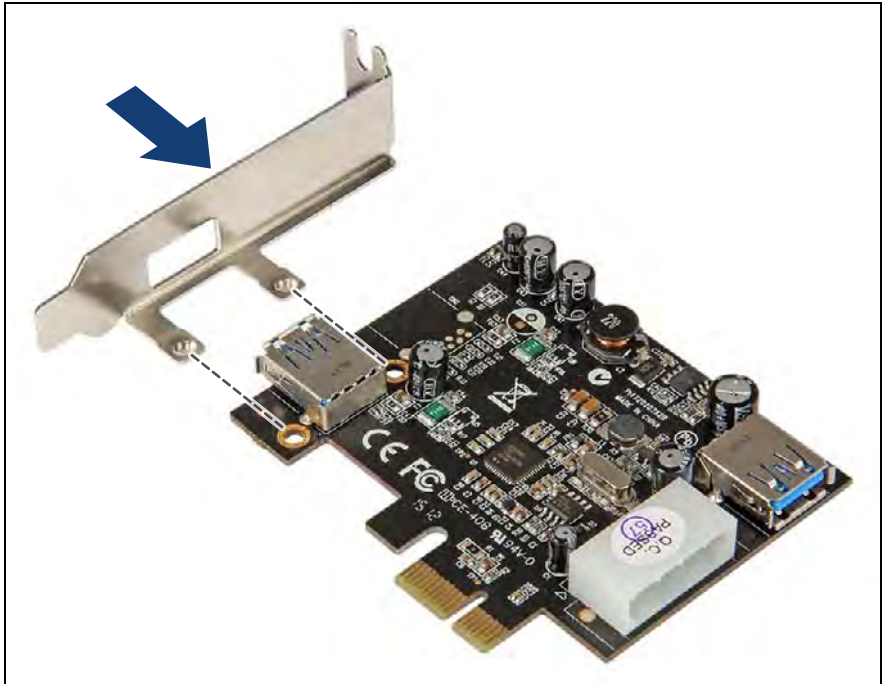


Figure 238: Mounting the PCI slot bracket (A)

- ▶ Place the controller on the mounting tabs on the slot bracket.
- ▶ Carefully shift the slot bracket towards the controller until the plug shells engage with the cut-outs in the slot bracket connector panel.

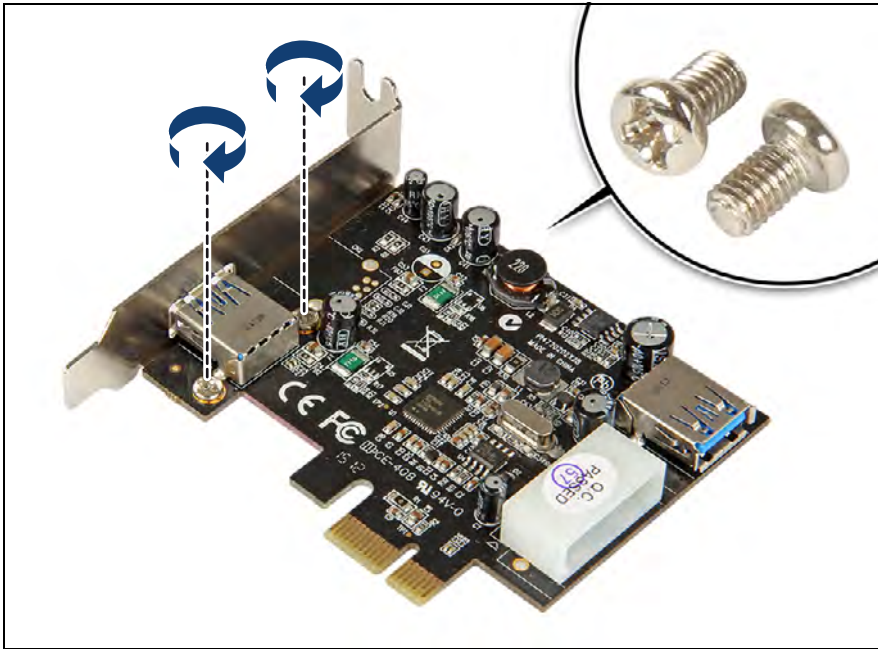


Figure 239: Mounting the PCI slot bracket (B)

- ▶ Secure the slot bracket to the controller with the two M3 x 5 mm screws contained in the expansion card kit.

9.2.1.3 Removing PCI slot bracket

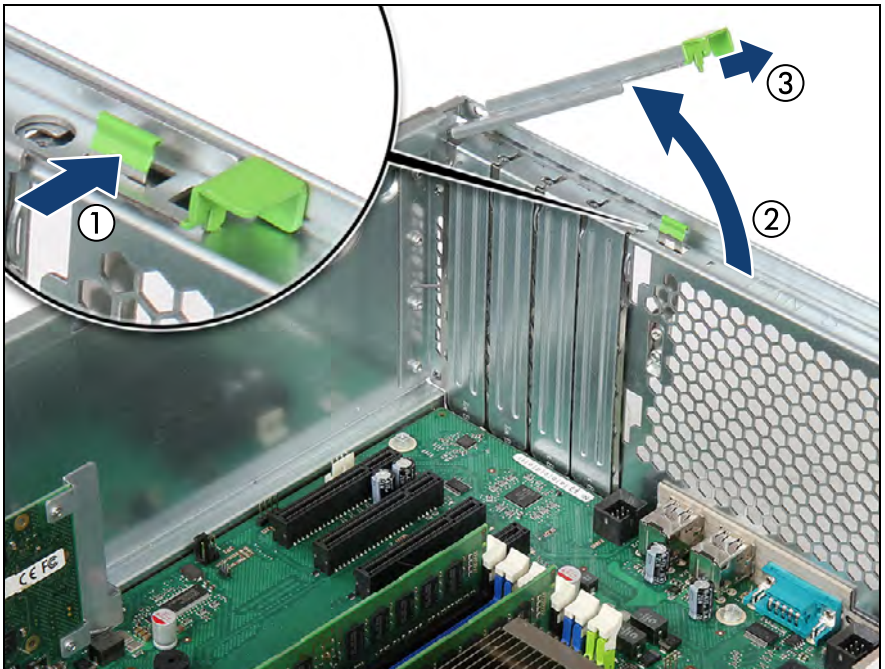


Figure 240: Removing the PCI slot bracket (A)

- ▶ Press out on the locking latch to disengage the PCI slot bracket locking bar (1, see close-up).
- ▶ Fold up (2) and remove (3) the PCI slot bracket locking bar.



Figure 241: 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.



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 ["Preparing the expansion card" on page 350](#).



CAUTION!

In order to satisfy cooling requirements, ensure to use a perforated full height slot bracket (C26192-Y35-C20).

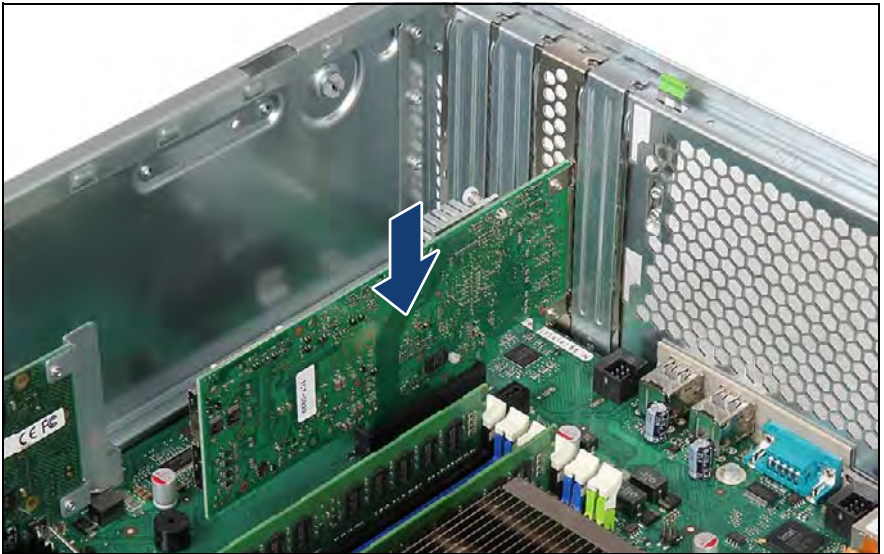


Figure 242: Installing the expansion card

- ▶ Carefully insert the expansion card into the desired PCI slot and press down firmly until it is fully seated in the slot.

i For slot preferences, please refer to section ["Basic information" on page 346](#).

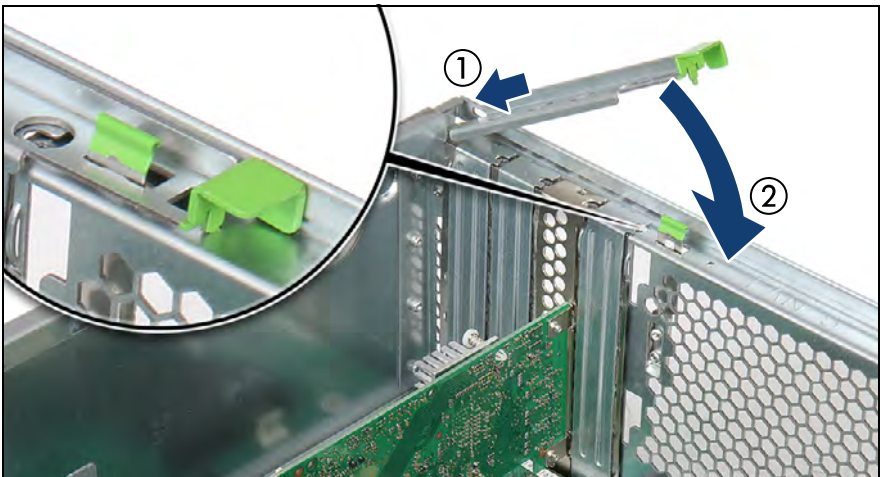


Figure 243: Securing the expansion card

Expansion cards and backup units

- ▶ Secure InfiniBand cards with one M3 x 4.5 mm screw each.



In case of all other standard expansion cards, fixation with the locking bar is sufficient.

- ▶ Insert (1) and close the PCI slot bracket locking bar (2) until the latch locks in place (see close-up).
- ▶ If applicable, install SFP+ transceiver modules into the new expansion card.

9.2.1.5 Connecting cables to the expansion card

- ▶ If applicable, connect internal cables to the expansion card.



For a complete cabling overview, please refer to section ["Cabling overviews" on page 738](#).

9.2.1.6 Connecting a backup unit to the expansion card

- ▶ If applicable, connect a BBU or FBU to the expansion card as described in sections ["Installing a BBU" on page 435](#) or ["Installing an FBU" on page 440](#).

9.2.1.7 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ Reconnect all external cables to the replaced expansion card.
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ After installing or replacing a Modular RAID controller, update the firmware as described in section ["Updating RAID controller firmware" on page 137](#).
- ▶ 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 138](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

- ▶ If applicable, restore LAN teaming configurations as described in section ["After replacing / upgrading LAN controllers"](#) on page 157.

9.2.2 Removing expansion cards



Upgrade and Repair Unit (URU)



**Average task duration:
5 minutes**

Tools: tool-less

9.2.2.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality"](#) on page 125
- ▶ ["Shutting down the server"](#) on page 62
- ▶ ["Disconnecting the server from the mains"](#) on page 63
- ▶ Remove all external cables from the expansion card to be removed.
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack"](#) on page 64
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server"](#) on page 68.
- ▶ ["Removing the system air duct"](#) on page 81

9.2.2.2 Removing an expansion card

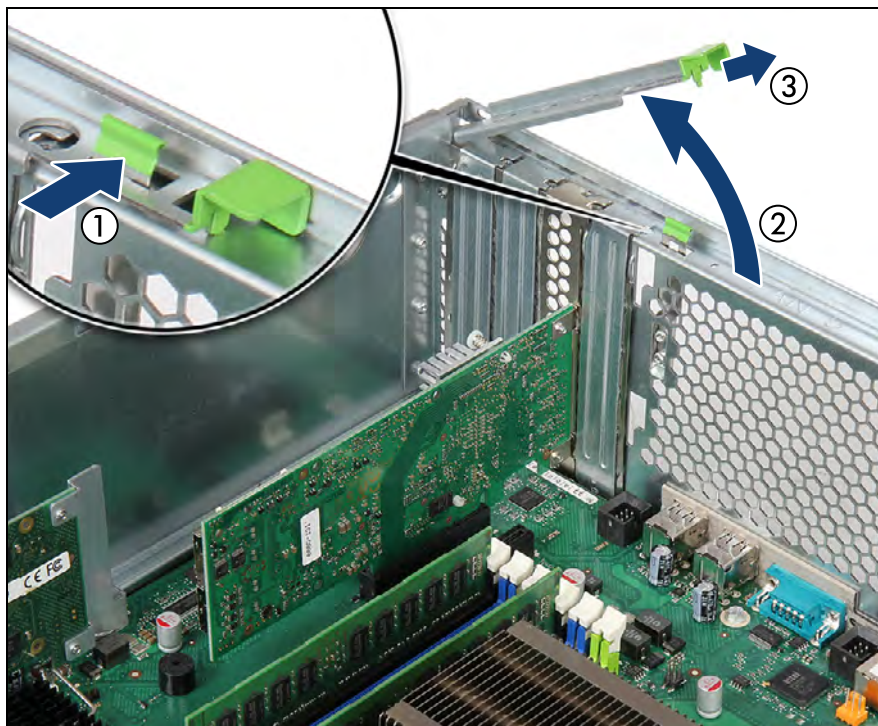


Figure 244: Removing an expansion card (A)

- ▶ If applicable, remove SFP+ transceiver modules from the expansion card.
- ▶ Press out on the locking latch to disengage the PCI slot bracket locking bar (1, see close-up).
- ▶ Fold up (2) and remove (3) the PCI slot bracket locking bar.

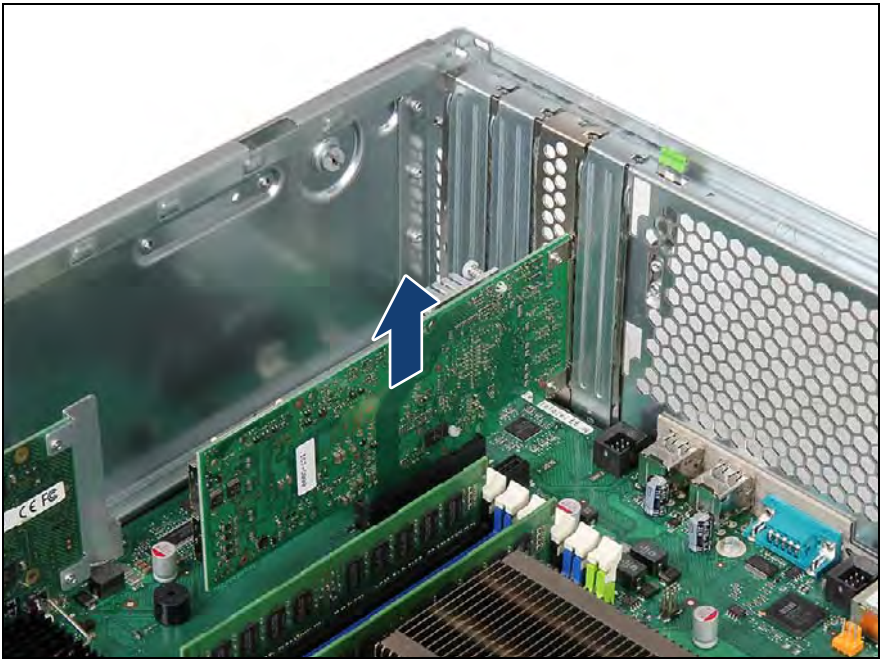


Figure 245: Removing an expansion card (B)

- ▶ Carefully pull up on the expansion card in a vertical motion and remove it from its slot.

9.2.2.3 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 246: Installing a PCI slot bracket (A)

- ▶ Insert a PCI slot bracket into the unused PCI slot opening.

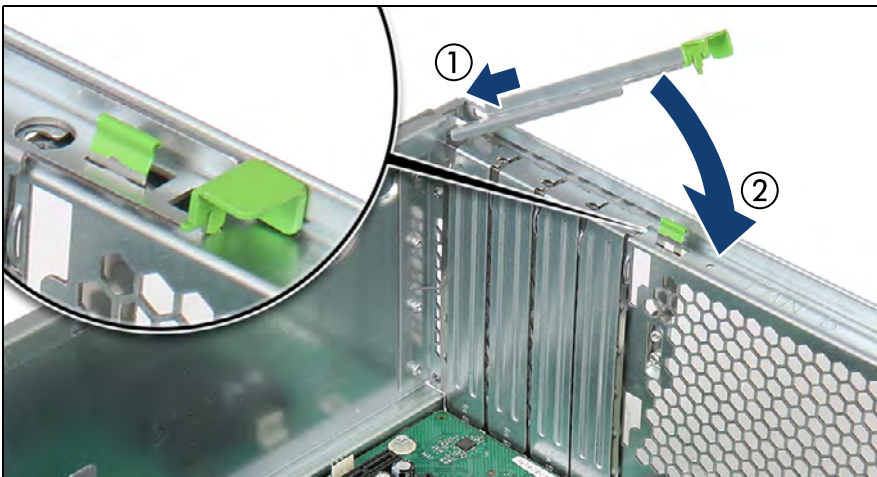


Figure 247: Installing a PCI slot bracket (B)

- ▶ Insert (1) and close the PCI slot bracket locking bar (2) until the latch locks in place (see close-up).

9.2.2.4 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

9.2.3 Replacing expansion cards



**Upgrade and Repair Unit
(URU)**



**Average task duration:
10 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

Note on network settings recovery



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 controller or the system board.

9.2.3.1 Preliminary steps

- ▶ If applicable, ensure to note down your current network settings in the operating system. For further information, please refer to section ["Note on network settings recovery" on page 361](#).
- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)

- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Remove all external cables from the expansion card to be replaced.
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ Locate the defective expansion card using the onboard Local Diagnostic LEDs as described in section ["Onboard indicators and controls" on page 779](#).

9.2.3.2 Removing an expansion card

- ▶ If applicable, remove SFP+ transceiver modules from the expansion card to be removed.
- ▶ Remove the defective expansion card as described in section ["Removing expansion cards" on page 357](#).
- ▶ If the slot bracket on the defective expansion card is to be reused, remove it from the board as described in section ["Preparing the expansion card" on page 350](#).

9.2.3.3 Installing an expansion card

- ▶ If applicable, install a slot bracket on the new expansion card as described in section ["Preparing the expansion card" on page 350](#).
- ▶ Install the new expansion card as described in section ["Installing expansion cards" on page 349](#).
- ▶ If applicable, reinstall SFP+ transceiver modules on the new expansion card.

9.2.3.4 Connecting cables to the expansion card

- ▶ If applicable, connect internal cables to the expansion card.



For a complete cabling overview, please refer to section ["Cabling overviews"](#) on page 738.

9.2.3.5 Connecting a backup unit to the expansion card

- ▶ If applicable, connect a BBU or FBU to the expansion card as described in sections ["Installing a BBU"](#) on page 435 or ["Installing an FBU"](#) on page 440.

9.2.3.6 Concluding steps

- ▶ ["Installing the system air duct"](#) on page 83
- ▶ ["Closing the server"](#) on page 98
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack"](#) on page 115
- ▶ Reconnect all external cables to the replaced expansion card.
- ▶ ["Connecting the server to the mains"](#) on page 118
- ▶ Enable the PCI slot of the replaced expansion card as described in section ["Enabling replaced components in the system BIOS"](#) on page 147.
- ▶ Inform the customer about changed WWN and MAC addresses. For further information, refer to section ["Looking up changed MAC / WWN addresses"](#) on page 153.
- ▶ After replacing a network controller in a server running Linux OS, update its MAC address in the related NIC definition file as described in section ["Updating the NIC configuration file in a Linux environment"](#) on page 150.
- ▶ After installing or replacing a Modular RAID controller, update the firmware as described in section ["Updating RAID controller firmware"](#) on page 137.
- ▶ ["Enabling SVOM boot watchdog functionality"](#) on page 146
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality"](#) on page 152
- ▶ If applicable, reconfigure your network settings in the operation system according to the original configuration of the replaced controller (expansion card or onboard).

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 361](#).

- ▶ If applicable, restore LAN teaming configurations as described in section ["After replacing / upgrading LAN controllers" on page 157](#).

9.3 Modular LAN controller in PCI slot 1

i PCI slot 1 is the preferred slot for Modular LAN controllers with NCSI connector.

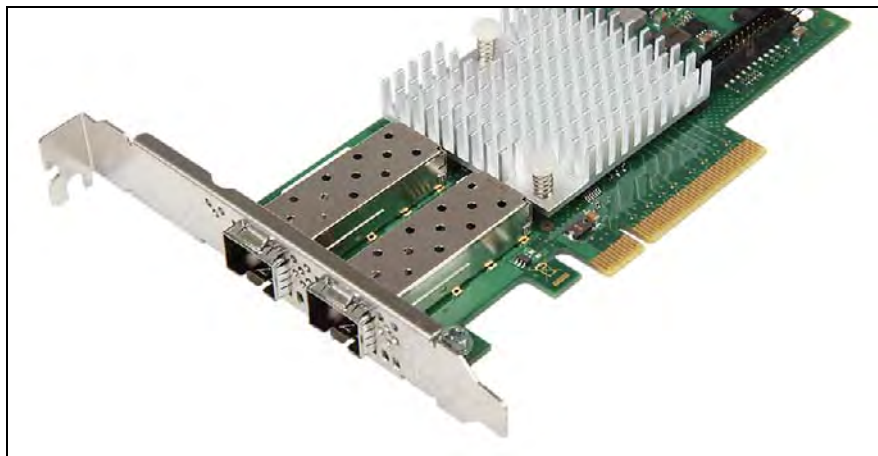


Figure 248: Modular LAN controller D2755

9.3.1 Installing the Modular LAN controller



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

9.3.1.1 Preliminary steps

- ▶ "Suspending BitLocker functionality" on page 125
- ▶ "Disabling SVOM boot watchdog functionality" on page 127
- ▶ "Shutting down the server" on page 62
- ▶ "Disconnecting the server from the mains" on page 63
- ▶ When working on a rack-mounted server:
 - ▶ "Extending / removing the server from the rack" on page 64
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section "Opening the server" on page 68.
- ▶ "Removing the system air duct" on page 81

9.3.1.2 Preparing the Modular LAN controller

Mounting the slot bracket

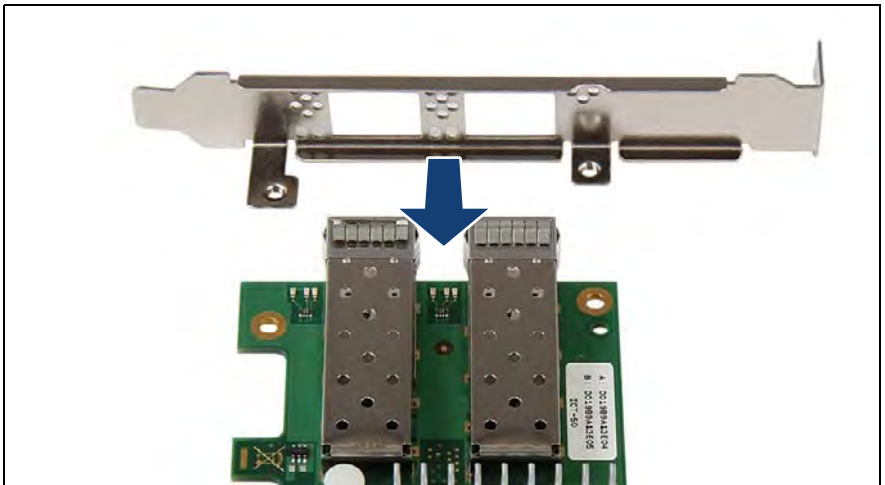


Figure 249: Mounting the PCI slot bracket (A)

- ▶ Place the controller on the mounting tabs on the slot bracket.
- ▶ Carefully shift the slot bracket towards the controller until the plug shells engage with the cut-outs in the slot bracket connector panel.

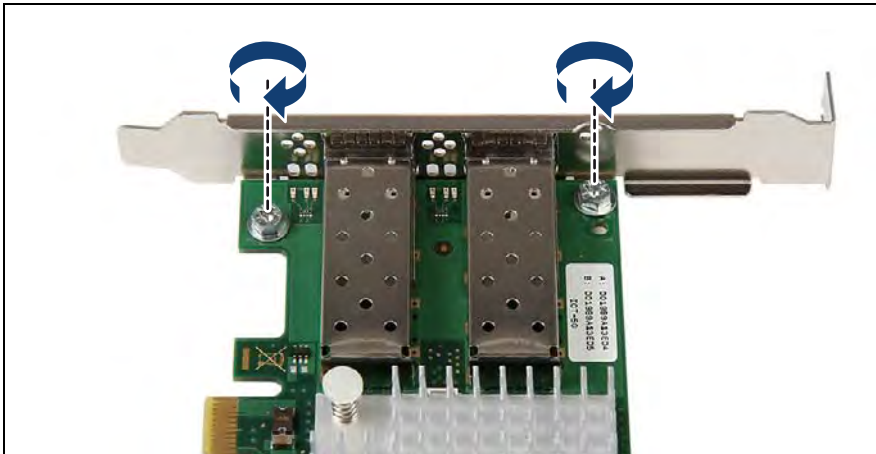


Figure 250: Mounting the PCI slot bracket (B)

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

Connecting the NCSI sideband cable to the Modular LAN controller

i Connecting the NCSI sideband cable is only necessary in order to use the Modular LAN controller as a shared LAN interface, that allows both, management and dedicated LAN connections.

If the Modular LAN controller is to be used for dedicated network connections only, please skip this section.

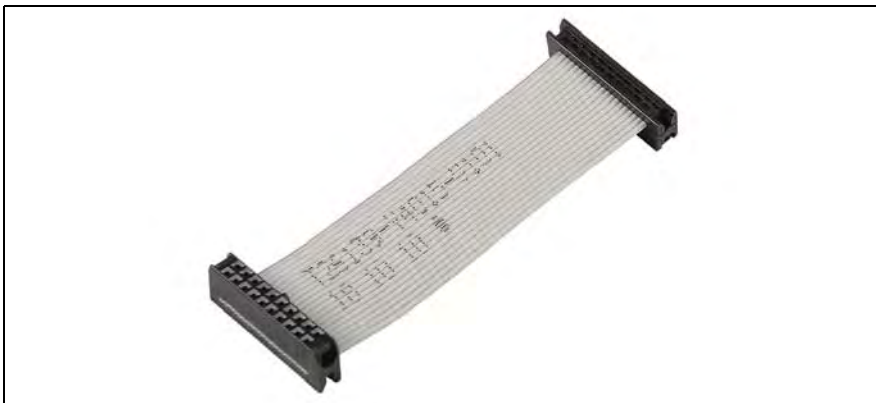


Figure 251: NCSI sideband cable

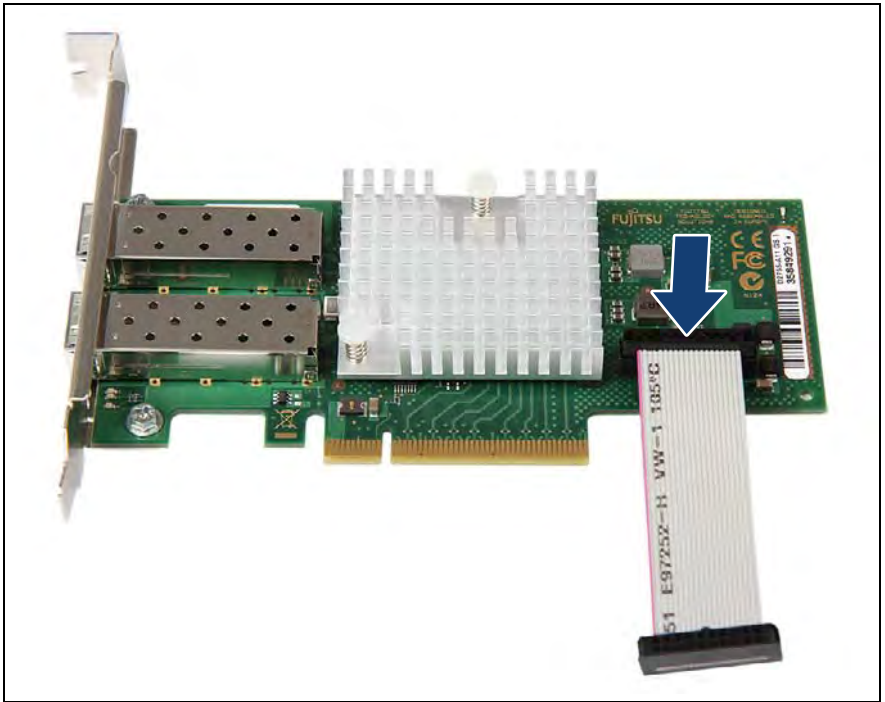


Figure 252: Connecting the NCSI sideband cable to the Modular LAN controller

- ▶ Connect the NCSI sideband cable to the Modular LAN controller:

Connector	Cable
20-pin connector	NCSI sideband cable T26139-Y4015-V101



For a complete cabling overview, please refer to section ["Cabling overviews"](#) on page 738.

9.3.1.3 Removing PCI slot bracket

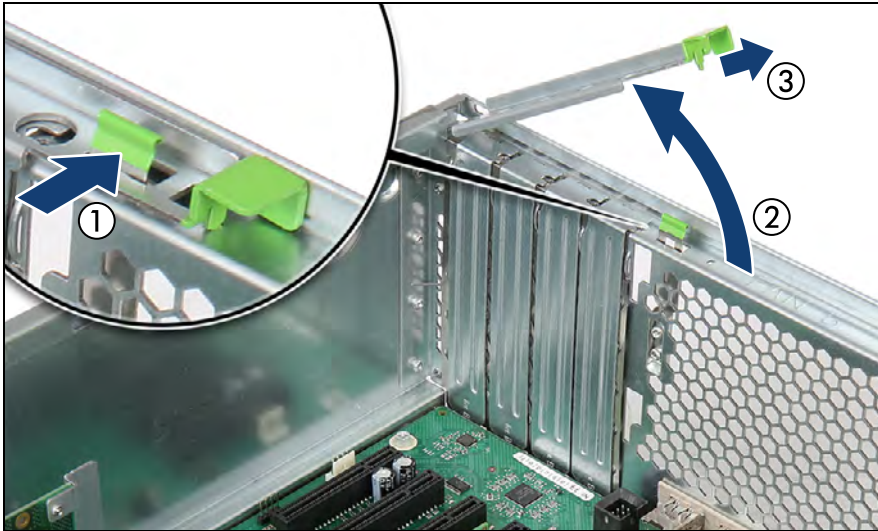


Figure 253: Removing the PCI slot bracket (A)

- ▶ Press out on the locking latch to disengage the PCI slot bracket locking bar (1, see close-up).
- ▶ Fold up (2) and remove (3) the PCI slot bracket locking bar.



Figure 254: 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.

9.3.1.4 Installing the Modular LAN controller

- ▶ Remove the Modular LAN controller from its protective packaging.



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

- ▶ If applicable, attach the enclosed full height slot bracket to the Modular LAN controller as described in section ["Preparing the Modular LAN controller" on page 365](#).



Figure 255: Installing the Modular LAN controller

- ▶ Carefully insert the Modular LAN controller into PCI slot 1 and press down firmly until it is fully seated in the slot.

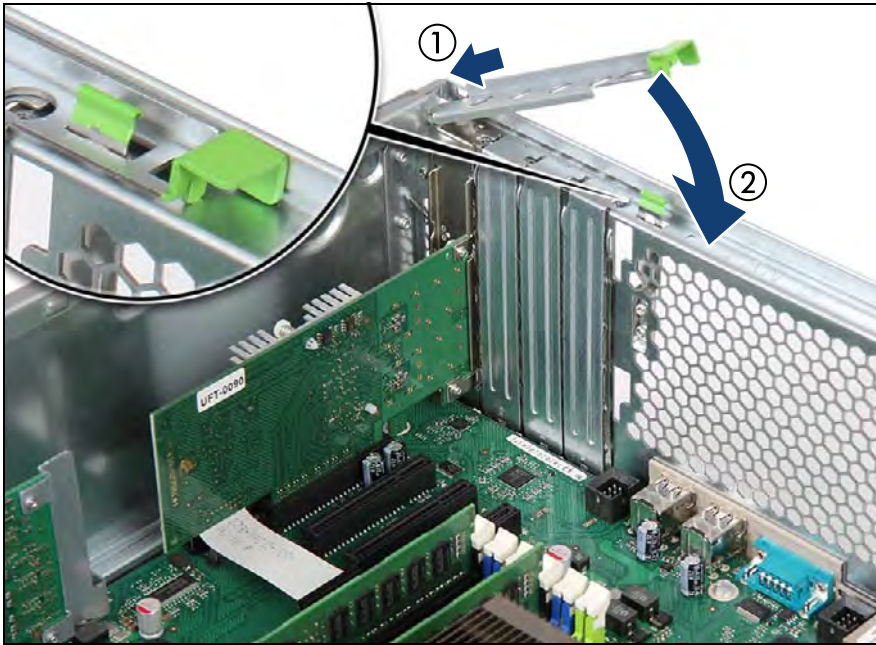


Figure 256: Securing the Modular LAN controller

- ▶ Insert (1) and close the PCI slot bracket locking bar (2) until the latch locks in place (see close-up).
- ▶ If applicable, install SFP+ transceiver modules into the Modular LAN controller.

Connecting the NCSI sideband cable to the system board



Connecting the NCSI sideband cable is only necessary in order to use the Modular LAN controller as a shared LAN interface, that allows both, management and dedicated LAN connections.

If the Modular LAN controller is to be used for dedicated network connections only, please skip this section.



Figure 257: Connecting the NCSI sideband cable to the system board

- ▶ Connect the loose end of the NCSI sideband cable to the system board:

Connector	Cable
NC-SI	NCSI sideband cable T26139-Y4015-V101

9.3.1.5 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ Reconnect all external cables to the replaced expansion card.

- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ 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 138](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)
- ▶ If applicable, restore LAN teaming configurations as described in section ["After replacing / upgrading LAN controllers" on page 157](#)

9.3.1.6 Concluding software tasks

If the Modular LAN controller is to be used as a shared LAN interface, please proceed as follows:

- ▶ Ensure that the NCSI cable has been connected to the Modular LAN controller and the system board as described in sections ["Connecting the NCSI sideband cable to the Modular LAN controller" on page 366](#) and ["Connecting the NCSI sideband cable to the system board" on page 370](#).
- ▶ Enter the BIOS.
- ▶ Select the *Server Mgmt* menu.
- ▶ Under *iRMC LAN Parameters Configuration* set the *Management LAN Port* setting to *Shared 2*.
- ▶ Save your changes and exit the BIOS.



For detailed information on how to access the BIOS and modify settings, refer to the "System Board D2949 BIOS Setup Utility" reference manual.

9.3.2 Removing the Modular LAN controller



**Upgrade and Repair Unit
(URU)**



**Average task duration:
5 minutes**

Tools: tool-less

9.3.2.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Remove all external cables from the expansion card to be removed.
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

9.3.2.2 Removing the Modular LAN controller

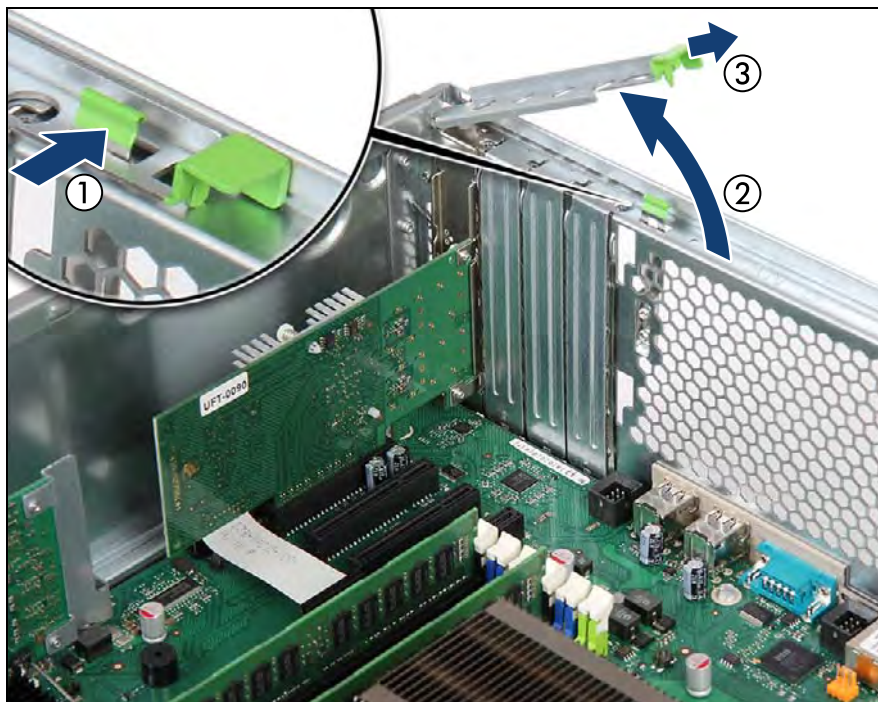


Figure 258: Detaching the Modular LAN controller

- ▶ If applicable, remove SFP+ transceiver modules from the Modular LAN controller.
- ▶ Press out on the locking latch to disengage the PCI slot bracket locking bar (1, see close-up).
- ▶ Fold up (2) and remove (3) the PCI slot bracket locking bar.



Figure 259: Disconnecting the NCSI sideband cable

- ▶ Disconnect the NCSI sideband cable from the system board.

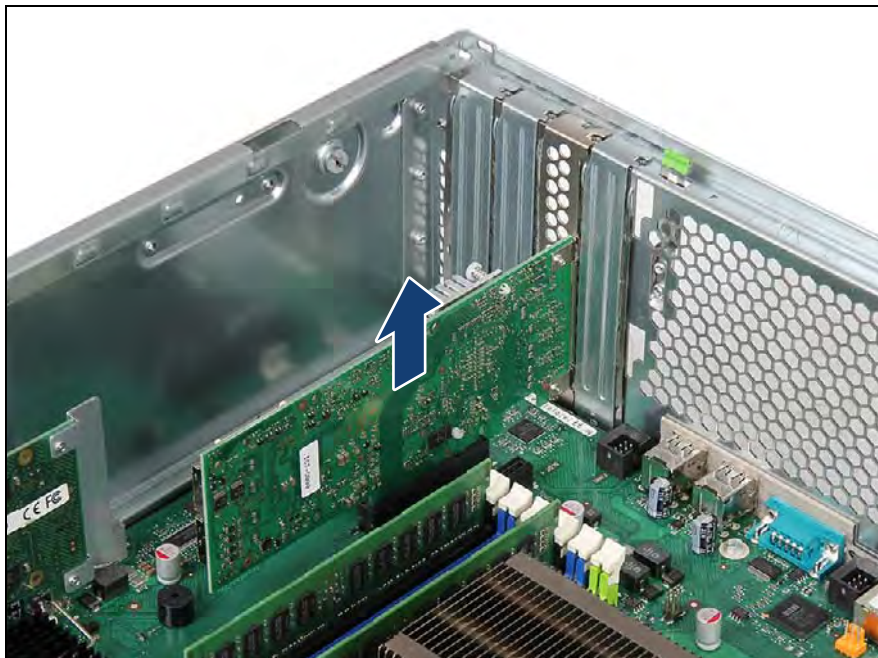


Figure 260: Removing the Modular LAN controller

- ▶ Carefully pull up on the Modular LAN controller in a vertical motion and remove it from its slot.

9.3.2.3 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.

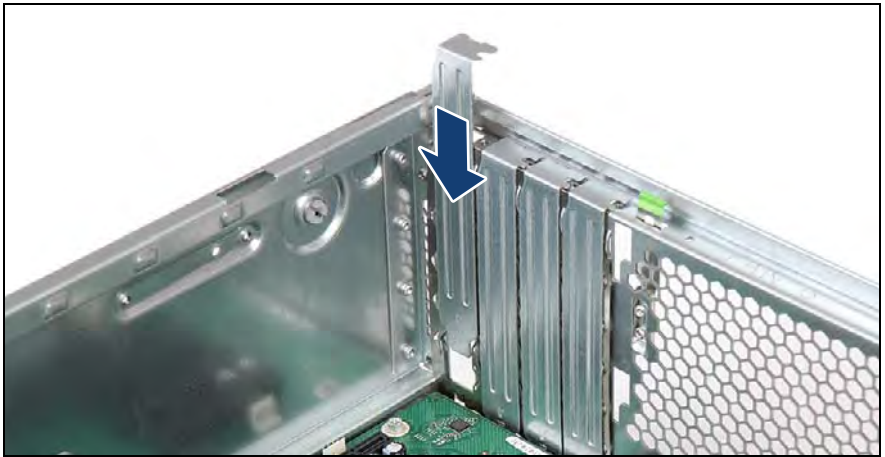


Figure 261: Installing a PCI slot bracket (A)

- ▶ Insert a PCI slot bracket into the unused PCI slot opening.

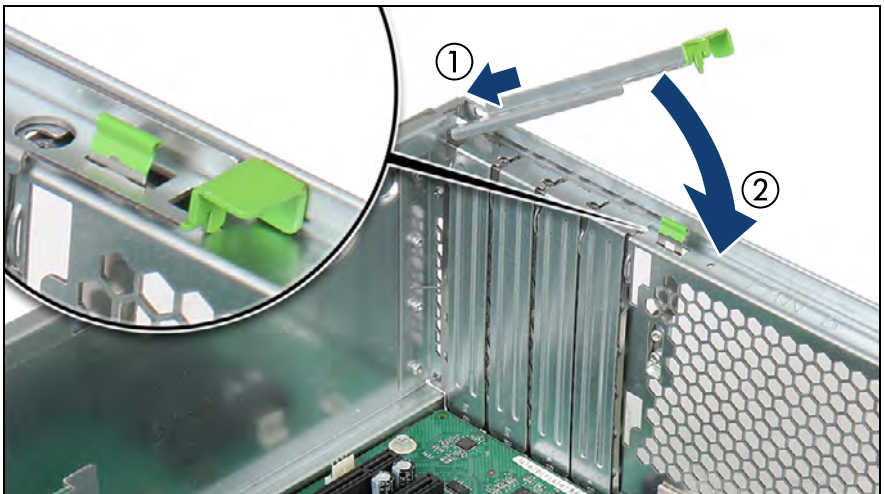


Figure 262: Installing a PCI slot bracket (B)

Expansion cards and backup units

- ▶ Insert (1) and close the PCI slot bracket locking bar (2) until the latch locks in place (see close-up).

9.3.2.4 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

9.3.3 Replacing the Modular LAN controller



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

Note on network settings recovery



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 controller or the system board.

9.3.3.1 Preliminary steps

- ▶ Ensure to note down your current network settings in the operating system. For further information, please refer to section ["Note on network settings recovery" on page 361](#).
- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)

- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Remove all external cables from the expansion card to be replaced.
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ Locate the defective expansion card using the onboard Local Diagnostic LEDs as described in section ["Onboard indicators and controls" on page 779](#).

9.3.3.2 Removing the Modular LAN controller

- ▶ If applicable, remove SFP+ transceiver modules from the Modular LAN controller to be removed.
- ▶ Remove the defective Modular LAN controller as described in section ["Removing the Modular LAN controller" on page 373](#).
- ▶ If the slot bracket on the defective Modular LAN controller is to be reused, remove it from the board as described in section ["Preparing the Modular LAN controller" on page 365](#).

9.3.3.3 Installing the Modular LAN controller

- ▶ If applicable, install a slot bracket on the new Modular LAN controller as described in section ["Preparing the Modular LAN controller" on page 365](#).
- ▶ Install the new Modular LAN controller as described in section ["Installing the Modular LAN controller" on page 364](#).
- ▶ If applicable, reinstall SFP+ transceiver modules on the new Modular LAN controller.

9.3.3.4 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ Reconnect all external cables to the replaced expansion card.
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ Enable the PCI slot of the replaced expansion card as described in section ["Enabling replaced components in the system BIOS" on page 147](#).
- ▶ Inform the customer about changed WWN and MAC addresses. For further information, refer to section ["Looking up changed MAC / WWN addresses" on page 153](#).
- ▶ After replacing a network controller in a server running Linux OS, update its MAC address in the related NIC definition file as described in section ["Updating the NIC configuration file in a Linux environment" on page 150](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)
- ▶ Reconfigure your network settings in the operation system according to the original configuration of the replaced controller (expansion card or onboard).



Configuration of network settings should be performed by the customer.

For further information, please refer to section ["Note on network settings recovery" on page 378](#).

- ▶ If applicable, restore LAN teaming configurations as described in section ["After replacing / upgrading LAN controllers" on page 157](#).

9.4 GPGPU / coprocessor cards in PCI slots 6 and 8

i PCI slots 6 and 8 are the preferred slots for GPGPU cards (General Purpose Graphics Processing Units) and coprocessor cards.

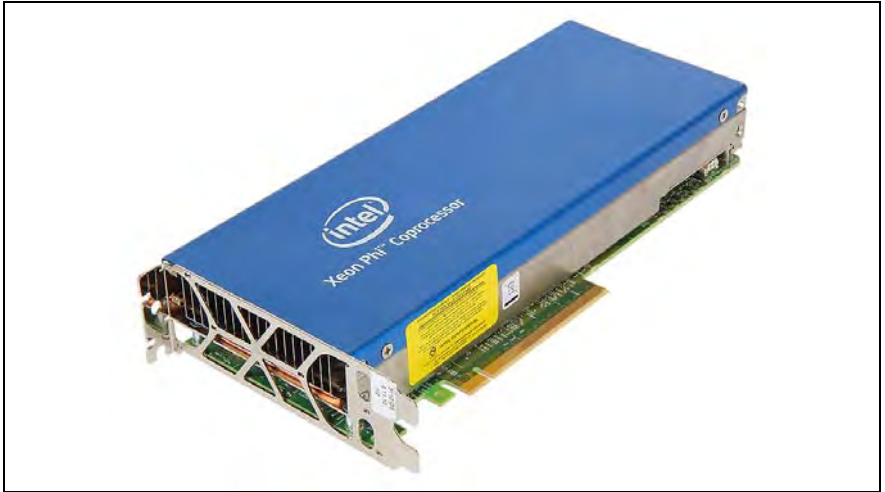


Figure 263: Coprocessor card Intel Xeon Phi 3120P / 5110P / 7120P



Figure 264: GPGPU card Nvidia TESLA K20 / K20X / K40

9.4.1 GPGPU / coprocessor card overview

Coprocessor / GPGPU card	Product number S26361-	Max. Power	Fan required ¹	Cabling plan
Intel Xeon Phi 3120P	D3260-V312	300 W	HP	16.2.22
Intel Xeon Phi 31S1P	D3260-V313	270 W	HP	16.2.22
Intel Xeon Phi 5110P	D3260-V511	225 W	STD	16.2.21
Intel Xeon Phi 5110P	D3260-V511	225 W	STD	16.2.21
Intel Xeon Phi 7120P	D3260-V712	300 W	HP	16.2.22
Nvidia TESLA K20	D3000-V22	225 W	STD	16.2.21
Nvidia TESLA K20X	D3000-V24	235 W	STD	16.2.21
Nvidia TESLA K40	D3000-V40	235 W	STD	16.2.21
Nvidia GRID K1	D3000-V1	130 W	STD	16.2.21
Nvidia GRID K2	D3000-V2	225 W	STD	16.2.21

¹ **STD:** Standard fan module (A3C40133739)
HP: High performance fan module (A3C40171937)

9.4.2 Installing a GPGPU / coprocessor card



Field Replaceable Unit (FRU)



Average task duration: 10 minutes

Tools: *Coprocessor card Intel Xeon Phi:*

- Phillips PH1 / (+) No. 1 screw driver
- Flat nose pliers

GPGPU card Nvidia TESLA / GRID:

- Phillips PH2 / (+) No. 2 screw driver
- Flat nose pliers

9.4.2.1 Preliminary software tasks



iRMC firmware and system board BIOS updates as well as modifications to BIOS settings may be necessary for your GPGPU or coprocessor card to operate properly.



CAUTION!

Failing to do so may permanently damage your system or result in unstable operation.

All required information on firmware / BIOS versions and BIOS settings can be found in the following Quick Installation Guides:

- "Getting started with accelerator cards - Nvidia Tesla K20/K20X GPGPU"
- "Getting started with accelerator cards - Intel Xeon Phi Coprocessor Card"

Both documents are available online at <http://manuals.ts.fujitsu.com> (<http://jp.fujitsu.com/platform/server/primergy/manual/> for the Japanese market).

- ▶ Before installing a GPGPU or coprocessor card, perform the following mandatory tasks as described in your card's "Getting started with accelerator cards" Quick Installation Guide:
 - ▶ Ensure that the correct iRMC firmware has been installed.
 - ▶ Ensure that the correct system board BIOS version has been installed.
 - ▶ Enable the *Above 4G Decoding* setting in the system board BIOS.

9.4.2.2 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
 - ▶ ["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).

Expansion cards and backup units

- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

9.4.2.3 Connecting GPGPU / coprocessor card power cables to the power backplane



Field Replaceable Unit (FRU)



Average task duration: additional 30 minutes

Tools: Phillips PH2 / (+) No. 2 screw driver

Coprocessor / GPGPU card	Required power cable	Cabling plan
Intel Xeon Phi 3120P	T26139-Y3952-V701	16.2.22
Intel Xeon Phi 31S1P	T26139-Y3952-V701	16.2.22
Intel Xeon Phi 5110P	T26139-Y3946-V701	16.2.21
Intel Xeon Phi 5110P	T26139-Y3946-V701	16.2.21
Intel Xeon Phi 7120P	T26139-Y3952-V701	16.2.22
Nvidia TESLA K20	T26139-Y3946-V701	16.2.21
Nvidia TESLA K20X	T26139-Y3946-V701	16.2.21
Nvidia TESLA K40	T26139-Y3946-V701	16.2.21
Nvidia GRID K1	T26139-Y3946-V701	16.2.21
Nvidia GRID K2	T26139-Y3946-V701	16.2.21

Preliminary steps

- ▶ Remove the system board as described in section ["Removing the system board" on page 687](#).
- ▶ Remove the system board carrier as described in section ["Removing the system board carrier" on page 85](#)".

Basic power cabling for GPGPU / coprocessor cards



Figure 265: GPGPU / coprocessor card power cable (T26139-Y3946-V701)

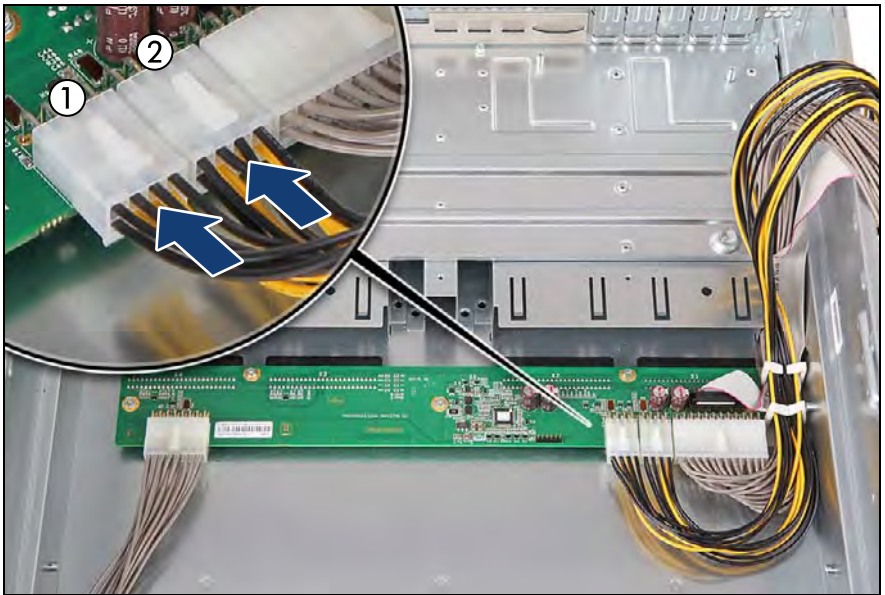


Figure 266: Connecting GPGPU / coprocessor card power cables to the power backplane

Expansion cards and backup units

- ▶ Connect the GPGPU power cables to the power backplane:

#	Connector	Cable
1	X22	GPGPU / coprocessor card power cable
2	X23	T26139-Y3946-V701

Additional power cabling for high performance coprocessor cards

i This description applies only to high performance coprocessor cards Intel Xeon Phi 3120P / 31S1P / 7120P.



Figure 267: HDD / GPGPU / coprocessor card power cable (T26139-Y3952-V701)

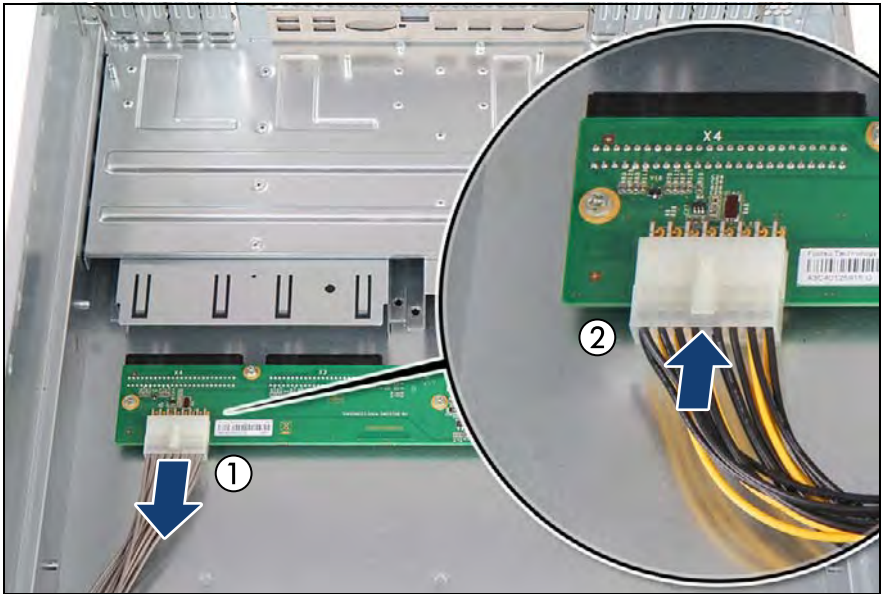


Figure 268: Installing power cable T26139-Y3952-V701 (A)

- ▶ Disconnect the HDD power cable T26139-Y3952-V601 from power backplane connector X21 (1) and the SAS backplanes and remove it from the system.
- ▶ Connect the HDD / GPGPU / coprocessor card power cable T26139-Y3952-V701 to power backplane connector X21 (2).

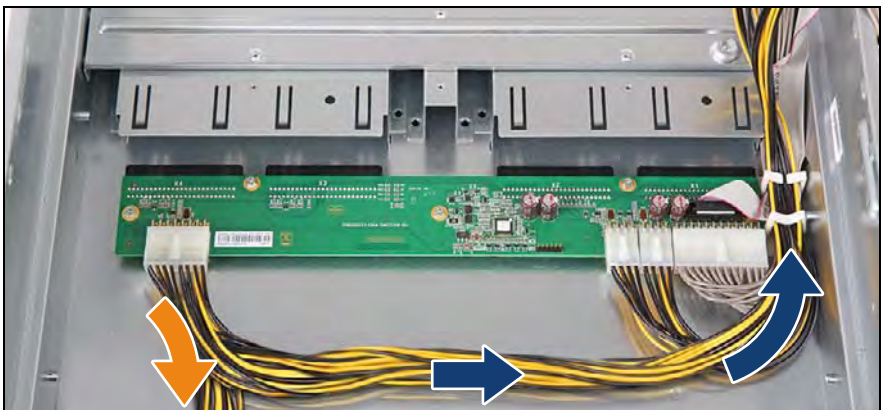


Figure 269: Installing power cable T26139-Y3952-V701 (B)

Expansion cards and backup units

- ▶ Run the two 4-conductor cables with white 4-pin connectors towards the drive cages and connect them to up to two SAS backplanes (see orange arrow).
- ▶ Run the two 6-conductor cables with black 6-pin connectors along the power backplanes and through the cable clamps as shown (see blue arrows).

Concluding steps

- ▶ Mount the system board carrier as described in section ["Installing the system board carrier" on page 88](#).



CAUTION!

Ensure not to trap or pinch any cables running through the cable exit from the power backplane.

- ▶ Reinstall the system board as described in section ["Installing the system board" on page 691](#).

9.4.2.4 Removing PCI slot brackets

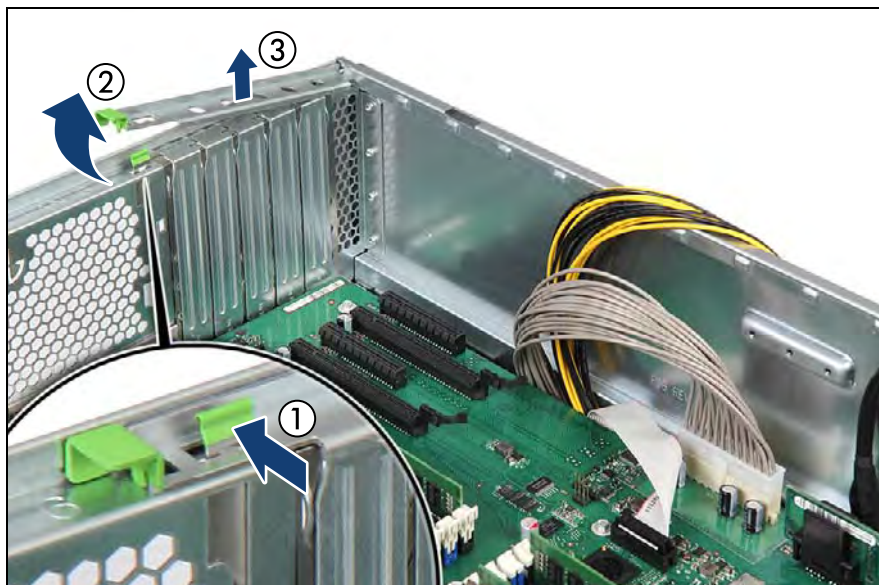


Figure 270: Removing the PCI slot bracket (A)

i Ensure that the GPGPU / coprocessor card power cables have been connected to the power backplane as described in section "[Connecting GPGPU / coprocessor card power cables to the power backplane](#)" on page 384.

- ▶ Press out on the locking latch to disengage the PCI slot bracket locking bar (1, see close-up).
- ▶ Fold up (2) and remove (3) the PCI slot bracket locking bar.

i The PCI slot mounting bar is no longer required if installing one or two GPGPU / coprocessor cards. Set aside and save the mounting bar for future use.

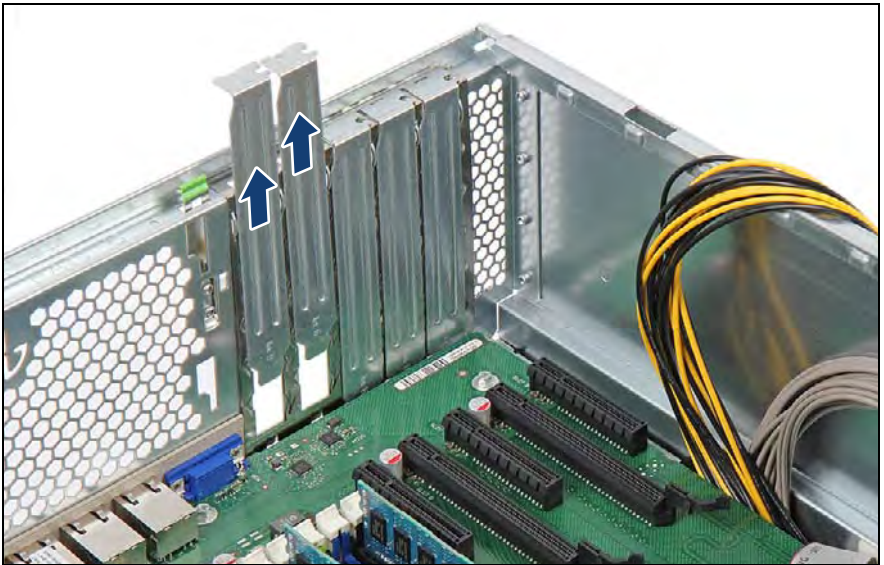


Figure 271: Removing the PCI slot bracket (B)

- ▶ Remove the slot brackets from expansion slots 5 and 6.

i If two GPGPU or coprocessor cards are to be installed, also remove the slot brackets from expansion slots 7 and 8.



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.

9.4.2.5 Preparing the GPGPU / coprocessor card mounting bracket

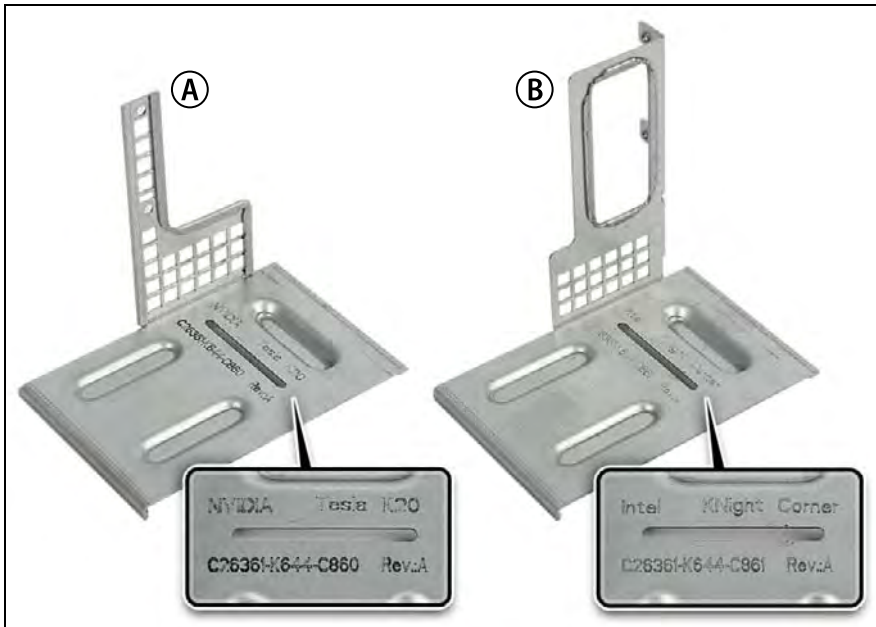


Figure 272: GPGPU / coprocessor card mounting brackets

A	for Nvidia TESLA K20 / K20X cards	C26361-K644-C860
B	for Intel Xeon Phi cards	C26361-K644-C861



Part numbers do not apply to the Japanese market.



Figure 273: Preparing the GPGPU / coprocessor card mounting bracket

- ▶ If applicable, attach the twist-lock cable holder C26192-Y53-C56 to the GPGPU / coprocessor card mounting bracket as shown.
- ▶ Align the cable holder in the middle of the two notches and right below the part number impression.

9.4.2.6 Installing the GPGPU / coprocessor card mounting bracket

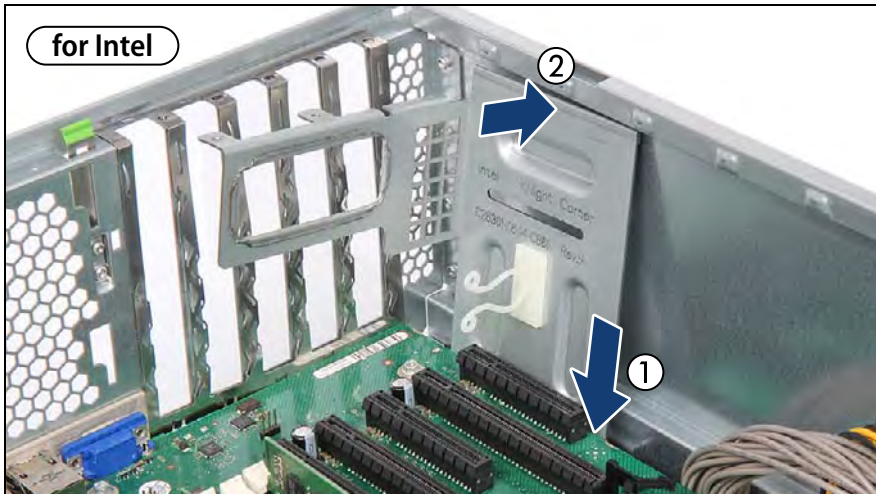


Figure 274: Installing the coprocessor card mounting bracket (Intel) (A)

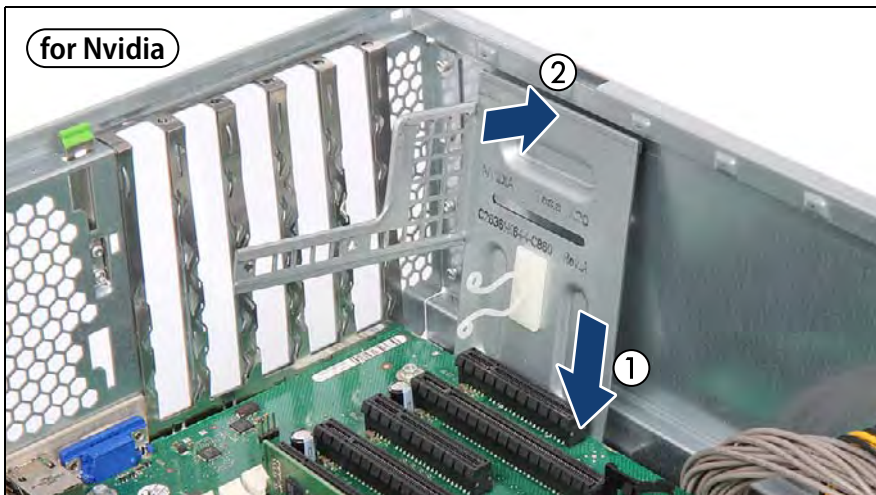


Figure 275: Installing the GPGPU card mounting bracket (Nvidia) (A)

- ▶ Place the GPGPU / coprocessor card mounting bracket in the gap next to PCI slot 9 (1).
- ▶ Tilt the upper edge of the mounting bracket toward the chassis wall (2).

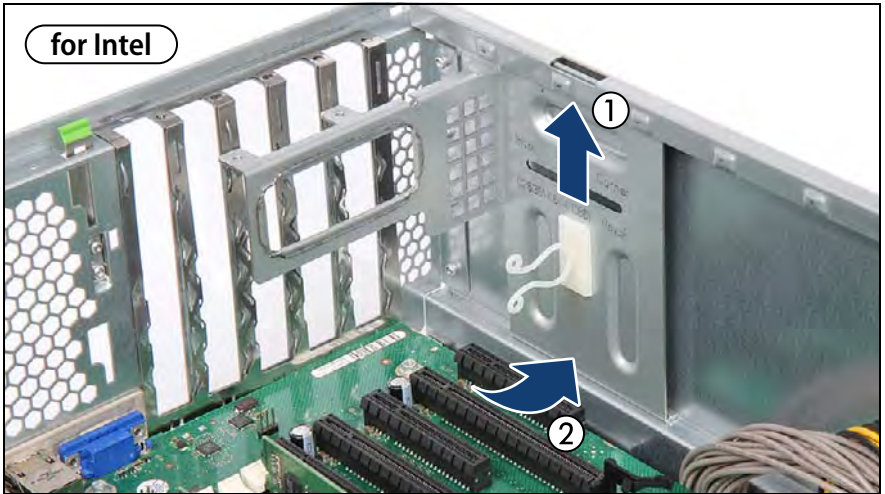


Figure 276: Installing the coprocessor card mounting bracket (Intel) (B)

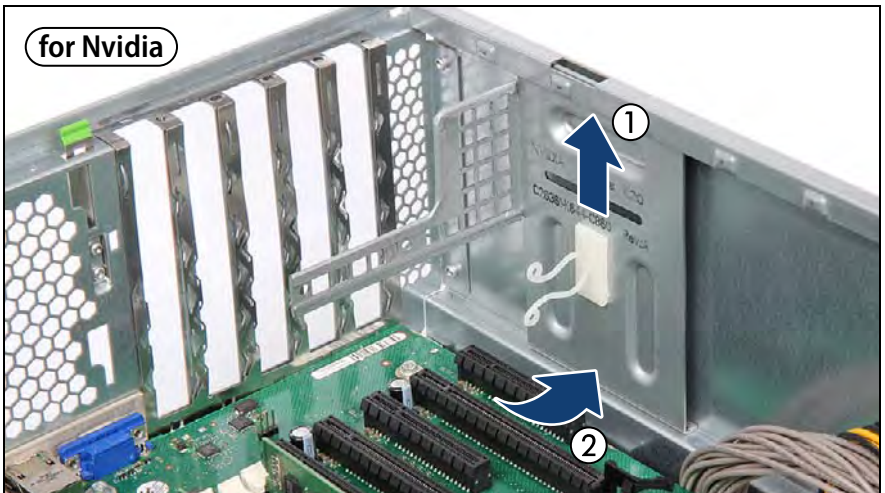


Figure 277: Installing the GPGPU card mounting bracket (Nvidia) (B)

- ▶ Hook in the GPGPU / coprocessor card mounting bracket under the upper rim of the side chassis wall as shown (1).
- ▶ Fold the lower edge of the mounting bracket toward the chassis wall as shown (2).

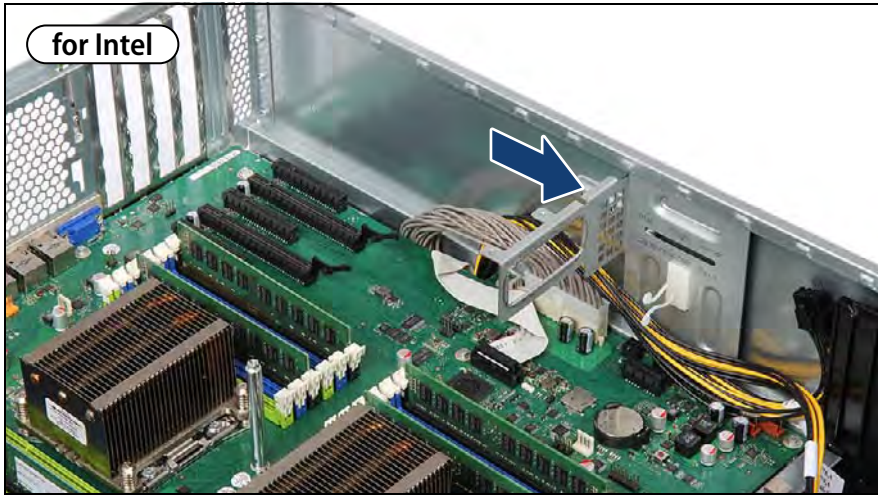


Figure 278: Installing the coprocessor card mounting bracket (Intel) (C)

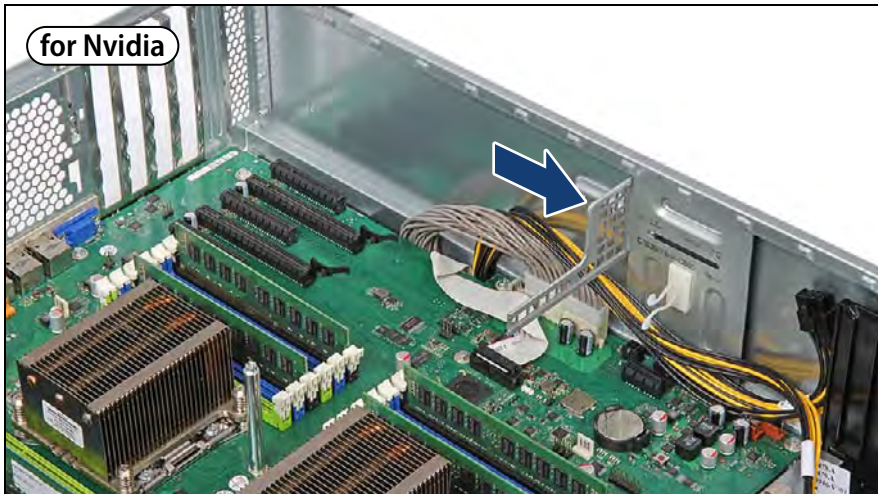


Figure 279: Installing the GPGPU card mounting bracket (Nvidia) (C)

- ▶ Slide the mounting bracket towards the server front as far as it will go.

9.4.2.7 Installing a GPGPU or coprocessor card

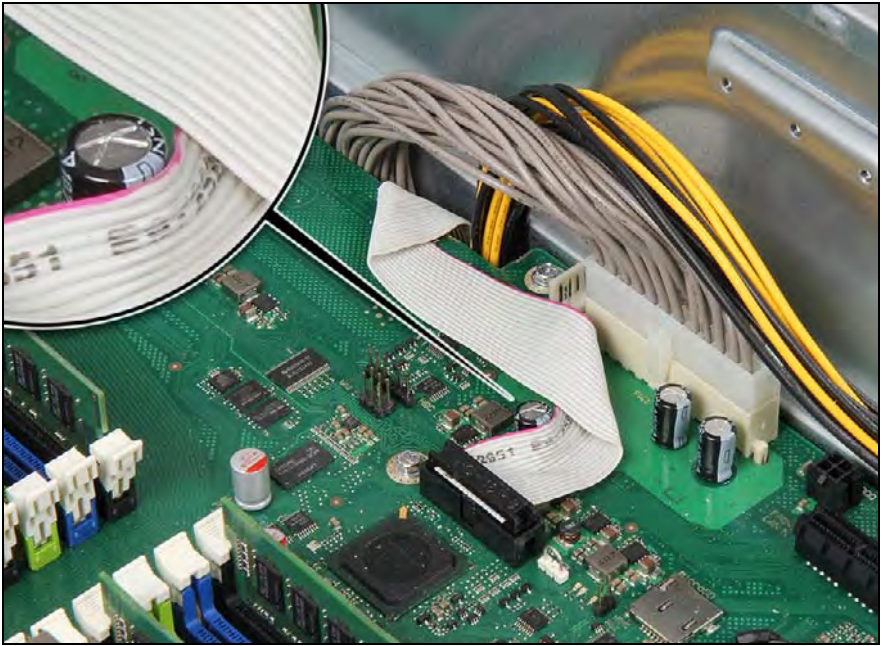


Figure 280: Routing the PSU signal cable

- ▶ Check the position of PSU signal cable T26139-Y4027-V1.



CAUTION!

The PSU signal cable must be laid as shown and must not cover the condenser.

- ▶ If necessary, correct the cable routing.
- ▶ Remove the GPGPU / coprocessor card from its protective packaging.

Expansion cards and backup units

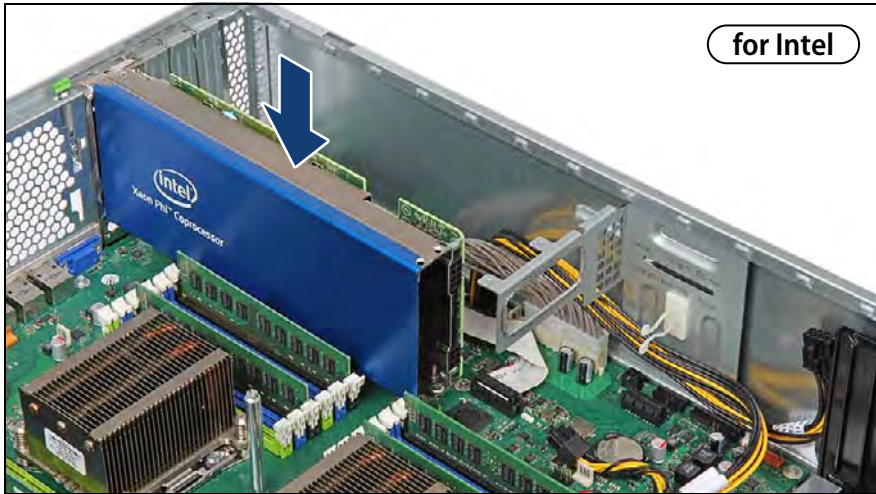


Figure 281: Installing the coprocessor card (Intel)

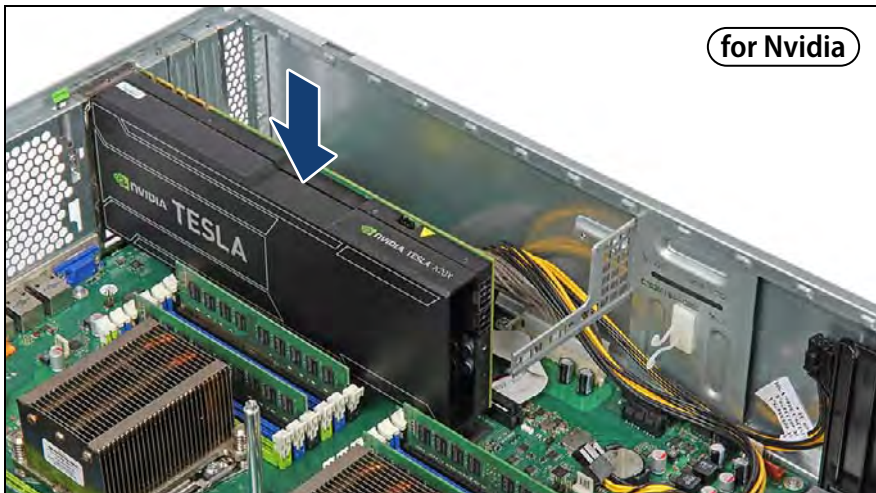


Figure 282: Installing the GPGPU card (Nvidia)

- ▶ Carefully insert the GPGPU / coprocessor card into PCI slot 6 and press down firmly until it is fully seated in the slot.

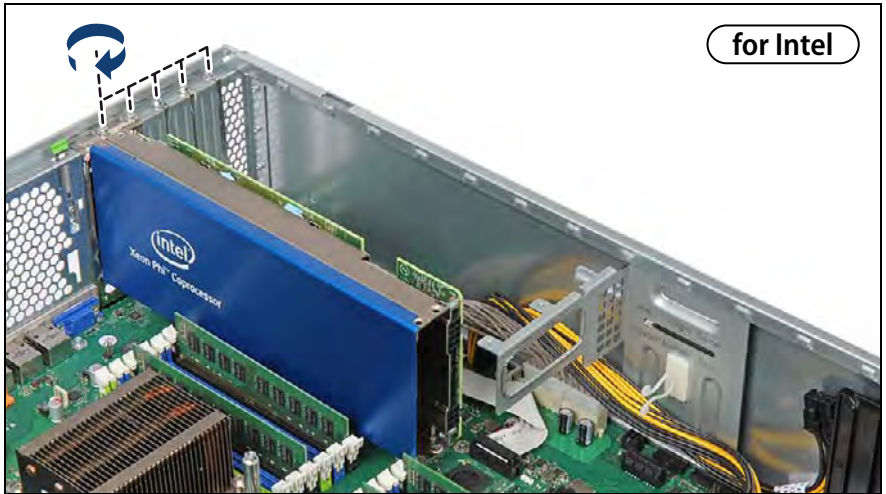


Figure 283: Securing the coprocessor card (Intel) (A)

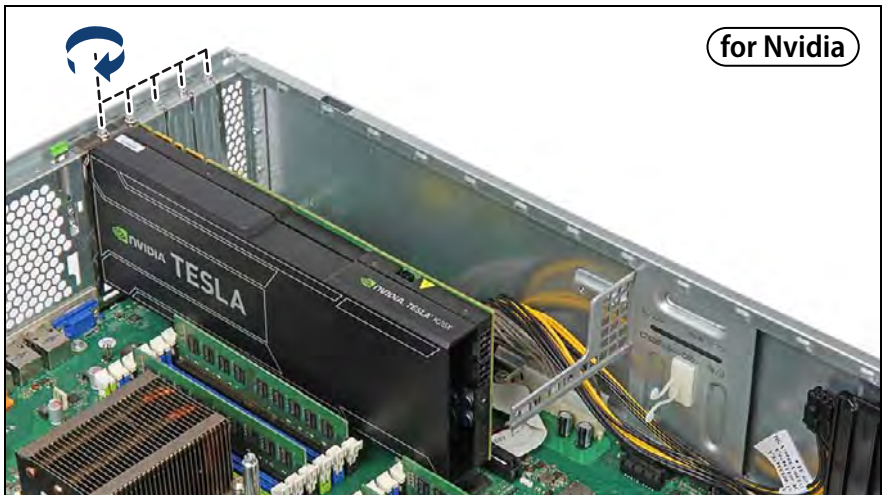


Figure 284: Securing the GPGPU card (Nvidia) (A)

- ▶ Secure the GPGPU / coprocessor card to the upper rear edge of the chassis with two M3 x 4.5 mm screws.
- ▶ While securing the card, slightly press the it towards the server rear.
- ▶ Secure all remaining slot brackets to the upper rear edge of the chassis with one M3 x 4.5 mm screw each.

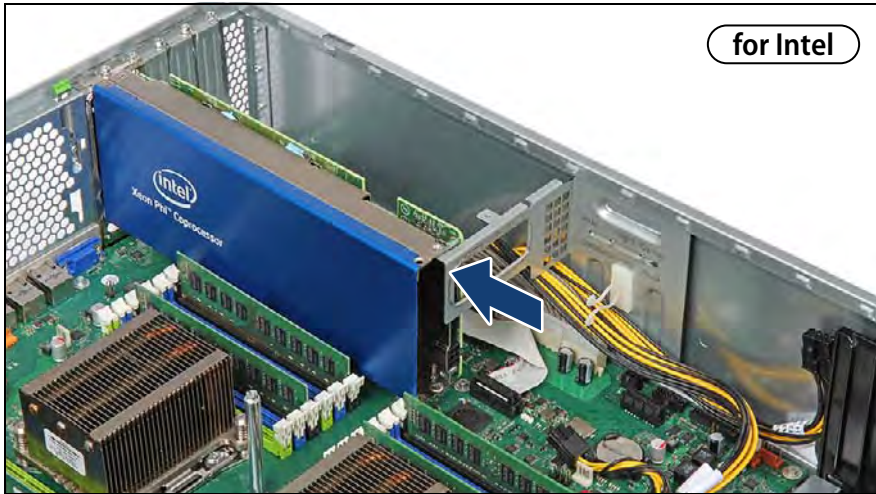


Figure 285: Securing the coprocessor card (Intel) (B)



Figure 286: Securing the GPGPU card (Nvidia) (B)

- ▶ Slide the GPGPU / coprocessor card mounting bracket towards the server rear until it touches the card.

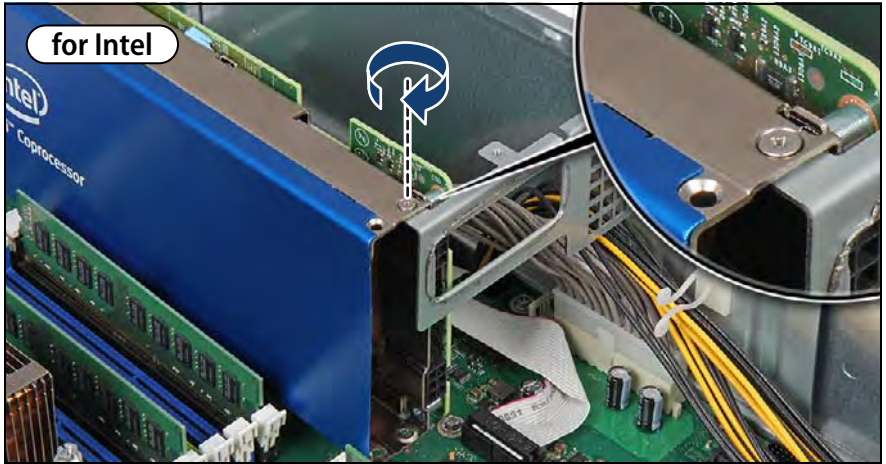


Figure 287: Securing the coprocessor card (Intel) (C)



Figure 288: Securing the GPGPU card (Nvidia) (C)

- Secure the GPGPU / coprocessor card to the mounting bracket.

	Intel cards	Nvidia cards
Screw	M3 x 4 mm flat head screw (part of the card kit)	M3 x 4.5 mm (C26192-Y10-C67)
Screw torque	0.4 Nm	0.6 Nm

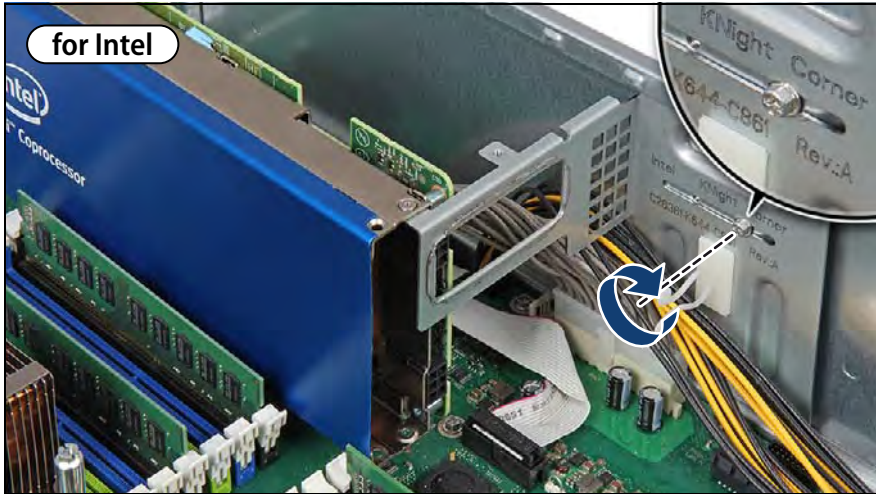


Figure 289: Securing the coprocessor card (Intel) (D)

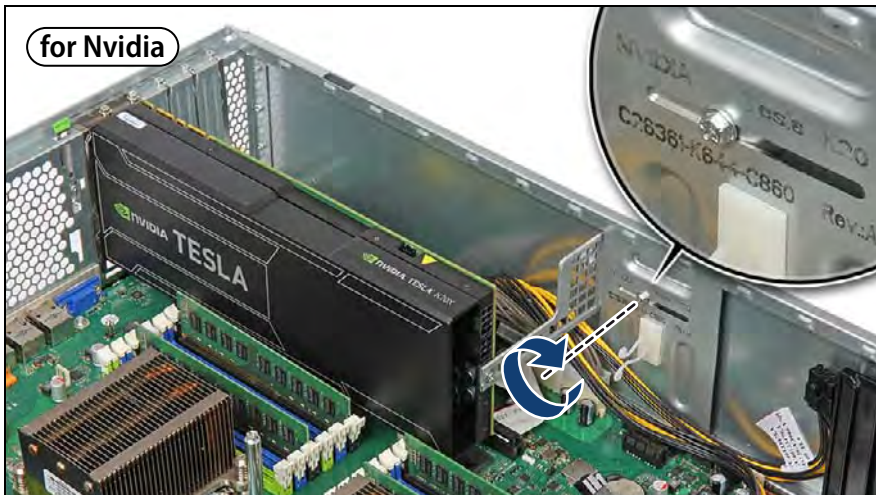


Figure 290: Securing the GPGPU card (Nvidia) (D)

- ▶ Secure the GPGPU / coprocessor card mounting bracket on the chassis wall with one M3 x 4.5 mm screw.



Use the right screw thread.

Installing a secondary GPGPU / coprocessor card

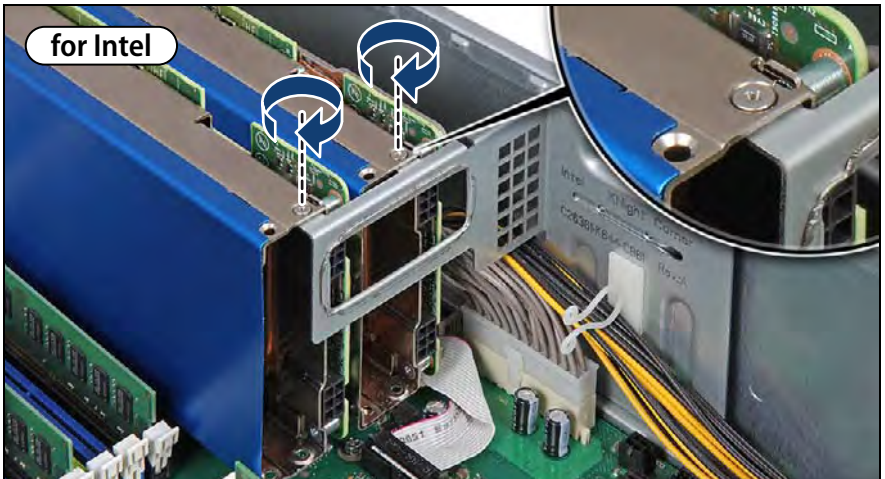


Figure 291: Installing the secondary coprocessor card (Intel)



Figure 292: Installing the secondary GPGPU card (Nvidia)

- ▶ If applicable, insert the second GPGPU / coprocessor card into PCI slot 8 and press down firmly until it is fully seated in the slot.
- ▶ Secure the secondary card in the chassis according to the primary GPGPU / coprocessor card.

9.4.2.8 Cabling the GPGPU / coprocessor card

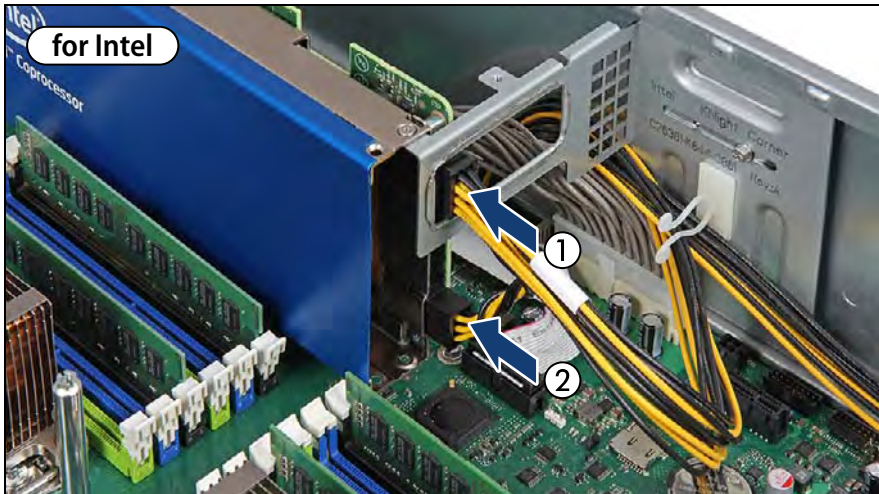


Figure 293: Cabling the primary coprocessor card (Intel)



Figure 294: Cabling the primary GPGPU card (Nvidia)

- ▶ Connect power cables to the GPGPU / coprocessor card:

- **For Intel Xeon Phi 5110P and Nvidia cards:**

	Cable	Connector
1	T26139-Y3946-V701	8-pin connector
2		6-pin connector

i For further information, please refer to cabling plan "[Cabling of standard GPGPU / coprocessor cards](#)" on page 757

- **For Intel Xeon Phi 3120P / 31S1P / 7120P cards:**

	Cable	Connector
1	T26139-Y3946-V701	8-pin connector
2	T26139-Y3952-V701	6-pin connector P1

i In case of Xeon Phi 3120P / 31S1P / 7120P cards, the standard HDD power cable T26139-Y3952-V601 is replaced by power cable T26139-Y3952-V701.

For further information, please refer to cabling plan "[Cabling of high performance GPGPU / coprocessor cards](#)" on page 758.

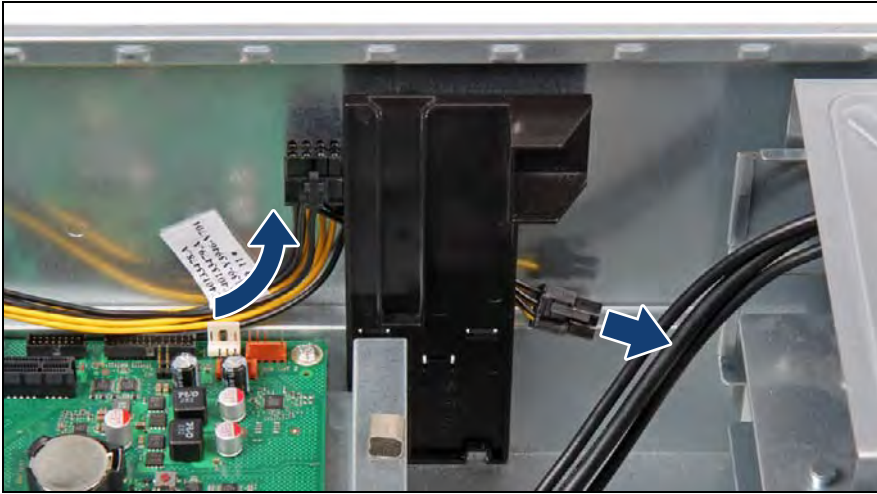


Figure 295: Routing the GPGPU card power cable

- ▶ For configurations with one GPGPU / coprocessor card:
Secure the loose ends of the unused GPGPU card power cable behind the cable guide as shown.

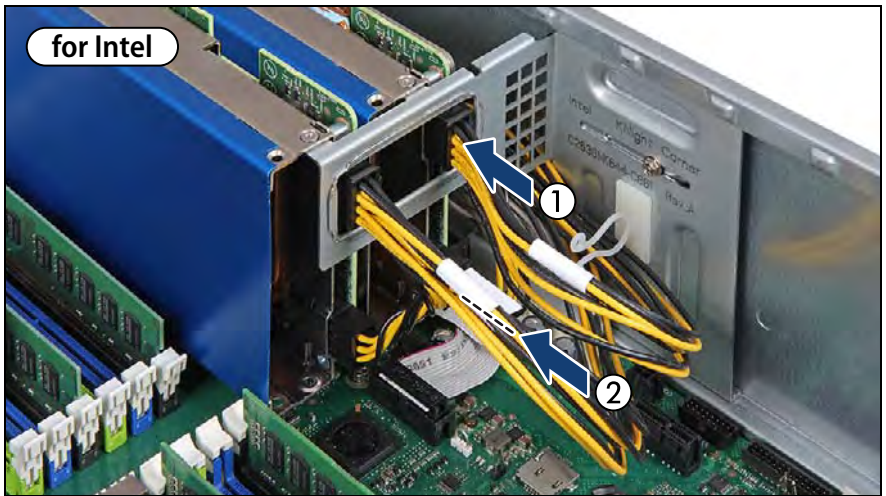


Figure 296: Cabling the secondary coprocessor card (Intel)




Figure 297: Cabling the secondary GPGPU card (Nvidia)

Expansion cards and backup units

- ▶ If applicable, power cabling of a second GPGPU / coprocessor card is performed according to the primary card:


- **For Intel Xeon Phi 5110P and Nvidia cards:**

	Cable	Connector
1	T26139-Y3946-V701	8-pin connector
2		6-pin connector

 For further information, please refer to cabling plan "[Cabling of standard GPGPU / coprocessor cards](#)" on page 757.

- **For Intel Xeon Phi 3120P / 31S1P / 7120P cards:**

	Cable	Connector
1	T26139-Y3946-V701	8-pin connector
2	T26139-Y3952-V701	6-pin connector P2

 In case of Xeon Phi 3120P / 31S1P / 7120P cards, the standard HDD power cable T26139-Y3952-V601 is replaced by power cable T26139-Y3952-V701.

For further information, please refer to cabling plan "[Cabling of high performance GPGPU / coprocessor cards](#)" on page 758.

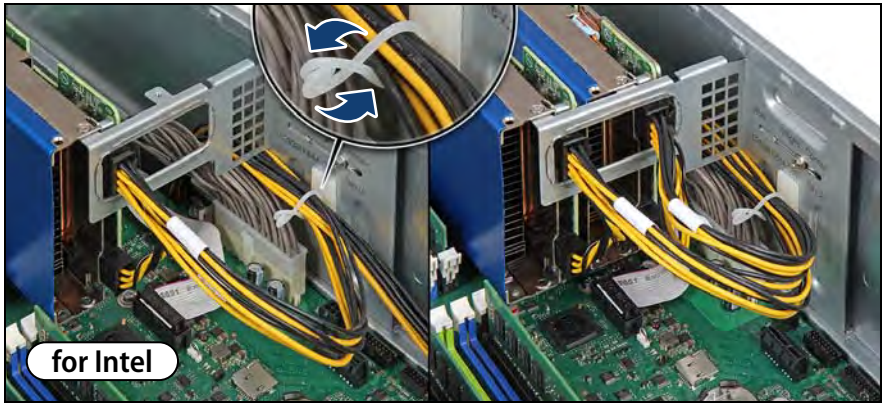


Figure 298: Securing the GPGPU power cable (Intel)

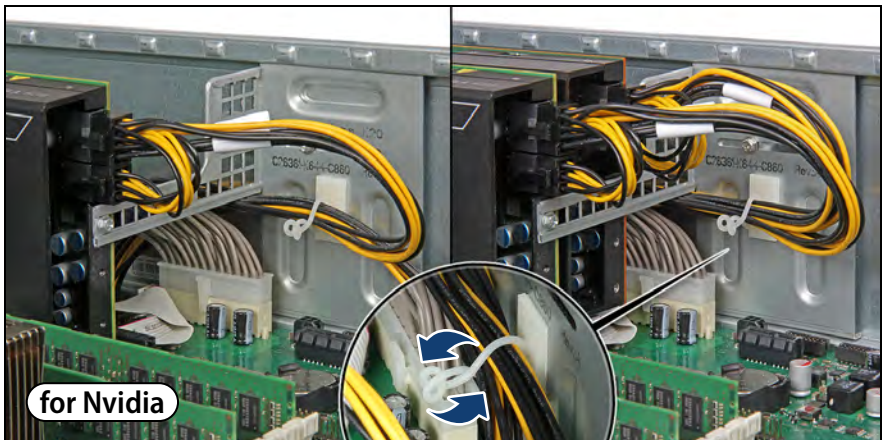


Figure 299: Securing the GPGPU power cable (Nvidia)

- ▶ Insert both power cables into the twist-lock cable holder.
- ▶ Twist both ends of the twist-lock cable holder.

9.4.2.9 Installing the GPGPU air duct

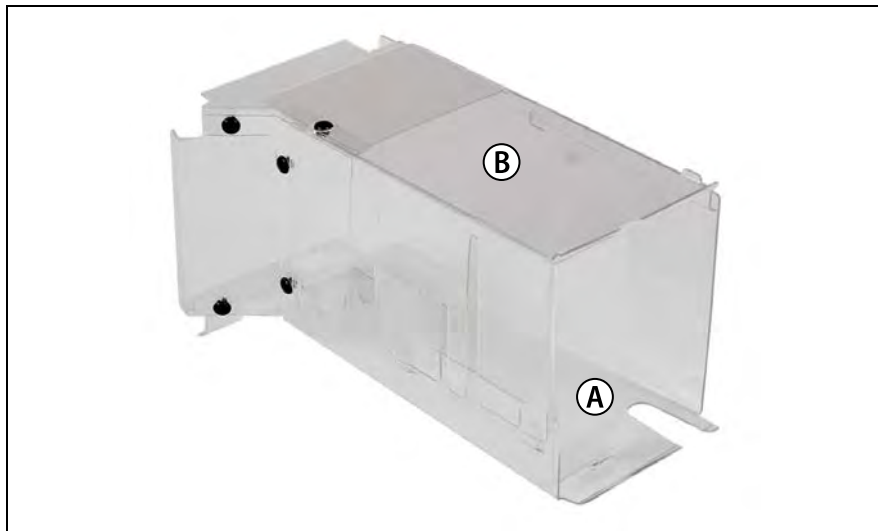


Figure 300: GPGPU air duct

	GPGPU air duct	C26361-K644-B871
A	GPGPU air duct base	C26361-K644-C870 / -C871
B	GPGPU air duct top cover	C26361-K644-C872



Part numbers do not apply to the Japanese market.

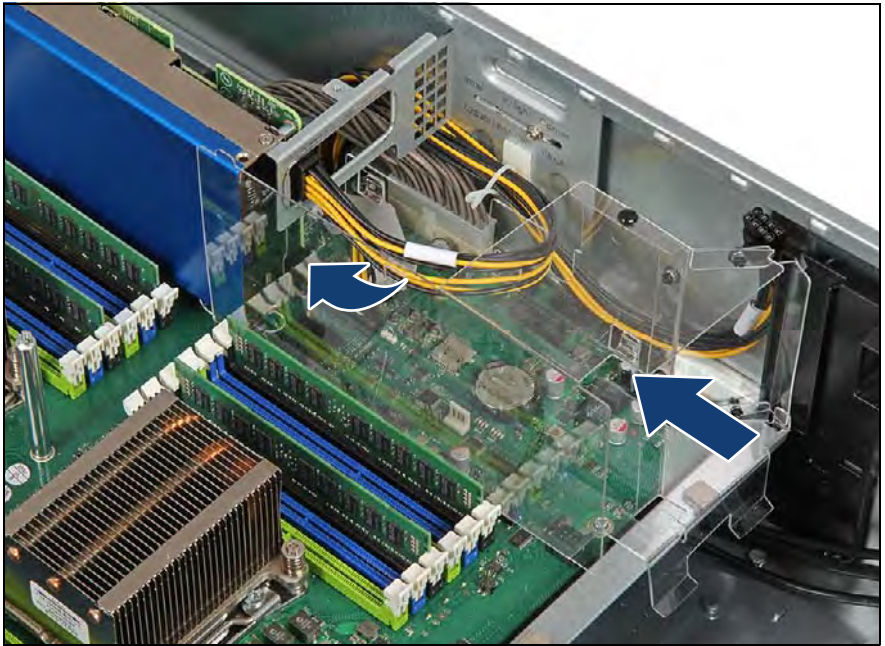


Figure 301: Installing the GPGPU air duct (A)

- ▶ From the middle of the server, slide the GPGPU air duct base into the chassis as shown.



CAUTION!

Ensure that no system board components are being damaged!

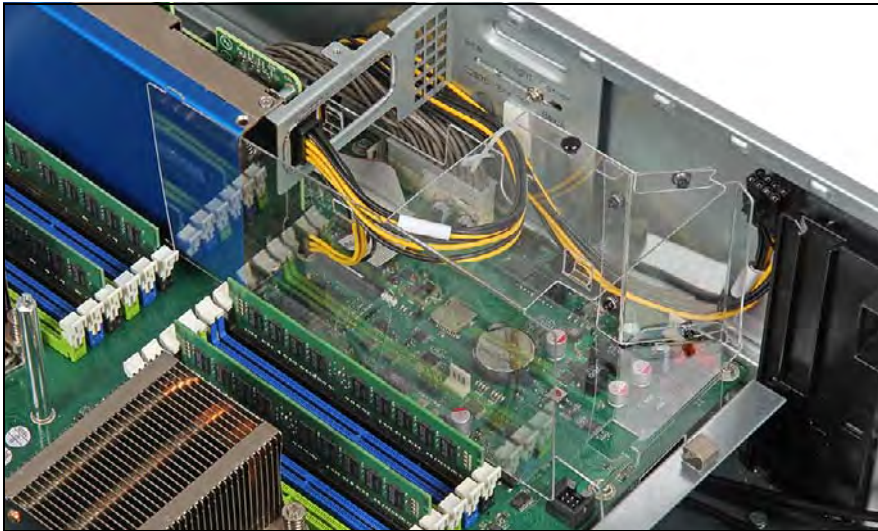


Figure 302: Fully inserted GPGPU air duct

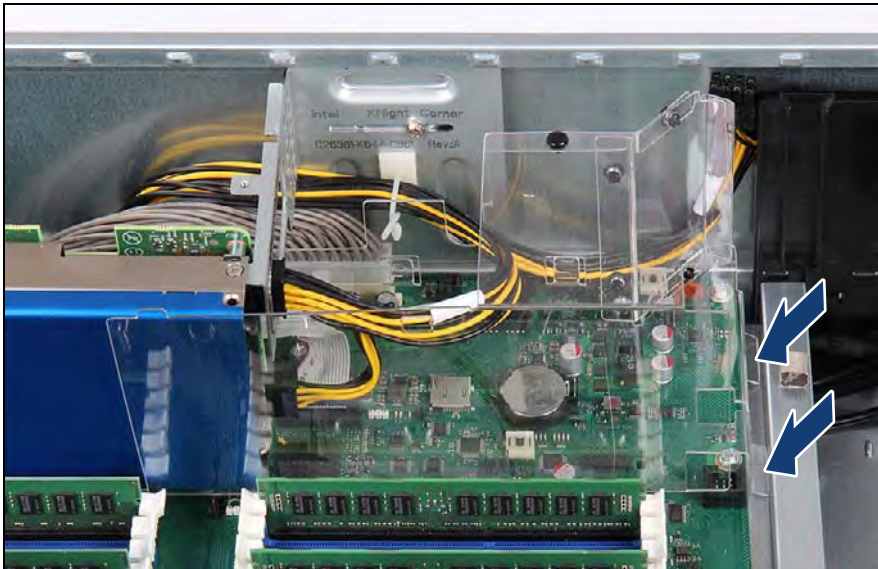


Figure 303: Installing the GPGPU air duct (B)

- ▶ Ensure that the GPGPU air duct base is properly seated in the chassis as shown above.

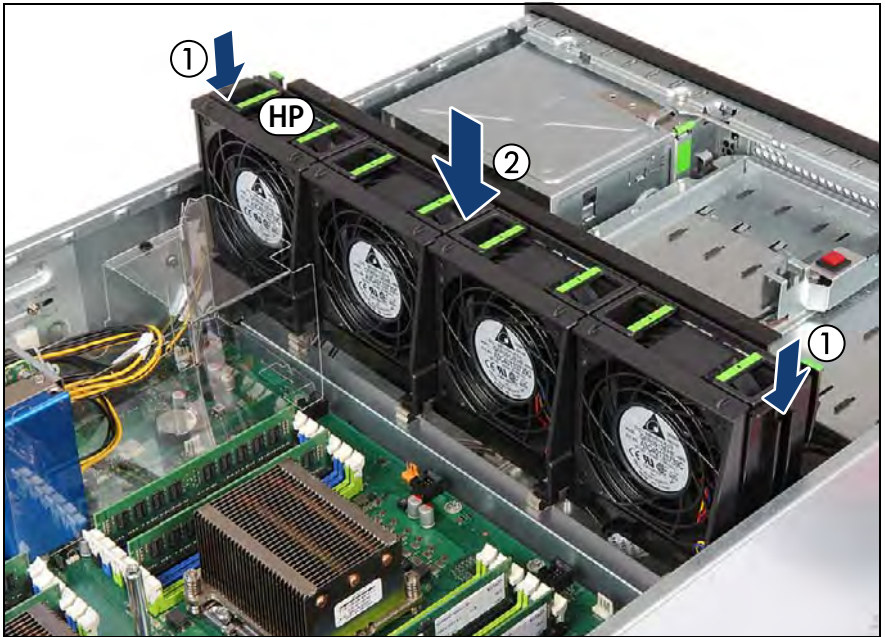


Figure 304: Installing the system fan holder (A)

- ▶ Reinstall the system fan holder as described in section "[Installing the system fan holder](#)" on [page 331](#) in order to secure the GPGPU air duct base:
 - ▶ Insert the system fan holder into its two guides (1).
 - ▶ Carefully lower the fan holder into the chassis until the two locking tabs engage (2).

i A high performance fan module (A3C40171937) is required in fan position 4 (HP) in some configurations involving one or two GPGPU / coprocessor cards. For further information, please refer to sections "[GPGPU / coprocessor card overview](#)" on [page 382](#) and "[Installing the GPGPU air duct](#)" on [page 408](#).

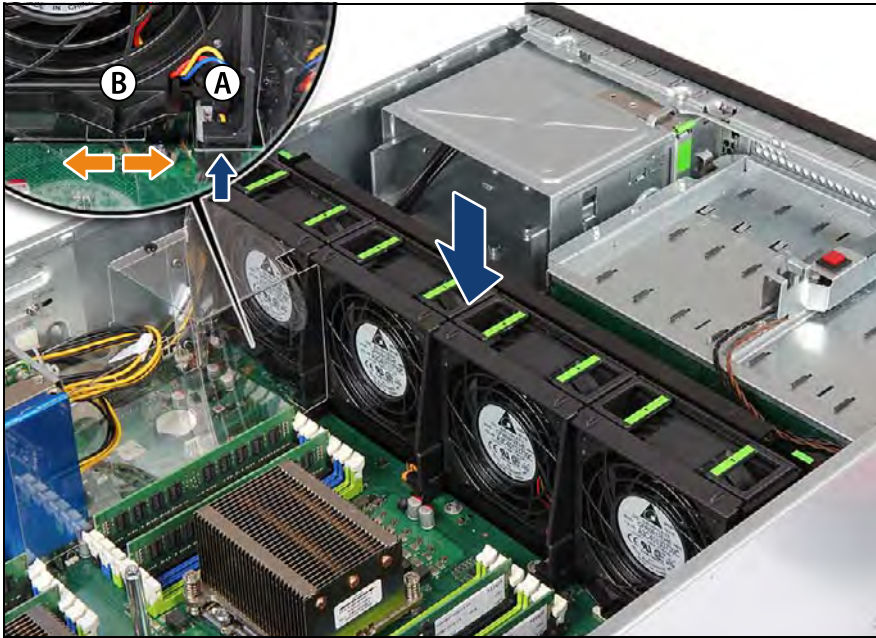


Figure 305: Installing the system fan holder (B)

- ▶ Ensure that the fan connector on the fan holder is properly seated in the dedicated opening in the GPGPU air duct (A, see close-up).
- ▶ Ensure that the system fan holder locks in place on both ends. To do so, slightly move the GPGPU air duct to the left and right (see orange arrows) until the V-shaped groove (B) fully rests in the dedicated opening in the GPGPU air duct base.

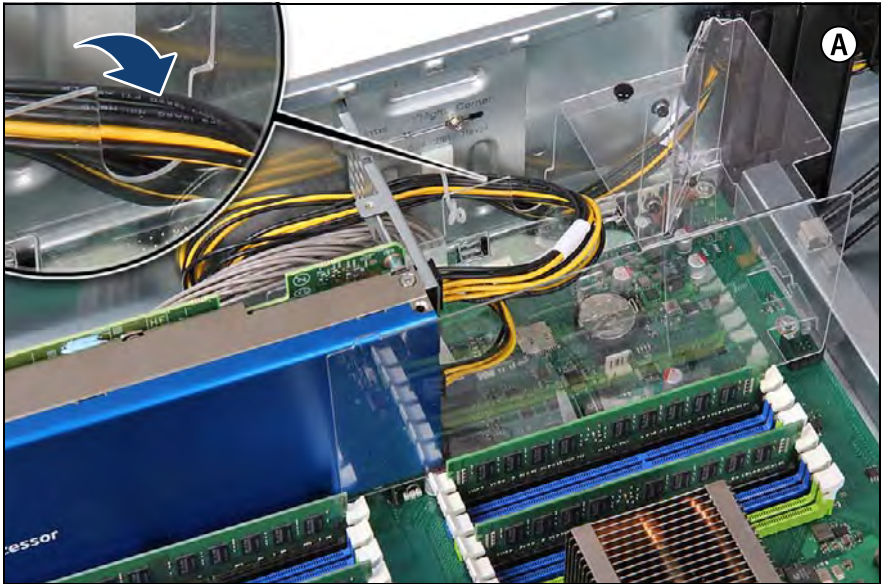


Figure 306: Routing the GPGPU card power cable in the air duct (1 card)

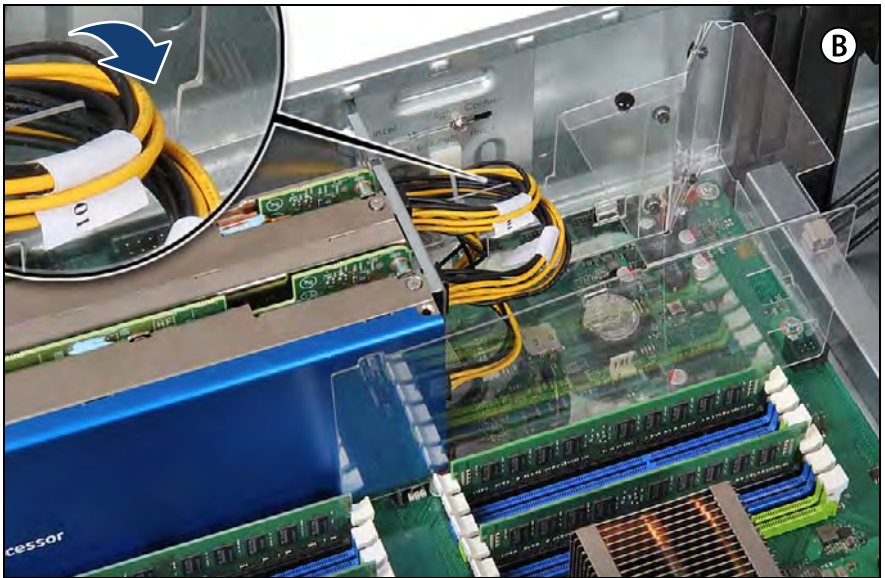


Figure 307: Routing the GPGPU card power cables in the air duct (2 cards)

Expansion cards and backup units

- ▶ Run the GPGPU power cables through the semicircular cable inlet in the GPGPU air duct base:

A	cable routing with with one GPGPU / coprocessor card
B	cable routing with with two GPGPU / coprocessor cards

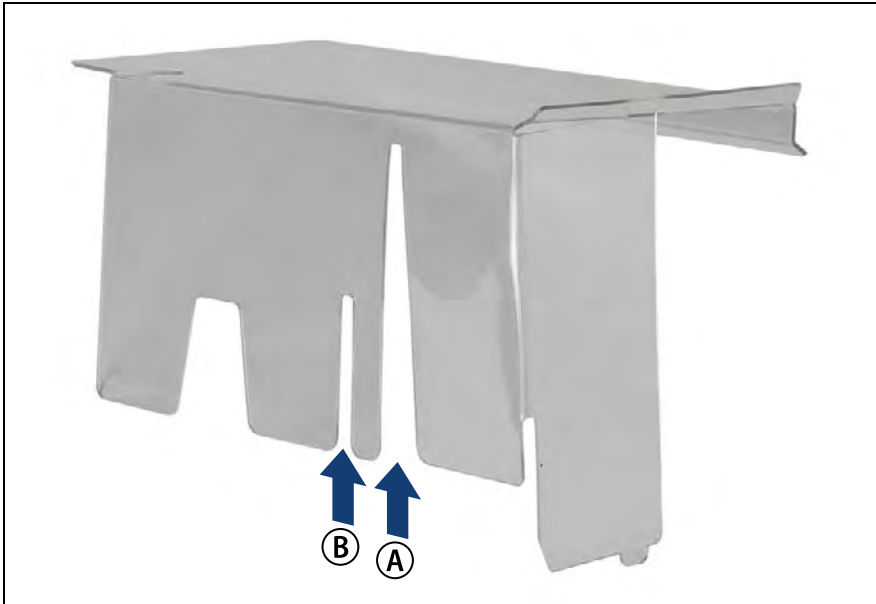


Figure 308: Installing the GPGPU air duct top cover (A)

GPGPU air duct top cover (C26361-K644-C872)



The part number does not apply to the Japanese market.

A	Slot for Intel Xeon Phi mounting bracket
B	Slot for Nvidia TESLA K20 mounting bracket

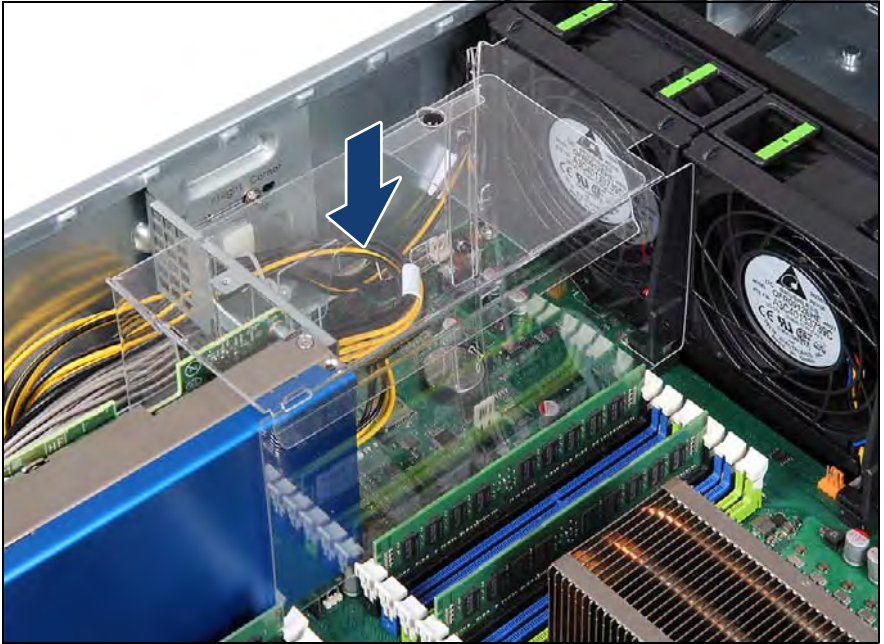


Figure 309: Installing the GPGPU air duct top cover (B)

- Fit the GPGPU air duct top cover onto the GPGPU air duct base.

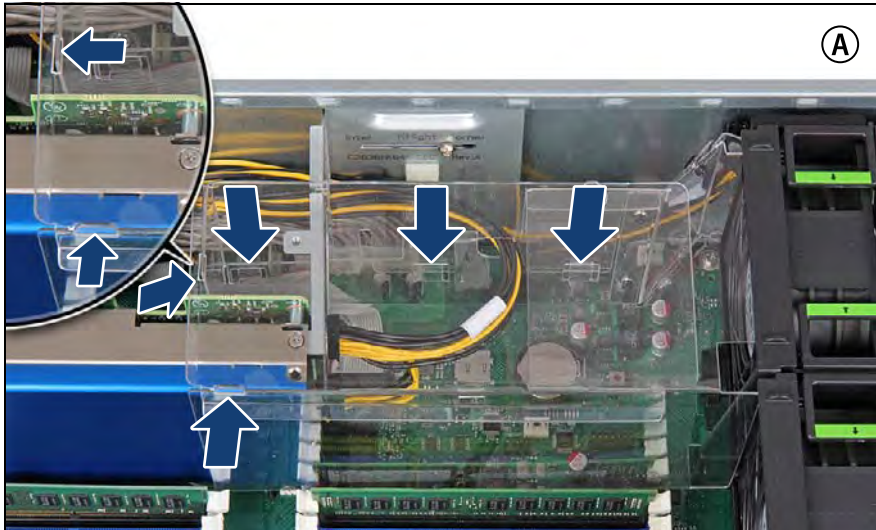


Figure 310: Installing the GPGPU air duct top cover (C)

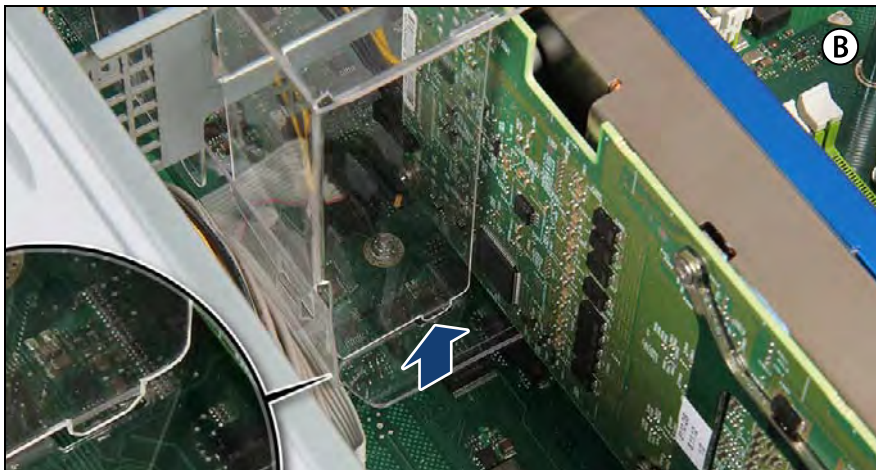


Figure 311: Installing the GPGPU air duct top cover (D)

- ▶ Ensure that all centering bars on the GPGPU air duct base and top cover are properly seated:

A	3 centering bars on the side, 2 on top
B	1 centering bar on the lower edge

For configurations with two GPGPU / coprocessor cards



Figure 312: Preparing the GPGPU air duct top cover for two GPGPU / coprocessor cards

- ▶ Bend out the blind cover on the GPGPU air duct by 90 degrees as shown.

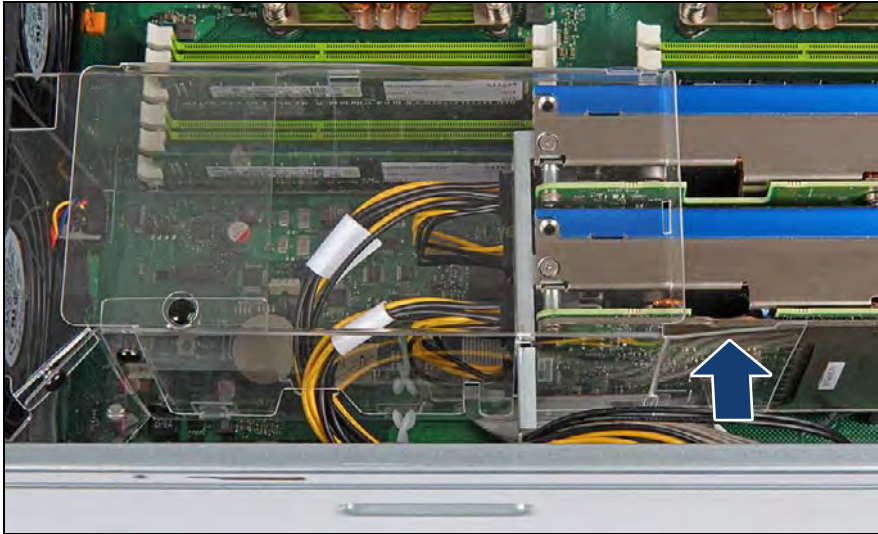


Figure 313: Installing the GPGPU air duct top cover (2 cards)

- ▶ The bent out blind cover rests against the second GPGPU card as shown.

9.4.2.10 Installing the system air duct

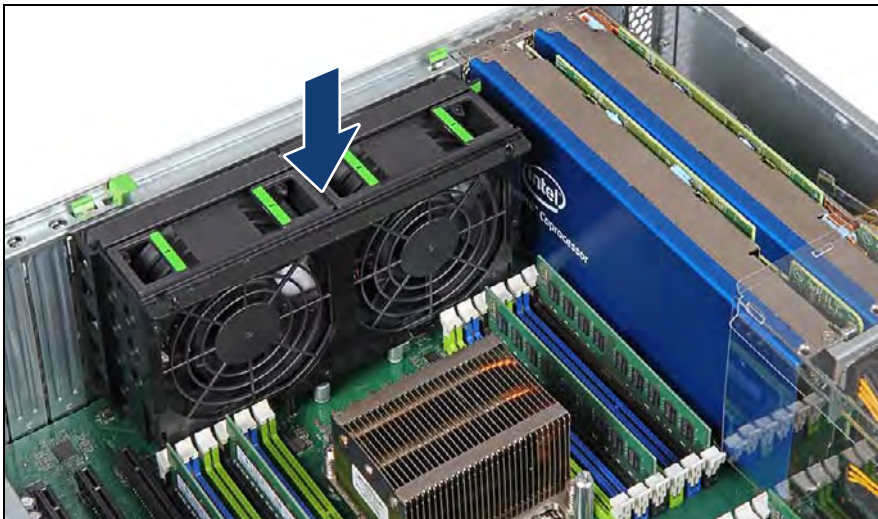


Figure 314: Installing the rear fan holder

- ▶ Install the rear fan holder and redundant fan modules as described in sections ["Installing the rear fan holder"](#) on page 342 and ["Installing rear fan modules"](#) on page 332.

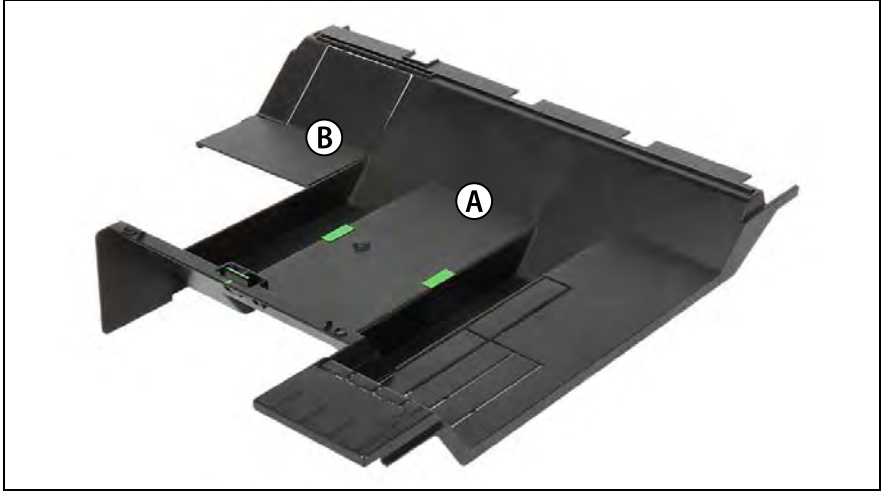


Figure 315: System air duct

	System air duct C26361-K644-C961 Rev. B
A	 The part number does not apply to the Japanese market.
B	GPGPU card blind cover

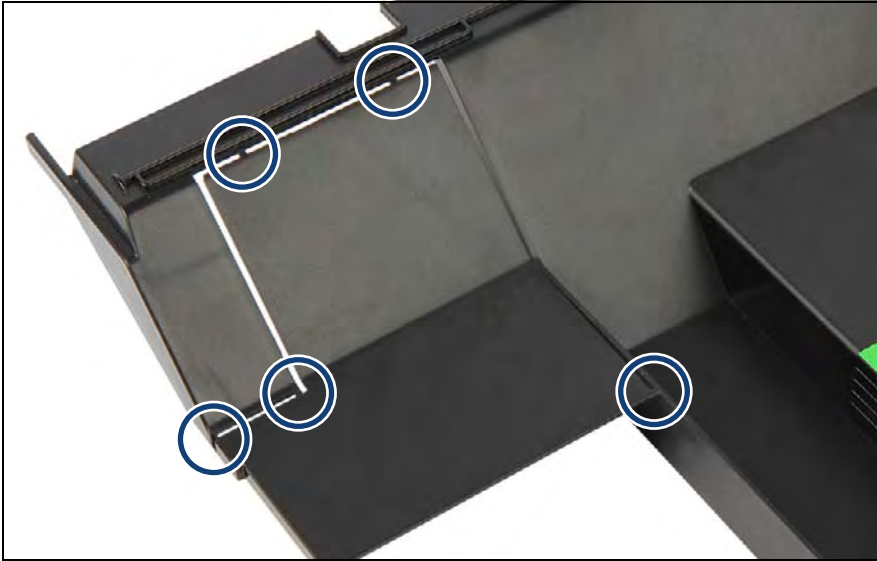


Figure 316: Breaking out the GPGPU card blind cover (A)

- ▶ If applicable, break out the blind cover from the system air duct (see circled joints).



The blind cover has already been removed in case of the system air duct contained in the GPGPU kit.

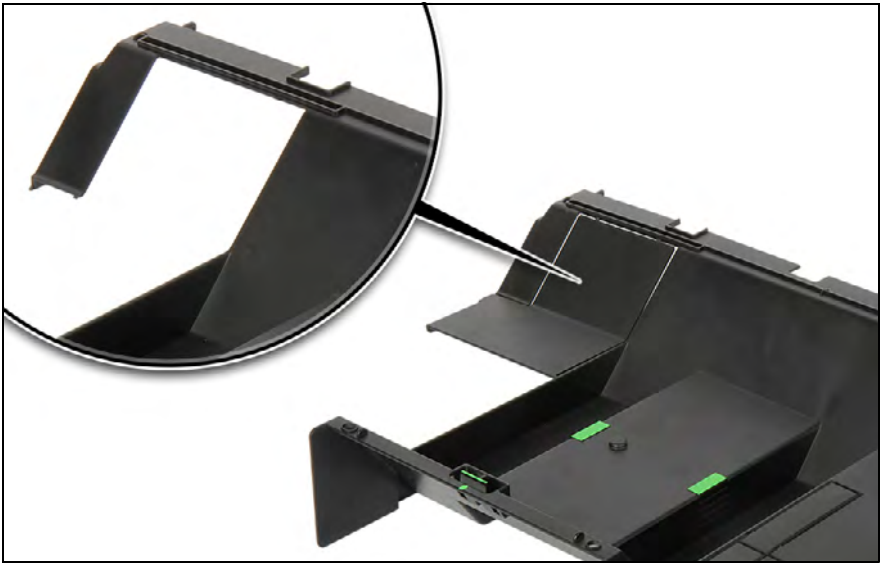


Figure 317: Breaking out the GPGPU card blind cover (B)



The opening is intended for the GPGPU air duct.

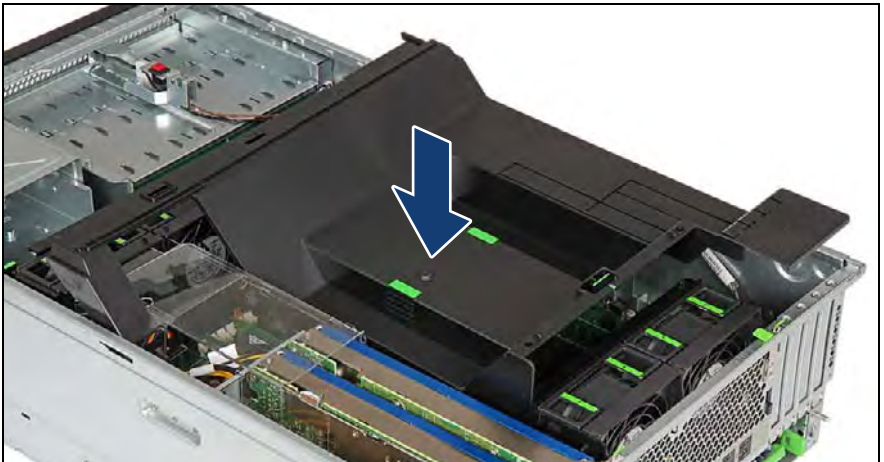


Figure 318: Installing the system air duct

- ▶ Install the system air duct into the chassis as described in section "[Installing the system air duct](#)" on page 83.

9.4.2.11 Installing perforated drive cover modules

- i** In order to satisfy GPGPU / coprocessor card cooling requirements, two perforated drive cover modules must be mounted in accessible drive bays 1 and 2.



Perforated drive cover module A3C40140230



Figure 319: Installing perforated drive cover modules (A)

- ▶ Pull up on the locking latch to disengage the accessible drive locking bar (1).

- ▶ Insert the perforated drive cover modules into drive bays 1 and 2 and carefully push in until they are flush with the server front (2).



Figure 320: Installing perforated drive cover modules (B)

- ▶ Close the locking bar until it locks in place.

9.4.2.12 Concluding steps

- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ Reconnect all external cables to the replaced expansion card.
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

9.4.3 Replacing a GPGPU / coprocessor card



Field Replaceable Unit (FRU)



**Average task duration:
15 minutes**

Tools: *Coprocessor card Intel Xeon Phi:*

- Phillips PH1 / (+) No. 1 screw driver

GPGPU card Nvidia TESLA / GRID:

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

9.4.3.1 Preliminary steps

- ▶ Proceed as described in chapter ["Before you start" on page 33](#)

9.4.3.2 Removing the GPGPU air duct

- ▶ Proceed as described in section ["Installing the GPGPU air duct" on page 408](#) in reverse order.

9.4.3.3 Removing a GPGPU / coprocessor card

- ▶ Disconnect all cables from the GPGPU / coprocessor card(s).
- ▶ Proceed as described in section ["Installing a GPGPU or coprocessor card" on page 395](#) in reverse order.

9.4.3.4 Installing a GPGPU / coprocessor card

- ▶ Proceed as described in section ["Installing a GPGPU or coprocessor card" on page 395](#).

9.4.3.5 Installing the GPGPU air duct

- ▶ Proceed as described in section ["Installing the GPGPU air duct" on page 408](#).

9.4.3.6 Installing the system fan holder

- ▶ Proceed as described in section ["Installing the system fan holder" on page 331](#).

9.4.3.7 Installing the system air duct


- ▶ Proceed as described in section ["Installing the system air duct" on page 83](#).

9.4.3.8 Concluding steps

- ▶ Proceed as described in section ["Concluding steps" on page 423](#).


9.5 SAS RAID controller in PCI slot 10

9.5.1 Additional information on SAS 3.0 RAID controllers

 This section only applies to 2.5-inch HDD configurations.

When adding SAS 3.0 RAID controller D3216 (PRAID EP400i / EP420i) to the system, please proceed as follows:

- ▶ Disconnect all SAS and power cables from SAS 2.0 HDD / SSD backplanes 1 and 2.
- ▶ Remove SAS 2.0 HDD / SSD backplanes 1 and 2 from the system and replace them by SAS 3.0 backplanes A3C40157842 as described in section ["Replacing a 2.5-inch HDD / SSD SAS backplane" on page 220](#).

 SAS 3.0 HDD / SSD backplanes are installed in the first 2.5-inch HDD drive cage.

- ▶ Connect SAS cables to the SAS 3.0 HDD / SSD backplanes and SAS RAID controller as described in section ["SAS 3.0 HDD / SSD backplane cabling" on page 186](#).
- ▶ If applicable, install the TFM module and FBU as described in section ["Installing an FBU" on page 440](#).

9.5.2 Installing the SAS RAID controller



**Upgrade and Repair Unit
(URU)**



**Average task duration:
15 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

9.5.2.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

9.5.2.2 Preparing the SAS RAID controller



Figure 321: SAS RAID controller with RAID card holder (C26361-K644-B944)

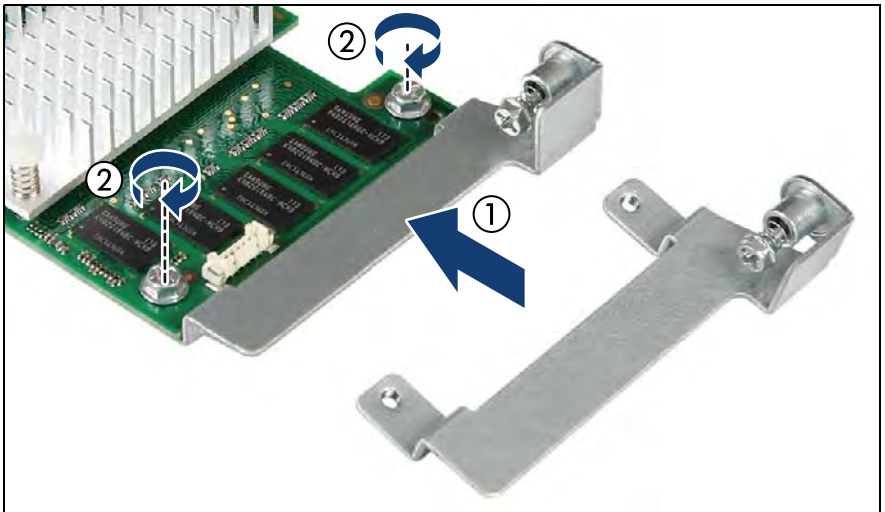


Figure 322: Installing the RAID card holder

- ▶ Place the controller on the mounting tabs on the slot bracket (1).
- ▶ Secure the slot bracket to the controller with two M3 x 4.5 mm screws (2).

9.5.2.3 Installing the SAS RAID controller

- ▶ Remove the SAS RAID controller 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 "[Preparing the SAS RAID controller](#)" on page 427.

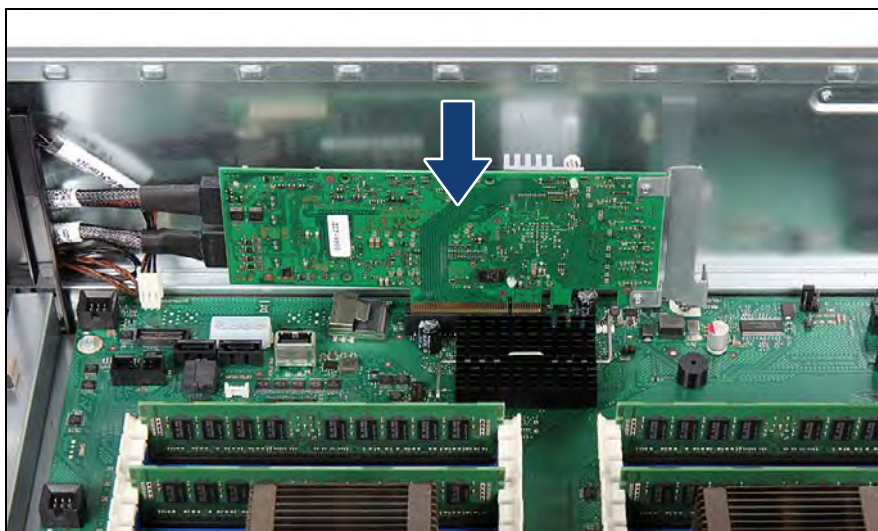


Figure 323: Installing the SAS RAID controller

- ▶ Carefully insert the RAID controller into PCI slot 10 and press down firmly until it is fully seated in the slot.

i For slot preferences, please refer to section "[Basic information](#)" on page 346.



Figure 324: Securing the SAS RAID controller

- ▶ Secure the RAID controller with the captive screw on the RAID card holder.

9.5.2.4 Connecting cables to the expansion card

- ▶ Connect SAS cables to the SAS RAID controller.



For a complete cabling overview, please refer to section ["Cabling overviews"](#) on page 738.

9.5.2.5 Connecting a backup unit to the expansion card

- ▶ If applicable, connect a BBU or FBU to the expansion card as described in sections ["Installing a BBU"](#) on page 435 or ["Installing an FBU"](#) on page 440.

9.5.2.6 Concluding steps

- ▶ ["Installing the system air duct"](#) on page 83
- ▶ ["Closing the server"](#) on page 98
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack"](#) on page 115
- ▶ Reconnect all external cables to the replaced expansion card.
- ▶ ["Connecting the server to the mains"](#) on page 118

Expansion cards and backup units

- ▶ After installing or replacing a Modular RAID controller, update the firmware as described in section ["Updating RAID controller firmware" on page 137](#).
- ▶ 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 138](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

9.5.3 Removing the SAS RAID controller



**Upgrade and Repair Unit
(URU)**



**Average task duration:
5 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

9.5.3.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Remove all external cables from the expansion card to be removed.
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

9.5.3.2 Removing the SAS RAID controller



Figure 325: Removing the SAS RAID controller (A)

- ▶ Disconnect the SAS cables from the SAS RAID controller.
- ▶ Loosen the captive screw on the RAID card holder.

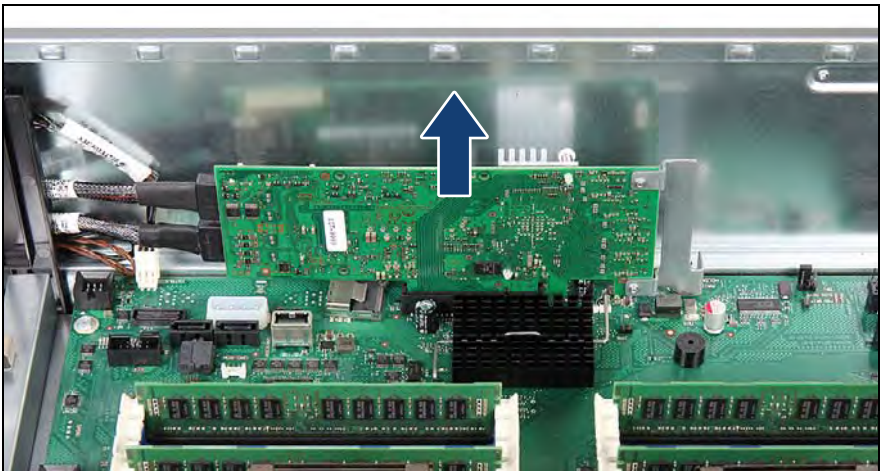


Figure 326: Removing the SAS RAID controller (B)

- ▶ Carefully pull up on the SAS RAID controller in a vertical motion and remove it from its slot.

9.5.3.3 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

9.5.4 Replacing the SAS RAID controller



**Upgrade and Repair Unit
(URU)**



**Average task duration:
15 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

9.5.4.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ Locate the defective expansion card using the onboard Local Diagnostic LEDs as described in section ["Onboard indicators and controls" on page 779](#).

9.5.4.2 Removing the defective SAS RAID controller

- ▶ Remove the defective SAS RAID controller as described in section ["Removing the SAS RAID controller" on page 430](#).
- ▶ If the RAID card holder on the defective controller is to be reused, remove it from the board as described in section ["Preparing the SAS RAID controller" on page 427](#).

9.5.4.3 Installing the new SAS RAID controller

- ▶ If applicable, install the RAID card holder on the new SAS RAID controller as described in section ["Preparing the SAS RAID controller" on page 427](#).
- ▶ Install the new PCI SAS RAID controller as described in section ["Installing the SAS RAID controller" on page 426](#).

9.5.4.4 Connecting cables to the expansion card

- ▶ Connect SAS cables to the SAS RAID controller.



For a complete cabling overview, please refer to section ["Cabling overviews" on page 738](#).

9.5.4.5 Connecting a backup unit to the expansion card

- ▶ If applicable, connect a BBU or FBU to the expansion card as described in sections ["Installing a BBU" on page 435](#) or ["Installing an FBU" on page 440](#).

9.5.4.6 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ Reconnect all external cables to the replaced expansion card.
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ Enable the PCI slot of the replaced expansion card as described in section ["Enabling replaced components in the system BIOS" on page 147](#).

Expansion cards and backup units

- ▶ Inform the customer about changed WWN and MAC addresses. For further information, refer to section ["Looking up changed MAC / WWN addresses" on page 153](#).
- ▶ After replacing a network controller in a server running Linux OS, update its MAC address in the related NIC definition file as described in section ["Updating the NIC configuration file in a Linux environment" on page 150](#).
- ▶ After installing or replacing a Modular RAID controller, update the firmware as described in section ["Updating RAID controller firmware" on page 137](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)
- ▶ If applicable, restore LAN teaming configurations as described in section ["After replacing / upgrading LAN controllers" on page 157](#).

9.6 Backup Units

9.6.1 Basic information

The Battery Backup Unit (BBU) or Flash Backup Unit (FBU) backs up the memory contents of the connected SAS RAID controller in the event of a power failure. The PRIMERGY TX300 S8 / RX350 S8 server can accommodate up to three backup units.

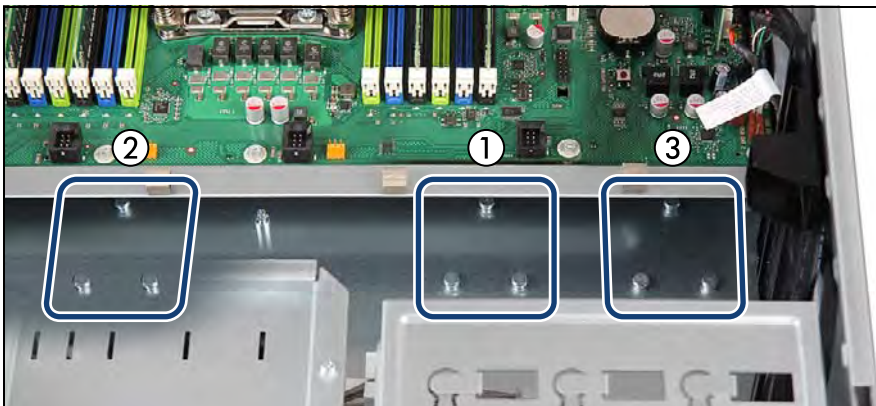


Figure 327: BBU mounting positions and sequence

1	Mounting position for first BBU / FBU
2	Mounting position for second BBU / FBU
3	Mounting position for third BBU / FBU

9.6.2 Installing a BBU



Upgrade and Repair Unit (URU)



Average task duration: 5 minutes

Tools: tool-less



CAUTION!

For further safety information, please refer to chapter "[Important information](#)" on page 45.

9.6.2.1 Preliminary steps

- ▶ "[Disabling SVOM boot watchdog functionality](#)" on page 127
- ▶ "[Shutting down the server](#)" on page 62
- ▶ "[Disconnecting the server from the mains](#)" on page 63
- ▶ When working on a rack-mounted server:
 - ▶ "[Extending / removing the server from the rack](#)" on page 64
- ▶ Open the side / top cover as described in section "[Opening the server](#)" on page 68.
- ▶ "[Removing the system air duct](#)" on page 81
- ▶ "[Removing the system fan holder](#)" on page 330
- ▶ "[Removing the SAS expander board](#)" on page 315 (if applicable)

9.6.2.2 Preparing the BBU

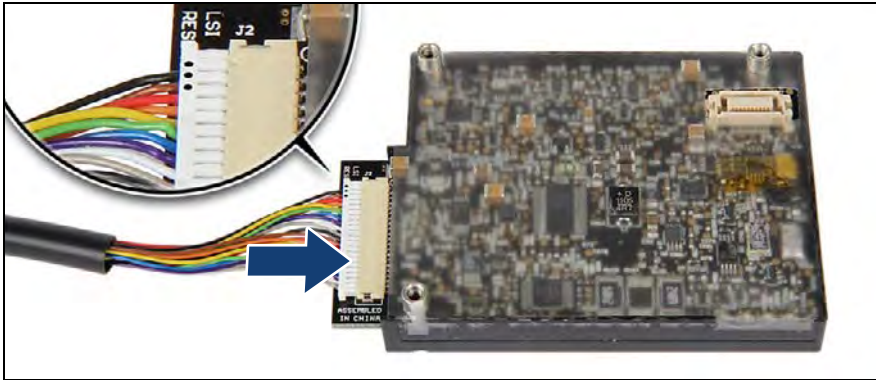


Figure 328: Connecting the BBU cable

- ▶ Connect the BBU cable (T26139-Y3987-V2) to the BBU board (Lx-25343-xxx, BBU08) as shown.



CAUTION!

Make sure that the connector side with the three dots points towards you (see close-up). Otherwise, short-circuits may result!



Figure 329: Installing the BBU in the BBU holder

- ▶ At a slight angle, fit the BBU under the right retaining bracket on the BBU holder (1).
- ▶ Fold down the BBU until it locks in place (2).

9.6.2.3 Installing the BBU holder into the chassis

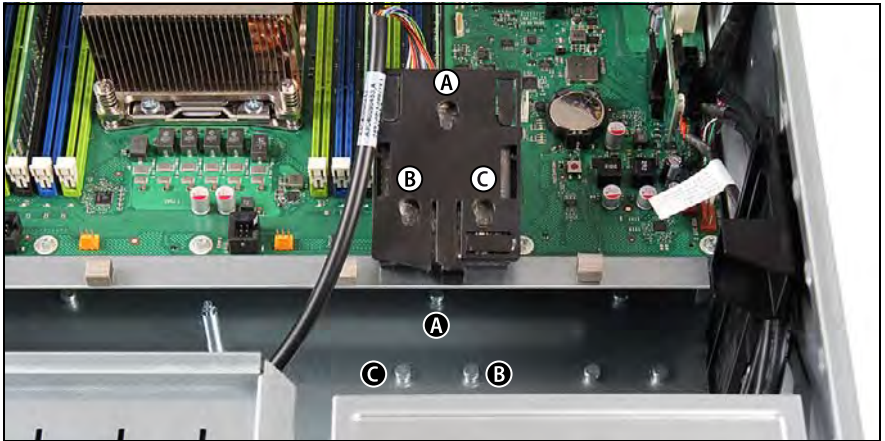


Figure 330: Mounting the BBU holder (A)



Note the positions of the fixation bolts on the chassis floor (A-C) and corresponding keyhole slots on the BBU holder.

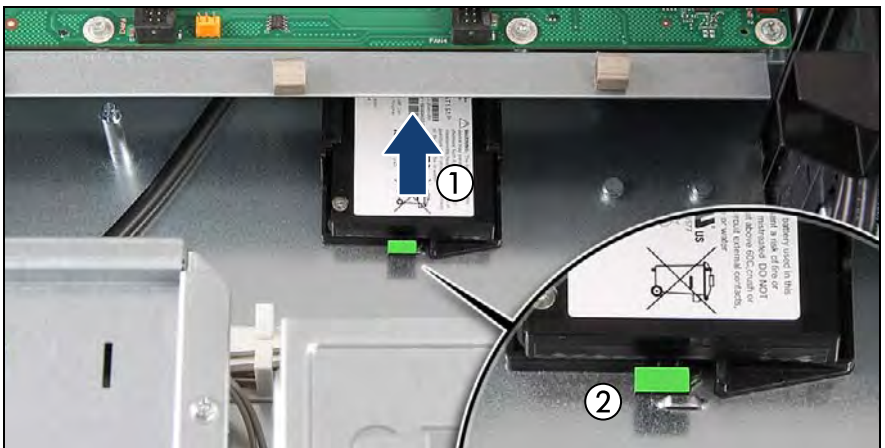


Figure 331: Mounting the BBU holder (B)

Expansion cards and backup units

- ▶ Insert the BBU holder into the chassis so that the three fixation bolts on the chassis floor rest in the wide ends of the keyhole slots on the holder.
- ▶ Slide the BBU holder under the system board as far as it will go (1).
The fixation bolts on the chassis floor will lock in the narrow ends of the keyhole slots on the BBU holder.
- ▶ Ensure that the locking handle on the BBU holder properly snaps in place (2).



Figure 332: Connecting the BBU cable to the controller

- ▶ For easier access to the BBU connector, temporarily remove the SAS RAID controller from its slot as described in sections ["Removing the SAS RAID controller" on page 430](#) or ["Removing expansion cards" on page 357](#).
- ▶ Connect the loose end of the BBU cable to the RAID controller.



CAUTION!

Make sure that the connector side with the three dots points towards you. Otherwise, short-circuits may result!

- ▶ Reinstall the SAS RAID controller as described in sections ["Installing the SAS RAID controller" on page 426](#) or ["Installing expansion cards" on page 349](#).

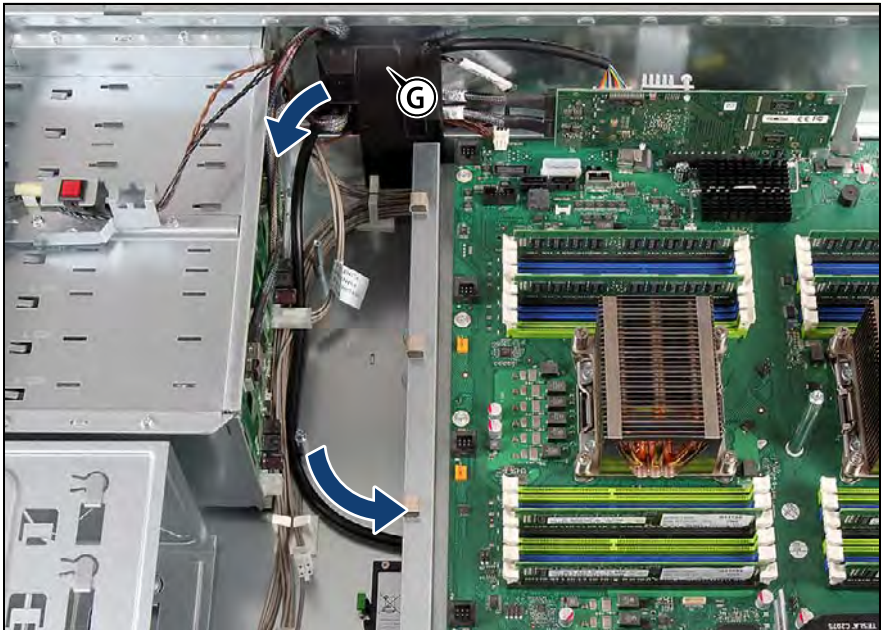


Figure 333: Routing the BBU cable

- ▶ Run the BBU cable through the cable guide (G) and along the drive bays as shown.

9.6.2.4 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Installing the SAS expander board" on page 309](#) (if applicable)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
 - ▶ ["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ 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 137](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)

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 may take up to 12 hours before the BBU will initiate a recalibration cycle.

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



For further information, please refer to the "ServerView Suite RAID Management" user guide.

- ▶ If the BBU is shown as bad or defective, do not power off the server for at least 12 hours to allow the charge and calibration cycles to finish.
- ▶ If the BBU status does not change after 12 hours, please try to initiate the recalibration process manually using the ServerView RAID Manager.



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

9.6.3 Installing an FBU



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: Phillips PH1 / (+) No. 1 screw driver



CAUTION!

For further safety information, please refer to chapter ["Important information"](#) on page 45.

9.6.3.1 Preliminary steps

- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)
- ▶ ["Removing the SAS expander board" on page 315](#) (if applicable)
- ▶ Disconnect the SAS cables from the SAS RAID controller.
- ▶ Remove the SAS RAID controller from its slot as described in sections ["Removing the SAS RAID controller" on page 430](#) or ["Removing expansion cards" on page 357](#).

9.6.3.2 Installing a TFM module

Note on TFM modules



A TFM module is required in order to connect an FBU to SAS RAID controllers D3116 and D3216. Three different TFM kits are available:

RAID controller	TFM kit
D3116 SAS RAID controller	TFM (LSZ:L3-25419-01)
D3216 PRAID EP400i SAS 3.0 RAID controller	TFM 4G (LSZ:03-25444-05)
D3216 PRAID EP420i SAS 3.0 RAID controller	TFM 8G (LSZ:03-25444-01)

SAS RAID controller D3116

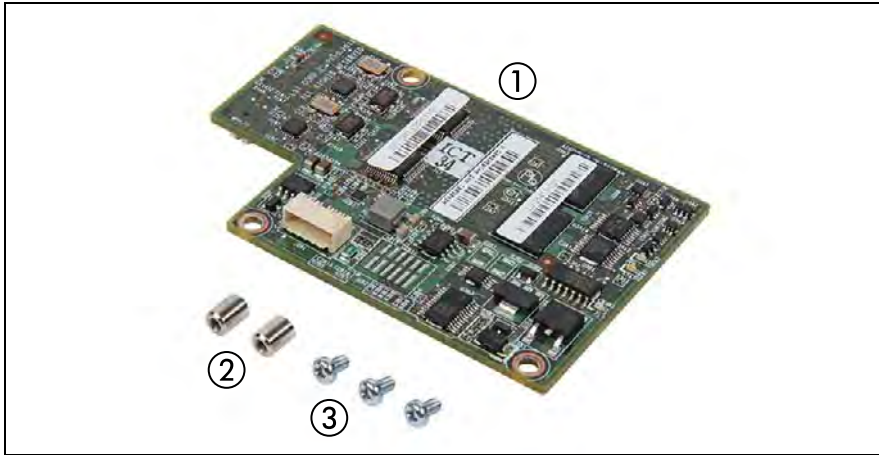


Figure 334: TFM module kit

- 1 TFM kit (LSZ:L3-25419-01)
- 2-3 Three spacer bolts and six screws

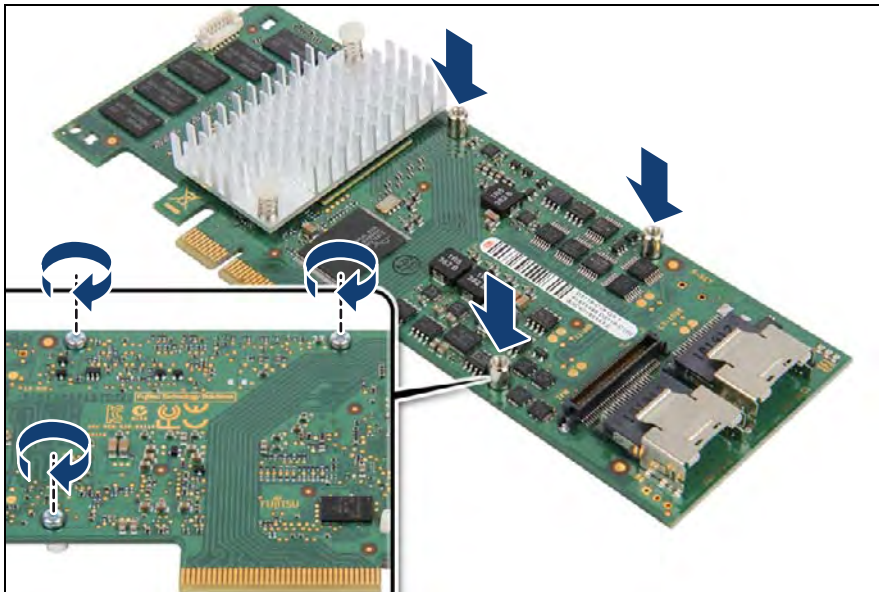


Figure 335: Mounting the TFM module (A)

- ▶ Fit the three spacer bolts on the SAS RAID controller as shown and secure each with a screw from the TFM kit.

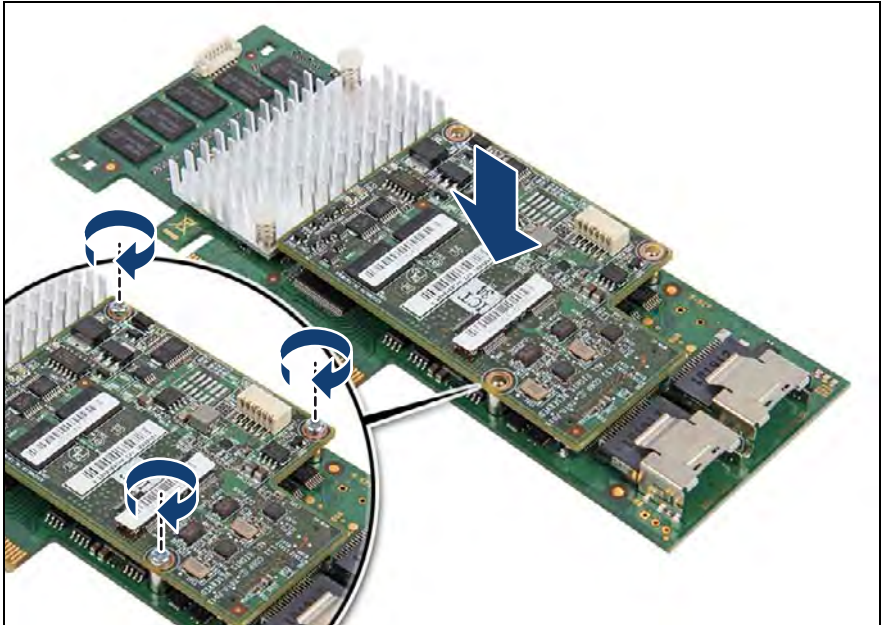


Figure 336: Mounting the TFM module (B)

- ▶ Attach the TFM module to the RAID controller as shown.
- ▶ Secure the TFM module on the spacer bolts with three screws from the TFM kit.

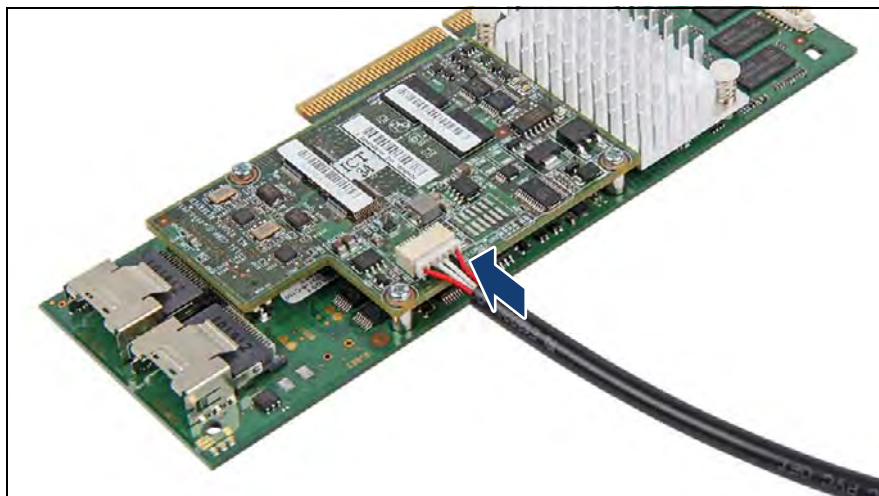


Figure 337: Mounting the TFM module (C)

- ▶ Connect the FBU adapter cable (T26139-Y4032-V1) to the TFM module.
- ▶ Reinstall the SAS RAID controller as described in sections ["Installing the SAS RAID controller"](#) on page 426 or ["Installing expansion cards"](#) on page 349.
- ▶ Connect the SAS cables to their original connectors on the SAS RAID controller.

SAS RAID controller D3216

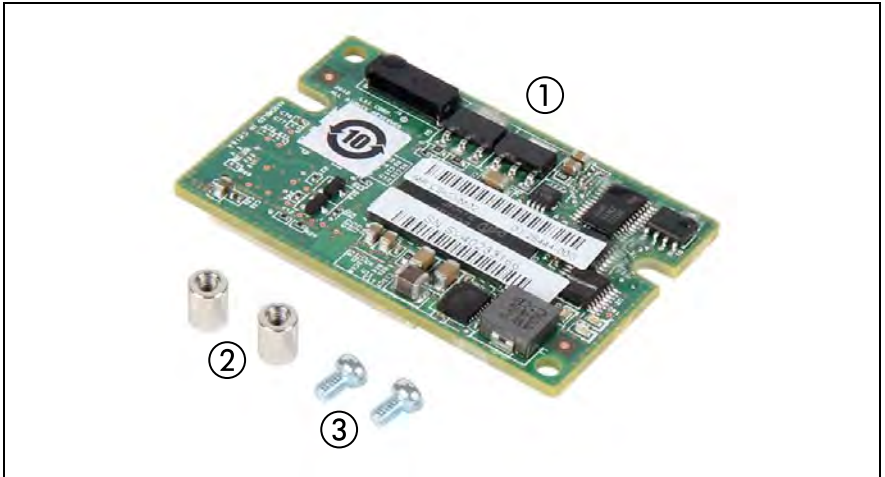


Figure 338: TFM 4G / 8G kit

- 1 TFM 4G / 8G kit (LSZ:03-25444-05 / LSZ:03-25444-01)
- 2-3 Two spacer bolts and four screws

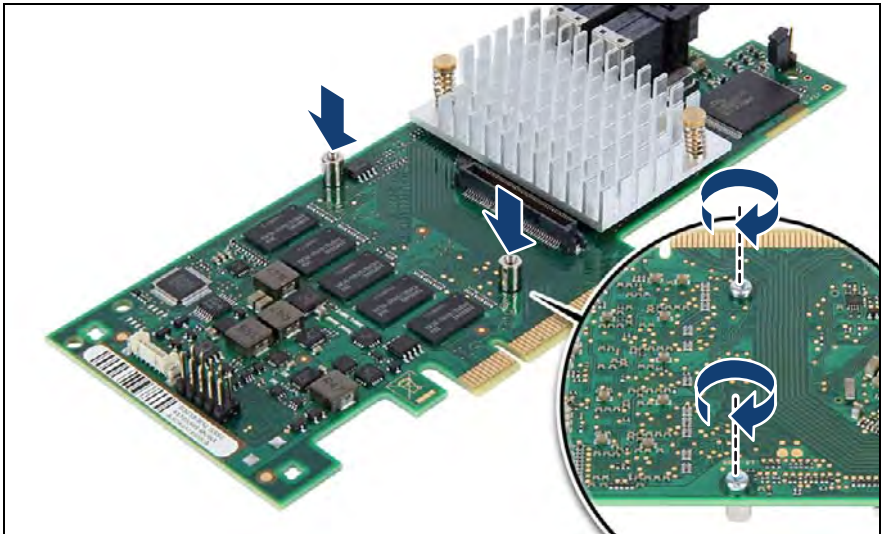


Figure 339: Mounting the TFM (A)

Expansion cards and backup units

- ▶ Fit the two spacer bolts on the SAS RAID controller as shown and secure each with a screw from the TFM kit.

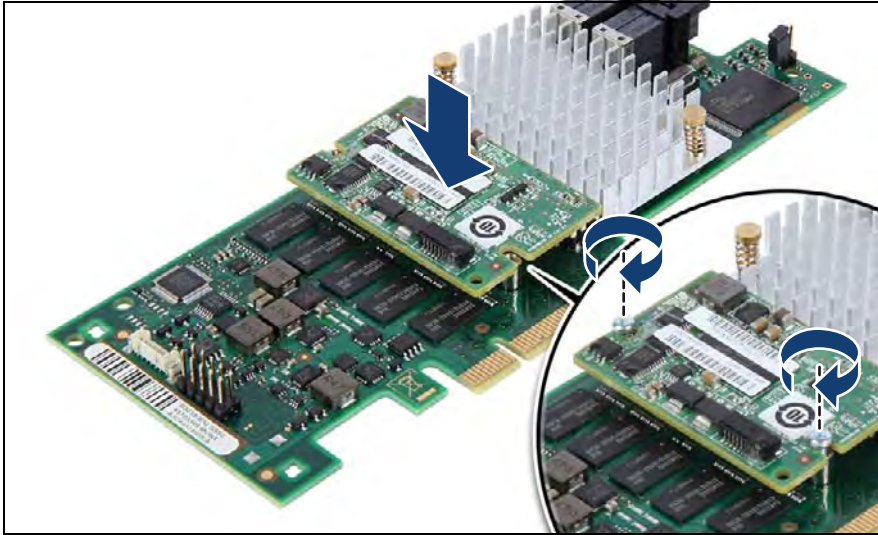


Figure 340: Mounting the TFM module (B)

- ▶ Attach the TFM module to the RAID controller as shown.
- ▶ Secure the TFM module on the spacer bolts with two screws from the TFM kit.

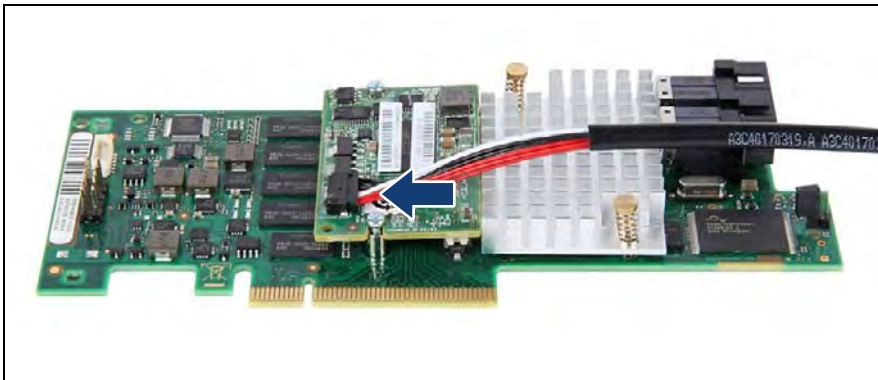


Figure 341: Mounting the TFM module (C)

- ▶ Connect the FBU adapter cable (T26139-Y4031-V103) to the TFM module.

- ▶ Reinstall the SAS RAID controller as described in sections "Installing the SAS RAID controller" on page 426 or "Installing expansion cards" on page 349.
- ▶ Connect the SAS cables to their original connectors on the SAS RAID controller.

9.6.3.3 Preparing the FBU

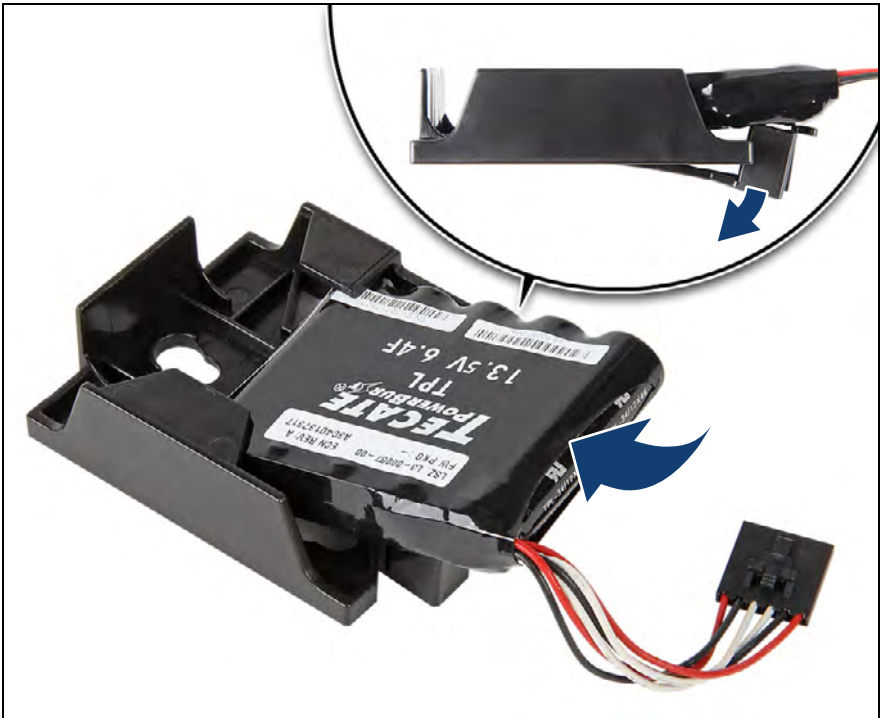


Figure 342: Installing the FBU in the FBU holder (A)

- ▶ At a slight angle, fit the FBU (A3C40137317) under both retaining brackets of the FBU holder (C26361-K644-C970) as shown.
- ▶ Push in the FBU until it locks in place.

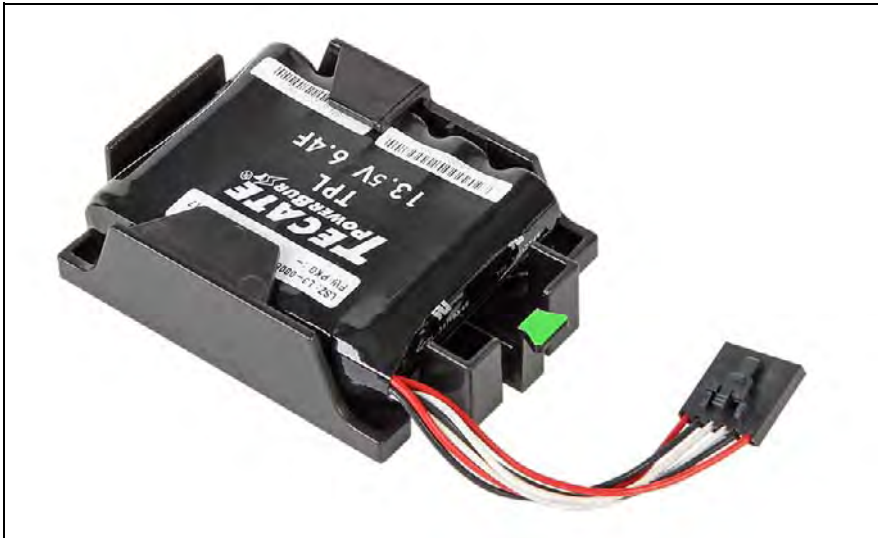


Figure 343: Installing the FBU in the FBU holder (B)

- ▶ Ensure that the FBU is properly seated in the FBU holder as shown.

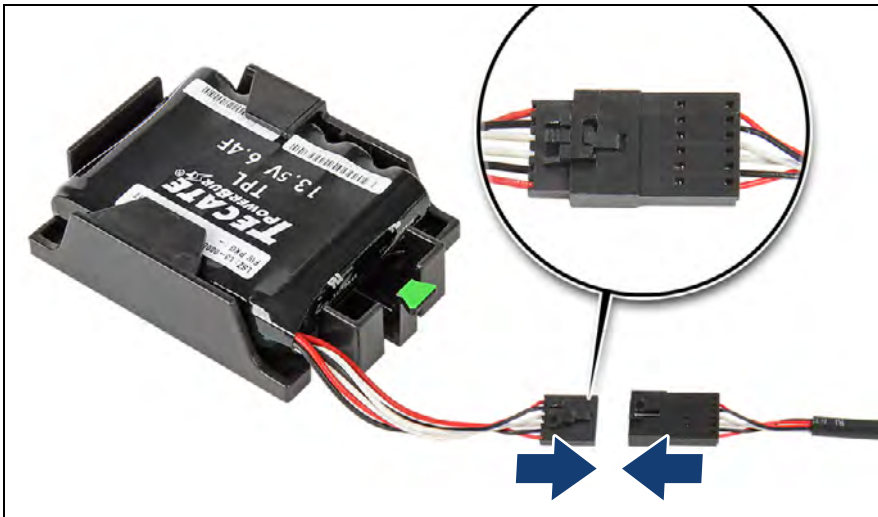


Figure 344: Connecting the FBU adapter cable to the FBU

- ▶ Connect the cable end on the FBU module to the FBU adapter cable as shown:

RAID controller / TFM module	TFM adapter cable	Cabling plan
D3116 SAS RAID controller TFM (LSZ:L3-25419-01)	T26139-Y4032-V1	16.2.23
D3216 PRAID EP400i SAS 3.0 RAID controller TFM 4G (LSZ:03-25444-05)	T26139-Y4031-V103	16.2.24
D3216 PRAID EP420i SAS 3.0 RAID controller TFM 8G (LSZ:03-25444-01)		

9.6.3.4 Installing the FBU holder into the chassis

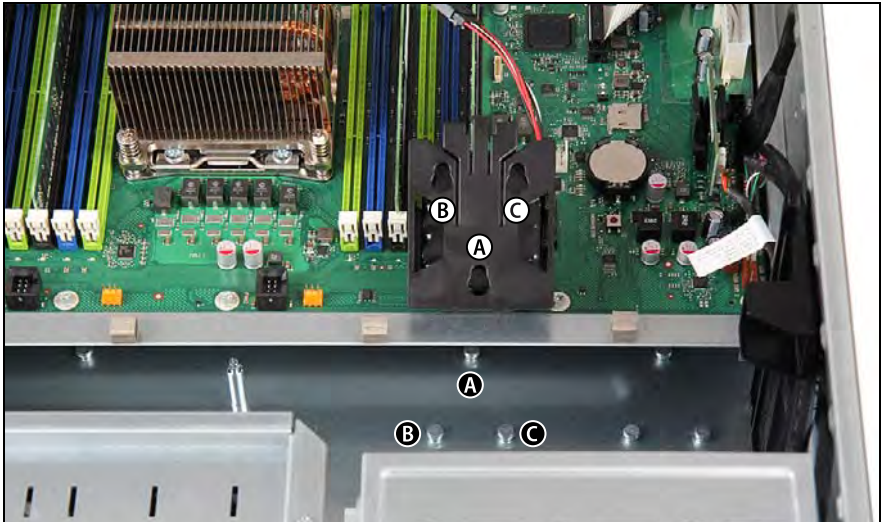


Figure 345: Mounting the FBU holder (A)



Note the positions of the fixation bolts on the chassis floor (A-C) and corresponding keyhole slots on the FBU holder.

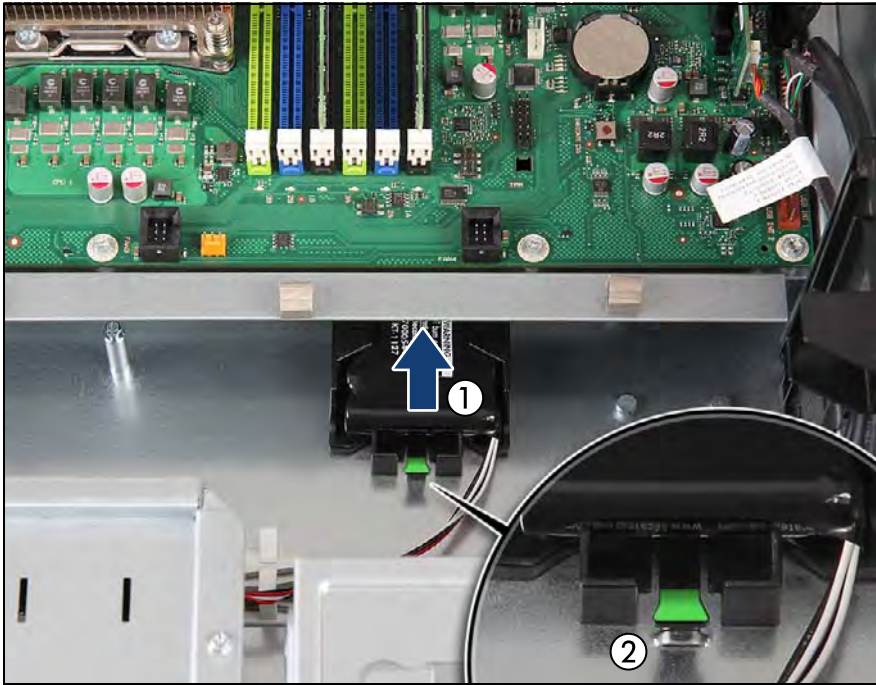


Figure 346: Mounting the FBU holder (B)

- ▶ Insert the FBU holder into the chassis so that the three fixation bolts on the chassis floor rest in the wide ends of the keyhole slots on the holder.
- ▶ Slide the FBU holder under the system board as far as it will go (1).
The fixation bolts on the chassis floor will lock in the narrow ends of the keyhole slots on the FBU holder.
- ▶ Ensure that the locking handle on the FBU holder properly snaps in place (2).

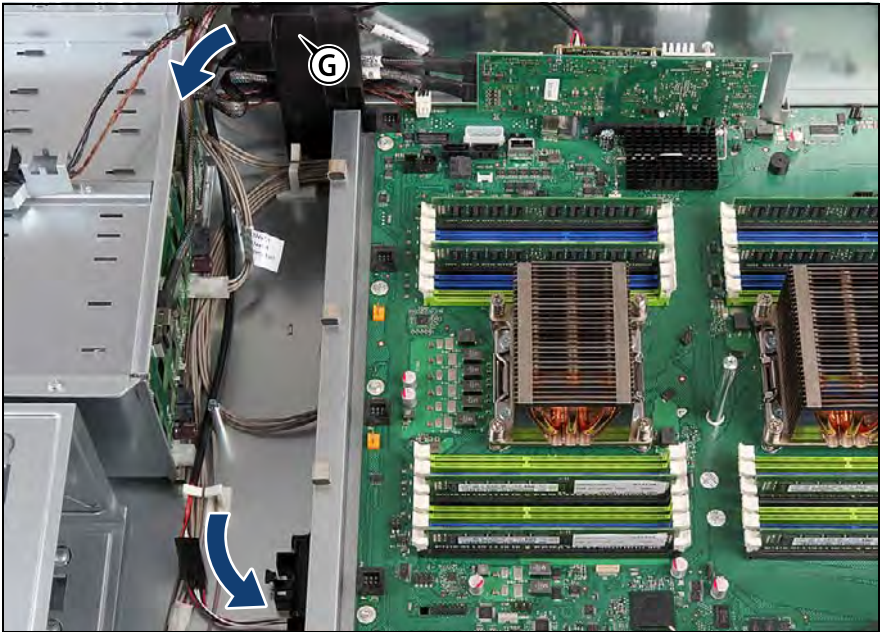


Figure 347: Routing the FBU cable

- ▶ Run the FBU cable through the cable guide (G) and along the drive bays as shown.

9.6.3.5 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Installing the SAS expander board" on page 309](#) (if applicable)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
 - ▶ ["Mounting the server in the rack" on page 115](#)
 - ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ 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 137](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)

9.6.4 Removing a BBU



Upgrade and Repair Unit (URU)



**Average task duration:
5 minutes**

Tools: tool-less



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 54.

9.6.4.1 Preliminary steps

- ▶ "[Locating the defective server](#)" on page 57
- ▶ "[Shutting down the server](#)" on page 62
- ▶ "[Disconnecting the server from the mains](#)" on page 63
- ▶ When working on a rack-mounted server:
 "[Extending / removing the server from the rack](#)" on page 64
- ▶ Open the side / top cover as described in section "[Opening the server](#)" on page 68.
- ▶ "[Removing the system air duct](#)" on page 81
- ▶ "[Removing the system fan holder](#)" on page 330
- ▶ "[Removing the SAS expander board](#)" on page 315 (if applicable)

9.6.5 Removing an FBU



Upgrade and Repair Unit (URU)



**Average task duration:
5 minutes**

Tools: tool-less



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 54.

9.6.5.1 Preliminary steps

- ▶ "[Locating the defective server](#)" on page 57
- ▶ "[Shutting down the server](#)" on page 62
- ▶ "[Disconnecting the server from the mains](#)" on page 63
- ▶ When working on a rack-mounted server:
 - ▶ "[Extending / removing the server from the rack](#)" on page 64
- ▶ Open the side / top cover as described in section "[Opening the server](#)" on page 68.
- ▶ "[Removing the system air duct](#)" on page 81
- ▶ "[Removing the system fan holder](#)" on page 330
- ▶ "[Removing the SAS expander board](#)" on page 315 (if applicable)

9.6.5.2 Removing the FBU holder from the chassis

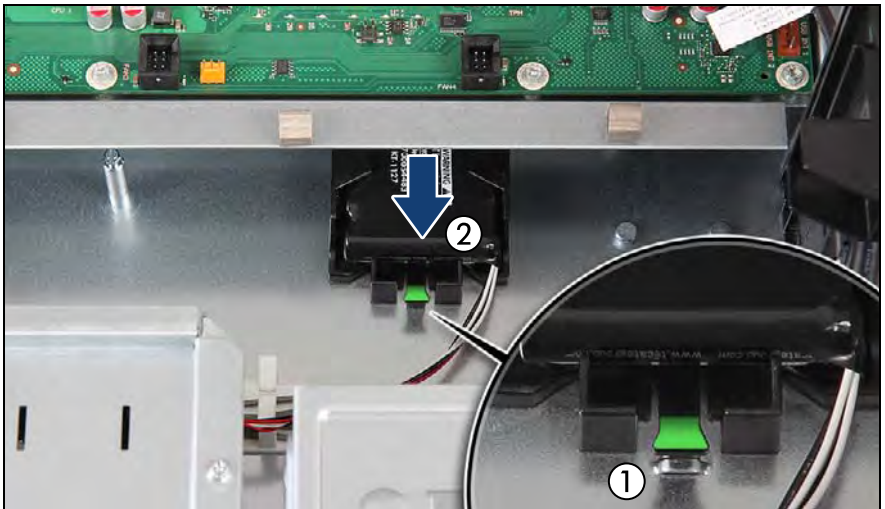


Figure 349: Removing the FBU holder from the chassis

- ▶ Carefully disconnect the FBU cable from the RAID controller.
- ▶ Remove the FBU cable from the cable guide.
- ▶ Lift up the locking handle on the FBU holder (1, see close-up) while sliding the FBU holder towards the server front as far as it will go (2).



After that, the fixation bolts on the chassis floor will rest in the wide ends of the keyhole slots on the holder.

- ▶ Lift the FBU holder out of the chassis.

9.6.5.3 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Installing the SAS expander board" on page 309](#) (if applicable)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
 - ▶ ["Mounting the server in the rack" on page 115](#)
 - ▶ ["Connecting the server to the mains" on page 118](#)

9.6.6 Replacing a BBU



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: tool-less



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 54.

9.6.6.1 Preliminary steps

- ▶ "[Disabling SVOM boot watchdog functionality](#)" on page 127
- ▶ "[Locating the defective server](#)" on page 57
- ▶ "[Shutting down the server](#)" on page 62
- ▶ "[Disconnecting the server from the mains](#)" on page 63
- ▶ When working on a rack-mounted server:
 "[Extending / removing the server from the rack](#)" on page 64
- ▶ Open the side / top cover as described in section "[Opening the server](#)" on page 68.
- ▶ "[Removing the system air duct](#)" on page 81
- ▶ "[Removing the system fan holder](#)" on page 330
- ▶ "[Removing the SAS expander board](#)" on page 315 (if applicable)

9.6.6.2 Removing a BBU module from the chassis

- ▶ Remove the BBU module from the chassis as described in section "[Removing a BBU](#)" on page 452.

9.6.6.3 Removing the BBU from the BBU holder



Figure 350: Removing the BBU from the BBU holder (A)

- ▶ Press out on the right retaining bracket on the BBU holder to disengage the locking mechanism while pulling up on the BBU.

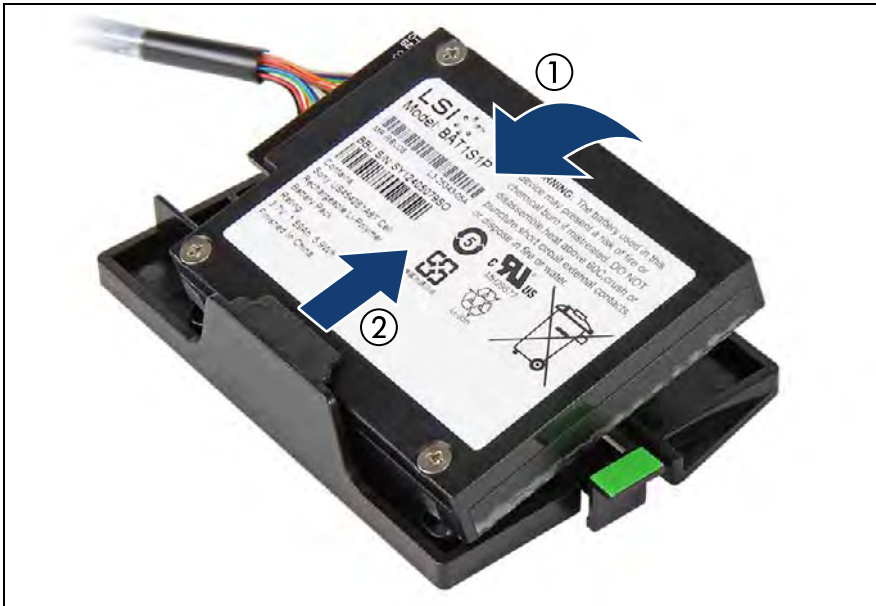


Figure 351: Removing the BBU from the BBU holder (B)

- ▶ Fold up the BBU (1) and at a slight angle remove it from the BBU holder (2).

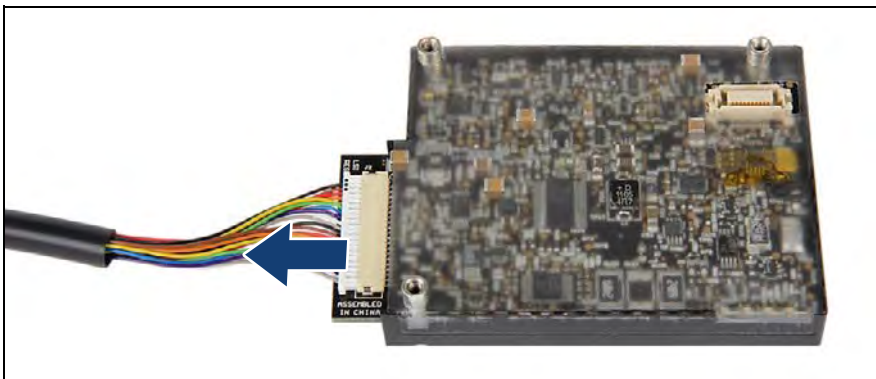


Figure 352: Disconnecting the BBU cable from the BBU

- ▶ Carefully disconnect the BBU cable from the BBU.

9.6.6.4 Installing a new BBU module

- ▶ Install the new BBU into the BBU holder as described in section "[Preparing the BBU](#)" on page 436.
- ▶ Install the BBU holder into the chassis as described in section "[Installing the BBU holder into the chassis](#)" on page 437.
- ▶ Connect the BBU to the controller.

9.6.6.5 Concluding steps

- ▶ "[Installing the system fan holder](#)" on page 331
- ▶ "[Installing the system air duct](#)" on page 83
- ▶ "[Installing the SAS expander board](#)" on page 309 (if applicable)
- ▶ "[Closing the server](#)" on page 98
- ▶ When working on a rack-mounted server:
"[Mounting the server in the rack](#)" on page 115
- ▶ "[Connecting the server to the mains](#)" on page 118
- ▶ 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 137.
- ▶ "[Enabling SVOM boot watchdog functionality](#)" on page 146

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 may take up to 12 hours before the BBU will initiate a recalibration cycle.

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



For further information, please refer to the "ServerView Suite RAID Management" user guide.

- ▶ If the BBU is shown as bad or defective, do not power off the server for at least 12 hours to allow the charge and calibration cycles to finish.

Expansion cards and backup units

- ▶ If the BBU status does not change after 12 hours, please try to initiate the recalibration process manually using the ServerView RAID Manager.



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

9.6.7 Replacing an FBU



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: tool-less



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 54.

9.6.7.1 Preliminary steps

- ▶ "[Disabling SVOM boot watchdog functionality](#)" on page 127
- ▶ "[Locating the defective server](#)" on page 57
- ▶ "[Shutting down the server](#)" on page 62
- ▶ "[Disconnecting the server from the mains](#)" on page 63
- ▶ When working on a rack-mounted server:
"[Extending / removing the server from the rack](#)" on page 64
- ▶ Open the side / top cover as described in section "[Opening the server](#)" on page 68.
- ▶ "[Removing the system air duct](#)" on page 81
- ▶ "[Removing the system fan holder](#)" on page 330
- ▶ "[Removing the SAS expander board](#)" on page 315 (if applicable)

9.6.7.2 Removing an FBU module from the chassis

- ▶ Remove the FBU module from the chassis as described in section ["Removing an FBU" on page 454](#).

9.6.7.3 Removing the FBU from the FBU holder

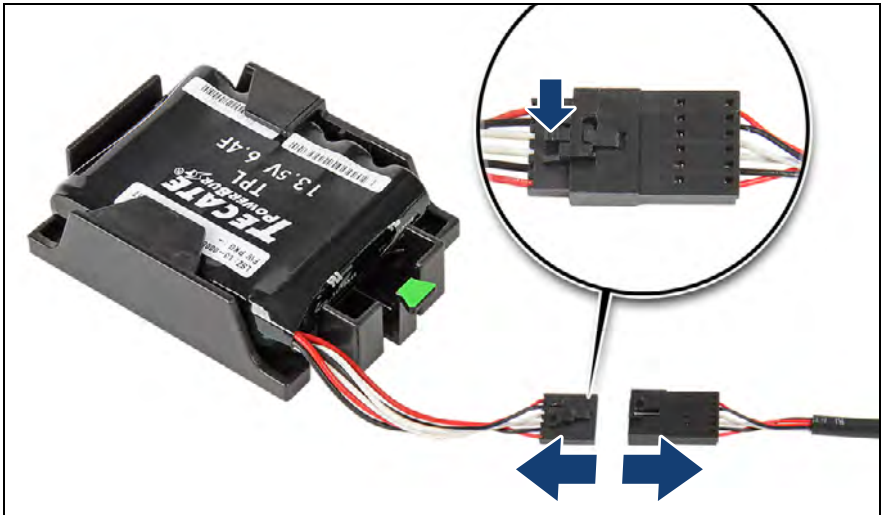


Figure 353: Disconnecting the FBU adapter cable from the FBU

- ▶ Press down on the locking latch on the FPU cable (see close-up) and disconnect the FBU adapter cable.

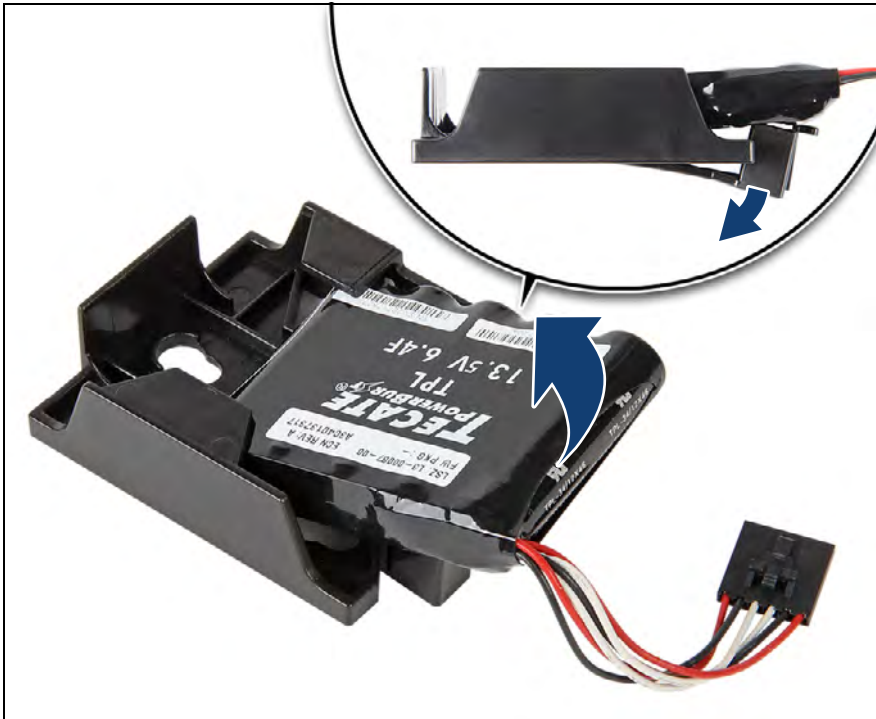


Figure 354: Removing the FBU from the FBU holder

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

9.6.7.4 Installing a new FBU module

- ▶ Install the new FBU into the FBU holder as described in section "[Preparing the FBU](#)" on page 447.
- ▶ Install the FBU holder into the chassis as described in section "[Installing the FBU holder into the chassis](#)" on page 449.
- ▶ Connect the FBU to the controller.

9.6.7.5 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Installing the SAS expander board" on page 309 \(if applicable\)](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ 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 137](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)

9.6.8 Replacing a TFM module



Upgrade and Repair Unit (URU)



Average task duration: 10 minutes

Tools: Phillips PH1 / (+) No. 1 screw driver



CAUTION!

For further safety information, please refer to chapter ["Important information" on page 45](#).

9.6.8.1 Preliminary steps

- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)

Expansion cards and backup units

- ▶ Open the side / top cover as described in section "Opening the server" on page 68.
- ▶ "Removing the system air duct" on page 81
- ▶ "Removing the system fan holder" on page 330
- ▶ Disconnect the SAS cables from the SAS RAID controller.
- ▶ Remove the SAS RAID controller from its slot as described in sections "Removing the SAS RAID controller" on page 430 or "Removing expansion cards" on page 357.

9.6.8.2 Removing the TFM module

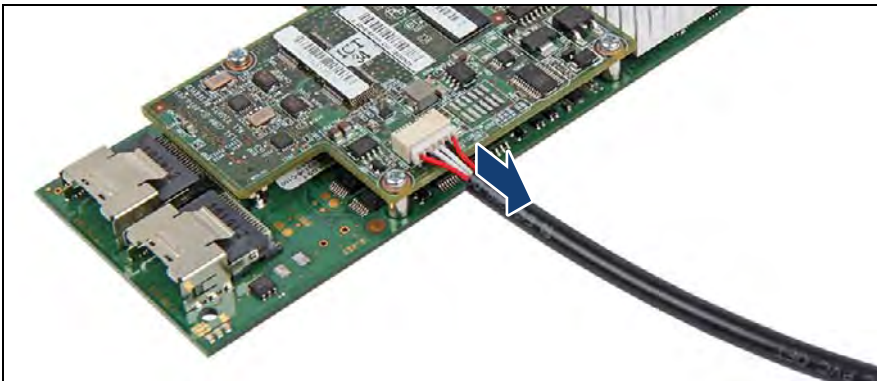


Figure 355: Removing the TFM adapter cable (RAID controller D3116)

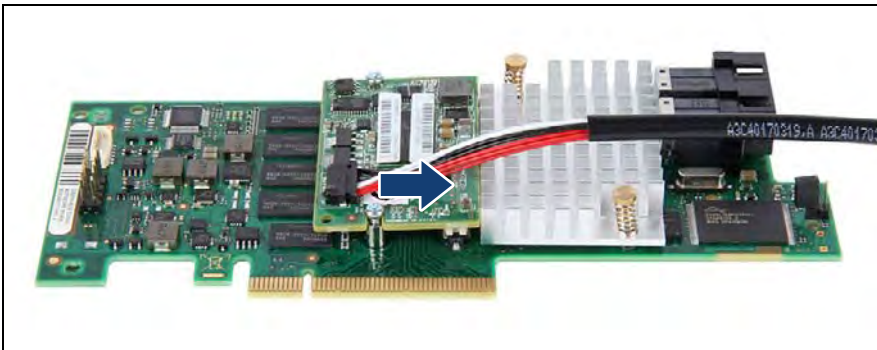


Figure 356: Removing the TFM adapter cable (RAID controller D3216)

- ▶ Disconnect the FBU adapter cable from the TFM module.

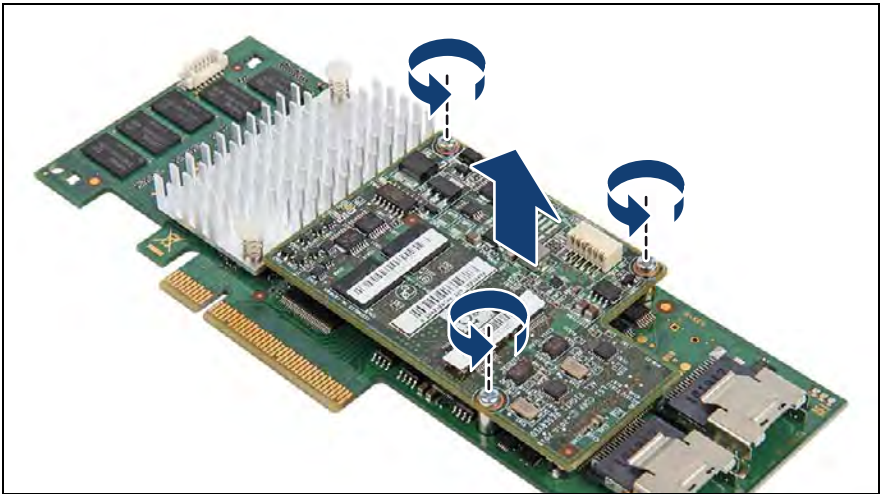


Figure 357: Removing the TFM module (RAID controller D3116)

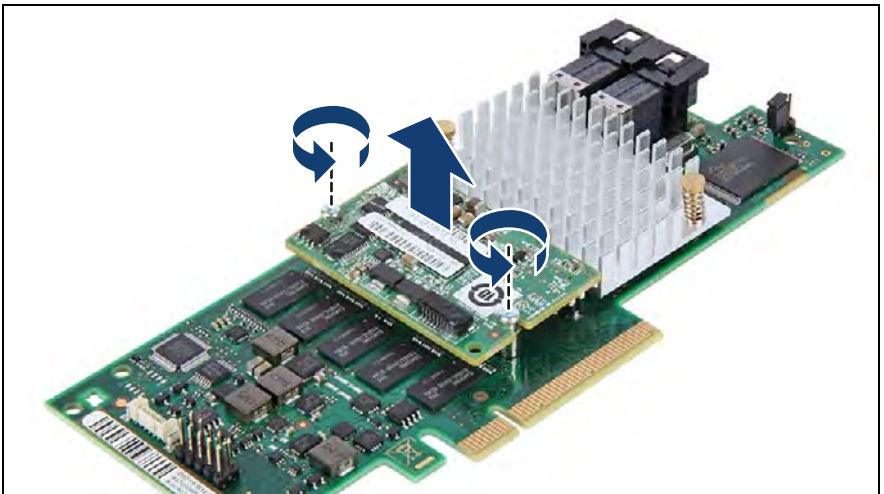


Figure 358: Removing the TFM module (RAID controller D3216)

- ▶ Remove the upper screws from TFM spacer bolts.
- ▶ Remove the TFM module from the SAS RAID controller.



Leave the TFM spacer bolts on the SAS RAID controller.

9.6.8.3 Installing the TFM module

- ▶ Install the new TFM module onto the existing TFM spacer bolts as described in section ["Installing a TFM module" on page 441](#).

9.6.8.4 Concluding steps

- ▶ Reinstall the SAS RAID controller as described in sections ["Installing the SAS RAID controller" on page 426](#) or ["Installing expansion cards" on page 349](#).
- ▶ Connect the SAS cables to their original connectors on the SAS RAID controller.
- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ 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 137](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)

10 Main memory

This section provides information on how to install, remove or replace memory modules.

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 468.
- 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 45.

10.1 Basic information

- The system board is equipped with 24 memory connectors (12 connectors per CPU).
- In mono processor configurations only 12 memory connectors are usable.
- The system has to be equipped with at least one memory module per processor.
- Supported capacities: 4 GB, 8 GB, 16 GB, 32 GB oder 64 GB
- Maximum amount of RAM: 1536 GB
- Supported memory modules:

Type		Ranking ¹			Error Correction
		SR	DR	QR	
DDR3-800	RDIMMs (Registered DIMMs)	x	x	x	ECC or non-ECC
DDR3-1066	UDIMMs (Unbuffered DIMMs)	x	x		
DDR3-1333					
DDR3-1600	LRDIMMs (Load-Reduced DIMMs)			x	
DDR3-1866					

¹ SR: Single-Rank, DR: Dual-Rank, QR: Quad-Rank

10.1.1 Memory sequence

10.1.1.1 Population rules

- Populate memory slot 1 / channel A (DIMM 1A) first.
- In case of dual processor configurations, populate memory slot 1 / channel E (DIMM 1E) second.
- Within all channels, memory slot 1 must be populated prior to slot 2. Slot 2 must be populated prior to slot 3 (for all CPUs).
- If memory modules with different ranks are used, always populate the higher number rank DIMM first (starting from slot 1).

- If memory modules with different capacities are used:
 - Populate modules with higher capacities first.
 - Within a channel, populate modules in descending order of capacity.
- If memory modules with different speeds are used, the lowest clock rate applies for all DIMMs.

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.

- Mixing UDIMMs, RDIMMs or LRDIMMs is not allowed.
- Mixing ECC and non-ECC DIMMs is not allowed.
- Mixing of quad-rank DIMMs in one channel and three DIMMs in another channel (3DPC) on the same CPU is not allowed.

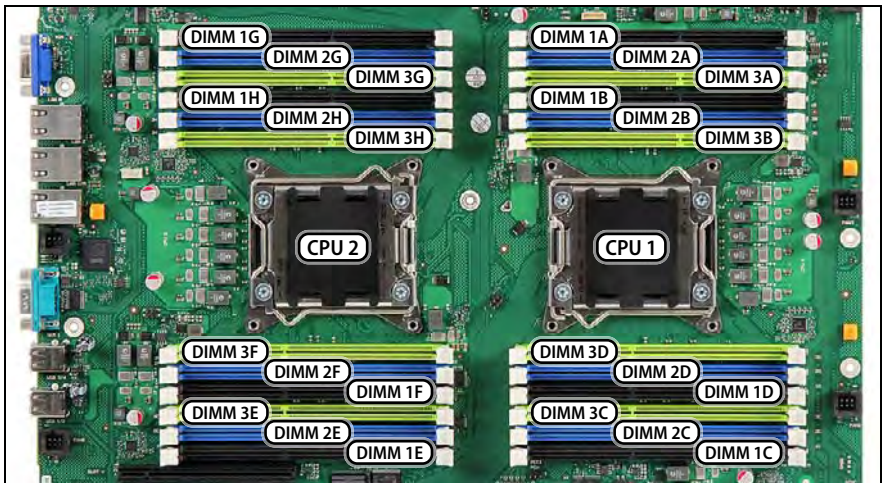


Figure 359: Memory overview

Main memory

10.1.1.2 Independant Channel mode

CPU	CPU 1												CPU 2												
	A			B			D			C			E			F			H			G			
Channel	1A	2A	3A	1B	2B	3B	1D	2D	3D	1C	2C	3C	1E	2E	3E	1F	2F	3F	1H	2H	3H	1G	2G	3G	
DIMM																									
# DIMMs	Mono CPU configuration																								
1	1																								
2	1									2															
3	1			3						2															
4	1			3			4			2															
5	1	5		3			4			2															
6	1	5		3			4			2	6														
7	1	5		3	7		4			2	6														
8	1	5		3	7		4	8		2	6														
9	1	5	9	3	7		4	8		2	6														
10	1	5	9	3	7		4	8		2	6	10													
11	1	5	9	3	7	11	4	8		2	6	10													
12	1	5	9	3	7	11	4	8	12	2	6	10													
# DIMMs	Dual CPU configuration																								
1	1																								
2	1												2												
3	1									3			2												
4	1									3			2										4		
5	1			5						3			2										4		
6	1			5						3			2			6							4		
7	1			5			7			3			2			6							4		
8	1			5			7			3			2			6			8				4		
9	1	9		5			7			3			2			6			8				4		
10	1	9		5			7			3			2	10		6			8				4		
11	1	9		5			7			3	11		2	10		6			8				4		
12	1	9		5			7			3	11		2	10		6			8				4	12	
13	1	9		5	13		7			3	11		2	10		6			8				4	12	
14	1	9		5	13		7			3	11		2	10		6	14		8				4	12	
15	1	9		5	13		7	15		3	11		2	10		6	14		8				4	12	
16	1	9		5	13		7	15		3	11		2	10		6	14		8	16			4	12	
17	1	9	17	5	13		7	15		3	11		2	10		6	14		8	16			4	12	
18	1	9	17	5	13		7	15		3	11		2	10	18	6	14		8	16			4	12	
19	1	9	17	5	13		7	15		3	11	19	2	10	18	6	14		8	16			4	12	
20	1	9	17	5	13		7	15		3	11	19	2	10	18	6	14		8	16			4	12	20
21	1	9	17	5	13	21	7	15		3	11	19	2	10	18	6	14		8	16			4	12	20
22	1	9	17	5	13	21	7	15		3	11	19	2	10	18	6	14	22	8	16			4	12	20
23	1	9	17	5	13	21	7	15	23	3	11	19	2	10	18	6	14	22	8	16			4	12	20
24	1	9	17	5	13	21	7	15	23	3	11	19	2	10	18	6	14	22	8	16	24		4	12	20

Notes on Independant Channel mode

- Configurations marked in grey are only possible with registered DIMMs (RDIMMS and LR-DIMMs)

10.1.1.3 Mirrored Channel and Performance modes

CPU	CPU 1												CPU 2											
Channel	A			B			D			C			E			F			H			G		
DIMM	1A	2A	3A	1B	2B	3B	1D	2D	3D	1C	2C	3C	1E	2E	3E	1F	2F	3F	1H	2H	3H	1G	2G	3G
# DIMMs	Mono CPU configuration																							
4	1	2	3	1	2	3	1	2	3	1	2	3												
8	1	2	3	1	2	3	1	2	3	1	2	3												
12	1	2	3	1	2	3	1	2	3	1	2	3												
# DIMMs	Dual CPU configuration																							
8	1	2	3	1	2	3	1	2	3	1	2	3	2	3	4	2	3	4	2	3	4	2	3	4
12	1	3	5	1	3	5	1	3	5	1	3	5	2	4	6	2	4	6	2	4	6	2	4	6
16	1	3	5	1	3	5	1	3	5	1	3	5	2	4	6	2	4	6	2	4	6	2	4	6
20	1	3	5	1	3	5	1	3	5	1	3	5	2	4	6	2	4	6	2	4	6	2	4	6
24	1	3	5	1	3	5	1	3	5	1	3	5	2	4	6	2	4	6	2	4	6	2	4	6

Notes on Mirrored Channel and Performance modes

- Always populate memory modules in multiples of 4.
- Same numbers mean identical modules (capacity, rank).

Main memory

10.1.1.4 Rank Sparing mode

Single-/Dual-Rank RDIMMs

CPU	CPU 1												CPU 2											
Channel	A			B			D			C			E			F			H			G		
DIMM	1A	2A	3A	1B	2B	3B	1D	2D	3D	1C	2C	3C	1E	2E	3E	1F	2F	3F	1H	2H	3H	1G	2G	3G
# DIMMs	Mono CPU configuration																							
2	o	o																						
3	o	o	o																					
4	o	o										o	o											
5	o	o	o									o	o											
6	o	o	o									o	o	o										
7	o	o	o	o	o							o	o											
8	o	o	o	o	o							o	o	o										
9	o	o	o	o	o	o						o	o	o										
10	o	o	o	o	o	o	o	o				o	o	o										
11	o	o	o	o	o	o	o	o	o			o	o	o										
12	o	o	o	o	o	o	o	o	o	o	o	o	o	o										
# DIMMs	Dual CPU configuration (if all modules are of the same capacity)																							
4	o	o												o	o									
5	o	o	o											o	o									
6	o	o	o											o	o	o								
7	o	o	o									o	o		o	o								
8	o	o	o									o	o	o	o	o								
9	o	o	o									o	o	o	o	o	o							
10	o	o	o									o	o		o	o	o					o	o	
11	o	o	o									o	o	o	o	o	o					o	o	
12	o	o	o									o	o	o	o	o	o					o	o	
13	o	o	o	o	o							o	o	o	o	o	o					o	o	
14	o	o	o	o	o							o	o	o	o	o	o					o	o	
15	o	o	o	o	o	o						o	o	o	o	o	o					o	o	
16	o	o	o	o	o							o	o	o	o	o	o	o				o	o	
17	o	o	o	o	o	o						o	o	o	o	o	o	o				o	o	
18	o	o	o	o	o	o						o	o	o	o	o	o	o				o	o	
19	o	o	o	o	o	o	o	o				o	o	o	o	o	o	o				o	o	
20	o	o	o	o	o	o	o	o				o	o	o	o	o	o	o				o	o	
21	o	o	o	o	o	o	o	o	o			o	o	o	o	o	o	o				o	o	
22	o	o	o	o	o	o	o	o				o	o	o	o	o	o	o	o	o		o	o	
23	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	
24	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	

CPU	CPU 1												CPU	CPU 2												
Ch.	A			B			D			C			Ch.	E			F			H			G			
DIMM	1A	2A	3A	1B	2B	3B	1D	2D	3D	1C	2C	3C	DIMM	1E	2E	3E	1F	2F	3F	1H	2H	3H	1G	2G	3G	
#	Dual CPU configuration (if modules are of different capacities)												#	Dual CPU configuration (if modules are of different capacities)												
2	o	o											2	o	o											
3	o	o	o										3	o	o	o										
4	o	o									o	o	4	o	o									o	o	
5	o	o	o								o	o	5	o	o	o								o	o	
6	o	o	o								o	o	o	6	o	o	o							o	o	o
7	o	o	o	o	o						o	o	o	7	o	o	o	o	o					o	o	o
8	o	o	o	o	o						o	o	o	8	o	o	o	o	o					o	o	o
9	o	o	o	o	o	o					o	o	o	9	o	o	o	o	o	o				o	o	o
10	o	o	o	o	o		o	o			o	o	o	10	o	o	o	o	o		o	o		o	o	o
11	o	o	o	o	o	o	o	o			o	o	o	11	o	o	o	o	o	o	o	o		o	o	o
12	o	o	o	o	o	o	o	o	o			o	o	12	o	o	o	o	o	o	o	o	o	o	o	o



For detailed population rules, refer to section ["Notes on Rank Sparing mode"](#) on page 475.

Main memory

Quad-Rank RDIMMs

CPU	CPU 1												CPU 2											
Channel	A			B			D			C			E			F			H			G		
DIMM	1A	2A	3A	1B	2B	3B	1D	2D	3D	1C	2C	3C	1E	2E	3E	1F	2F	3F	1H	2H	3H	1G	2G	3G
# DIMMs	Mono CPU configuration																							
1	o																							
2	o	o																						
3	o	o										o												
4	o	o										o	o											
5	o	o		o								o	o											
6	o	o		o	o							o	o											
7	o	o		o	o		o					o	o											
8	o	o		o	o		o	o				o	o											
9	o	o	o	o	o		o	o				o	o											
10	o	o	o	o	o		o	o				o	o	o										
11	o	o	o	o	o	o	o	o				o	o	o										
12	o	o	o	o	o	o	o	o	o	o	o	o	o	o										
# DIMMs	Dual CPU configuration (if all modules are of the same capacity)																							
1	o																							
2	o													o										
3	o	o												o										
4	o	o												o	o									
5	o	o										o		o	o									
6	o	o										o	o	o	o									
7	o	o										o	o	o	o									
8	o	o										o	o	o	o									
9	o	o		o								o	o	o	o									
10	o	o		o	o							o	o	o	o									
11	o	o		o	o							o	o	o	o	o								
12	o	o		o	o							o	o	o	o	o	o							
13	o	o		o	o		o					o	o	o	o	o	o							
14	o	o		o	o		o	o				o	o	o	o	o	o							
15	o	o		o	o		o	o				o	o	o	o	o	o							
16	o	o		o	o		o	o				o	o	o	o	o	o							
17	o	o	o	o	o		o	o				o	o	o	o	o	o							
18	o	o	o	o	o		o	o				o	o	o	o	o	o							
19	o	o	o	o	o		o	o				o	o	o	o	o	o							
20	o	o	o	o	o		o	o				o	o	o	o	o	o							
21	o	o	o	o	o	o	o	o				o	o	o	o	o	o							
22	o	o	o	o	o	o	o	o				o	o	o	o	o	o							
23	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o							
24	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o

CPU	CPU 1												CPU	CPU 2											
Ch.	A			B			D			C			Ch.	E			F			H			G		
DIMM	1A	2A	3A	1B	2B	3B	1D	2D	3D	1C	2C	3C	DIMM	1E	2E	3E	1F	2F	3F	1H	2H	3H	1G	2G	3G
#	Dual CPU configuration (if modules are of different capacities)												#	Dual CPU configuration (if modules are of different capacities)											
1	o												1	o											
2	o	o											2	o	o										
3	o	o										o	3	o	o								o		
4	o	o									o	o	4	o	o							o	o		
5	o	o		o							o	o	5	o	o		o					o	o		
6	o	o		o	o						o	o	6	o	o		o	o				o	o		
7	o	o		o	o		o				o	o	7	o	o		o	o		o		o	o		
8	o	o		o	o		o	o			o	o	8	o	o		o	o		o	o	o	o		
9	o	o	o	o	o		o	o			o	o	9	o	o	o	o	o		o	o	o	o		
10	o	o	o	o	o		o	o			o	o	10	o	o	o	o	o		o	o	o	o	o	
11	o	o	o	o	o		o	o			o	o	11	o	o	o	o	o		o	o	o	o	o	
12	o	o	o	o	o		o	o			o	o	12	o	o	o	o	o		o	o	o	o	o	

Notes on Rank Sparring mode

- Same numbers mean identical modules (capacity, rank)
- In case of Single-/Dual-Rank memory configurations, at least two 1R or 2R modules must be populated per a channel.
- In case of Quad-Rank memory modules, please note the following: Due to performance reasons, always populate a new channel before installing the 3rd memory slot of a channel.
- Only one memory module capacity per CPU is allowed.

If two different memory module capacities have been ordered for Rank Sparring mode, populate them on different CPUs, so that each CPUs only comprises modules of one capacity

Example:

12 modules have been ordered, 8 x 4 GB and 4 x 8 GB.
In this case, proceed as follows:

- ▶ Use the capacity group with more memory modules for CPU 1 and populate them according to the population sequence for mono CPU configurations.
- ▶ Populate the other capacity group on CPU 2 according to the population rules for mono CPU configurations.

Main memory

- In order to satisfy cooling requirements, populate memory channels on alternating sides of the processor:

Order	CPU 1	CPU 2
1	Channel A	Channel E
2	Channel C	Channel G
3	Channel B	Channel F
4	Channel D	Channel H

10.2 Installing memory modules



Upgrade and Repair Unit (URU)



**Average task duration:
5 minutes**

Tools: tool-less

10.2.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

10.2.2 Installing a memory module

- ▶ Identify the correct memory slot according to the mounting order described in section ["Memory sequence"](#) on page 468.

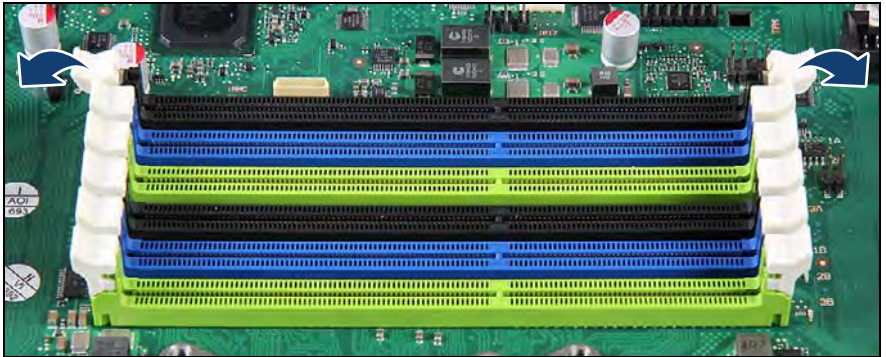


Figure 360: Installing memory modules (A)

- ▶ Press out the securing clip at each end of the memory module connector.



For lack of space, it is necessary to remove the left rear fan (fan 5) in order to install or remove memory modules in channels E and F. For further information, please refer to section ["Removing a rear fan module"](#) on page 336.

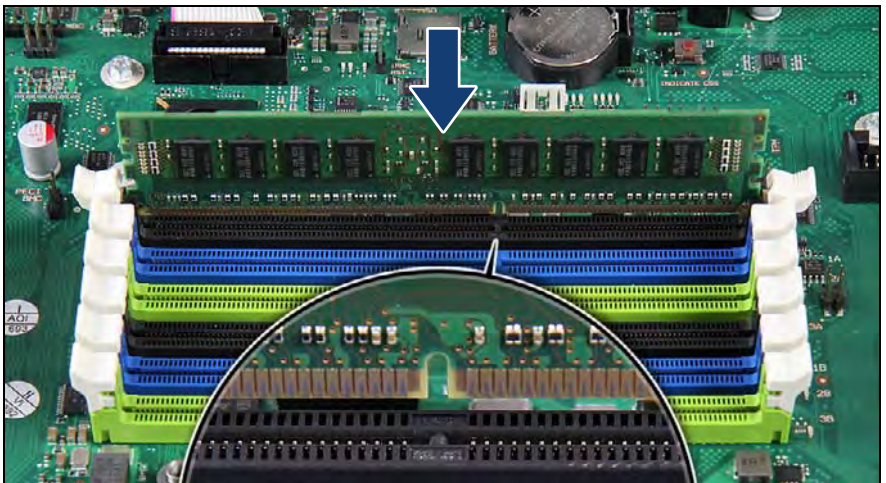


Figure 361: Installing memory modules (B)

Main memory

- ▶ Align the notch on the bottom of the module with the crossbar in the connector (see close-up).

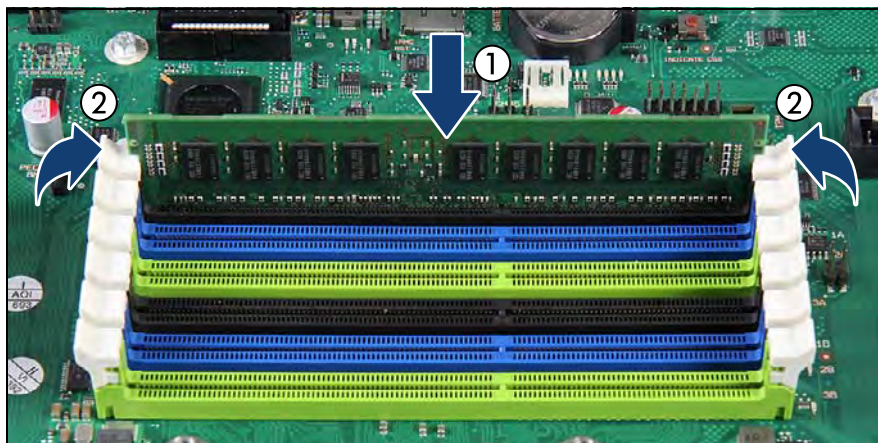


Figure 362: Installing memory modules (C)

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

10.2.3 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If available, update the system board BIOS to the latest version as described in section ["Updating or recovering the system board BIOS and iRMC" on page 134](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ If applicable, configure the memory mode as described in section ["Verifying the memory mode" on page 147](#).
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

10.3 Removing memory modules



**Upgrade and Repair Unit
(URU)**



**Average task duration:
5 minutes**

Tools: tool-less

10.3.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

10.3.2 Removing a memory module

- ▶ Identify the desired memory slot according to the mounting order described in section ["Memory sequence" on page 468](#).



CAUTION!

Ensure to maintain an operational configuration when removing memory modules. For additional information, please refer to section ["Basic information" on page 468](#).

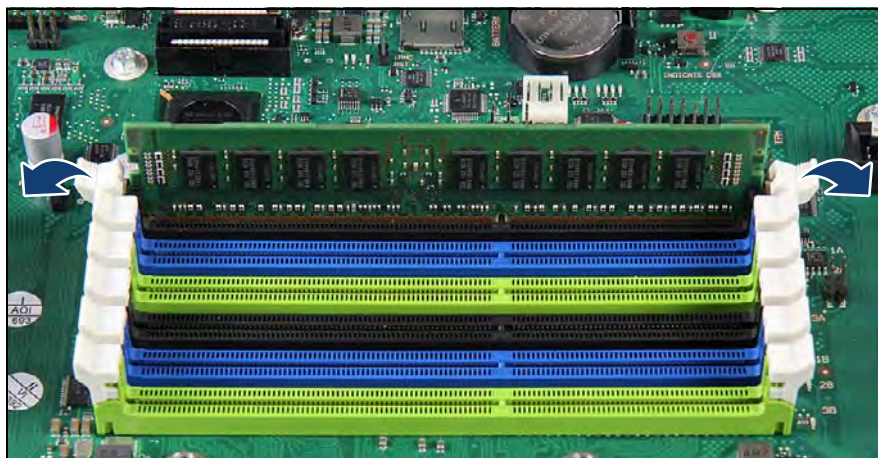


Figure 363: Removing memory modules (A)

- ▶ Eject the desired memory module by pressing out the securing clips at each end of the memory module connector.



For lack of space, it is necessary to remove the rear fan modules (fans 5 and 6) in order to install or remove memory modules in channels E and F or channels G and H. For further information, please refer to section ["Removing a rear fan module" on page 336](#).

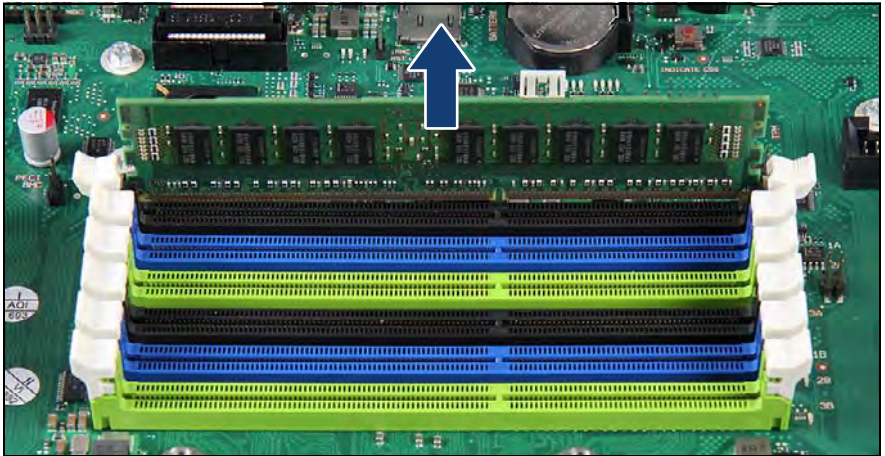


Figure 364: Removing memory modules (B)

- ▶ Remove the ejected memory module.

10.3.3 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
 - ▶ ["Mounting the server in the rack" on page 115](#)
 - ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If available, update the system board BIOS to the latest version as described in section ["Updating or recovering the system board BIOS and iRMC" on page 134](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

10.4 Replacing memory modules



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: tool-less

10.4.1 Preliminary steps

- ▶ Identify the defective memory slot using the server management software.
- ▶ ["Suspending BitLocker functionality" on page 125.](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127.](#)
- ▶ ["Locating the defective server" on page 57.](#)
- ▶ ["Shutting down the server" on page 62.](#)
- ▶ ["Disconnecting the server from the mains" on page 63.](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68.](#)
- ▶ ["Removing the system air duct" on page 81.](#)
- ▶ Locate the defective memory module using the onboard Local Diagnostic LEDs as described in section ["Onboard indicators and controls" on page 779.](#)

10.4.2 Removing the defective memory module

- ▶ ["Removing memory modules" on page 479](#)

10.4.3 Installing a new memory module

- ▶ ["Installing memory modules" on page 476](#)

10.4.4 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If available, update the system board BIOS to the latest version as described in section ["Updating or recovering the system board BIOS and iRMC" on page 134](#).
- ▶ ["Resetting the error status after replacing memory modules or processors" on page 142](#)
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ ["Enabling replaced components in the system BIOS" on page 147](#)
- ▶ Verify if the memory mode has been restored to its original state as described in section ["Verifying the memory mode" on page 147](#).
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

11 Processors

This section provides information on how to install, remove and replace processors and processor heat sinks.

Safety notes



CAUTION!

- Do not install unsupported processors. For further information on supported processors, refer to section ["Basic information" on page 485](#).
- 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 processors, be careful not to touch or bend the spring contacts on the processor sockets.
- Never touch the underside of the processors. Even minor soiling such as grease from the skin can impair the processor's operation or destroy the processors.
- For further information, please refer to chapter ["Important information" on page 45](#).

11.1 Basic information

The system board D2949 offers two sockets for Intel Xeon processors.

11.1.1 Supported processors

- Intel Xeon E5-2600 processor series CPUs
- Socket type: LGA 2011 package
- Thermal Design Power (TDP) class: up to 135 W

11.1.2 Processor locations

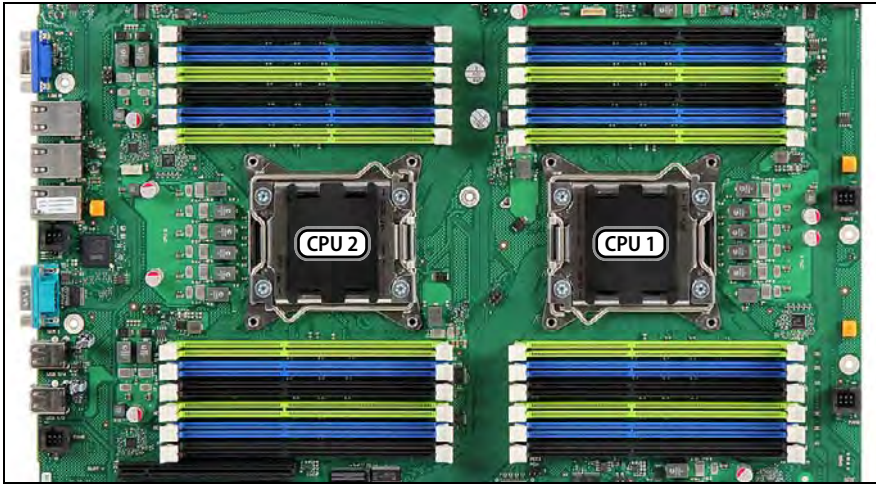


Figure 365: CPU locations on system board D2949

11.2 Installing processors



**Upgrade and Repair Unit
(URU)**



**Average task duration:
20 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver



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 Preliminary steps

- ▶ "Suspending BitLocker functionality" on page 125
- ▶ "Disabling SVOM boot watchdog functionality" on page 127
- ▶ "Shutting down the server" on page 62
- ▶ "Disconnecting the server from the mains" on page 63
- ▶ When working on a rack-mounted server:
"Extending / removing the server from the rack" on page 64
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section "Opening the server" on page 68.
- ▶ "Removing the system air duct" on page 81

11.2.2 Installing a processor



This description applies to the following procedures:

- Installing the second CPU in a mono-processor configuration
- Transferring a CPU after replacing the system board (see section "Swapping processors" on page 695)

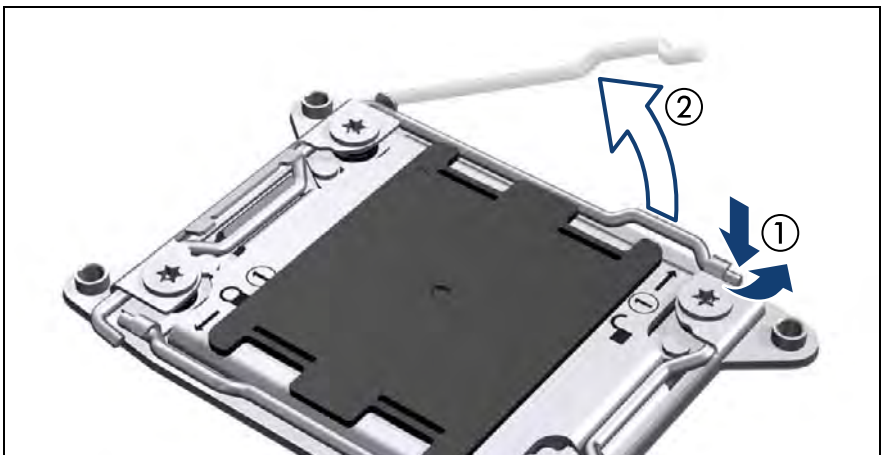


Figure 366: Opening socket release lever 1

Processors

- ▶ Unlatch the socket release lever marked *Open 1st* by pushing it down and away from the socket (1).
- ▶ The socket release lever will slightly lift up (2).

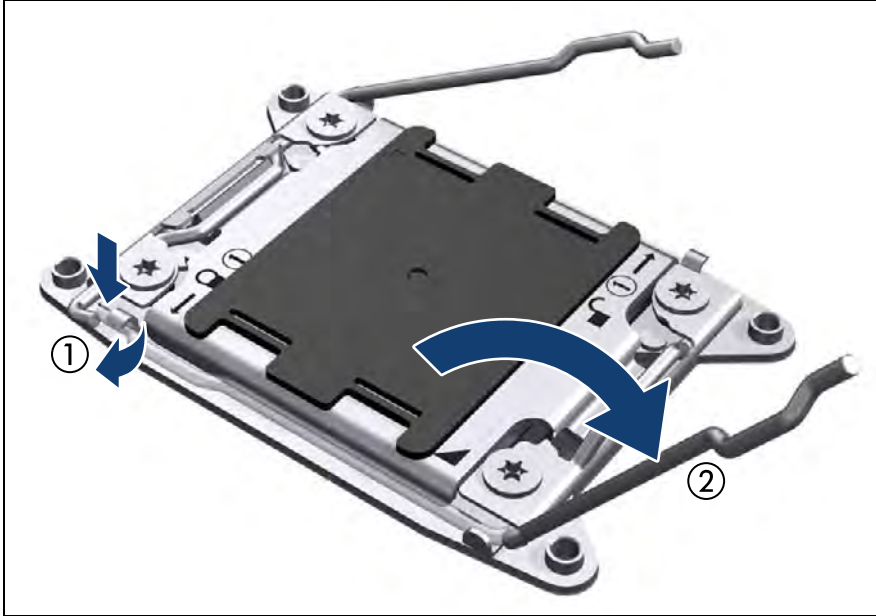


Figure 367: Opening socket release lever 2

- ▶ Unlatch the socket release lever marked *Close 1st* by pushing it down and away from the socket (1).
- ▶ Fully fold back the second socket release lever (2).

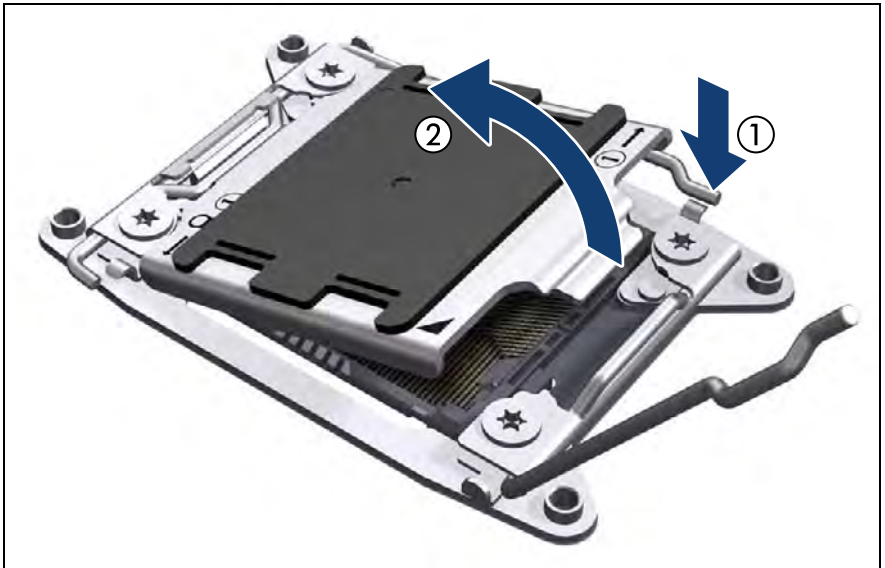


Figure 368: Opening the load plate (A)

- ▶ Push down on the first socket release lever (1) to lift the load plate away from the socket (2).

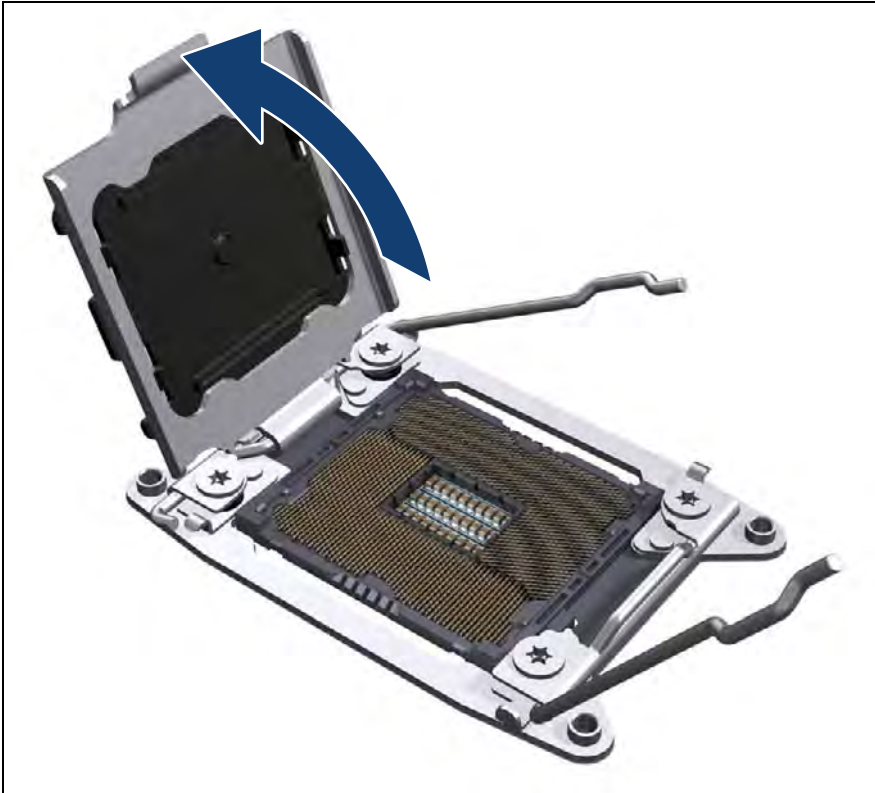


Figure 369: Opening the load plate (B)

- ▶ Fully open the load plate.



CAUTION!

Be careful not to touch or bend the spring contacts on the processor socket!

- ▶ Make sure that the load plate is in the fully open position.

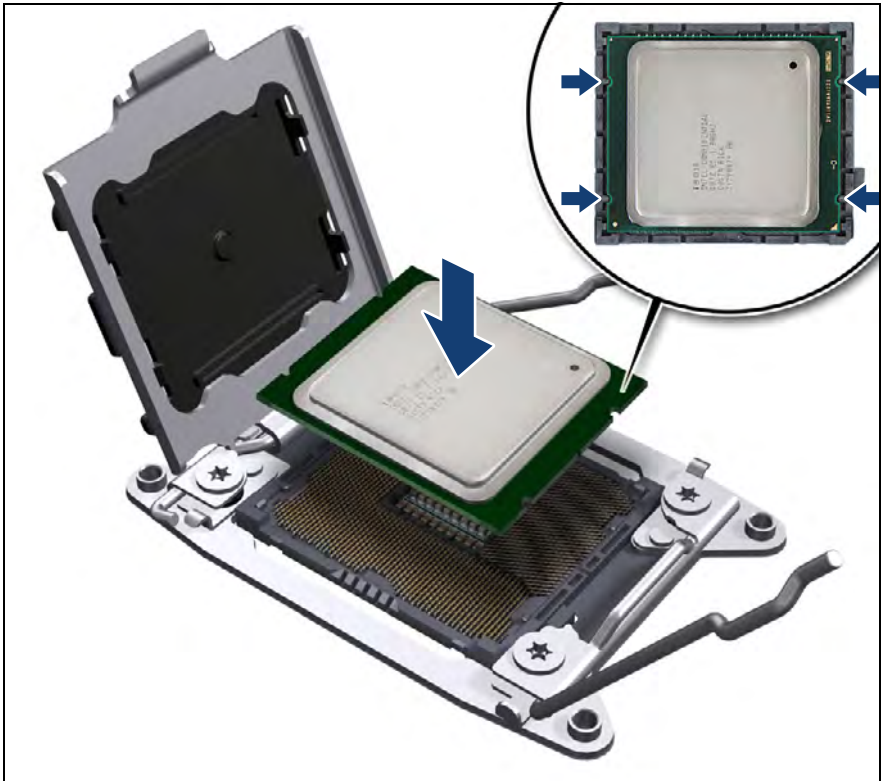


Figure 370: Installing the processor

- ▶ Hold the processor with your thumb and index finger.
- ▶ Make sure that the four 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.

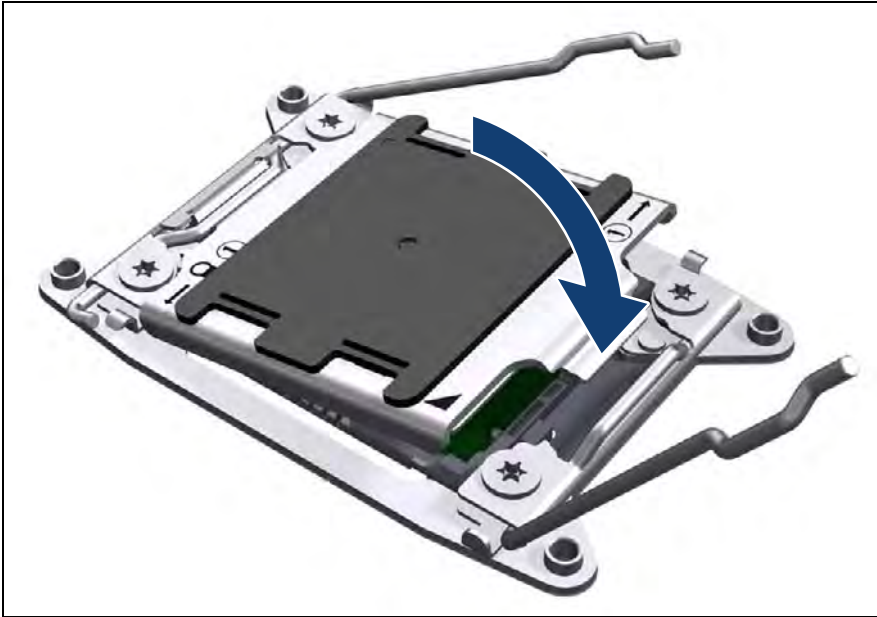


Figure 371: Closing the load plate

- ▶ Carefully lower the load plate over the processor.

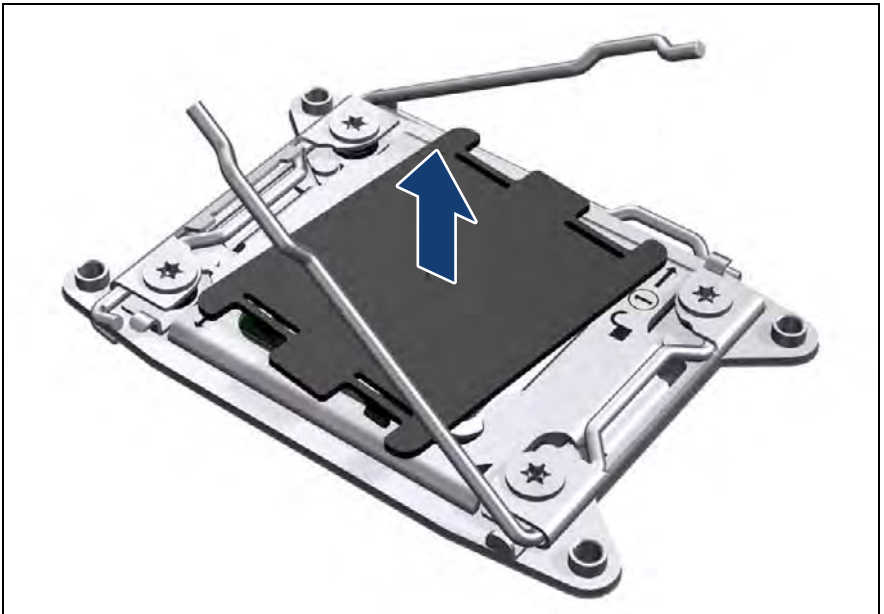


Figure 372: Removing the protective socket cover

- ▶ When closing the load plate, the protective socket cover will automatically detach.
- ▶ Remove the socket cover and save it for future use.



CAUTION!

Always replace the socket cover if you remove the processor from the socket!

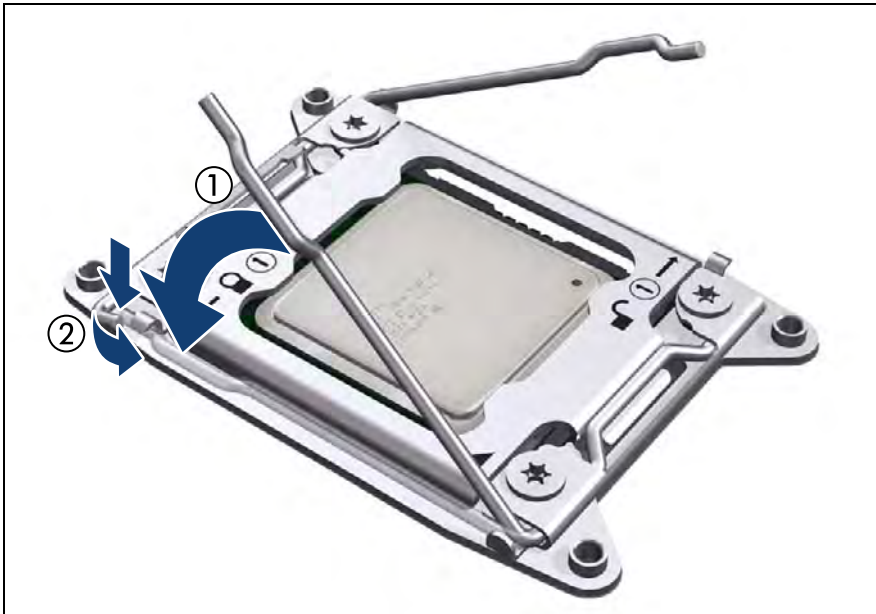


Figure 373: Closing socket release lever 2

- ▶ Fully close and hold shut the load plate.
- ▶ Close the socket release lever marked *Close 1st* (1) and latch it under the load plate retention tab to lock down the load plate (2).

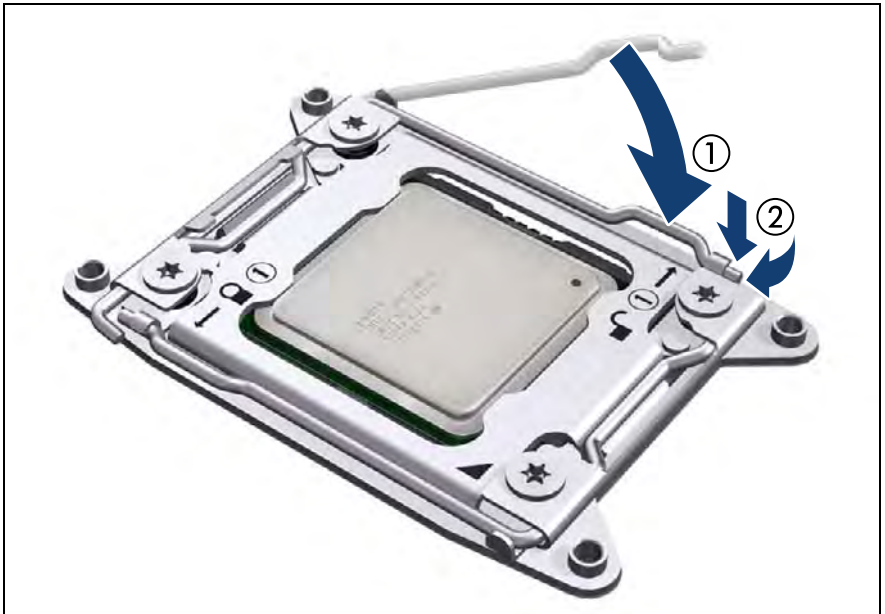


Figure 374: Closing socket release lever 1

- ▶ Close the socket release lever marked *Open Ist* (1) and latch it under the load plate retention tab (2).
- ▶ If applicable, install the second processor accordingly.

11.2.3 Concluding steps

- ▶ ["Installing processor heat sinks" on page 519](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ Reconnect all external cables.
- ▶ ["Connecting the server to the mains" on page 118](#)

- ▶ If available, update the system board BIOS and the iRMC to the latest version as described in section ["Updating or recovering the system board BIOS and iRMC" on page 134](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

11.3 Removing processors



Upgrade and Repair Unit (URU)



**Average task duration:
20 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver



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.

11.3.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).

- ▶ "Removing the system air duct" on page 81
- ▶ "Removing processor heat sinks" on page 523

11.3.2 Removing a processor

- i** This description applies to the following procedures:
- Removing CPU 2 from a dual-processor configuration
 - Removing CPUs from a defective system board (see section "Swapping processors" on page 695)
- ▶ Remove the desired processor heat sink as described in section "Removing processor heat sinks" on page 523.

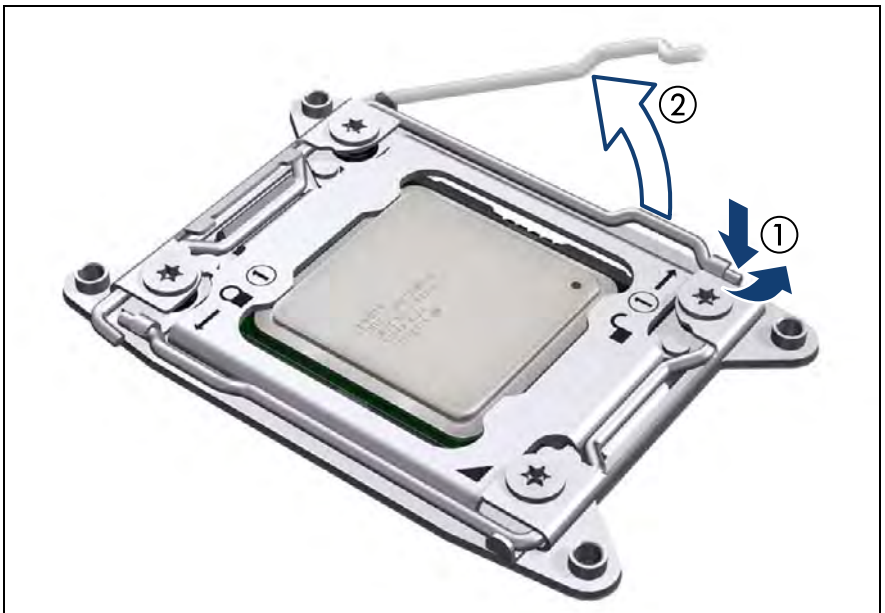


Figure 375: Opening socket release lever 1

- ▶ Unlatch the socket release lever marked *Open 1st* by pushing it down and away from the socket (1).
- ▶ The socket release lever will slightly lift up (2).



Figure 376: Opening socket release lever 2

- ▶ Unlatch the socket release lever marked *Close 1st* by pushing it down and away from the socket (1).
- ▶ Fully fold back the second socket release lever (2).

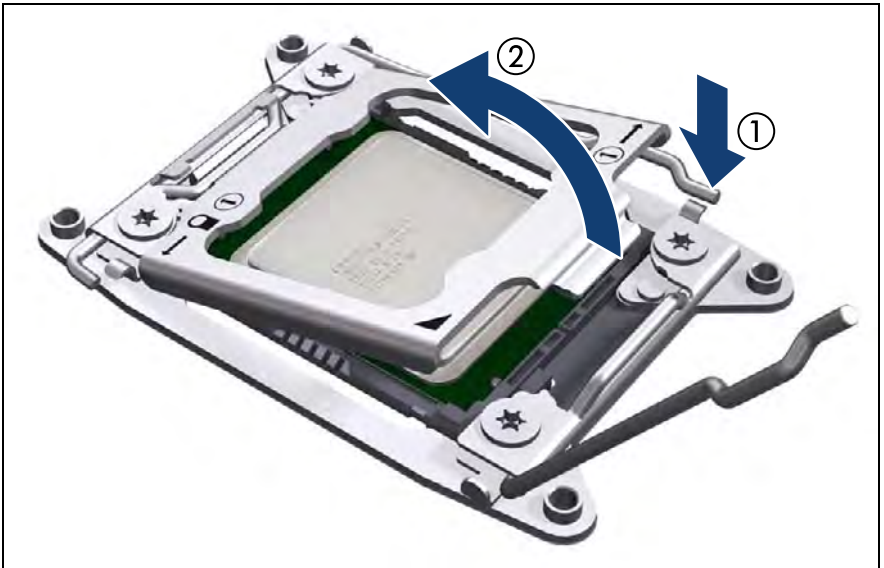


Figure 377: Opening the load plate (A)

- ▶ Push down on the socket release lever marked *Open 1st* (1) to lift the load plate away from the socket (2).



Figure 378: Opening the load plate (B)

- ▶ Fully open the load plate.

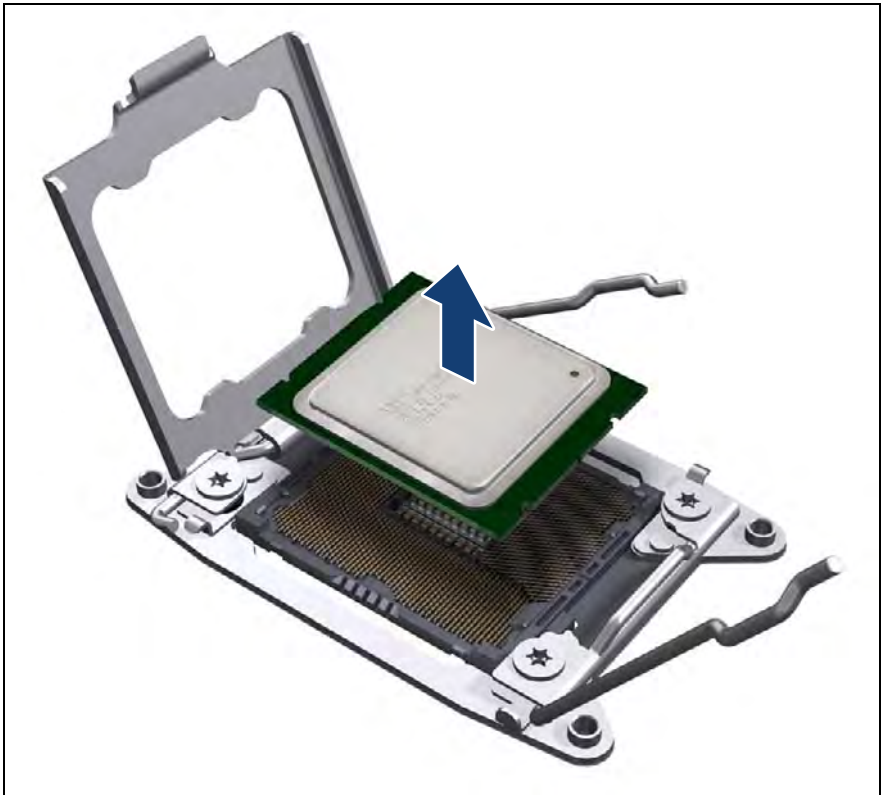


Figure 379: Removing the processor

- ▶ 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.
- ▶ Thoroughly clean residual thermal paste from the processor surface using a lint-free cloth.

Processors

- ▶ Store the processor in a safe place for later reuse.



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.

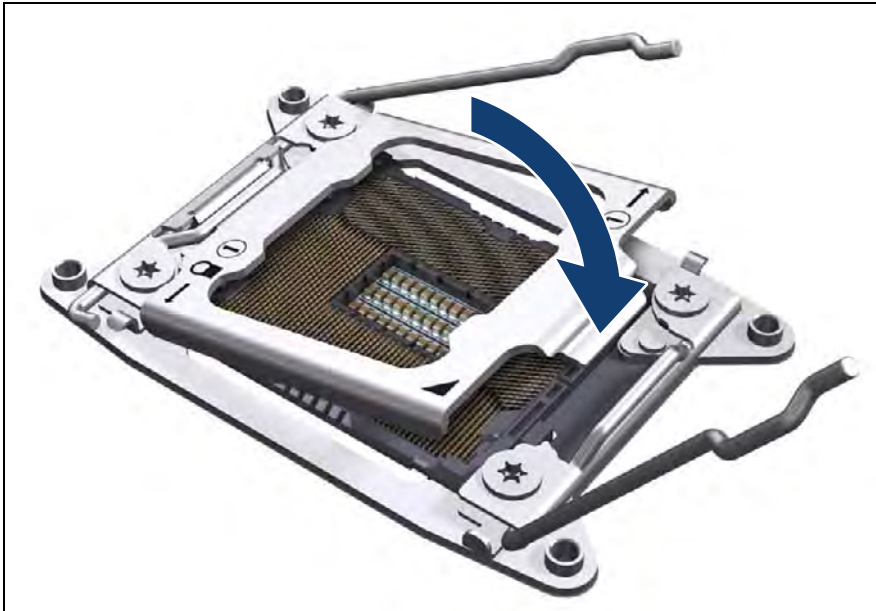


Figure 380: Closing the load plate

- ▶ Carefully close the load plate over the empty processor socket.



CAUTION!

Be careful not to touch or bend the spring contacts on the processor socket.

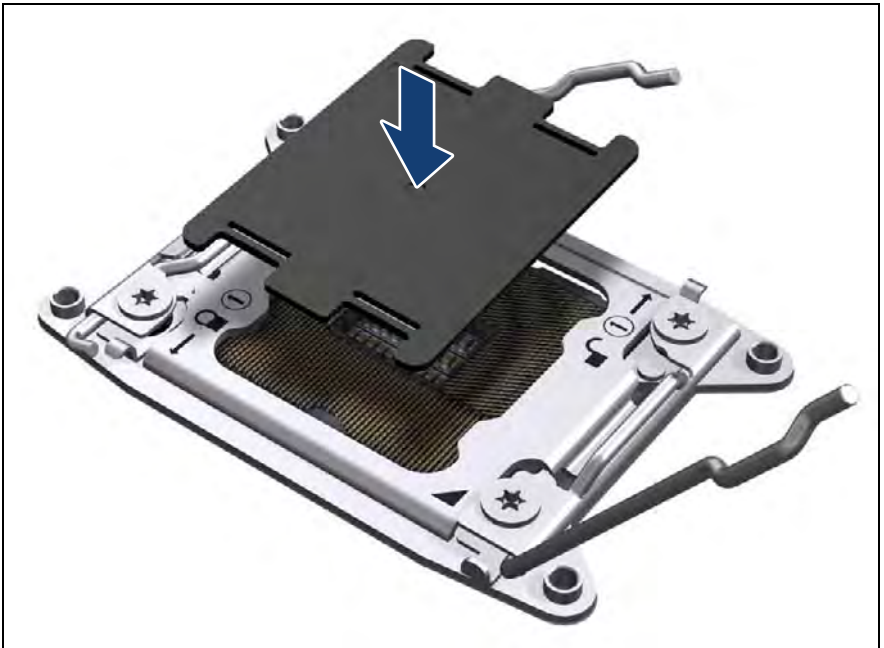


Figure 381: Attaching the protective socket cover (A)

- ▶ Carefully lower the protective socket cover onto the CPU socket in a vertical motion until it snaps in place.



CAUTION!

Always replace the socket cover if you remove the processor from the socket!

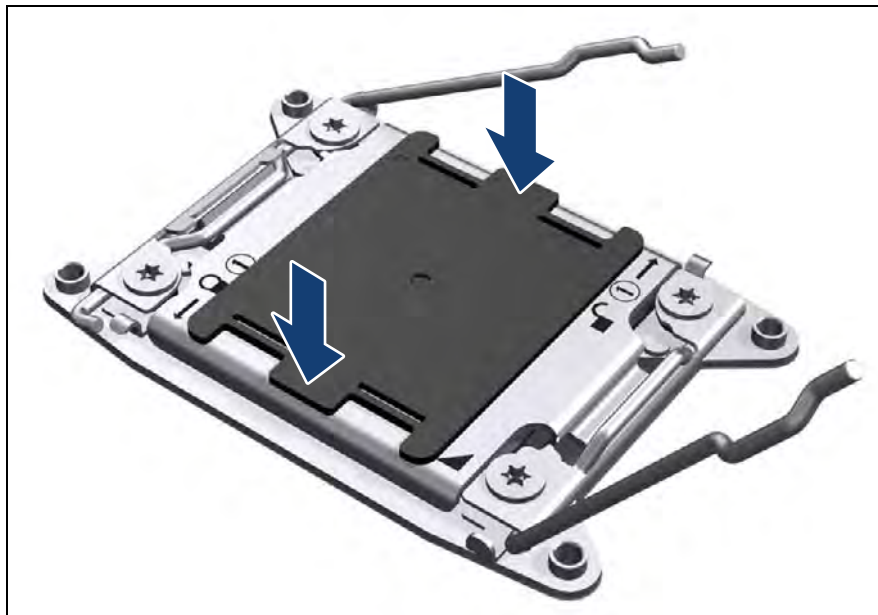


Figure 382: Attaching the protective socket cover (B)

- ▶ Ensure that the protective socket cover is properly installed on the socket as shown above.

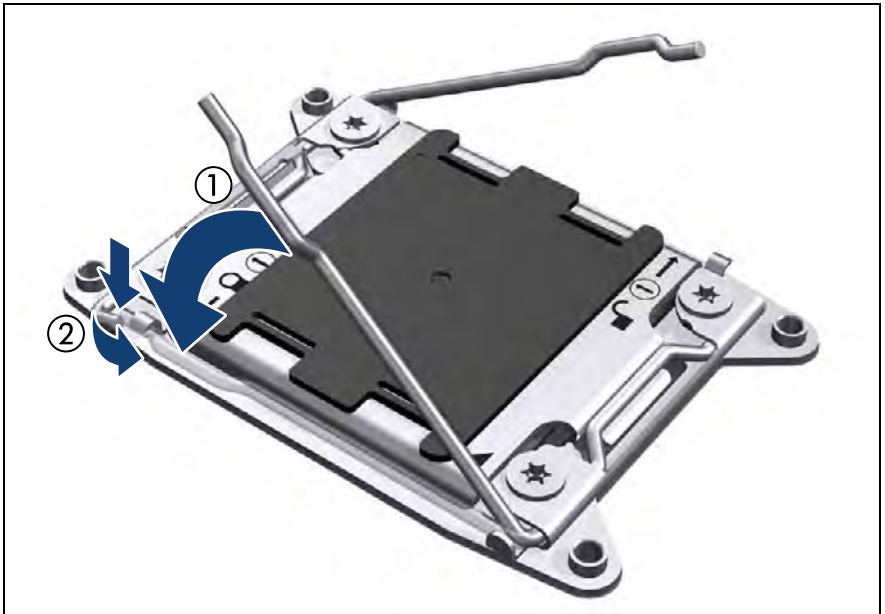


Figure 383: Closing socket release lever 2

- ▶ Fully close and hold shut the load plate.
- ▶ Close the socket release lever marked *Close 1st* (1) and latch it under the load plate retention tab to lock down the load plate (2).

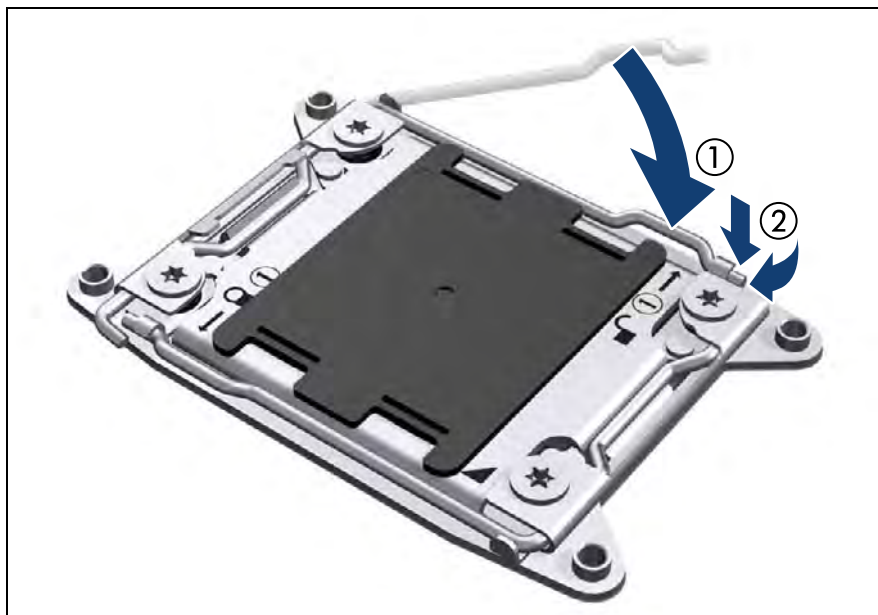


Figure 384: Closing socket release lever 1

- ▶ Close the socket release lever marked *Open 1st* (1) and latch it under the load plate retention tab (2).

11.3.3 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If available, update the system board BIOS and the iRMC to the latest version as described in section ["Updating or recovering the system board BIOS and iRMC" on page 134](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

11.4 Upgrading or replacing processors



Field Replaceable Unit (FRU)



**Average task duration:
20 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver



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.

11.4.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)
- ▶ ["Locating the defective server" on page 57](#) (if applicable)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing processor heat sinks" on page 523](#)

11.4.2 Upgrading or replacing a processor

11.4.2.1 Removing the processor



Figure 385: Opening socket release lever 1

- ▶ Unlatch the socket release lever marked *Open 1st* by pushing it down and away from the socket (1).
- ▶ The socket release lever will slightly lift up (2).



Figure 386: Opening socket release lever 2

- ▶ Unlatch the socket release lever marked *Close 1st* by pushing it down and away from the socket (1).
- ▶ Fully fold back the second socket release lever (2).

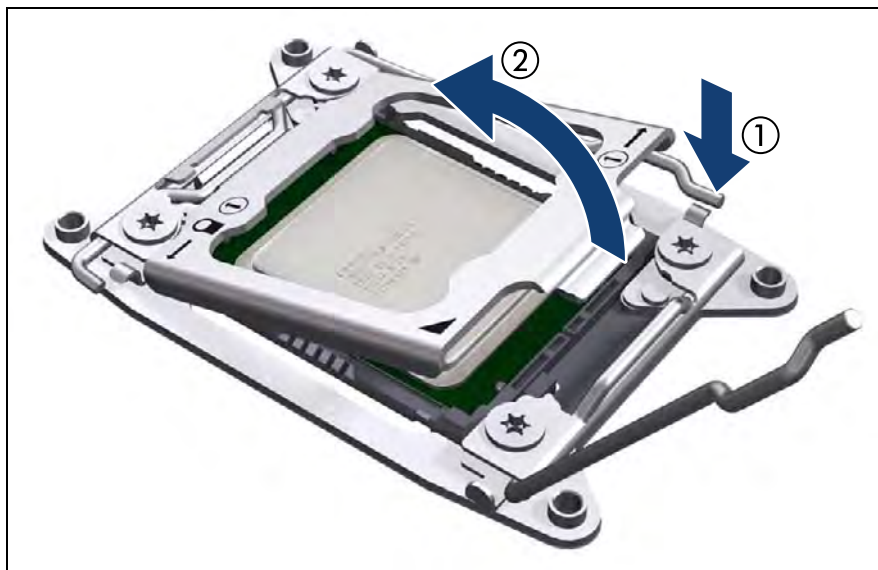


Figure 387: Opening the load plate (A)

- ▶ Push down on the socket release lever marked *Open Ist* (1) to lift the load plate away from the socket (2).



Figure 388: Opening the load plate (B)

- ▶ Fully open the load plate.

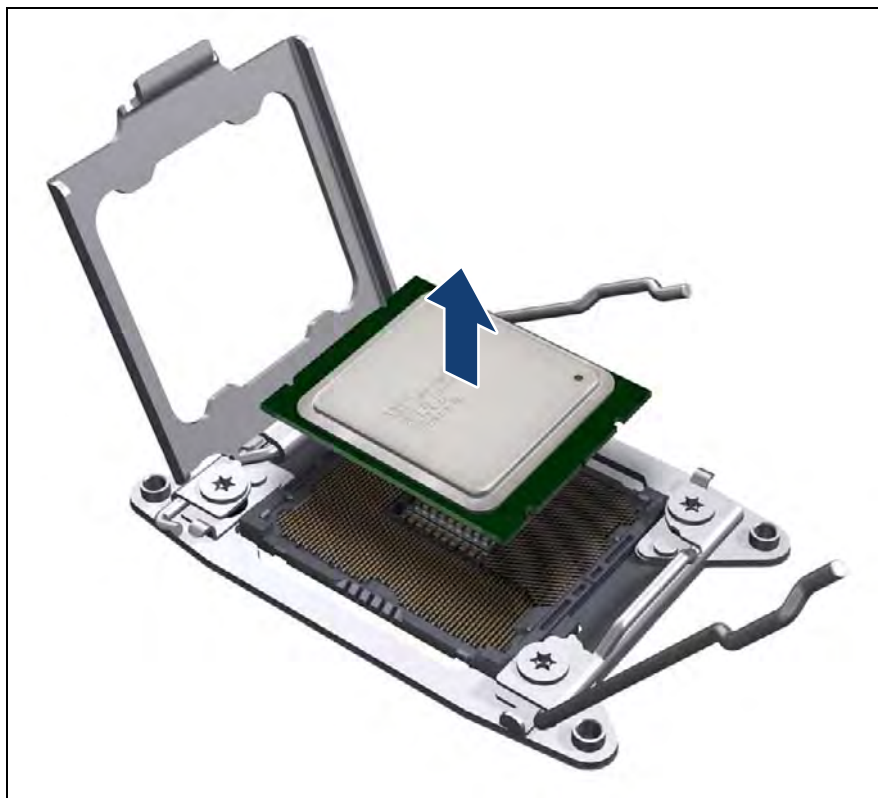


Figure 389: Removing the processor

- ▶ Carefully remove the processor from its socket in a vertical motion.



CAUTION!

Be careful not to touch or bend the spring contacts on the processor socket.

- ▶ Thoroughly clean residual thermal paste from the processor surface using a lint-free cloth.
- ▶ If the processor is being replaced during a CPU upgrade and may be reused later, store it in a safe place.

**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.

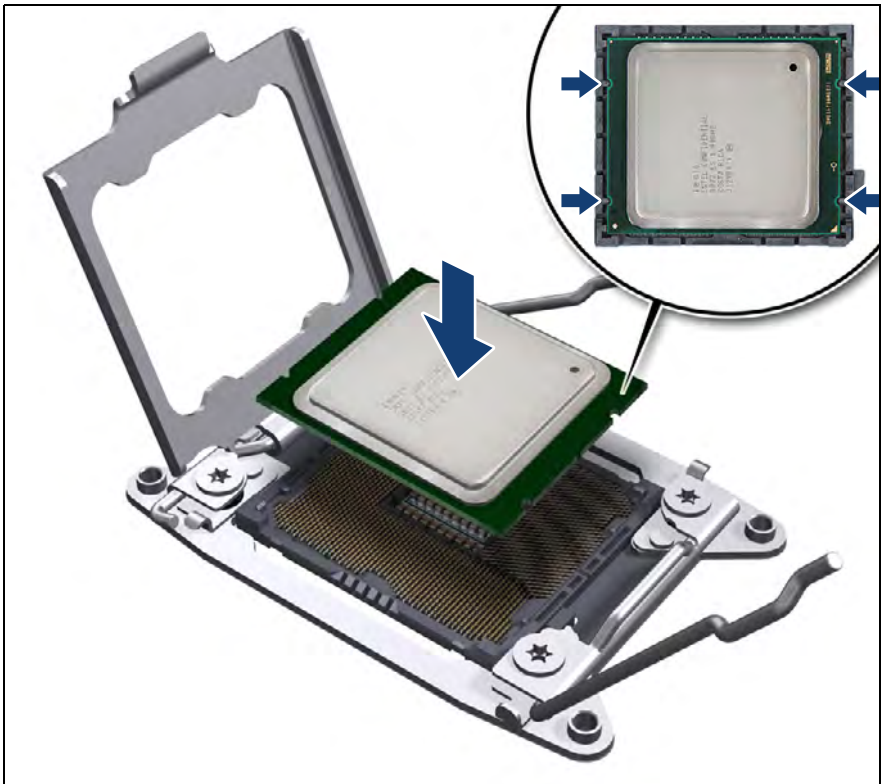
11.4.2.2 Installing the processor

Figure 390: Installing the processor

- ▶ Hold the processor with your thumb and index finger.
- ▶ Make sure that the four 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.

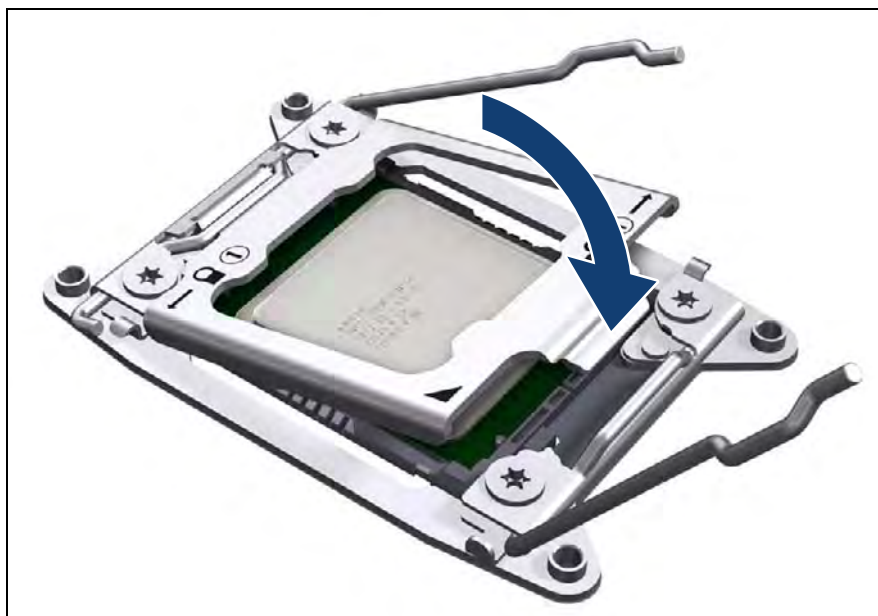


Figure 391: Closing the load plate

- ▶ Carefully lower the load plate over the processor.

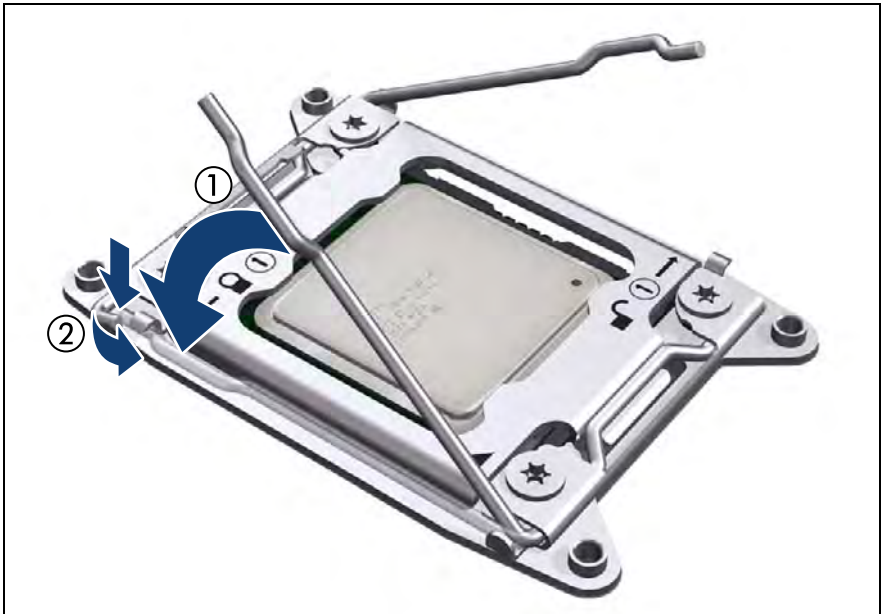


Figure 392: Closing socket release lever 2

- ▶ Fully close and hold shut the load plate.
- ▶ Close the socket release lever marked *Close 1st* (1) and latch it under the load plate retention tab to lock down the load plate (2).



Figure 393: Closing socket release lever 1

- ▶ Close the socket release lever marked *Open 1st* (1) and latch it under the load plate retention tab (2).

11.4.3 Concluding steps

- ▶ ["Installing processor heat sinks" on page 519](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)

- ▶ ["Connecting the server to the mains" on page 118](#)



When the system is powered on after a CPU has been replaced or upgraded, the Global Error indicator will start flashing with the error message `CPU has been changed`. This only indicates that the CPU configuration has been altered. There is no technical problem.

In order to turn off the Global Error indicator, please proceed as follows:

- ▶ Restart the system and wait for screen output to appear.
 - ▶ Press the `[F2]` function key to enter the BIOS. If assigned, enter the BIOS password and press `[Enter]`.
 - ▶ In the *Save & Exit* menu, select *Save Changes and Exit* or *Save Changes and Reset*.
 - ▶ Ensure that the Global Error indicator has stopped flashing.
- ▶ If available, update the system board BIOS and the iRMC to the latest version as described in section ["Updating or recovering the system board BIOS and iRMC" on page 134](#).
 - ▶ ["Resetting the error status after replacing memory modules or processors" on page 142](#)
 - ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
 - ▶ ["Enabling replaced components in the system BIOS" on page 147](#)
 - ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

11.5 Handling processor heat sinks



Upgrade and Repair Unit (URU)



**Average task duration:
15 minutes**



Field Replaceable Unit (FRU) if thermal paste is involved

Tools: Phillips PH2 / (+) No. 2 screw driver

11.5.1 Preliminary steps

- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

11.5.2 Installing processor heat sinks



Figure 394: Standard processor heat sink



Figure 395: High performance processor heat sink

Processors

Two different processor heat sinks are available for the TX300 S8 / RX350 S8 servers:

High performance heat sink	V26898-B977-V3	<ul style="list-style-type: none">– Xeon E5-2643 V2 (Ivy Bridge) 3.5 GHz, 130 W, 6 Core– Xeon E5-2637 V2 (Ivy Bridge) 3.5 GHz, 130 W, 4 Core
Standard heat sink	V26898-B977-V1	all other approved CPUs

11.5.2.1 Preparing the heat sink and processor

When installing a new heat sink

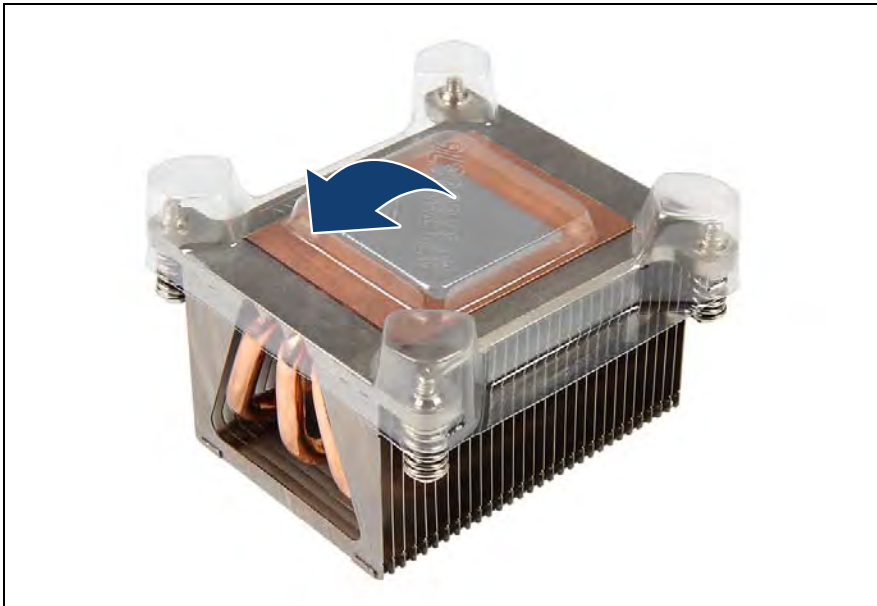


Figure 396: Removing the protective heat sink cover

- ▶ Remove the protective cover from the heat sink.



CAUTION!

Ensure not to touch the thermal paste on the bottom of the heat sink.

When reusing a heat sink

- ▶ Ensure that all residual thermal paste has been thoroughly cleaned off the copper surface of the heat sink.
- ▶ Apply thermal paste to the processor surface as described in section ["Applying thermal paste" on page 526](#).

11.5.2.2 Installing the heat sink

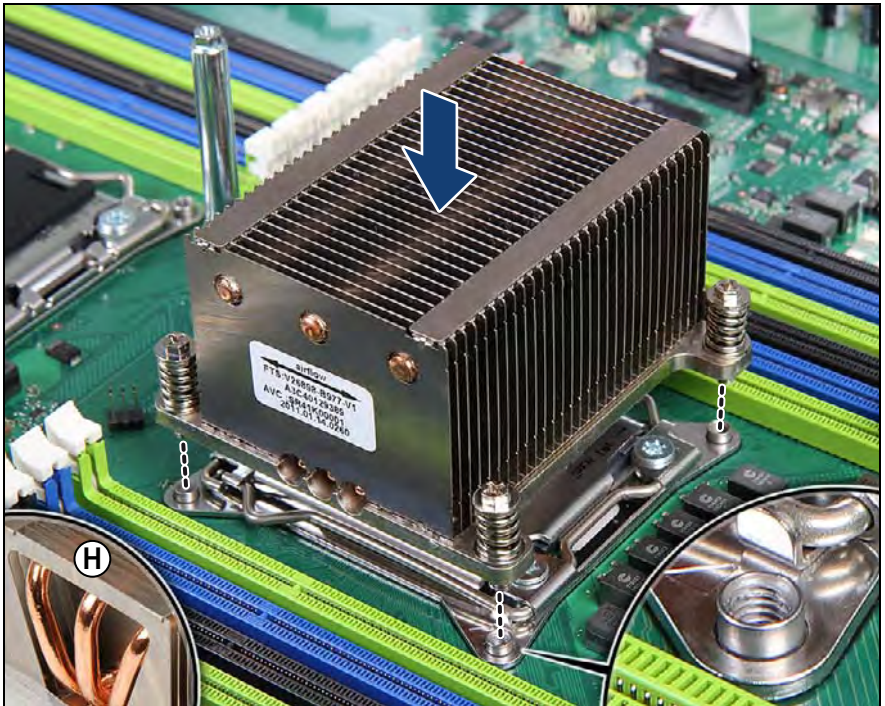


Figure 397: Installing the heat sink (A)

- ▶ Align the heat sink with the uncovered copper heat pipes (H, see above) facing towards the server top.

Processors

- ▶ Carefully seat the heat sink on the four threaded holes as shown (see close-up).



CAUTION!

- Ensure that the screws on the heat sink are properly seated on the threaded holes.
- Ensure that the heat sink cooling fins match the direction of the airflow!

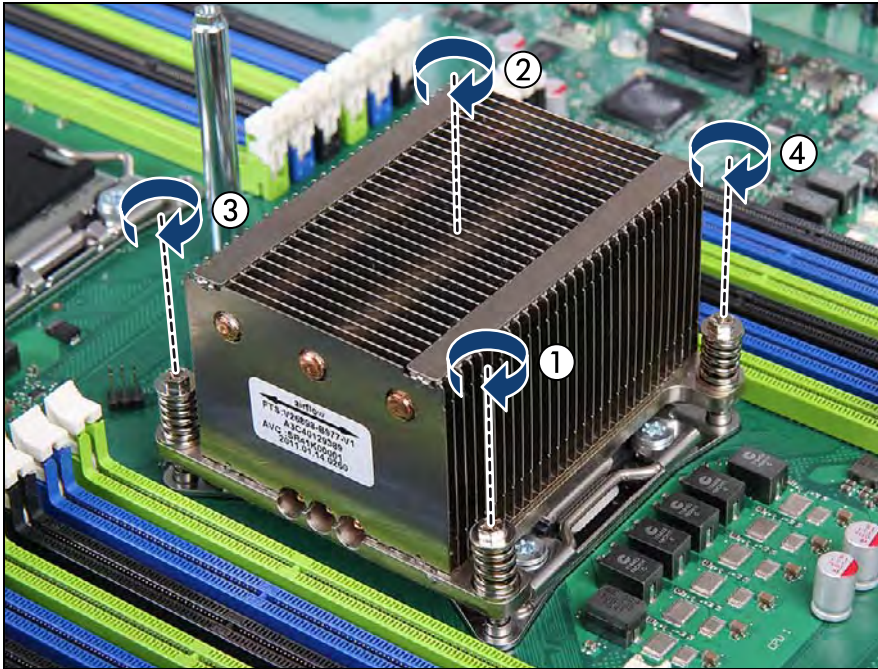


Figure 398: Installing the heat sink (B)

- ▶ Fasten the four captive screws on the heat sink in a crossover pattern (screw torque: 1.0 Nm, not applicable for the Japanese market) (1-4).

11.5.3 Removing processor heat sinks

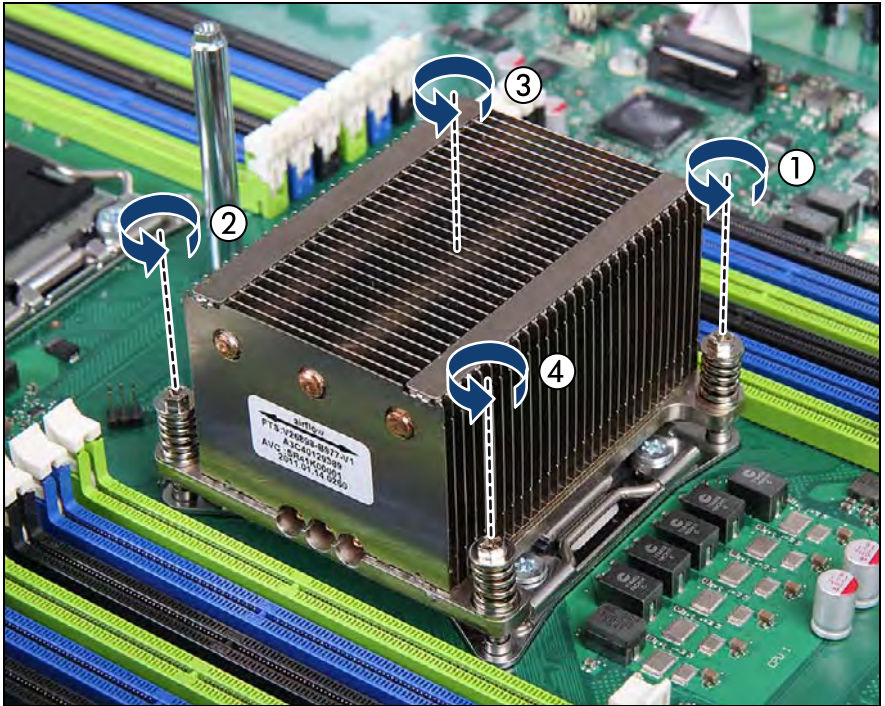


Figure 399: Removing the processor heat sink (A)

- Loosen the four captive screws on the heat sink in a crossover pattern (1-4).

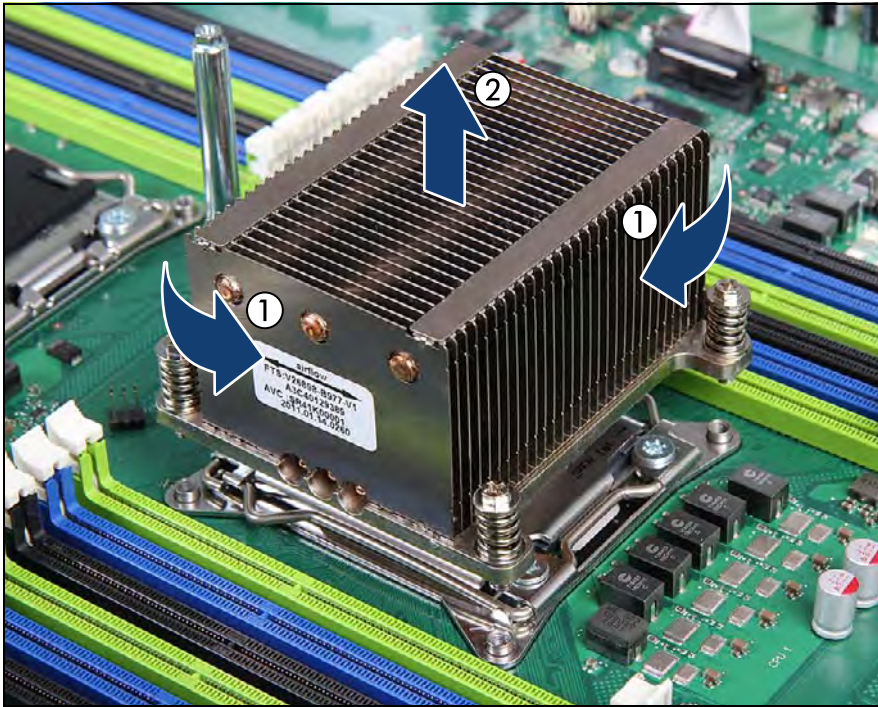


Figure 400: Removing the processor heat sink (B)

- ▶ Carefully turn the heat sink back and forth to detach it from the processor (1).



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 (2).
- ▶ Thoroughly clean residual thermal paste from the surface of the heat sink and the processor using a lint-free cloth.

11.5.4 Replacing processor heat sinks

11.5.4.1 Removing the processor heat sink

- ▶ Remove the processor heat sink as described in section ["Removing processor heat sinks" on page 523](#).

11.5.4.2 Applying thermal paste

- ▶ Apply thermal paste to the processor surface as described in section ["Applying thermal paste" on page 526](#).



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 525](#).

11.5.4.3 Installing the processor heat sink

- ▶ Install the processor heat sink as described in sections ["Preparing the heat sink and processor" on page 520](#) and ["Installing the heat sink" on page 521](#).

11.5.5 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)

11.6 Applying thermal paste



Field Replaceable Unit (FRU)



Average task duration:
5 minutes

Tools: tool-less



- For the Japanese market, the service engineer must follow the instruction provided separately.
- 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 processor heat sinks" on page 519](#).

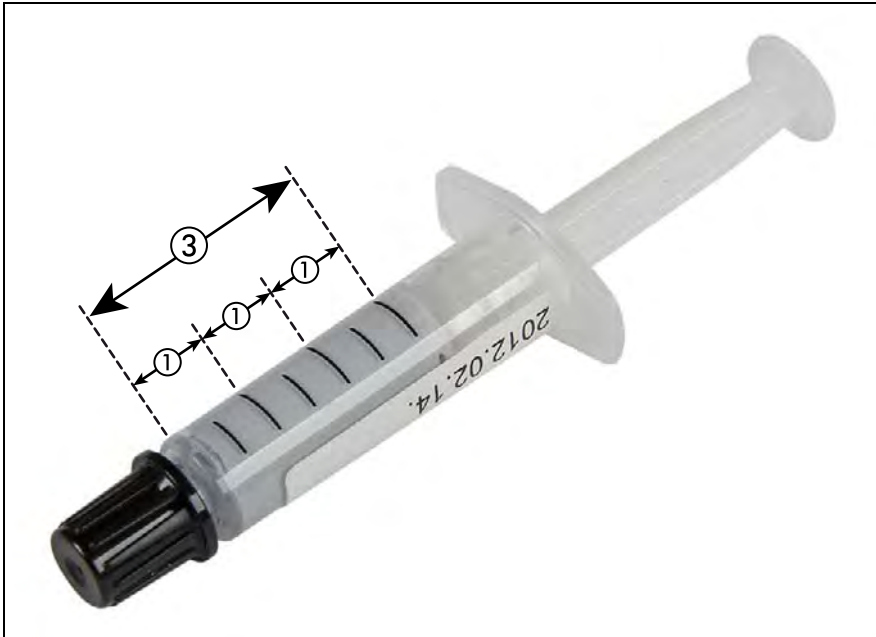


Figure 401: Thermal paste syringe TC-5026

One thermal compound syringe (A3C40142460 / 34035576) contains thermal paste for three processors.



Figure 402: Applying thermal paste

- ▶ Apply a dot of thermal paste to the center of the processor surface as shown.



Two graduation marks on the syringe equal the correct amount of thermal paste for one processor.



CAUTION!

Do not mix different types of thermal paste.

12 Accessible drives

This chapter provides information on how to install, remove or replace SATA optical disk drives (ODDs), SAS / USB backup drives and the Local Service Display (LSD).

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 45.

12.1 Basic information

Accessible drive bays

PRIMERGY TX300 S8 / RX350 S8 server offers three 5.25-inch accessible drive bays for optical disk drives and backup drives:

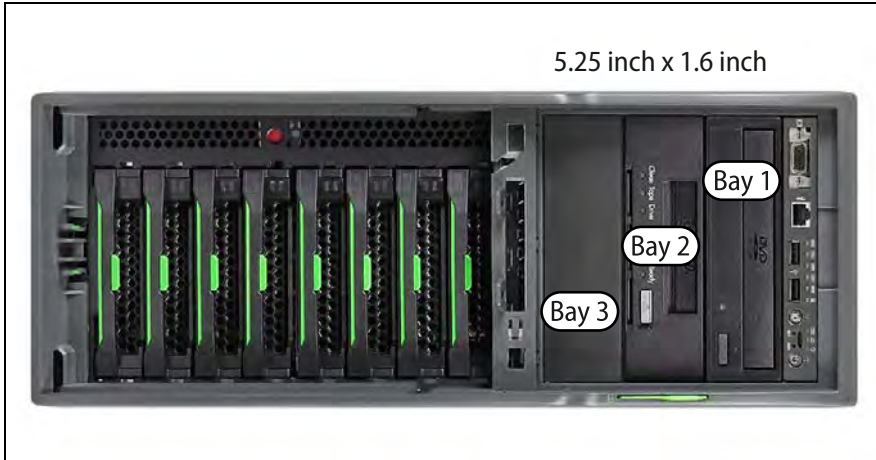


Figure 403: Accessible drives mounting order (tower server)

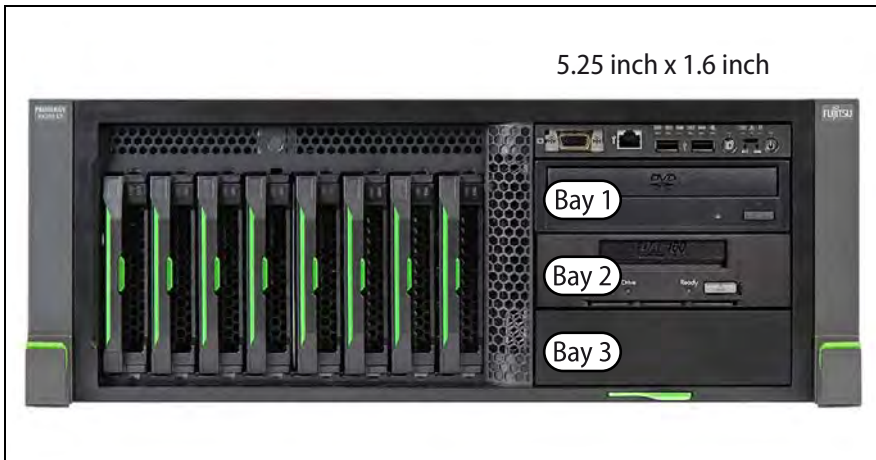


Figure 404: Accessible drives mounting order (rack server)

Mounting order for accessible drives

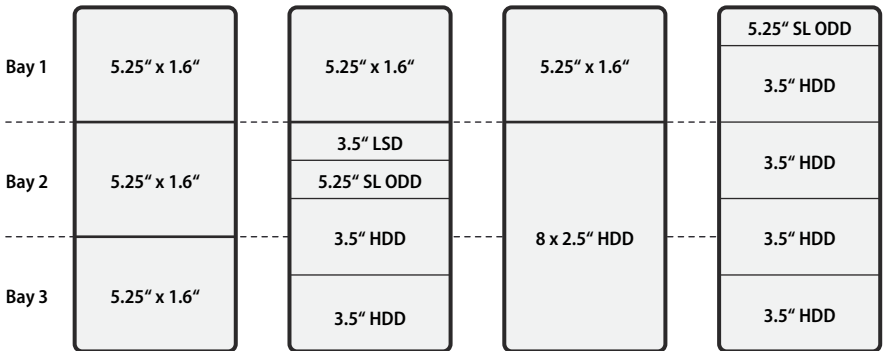


Figure 405: Accessible drive configurations

Order	Accessible drive	Drive bay	Max.	Occupied	Interface
1	Optical disk drive (full height)	Bay 1	1	1.6" x 5.25"	SATA
1	LSD in Multibay		1	1.6" x 5.25"	I ² C bus
1	Slimline ODD in Multibay		1	1.6" x 5.25"	SATA
2	Backup drive LTO3 HH Ultrium	Bay 3 if occupied: Bay 2 or 1	1	1.6" x 5.25"	SAS
2	Backup drive LTO4 HH SAS (IBM)		1	1.6" x 5.25"	SAS
2	Backup drive LTO5 HH Ultrium		1	1.6" x 5.25"	SAS
2	Backup drive LTO6 HH SAS (IBM)		1	1.6" x 5.25"	SAS
2	Backup drive DDS Gen 6		2	1.6" x 5.25"	USB 2.0
3	Backup drive DDS Gen 5 / Gen 6	Bay 3 if occupied: Bay 2 or 1	2	1.6" x 5.25"	USB 2.0

Table 5: Accessible drive mounting sequence

Accessible drives

Order	Accessible drive	Drive bay	Max.	Occupied	Interface
4	RDX backup drive	Bay 3 if occupied: Bay 2 or 1	1	1.6" x 5.25"	USB 2.0
					USB 3.0
5	8x 2.5-inch HDD Extension box	Bays 2+3	1	3.2" x 5.25"	SAS
5	2x 3.5-inch HDD Extension box	Bays 1+2, if occupied: Bays 2+3	1	3.2" x 5.25"	SAS
	LSD in 2x 3.5-inch HDD Extension box				I ² C bus
	Slimline ODD in 2x 3.5-inch HDD Extension box				SATA
5	4x 3.5-inch HDD Extension box	Bays 1+2+3	1	4.8" x 5.25"	SAS
	Slimline ODD in 4x 3.5-inch HDD Extension box				SATA

Table 5: Accessible drive mounting sequence

12.2 Installing accessible drives



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: Slotted screw driver (for bending in or out accessible drive mounting brackets)

12.2.1 Preliminary steps

- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)



The front cover only needs to be removed in order to remove accessible drive dummy covers.

- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

12.2.2 Removing accessible drive dummy covers

- ▶ Remove accessible drive filler covers from the required bays as described in section ["Accessible drive filler covers" on page 94](#).
- ▶ Remove accessible drive covers as described in section ["Accessible drive covers" on page 96](#).

12.2.3 Installing an accessible drive

12.2.3.1 Installing an ODD / backup drive

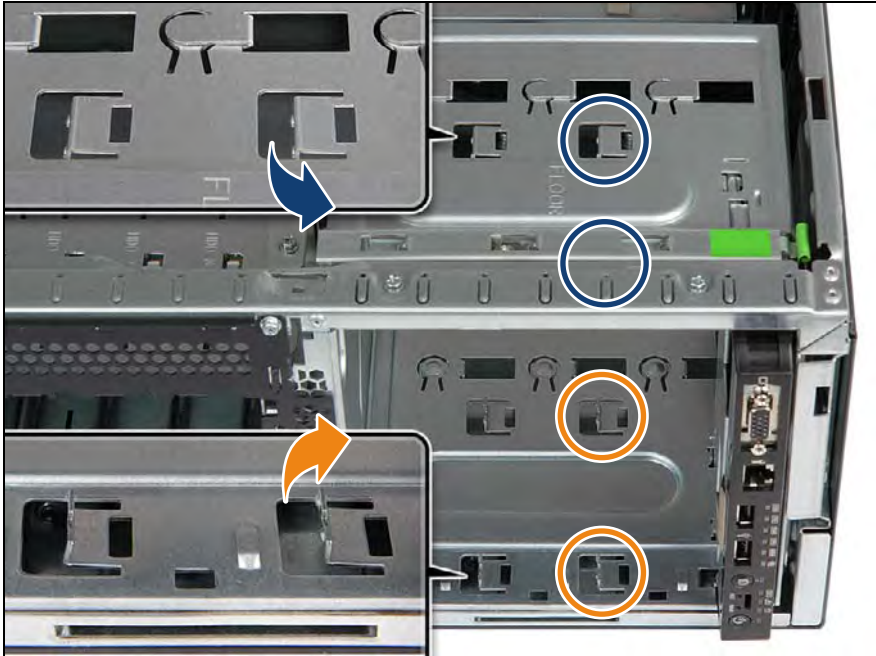


Figure 406: Checking mounting bracket positions (Example: ODD installation, bay 1)

- ▶ Ensure that the four mounting brackets in the desired accessible drive bay have not been bent out. If necessary, proceed as follows:
 - ▶ Using a screw driver, bend the mounting brackets of the upper installation bay inwards, so that their sides are flush with the bay walls (see close-up).
 - ▶ Bend down the upper two mounting brackets (see blue circles).
 - ▶ Bend up the lower two mounting brackets (see orange circles).
- ▶ Disengage the accessible drive locking bar as described in section "[Opening the accessible drive locking bar](#)" on page 91.



Figure 407: Inserting the accessible drive

- ▶ Insert the accessible drive into its installation bay and carefully push in until its front screw hole lines up with the centering pin on the locking bar.
- ▶ Engage the locking bar as described in section ["Closing the accessible drive locking bar"](#) on page 93.

12.2.3.2 Installing mounting brackets to RDX and DAT72 backup drives

- i • This section does not apply to the Japanese market.
 - Replacing mounting brackets may be skipped if no new mounting brackets are available while replacing a backup drive during service.
 - Backup drive mounting brackets are contained in mounting kit S26361-F3753-E1 (to be ordered separately with the backup drive).
- ▶ If applicable, remove existing mounting brackets from the backup drive.

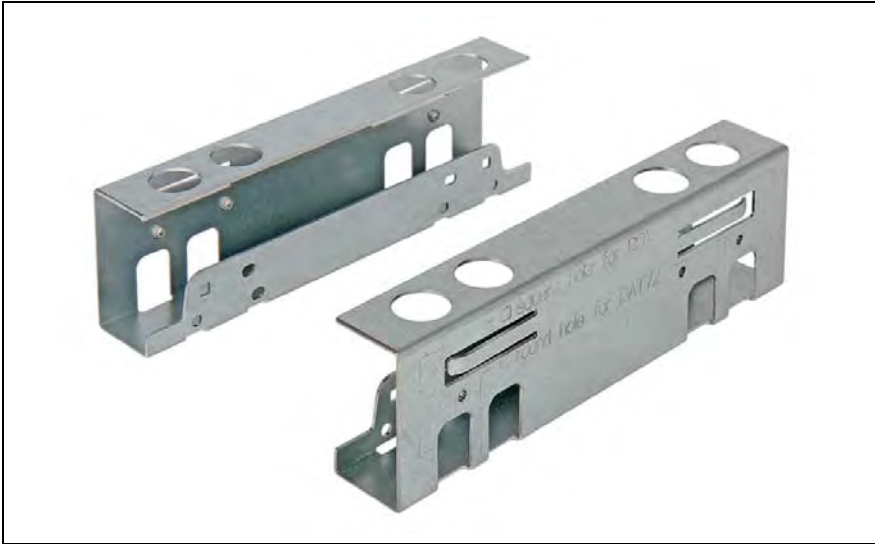


Figure 408: Backup drive mounting brackets

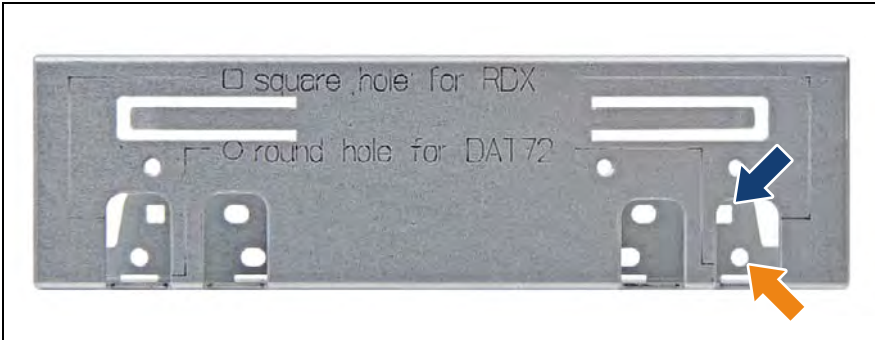


Figure 409: Screw holes on backup drive mounting brackets

- ▶ Note the screw hole description stamped onto the mounting bracket:
 - ▶ Use the square screw hole for RDX backup drives (see blue arrow).
 - ▶ Use the round screw holes for DAT72 backup drives (see orange arrow).

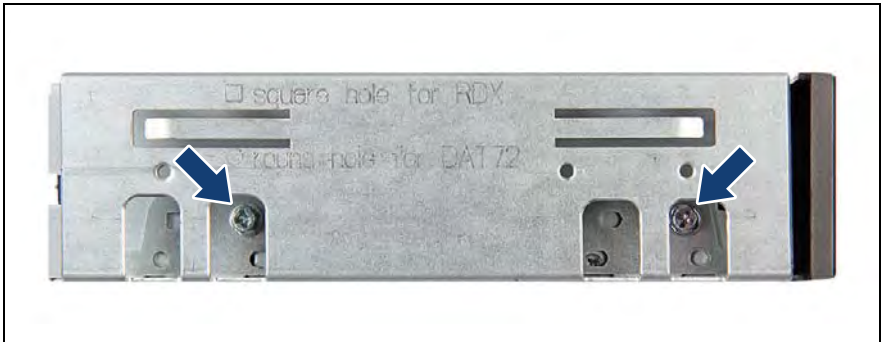


Figure 410: Securing mounting brackets to an RDX backup drive

- Secure the backup drive mounting brackets to the RDX backup drive with two M3 x 4.5 screws per bracket as shown (screw torque: 0.6 Nm).



Figure 411: Securing mounting brackets to a DAT72 backup drive

- Secure the backup drive mounting brackets to the DAT72 backup drive with two M3 x 4.5 screws per bracket as shown (screw torque: 0.6 Nm).

Accessible drives



Figure 412: RDX backup drive with mounting brackets



Figure 413: DAT72 backup drive with mounting brackets

12.2.4 Cabling the accessible drive

i The cabling list number and cabling plan sections in the allocation tables below refer to chapter "[Cabling](#)" on page 735.

12.2.4.1 SATA ODD

3.5-inch HDD configurations

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SATA cable Y3958-V205	20	ODD	System board connector SATA 1	16.2.1
SATA power cable Y3930-V601	6	ODD (15-pin SATA)	3.5-inch HDD backplane 1 connector X9 (4-pin connector)	16.2.3

2.5-inch HDD configurations (4 SAS backplanes, up to 8 HDDs)

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SATA cable Y3958-V205	20	ODD	System board connector SATA 1	16.2.1
SATA power cable Y3930-V601	6	ODD (15-pin SATA)	2.5-inch HDD backplane 1 connector X9 (4-pin connector)	16.2.11

2.5-inch HDD configurations (6/8 SAS backplanes, up to 16/24 HDDs)

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SATA cable Y3958-V205	20	ODD	System board connector SATA 1	16.2.1
SATA power cable Y3930-V601	6	ODD (15-pin SATA)	2.5-inch HDD backplane 3 connector X9 (4-pin connector)	16.2.12

Accessible drives

- ▶ Connect the SATA and power cables according to your configuration as shown in the tables above.

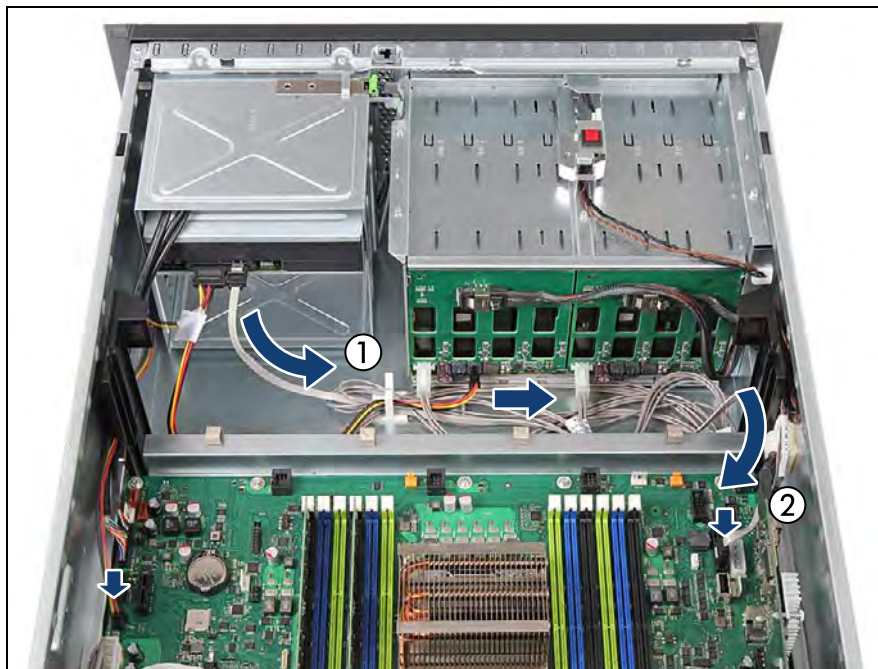


Figure 414: Routing cables

- ▶ Run SATA cable T26139-Y3958-V205 along the drive bays and through the cable clamp on the server floor as shown (1).
- ▶ Run the SATA cable through the cable guide (2).

12.2.4.2 USB backup drive



Notes on RDX drive USB cabling:

- A USB 2.0 RDX drive may be replaced by a USB 3.0 RDX drive with previous cabling.
- A USB 3.0 RDX drive may be connected to a USB 2.0 cable with limited performance.
- A USB 3.0 RDX drive may be connected to an onboard USB 2.0 connector with limited performance.
- For full performance, connect the USB 3.0 RDX drive to a USB 3.0 PCI interface card by USB 3.0 cable.
- The USB 3.0 cable cannot be connected to a USB 2.0 RDX drive.

3.5-inch HDD configurations

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
USB 2.0 cable Y3973-V96	21A	USB backup drive (Type B connector)	System board connector USB INT 1 (6-pin connector)	16.2.1
USB 3.0 cable Y4039-V100	21B		USB 3.0 PCI card (Type A connector)	
Backup drive power cable Y4029-V1	5	USB backup drive (PATA connector)	3.5-inch HDD backplane 1 connector X10 (4-pin connector)	16.2.3

Accessible drives

2.5-inch HDD configurations (4 SAS backplanes, up to 8 HDDs)

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
USB 2.0 cable Y3973-V96	21A	USB backup drive (Type B connector)	System board connector USB INT 1 (6-pin connector)	16.2.1
USB 3.0 cable Y4039-V100	21B		USB 3.0 PCI card (Type A connector)	
Backup drive power cable Y4029-V1	5	USB backup drive (PATA connector)	2.5-inch HDD backplane 2 connector X9 (4-pin connector)	16.2.11

2.5-inch HDD configurations (6/8 SAS backplanes, up to 16/24 HDDs)

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
USB 2.0 cable Y3973-V96	21A	USB backup drive (Type B connector)	System board connector USB INT 1 (6-pin connector)	16.2.1
USB 3.0 cable Y4039-V100	21B		USB 3.0 PCI card (Type A connector)	
Backup drive power cable Y4029-V1	5	USB backup drive (PATA connector)	2.5-inch HDD backplane 4 connector X9 (4-pin connector)	16.2.12

- Connect the USB and power cables according to your configuration as shown in the tables above.

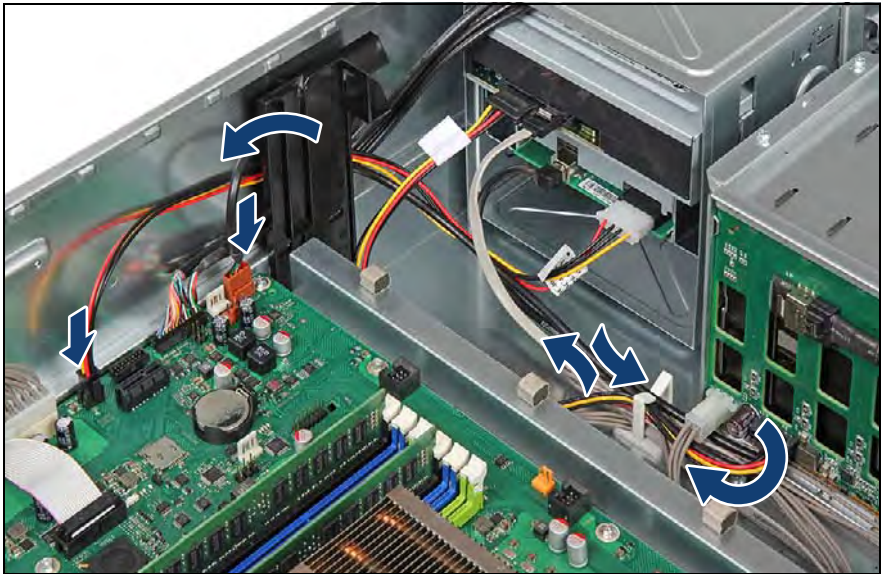


Figure 415: Routing cables

- ▶ Run the USB and power cables through the cable clamps (see arrows) as shown.

12.2.4.3 SAS backup drives with separate power supply



This description applies to the following LTO drive types:

- LTO3
- LTO4 (Quantum)

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS Backup Drive SAS / Power cable Y3969-V401	7	SAS backup drive (P1, 22-pin connector)	System board connector SAS 1-4 (P2, 36-pin Mini SAS connector) ¹	16.2.1
Backup Drive Power Cable Y4029-V1	5	SAS backup drive	System board connector PWR HDD / ODD (P1, 4-pin connector)	16.2.3

¹ Requires installed Onboard SAS enabling key (see section ["Installing the onboard SAS enabling key" on page 673](#))

Accessible drives

- ▶ Connect the SAS and power cables according to your configuration as shown in the tables above.

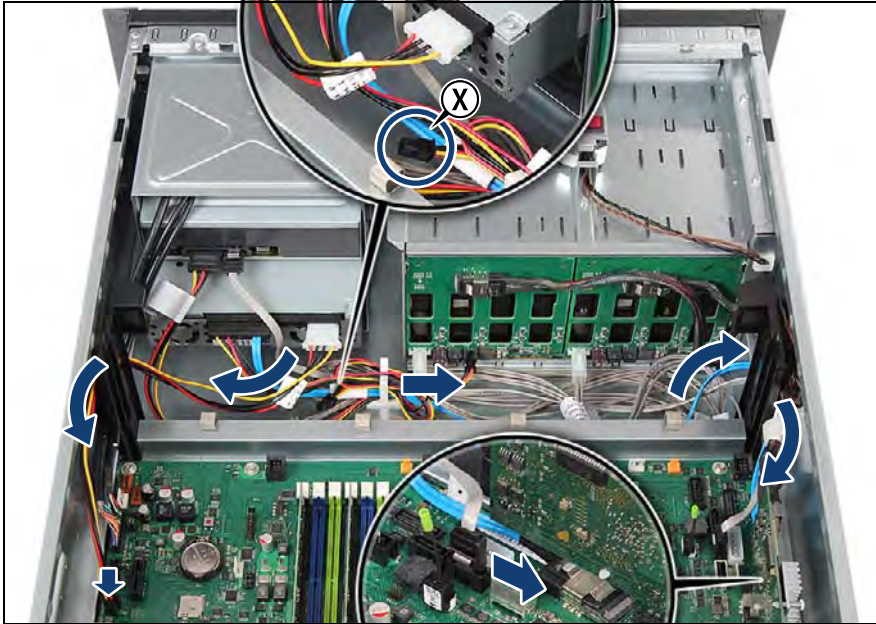


Figure 416: Routing cables

- ▶ Run the SAS and power cables through the cable clamps (see arrows) as shown.



The power connector on SAS / power cable Y3969-V401 (X) remains unused.

12.2.4.4 SAS backup drives with SAS power supply

i This description applies to the following LTO drive types:

- LTO4 (IBM)
- LTO5
- LTO6

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SAS Backup Drive SAS / Power cable Y3969-V401	7	SAS backup drive (P1, 22-pin connector)	System board connector SAS 1-4 (P2, 36-pin Mini SAS connector) ¹	16.2.1
			System board connector PWR HDD / ODD (P1, 4-pin connector)	16.2.3

¹ Requires installed Onboard SAS enabling key (see section ["Installing the onboard SAS enabling key" on page 673](#))

- ▶ Connect the SAS and power cables according to your configuration as shown in the tables above.

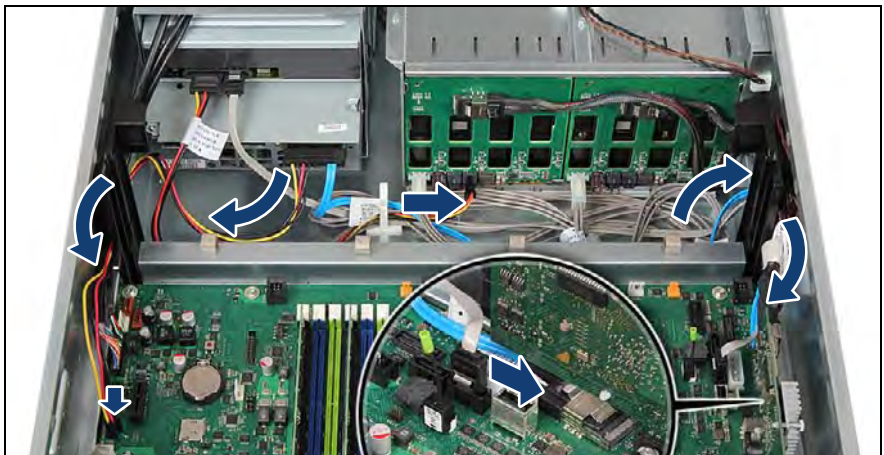


Figure 417: Routing cables

- ▶ Run the SAS and power cables through the cable clamps (see arrows) as shown.

12.2.5 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ 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 139](#).

12.3 Removing accessible drives



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: tool-less

12.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Removing backup and optical disk media" on page 129](#)
- ▶ ["Verifying and configuring the backup software solution" on page 129](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)

- ▶ ["Opening the server" on page 68](#)



The front cover only needs to be removed in order to install accessible drive dummy covers (see section ["Installing accessible drive dummy covers" on page 548](#)). If the accessible drive is replaced after being removed, leave the front cover installed.

- ▶ ["Removing the system air duct" on page 81.](#)
- ▶ ["Removing the system fan holder" on page 330.](#)

12.3.2 Removing an accessible drive

- ▶ Remove all cables from the accessible drive.
- ▶ Disengage the accessible drive locking bar as described in section ["Opening the accessible drive locking bar" on page 91.](#)



Figure 418: Removing the accessible drive

- ▶ Carefully pull the accessible drive out of its installation bay.
- ▶ Engage the locking bar as described in section "[Closing the accessible drive locking bar](#)" on page 93.

12.3.3 Installing accessible drive dummy covers

- ▶ Install accessible drive filler covers as described in section "[Accessible drive filler covers](#)" on page 94.
- ▶ Install accessible drive covers as described in section "[Accessible drive covers](#)" on page 96.

12.3.4 Concluding steps

- ▶ "[Installing the system fan holder](#)" on page 331
- ▶ "[Installing the system air duct](#)" on page 83
- ▶ "[Closing the server](#)" on page 98
- ▶ When working on a rack-mounted server:
"[Mounting the server in the rack](#)" on page 115
- ▶ "[Connecting the server to the mains](#)" on page 118
- ▶ 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 139.

12.4 Replacing accessible drives



Upgrade and Repair Unit (URU)



**Average task duration:
15 minutes**

Tools: Slotted screw driver (for bending in or out accessible drive mounting brackets)

12.4.1 Preliminary steps

- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Removing backup and optical disk media" on page 129](#)
- ▶ ["Verifying and configuring the backup software solution" on page 129](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).



Removing the front cover is not required in order to replace an accessible drive.

- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

12.4.2 Removing an accessible drive

- ▶ Remove all cables from the accessible drive.
- ▶ Remove the defective accessible drive as described in section ["Removing an accessible drive" on page 547](#).

12.4.3 Installing an accessible drive

- ▶ Install the new accessible drive into the empty slot as described in section ["Installing an accessible drive" on page 534](#).
- ▶ Reconnect all cables to their original accessible drive connectors as described in section ["Cabling the accessible drive" on page 539](#).

12.4.4 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ 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 139](#).

12.5 Slimline ODD and LSD in Multibay box

12.5.1 Installing the slimline ODD or LSD



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools:

- Phillips PH2 / (+) No. 2 screw driver
- Slotted screw driver (for bending in or out accessible drive mounting brackets)

12.5.1.1 Preliminary steps

- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)



The front cover only needs to be removed in order to remove accessible drive dummy covers (see section ["Removing accessible drive dummy covers" on page 533](#)). If the Multibay box is already installed in the server and will be removed in order to install a slimline ODD or LSD module, skip this step.

- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)
- ▶ If the Multibay box is already installed in the server, disconnect all cables from the slimline ODD or LSD module and remove the box as described in section ["Removing the Multibay box" on page 568](#).

12.5.1.2 Installing the slimline ODD into the Multibay box

- ▶ Press up on the locking tab to disengage the slimline ODD dummy module as shown in [figure 431 on page 563](#).
- ▶ From inside the Multibay module, press out on the ODD dummy module and pull it out of its bay.

Accessible drives

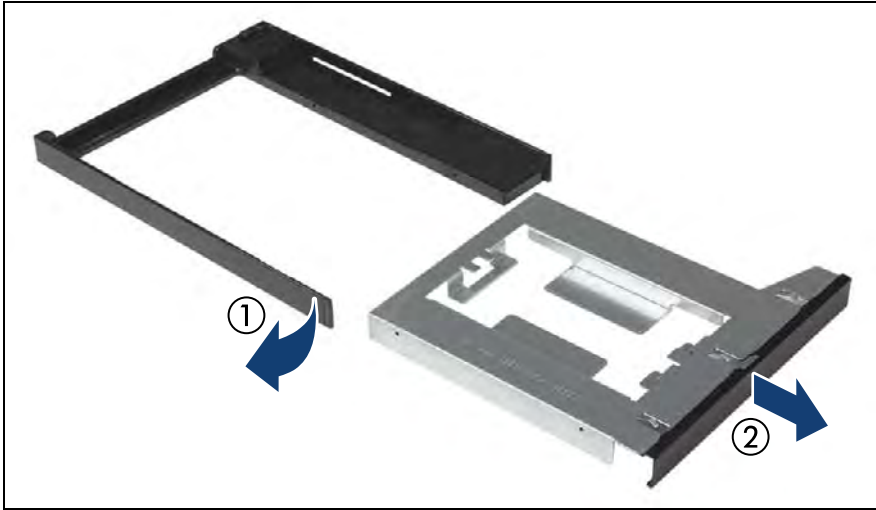


Figure 419: Disassembling the slimline ODD dummy module

- ▶ Disengage (1) and remove (2) the slimline ODD dummy insert (metal part) from the slimline ODD installation frame (A3C40053093-R).



Figure 420: Mounting the slimline ODD in the installation frame (A)

- ▶ Fit the slimline ODD into the slimline ODD installation frame.
- ▶ Ensure that the four pins on the frame (see circles) engage with the screw holes on the drive.



Figure 421: Mounting the slimline ODD in the installation frame (B)

- ▶ Ensure that the ODD is properly seated in the installation frame as shown above.

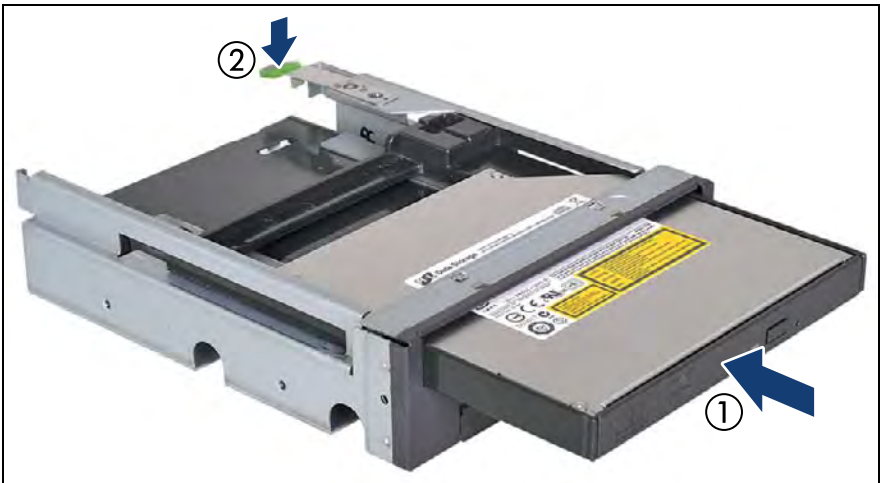


Figure 422: Mounting the slimline ODD module in the Multibay box

- ▶ Insert the slimline ODD module into the Multibay box (1) and push back until the locking tab (2) engages.

Accessible drives

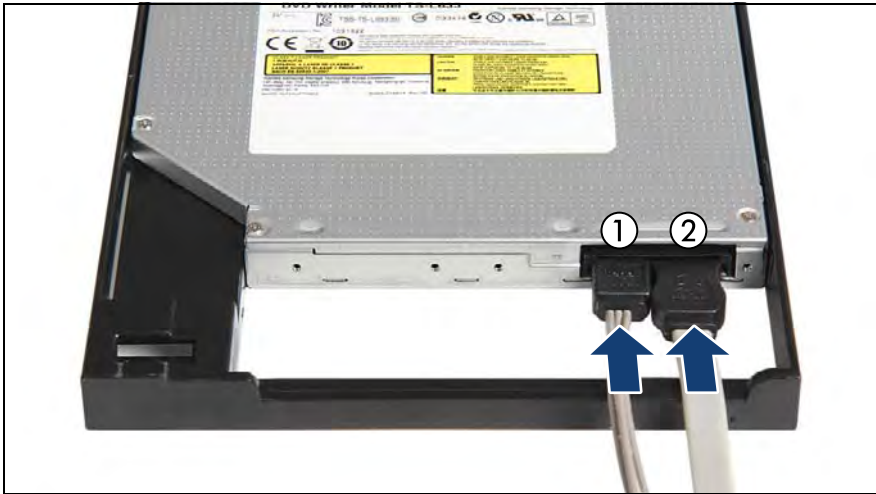


Figure 423: Mounting the slimline ODD in the installation frame (B)

- Connect cables to the slimline ODD:

#	Cabling list no. ¹	Cable
1	8A / 8B	Slimline ODD SATA power cable (T26139-Y3986-V302 / T26139-Y3986-V305)
2	20	SATA cable (T26139-Y3958-V205)

¹ The cabling list numbers refers to section ["List of used cables" on page 736.](#)

12.5.1.3 Installing the LSD module into the Multibay box

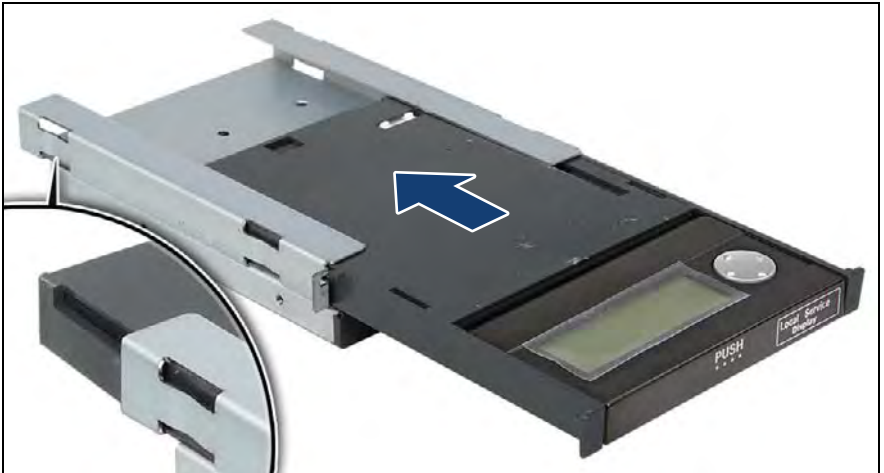


Figure 424: Inserting the LSD module into the 3.5-inch installation frame

- ▶ From the front, slide the LSD module into the 3.5-inch installation frame (C26361-K644-B437-*-Y155) until the locking latch (see circle) engages.

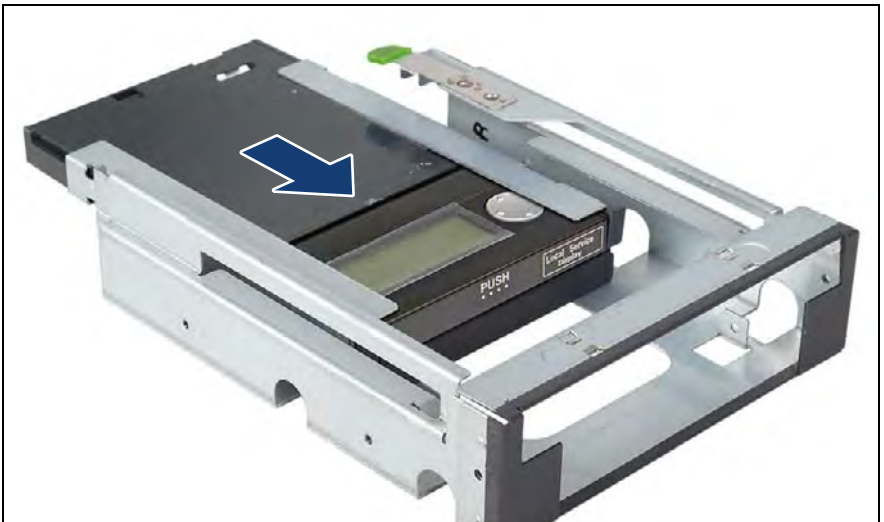


Figure 425: Installing the 3.5-inch installation frame in the Multibay box (A)

- ▶ From the rear, slide the 3.5-inch installation frame into the Multibay box.

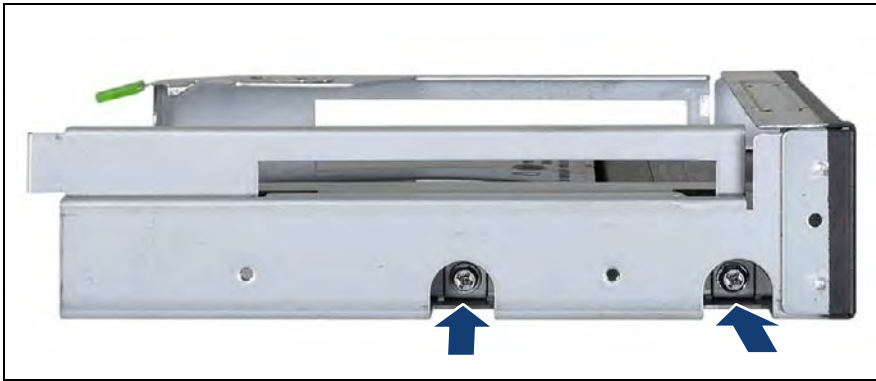


Figure 426: Installing the 3.5-inch installation frame in the Multibay box (B)

- ▶ Secure the installation frame in the Multibay box with two screws (M3 x 6 mm) on either side.
- ▶ Before inserting the Multibay box into the chassis, connect the LSD cable to the LSD module:

Cabling list no. ¹	Cable
14	LSD cable (T26139-Y3718-V301)

¹ The cabling list numbers refers to section ["List of used cables" on page 736](#).

12.5.1.4 Removing accessible drive dummy covers

Removing accessible drive filler covers

- ▶ Remove the accessible drive filler cover from installation bay 1 as described in section ["Accessible drive filler covers" on page 94](#).



CAUTION!

Always replace filler covers into unused drive bays to comply with applicable EMC regulations and satisfy cooling requirements.

Removing accessible drive covers

- ▶ Remove the accessible drive cover from installation bay 1 as described in section ["Accessible drive covers" on page 96](#).

12.5.1.5 Installing the Multibay box

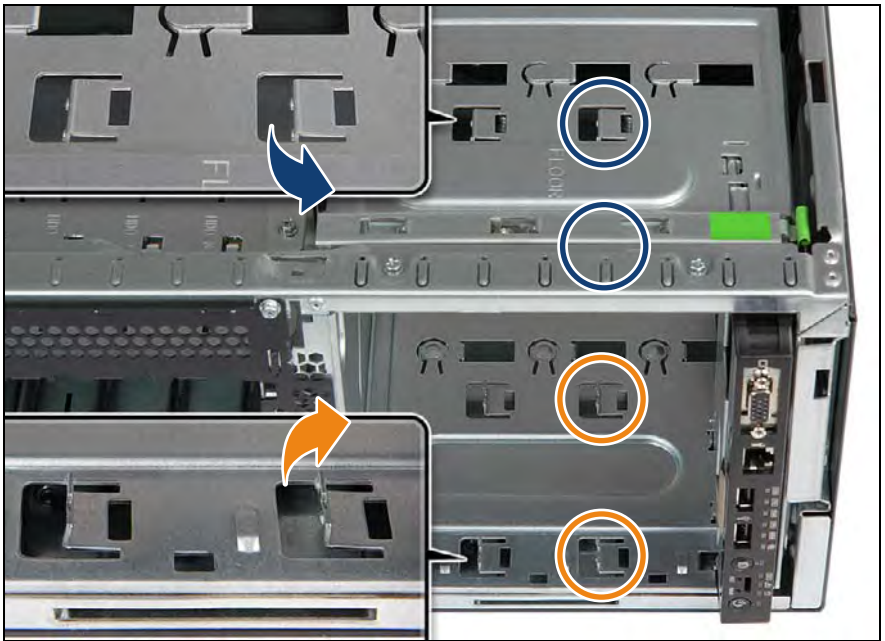


Figure 427: Checking mounting bracket positions


- ▶ Ensure that the four mounting brackets in the desired accessible drive bay have not been bent out. If necessary, proceed as follows:
 - ▶ Using a screw driver, bend the mounting brackets of the upper installation bay inwards, so that their sides are flush with the bay walls (see close-up).
 - ▶ Bend down the upper two mounting brackets (see blue circles).
 - ▶ Bend up the lower two mounting brackets (see orange circles).
- ▶ Disengage the accessible drive locking bar as described in section "[Opening the accessible drive locking bar](#)" on page 91.



Figure 428: Multibay-Box einsetzen

- ▶ Insert the Multibay box into installation bay 1 and carefully push in until its front screw hole lines up with the centering pin on the locking bar.
- ▶ Engage the locking bar as described in section "[Closing the accessible drive locking bar](#)" on page 93.

12.5.1.6 Cabling the slimline ODD and LSD

 The cabling list number and cabling plan sections in the allocation tables below refer to chapter "[Cabling](#)" on page 735.

Slimline SATA ODD

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SATA cable Y3958-V205	20	Slimline ODD	System board connector SATA 1	16.2.1
Slimline ODD SATA power cable Y3986-V302	8A / 8B	Slimline ODD (15-pin SATA)	3.5-inch HDD backplane 2 connector X9 (4-pin connector)	16.2.6 16.2.4

Local Service Display (LSD)

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
LSD cable Y3718-V301	14	LSD	System board connector SMB 1	16.2.1

- ▶ Connect the LSD, SATA and power cables as shown in the tables above.

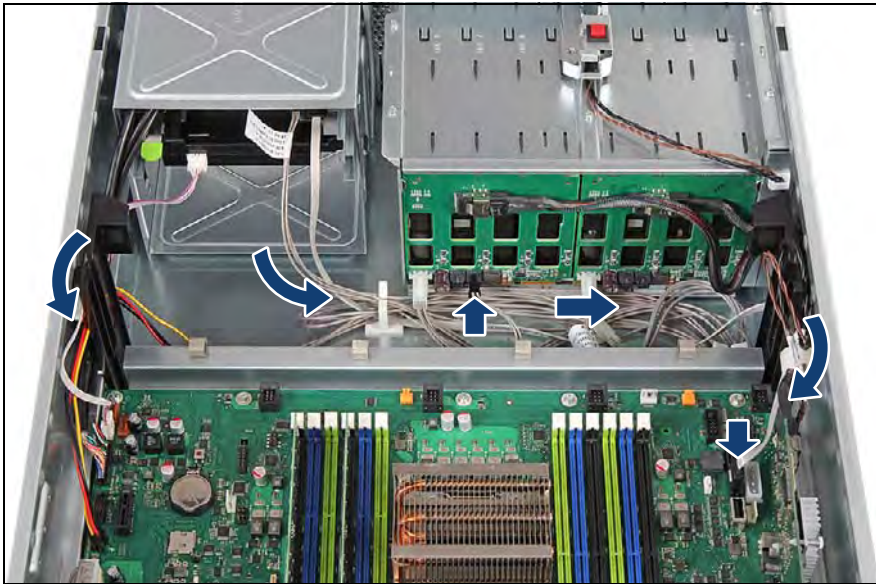


Figure 429: Routing cables

- ▶ Run SATA cable T26139-Y3958-V205 along the drive bays and through the cable clamp on the server floor as shown.
- ▶ Run the SATA cable through the cable guide.

12.5.1.7 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
 - ▶ ["Mounting the server in the rack" on page 115](#)
 - ▶ ["Connecting the server to the mains" on page 118](#)

12.5.2 Removing a slimline ODD or LSD



**Upgrade and Repair Unit
(URU)**



**Average task duration:
10 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

12.5.2.1 Preliminary steps

- ▶ ["Removing backup and optical disk media" on page 129](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)



The front cover only needs to be removed in order to install accessible drive dummy covers (see section ["Installing accessible drive dummy covers" on page 548](#)). If the Multibay will be reinstalled after removing the slimline ODD or LSD module, skip this step.

- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

12.5.2.2 Removing the Multibay box

- ▶ Remove all cables from the slimline ODD.
- ▶ Remove the LSD cable from system board connector SMB 1.
- ▶ Disengage the accessible drive locking bar as described in section "[Opening the accessible drive locking bar](#)" on page 91.



Figure 430: Removing the Multibay box

- ▶ Carefully pull the Multibay box out of its installation bay.
- ▶ Engage the locking bar as described in section "[Closing the accessible drive locking bar](#)" on page 93.

12.5.2.3 Removing the slimline ODD from the Multibay box

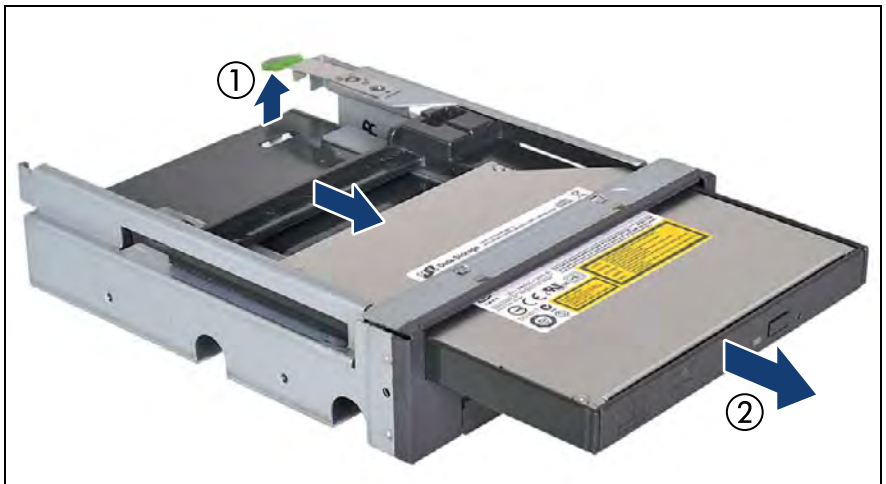


Figure 431: Removing the slimline ODD from the Multibay box

- ▶ Press up on the locking tab to disengage the slimline ODD module (1).
- ▶ From inside the Multibay box, press out on the slimline ODD module and pull it out of its bay (2).



Figure 432: Removing the slimline ODD from its installation frame

- ▶ Disengage (1) and remove (2) the slimline ODD from its installation frame.

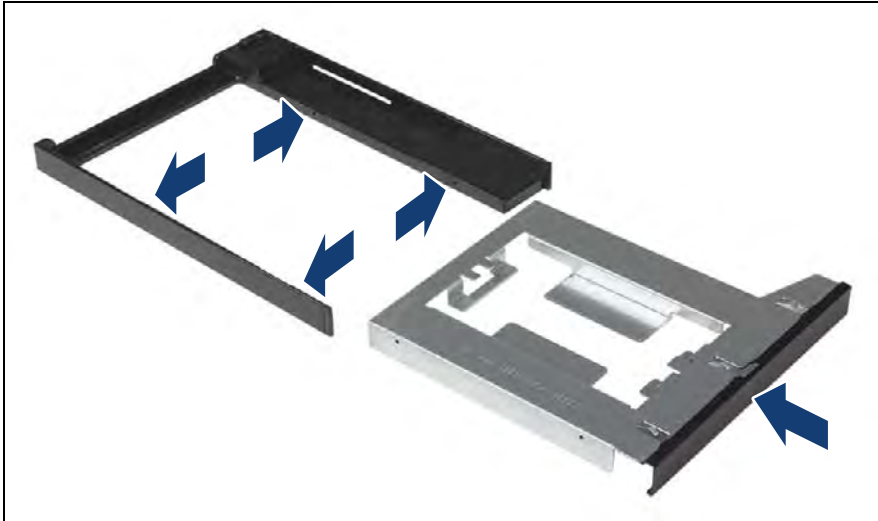


Figure 433: Mounting the slimline ODD dummy insert in the installation frame

- ▶ Fit the slimline ODD dummy insert into the slimline ODD installation frame.
- ▶ Ensure that the four pins on the frame (see arrows) engage with the side holes on the dummy insert.
- ▶ Insert the slimline ODD dummy module into the Multibay box and push back until the locking tab engages as shown in [figure 422 on page 553](#).

12.5.2.4 Removing the LSD module from the Multibay box

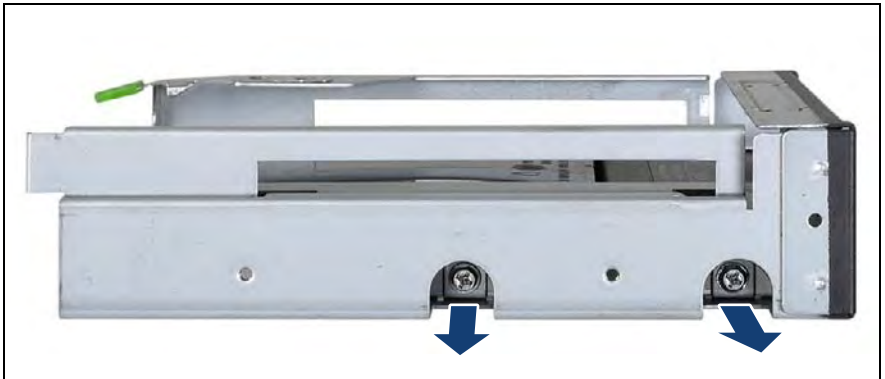


Figure 434: Removing the 3.5-inch installation frame from the Multibay box (A)

- ▶ Remove two screws on either side of the Multibay box to disengage the 3.5-inch installation bay.

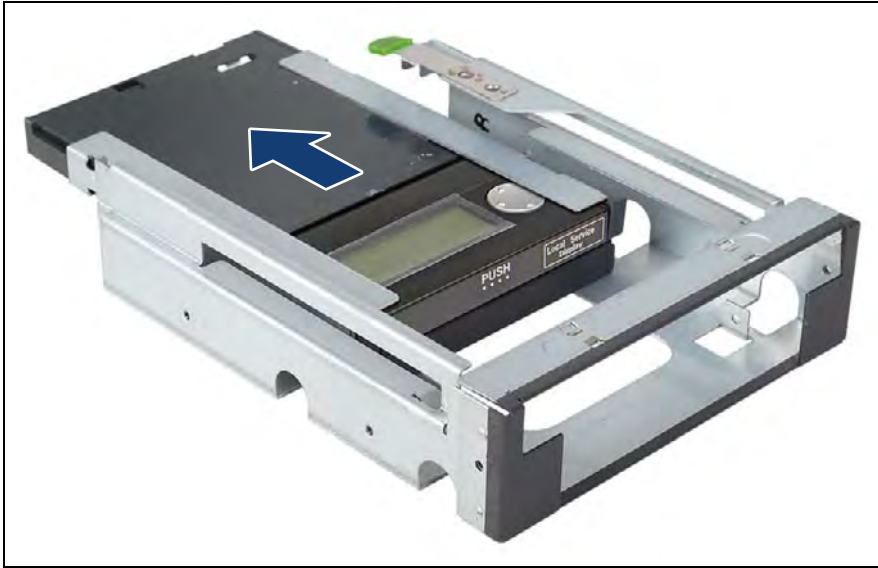


Figure 435: Removing the 3.5-inch installation frame from the Multibay box (B)

- ▶ Slide the 3.5-inch installation frame out of the Multibay box as shown.

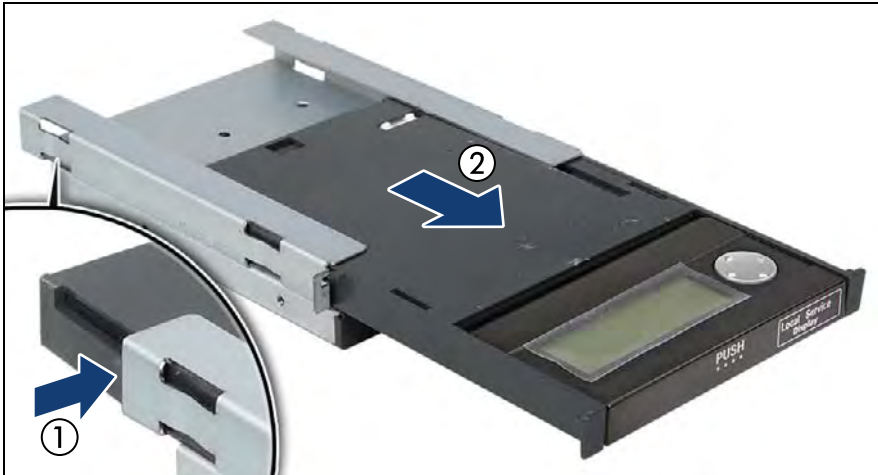



Figure 436: Removing the LSD module from the 3.5-inch installation frame

- ▶ Press in on the locking latch (see close-up) to disengage the LSD module (1).

- ▶ Pull the LSD module out of the 3.5-inch installation frame (2).
- ▶ If the removed LSD module is not to be replaced by a new module, reinstall the LSD dummy cover.

12.5.2.5 Installing accessible drive dummy covers

 if the 4x 3.5-inch HDD extension box is to be reinstalled in the system, the following description does not apply. Please proceed as described in section "[Installing the 4x 3.5-inch HDD extension box](#)" on page 296.

Installing accessible drive filler covers

- ▶ Install an accessible drive filler cover (C26361-K644-C933) into the empty installation bay 1 as described in section "[Accessible drive filler covers](#)" on page 94.



CAUTION!

Always replace filler covers into unused drive bays to comply with applicable EMC regulations and satisfy cooling requirements.

Installing accessible drive covers

- ▶ Install an accessible drive cover (C26361-K644-C60) into installation bay 1 of the front cover as described in section "[Accessible drive covers](#)" on page 96.

12.5.2.6 Concluding steps

- ▶ "[Installing the system fan holder](#)" on page 331
- ▶ "[Installing the system air duct](#)" on page 83
- ▶ "[Closing the server](#)" on page 98
- ▶ When working on a rack-mounted server:
 "[Mounting the server in the rack](#)" on page 115
- ▶ "[Connecting the server to the mains](#)" on page 118

12.5.3 Replacing a slimline ODD or LSD



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools:

- Phillips PH2 / (+) No. 2 screw driver
- Slotted screw driver (for bending in or out accessible drive mounting brackets)

12.5.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Removing backup and optical disk media" on page 129](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).



Removing the front cover is not required in order to replace the slimline ODD or LSP in the Multibay box.

- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

12.5.3.2 Removing the Multibay box

- ▶ Remove all cables from the slimline ODD.
- ▶ Remove the LSD cable from system board connector SMB 1.
- ▶ Remove the Multibay box from the server as described in section ["Removing the Multibay box" on page 568](#).

12.5.3.3 Removing the slimline ODD from the Multibay box

- ▶ Remove the defective slimline ODD from the Multibay box as described in section ["Removing the slimline ODD from the Multibay box" on page 563](#).

12.5.3.4 Removing the LSD module from the Multibay box

- ▶ Remove the defective LSD module from the Multibay box as described in section ["Removing the LSD module from the Multibay box" on page 565](#).

12.5.3.5 Installing the slimline ODD into the Multibay box

- ▶ Install the new the slimline ODD into the Multibay box as described in section ["Installing the slimline ODD into the Multibay box" on page 569](#).

12.5.3.6 Installing the LSD module into the Multibay box

- ▶ Install the new LSD module into the Multibay box as described in section ["Installing the LSD module into the Multibay box" on page 555](#).

12.5.3.7 Installing the Multibay box

- ▶ Reinstall the Multibay box as described in section ["Installing the Multibay box" on page 557](#).

12.5.3.8 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ 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 139](#).

12.6 Slimline ODD and LSD in 2x 3.5-inch HDD extension box

12.6.1 Installing the slimline ODD or LSD



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: Slotted screw driver (for bending in or out accessible drive mounting brackets)

12.6.1.1 Preliminary steps

- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)



The front cover only needs to be removed in order to remove accessible drive dummy covers (see section ["Removing accessible drive dummy covers" on page 533](#)). If the HDD extension box is already installed in the server and will be removed in order to install a slimline ODD or LSD module, skip this step.

- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)
- ▶ If the HDD extension box is already installed in the server, disconnect all cables from the HDD backplane and accessible devices and remove the extension box as described in section ["Removing the 2x 3.5-inch HDD extension box" on page 291](#).

12.6.1.2 Installing the slimline ODD into the extension box

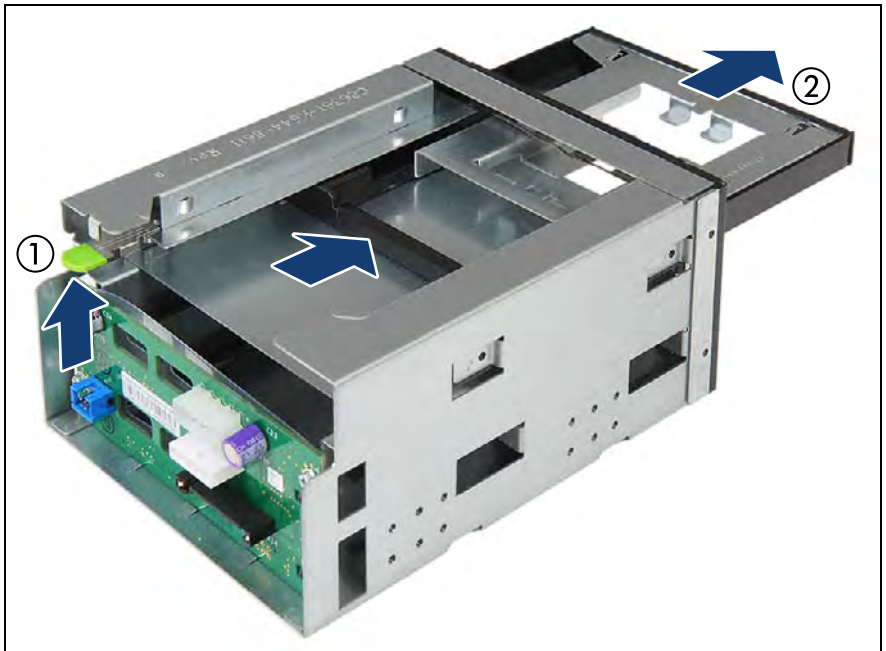


Figure 437: Removing the slimline ODD dummy module

- ▶ Press up on the locking tab to disengage the slimline ODD dummy module (1).
- ▶ From inside the HDD extension box, press out on the ODD dummy module and pull it out of its bay (2).

Accessible drives

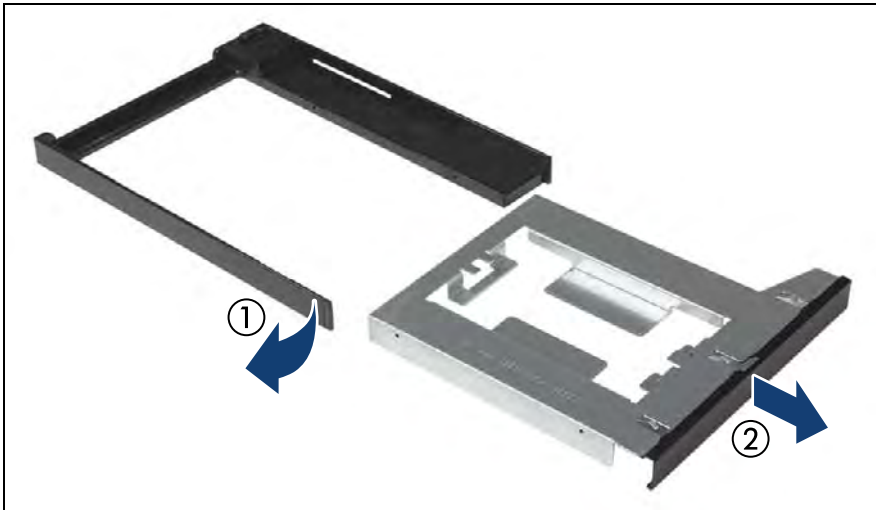


Figure 438: Disassembling the slimline ODD dummy module

- ▶ Disengage (1) and remove (2) the slimline ODD dummy insert (metal part) from the slimline ODD installation frame (A3C40053093-R).



Figure 439: Mounting the slimline ODD in the installation frame (A)

- ▶ Fit the slimline ODD into the slimline ODD installation frame.
- ▶ Ensure that the four pins on the frame (see circles) engage with the screw holes on the drive.



Figure 440: Mounting the slimline ODD in the installation frame (B)

- ▶ Ensure that the ODD is properly seated in the installation frame as shown above.

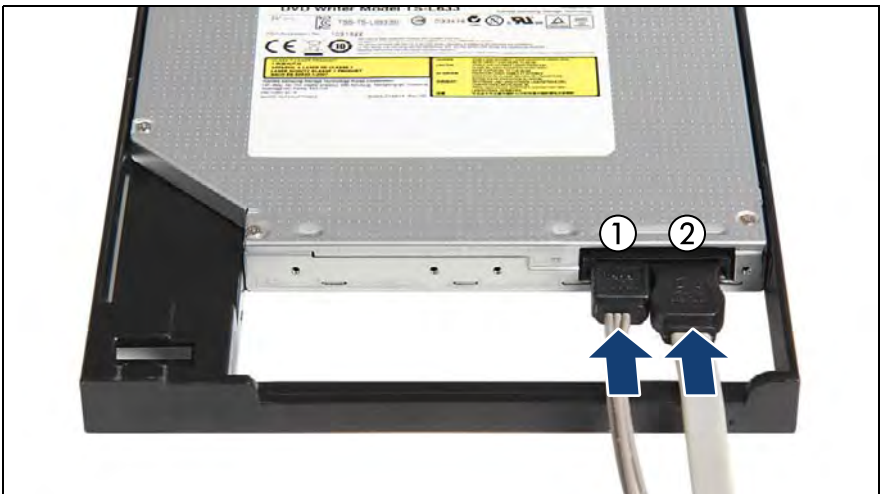


Figure 441: Mounting the slimline ODD in the installation frame (B)

Accessible drives

- ▶ Connect cables to the slimline ODD:

#	Cabling list no. ¹	Cable
1	8A / 8B	Slimline ODD SATA power cable (T26139-Y3986-V302 / T26139-Y3986-V305)
2	20	SATA cable (T26139-Y3958-V205)

¹ The cabling list numbers refers to section ["List of used cables"](#) on page 736.

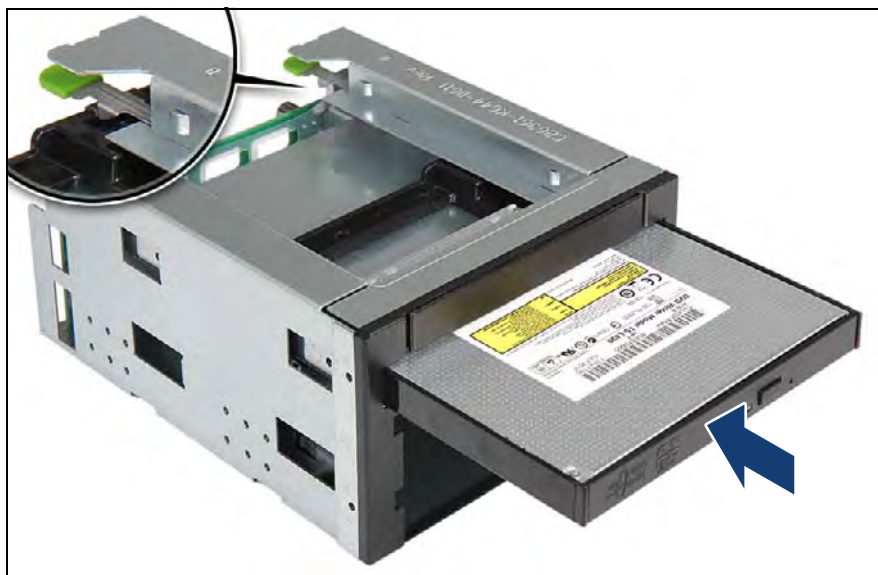


Figure 442: Mounting the slimline ODD module in the HDD expansion box

- ▶ Insert the slimline ODD module into the HDD extension box and push back until the locking tab (see close-up) engages.

12.6.1.3 Installing the LSD module into the HDD extension box



Figure 443: Removing the LSD dummy cover plate (A)

- ▶ Carefully bend out the LSD dummy cover plat (1) and disengage its right edge (2).



Figure 444: Removing the LSD dummy cover plate (B)

- ▶ Fold out (1) and remove (2) the LSD cover plate.

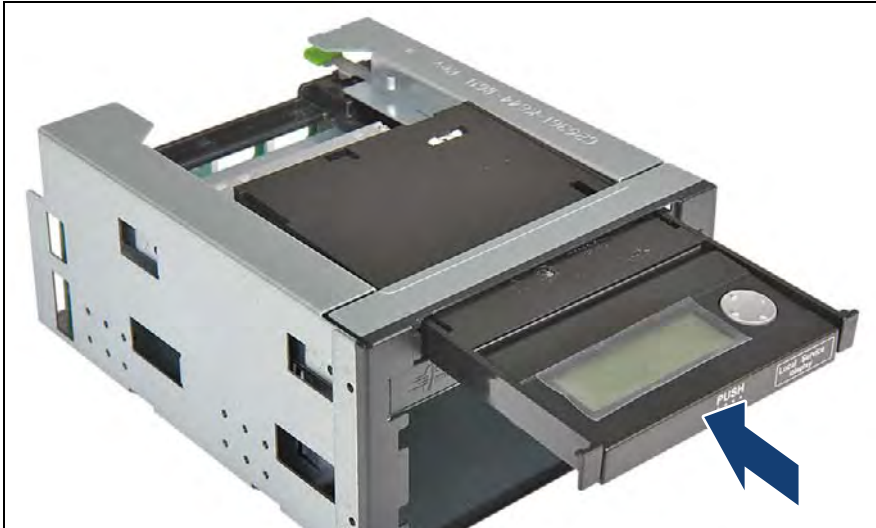


Figure 445: Inserting the LSD module

- ▶ Insert the LSD module into its installation bay and push in until it locks in place.
- ▶ Before inserting the 2x 3.5-inch HDD extension box into the chassis, connect the LSD cable to the LSD module:

Cabling list no. ¹	Cable
14	LSD cable (T26139-Y3718-V301)

¹ The cabling list numbers refers to section "[List of used cables](#)" on page 736.

12.6.1.4 Removing accessible drive dummy covers

Removing accessible drive filler covers

- ▶ Remove accessible drive filler covers from installation bays 2 and 3 as described in section "[Accessible drive filler covers](#)" on page 94.



CAUTION!

Always replace filler covers into unused drive bays to comply with applicable EMC regulations and satisfy cooling requirements.

Removing accessible drive covers

- ▶ Remove accessible drive covers from installation bays 2 and 3 as described in section ["Accessible drive covers" on page 96](#).

12.6.1.5 Installing the 2x 3.5-inch HDD extension box

- ▶ Prepare the accessible drive mounting brackets and install the 2x 3.5-inch HDD extension box into installation bays 2 and 3 as described in section ["Installing the 2x 3.5-inch HDD extension box" on page 288](#).

12.6.1.6 Cabling the slimline ODD and LSD



For SAS cabling of HDD extension box backplanes, please refer to section ["HDD extension boxes" on page 284](#).

The cabling list number and cabling plan sections in the allocation tables below refer to chapter ["Cabling" on page 735](#).

Slimline SATA ODD

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SATA cable Y3958-V205	20	Slimline ODD	System board connector SATA 1	16.2.1
Slimline ODD SATA power cable Y3986-V302	8A / 8B	Slimline ODD (15-pin SATA)	3.5-inch HDD backplane 2 connector X9 (4-pin connector)	16.2.6 16.2.4

Local Service Display (LSD)

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
LSD cable Y3718-V301	14	LSD	System board connector SMB 1	16.2.1

- ▶ Connect the LSD, SATA and power cables as shown in the tables above.

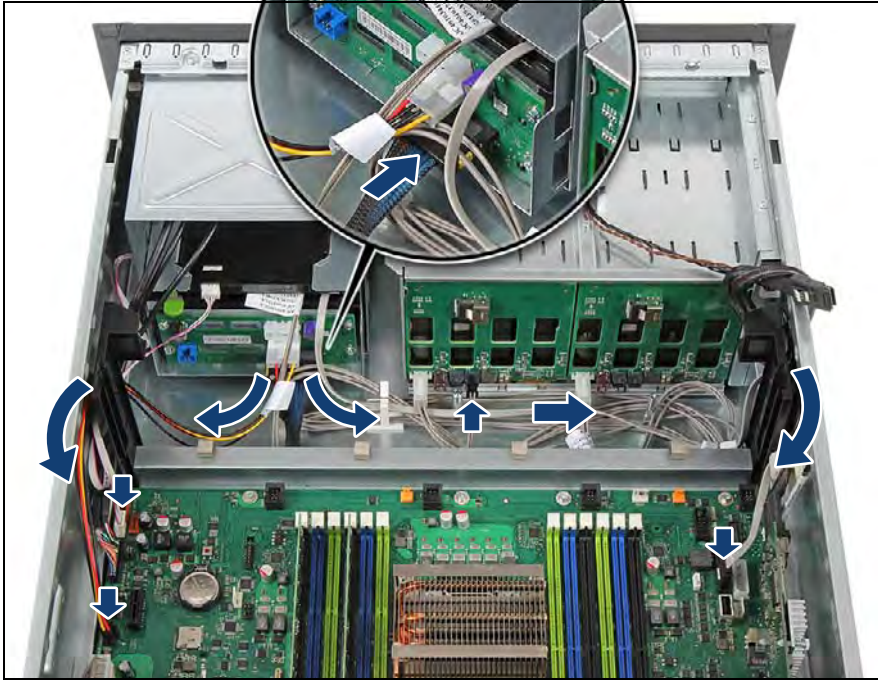


Figure 446: Routing cables

- ▶ Run SATA cable T26139-Y3958-V205 along the drive bays and through the cable clamp on the server floor as shown.
- ▶ Run the SATA cable through the cable guide.

12.6.1.7 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
 - ▶ ["Mounting the server in the rack" on page 115](#)
 - ▶ ["Connecting the server to the mains" on page 118](#)

12.6.2 Removing the slimline ODD or LSD



**Upgrade and Repair Unit
(URU)**



**Average task duration:
10 minutes**

Tools: tool-less

12.6.2.1 Preliminary steps

- ▶ ["Removing backup and optical disk media" on page 129](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)



The front cover only needs to be removed in order to install accessible drive dummy covers (see section ["Installing accessible drive dummy covers" on page 548](#)). If the HDD extension box will be reinstalled after removing the slimline ODD or LSD module, skip this step.

- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

12.6.2.2 Removing the 2x 3.5-inch HDD extension box

- ▶ Remove the 2x 3.5-inch HDD extension box from installation bays 2 and 3 as described in section ["Removing the 2x 3.5-inch HDD extension box" on page 291](#).

12.6.2.3 Removing the slimline ODD from the extension box

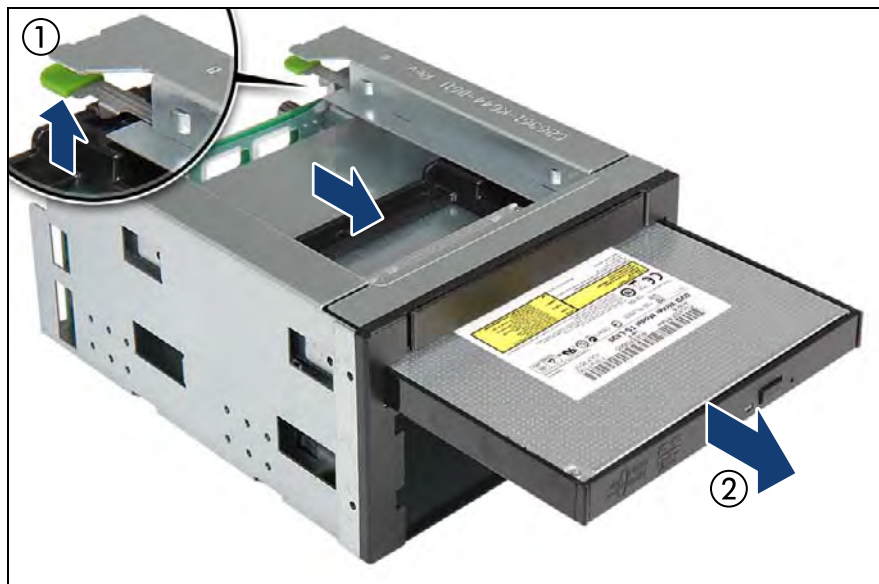


Figure 447: Removing the slimline ODD

- ▶ Press up on the locking tab to disengage the slimline ODD module (1).
- ▶ From inside the HDD extension box, press out on the slimline ODD module and pull it out of its bay (2).

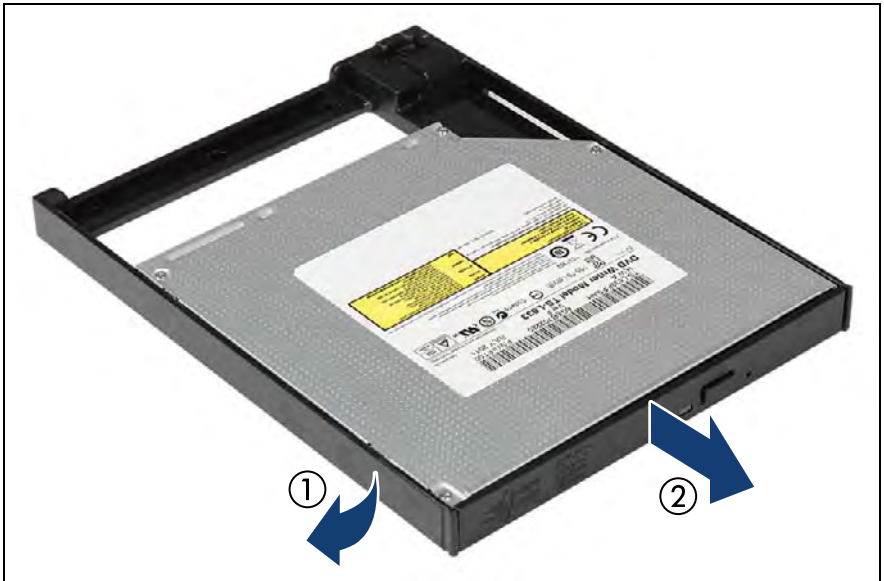


Figure 448: Removing the slimline ODD from its installation frame

- Disengage (1) and remove (2) the slimline ODD from its installation frame.

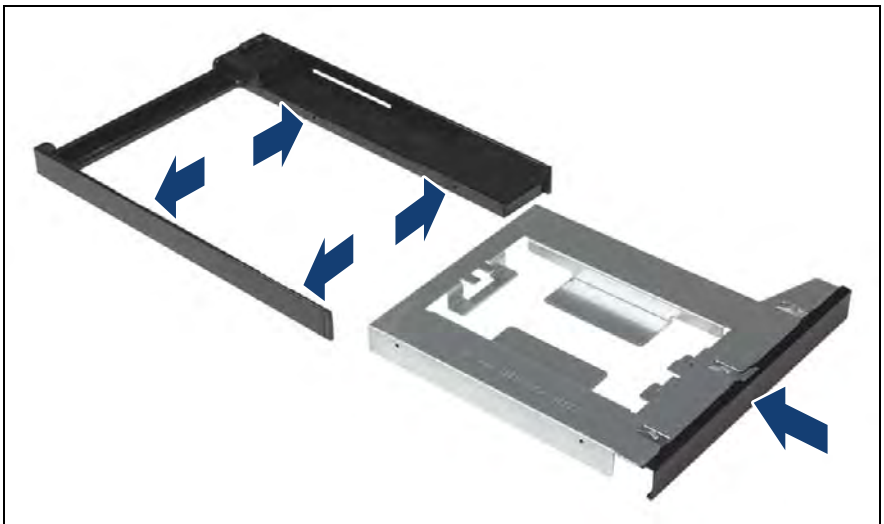


Figure 449: Mounting the slimline ODD dummy insert in the installation frame

Accessible drives

- ▶ Fit the slimline ODD dummy insert into the slimline ODD installation frame.
- ▶ Ensure that the four pins on the frame (see arrows) engage with the side holes on the dummy insert.

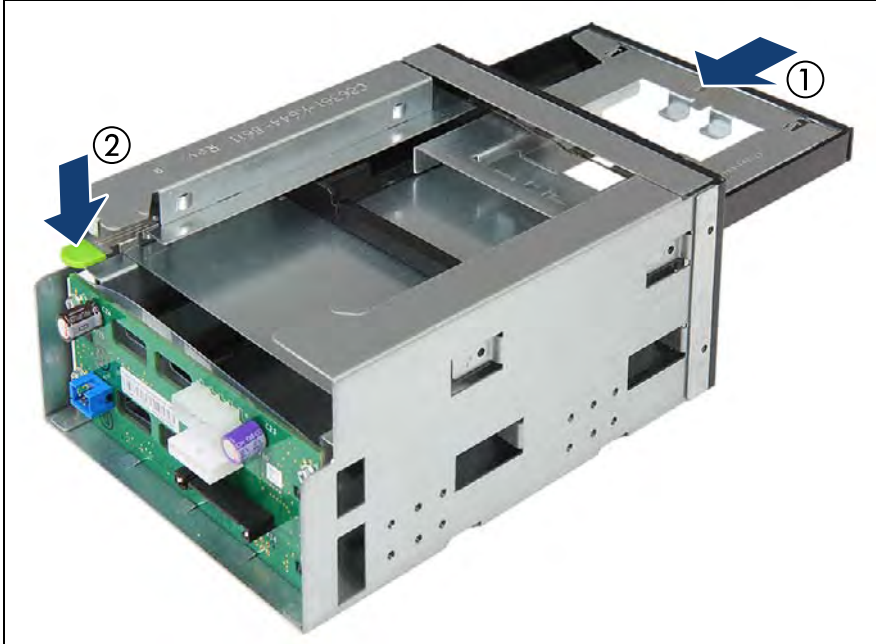


Figure 450: Mounting the slimline ODD module in the HDD expansion box

- ▶ Insert the slimline ODD dummy module into the HDD extension box (1) and push back until the locking tab (2) engages.

12.6.2.4 Removing the LSD module from the extension box

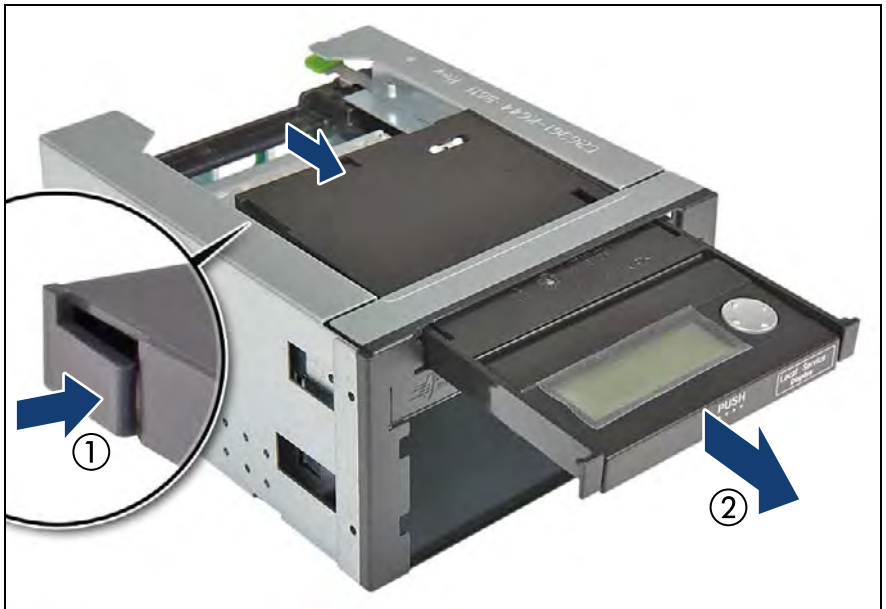


Figure 451: Removing the LSD module

- ▶ From the rear side of the extension box, press in on the locking latch (see close-up) to disengage the LSD module (1).
- ▶ From inside the HDD extension box, press out on the LSD module and pull it out of its bay (2).

Accessible drives

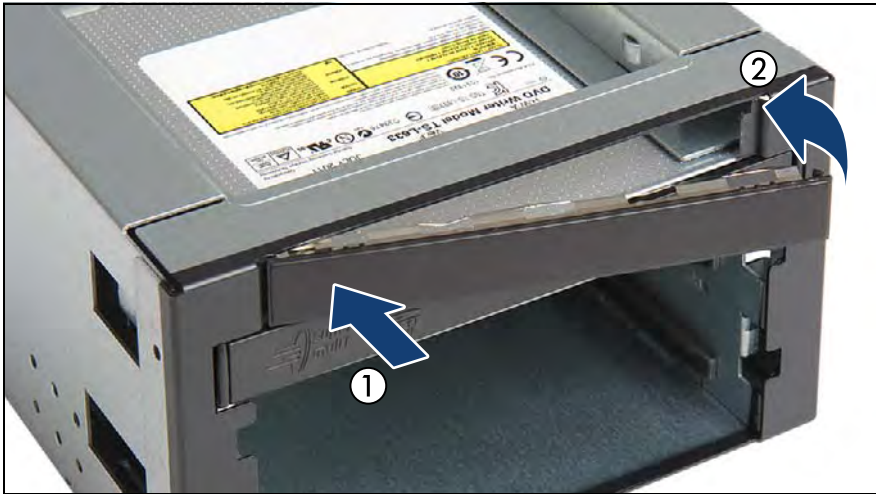


Figure 452: Removing the slimline ODD from its installation frame

- ▶ Fit one edge of the LSD dummy cover plate into the LSD slot (1) as shown.
- ▶ Fold in the dummy cover plate (2).



Figure 453: Mounting the slimline ODD dummy insert in the installation frame

- ▶ Carefully bend out the LSD dummy cover plate (1) and fit its other edge into the LSD slot (2).

12.6.2.5 Installing accessible drive dummy covers



if the 2x 3.5-inch HDD extension box is to be reinstalled in the system, the following description does not apply. Please proceed as described in section ["Installing the 2x 3.5-inch HDD extension box" on page 288](#).

Installing accessible drive filler covers

- ▶ Install accessible drive filler covers (C26361-K644-C933) into the empty installation bays 2 and 3 as described in section ["Accessible drive filler covers" on page 94](#).



CAUTION!

Always replace filler covers into unused drive bays to comply with applicable EMC regulations and satisfy cooling requirements.

Installing accessible drive covers

- ▶ Install accessible drive covers (C26361-K644-C60) into installation bays 2 and 3 of the front cover as described in section ["Accessible drive covers" on page 96](#).

12.6.2.6 Installing the 2x 3.5-inch HDD extension box

- ▶ If the 2x 3.5-inch HDD extension box is to be reinstalled in the system, prepare the accessible drive mounting brackets and install the extension box into installation bays 2 and 3 as described in section ["Installing the 2x 3.5-inch HDD extension box" on page 288](#).

12.6.2.7 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)

12.6.3 Replacing the slimline ODD or LSD



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: Slotted screw driver (for bending in or out accessible drive mounting brackets)

12.6.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Removing backup and optical disk media" on page 129](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).



Removing the front cover is not required in order to replace the slimline ODD or LSP in the 2x 3.5-inch HDD extension box.

- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

12.6.3.2 Removing the 2x 3.5-inch HDD extension box

- ▶ Remove all cables from the 2x 3.5-inch HDD extension box backplane.
- ▶ Remove all cables from the slimline ODD.
- ▶ Remove the LSD cable from system board connector SMB 1.
- ▶ Remove the 2x 3.5-inch HDD extension box from the server as described in section ["Removing the 2x 3.5-inch HDD extension box" on page 291](#).

12.6.3.3 Removing the slimline ODD from the HDD extension box

- ▶ Remove the defective slimline ODD from the 2x 3.5-inch HDD extension box as described in section ["Removing the slimline ODD from the extension box" on page 580](#).

12.6.3.4 Removing the LSD module from the HDD extension box

- ▶ Remove the defective LSD module from the 2x 3.5-inch HDD extension box as described in section ["Removing the LSD module from the extension box" on page 583](#).

12.6.3.5 Installing the slimline ODD into the HDD extension box

- ▶ Install the new the slimline ODD into the 2x 3.5-inch HDD extension box as described in section ["Installing the slimline ODD into the extension box" on page 571](#).

12.6.3.6 Installing the LSD module into the HDD extension box

- ▶ Install the new LSD module into the 2x 3.5-inch HDD extension box as described in section ["Installing the LSD module into the HDD extension box" on page 575](#).

12.6.3.7 Installing the 2x 3.5-inch HDD extension box

- ▶ Reinstall the 2x 3.5-inch HDD extension box as described in section ["Installing the 2x 3.5-inch HDD extension box" on page 288](#).

12.6.3.8 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)

12.7 Slimline ODD in 4x 3.5-inch HDD extension box

12.7.1 Installing the slimline ODD



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools:

- Phillips PH2 / (+) No. 2 screw driver
- Slotted screw driver (for bending in or out accessible drive mounting brackets)

12.7.1.1 Preliminary steps

- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)



The front cover only needs to be removed in order to remove accessible drive dummy covers (see section ["Removing accessible drive dummy covers" on page 533](#)). If the HDD extension box is already installed in the server and will be removed in order to install a slimline ODD or LSD module, skip this step.

- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)
- ▶ If the HDD extension box is already installed in the server, disconnect all cables from the HDD backplane and remove the extension box as described in section ["Removing the 4x 3.5-inch HDD extension box" on page 299](#).

12.7.1.2 Installing the slimline ODD into the HDD extension box



Figure 454: Removing the slimline ODD mounting bracket

- ▶ Remove two screws from the slimline ODD mounting bracket.
- ▶ Remove the slimline ODD mounting bracket.

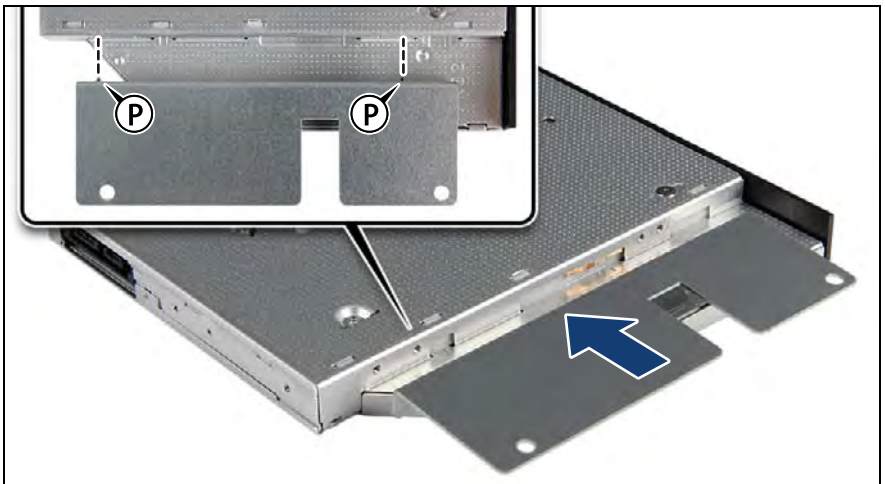


Figure 455: Installing the slimline ODD mounting bracket on the ODD (A)

- ▶ Turn the slimline ODD upside down.

Accessible drives

- ▶ Fit the mounting bracket on the slimline ODD as shown.
- ▶ Ensure that the two pins (P) on the mounting bracket properly engage with the screw holes in the drive.

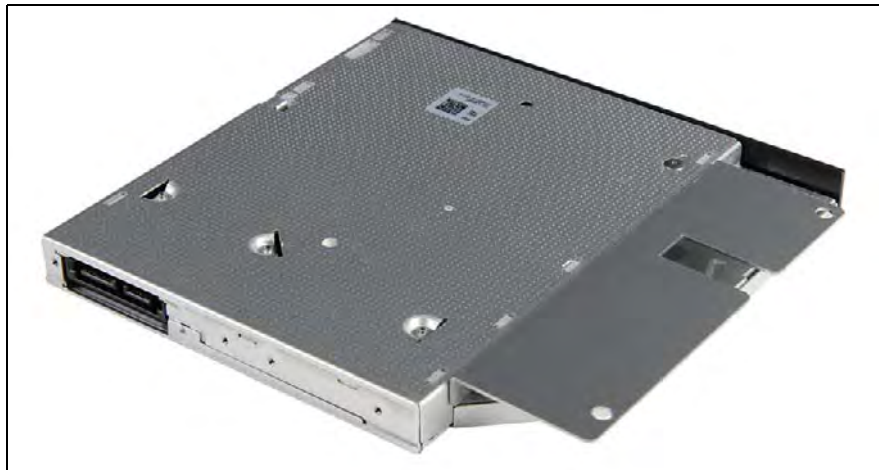


Figure 456: Installing the slimline ODD mounting bracket on the ODD (B)

- ▶ Ensure that the slimline ODD mounting bracket is properly seated on the drive as shown.

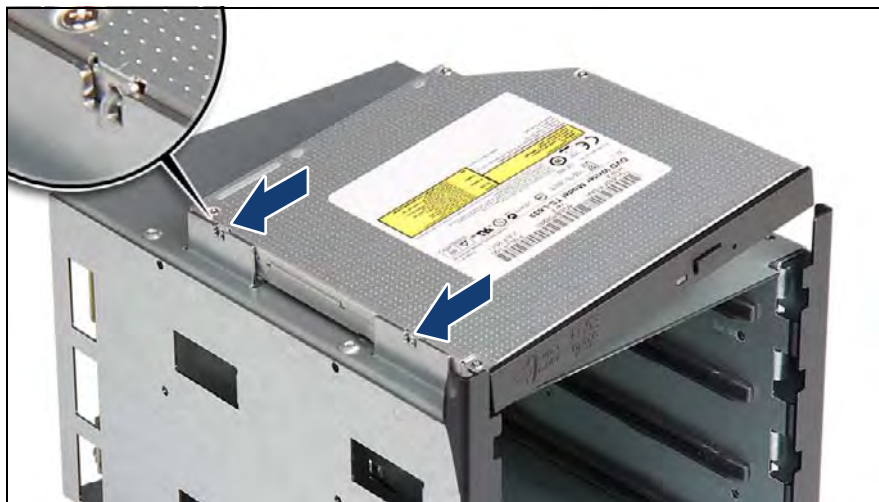


Figure 457: Installing the slimline ODD on the HDD extension box (A)

- ▶ Hook the two latches on the left edge of the slimline ODD into the metal guides on the 4x 3.5-inch HDD extension box as shown (see close-up).



Figure 458: Installing the slimline ODD on the HDD extension box (B)

- ▶ Fold down the slimline ODD.

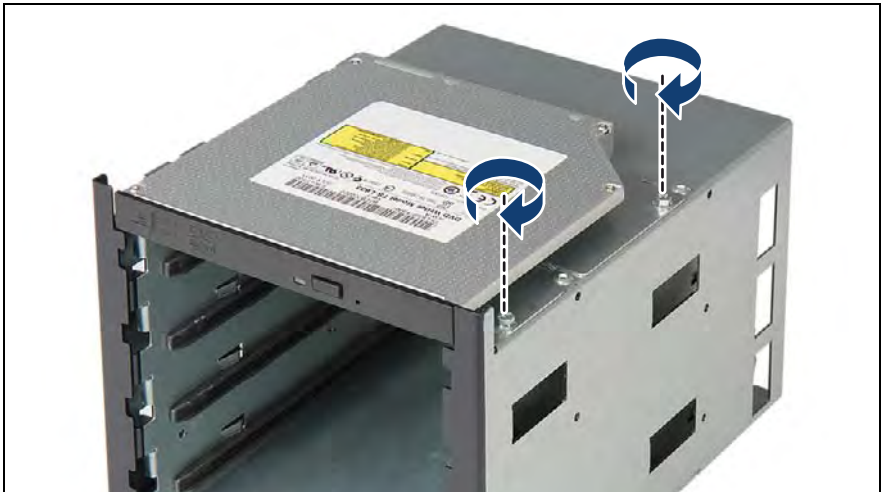


Figure 459: Installing the slimline ODD on the HDD extension box (C)

Accessible drives

- ▶ Secure the slimline ODD mounting bracket on the 4x 3.5-inch HDD extension box with two M3 x 4.5 mm screws.

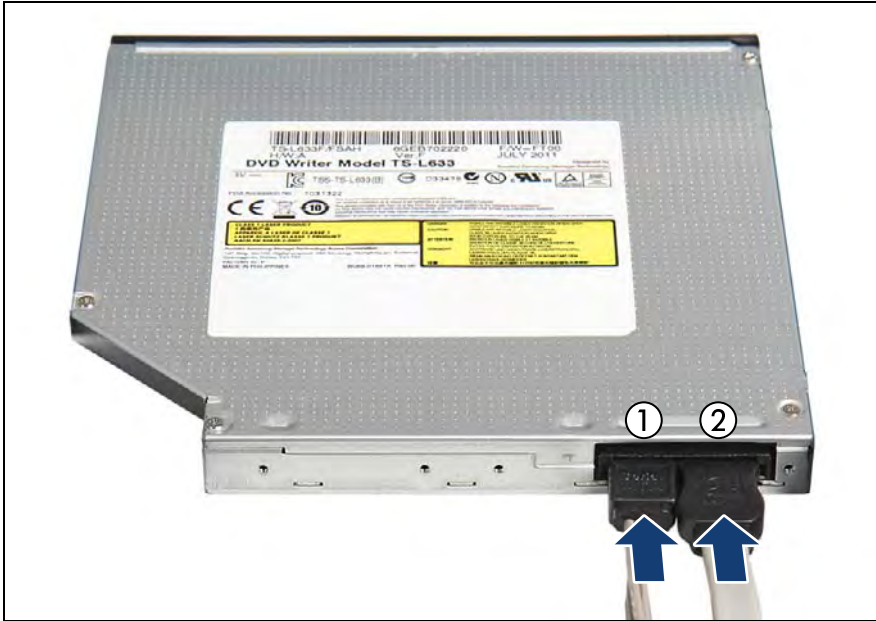


Figure 460: Removing the slimline ODD dummy module

- ▶ Connect cables to the slimline ODD:

#	Cabling list no. ¹	Cable
1	8A / 8B	Slimline ODD SATA power cable (T26139-Y3986-V302 / T26139-Y3986-V305)
2	20	SATA cable (T26139-Y3958-V205)

¹ The cabling list numbers refers to section "[List of used cables](#)" on page 736.

12.7.1.3 Removing accessible drive dummy covers

Removing accessible drive filler covers

- ▶ Remove accessible drive filler covers from installation bays 1, 2 and 3 as described in section ["Accessible drive filler covers" on page 94.](#)



CAUTION!

Always replace filler covers into unused drive bays to comply with applicable EMC regulations and satisfy cooling requirements.

Removing accessible drive covers

- ▶ Remove accessible drive covers from installation bays 1, 2 and 3 as described in section ["Accessible drive covers" on page 96.](#)

12.7.1.4 Installing the 4x 3.5-inch HDD extension box

- ▶ Prepare the accessible drive mounting brackets and install the 4x 3.5-inch HDD extension box into installation bays 1, 2 and 3 as described in section ["Installing the 4x 3.5-inch HDD extension box" on page 296.](#)

12.7.1.5 Cabling the slimline ODD on the HDD extension box



For SAS cabling of HDD extension box backplanes, please refer to section ["HDD extension boxes" on page 284.](#)

The cabling list number and cabling plan sections in the allocation tables below refer to chapter ["Cabling" on page 735.](#)

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
SATA cable Y3958-V205	20	Slimline ODD	System board connector SATA 1	16.2.1
Slimline ODD SATA power cable Y3986-V302	8A / 8B	Slimline ODD (15-pin SATA)	3.5-inch HDD backplane 2 connector X9 (4-pin connector)	16.2.6 16.2.4

- ▶ Connect the SATA and power cables as shown in the tables above.

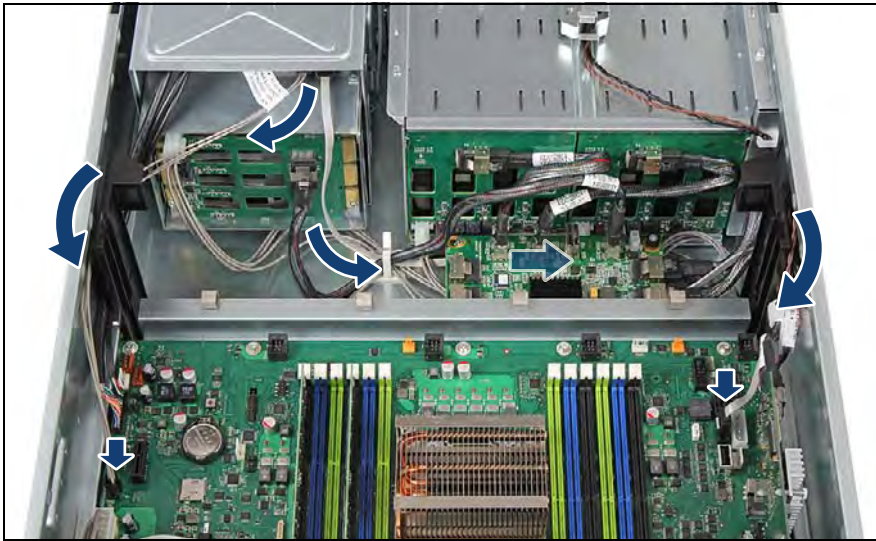


Figure 461: Routing cables

- ▶ Run SATA cable T26139-Y3958-V205 along the drive bays and through the cable clamp on the server floor as shown.
- ▶ Run the SATA cable through the cable guide.

12.7.1.6 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
 - ▶ ["Mounting the server in the rack" on page 115](#)
 - ▶ ["Connecting the server to the mains" on page 118](#)

12.7.2 Removing the slimline ODD



**Upgrade and Repair Unit
(URU)**



**Average task duration:
10 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

12.7.2.1 Preliminary steps

- ▶ ["Removing backup and optical disk media" on page 129](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ ["Opening the server" on page 68](#)



The front cover only needs to be removed in order to install accessible drive dummy covers (see section ["Installing accessible drive dummy covers" on page 548](#)). If the HDD extension box will be reinstalled after removing the slimline ODD, skip this step.

- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

12.7.2.2 Removing the 4x 3.5-inch HDD extension box

- ▶ Remove the 4x 3.5-inch HDD extension box from installation bays 1, 2 and 3 as described in section ["Removing the 4x 3.5-inch HDD extension box" on page 299](#).

12.7.2.3 Removing the slimline ODD from the extension box

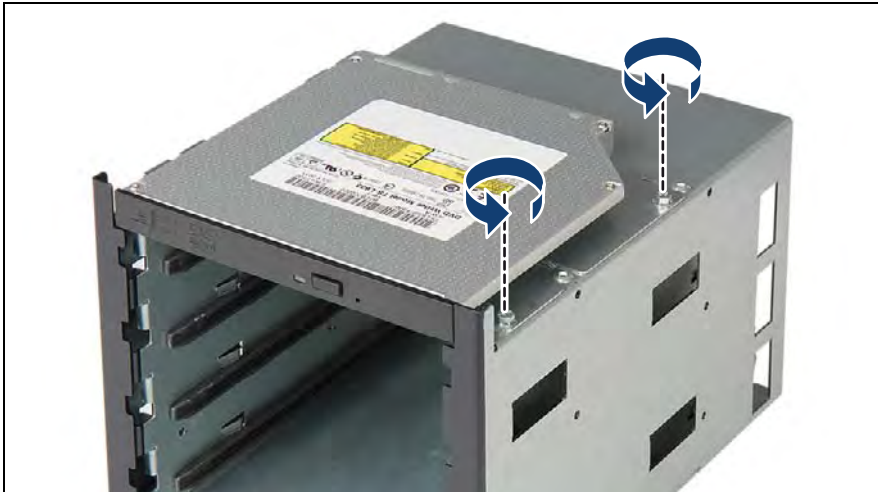


Figure 462: Removing the slimline ODD from the extension box (A)

- ▶ Remove two screws from the slimline ODD mounting bracket.

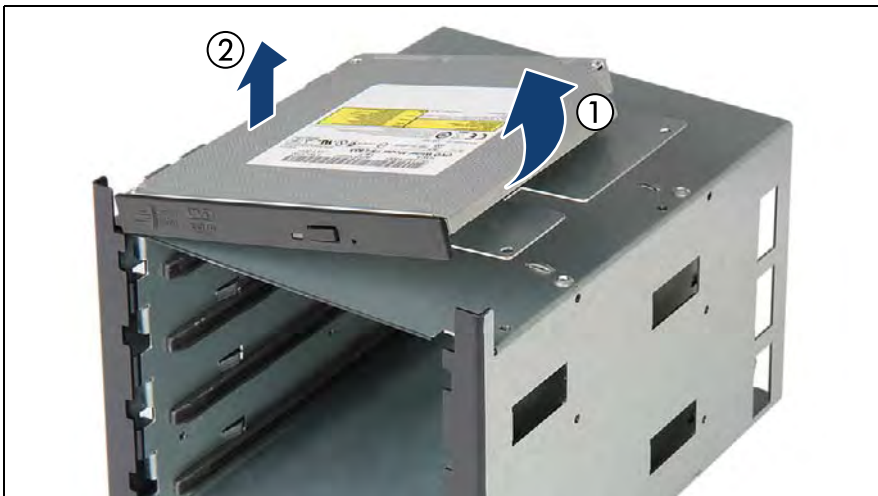


Figure 463: Removing the slimline ODD from the extension box (B)

- ▶ Fold up (1) and remove (2) the slimline ODD as shown.

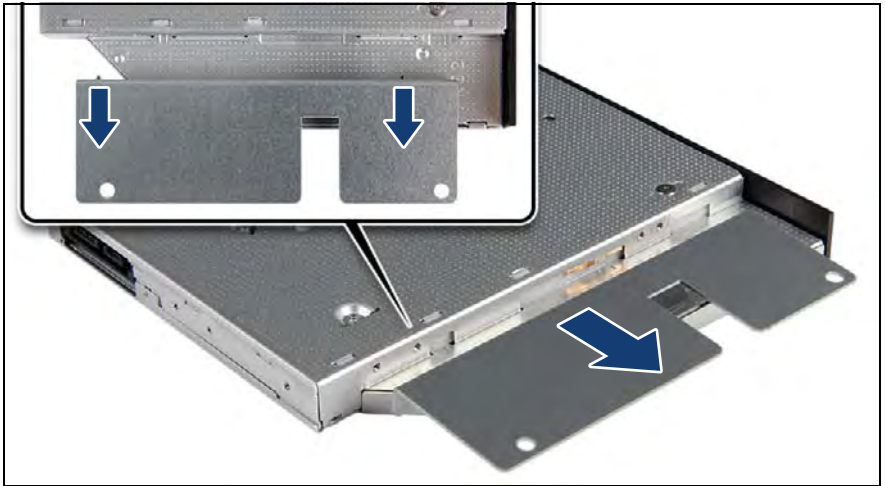


Figure 464: Removing the mounting frame from the slimline ODD

- Remove the slimline ODD mounting bracket from the slimline ODD.



Figure 465: Reinstalling the slimline ODD mounting frame on the HDD expansion box

- If the removed slimline ODD is not to be replaced by a new drive, reinstall the slimline ODD mounting bracket on the 4x 3.5-inch HDD extension box. Secure the slimline ODD mounting bracket on the HDD extension box with two M3 x 4.5 mm screws.

12.7.2.4 Installing accessible drive dummy covers



if the 4x 3.5-inch HDD extension box is to be reinstalled in the system, the following description does not apply. Please proceed as described in section ["Installing the 4x 3.5-inch HDD extension box" on page 296](#).

Installing accessible drive filler covers

- ▶ Install accessible drive filler covers (C26361-K644-C933) into the empty installation bays 1, 2 and 3 as described in section ["Accessible drive filler covers" on page 94](#).



CAUTION!

Always replace filler covers into unused drive bays to comply with applicable EMC regulations and satisfy cooling requirements.

Installing accessible drive covers

- ▶ Install accessible drive covers (C26361-K644-C60) into installation bays 1, 2 and 3 of the front cover as described in section ["Accessible drive covers" on page 96](#).

12.7.2.5 Installing the 4x 3.5-inch HDD extension box

- ▶ If the 4x 3.5-inch HDD extension box is to be reinstalled in the system, prepare the accessible drive mounting brackets and install the extension box into installation bays 1, 2 and 3 as described in section ["Installing the 4x 3.5-inch HDD extension box" on page 296](#).

12.7.2.6 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)

12.7.3 Replacing the slimline ODD



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: – Phillips PH2 / (+) No. 2 screw driver
– Slotted screw driver (for bending in or out accessible drive mounting brackets)

12.7.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Removing backup and optical disk media" on page 129](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).



Removing the front cover is not required in order to replace the slimline ODD or LSP in the 2x 3.5-inch HDD extension box.

- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

12.7.3.2 Removing the 4x 3.5-inch HDD extension box

- ▶ Remove all cables from the 4x 3.5-inch HDD extension box backplane.
- ▶ Remove all cables from the slimline ODD.
- ▶ Remove the 4x 3.5-inch HDD extension box from the server as described in section ["Removing the 4x 3.5-inch HDD extension box" on page 299](#).

12.7.3.3 Removing the slimline ODD from the HDD extension box

- ▶ Remove the defective slimline ODD from the 4x 3.5-inch HDD extension box as described in section ["Removing the slimline ODD from the extension box" on page 596](#).

12.7.3.4 Installing the slimline ODD into the HDD extension box

- ▶ Install the new the slimline ODD onto the 4x 3.5-inch HDD extension box as described in section ["Installing the slimline ODD into the HDD extension box" on page 600](#).

12.7.3.5 Installing the 4x 3.5-inch HDD extension box

- ▶ Reinstall the 4x 3.5-inch HDD extension box as described in section ["Installing the 4x 3.5-inch HDD extension box" on page 296](#).

12.7.3.6 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)

13 Front panel and external connectors

This chapter provides information on how to replace the front panel module and optional front LAN connector board and front VGA connector.

Safety notes



CAUTION!

- When inserting the front panel module into the server, ensure not to pinch or strain any connected cables.
- 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 45.

13.1 Replacing the front panel module



Field Replaceable Unit (FRU)



Average task duration: 15 minutes

Tools: tool-less

Note on system information backup / restore



The front panel module contains the Chassis ID EPROM that contains system information like server name and model, housing type, serial number and manufacturing data.

To avoid the loss of non-default settings when replacing the system board, a backup copy of important system configuration data is automatically stored from the system board NVRAM to the Chassis ID EPROM. After replacing the system board the backup data is restored from the Chassis ID board to the new system board.



CAUTION!

For that reason the front panel module and system board must not be replaced simultaneously! In this case, restoring the system configuration data on the system board would fail.

13.1.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

13.1.2 Removing the front panel module

13.1.2.1 Removing front panel cables from the system board

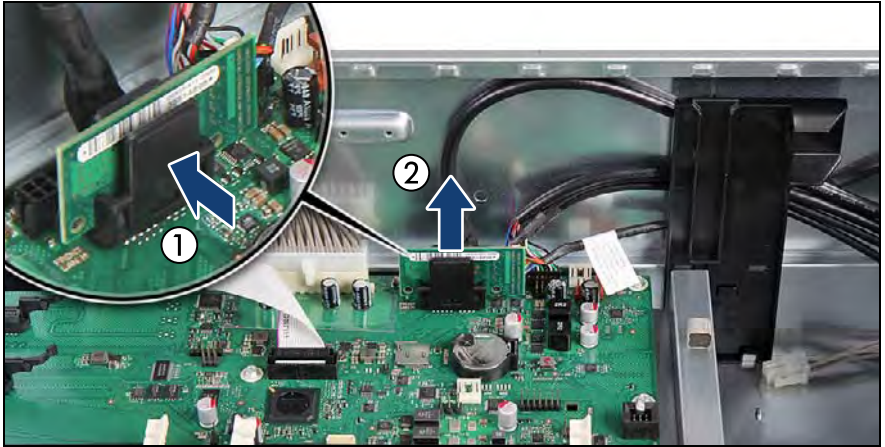


Figure 466: Disconnecting the front LAN board

- ▶ If applicable, disconnect the front LAN board from the system board:
 - ▶ Press in on the locking latch on the front LAN board holder (1, see close-up).
 - ▶ While holding the locking latch pressed, pull the front LAN board out of its socket (2).

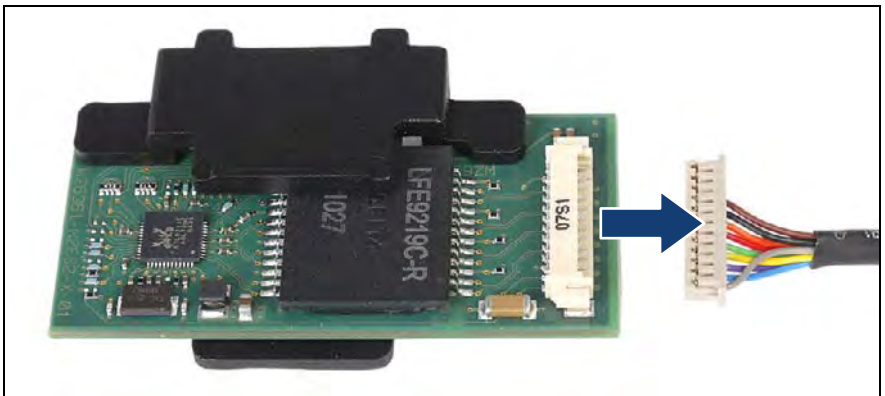


Figure 467: Disconnecting the front LAN cable

Front panel and external connectors

- ▶ Disconnect the front LAN cable from the front LAN board.
- ▶ Remove the front LAN board from the chassis and set aside.

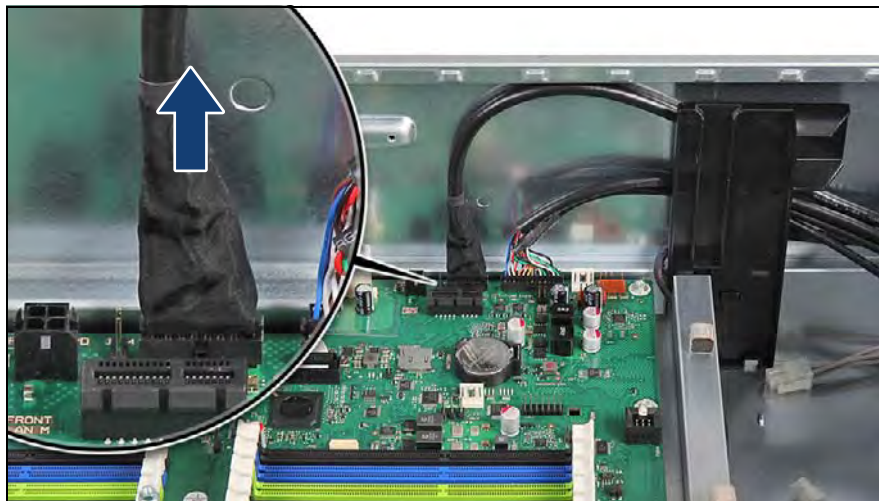


Figure 468: Disconnecting the front VGA cable

- ▶ If applicable, disconnect the front VGA cable from the system board (see close-up).

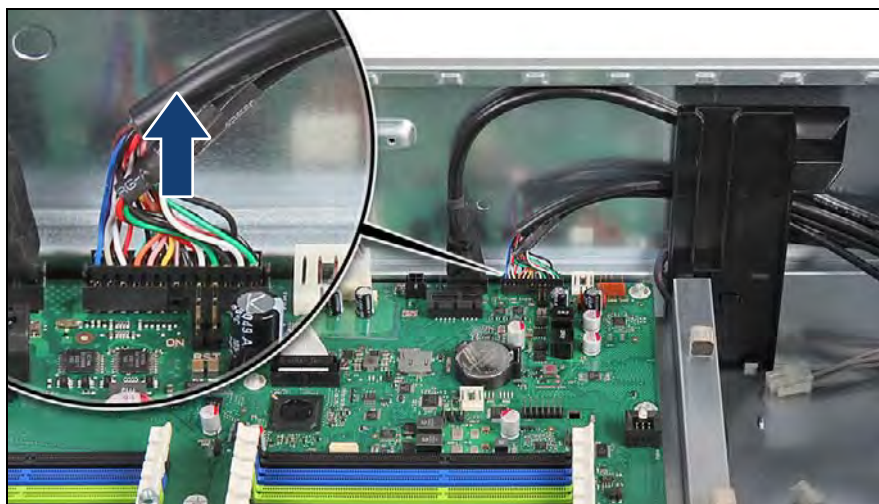


Figure 469: Disconnecting front panel cables

- ▶ Disconnect the front panel cable from the system board (see close-up).
- ▶ Remove all front panel cables from the cable guide.

13.1.2.2 Removing the front panel module

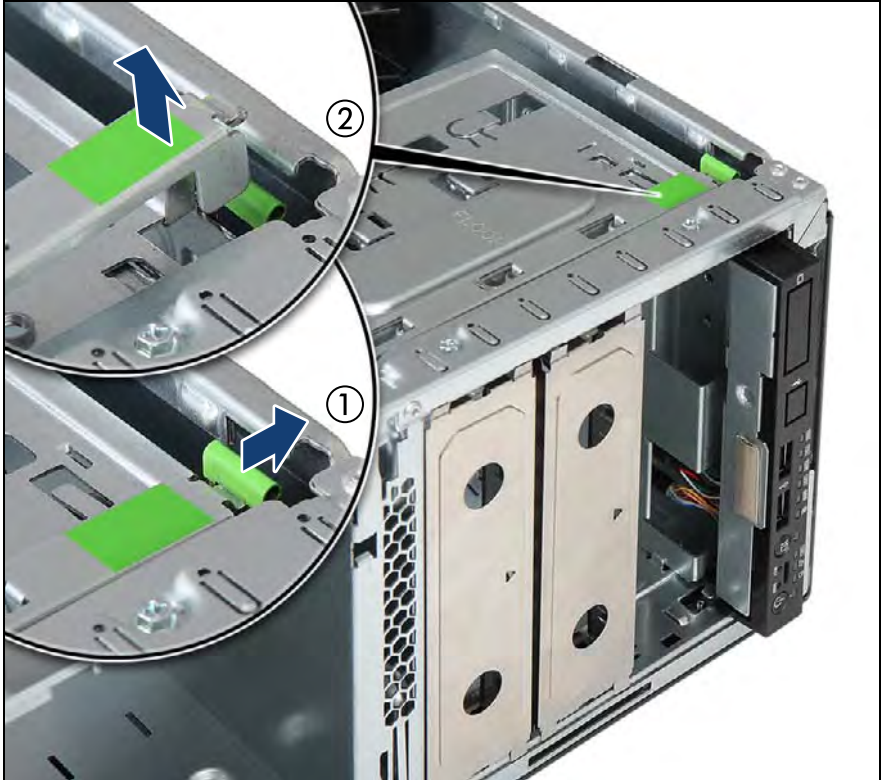


Figure 470: Removing the front panel module

i The front cover (tower server) / rack mounting frame (rack server) does not need to be removed in order to replace the front panel module. In the figures, the front cover / rack mounting frame has been removed for illustration purposes only.

- ▶ Press out on the locking latch to disengage the accessible drive locking bar (1).
- ▶ Fold up the accessible drive locking bar (2).

Front panel and external connectors

- i** Unlocking and securing the front panel and accessible drives is illustrated by the example of tower servers. In case of rack servers, the accessible drive locking bar is located on the side of the drive bay. In this case, proceed as follows:



Figure 471: Removing the front panel module (rack systems)

- ▶ Pull up on the locking latch to disengage the accessible drive locking bar (1).
- ▶ Fold out the accessible drive locking bar (2).

13.1.2.3 Removing cables from the front panel module

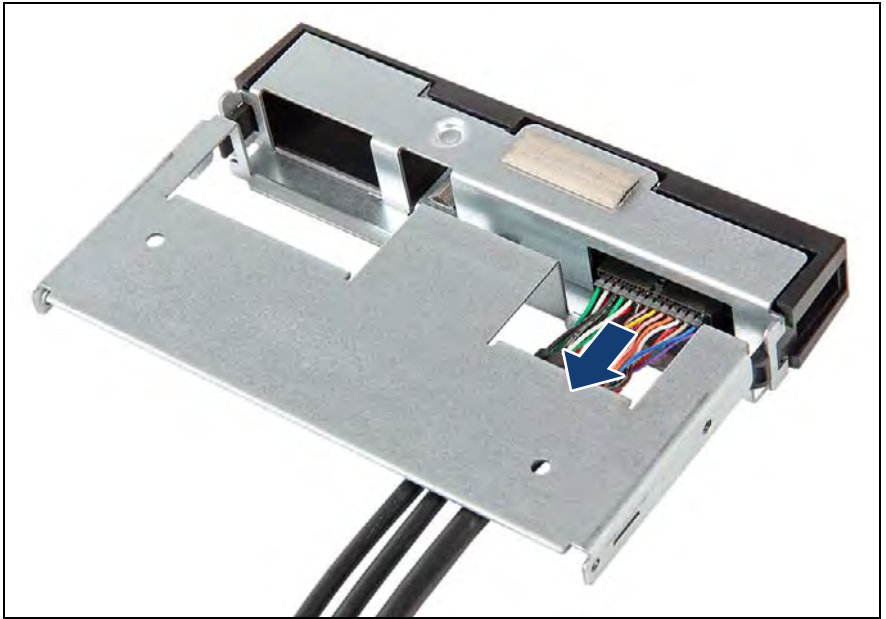


Figure 472: Removing the front panel cable

- ▶ Remove the front panel cable from the defective front panel module as shown.
- ▶ If the front LAN connector has been installed in the defective front panel module, remove the cable as described in section "[Removing the front LAN connector](#)" on page 628.
- ▶ If the front VGA connector has been installed in the defective front panel module, remove the cable as described in section "[Removing the front VGA connector](#)" on page 639.

13.1.3 Replacing the front panel module cover

i Removing and mounting the front panel module cover is required if installing or removing optional front LAN or front VGA connectors.

13.1.3.1 Removing the front panel module cover

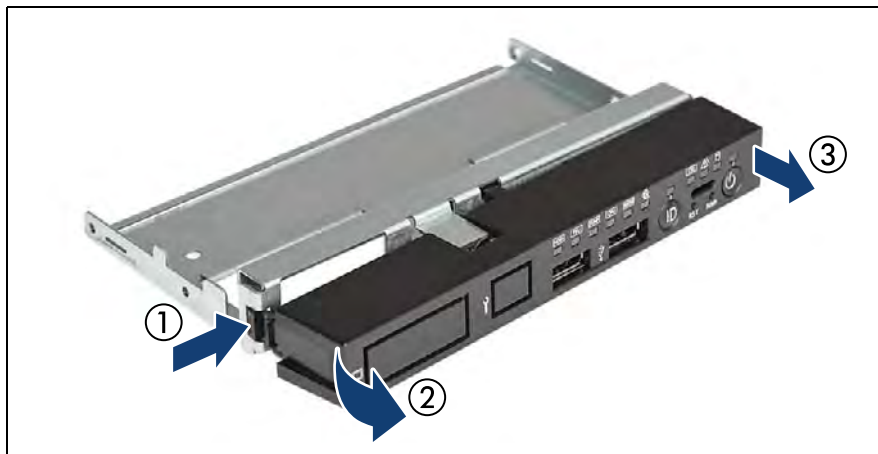


Figure 473: Removing the front panel module cover (A)

- ▶ Press in on the locking latch on the left side of the front panel module cover to disengage the locking mechanism (1).
- ▶ Fold out the left side of the front panel module cover as shown (2).
- ▶ Disengage the right locking latch and pull off the front panel module cover (3).

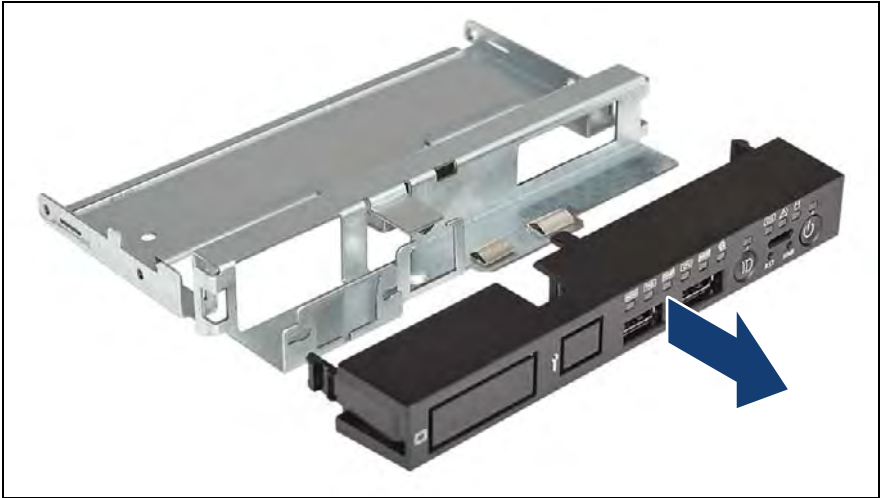


Figure 474: Removing the front panel module cover (B)

- ▶ Remove the front panel module cover from the front panel frame.

13.1.3.2 Mounting the front panel module cover

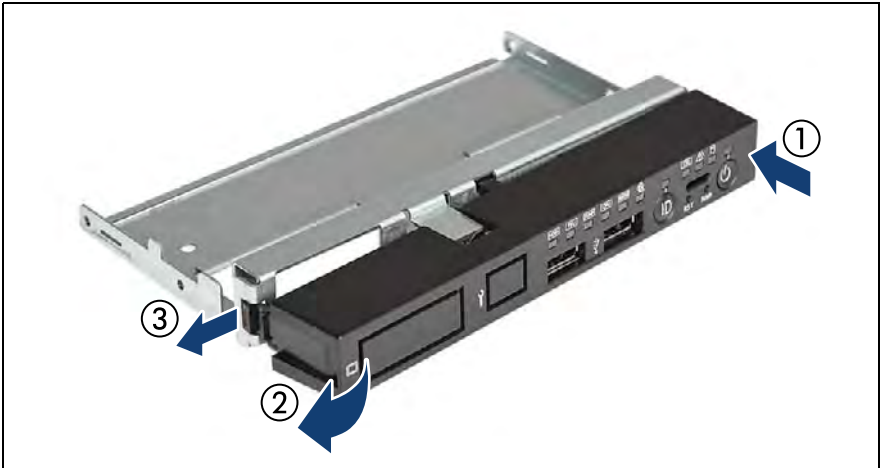


Figure 475: Mounting the front panel module cover

- ▶ Hook the locking latch on the right side of the front panel module cover into the front panel frame (1).

Front panel and external connectors

- ▶ Fold in the front panel module cover (2) until the left locking latch engages with the front panel frame (3).

13.1.4 Installing the front panel module

13.1.4.1 Connecting cables to the front panel module

- ▶ If the front LAN connector is to be installed in the new front panel module, install the front LAN cable as described in section ["Installing the front LAN connector" on page 618](#).
- ▶ If the front VGA connector is to be installed in the new front panel module, install the front VGA cable as described in section ["Installing the front VGA connector" on page 632](#).

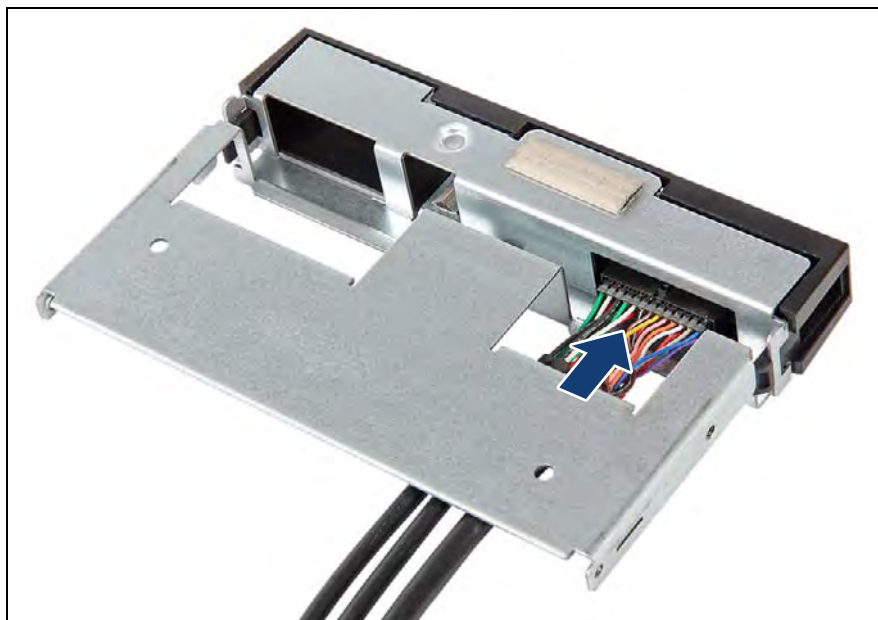


Figure 476: Connecting the front panel cable

- ▶ Connect the front panel cable to the new front panel module as shown.

13.1.4.2 Installing the front panel module



Figure 477: Installing the front panel module

- ▶ Insert the front panel module into its installation bay and carefully push in until the front screw hole on the front panel frame lines up with the centering pin on the locking bar.



Figure 478: Securing the front panel module

- ▶ Close the locking bar until it locks in place.

- i** Unlocking and securing the front panel and accessible drives is illustrated by the example of tower servers. In case of rack servers, the accessible drive locking bar is located on the side of the drive bay. In this case, proceed as follows:



Figure 479: Securing the front panel module (rack systems)

- ▶ Close the locking bar until it locks in place.

13.1.4.3 Connecting front panel cables to the system board

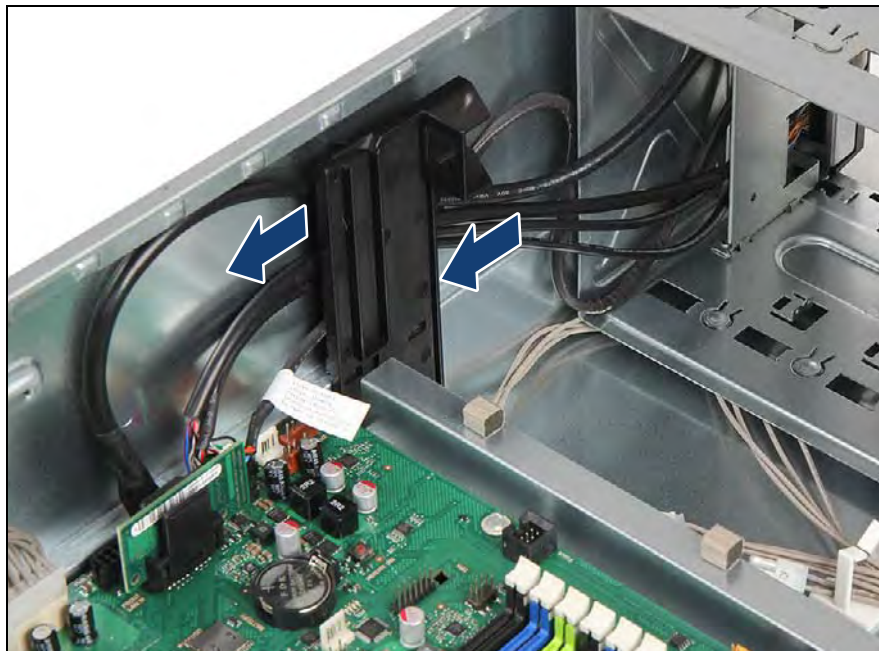


Figure 480: Securing front panel cables

- ▶ Run the front panel cables through the cable guide as shown.

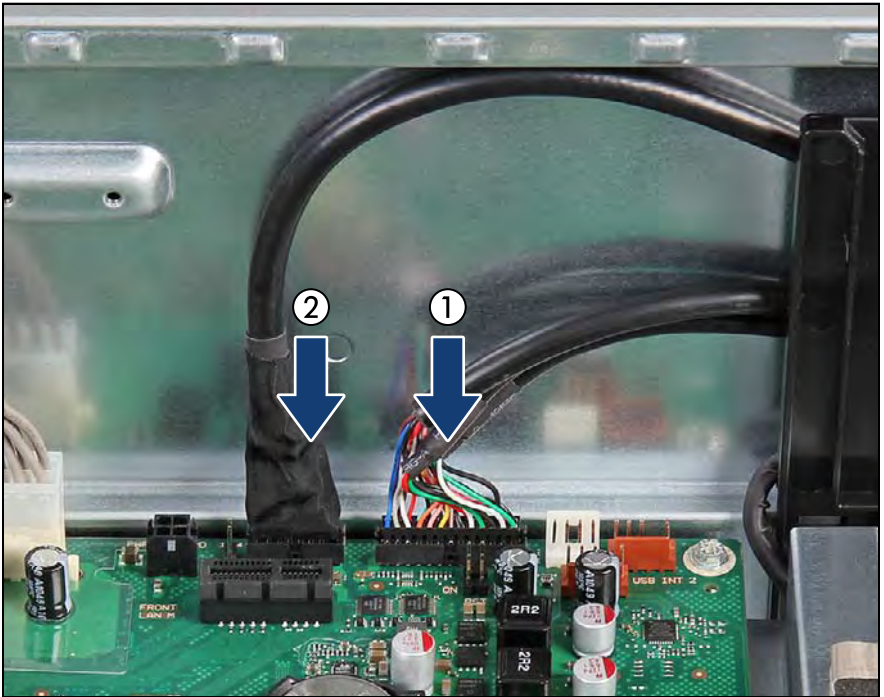


Figure 481: Connecting front panel cables to the system board

- ▶ Connect the front panel cable and front VGA cable (if applicable to the system board):

#	Connector	Cable
1	FRONTPANEL	Front panel cable T26139-Y4015-V1
2	FRONT VGA	Front VGA cable T26139-Y3994-V101

Front panel and external connectors

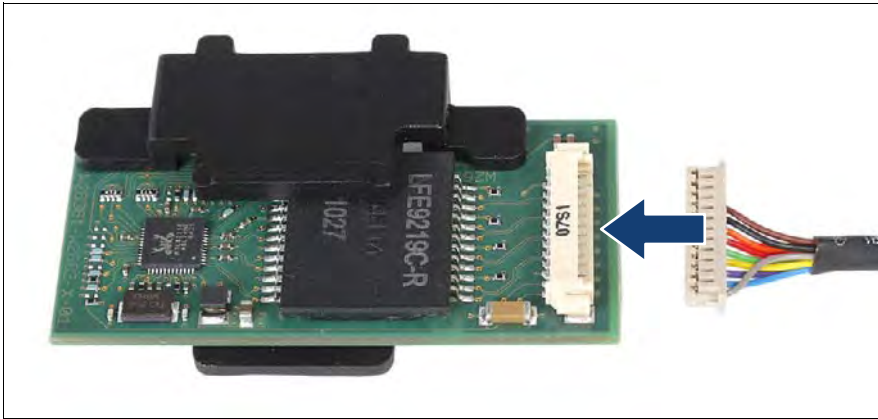


Figure 482: Connecting the front LAN cable to the front LAN board

- ▶ If applicable, connect the front LAN cable to front LAN board D2935.

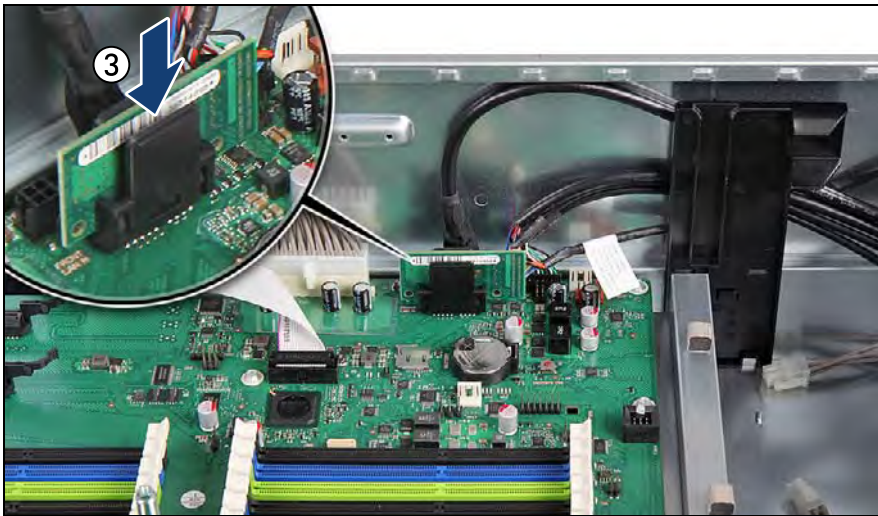


Figure 483: Connecting the front LAN board to the system board

- ▶ If applicable, connect front LAN board D2935 to the system board:

#	Connector	Cable
3	FRONT LAN	Front LAN cable T26139-Y4025-V1 on front LAN board D2935

13.1.5 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ Verify whether a backup copy of the system board settings has been successfully transferred to the Chassis ID EPROM as described in section ["Verifying system information backup / restore" on page 136](#).
- ▶ Store your server's system information on the Chassis ID EPROM integrated into the front panel board. For further information on how to obtain and use the *ChassisId_Prom* Tool, refer to section ["Using the Chassis ID Prom Tool" on page 155](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

13.2 Front LAN connector

13.2.1 Installing the front LAN connector



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: Slotted screw driver for breaking out the front LAN cover plate

13.2.1.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

13.2.1.2 Removing the front panel module

- ▶ ["Removing front panel cables from the system board" on page 603](#)
- ▶ ["Removing the front panel module" on page 605](#)

13.2.1.3 Preparing the front panel module

- ▶ ["Removing the front panel module cover" on page 608](#)

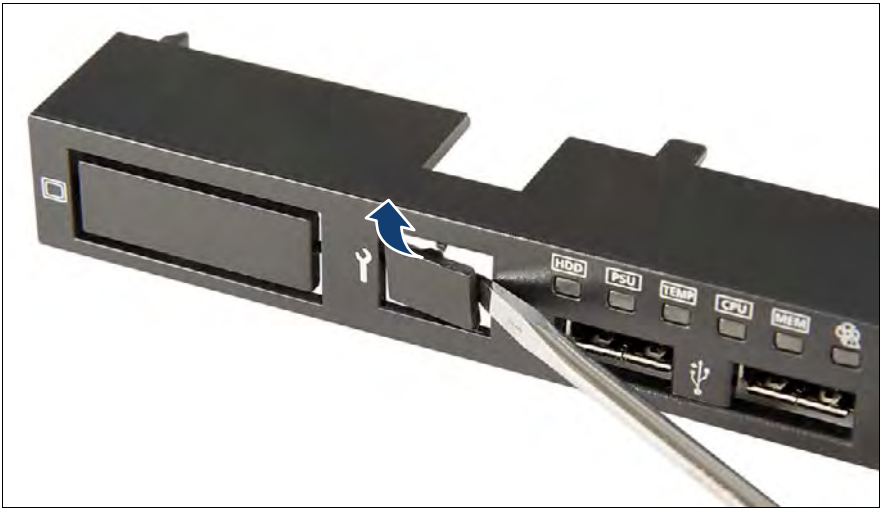


Figure 484: Breaking out the front LAN cover plate

- Break out the front LAN cover plate on the front panel cover.



Please note that once removed, the front LAN cover plate cannot be refitted.

13.2.1.4 Installing the front LAN connector



Figure 485: Front LAN cable T26139-Y4025-V1

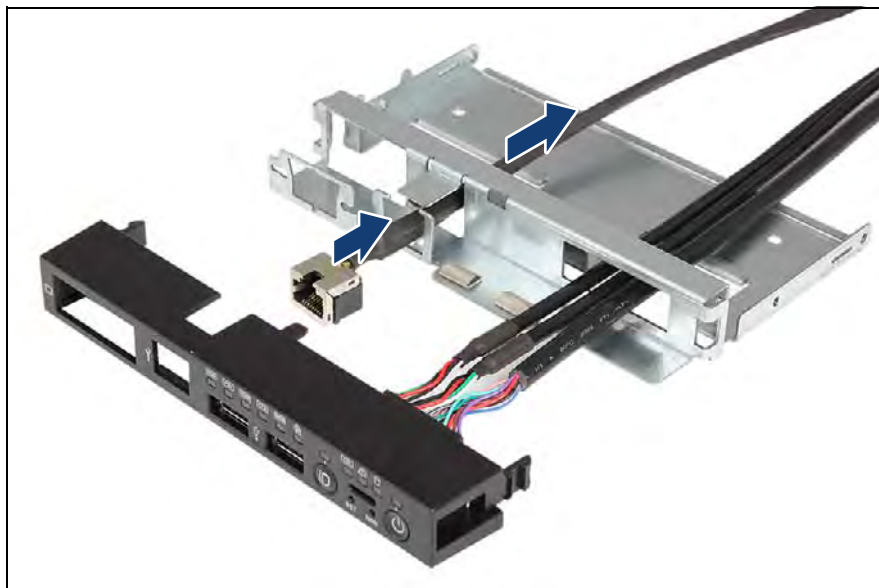


Figure 486: Mounting the front LAN connector (A)

- ▶ Run the front LAN cable through the mounting bracket on the front panel frame as shown.

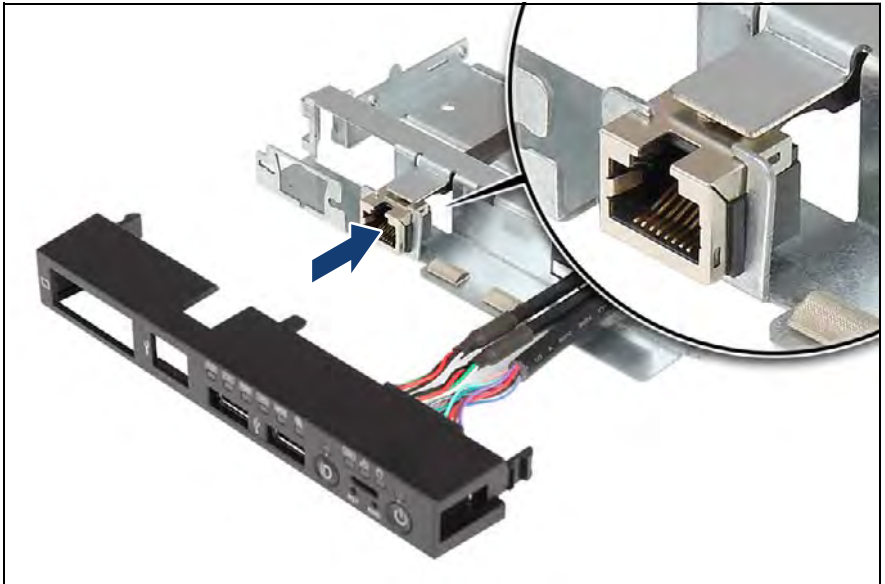


Figure 487: Mounting the front LAN connector (B)

- ▶ Carefully snap the front LAN cable connector into the mounting bracket (see close-up).

13.2.1.5 Reassembling the front panel module

- ▶ ["Mounting the front panel module cover" on page 609](#)

13.2.1.6 Reinstalling the front panel module

- ▶ ["Installing the front panel module" on page 611](#)

13.2.1.7 Preparing the front LAN board



Figure 488: LAN board kit

- 1 Front LAN board D2935
Part number: S26361-D2935-A11
- 2 Front LAN board holder
Part number: A3C40126757

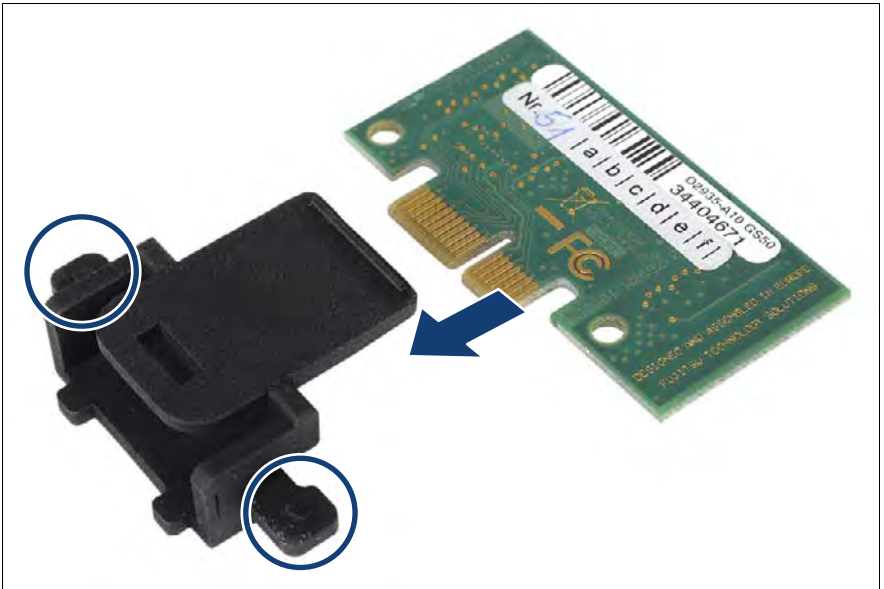


Figure 489: Assembling the front LAN board (A)

- ▶ Insert and push the front LAN board into the front LAN holder (A3C40126757) until the two locking pins in the holder snap in place.



Figure 490: Assembling the front LAN board (B)

- ▶ Assembled front LAN board in front LAN holder

13.2.1.8 Connecting front panel cables to the system board

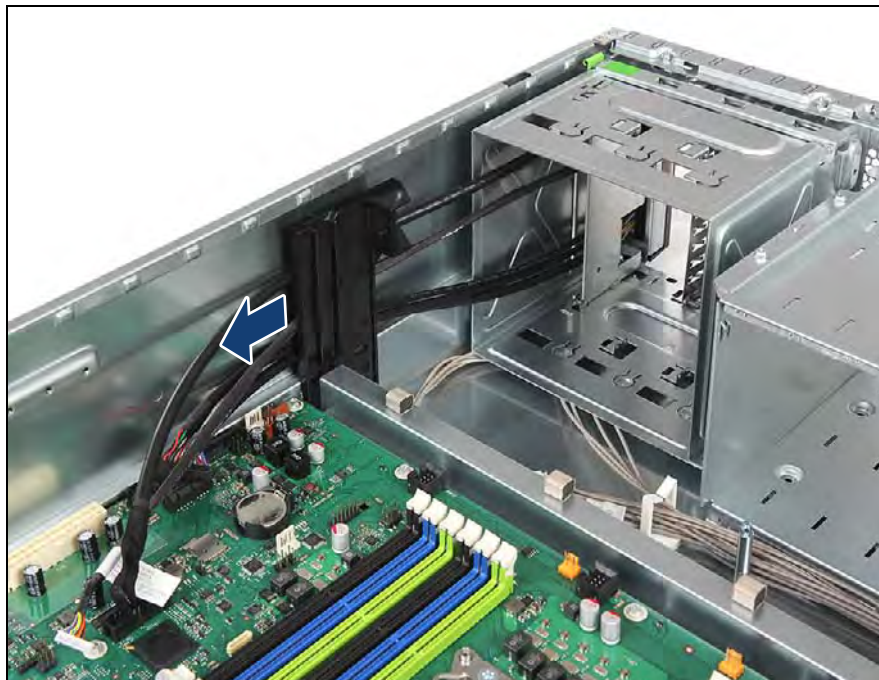


Figure 491: Securing front panel cables

- ▶ Run the front panel cables through the cable guide as shown.

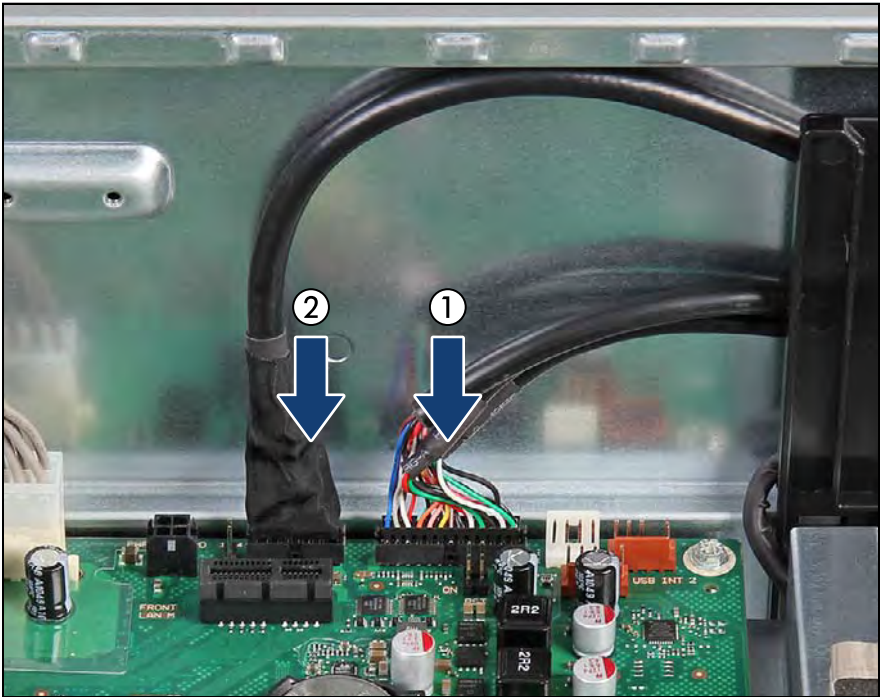


Figure 492: Connecting front panel cables to the system board

- ▶ Connect the front panel cable and front VGA cable (if applicable to the system board):

#	Connector	Cable
1	FRONTPANEL	Front panel cable T26139-Y4015-V1
2	FRONT VGA	Front VGA cable T26139-Y3994-V101

Front panel and external connectors

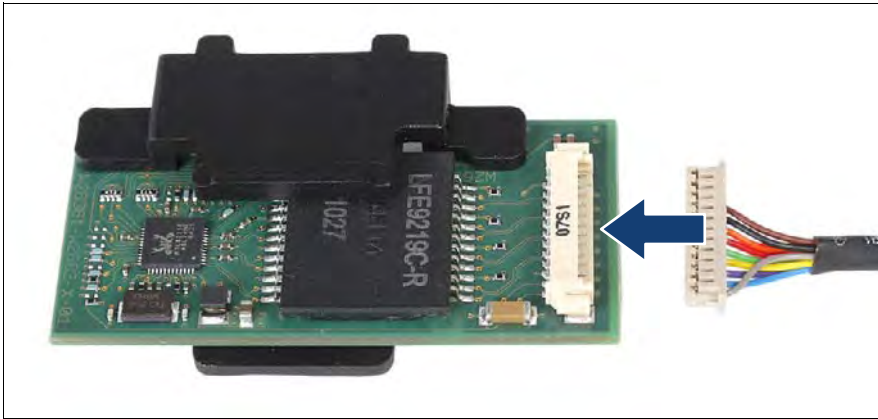


Figure 493: Connecting the front LAN cable to the front LAN board

- ▶ Connect the front LAN cable to front LAN board D2935.

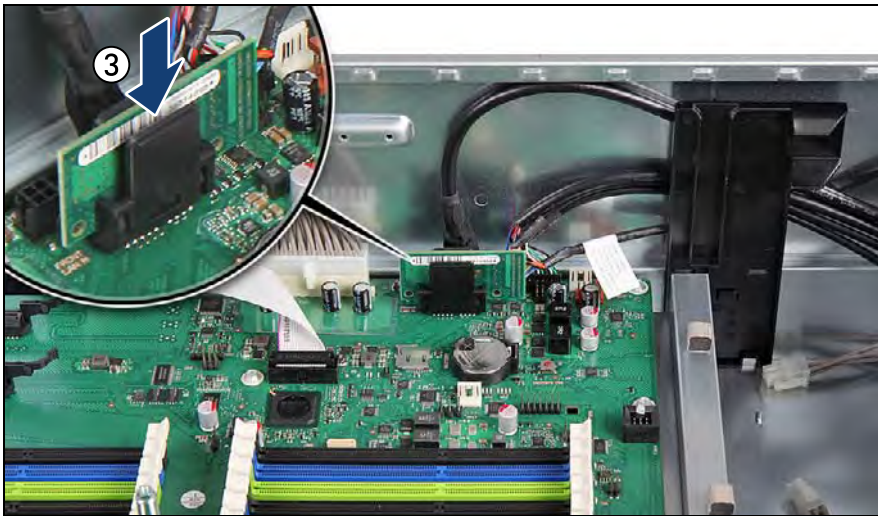


Figure 494: Connecting the front LAN board to the system board

- ▶ Connect front LAN board D2935 to the system board:

#	Connector	Cable
3	FRONT LAN	Front LAN cable T26139-Y4025-V1 on front LAN board D2935

13.2.1.9 Concluding steps

- ▶ "Installing the system fan holder" on page 331
- ▶ "Installing the system air duct" on page 83
- ▶ "Closing the server" on page 98
- ▶ When working on a rack-mounted server:
"Mounting the server in the rack" on page 115
- ▶ "Connecting the server to the mains" on page 118
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: "Resuming BitLocker functionality" on page 152

13.2.1.10 Using the front management LAN connector

In order to use the front management LAN connector to access the iRMC S4 management controller, please proceed as follows:

- ▶ Ensure that *Management LAN* has been enabled in the BIOS:
 - ▶ Enter the BIOS.
 - ▶ Select the *Server Mgmt* menu.
 - ▶ Under *iRMC LAN Parameters Configuration*, make sure that the *Management LAN* setting is set to *Enabled*.
 - ▶ Save your changes and exit the BIOS.



The front management LAN connector can be used to access the iRMC S4 with either of the *Management LAN Port* settings enabled, *Management* or *Shared*.

For detailed information on how to access the BIOS and modify settings, refer to the "D2949 BIOS Setup Utility for PRIMERGY TX300 S8 / RX350 S8" reference manual.

Front panel and external connectors

- ▶ Connect a client computer (e.g. notebook) to the front management LAN connector.



It is not possible to simultaneously access the iRMC S4 from the front and rear management LAN connectors. As soon as a LAN cable is connected to the front management LAN connector, the iRMC S4 cannot be accessed via the rear management LAN connector.

After removing the LAN cable from the front management LAN connector, the iRMC S4 will immediately become accessible via the rear management LAN connector again.

- ▶ Accessing the iRMC S4 using the front management LAN connector is only possible via the preset IP address 192.168.1.1 and cannot be configured otherwise.

Configure your client computer to use any static IP address on subnet 192.168.1.x (except 192.168.1.1) with subnet mask 255.255.255.0.

13.2.2 Removing the front LAN connector



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: tool-less

13.2.2.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63.](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)

- ▶ ["Removing the system fan holder" on page 330](#)

13.2.2.2 Removing and preparing the front panel module

- ▶ ["Removing front panel cables from the system board" on page 603](#)
- ▶ ["Removing the front panel module" on page 605](#)
- ▶ ["Removing the front panel module cover" on page 608](#)

13.2.2.3 Removing the front LAN connector

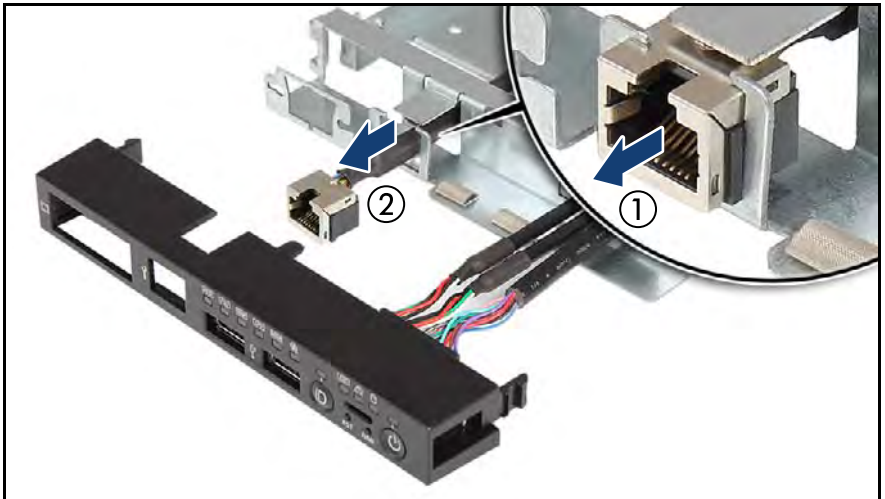


Figure 495: Removing the front panel connector

- ▶ Carefully unclatch the front LAN cable connector from the mounting bracket (1).
- ▶ Pull the front LAN cable out through the mounting bracket on the front panel frame and remove it (2).

13.2.2.4 Reassembling the front panel module

- ▶ ["Mounting the front panel module cover" on page 609](#)

13.2.2.5 Reinstalling the front panel module

- ▶ ["Installing the front panel module" on page 611](#)

13.2.2.6 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

13.2.3 Replacing the front LAN connector and board



**Upgrade and Repair Unit
(URU)**



**Average task duration:
15 minutes**

Tools: tool-less

13.2.3.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ ["Opening the server" on page 68](#)

- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

13.2.3.2 Removing the front panel module

- ▶ ["Removing the front panel module" on page 603](#)

13.2.3.3 Removing the defective front LAN connector

- ▶ ["Removing the front LAN connector" on page 628](#)

13.2.3.4 Installing the new front LAN connector

- ▶ ["Installing the front LAN connector" on page 619](#)

13.2.3.5 Reassembling the front panel module

- ▶ ["Mounting the front panel module cover" on page 609](#)

13.2.3.6 Reinstalling the front panel module

- ▶ ["Installing the front panel module" on page 611](#)

13.2.3.7 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
 - ▶ ["Mounting the server in the rack" on page 115](#)
 - ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ Inform the customer about changed WWN and MAC addresses. For further information, refer to section ["Looking up changed MAC / WWN addresses" on page 153](#).
- ▶ After replacing the front LAN board in a server running Linux OS, update its MAC address in the related NIC definition file as described in section ["Updating the NIC configuration file in a Linux environment" on page 150](#).

- ▶ If applicable, restore LAN teaming configurations as described in section ["After replacing / upgrading LAN controllers"](#) on page 157.
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality"](#) on page 152

13.3 Front VGA connector

13.3.1 Installing the front VGA connector



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: – Slotted screw driver for breaking out the front VGA cover plate – Socket screw driver (5 mm)

13.3.1.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality"](#) on page 125
- ▶ ["Locating the defective server"](#) on page 57
- ▶ ["Shutting down the server"](#) on page 62
- ▶ ["Disconnecting the server from the mains"](#) on page 63
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack"](#) on page 64
- ▶ Bring the server to its horizontal position.
- ▶ ["Opening the server"](#) on page 68
- ▶ ["Removing the system air duct"](#) on page 81
- ▶ ["Removing the system fan holder"](#) on page 330

13.3.1.2 Removing the front panel module

- ▶ "Removing front panel cables from the system board" on page 603
- ▶ "Removing the front panel module" on page 605

13.3.1.3 Preparing the front panel module

- ▶ "Removing the front panel module cover" on page 608



Figure 496: Breaking out the front VGA cover plate

- ▶ Break out the front VGA cover plate on the front panel cover.



Please note that once removed, the front VGA cover plate cannot be refitted.

13.3.1.4 Installing the front VGA connector

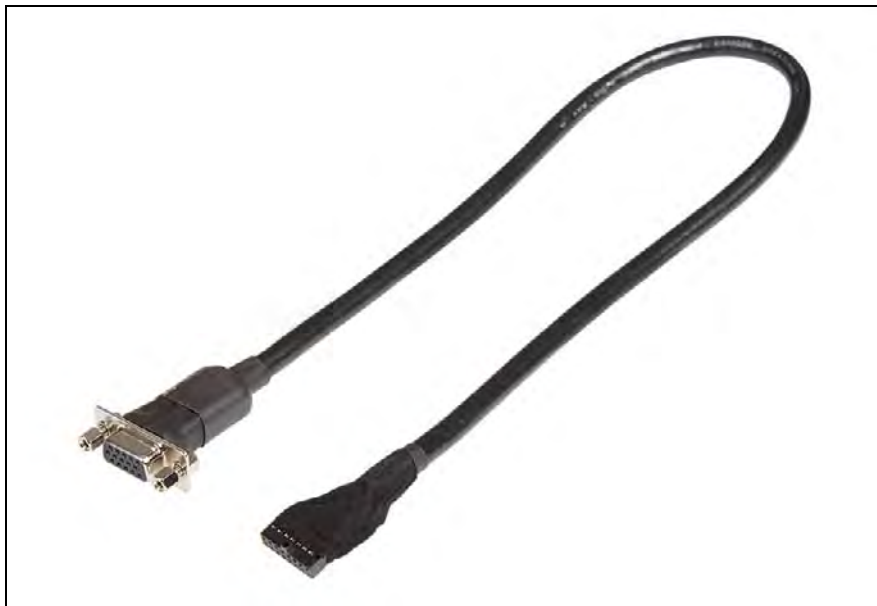


Figure 497: Front VGA cable T26139-Y3994-V101



Figure 498: Preparing the front VGA cable

- ▶ Remove the two hexagon bolts (UNC #4-40, V26827-B408-V989) from the VGA connector.

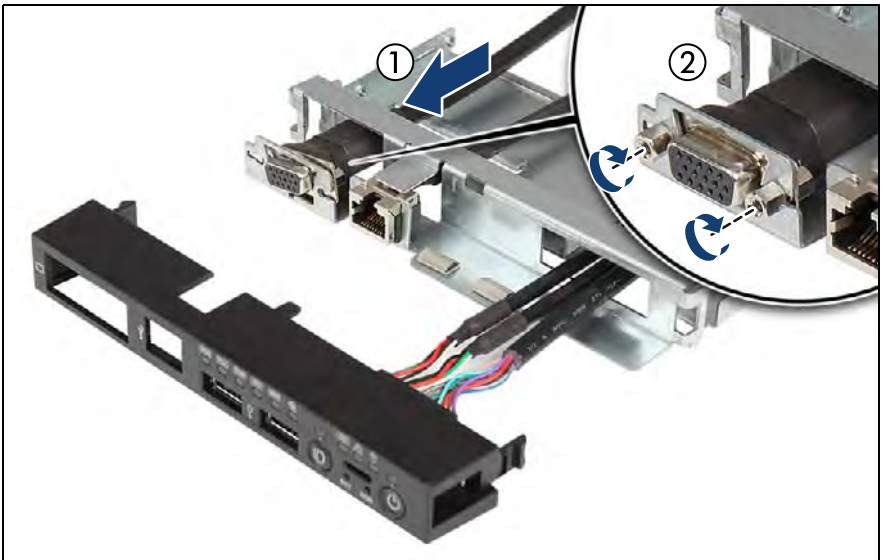


Figure 499: Mounting the front VGA connector

Front panel and external connectors

- ▶ Run the front VGA cable through the mounting bracket on the front panel frame as shown (1).
- ▶ Secure the front VGA connector with two hexagon bolts (2, see close-up).

13.3.1.5 Reassembling the front panel module

- ▶ ["Mounting the front panel module cover" on page 609](#)

13.3.1.6 Reinstalling the front panel module

- ▶ ["Installing the front panel module" on page 611](#)

13.3.1.7 Connecting front panel cables to the system board

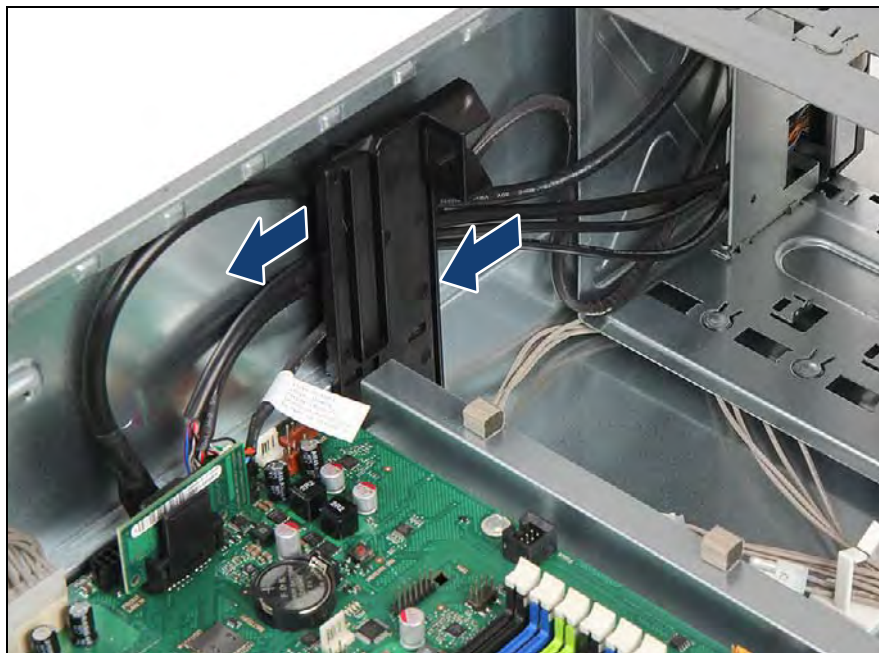


Figure 500: Securing front panel cables

- ▶ Run the front panel cables through the cable guide as shown.

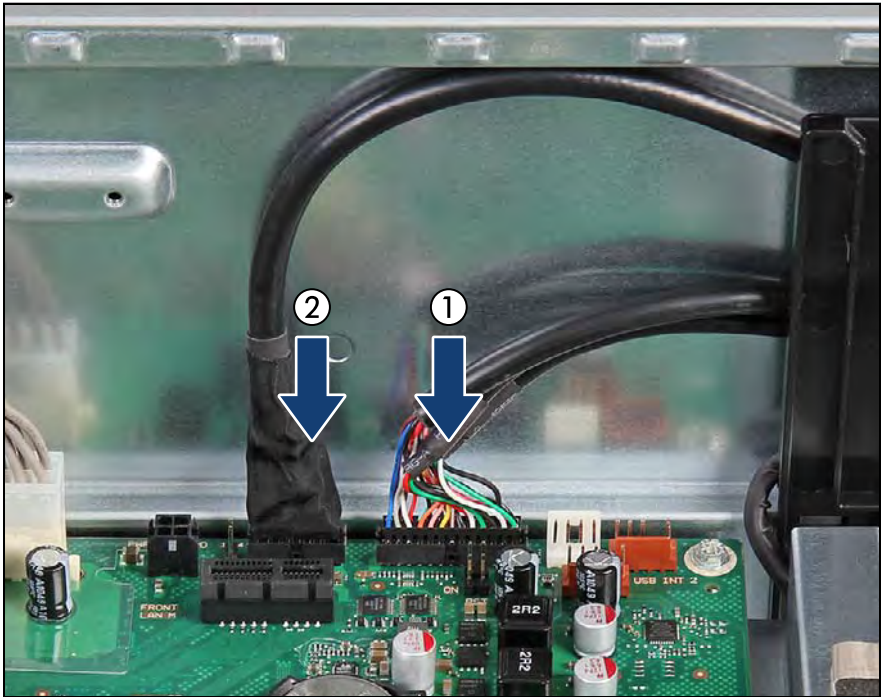


Figure 501: Connecting front panel cables to the system board

- ▶ Connect the front panel cable and front VGA cable (if applicable to the system board):

#	Connector	Cable
1	FRONTPANEL	Front panel cable T26139-Y4015-V1
2	FRONT VGA	Front VGA cable T26139-Y3994-V101

Front panel and external connectors

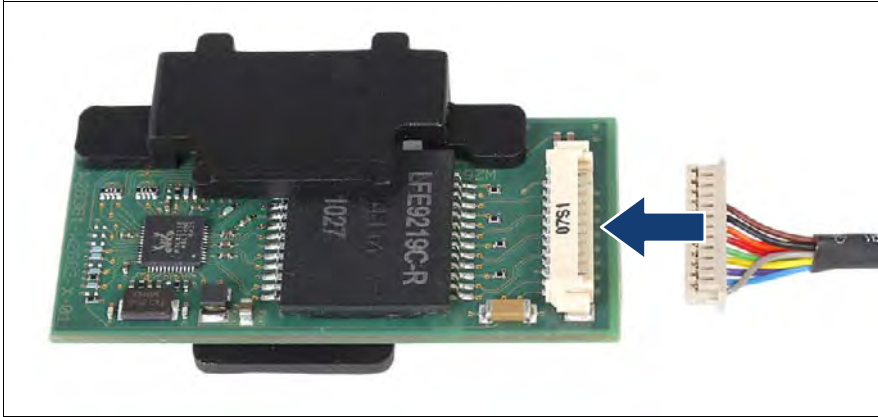


Figure 502: Connecting the front LAN cable to the front LAN board

- ▶ If applicable, connect the front LAN cable to front LAN board D2935.

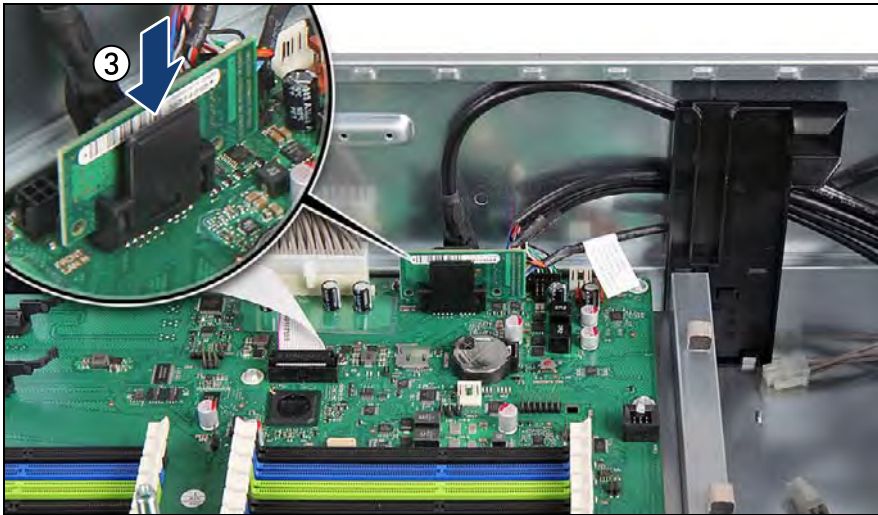


Figure 503: Connecting the front LAN board to the system board

- ▶ If applicable, connect front LAN board D2935 to the system board:

#	Connector	Cable
3	FRONT LAN	Front LAN cable T26139-Y4025-V1 on front LAN board D2935

13.3.1.8 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

13.3.2 Removing the front VGA connector



**Upgrade and Repair Unit
(URU)**



**Average task duration:
10 minutes**

Tools: Wrench key for UNC #4-40 hexagon bolts

13.3.2.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

13.3.2.2 Removing and preparing the front panel module

- ▶ ["Removing front panel cables from the system board" on page 603](#)
- ▶ ["Removing the front panel module" on page 605](#)
- ▶ ["Removing the front panel module cover" on page 608](#)

13.3.2.3 Removing the VGA connector

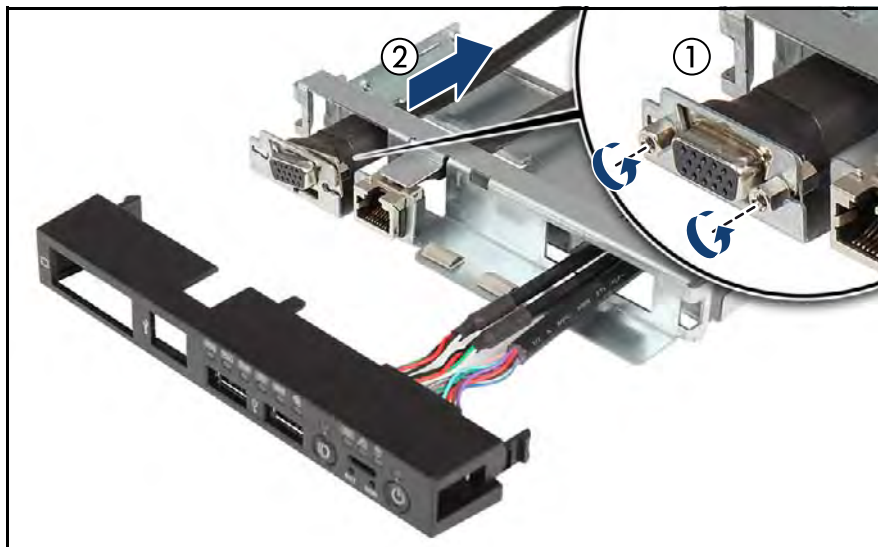


Figure 504: Removing the front panel connector

- ▶ Remove the two hexagon bolts from the front VGA connector (1, see close-up).
- ▶ Pull the front VGA cable out through the mounting bracket on the front panel frame and remove it (2).

13.3.2.4 Reassembling the front panel module

- ▶ ["Mounting the front panel module cover" on page 609](#)

13.3.2.5 Reinstalling the front panel module

- ▶ ["Installing the front panel module" on page 611](#)

13.3.2.6 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152.](#)

13.3.3 Replacing the front VGA connector



**Upgrade and Repair Unit
(URU)**



**Average task duration:
15 minutes**

Tools: Wrench key for UNC #4-40 hexagon bolts

13.3.3.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)

- ▶ Bring the server to its horizontal position.
- ▶ ["Opening the server" on page 68](#)
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

13.3.3.2 Removing the front panel module

- ▶ ["Removing the front panel module" on page 603](#)

13.3.3.3 Removing the defective front VGA connector

- ▶ ["Removing the front VGA connector" on page 639](#)

13.3.3.4 Installing the new front VGA connector

- ▶ ["Installing the front VGA connector" on page 632](#)

13.3.3.5 Reassembling the front panel module

- ▶ ["Mounting the front panel module cover" on page 609](#)

13.3.3.6 Reinstalling the front panel module

- ▶ ["Installing the front panel module" on page 611](#)

13.3.3.7 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ Inform the customer about changed WWN and MAC addresses. For further information, refer to section ["Looking up changed MAC / WWN addresses" on page 153](#).

- ▶ After replacing the front LAN board in a server running Linux OS, update its MAC address in the related NIC definition file as described in section ["Updating the NIC configuration file in a Linux environment" on page 150](#).
- ▶ If applicable, restore LAN teaming configurations as described in section ["After replacing / upgrading LAN controllers" on page 157](#).
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

14 System board and components

This chapter provides information on how to replace the system board and system board components as its CMOS battery, the USB Flash Module (UFM) and the Trusted Platform Module (TPM).

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 45.

14.1 Replacing the CMOS battery



Upgrade and Repair Unit (URU)



Average task duration: 5 minutes

Tools: – Phillips PH2 / (+) No. 2 screw driver – tooth pick (recommended)

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 TX300 S8 / RX350 S8 Operating Manual.
- **Ensure to insert the CMOS battery the with the positive pole facing up!**

14.1.1 Preliminary steps

- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

14.1.2 Removing the battery

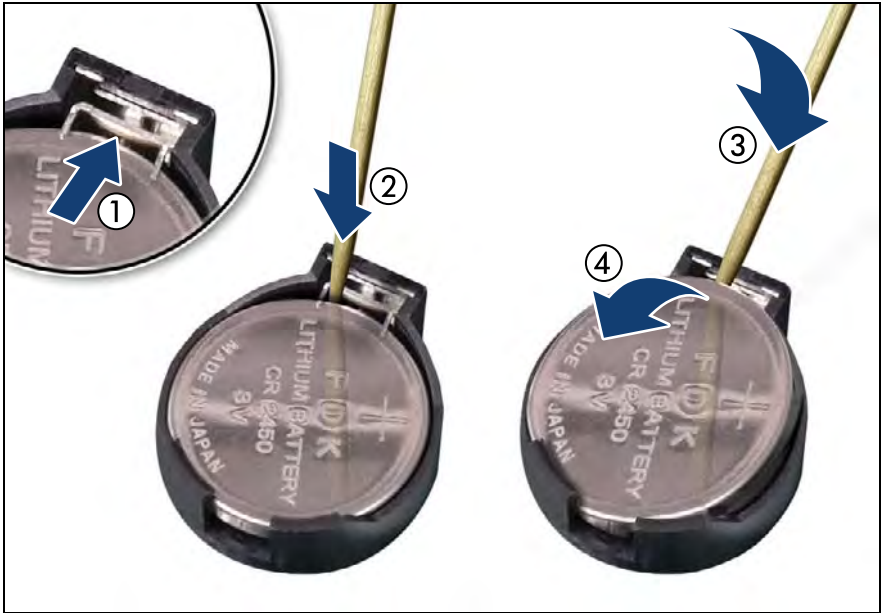


Figure 505: Replacing the CMOS battery

- ▶ Press out on the locking spring to eject the depleted CMOS battery (1).
- ▶ If the CMOS battery cannot be ejected this way, use a toothpick (recommended) or similar tool as a lever: Insert the toothpick between the battery and locking spring as shown (2).



CAUTION!

Do not use sharp-edged tools like screw drivers as they may damage system board components when slipping.

- ▶ Carefully pry the depleted CMOS battery out of its socket as shown (3).
- ▶ Remove the CMOS battery (4).



Do not throw the CMOS battery into the trash can. Lithium batteries must be disposed of in accordance with local regulations concerning special waste.

14.1.3 Installing the CMOS battery

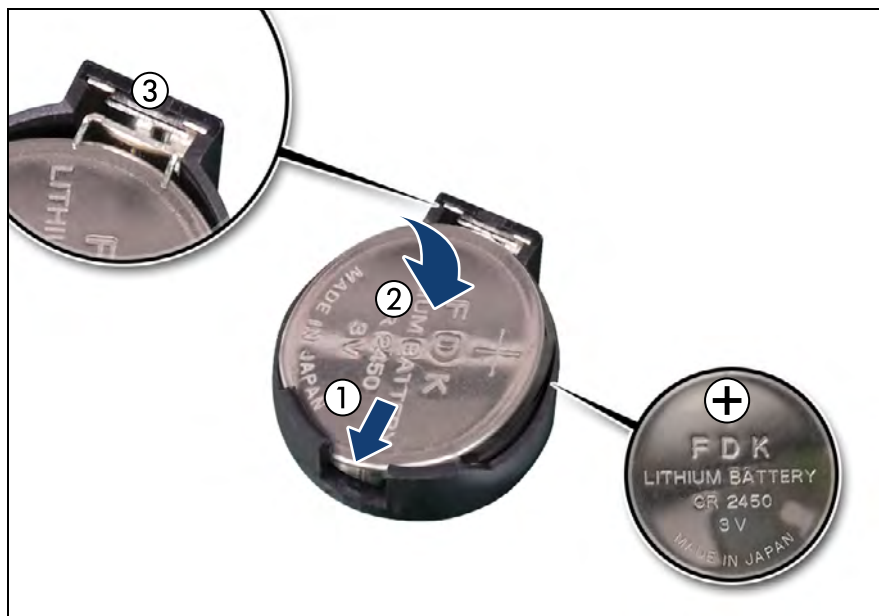


Figure 506: Installing the CMOS battery

- ▶ At a slight angle, fit the new CMOS battery into its socket as shown (1).



CAUTION!

Ensure to insert the CMOS battery with the positive pole (label side) facing up as shown (see close-up).

- ▶ Fold down the CMOS battery (2) until it locks in place.
- ▶ Ensure that the locking spring (3) is properly engaged.

14.1.4 Concluding steps

- ▶ Dispose of the CMOS battery in accordance with local regulations concerning special waste.
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ Verify whether the backup data on the Chassis ID EPROM has been restored to the system board as described in section ["Verifying system information backup / restore" on page 136](#).
- ▶ ["Verifying the system time settings" on page 148](#)

14.2 USB Flash Module (UFM)

This section provides information on how to install, remove or replace the USB Flash Module (UFM).

14.2.1 Installing the UFM board



Upgrade and Repair Unit (URU)



**Average task duration:
10 minutes**

Tools: tool-less

14.2.1.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)

System board and components

- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

14.2.1.2 Installing the UFM board

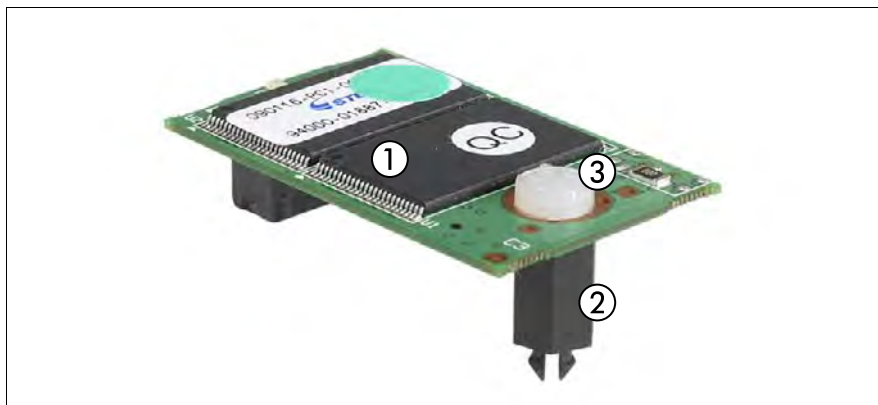


Figure 507: UFM kit

Pre-assembled UFM flash module kit (S26361-F3514-V3):

- 1 2 GB UFM SLC
A3C40104433
- 2 UFM spacer
A3C40109081
- 3 UFM nylon screw
A3C40109082

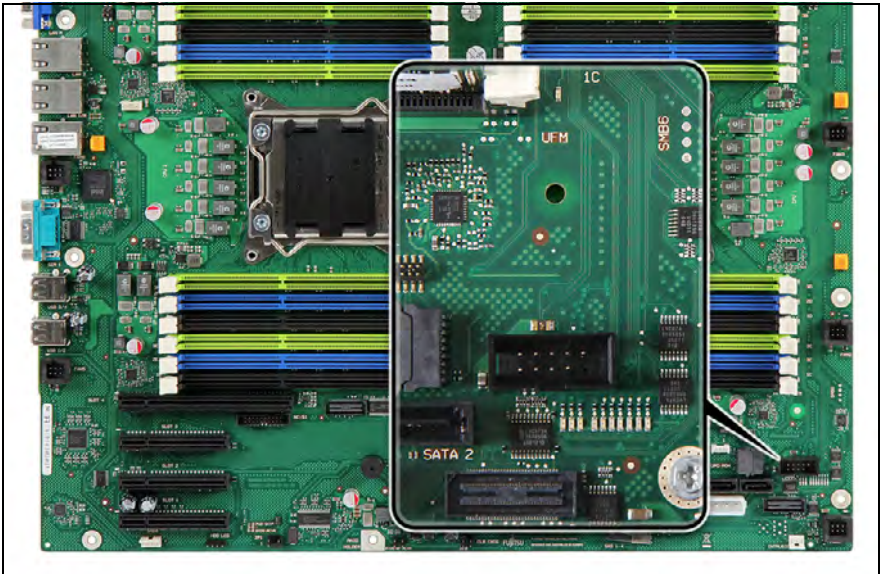


Figure 508: UFM mounting location

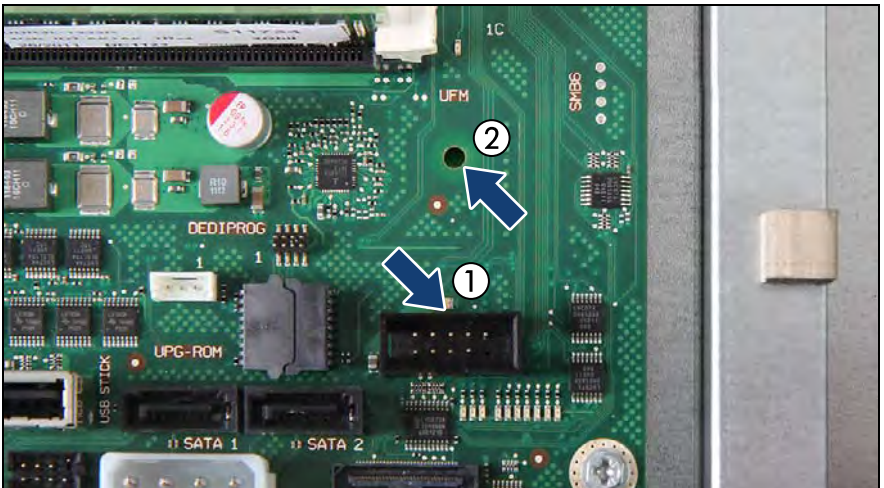


Figure 509: UFM mounting location (detail)

UFM mounting location on the system board:

- 1 UFM connector
- 2 Cut-out for UFM spacer

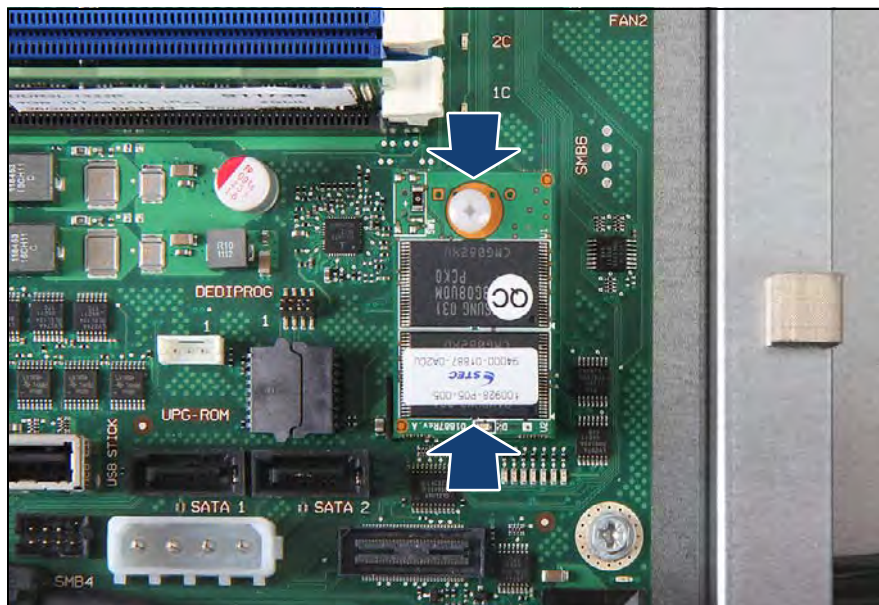


Figure 510: Installing the UFM board

- ▶ Connect the UFM board to the system board, snapping in the UFM spacer.

14.2.1.3 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

14.2.1.4 Software configuration

In order to setup the ESXi configuration, the VMware ESXi Recovery Tools CD is required. An ISO image of the CD is available from the Fujitsu service partners portal at the following https address:

<https://globalpartners.ts.fujitsu.com/com/service/ps/Servers/PRIMERGY/Pages/default.aspx>.

- ▶ Sign in and choose your PRIMERGY server.
- ▶ Select the *Software & Tools Documentation* category.
- ▶ Download the desired ESXi Recovery CD ISO image, listed under *Tools*.
- ▶ Unpack and burn the image to a CD.
- ▶ Ensure that no other USB storage device is connected to the server beside the UFM.
- ▶ Insert the Recovery Tools CD into your CD / DVD drive and reboot the server.
The server should now boot from the Recovery Tools CD.
- ▶ Follow the on-screen instructions to initiate the installation.
After the flash process is complete, you will be asked to reboot the system.



For the Japanese market, follow the instructions provided separately.

14.2.2 Removing the UFM board



Upgrade and Repair Unit (URU)



**Average task duration:
5 minutes**

Tools: Phillips PH1 / (+) No. 1 screw driver

14.2.2.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)

System board and components

- ▶ "Disconnecting the server from the mains" on page 63
- ▶ When working on a rack-mounted server:
"Extending / removing the server from the rack" on page 64
- ▶ Open the side / top cover as described in section "Opening the server" on page 68.
- ▶ "Removing the system air duct" on page 81

14.2.2.2 Removing the UFM board

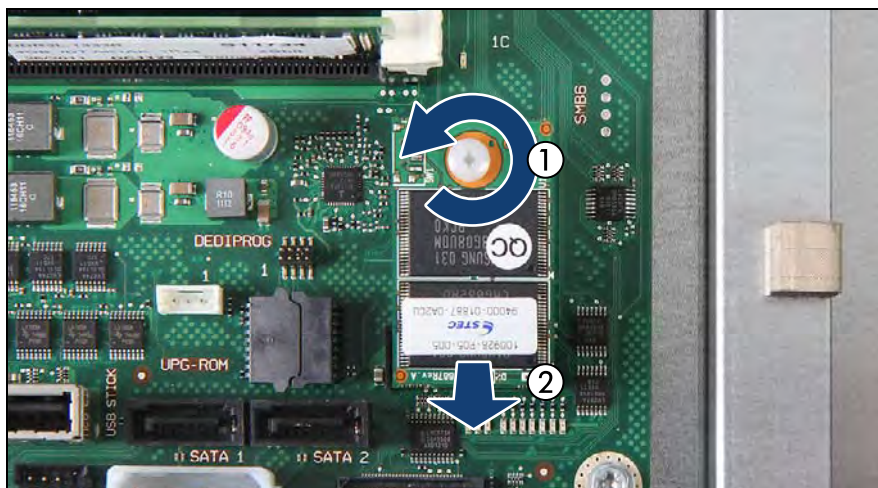


Figure 511: Removing the UFM board (A)

- ▶ Remove the nylon screw on the defective UFM board (1).
- ▶ Disconnect and remove the defective UFM board (2).

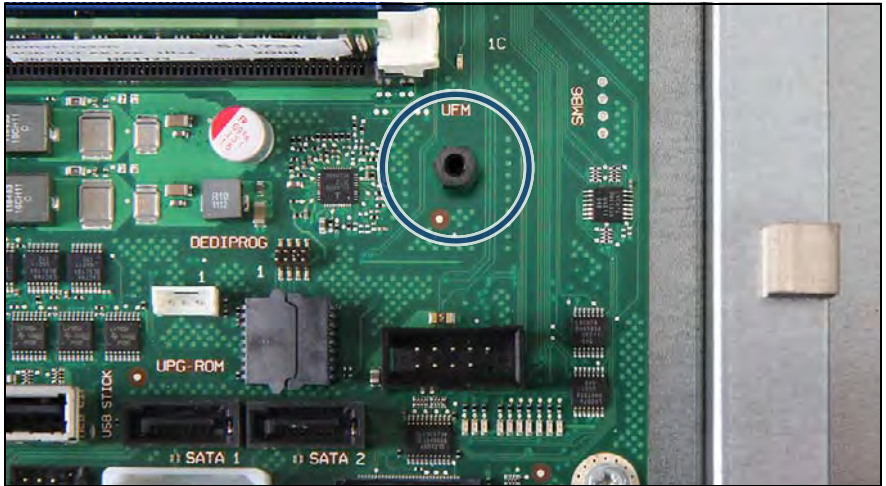


Figure 512: Removing the UFM board (B)

- ▶ The UFM spacer remains on the system board.

14.2.2.3 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

14.2.3 Replacing the UFM board



Upgrade and Repair Unit (URU)



**Average task duration:
15 minutes**

Tools: <ul style="list-style-type: none">– Combination pliers and flat nose pliers– Phillips PH1 / (+) No. 1 screw driver

14.2.3.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

14.2.3.2 Removing the UFM

- ▶ Remove defective UFM board from the system board as described in section ["Removing the UFM board" on page 653](#).
- ▶ The UFM spacer remains on the system board.

14.2.3.3 Reinstalling the UFM

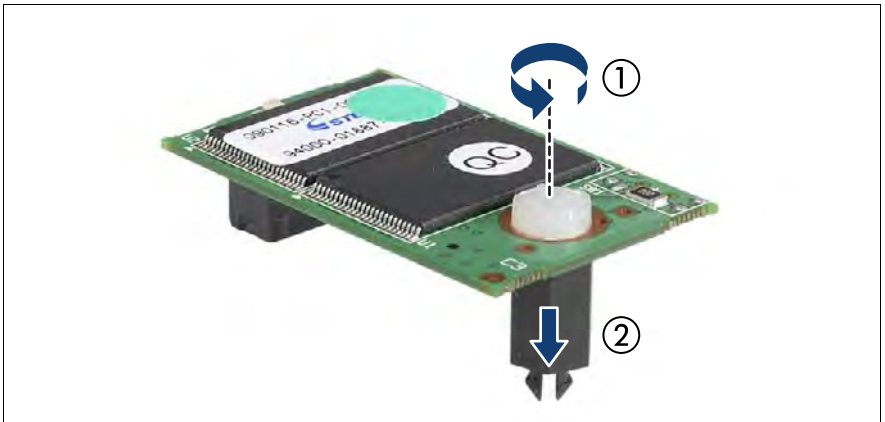


Figure 513: Preparing the new UFM board

- ▶ Remove the nylon screw from the new UFM board (1).
- ▶ Remove the UFM spacer (2).

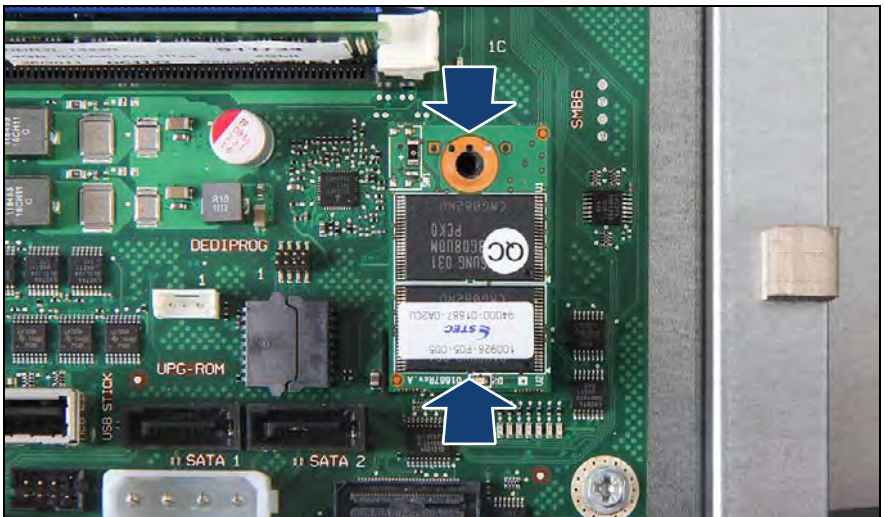


Figure 514: Installing the UFM board (A)

- ▶ Fit the new UFM board on the UFM connector and the remaining UFM spacer.

System board and components

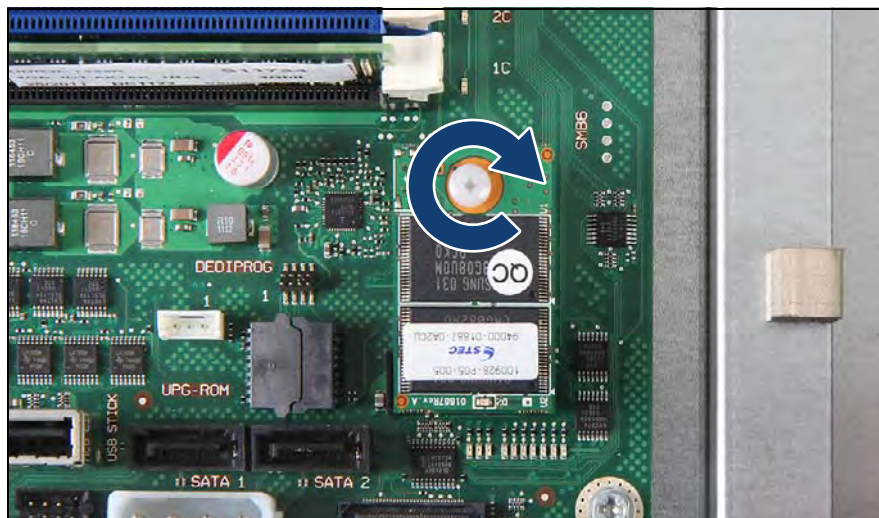


Figure 515: Installing the UFM board (B)

- ▶ Secure the UFM board to the UFM spacer with the nylon screw.

Destroying the defective UFM board



CAUTION!

The UFM board contains customer information (e.g. IP address, license numbers). After replacing the UFM, hand the defective UFM board over to the customer. If the customer requests disposal of the defective UFM board, proceed as follows:



Figure 516: Destroying the defective UFM board

- ▶ Use a pair of combination pliers (1) and flat nose pliers (2) to break the UFM board in half as shown.

14.2.3.4 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

14.2.3.5 Software configuration

In order to setup the ESXi configuration, the VMware ESXi Recovery Tools CD is required. An ISO image of the CD is available from the Fujitsu service partners portal at the following https address:

<https://globalpartners.ts.fujitsu.com/com/service/ps/Servers/PRIMERGY/Pages/default.aspx>.

- ▶ Sign in and choose your PRIMERGY server.
- ▶ Select the *Software & Tools Documentation* category.
- ▶ Download the desired ESXi Recovery CD ISO image, listed under *Tools*.
- ▶ Unpack and burn the image to a CD.
- ▶ Ensure that no other USB storage device is connected to the server beside the UFM.
- ▶ Insert the Recovery Tools CD into your CD / DVD drive and reboot the server.
The server should now boot from the Recovery Tools CD.
- ▶ Follow the on-screen instructions to initiate the installation.
After the flash process is complete, you will be asked to reboot the system.



For the Japanese market, follow the instructions provided separately.

14.3 Trusted Platform Module (TPM)

This section provides information on how to install, remove or replace the Trusted Platform Module (TPM).

14.3.1 Installing the TPM board



Field Replaceable Unit (FRU)



**Average task duration:
10 minutes**

- | |
|---|
| <p>Tools:</p> <ul style="list-style-type: none">– Phillips PH2 / (+) No. 2 screw driver– Bit screw driver– TPM bit insert (*) <p>(*) For the Japanese market:</p> <ul style="list-style-type: none">– TPM module fixing tool (S26361-F3552-L909) |
|---|

14.3.1.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

14.3.1.2 Installing the TPM board

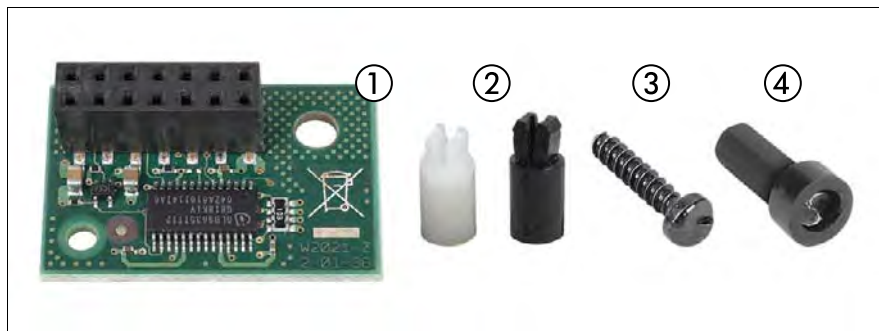



Figure 517: TPM kit

TPM kit (S26361-F3299-E2):

- 1 TPM module
S26361-D2727-A10
- 2 TPM spacers
 -  Use the white TPM spacer (A3C40106008).
The black TPM spacer is not used in this server.
- 3 TPM special screw
C26192-Y10-C176
- 4 TPM bit insert for TPM special screw

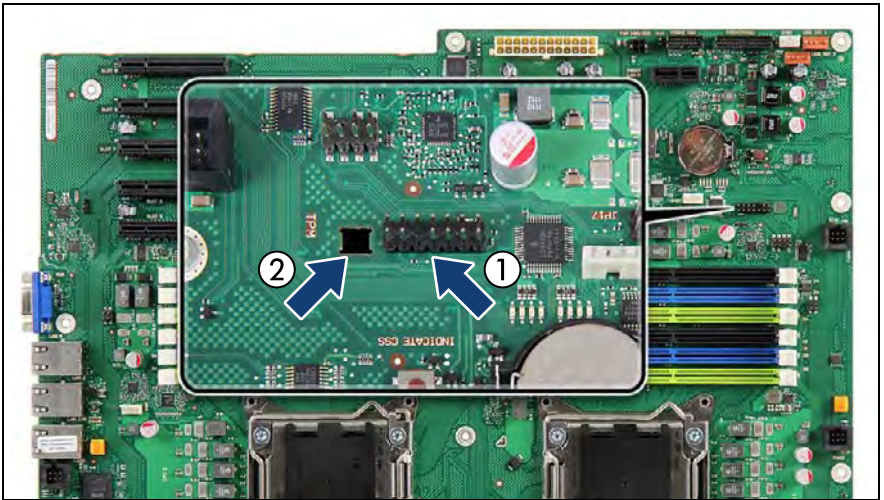


Figure 518: TPM mounting location

TPM mounting location on the system board:

- 1 TPM connector
- 2 Cut-out for TPM spacer

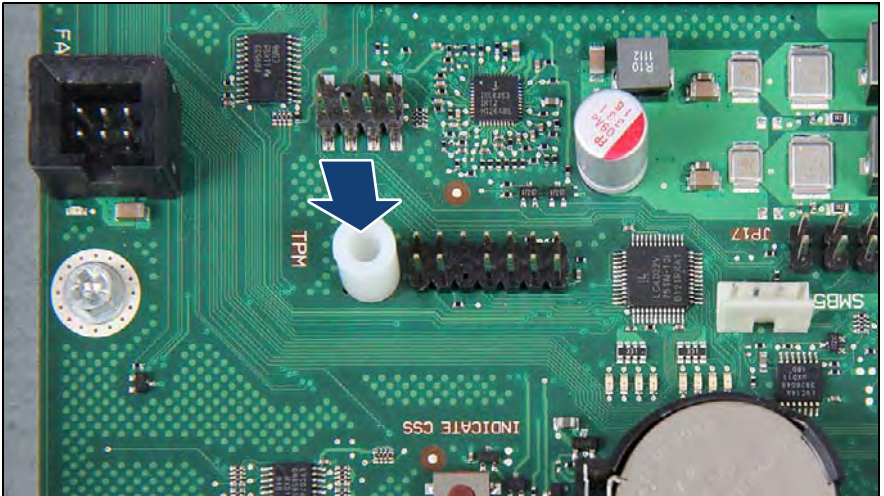


Figure 519: Installing the TPM spacer

- ▶ Snap the TPM spacer into the cut-out in the system board.

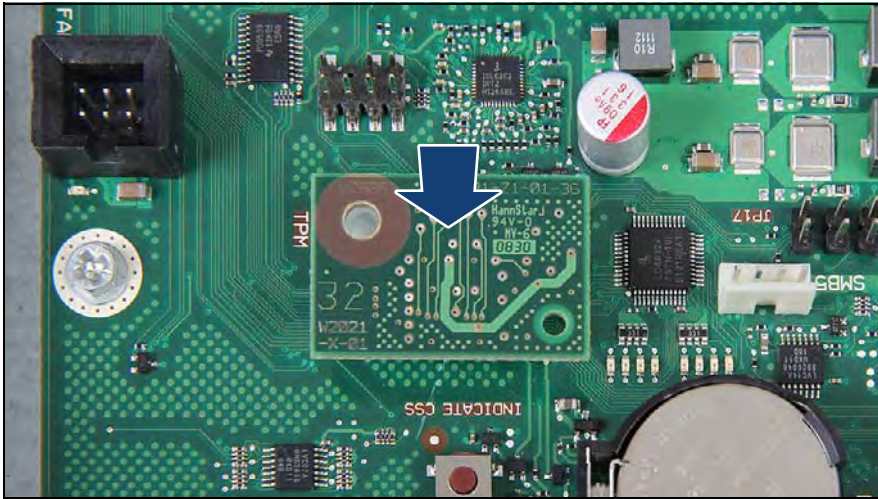


Figure 520: Installing the TPM board

- ▶ Connect the new TPM board to the system board.



Figure 521: TPM bit insert

- ▶ Attach the TPM bit insert or TPM module fixing tool (Japanese market) to a bit screw driver.

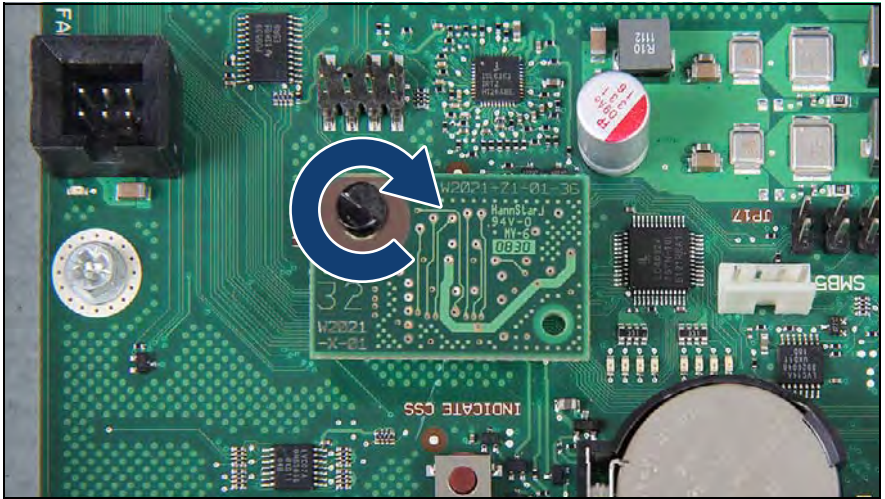


Figure 522: Securing the TPM board

- ▶ Secure the TPM board with the TPM screw using the TPM bit insert.



Do not fasten the screw too firmly. Stop as soon as the head of the screw lightly touches the TPM board.

14.3.1.3 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ 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*.

System board and components

- ▶ Under *Pending TPM operation*, select the desired TPM operation mode.
- ▶ Save your changes and exit the BIOS.



For detailed information on how to access the BIOS and modify settings, refer to the "D2949 BIOS Setup Utility for PRIMERGY TX300 S8 / RX350 S8" reference manual.

- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

14.3.2 Removing the TPM board



Field Replaceable Unit (FRU)



**Average task duration:
30 minutes**

- Tools:**
- Phillips PH2 / (+) No. 2 screw driver
 - Thin slotted screw driver (2 x 0.4 mm)
 - Small pair of combination pliers

For the Japanese market:

- Dedicated TPM screw driver (CWZ8291A)



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 board will cause to lose all data.

14.3.2.1 Preliminary steps

- ▶ Before removing the TPM board, 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*.



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*.



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.



For detailed information on how to access the BIOS and modify settings, refer to the "D2949 BIOS Setup Utility for PRIMERGY TX300 S8 / RX350 S8" reference manual.

- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

14.3.2.2 Removing the TPM board

- ▶ Remove the system board as described in section ["Removing the system board" on page 687](#).
- ▶ Lay the system board on a soft, antistatic surface with its component side facing down.

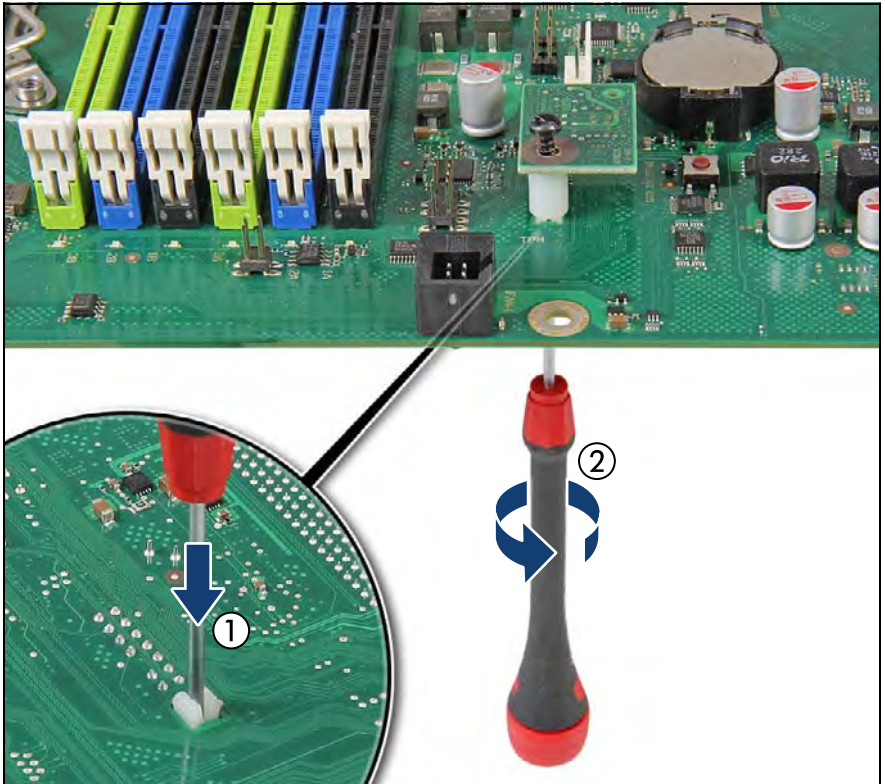


Figure 523: Removing the TPM screw

- ▶ Locate the slotted lower end of the TPM screw (1).

System board and components

- ▶ 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 **counter-clockwise** in order to remove it!

Slowly and carefully increase the pressure on the screw until it begins to turn. The effort when loosening 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 board on the upper side of the system board.

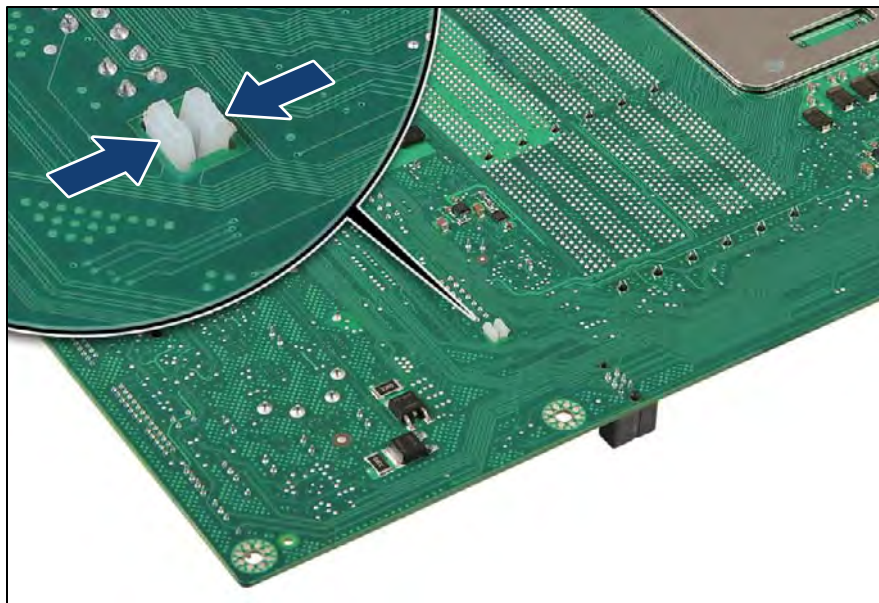


Figure 524: Removing the TPM spacer

- ▶ Using a small pair of combination pliers, press together the hooks on the TPM spacer (see close-up) and remove it from the system board.



If the TPM module is to be replaced, the TPM spacer may remain on the system board.

14.3.2.3 Concluding steps

- ▶ "Installing the system board" on page 691
- ▶ "Installing the system fan holder" on page 331
- ▶ "Installing the system air duct" on page 83
- ▶ "Closing the server" on page 98
- ▶ When working on a rack-mounted server:
"Mounting the server in the rack" on page 115
- ▶ "Connecting the server to the mains" on page 118

14.3.3 Replacing the TPM board



Field Replaceable Unit (FRU)



**Average task duration:
40 minutes**

- Tools:**
- Phillips PH2 / (+) No. 2 screw driver
 - 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)



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 board will cause to lose all data.

System board and components

14.3.3.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ ["Removing the system fan holder" on page 330](#)

14.3.3.2 Removing the TPM board

- ▶ Remove the TPM board as described in section ["Removing the TPM board" on page 666](#).
- ▶ Leave the TPM spacer on the system board when removing the defective TPM board.

14.3.3.3 Reinstalling the TPM board

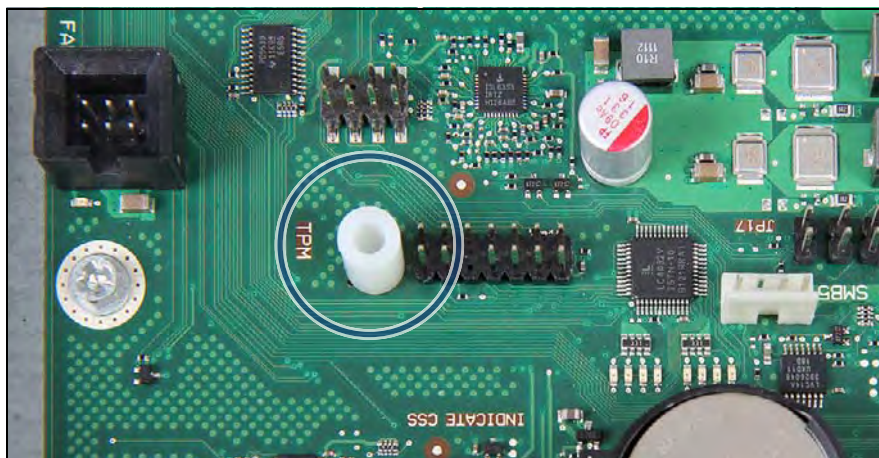


Figure 525: TPM spacer

- ▶ The TPM spacer is already present on the system board.
- ▶ Reinstall the TPM board as described in section ["Installing the TPM board" on page 661](#).

14.3.3.4 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

14.4 Onboard SAS enabling key

The onboard SAS enabling key needs to be installed in order to enable SAS connector SAS 1-4 on the system board.

14.4.1 Installing the onboard SAS enabling key



**Upgrade and Repair Unit
(URU)**



**Average task duration:
5 minutes**

Tools: tool-less

14.4.1.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)

System board and components

- ▶ When working on a rack-mounted server:
"Extending / removing the server from the rack" on page 64
- ▶ Open the side / top cover as described in section "Opening the server" on page 68.
- ▶ "Removing the system air duct" on page 81

14.4.1.2 Installing the onboard SAS enabling key

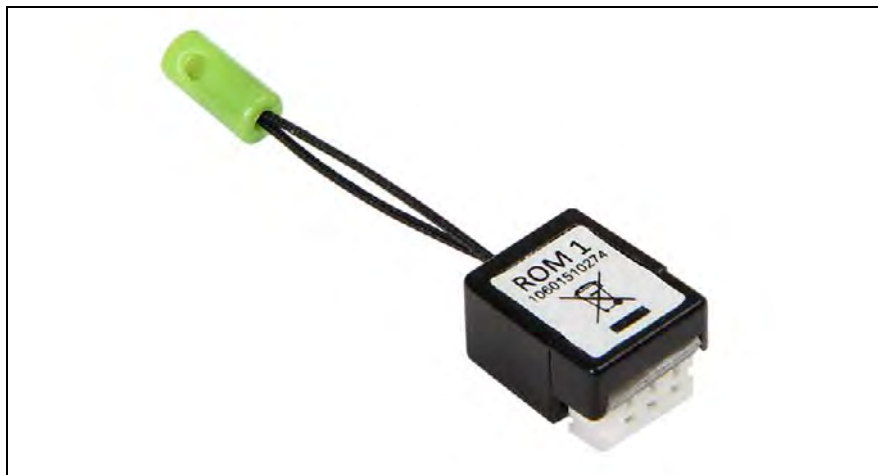


Figure 526: Onboard SAS enabling key (10601510274 / SRT:PN-EP1-1000-11-05051)

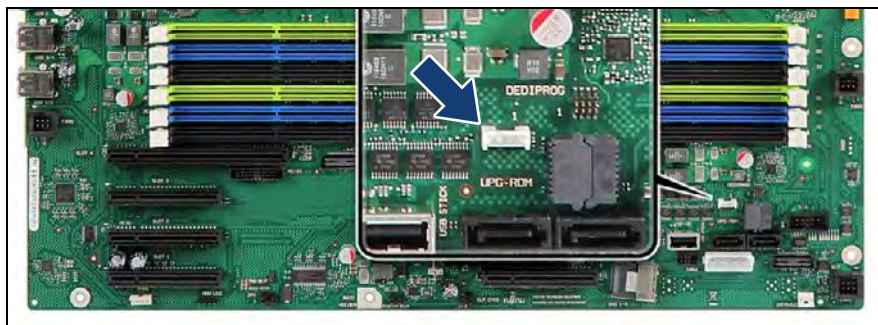


Figure 527: Onboard SAS enabling key mounting location

- ▶ Locate the onboard SAS enabling key mounting location on the system board.



Figure 528: Onboard SAS enabling key mounting location

- ▶ Connect the onboard SAS enabling key to system board connector UGP-ROM.

14.4.1.3 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

14.4.2 Removing the onboard SAS enabling key



**Upgrade and Repair Unit
(URU)**



**Average task duration:
5 minutes**

Tools: tool-less

14.4.2.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

14.4.2.2 Removing onboard SAS enabling key

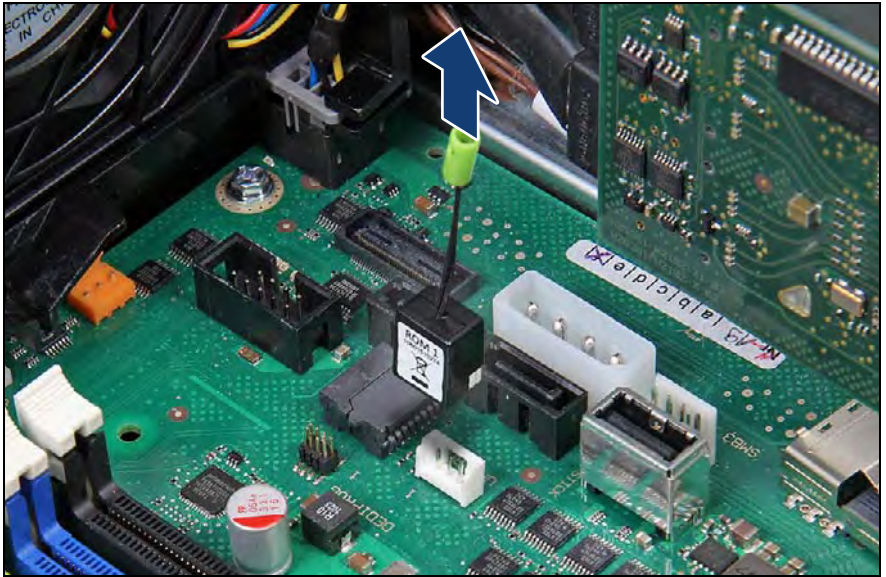


Figure 529: Onboard SAS enabling key mounting location

- ▶ Firmly pull up on the release latch until the onboard SAS enabling key pops out of its connector.

14.4.2.3 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

14.4.3 Replacing the onboard SAS enabling key



**Upgrade and Repair Unit
(URU)**



**Average task duration:
5 minutes**

Tools: tool-less

14.4.3.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 125.](#)
- ▶ ["Locating the defective server" on page 57.](#)
- ▶ ["Shutting down the server" on page 62.](#)
- ▶ ["Disconnecting the server from the mains" on page 63.](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68.](#)
- ▶ ["Removing the system air duct" on page 81.](#)

14.4.3.2 Replacing the onboard SAS enabling key

- ▶ ["Removing onboard SAS enabling key" on page 677](#)
- ▶ ["Installing the onboard SAS enabling key" on page 674](#)

14.4.3.3 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)

14.5 iRMC microSD card



The iRMC microSD card is necessary for using the Embedded Lifecycle Management (eLCM) functionality of the iRMC. It requires a valid eLCM license key, which is always purchased together with the iRMC microSD card and activated through the iRMC web frontend.

For further information, please refer to the “ServerView embedded Lifecycle Management (eLCM)” user guide.

14.5.1 Installing the iRMC microSD card



Upgrade and Repair Unit (URU)



Average task duration: 5 minutes

Tools: tool-less

14.5.1.1 Preliminary steps

- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

14.5.1.2 Installing the iRMC microSD card



Figure 530: iRMC microSD card

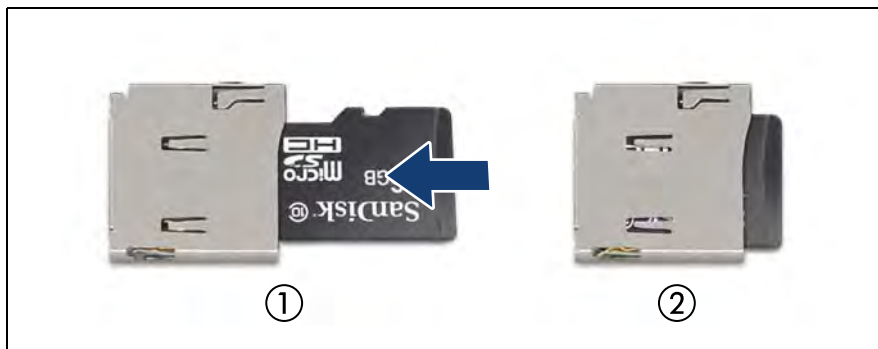


Figure 531: Installing the iRMC microSD card

- ▶ With the label facing up, insert the iRMC microSD card into the microSD card slot (1) until it locks in place (2).



The onboard position of the microSD card slot can be found in section ["Connectors and indicators on the system board"](#) on page 776.

14.5.1.3 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)

14.5.2 Removing the iRMC microSD card



**Upgrade and Repair Unit
(URU)**



**Average task duration:
5 minutes**

Tools: Side-cutting pliers

14.5.2.1 Preliminary steps

- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

14.5.2.2 Removing the iRMC microSD card

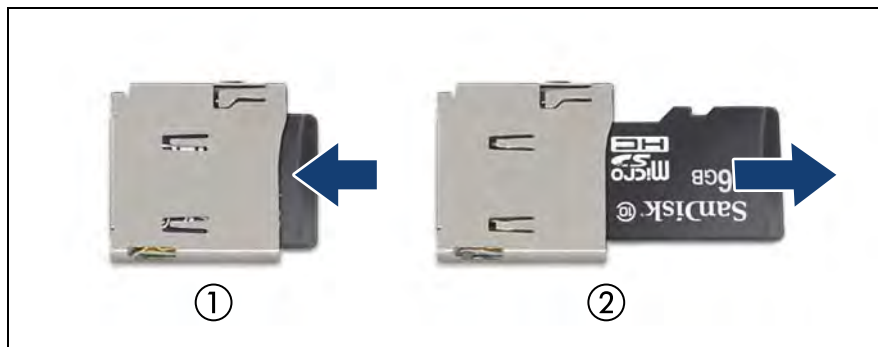


Figure 532: Removing the iRMC microSD card

- ▶ To eject the iRMC microSD card, gently push it in and then let go (1).
- ▶ Pull the iRMC microSD card straight out of its slot (2).

Destroying the defective iRMC microSD card



CAUTION!

The iRMC microSD card contains customer information. After replacing the iRMC microSD card, hand the defective card over to the customer. If the customer requests disposal of the defective iRMC microSD card, proceed as follows:

- ▶ Using a pair of side-cutting pliers, cut the iRMC microSD card in half.

14.5.2.3 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
 - ▶ ["Mounting the server in the rack" on page 115](#)
 - ▶ ["Connecting the server to the mains" on page 118](#)

14.5.3 Replacing the iRMC microSD card



**Upgrade and Repair Unit
(URU)**



**Average task duration:
5 minutes**

Tools: Side-cutting pliers

14.5.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)

14.5.3.2 Replacing the iRMC microSD card

- ▶ Remove the defective iRMC microSD card as described in section ["Removing the iRMC microSD card" on page 681](#).
- ▶ Install the new iRMC microSD card as described in section ["Installing the iRMC microSD card" on page 679](#).

14.5.3.3 Concluding steps

- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)

14.6 Replacing the system board



Field Replaceable Unit (FRU)



**Average task duration:
60 minutes**

- Tools:**
- Phillips PH2 / (+) No. 2 screw driver
 - Magnifying glass for inspecting CPU socket springs (recommended)

If a TPM module 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)

If a UFM module is installed:

- Phillips PH1 / (+) No. 1 screw driver

Note on TPM



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 board" on page 671](#).

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 board will cause to lose all data.

Note on system information backup / restore



The front panel module contains the Chassis ID EPROM that contains system information like server name and model, housing type, serial number and manufacturing data.

To avoid the loss of non-default settings when replacing the system board, a backup copy of important system configuration data is automatically stored from the system board NVRAM to the Chassis ID EPROM. After replacing the system board the backup data is restored from the Chassis ID board to the new system board.



CAUTION!

For that reason the front panel module and system board must not be replaced simultaneously! In this case, restoring the system configuration data on the system board would fail.

Note on network settings recovery



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 controller or the system board.

14.6.1 Preliminary steps

- ▶ Ensure to note down your current network settings in the operating system. For further information, please refer to section ["Note on network settings recovery" on page 685](#).
- ▶ ["Suspending BitLocker functionality" on page 125](#)
- ▶ ["Disabling SVOM boot watchdog functionality" on page 127](#)
- ▶ ["Locating the defective server" on page 57](#)
- ▶ ["Shutting down the server" on page 62](#)
- ▶ ["Disconnecting the server from the mains" on page 63](#)
- ▶ Disconnect all external cables.
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Bring the server to its horizontal position.
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68](#).
- ▶ ["Removing the system air duct" on page 81](#)
- ▶ Remove all fan modules and fan holders from the system as described in the related sections:
 - ["Removing system fan modules" on page 325](#)
 - ["Removing the system fan holder" on page 330](#)
 - ["Removing rear fan modules" on page 335](#)
 - ["Removing the rear fan holder" on page 340](#)

14.6.2 Removing the system board

- ▶ Remove all cables from the system board.
- ▶ Remove the following components from the system board as shown in the related sections:

- Heat sink: see [section "Removing processor heat sinks" on page 523](#)



Leave the processor on the defective board for now.

- Memory modules: refer to section ["Removing memory modules" on page 479](#)



Ensure to take note of the memory modules' mounting positions for reassembly.

- Expansion cards: refer to the section ["Removing expansion cards" on page 357](#)



Ensure to take note of the controllers' mounting positions and cable connections for reassembly.

- UFM board: refer to section ["Removing the UFM board" on page 653](#)



Remove the UFM spacer from the defective system board and fasten it to the UFM board with the UFM screw.

- Onboard SAS enabling key: refer to section ["Replacing the onboard SAS enabling key" on page 678](#)

- iRMC microSD card: refer to section ["Removing the iRMC microSD card" on page 681](#)

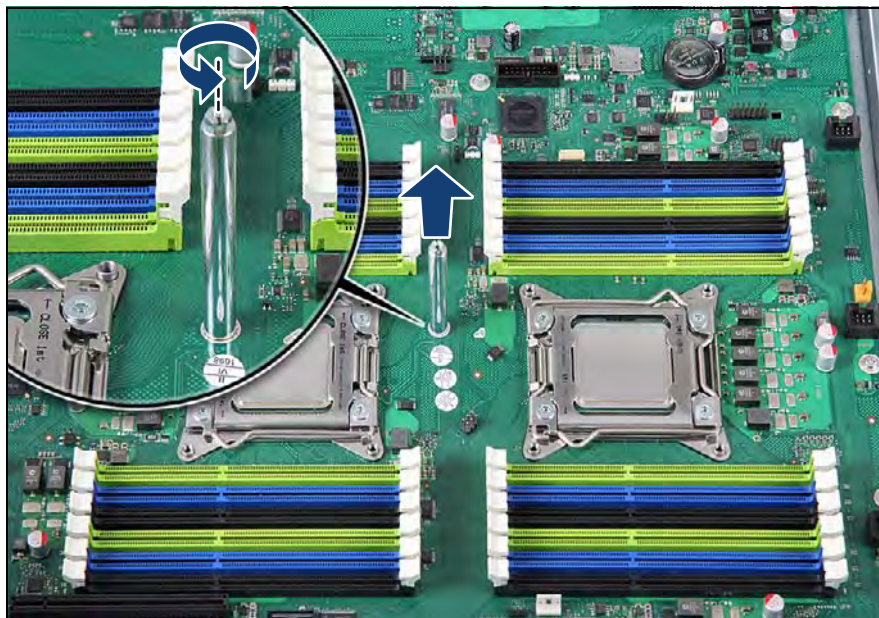


Figure 533: Detaching the system board (A)

- ▶ Remove the spacer as shown and set aside.

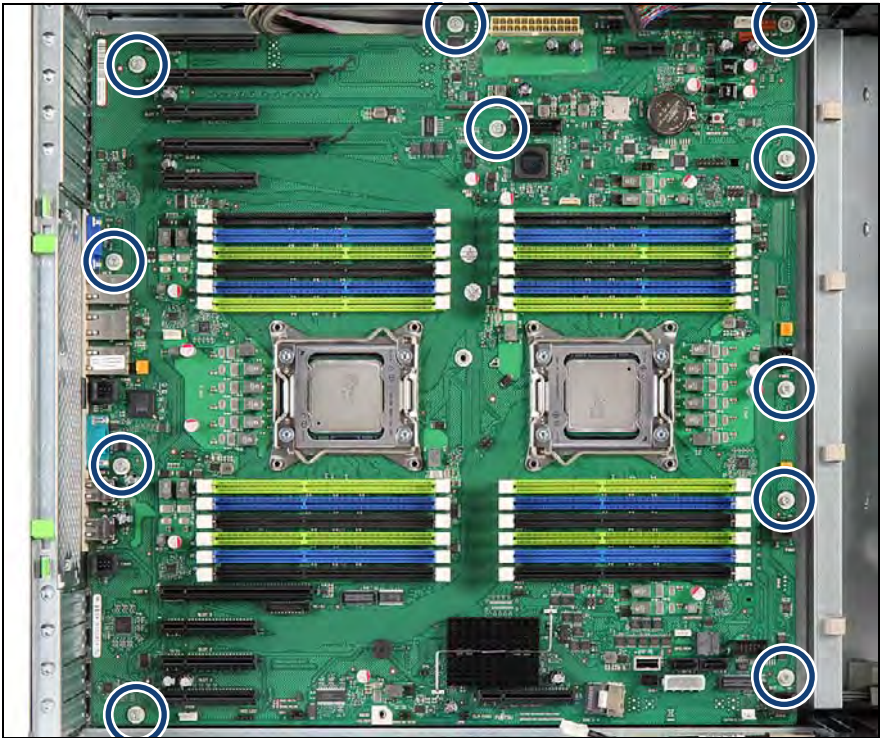


Figure 534: Detaching the system board (B)

- ▶ Remove eleven screws from the system board (see circles).

System board and components

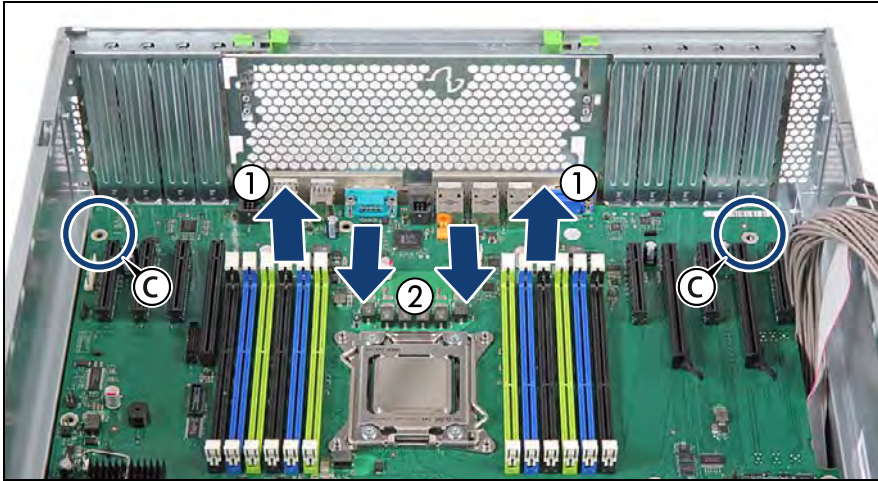


Figure 535: Detaching the system board (C)

- ▶ 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 (C).
- ▶ Carefully shift the system board towards the server front until the plug shells disengage from the cut-outs in the connector panel (2).

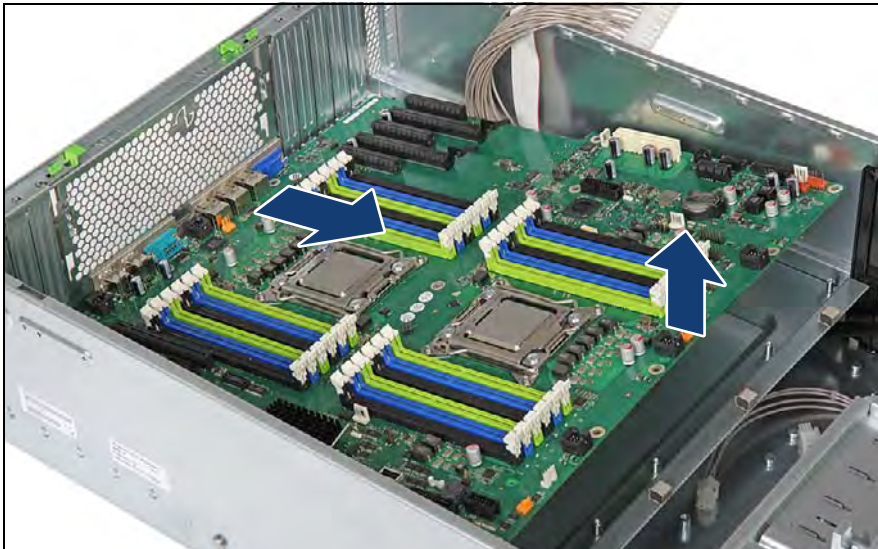


Figure 536: Removing the system board

- ▶ 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 board as described in [section "Removing the TPM board" on page 668](#).

14.6.3 Installing the system board

14.6.3.1 Mounting the system board

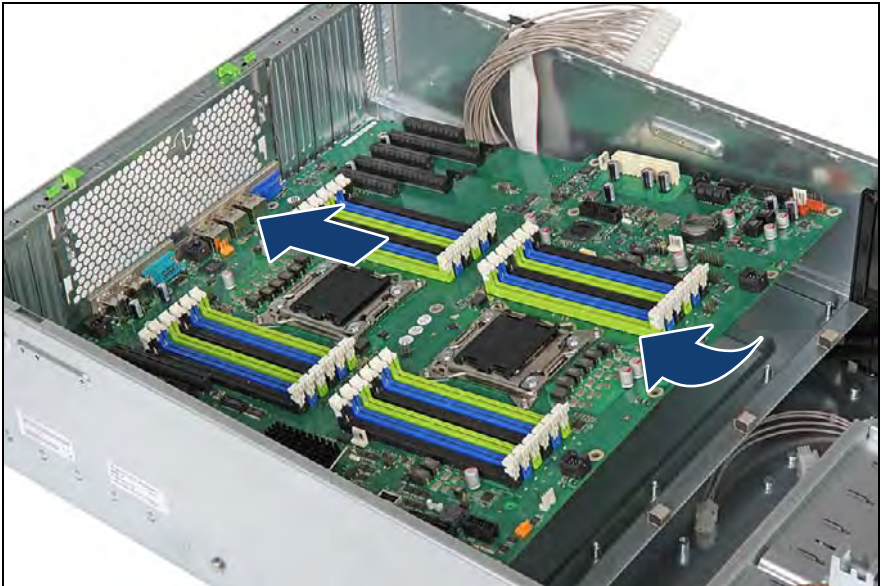


Figure 537: Installing the system board (A)

- ▶ 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.

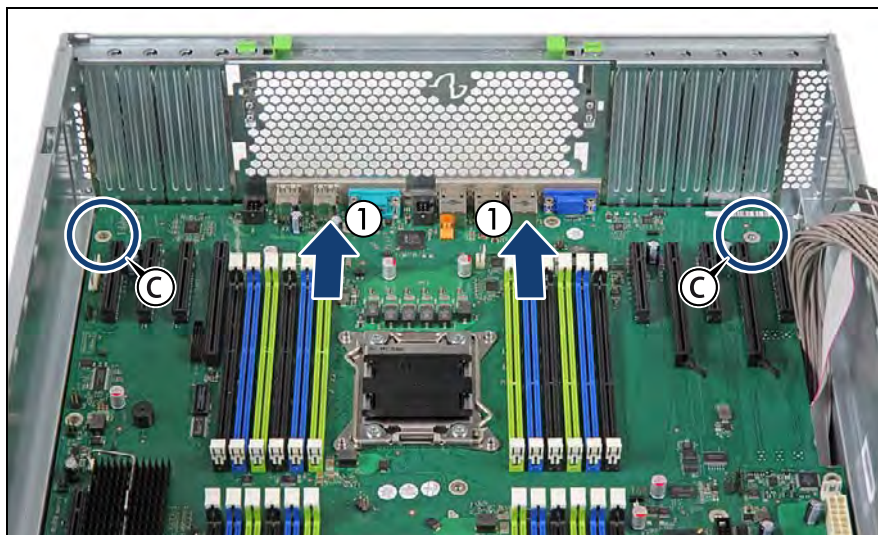


Figure 538: Installing the system board (B)

- ▶ 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 (C). Ensure that the system board is properly seated on both centering bolts.

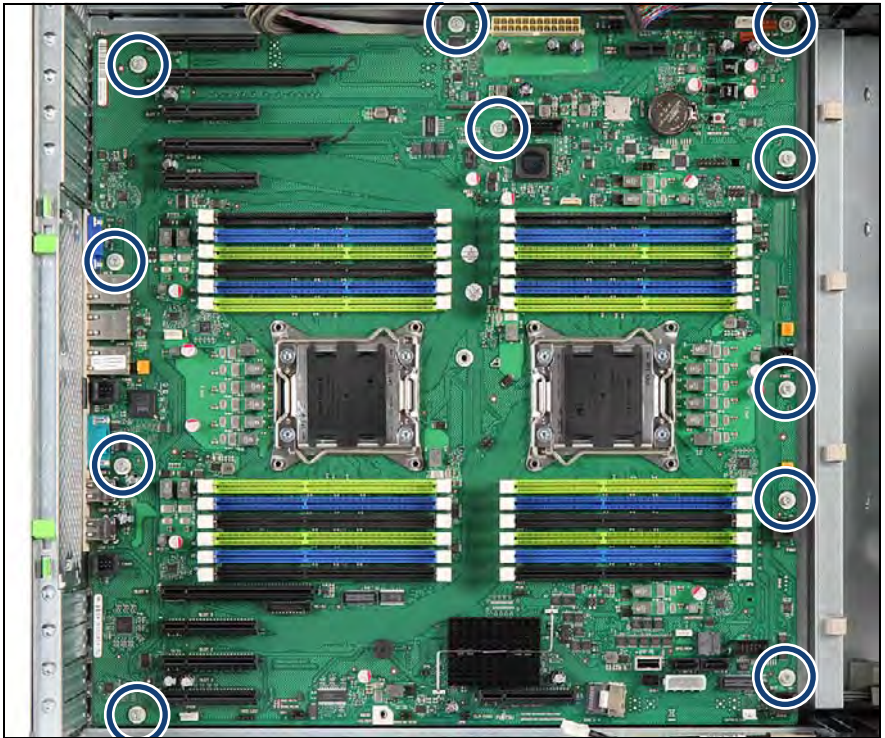


Figure 539: Securing the system board (A)

- ▶ Secure the system board with eleven screws (M3 x 6 mm, C26192-Y10-C68) (see circles).



Screw torque: 0.6 Nm (not applicable for the Japanese market)
Tighten the screws in a cross diagonal pattern.

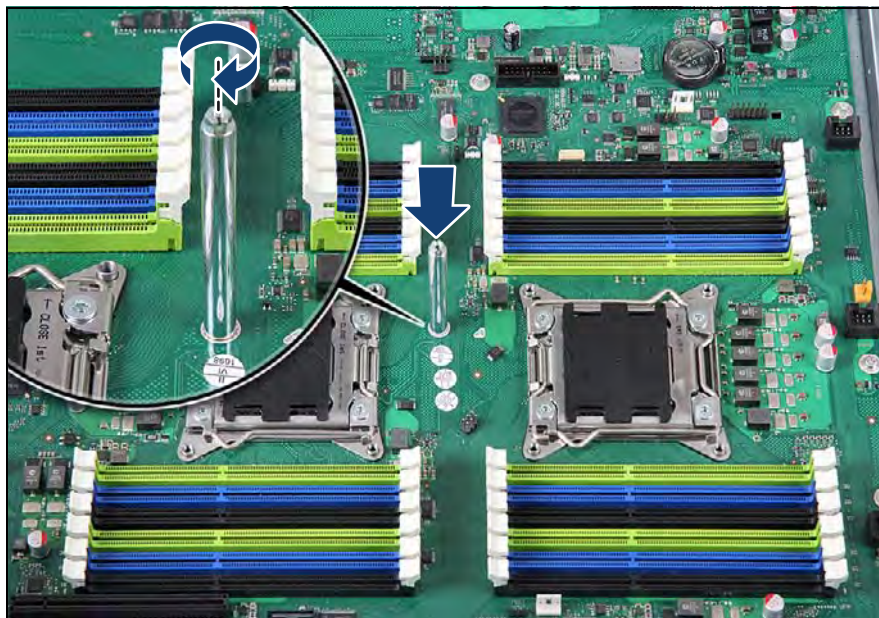


Figure 540: Securing the system board (B)

- ▶ Screw in the air duct spacer as shown.



Screw torque: 1.0 Nm (not applicable for the Japanese market).

- ▶ Verify the settings on the new system board (jumpers).



For a detailed description, please refer to section ["Onboard settings" on page 778](#).

14.6.3.2 Swapping processors

Preparing the processor socket load plates on the new system board

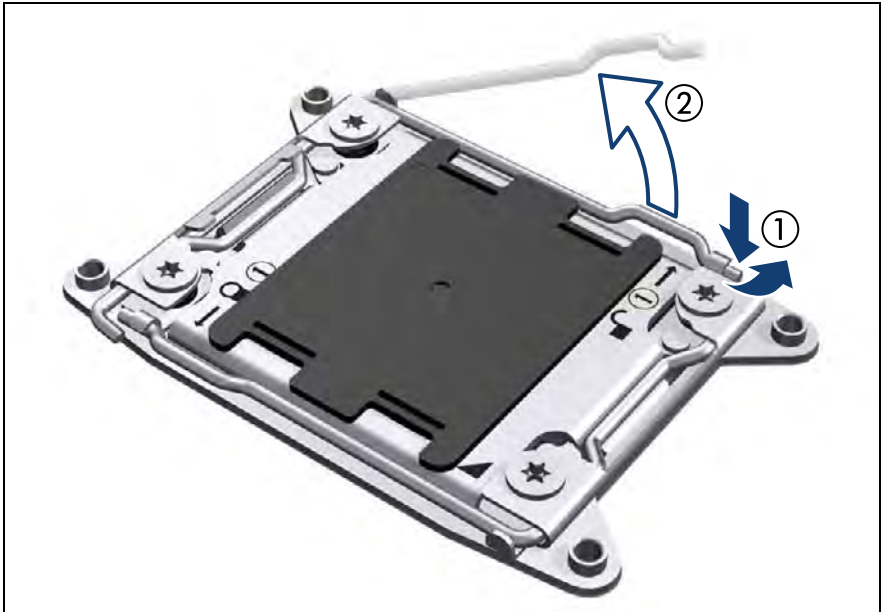


Figure 541: Opening socket release lever 1 (new system board)

- ▶ Unlatch the socket release lever marked *Open 1st* by pushing it down and away from the socket (1).
- ▶ The socket release lever will slightly lift up (2).

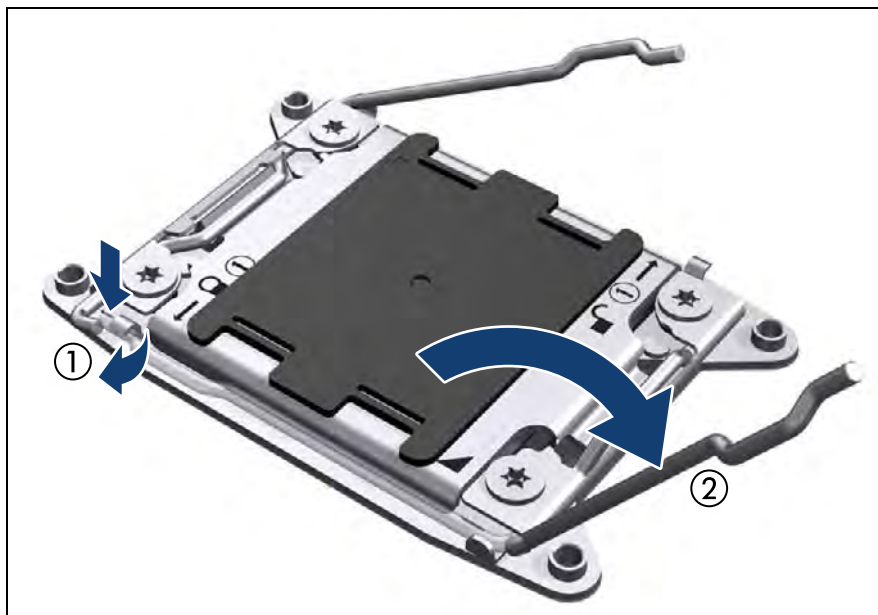


Figure 542: Opening socket release lever 2 (new system board)

- ▶ Unlatch the socket release lever marked *Close 1st* by pushing it down and away from the socket (1).
- ▶ Fully fold back the second socket release lever (2).

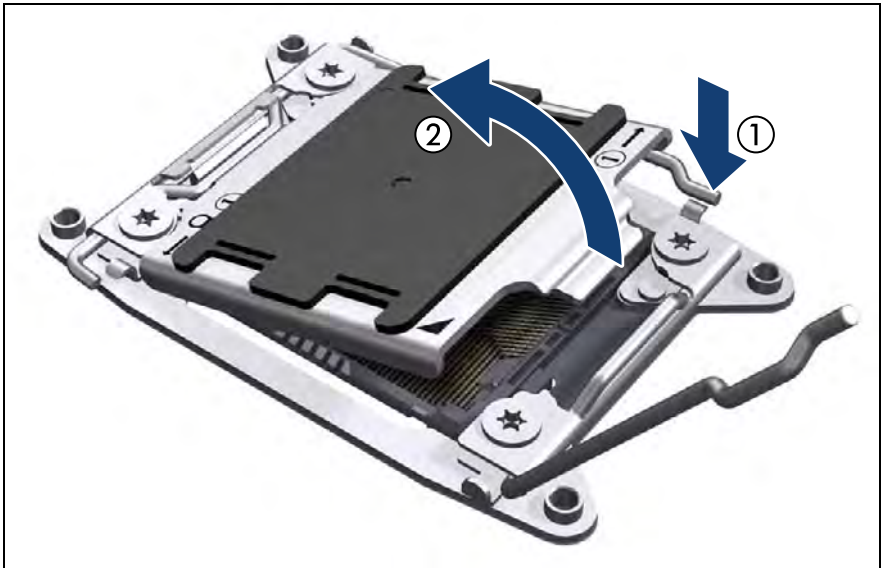


Figure 543: Opening the load plate (A)

- ▶ Push down on the first socket release lever (1) to lift the load plate away from the socket (2).

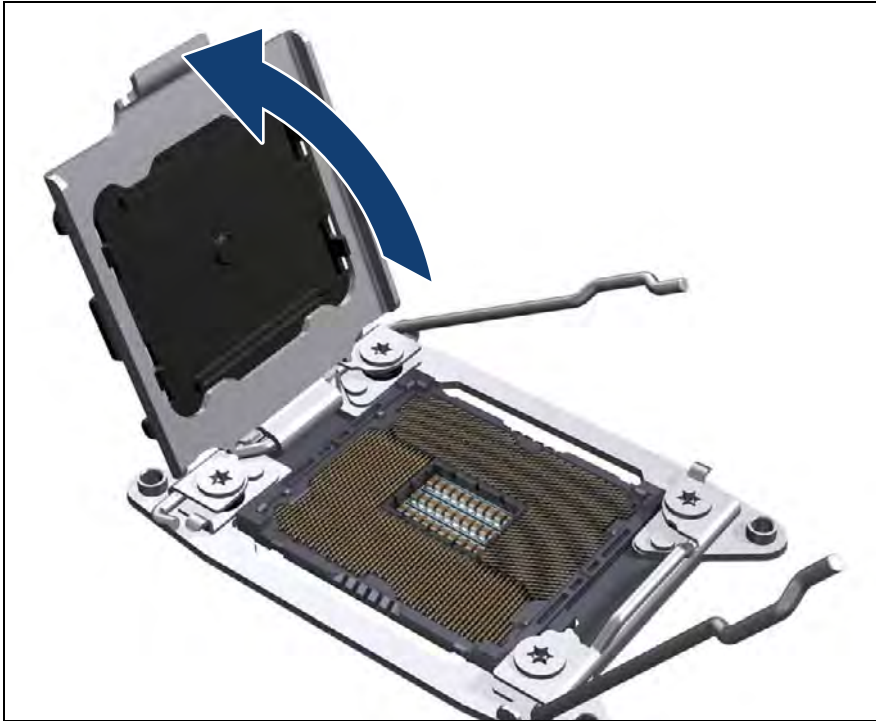


Figure 544: Opening the load plate (B)

- ▶ Fully open the load plate.



CAUTION!

Be careful not to touch or bend the spring contacts on the processor socket!

- ▶ Make sure that the load plate is in the fully open position.
- ▶ 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.

Removing processors from the defective system board

- ▶ Carefully remove the processors from their sockets on the defective system board as described in [section "Removing a processor" on page 497](#).



Remove and reinstall one processor at a time. Do not remove the second processor from the defective system board until the first processor has been installed on the new system board.

Installing processors on the new system board

- ▶ Install the processors on the new system board as described in [section "Installing the processor" on page 513](#).

Installing protective socket covers on the defective system board



Since the defective system board is sent back for repair, protect the delicate processor socket springs with a socket cover.

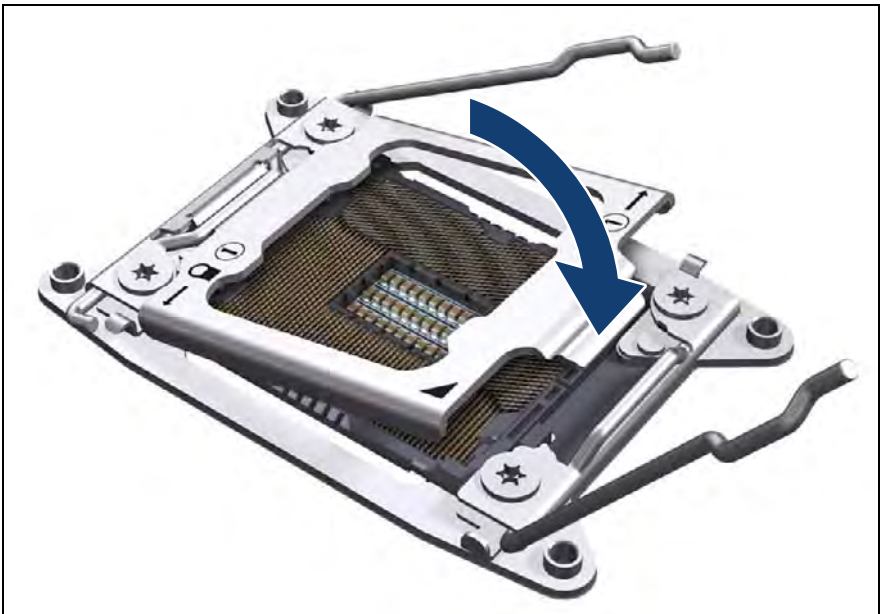


Figure 545: Closing the load plate

System board and components

- ▶ Carefully close the load plate over the empty processor socket.



CAUTION!

Be careful not to touch or bend the spring contacts on the processor socket.

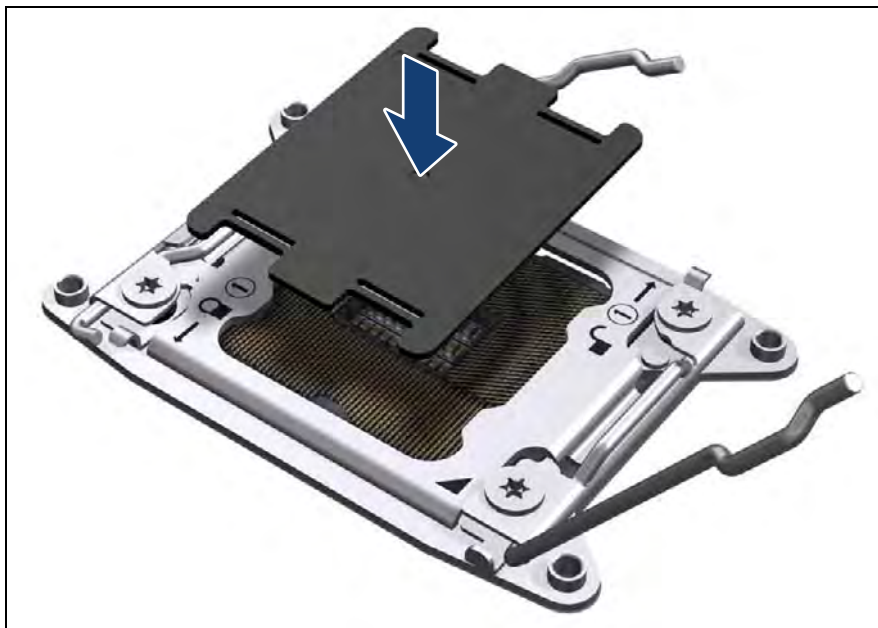


Figure 546: Attaching the protective socket cover (A)

- ▶ Carefully lower the protective socket cover onto the CPU socket in a vertical motion until it snaps in place.

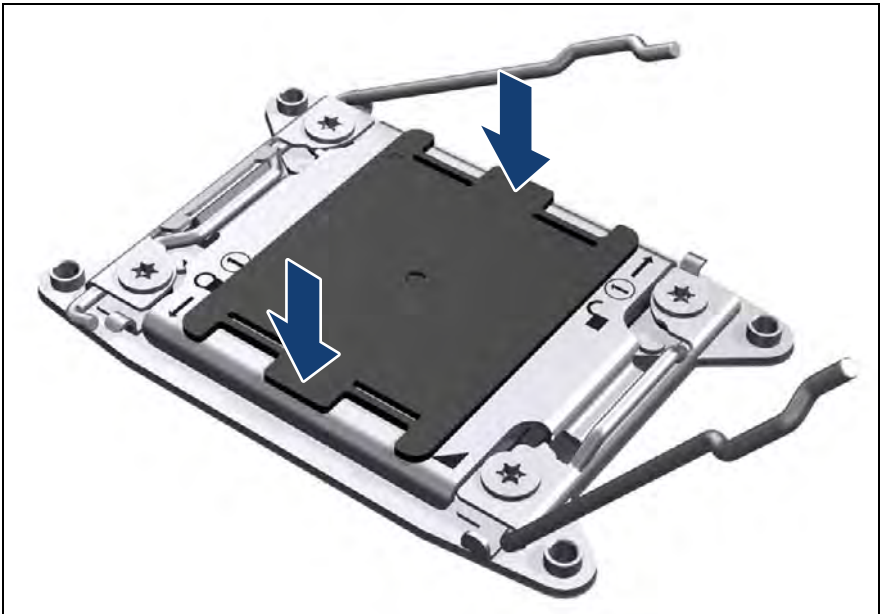


Figure 547: Attaching the protective socket cover (B)

- ▶ Ensure that the protective socket cover is properly installed on the socket as shown above.

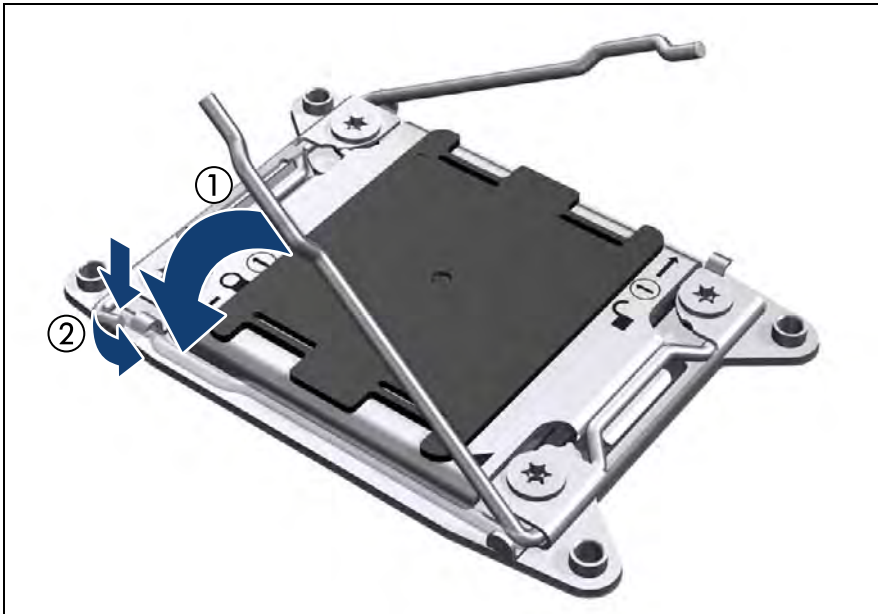


Figure 548: Closing socket release lever 2

- ▶ Fully close and hold shut the load plate.
- ▶ Close the socket release lever marked *Close 1st* (1) and latch it under the load plate retention tab to lock down the load plate (2).

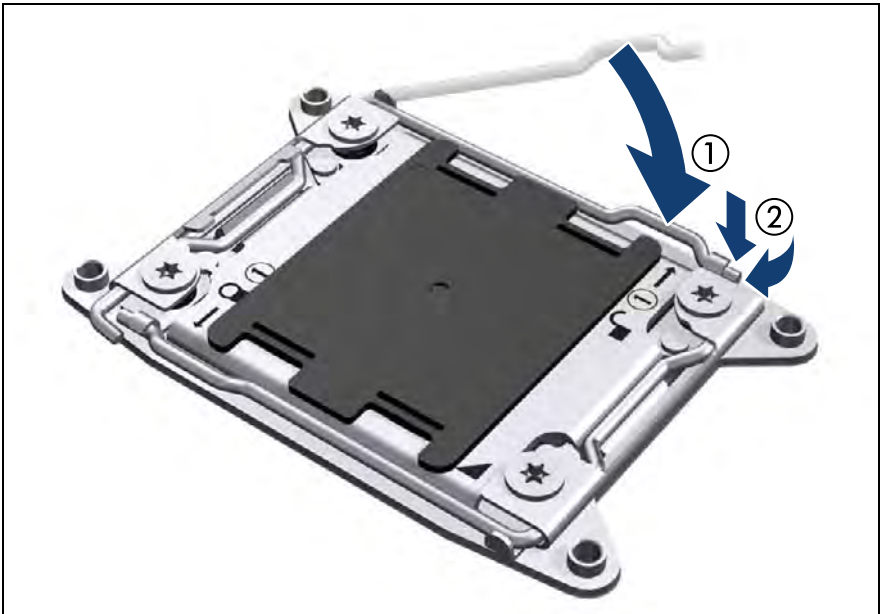


Figure 549: Closing socket release lever 1

- ▶ Close the socket release lever marked *Open Ist* (1) and latch it under the load plate retention tab (2).

14.6.3.3 Connecting cables to the system board

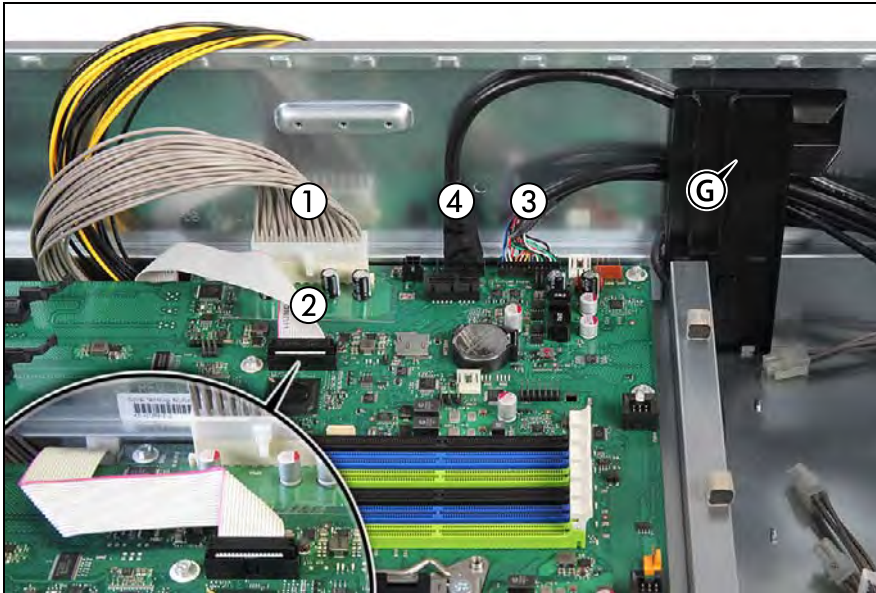


Figure 550: Connecting cables to the system board (A)

- ▶ Run the cables through the cable guide (G) as shown.
- ▶ Fold the PSU signal cable (T26139-Y4027-V1) as shown. Ensure that it lays flat against the system board (see close-up).
- ▶ Connect the power and front panel cables to the system board:

No.	Cable (T26139-)	Cabling list no.	from	to	Cabling plan
1	System power cable Y3758-V9	4	Power backplane connector X20	System board connector PWR	16.2.2
2	PSU signal cable Y4027-V1	2	Power backplane connector X25	System board connector PSU CONTROL	16.2.2
3	Front panel cable Y4015-V1	10	Front panel module	System board connector FRONTPANEL	16.2.1
4	Front VGA cable Y3994-V101	12	Front panel module	System board connector FRONT VGA	16.2.1

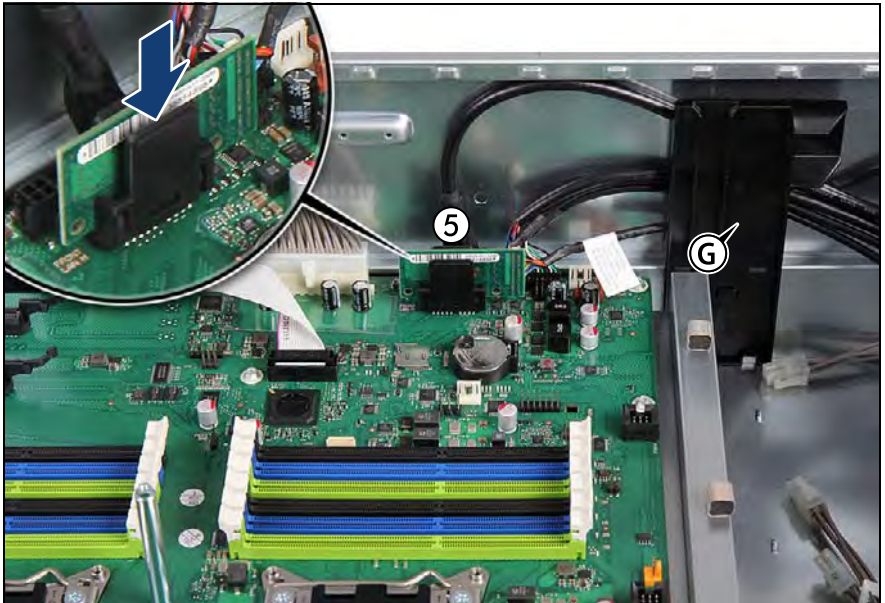


Figure 551: Connecting cables to the system board (B)

- ▶ If applicable, run the front LAN cable through the cable guide (G) as shown.
- ▶ Connect the front LAN board to the system board:

No.	Cable (T26139-)	Cabling list no.	from	to	Cabling plan
5	Front LAN cable Y4025-V1	11	Front panel module	System board connector FRONT LAN	16.2.1



For further information on how to assemble the front LAN board and holder, refer to section ["Preparing the front LAN board" on page 622.](#)

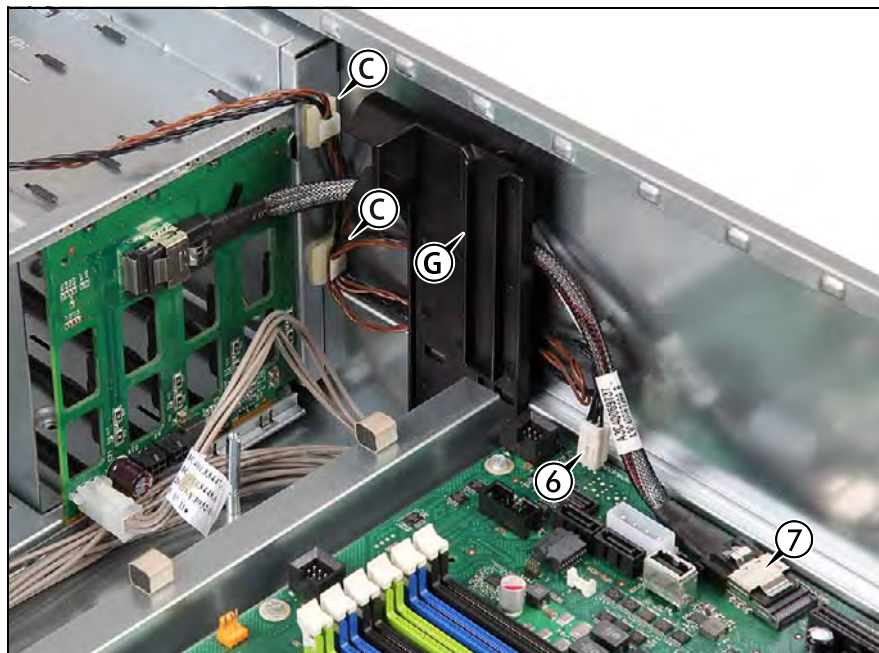


Figure 552: Connecting cables to the system board (C)

- ▶ Run the SAS and intrusion switch cables through the cable clamps (C) on the HDD cage and the cable guide (G) as shown.
- ▶ Connect the SAS cable (if applicable for your configuration) and intrusion switch cable to the system board.





For further information on SAS backup drive cabling, refer to section ["SAS backup drives with separate power supply"](#) on page 543.

No.	Cable (T26139-)	Cabling list no.	from	to	Cabling plan
6	Intrusion switch cable Y3922-V121	13	Intrusion switch holder	System board connector INTRUSION	16.2.1
7	SAS cable (4x 3.5" HDD configurations only) or SAS backup drive cable	15-18 7	Power backplane connector X25	System board connector SAS 1-4 ¹	16.2.1

¹ Requires installed Onboard SAS enabling key (see section ["Installing the onboard SAS enabling key"](#) on page 673)

14.6.4 Concluding steps

- ▶ Reconnect all remaining cables to the system board. For a complete cabling overview, please refer to section ["Cabling overviews" on page 738](#).
- ▶ Reinstall all remaining system board components as shown in the related sections:
 - Heat sinks: refer to section ["Installing processor heat sinks" on page 519](#)
 - Memory modules: refer to section ["Installing a memory module" on page 477](#)
 -  Install all memory modules into their original slots.
 - Expansion cards: refer to section ["Installing a memory module" on page 477](#)
 -  Install all expansion cards into their original slots.
 - UFM board (if applicable): refer to section ["Installing the UFM board" on page 649](#)
 - TPM board (if applicable): refer to section ["Installing the TPM board" on page 661](#)
 - iRMC microSD card (if applicable): refer to section ["Installing the iRMC microSD card" on page 679](#)
- ▶ Reinstall all fan modules and fan holders as described in the related sections:
 - ["Installing the system fan holder" on page 331](#)
 - ["Installing system fan modules" on page 327](#)
 - ["Installing the rear fan holder" on page 342](#)
 - ["Installing rear fan modules" on page 332](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ If applicable, activate TPM functionality in the system BIOS under *Security > TPM (Security Chip) Setting > Security Chip*. For more information, refer to the ["D2949 BIOS Setup Utility for PRIMERGY TX300 S8 / RX350 S8 Reference Manual"](#).

System board and components

- ▶ When working on a rack-mounted server:
["Mounting the server in the rack" on page 115](#)
- ▶ Reconnect all external cables.
- ▶ ["Connecting the server to the mains" on page 118](#)
- ▶ Update the system board BIOS and iRMC to the latest version as described in section ["Updating or recovering the system board BIOS and iRMC" on page 134](#).
- ▶ Verify whether the backup data on the Chassis ID EPROM has been restored to the system board as described in section ["Verifying system information backup / restore" on page 136](#).
- ▶ ["Verifying the system time settings" on page 148](#)
- ▶ Inform the customer about changed WWN and MAC addresses. For further information, refer to section ["Looking up changed MAC / WWN addresses" on page 153](#).
- ▶ 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 150](#).
- ▶ ["Enabling SVOM boot watchdog functionality" on page 146](#)
- ▶ If BitLocker functionality is used and has been disabled before starting the maintenance task: ["Resuming BitLocker functionality" on page 152](#)
- ▶ Reconfigure your network settings in the operation system according to the original configuration of the replaced controller (expansion card or onboard).

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 685](#).
- ▶ If applicable, restore LAN teaming configurations as described in section ["After replacing the system board" on page 157](#).

15 Converting a tower server to a rack server



Upgrade and Repair Unit (URU)



**Average task duration:
20 minutes**

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

Safety notes

For further information, please refer to chapter ["Important information"](#) on page 45.

15.1 Preliminary steps

- ▶ ["Shutting down the server"](#) on page 62
- ▶ ["Disconnecting the server from the mains"](#) on page 63
- ▶ Remove all external cables.
- ▶ ["Opening the server"](#) on page 68



The front cover is no longer required.

- ▶ If applicable, remove all HDDs or HDD dummy modules from an installed HDD extension box as described in the following sections:
 - ["Removing a 2.5-inch HDD / SSD module"](#) on page 211
 - ["Removing a 2.5-inch HDD / SSD dummy module"](#) on page 207
 - ["Removing a 3.5-inch HDD module"](#) on page 259
 - ["Removing a 3.5-inch HDD dummy module"](#) on page 255

Converting a tower server to a rack server

- ▶ Remove all accessible drives, extension boxes and filler covers as described in the following sections:
 - "Removing accessible drives" on page 546
 - "Accessible drive filler covers" on page 94
 - "HDD extension boxes" on page 284
- ▶ "Removing the anti-tilt bracket" on page 114

15.2 Removing the right side cover

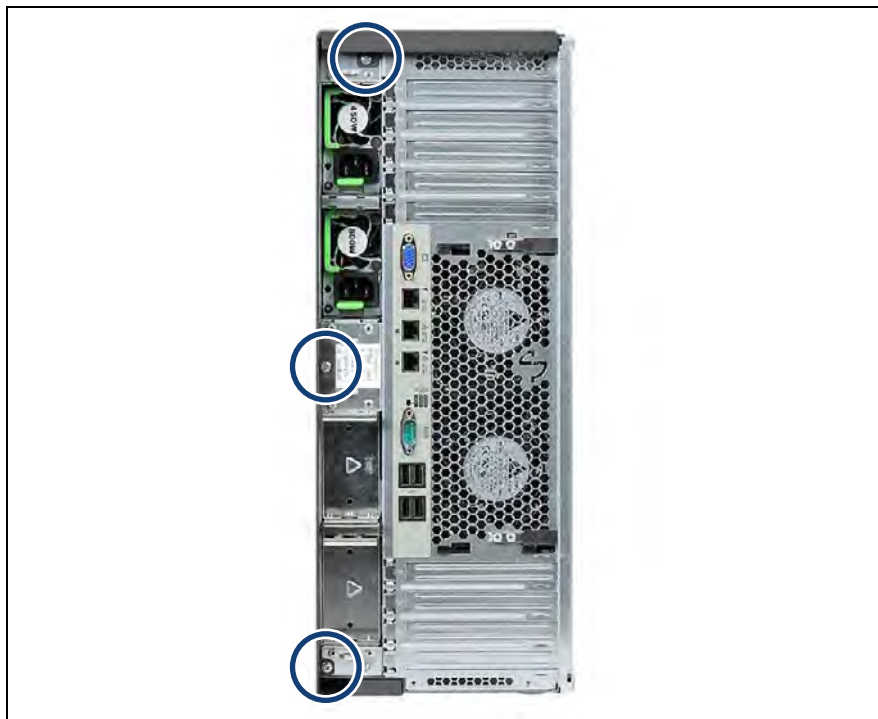


Figure 553: Removing the right side cover (A)

- ▶ Remove three screws on the server rear (see circles).

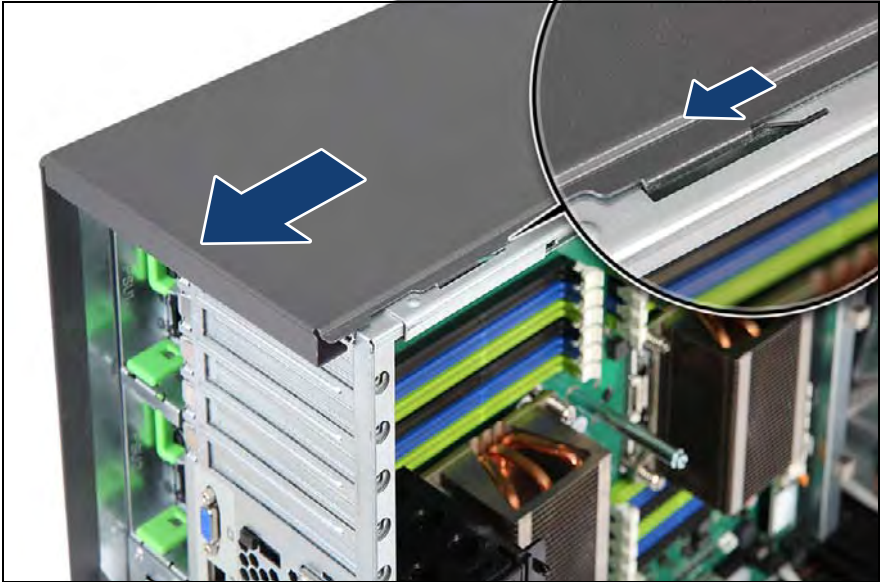


Figure 554: Removing the right side cover (B)

- ▶ Slide the right side cover towards the server rear as far as it will go.
- ▶ Ensure that the three hooks on the right side cover rest in the wide ends of the slots on the upper chassis edge (see close-up).

Converting a tower server to a rack server

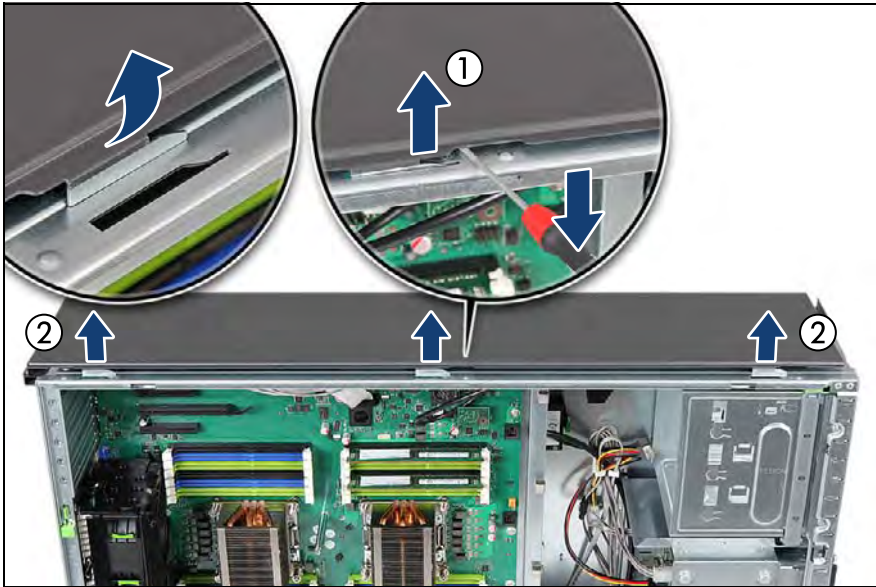


Figure 555: Removing the right side cover (C)

- ▶ Remove the three hooks on the right side cover from the slots on the upper chassis edge:
 - ▶ Using a slotted screw driver, slightly pry up on the middle hook until it disengages (1).
 - ▶ Pull up on both ends of the right side cover to remove the left and right hooks from the slots on the upper chassis edge (2).



Figure 556: Removing the right side cover (D)

- ▶ Ensure that all cables and components are properly secured inside the server and that there are no loose pieces.
- ▶ Carefully turn the server upside down.
 - i** At least two people are needed to turn over a fully equipped server. Remove hard disk drives and power supply modules in order to facilitate the task.
- ▶ Lift off and remove the right side cover as shown.
 - i** The right side cover is no longer required.
- ▶ Leave the server in its upside down position.

15.3 Removing the accessible drive cage



Figure 557: Detaching the accessible drive cage (A)

- ▶ Remove two screws from the bottom side of the server as shown.
- ▶ Bring the server back to its horizontal position.

i At least two people are needed to turn over a fully equipped server. Remove hard disk drives and power supply modules in order to facilitate the task.



Figure 558: Detaching the accessible drive cage (B)

- ▶ Remove two screws from the right chassis edge as shown.

Converting a tower server to a rack server



Figure 559: Detaching the accessible drive cage (C)

- ▶ Remove two screws from the top edge of the chassis as shown.

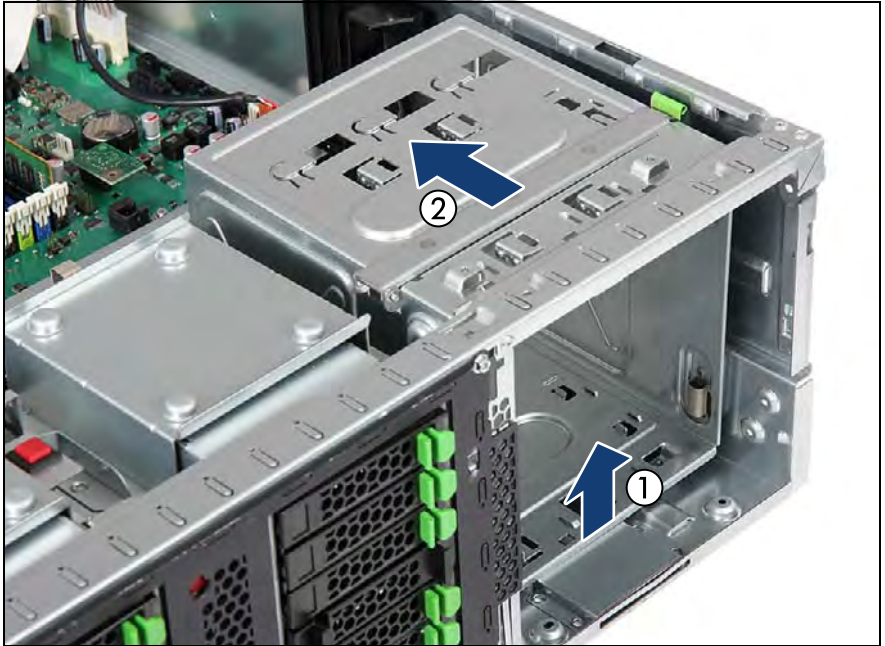


Figure 560: Removing the accessible drive cage (A)

- ▶ Slightly lift up the accessible drive cage to disengage its front bottom edge from the slot on the chassis floor (1).
- ▶ Slide the accessible drive cover from under the chassis frame as shown (2).

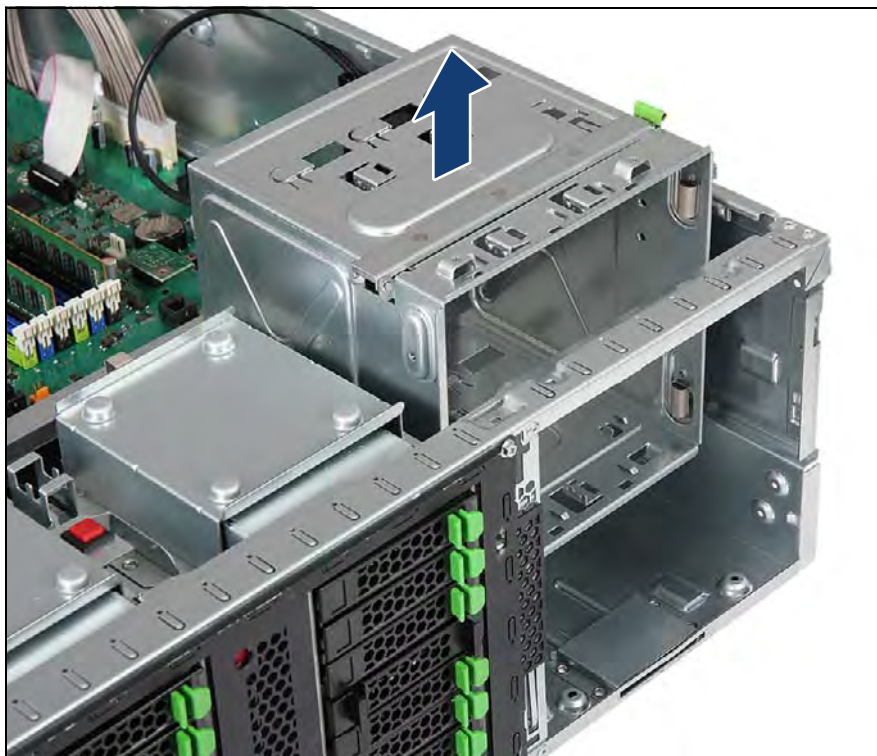


Figure 561: Removing the accessible drive cage (B)

- ▶ Lift the accessible drive cage out of the chassis.

15.4 Converting the accessible drive cage



Figure 562: Converting the accessible drive cage (A)

- ▶ Turn the accessible drive cover with its "RACK" stamping facing up (1, see close-up).
- ▶ Remove the threaded bolt from the upper edge of the accessible drive cage (2).



Figure 563: Converting the accessible drive cage (B)

- ▶ Reinstall the threaded bolt on the side of the accessible drive cage as shown (see close-up).

15.5 Reinstalling the accessible drive cage

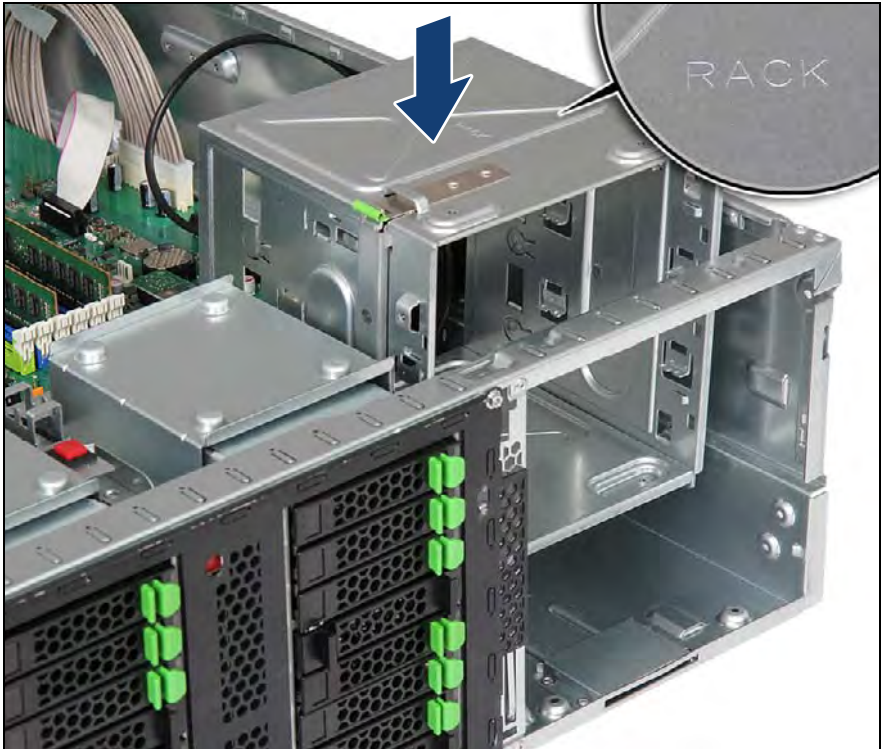


Figure 564: Mounting the accessible drive cage (A)

- ▶ With its "RACK" stamping facing up (see close-up), lower the accessible drive cage into the chassis.



Figure 565: Mounting the accessible drive cage (B)

- ▶ Slide the accessible drive cage towards the server front as far as it will go.

Converting a tower server to a rack server

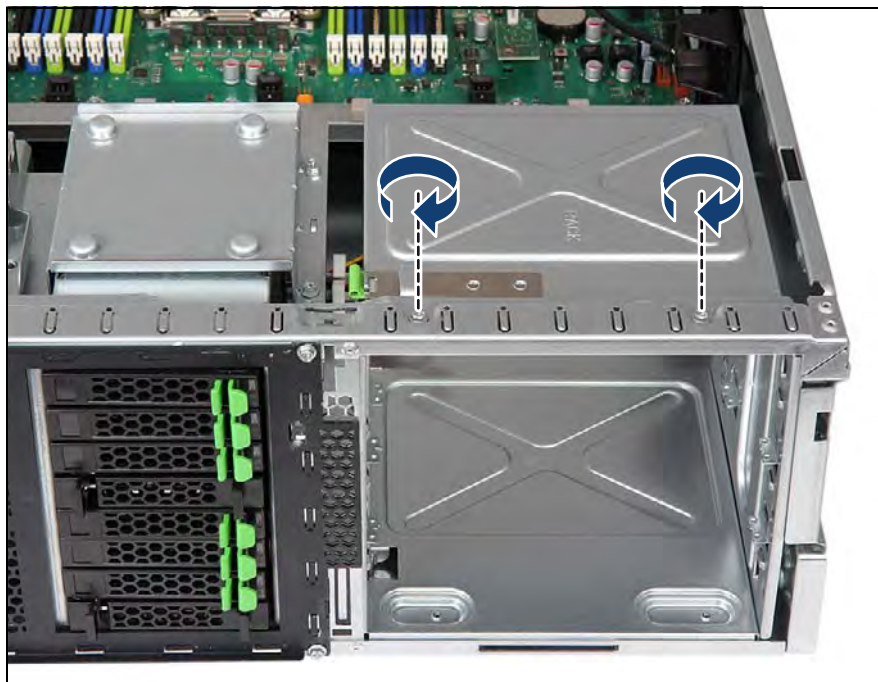


Figure 567: Securing the accessible drive cage (A)

- ▶ Secure the accessible drive cage with two screws on the upper chassis edge.



Figure 568: Securing the accessible drive cage (B)

- ▶ Secure the accessible drive cage with two screws on the right chassis edge as shown.

Converting a tower server to a rack server

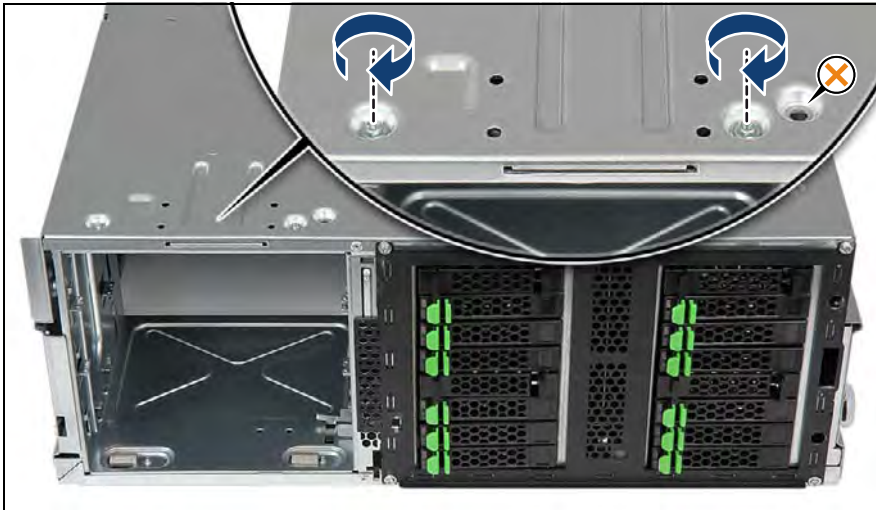


Figure 569: Securing the accessible drive cage (C)

- ▶ Ensure that all cables and components are properly secured inside the server and that there are no loose pieces.
- ▶ Carefully turn the server upside down.
 - i** At least two people are needed to turn over a fully equipped server. Remove hard disk drives and power supply modules in order to facilitate the task.
- ▶ Secure the accessible drive cage with two screws on the bottom side of the chassis.
 - i** Note the correct screw positions (see close-up): The screw hole on the right that has been used in the tower configuration remains empty.

15.6 Removing glider feet

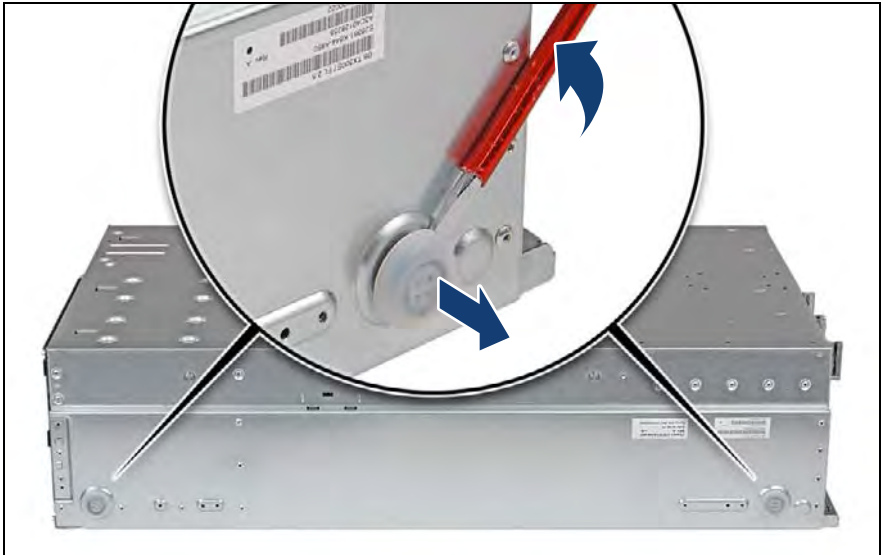


Figure 570: Removing glider feet

- ▶ Using a slotted screw driver, slightly pry up on each glider foot until it detaches.
- ▶ Bring the server back to its horizontal position.

i At least two people are needed to turn over a fully equipped server. Remove hard disk drives and power supply modules in order to facilitate the task.

15.7 Preparing the intrusion switch

- ▶ Remove the intrusion switch module as described in section "[Removing the intrusion switch cable](#)" on page 762.
- ▶ Attach a rubber bumper (C26192-Y26-C43) to the front intrusion switch and reinstall the intrusion switch module as described in section "[Installing the intrusion switch cable](#)" on page 765.

15.8 Reinstalling accessible drives



Figure 571: Reinstalling accessible drives

- ▶ Reinstall the front panel module (rotated by 90 degrees) as described in section ["Installing the front panel module" on page 610](#).
- ▶ Reinstall all accessible drives into their original bays (rotated by 90 degrees) according to the mounting sequence in [table 5 on page 531](#). Proceed as described in section ["Cabling the accessible drive" on page 539](#).
- ▶ If applicable, reinstall an HDD extension box into its original bay (rotated by 90 degrees) according to the mounting sequence in [table 5 on page 531](#). Proceed as described in section ["HDD extension boxes" on page 284](#).

- ▶ If applicable, reinstall all hard disk drives and HDD dummy modules into their original slots in the HDD extension box as described in the following sections:
 - "Installing 2.5-inch HDD / SSD modules" on page 207
 - "Installing a 2.5-inch HDD / SSD dummy module" on page 213
 - "Installing 3.5-inch HDD modules" on page 254
 - "Installing a 3.5-inch HDD dummy module" on page 261
- ▶ Reinstall all accessible drive filler covers and front covers as described in section "Installing accessible drive dummy covers" on page 548.

15.9 Assembling the rack front cover



Figure 572: Rack mounting brackets with quick release levers

- i** The rack front cover consists of a plastic frame and two rack mounting brackets with quick release levers.

Converting a tower server to a rack server

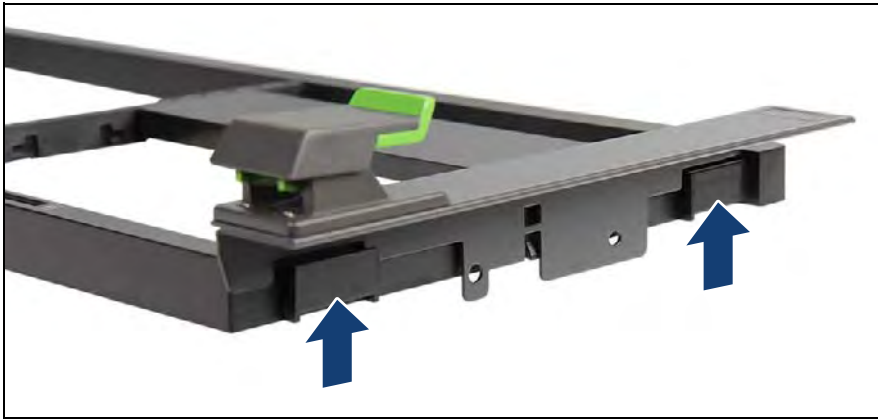


Figure 573: Installing rack mounting brackets (A)

- ▶ Fit the rack mounting bracket on the two hooks on the rack front bezel (see arrows).

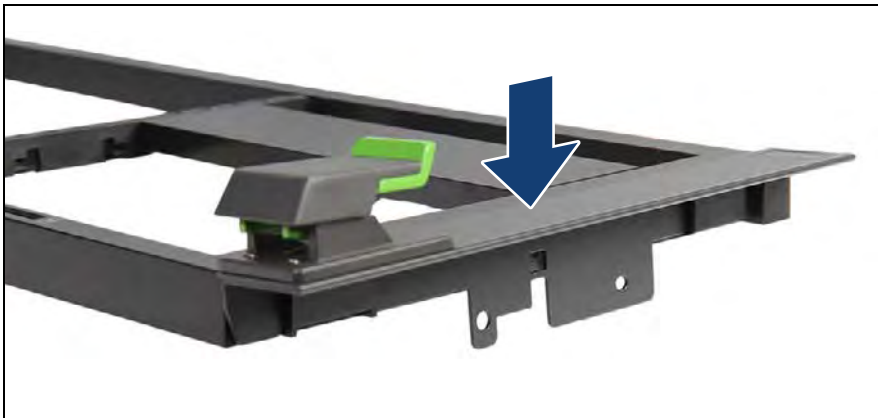


Figure 574: Installing rack mounting brackets (B)

- ▶ Firmly press down on the rack mounting bracket until it is fully seated in the rack front bezel.
- ▶ Mount the second rack mounting bracket accordingly.



Figure 575: Installing accessible drive dummy covers

- ▶ Reinstall all accessible drive dummy covers into their original locations (rotated by 90 degrees):
 - ▶ Ensure that an accessible drive filler cover has been installed in every empty drive bay.
 - ▶ Turn the front cover face down.
 - ▶ Join the two lugs on one edge of the accessible drive cover (C26361-K644-C60) with the right inner edge of the front cover (1).
 - ▶ Fold down the accessible drive cover until it snaps in place (2).
- i** Use the dummy covers that have been removed from the front cover during the preliminary steps.

15.10 Concluding steps

- ▶ "Closing the server" on page 98



Figure 576: Attaching the caution label

- ▶ Place the enclosed load warning sign on the left front edge of the top cover as shown.
- ▶ Mount the support bracket and rack mounting rails in the rack as described in the "Rack Mounting Kit - RMK-F2 Drop-In" Mounting Instructions.



The document is available online at <http://manuals.ts.fujitsu.com> (<http://jp.fujitsu.com/platform/server/primergy/manual/> for the Japanese market). The printed poster is contained in the rack mounting kit.

- ▶ "Mounting the server in the rack" on page 115
- ▶ Reconnect all external cables.
- ▶ "Connecting the server to the mains" on page 118

- ▶ Update your server's chassis information on the Chassis ID EPROM integrated into the front panel board. For further information on how to obtain and use the *ChassisId_Prom* Tool, refer to section ["Using the Chassis ID Prom Tool" on page 155](#).
- ▶ Change the chassis model setting to "rack server" as described in section ["Specifying the chassis model" on page 158](#).

16 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.

16.1 List of used cables



The numbers in the cable list correspond to those shown in the cabling plans below.

No.	Name	Length	Number (T26139-)	Routing
1	HDD Power Cable	750 / 550 / 450 mm	Y3952-V601	Power backplane to SAS backplanes / HDD ext. box
2	PSU Signal Cable	300 mm	Y4027-V1	Power backplane to system board
3	HDD / ODD Power Cable	410 mm	Y4029-V201	SAS backplane to HDD extension box or system board
4	System Power Cable	500 mm	Y3758-V9	Power backplane to system board
5	Backup Drive Power Cable	410 mm	Y4029-V1	Backup drive to system board or power backplane
6	ODD SATA Power Cable	410 mm	Y3930-V601	ODD to SAS backplane
7	SAS Backup Drive Power / Data cable	410 / 700 mm	Y3969-V401	SAS Backup drive to system board connector SAS 1-4
8A	Slimline ODD SATA Power Cable	400 mm	Y3986-V302	ODD to system board or SAS backplane
8B		500 mm	Y3986-V305	ODD to SAS backplane
9	SAS Expander Board Power Cable	300 mm	Y4029-V101	SAS expander board to SAS backplane
10	Front Panel Connector Cable	400 mm	Y4015-V1	Front panel module to system board
11	Front LAN Cable	600 mm	Y4025-V1	Server front to front LAN board D2935
12	Front VGA Cable	500 mm	Y3994-V101	Server front to system board
13	Intrusion Switch Cable	830 / 890 mm	Y3922-V121	Server side and front to system board
14	LSD Cable	700 mm	Y3718-V301	LSD to system board

Table 6: List of used cables

No.	Name	Length	Number (T26139-)	Routing
15	SAS Cable	250 mm	Y3963-V112	SAS backplane to SAS expander board or SAS controller
16		320 mm	Y3963-V101	
17			Y3963-V151	
18		470 mm	Y3963-V103	
		620 mm	Y3963-V153	
19	Multilane SAS Cable	420 mm	Y3963-V201	2x 3.5-inch HDD extension box to SAS expander board or SAS controller
20	ODD SATA Cable	650 mm	Y3958-V205	ODD to system board
21A	USB 2.0 Cable	700 mm	Y3973-V96	USB backup drive to system board
21B	USB 3.0 Cable	1000 mm	Y4039-V100	USB backup drive to USB 3.0 PCI interface card
22	BBU Cable	700 mm	Y3987-V1	BBU to SAS controller
23	FBU Cable (SAS 2.0 controllers)	-	Y4032-V1	FBU to TFM module
24	NCSI Sideband Cable	75 mm	Y4015-V101	Modular LAN controller to system board
25	GPGPU / Coprocessor Card Power Cable	600 mm	Y3946-V701	Power backplane to GPGPU / coprocessor card
26	HDD / GPGPU / Coprocessor Card Power Cable	820 mm	Y3952-V701	Power backplane to SAS backplanes and GPGPU / coprocessor card
27	SAS 3.0 Cable	470 mm	Y4040-V8	SAS 3.0 backplane to SAS 3.0 controller
28	SAS 2.0 / 3.0 Cable	300 mm	Y4040-V14	SAS 3.0 backplanes to SAS 2.0 controller
29	SAS 3.0 Out-of-Band Cable	-	Y4015-V601	SAS 3.0 backplane to system board
30	FBU Cable (SAS 3.0 controllers)	700 mm	Y4031-V103	FBU to TFM module 4G / 8G

Table 6: List of used cables

16.2 Cabling overviews

i The numbers in the cabling plans correspond to those shown in the list of used cables above.

16.2.1 Basic cabling

This cabling overview includes the following components:

- Intrusion switches
- Accessible drives
- ODD / USB / SAS backup drives
- Front panel connectors

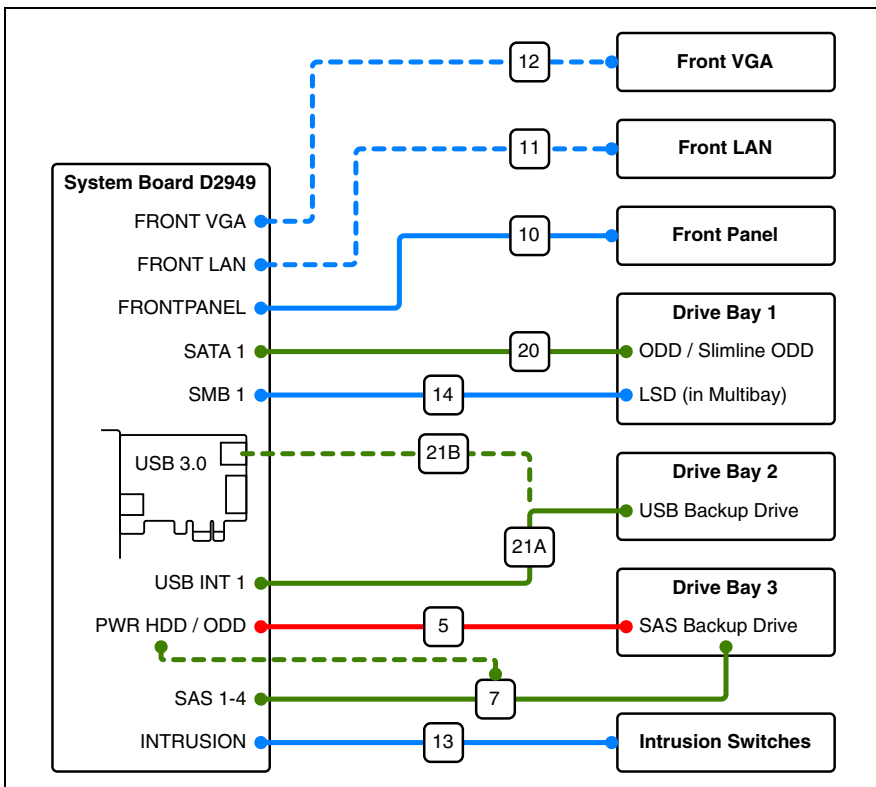


Figure 577: Basic cabling

16.2.2 Power cabling with 8x 3.5-inch HDDs and SAS expander board

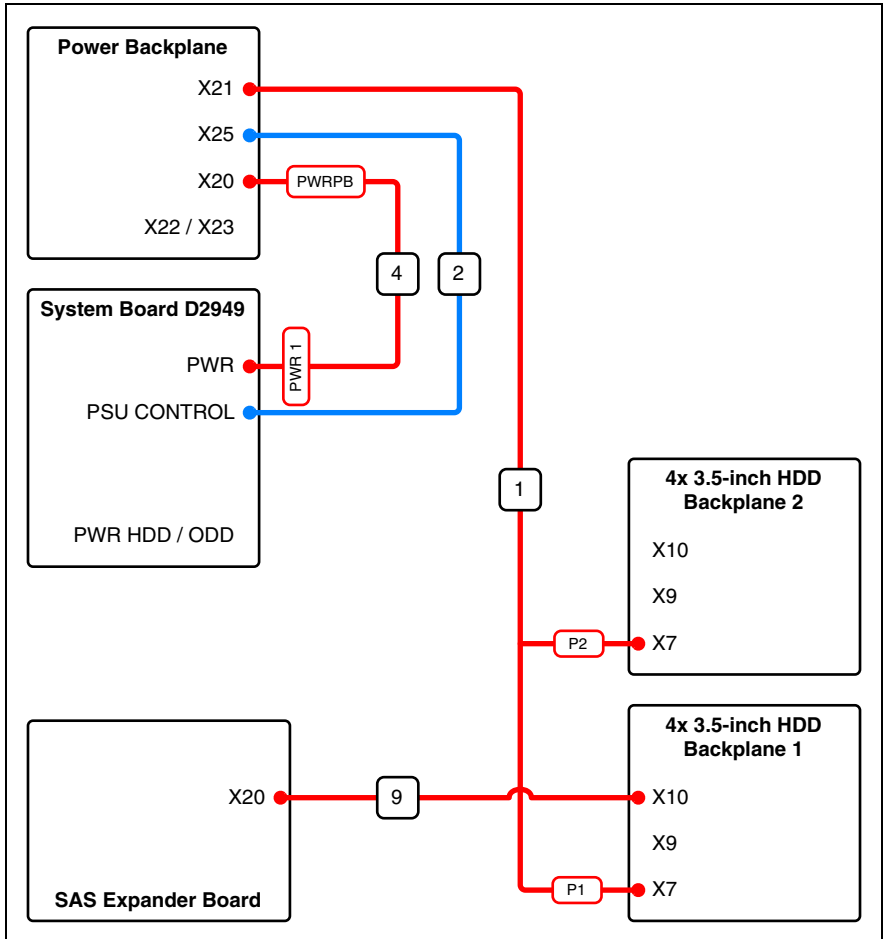


Figure 578: Power cabling: 8x 3.5" HDDs and SAS expander board

16.2.4 Power cabling with 4x 3.5-inch HDDs and multibay box

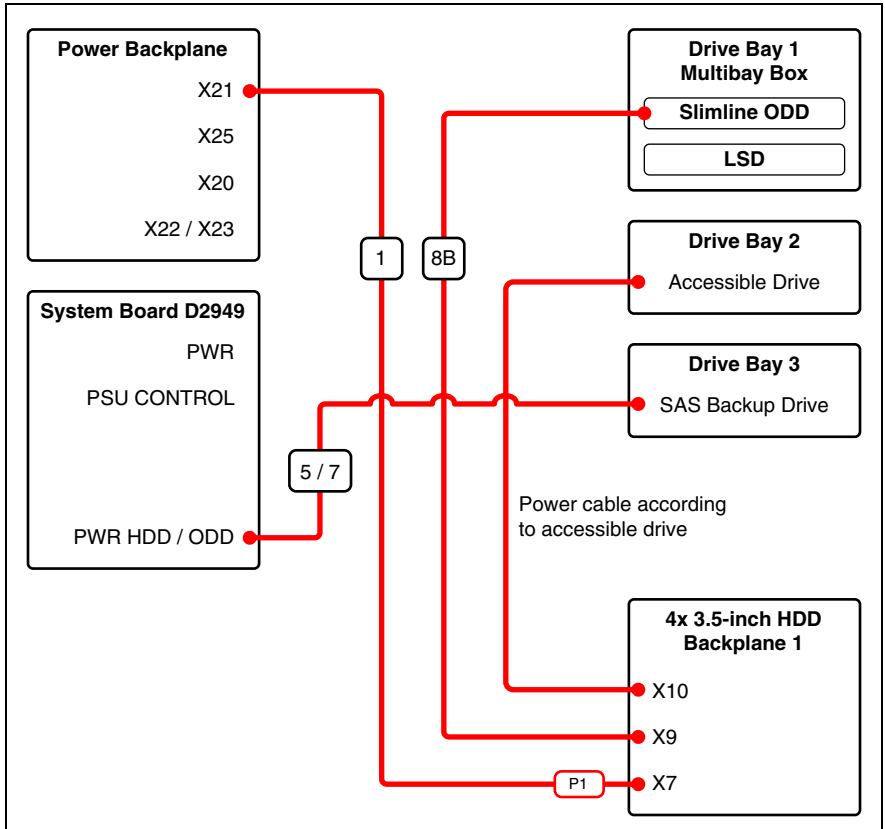


Figure 580: Power cabling: 4x 3.5" HDDs and multibay box

16.2.5 Power cabling with 8x 3.5-inch HDDs and 4x 3.5-inch HDD extension box

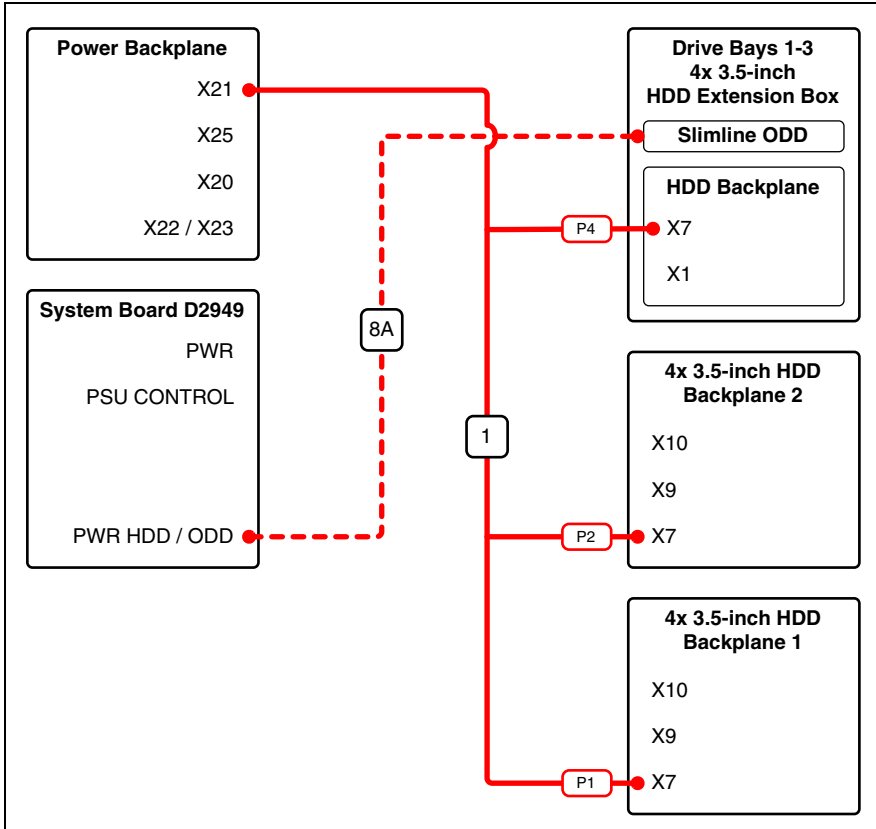


Figure 581: Power cabling: 8x 3.5" HDDs and 4x 3.5" HDD extension box

16.2.6 Power cabling with 8x 3.5-inch HDDs and 2x 3.5-inch HDD extension box

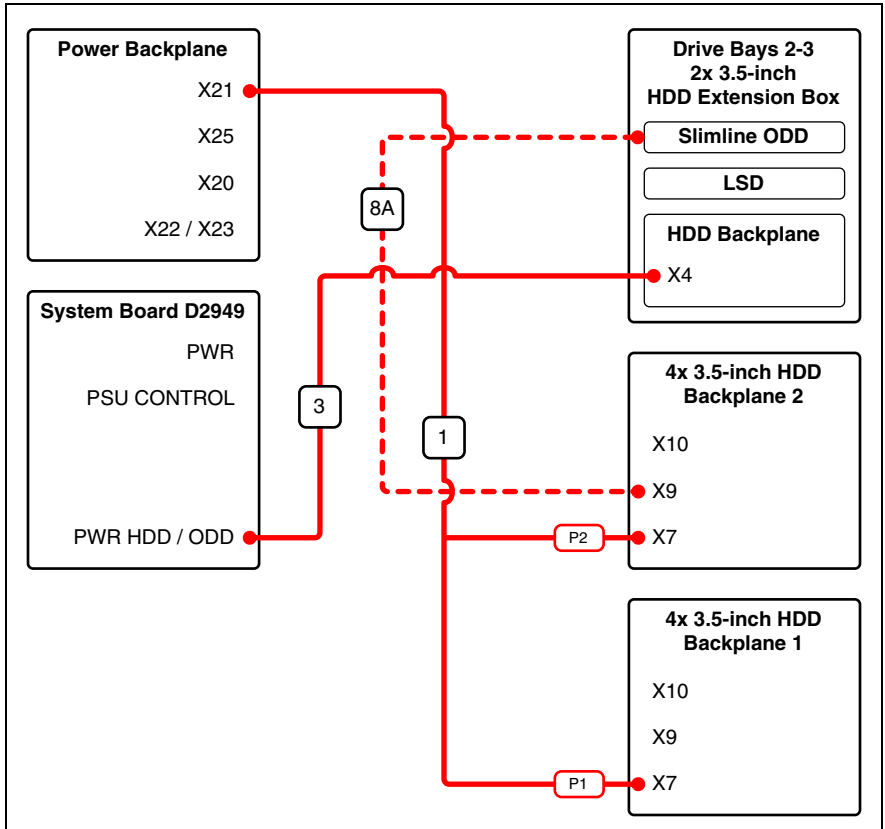


Figure 582: Power cabling: 8x 3.5" HDDs and 2x 3.5" HDD extension box

16.2.7 SAS cabling with 8x 3.5-inch HDDs

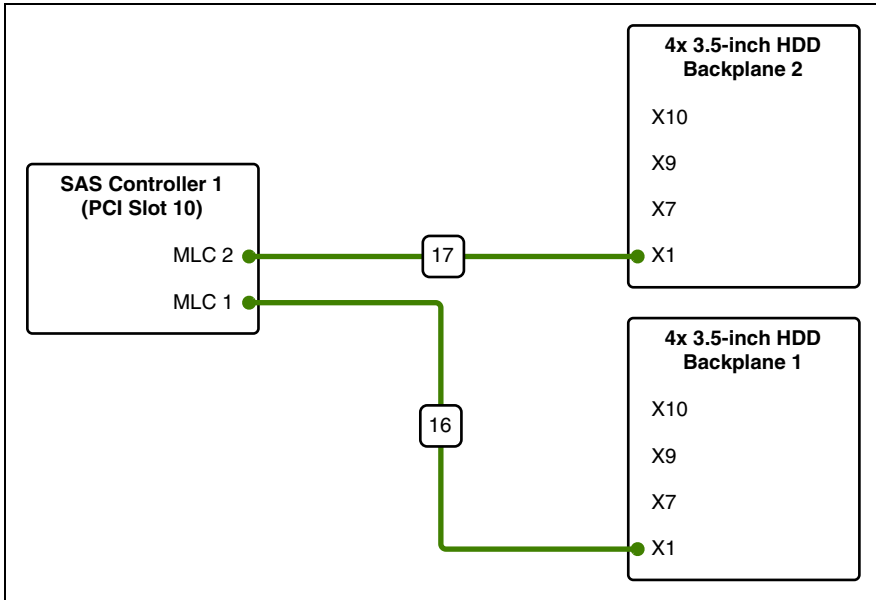


Figure 583: SAS cabling: 8x 3.5" HDDs

16.2.8 SAS cabling with 8x 3.5-inch HDDs and 2x 3.5-inch HDD extension box

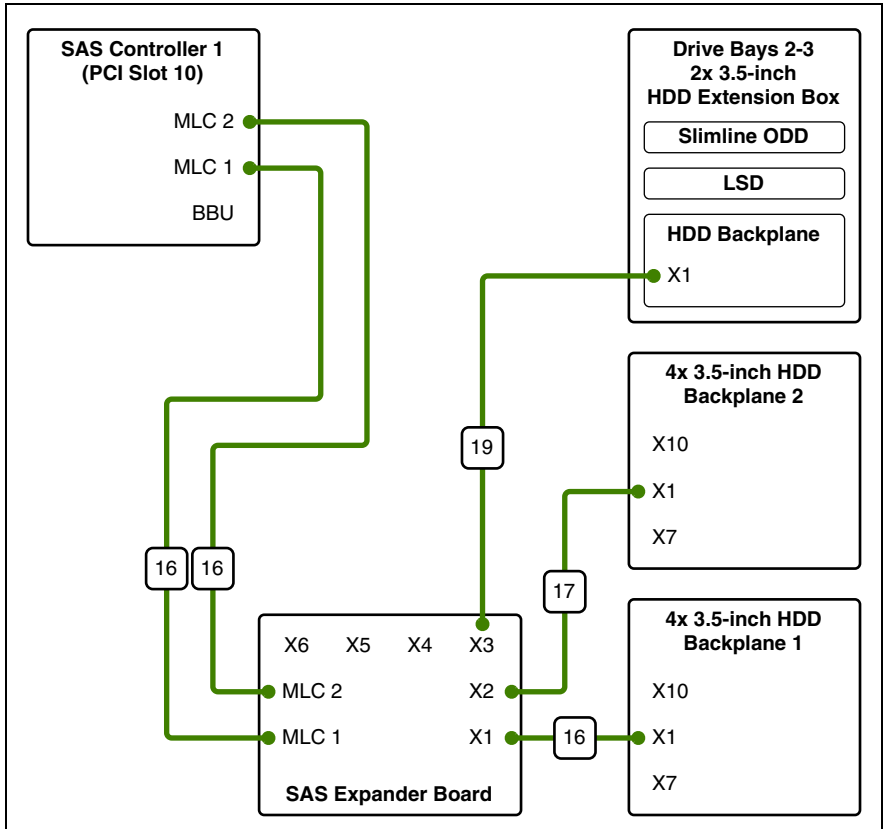


Figure 584: SAS cabling: 8x 3.5" HDDs and 2x 3.5" HDD extension box

16.2.9 SAS cabling with 8x 3.5-inch HDDs and 4x 3.5-inch HDD extension box

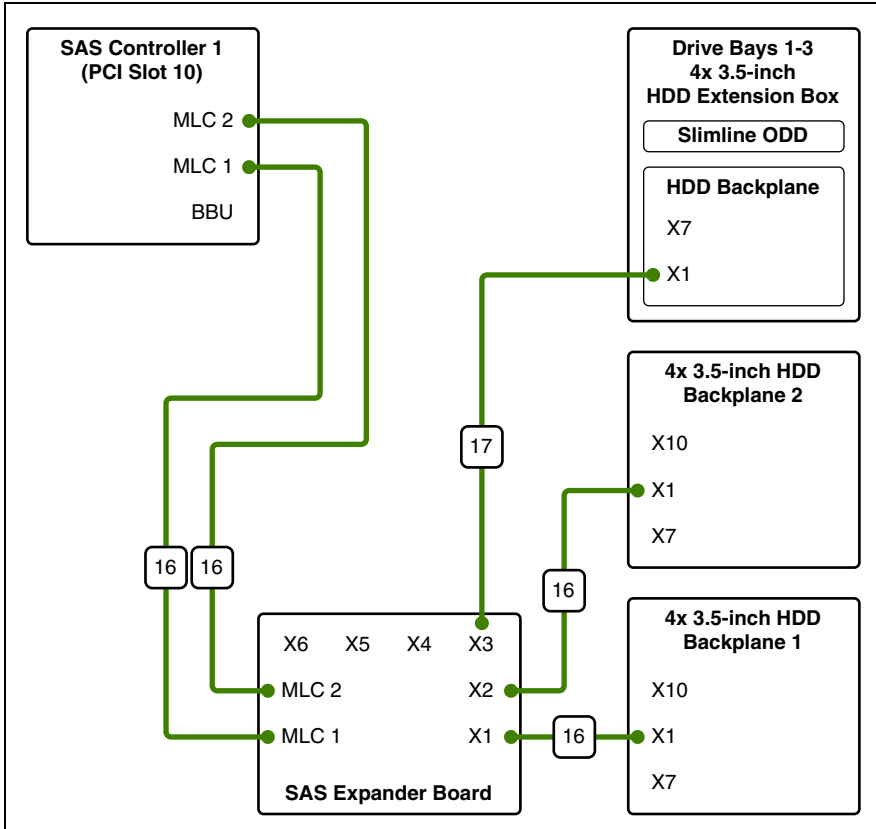


Figure 585: SAS cabling: 8x 3.5" HDDs and 4x 3.5" HDD extension box

16.2.10 Power cabling with 8x 2.5-inch HDDs / SSDs and SAS expander board

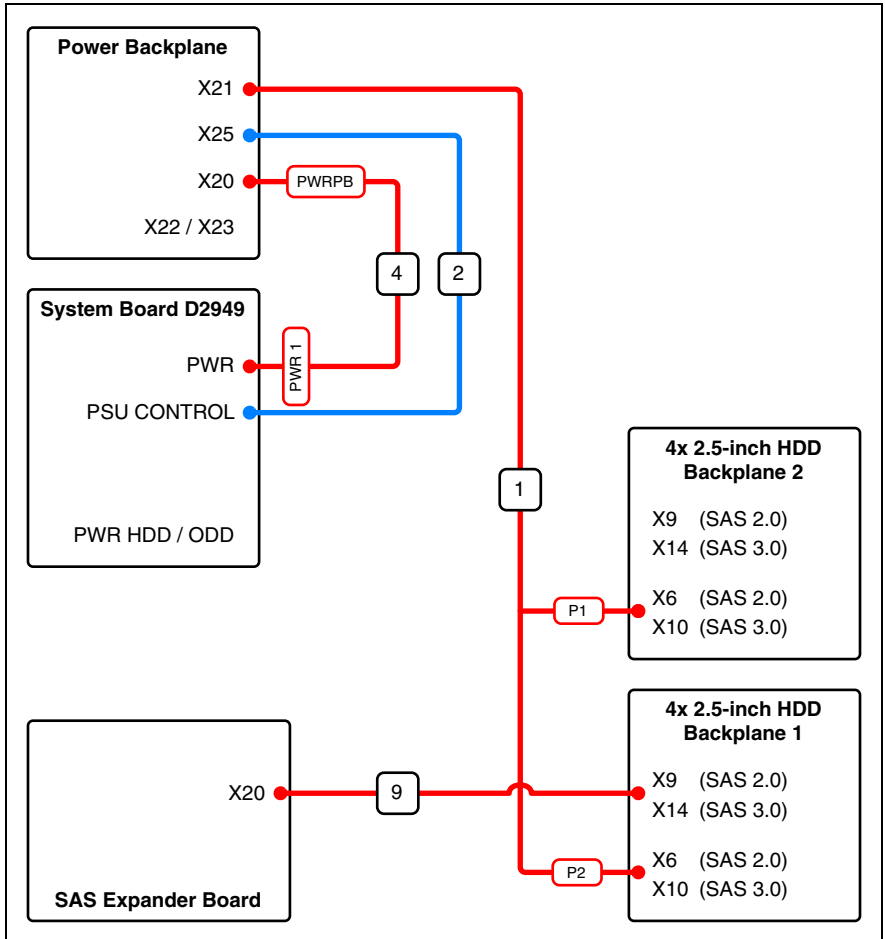


Figure 586: Power cabling: 8x 2.5" HDDs / SSDs and SAS expander board

16.2.11 Power cabling with 8x 2.5-inch HDDs / SSDs and accessible drives

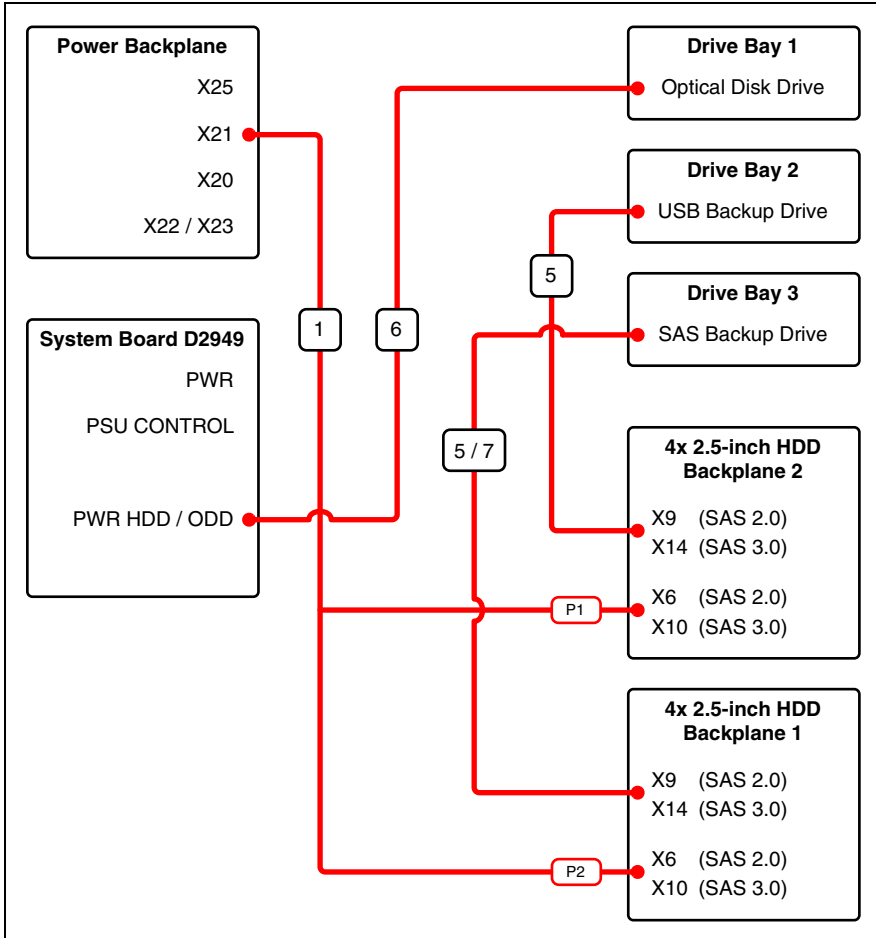


Figure 587: Power cabling: 8x 2.5" HDDs / SSDs and accessible drives

16.2.12 Power cabling with 16x / 24x 2.5-inch HDDs / SSDs and backup drives

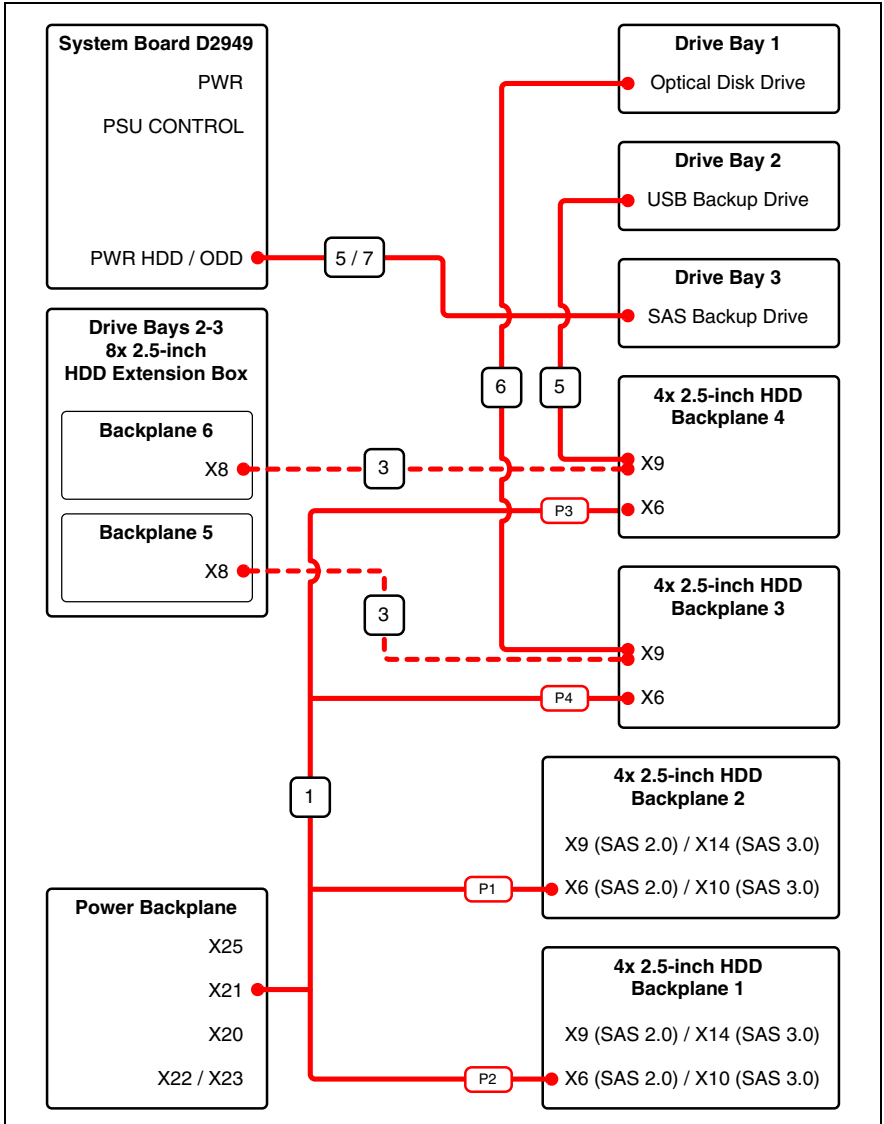


Figure 588: Power cabling: 16x / 24x 2.5" HDDs / SSDs and backup drives

16.2.13 SAS 2.0 cabling with 8x 2.5-inch SAS 2.0 HDDs / SSDs and two SAS 3.0 backplanes

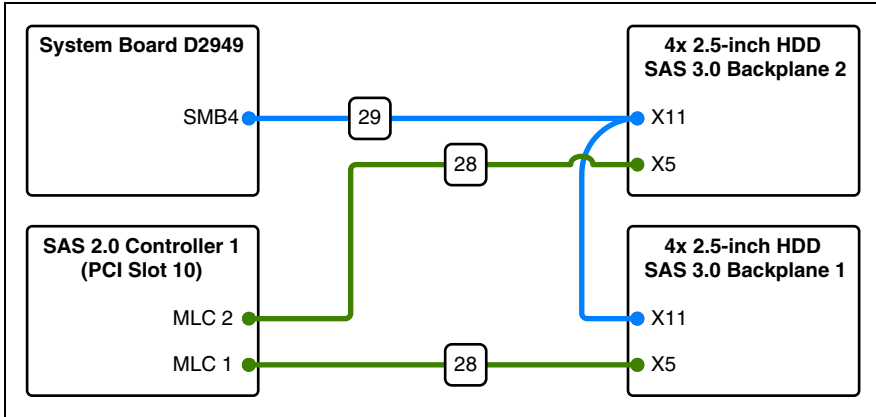


Figure 589: SAS 2.0 cabling with two SAS 3.0 backplanes



This cabling configuration includes Out-of-Band monitoring with SAS 2.0 RAID controllers D2616 and D2607.

16.2.14 SAS 3.0 cabling with 8x 2.5-inch SAS 3.0 SSDs and two SAS 3.0 backplanes

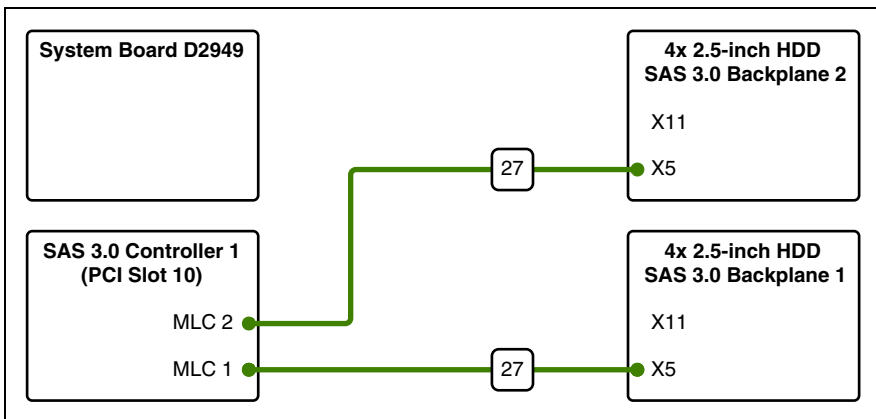


Figure 590: SAS 3.0 cabling with two SAS 3.0 backplanes

i This cabling plan applies to SAS 3.0 RAID controller D3216 (PRAID EP400i / EP420i).

16.2.15 SAS 2.0 cabling with 16x 2.5-inch HDDs / SSDs and two SAS controllers

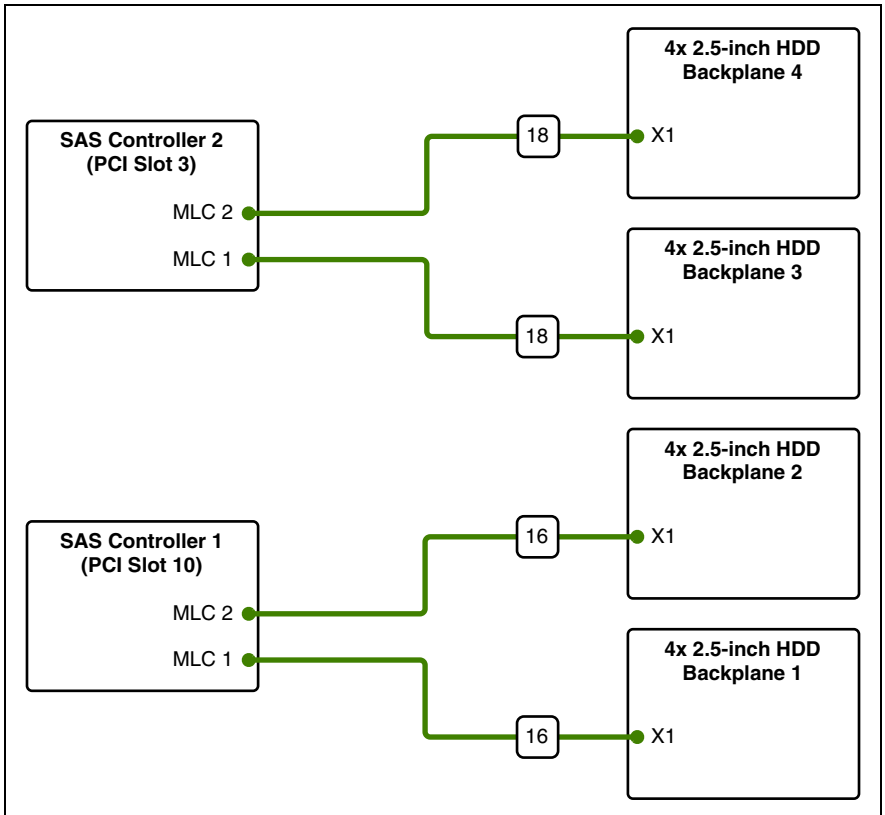


Figure 591: SAS cabling: 16x 2.5" SAS HDDs, 2x SAS 2.0 controllers

16.2.16 SAS 3.0 / 2.0 cabling with 16x 2.5-inch HDDs / SSDs and two SAS controllers

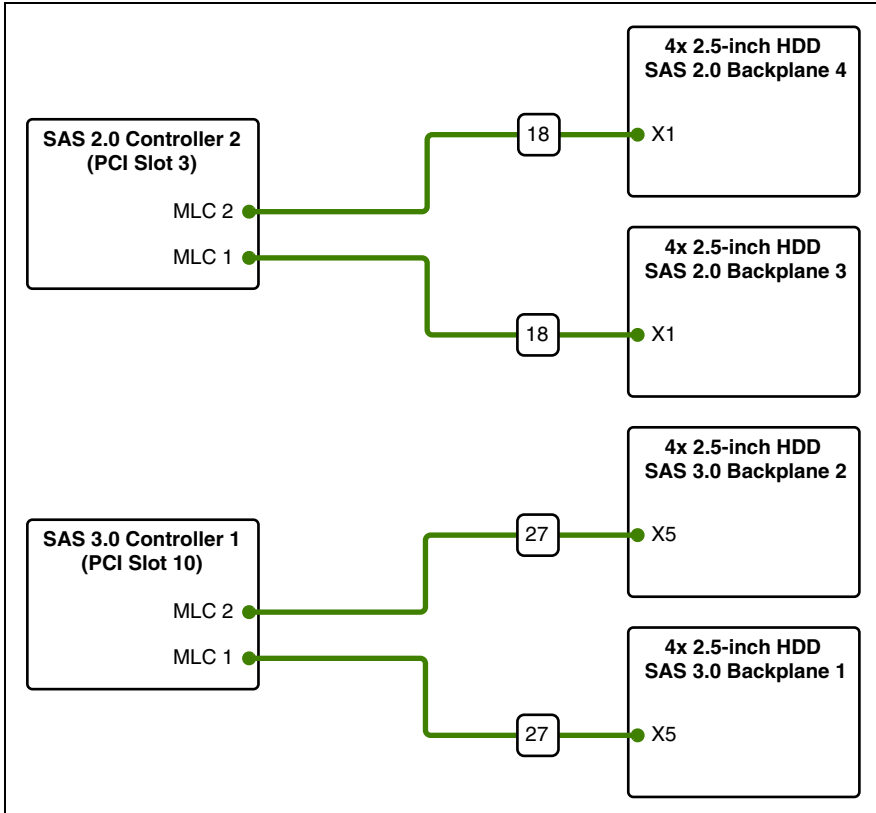


Figure 592: SAS cabling: 16x 2.5" HDDs / SSDs, 1x SAS 3.0 / 1x SAS 2.0 controller

16.2.17 SAS 2.0 cabling with 16x 2.5-inch HDDs / SSDs, one SAS controller and SAS expander board

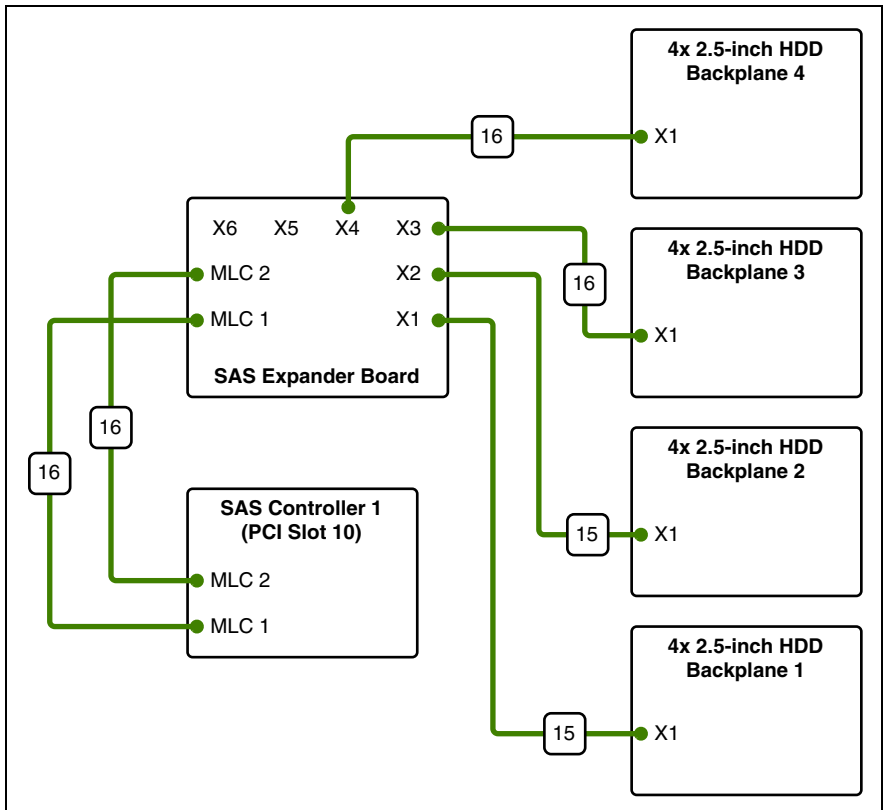


Figure 593: SAS cabling: 16x 2.5" HDDs / SSDs, 1x SAS controller, SAS expander board

16.2.18 SAS 2.0 cabling with 24x 2.5-inch HDDs / SSDs, two SAS controllers and SAS expander board

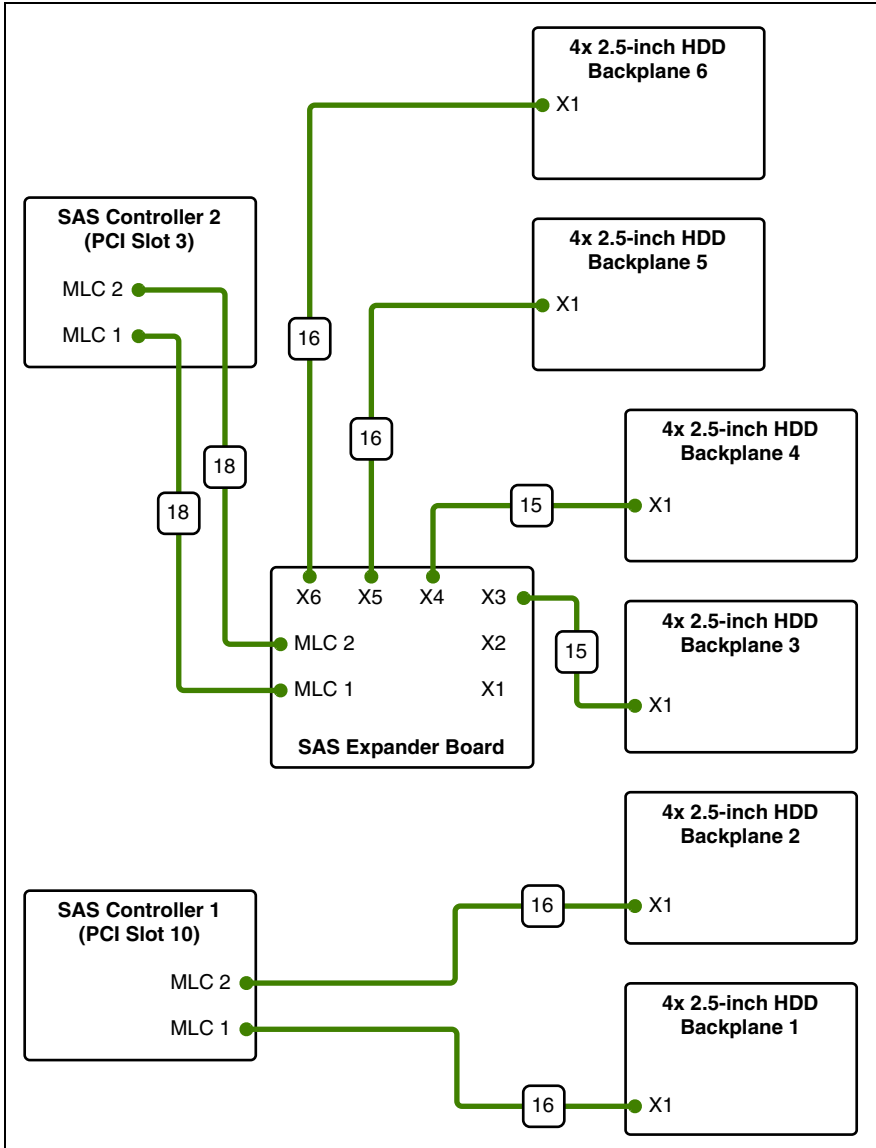


Figure 594: SAS cabling: 24x 2.5" HDDs, 2x SAS 2.0 controllers, SAS expander board

16.2.19 SAS 3.0 / 2.0 cabling with 24x 2.5-inch HDDs / SSDs, two SAS controllers, SAS expander board

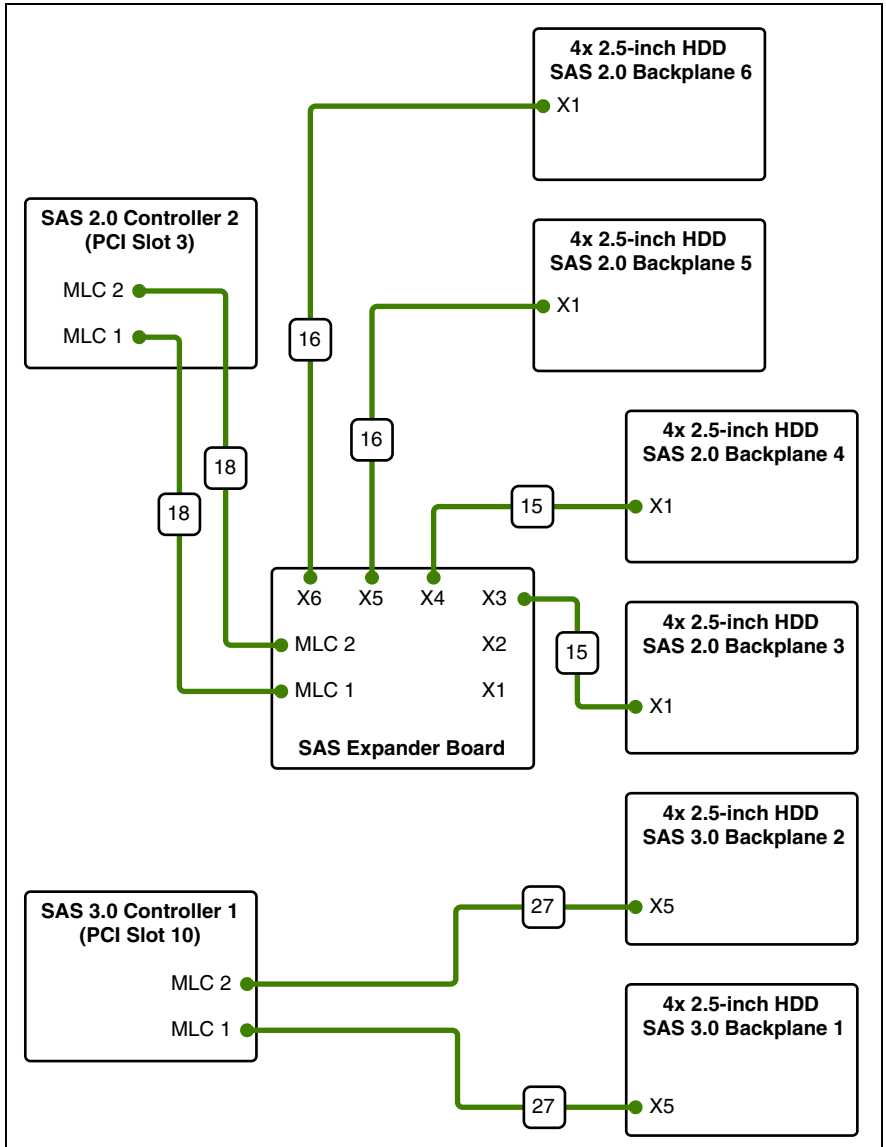


Figure 595: SAS cabling: 24x 2.5" HDDs, 2x SAS 2.0 / 3.0 controllers, SAS expander board

16.2.20 SAS 2.0 cabling with 24x 2.5-inch HDDs / SSDs, one SAS controller and SAS expander board

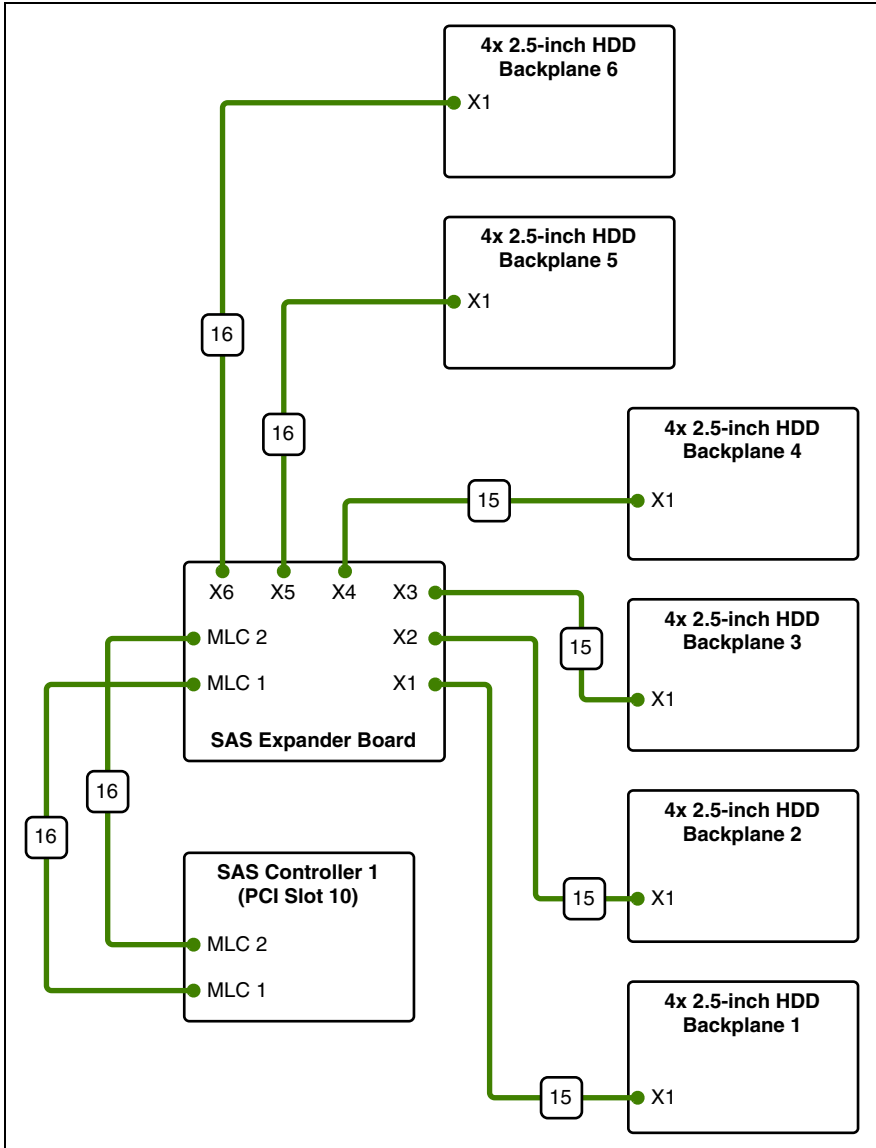


Figure 596: SAS cabling: 24x 2.5" HDDs / SSDs, 1x SAS controller, SAS expander board

16.2.21 Cabling of standard GPGPU / coprocessor cards

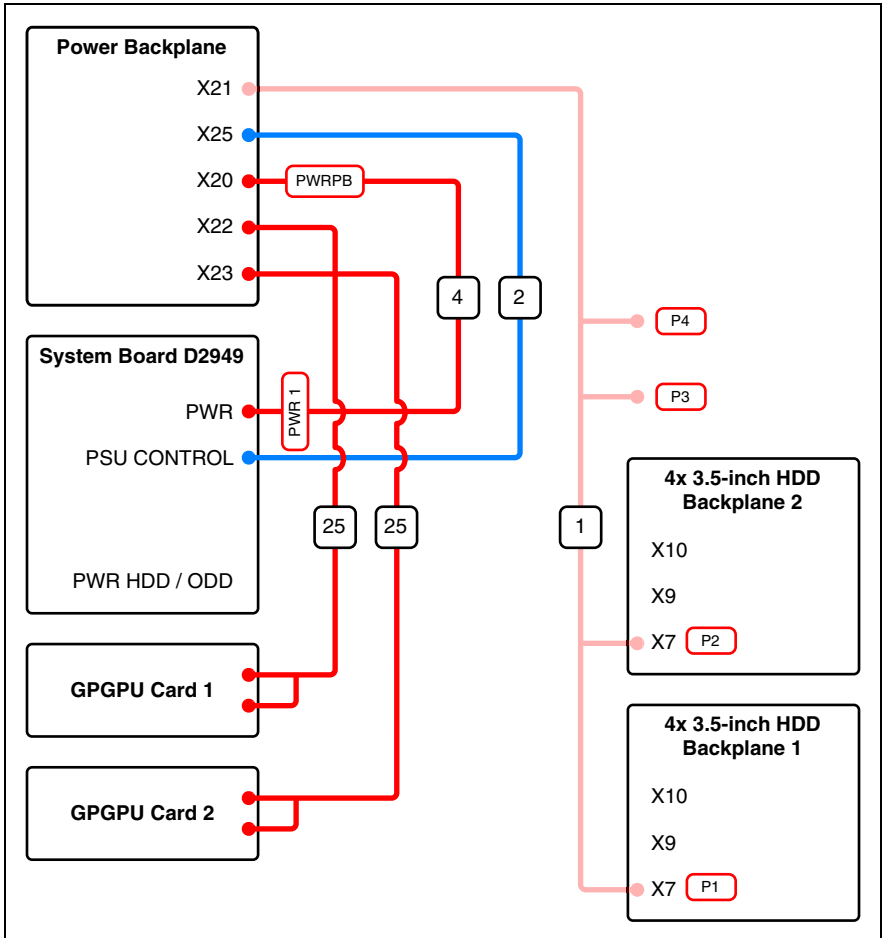


Figure 597: Standard GPGPU / coprocessor card cabling

16.2.22 Cabling of high performance GPGPU / coprocessor cards

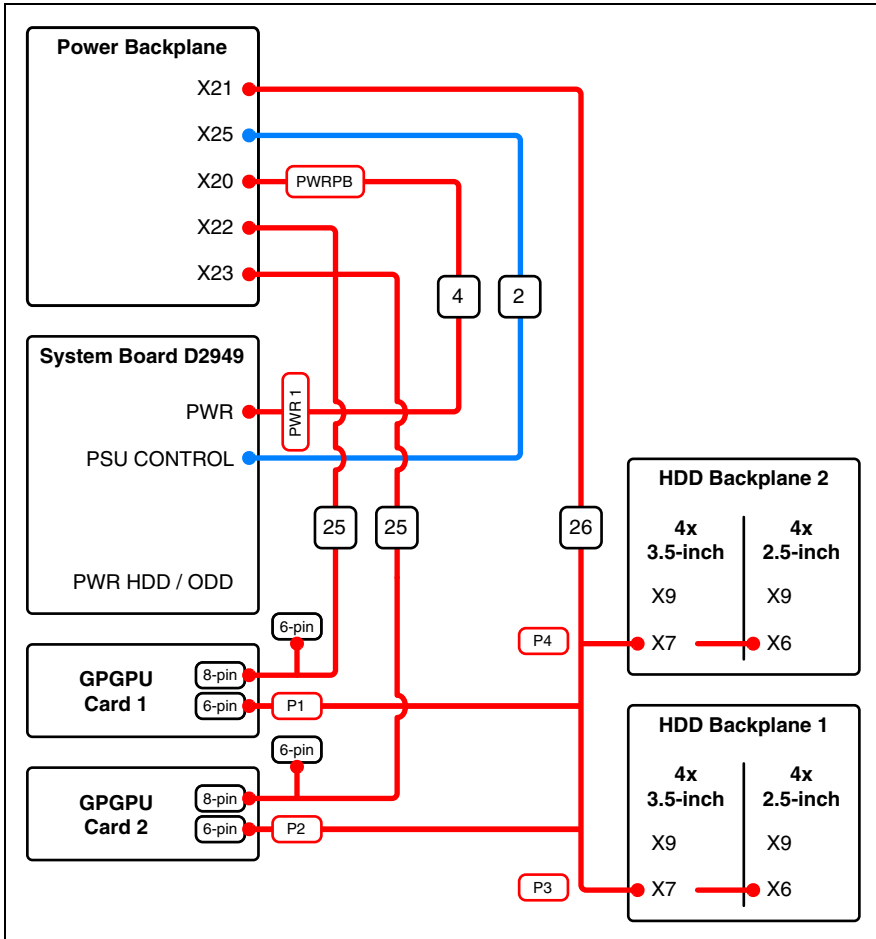


Figure 598: High Performance GPGPU / coprocessor card cabling

16.2.23 SAS 2.0 BBU / FBU cabling

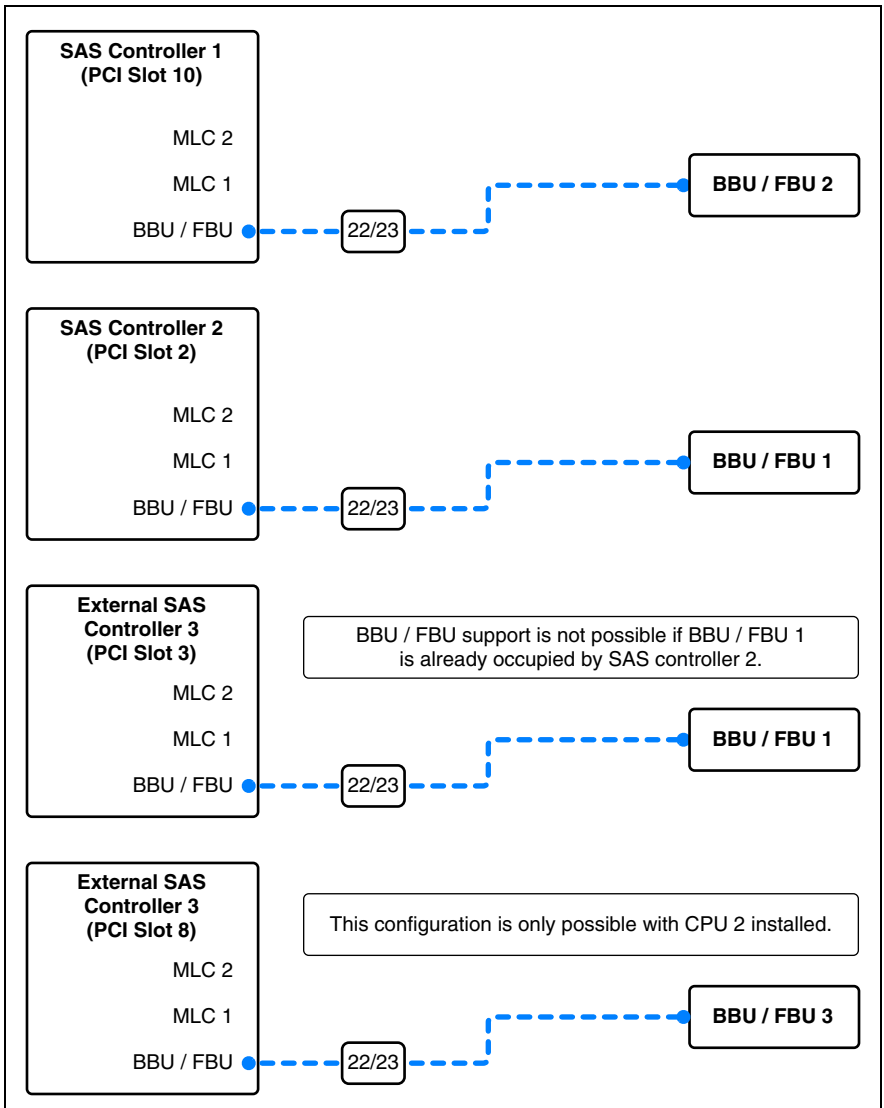


Figure 599: SAS 2.0 BBU / FBU cabling

16.2.24 SAS 3.0 FBU cabling

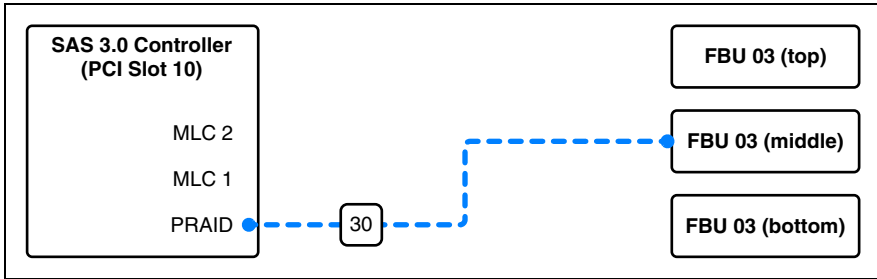


Figure 600: SAS 3.0 FBU cabling

16.2.25 Modular LAN NCSI sideband cabling

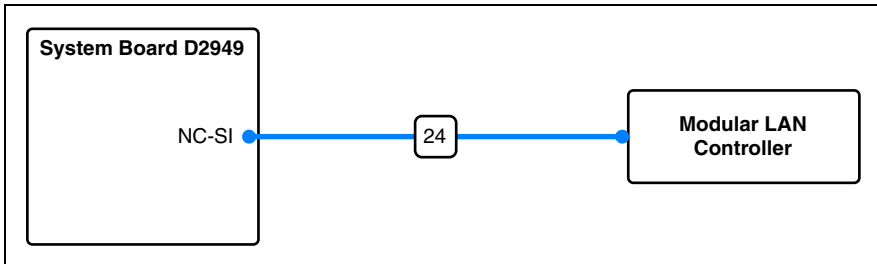


Figure 601: Modular LAN NCSI sideband cabling

16.3 Replacing the intrusion switch cable



Field Replaceable Unit (FRU)



**Average task duration:
10 minutes**

Tools: Phillips PH2 / (+) No. 2 screw driver

16.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 57.](#)
- ▶ ["Shutting down the server" on page 62.](#)
- ▶ ["Disconnecting the server from the mains" on page 63.](#)
- ▶ When working on a rack-mounted server:
["Extending / removing the server from the rack" on page 64](#)
- ▶ Open the side / top cover as described in section ["Opening the server" on page 68.](#)
- ▶ ["Removing the system air duct" on page 81.](#)
- ▶ ["Removing the system fan holder" on page 330.](#)

16.3.2 Removing the intrusion switch cable

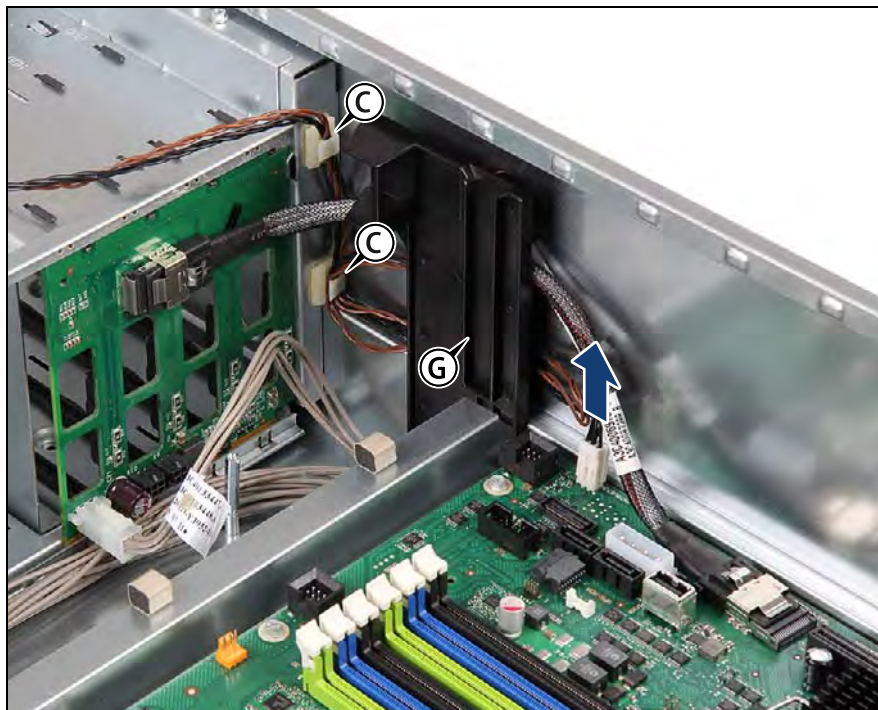


Figure 602: Disconnecting the intrusion switch cable

- ▶ Disconnect the intrusion switch cable from the system board.
- ▶ Remove the intrusion switch cable from the cable guide (G) and the two cable clamps (C) on the HDD cage.

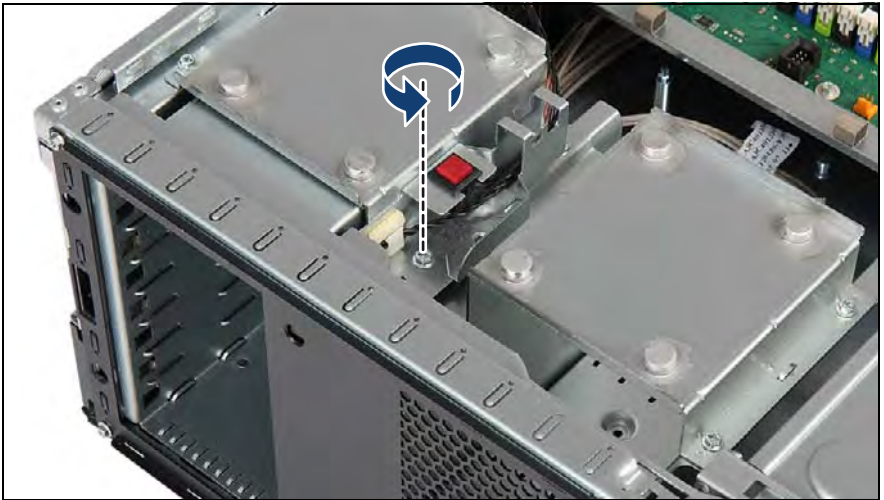


Figure 603: Removing the intrusion switch holder (A)

- ▶ Remove one screw from the intrusion switch holder as shown.

i Replacing the intrusion switch cable is illustrated by the example of the 2.5-inch HDD model. In case of the 3.5-inch HDD model, the procedure is identical, although the HDD bay top cover looks slightly different:

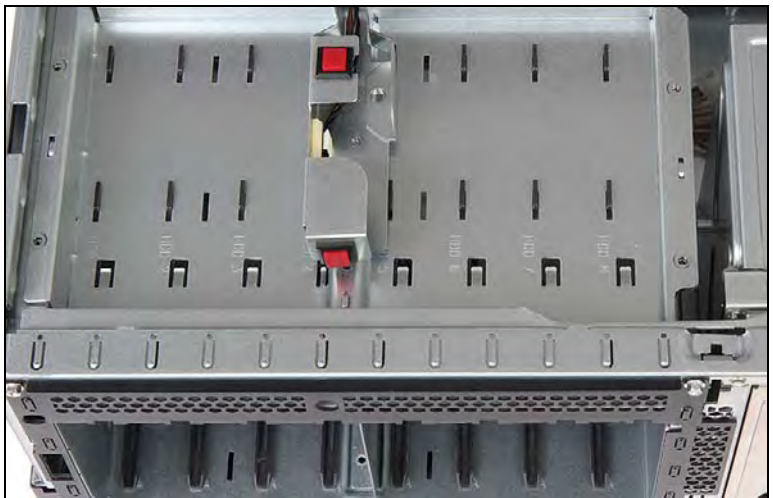


Figure 604: Intrusion switch holder in 3.5-inch HDD configurations

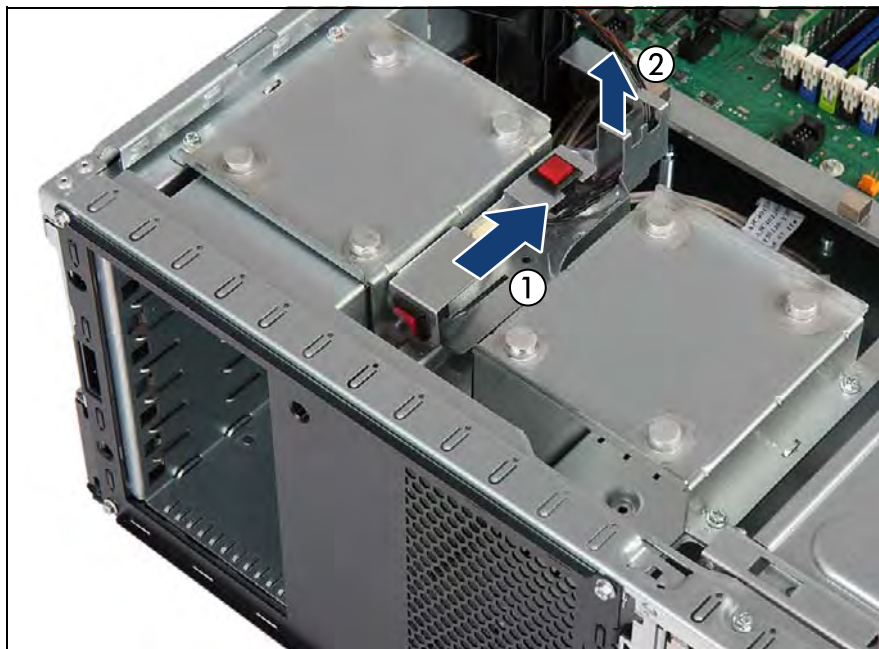


Figure 605: Removing the intrusion switch cable (B)

- ▶ Slide back the intrusion switch holder until it disengages from the HDD bay top cover (1).
- ▶ Remove the defective intrusion switch holder (2).

16.3.3 Installing the intrusion switch cable

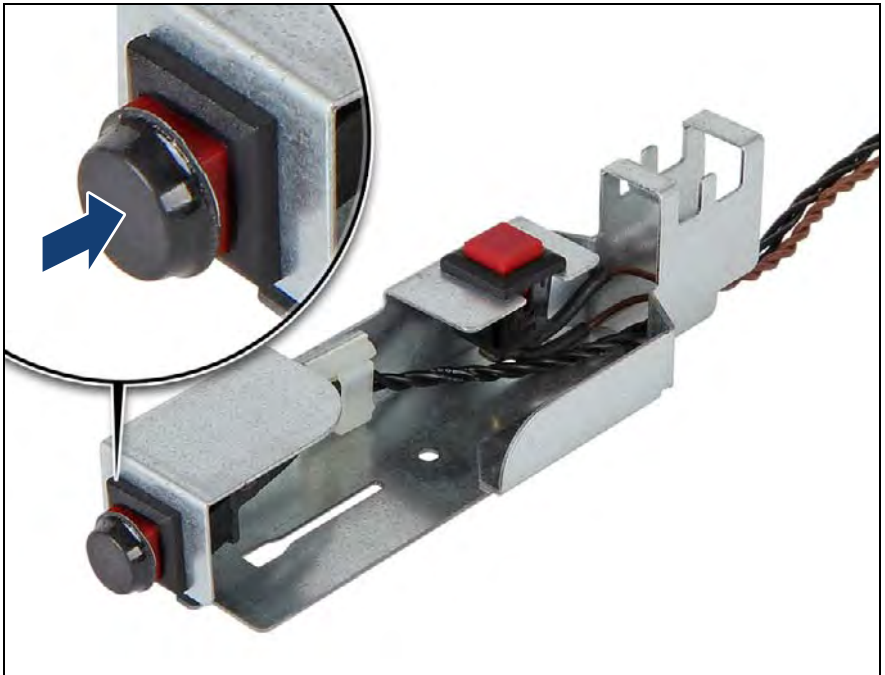


Figure 606: Attaching a rubber bumper to the front intrusion switch

- i** In case of rack server configurations, a rubber bumper needs to be attached to the front intrusion switch as described below. When working on a tower server, please skip this step.
- ▶ Attach a rubber bumper (C26192-Y26-C43) to the front intrusion switch as shown.

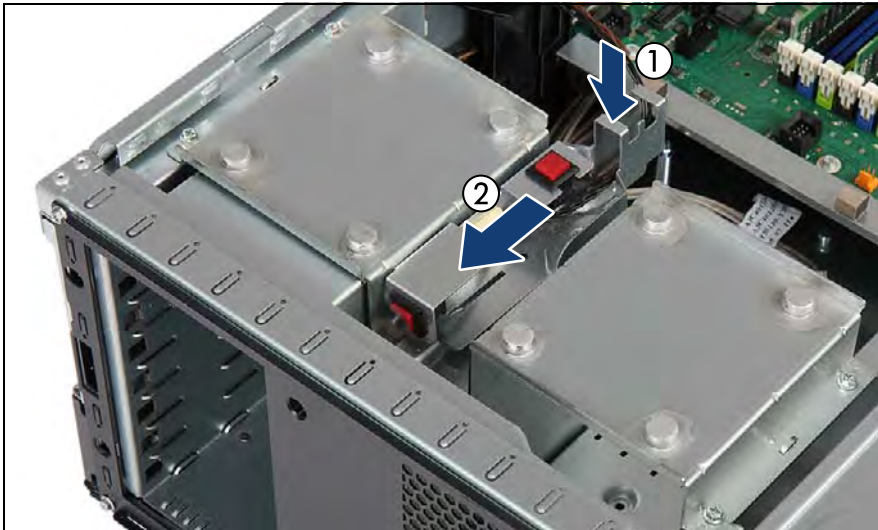


Figure 607: Installing the intrusion switch cable (A)

- ▶ Place the new intrusion switch holder on the HDD bay top cover as shown (1).
- ▶ Slide the intrusion switch holder under the front chassis rim as far as it will go (2).

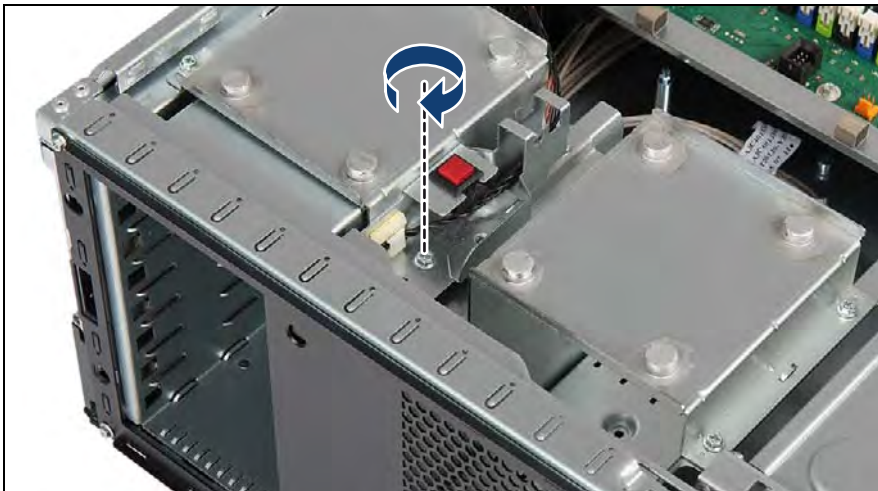


Figure 608: Installing the intrusion switch cable (B)

- ▶ Secure the intrusion switch holder on the HDD bay top cover with one M3 x 4.5 mm screw.

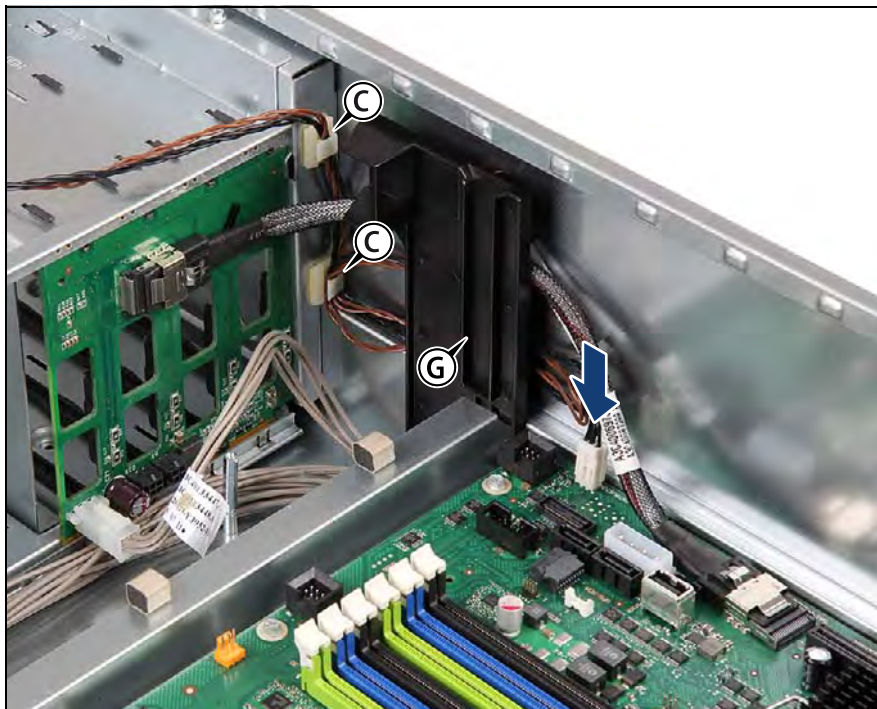


Figure 609: Connecting the intrusion switch cable

- ▶ Run the intrusion switch cable through the cable clamps (C) on the HDD cage and the cable guide (G).
- ▶ Connect the intrusion switch cable to the system board:

Cable (T26139-)	Cabling list no.	from	to	Cabling plan
Intrusion switch cable Y3922-V121	13	Intrusion switch holder	System board connector INTRUSION	16.2.1

16.3.4 Concluding steps

- ▶ ["Installing the system fan holder" on page 331](#)
- ▶ ["Installing the system air duct" on page 83](#)
- ▶ ["Closing the server" on page 98](#)
- ▶ When working on a rack-mounted server:
 - ▶ ["Mounting the server in the rack" on page 115](#)
- ▶ ["Connecting the server to the mains" on page 118](#)

17 Appendix

17.1 Mechanical overview

17.1.1 Server front

2.5-inch HDD / SSD model

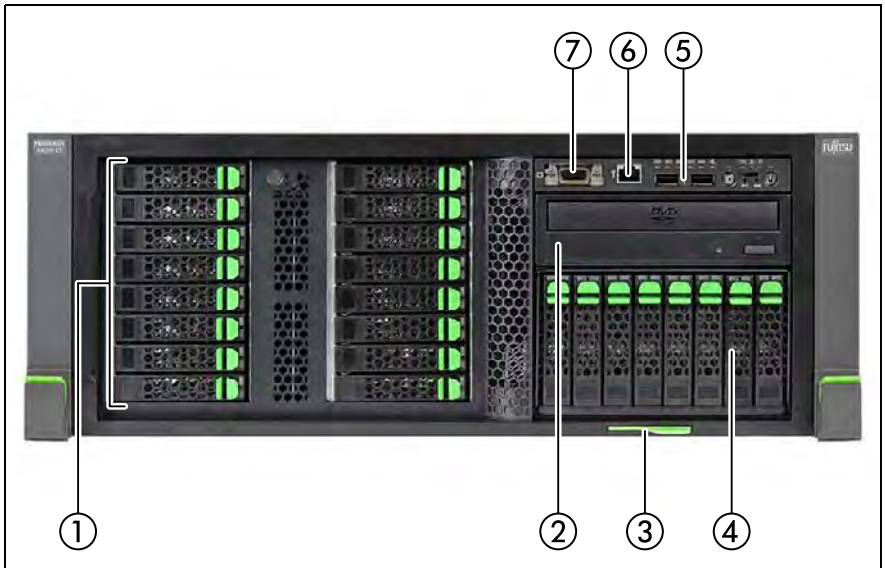


Figure 610: PRIMERGY TX300 S8 / RX350 S8 front - 2.5-inch HDD / SSD model

Pos.	Component	Reference
1	2.5-inch hard disk drives / solid state drives / dummy modules	"8x 2.5-inch HDDs / SSDs (2 SAS backplanes)" on page 189
2	Optical disk drive / 5.25-inch dummy module	"Accessible drive bays" on page 530
3	ID card	"Opening the server" on page 68

Appendix

Pos.	Component	Reference
4	8x 2.5-inch HDD extension box	"8x 2.5-inch HDDs / SSDs (2 SAS backplanes)" on page 189
5	Front panel module: 2 USB connectors	"Replacing the front panel module" on page 601
6	Front panel module: Front Management LAN connector (optional)	"Replacing the front LAN connector and board" on page 630
7	Front panel module: Front VGA connector (optional)	"Replacing the front VGA connector" on page 641

3.5-inch HDD model

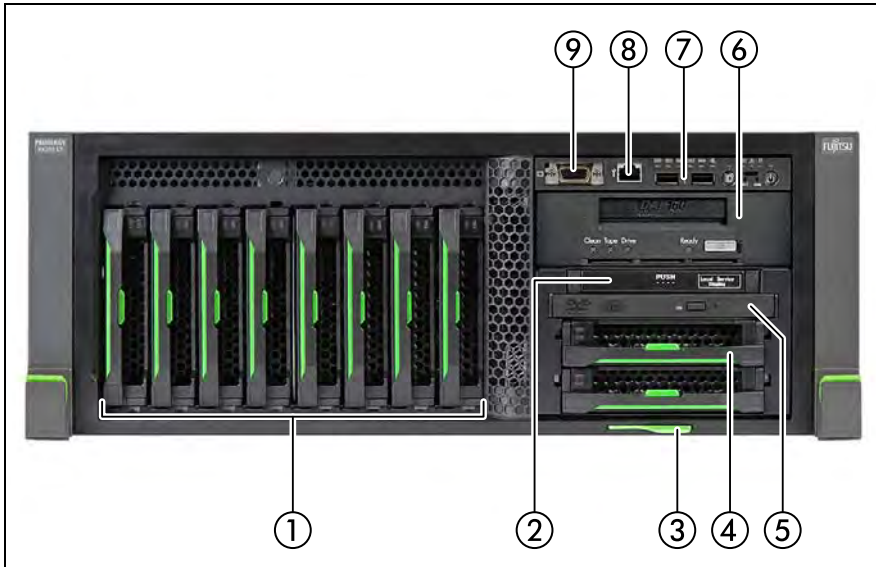


Figure 611: PRIMERGY TX300 S8 / RX350 S8 front - 3.5-inch HDD model

Pos.	Component	Reference
1	3.5-inch hard disk drives / dummy modules	"3.5-inch HDD configurations" on page 241
2	Local service display module (LSD)	"Accessible drive bays" on page 530
3	ID card	"Opening the server" on page 68
4	2x 3.5-inch HDD extension box with LSD and slimline ODD bays	"HDD extension boxes" on page 284
5	Optical disk drive	
6	Backup drive / 5.25-inch dummy module	"Accessible drive bays" on page 530
7	Front panel module: 2 USB connectors	"Replacing the front panel module" on page 601
8	Front panel module: Front Management LAN connector (optional)	"Replacing the front LAN connector and board" on page 630
9	Front panel module: Front VGA connector (optional)	"Replacing the front VGA connector" on page 641

17.1.2 Server rear

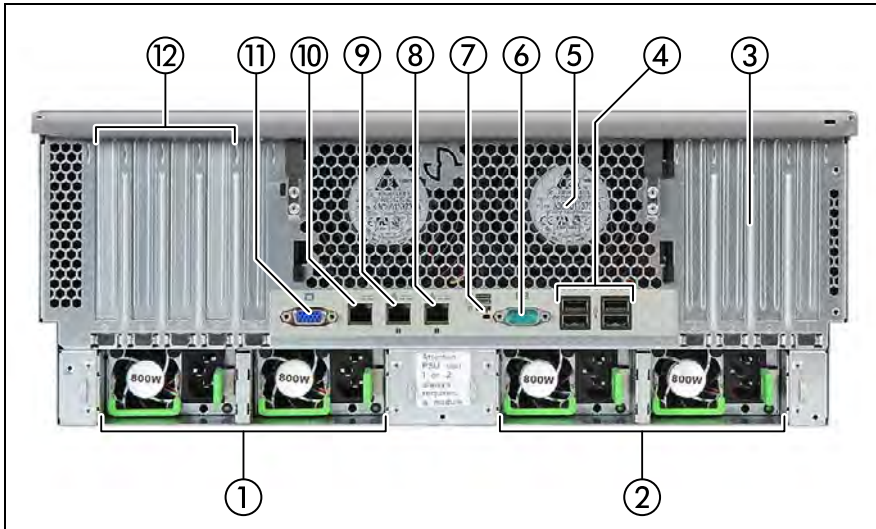


Figure 612: PRIMERGY TX300 S8 / RX350 S8 rear

Pos.	Component	Reference
1	Power supply units 1-2	"Replacing PSU modules" on page 173
2	Power supply units 3-4	
3	Expansion cards (slots 1-4)	"Replacing expansion cards" on page 361
4	USB connectors 1-4	"I/O panel connectors" on page 781
5	Rear fans (fan 5-6)	"Replacing rear fan modules" on page 339
6	Serial connector	"I/O panel connectors" on page 781
7	Global Error / CSS / ID indicators	"I/O panel indicators" on page 782 "Onboard indicators and controls" on page 779

Pos.	Component	Reference
8	Shared LAN connector (LAN 1)	"I/O panel connectors" on page 781 "I/O panel indicators" on page 782 "Replacing the system board" on page 684
9	Standard LAN connectors (LAN 2)	
10	Management LAN connector	
11	Video connector (VGA)	"I/O panel connectors" on page 781
12	Expansion cards (slots 6-9) for GPGPU cards	"Replacing a GPGPU / coprocessor card" on page 424

17.1.3 Server interior

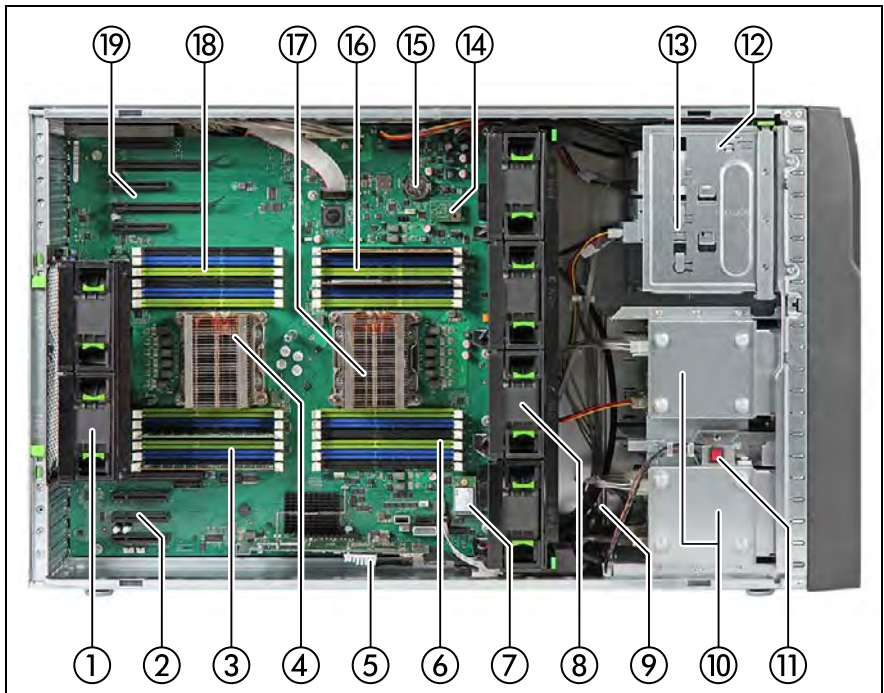


Figure 613: PRIMERGY TX300 S8 / RX350 S8 interior (example: 2.5-inch HDD tower model)

Appendix

Pos.	Component	Reference
1	Optional rear fans (fans 5-6)	"Replacing rear fan modules" on page 339
2	Expansion card slots 1-4	"Replacing expansion cards" on page 361
3	Memory modules (channels E/F)	"Replacing memory modules" on page 482
4	Processor 2 / CPU heat sink	"Installing processors" on page 486
5	Expansion card slots 10 for SAS RAID cards	"Replacing expansion cards" on page 361
6	Memory modules (channels C/D)	"Replacing memory modules" on page 482
7	UFM board	"Replacing the UFM board" on page 656
8	System fans (fans 1-4)	"Replacing system fan modules" on page 324
9	Battery backup units / Flash backup units	"Replacing a BBU" on page 456 "Replacing an FBU" on page 460
10	HDD / SSD drive bays	"Hard disk drives / solid state drives" on page 183
11	Intrusion switches	
12	Front panel module bay	"Replacing the front panel module" on page 601
13	Accessible drive bay	"Accessible drives" on page 529
14	TPM board	"Replacing the TPM board" on page 671
15	CMOS battery	"Replacing the CMOS battery" on page 645
16	Memory modules (channels A/B)	"Replacing memory modules" on page 482
17	Processor 1/ CPU heat sink	"Installing processors" on page 486
18	Memory modules (channels G/H)	"Replacing memory modules" on page 482
19	Expansion card slots 5-8 for GPGPU / coprocessor cards	"Replacing a GPGPU / coprocessor card" on page 424

17.2 Configuration tables

17.2.1 Hard disk drives / solid state drives mounting order

Please refer to chapter ["Hard disk drives / solid state drives"](#) on page 183.

17.2.2 Memory board configuration table

Please refer to chapter ["Main memory"](#) on page 467.

17.2.3 Expansion card configuration table

Please refer to chapter ["Expansion cards and backup units"](#) on page 345.

17.3 Connectors and indicators

17.3.1 Connectors and indicators on the system board

17.3.1.1 Onboard connectors

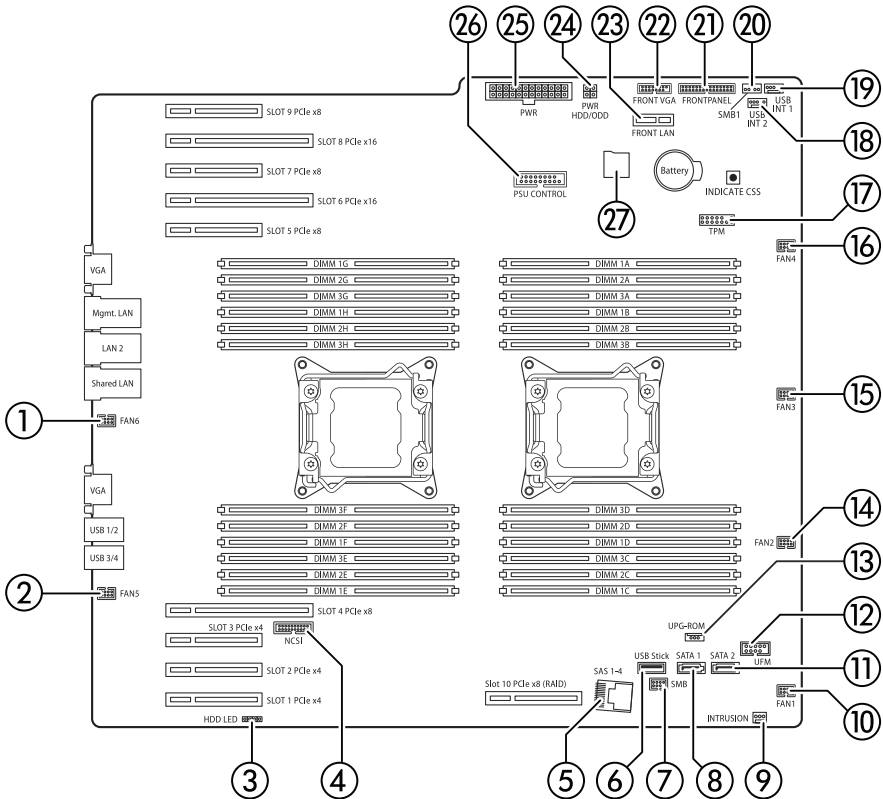


Figure 614: Internal connectors of system board D2949

No.	Print	Description
1	FAN6	Fan connectors for hot-pluggable rear fans
2	FAN5	
3	HDD LED	(not used)

No.	Print	Description
4	NC-SI	NCSI connector for Modular LAN cards
5	SAS 1-4	Onboard SAS connector (needs to be enabled with onboard SAS enabling key)
6	USB STICK	(not used)
7	SMB 4	(not used)
8	SATA 1	SATA connector for accessible SATA drives
9	INTRUSION	Intrusion switch cable connector
10	FAN1	Fan connector for hot-pluggable system fan
11	SATA 2	SATA connector for accessible SATA drives
12	UFM	Connector for USB Flash Module (UFM)
13	UPG-ROM	Connector for onboard SAS enabling key (required to enable onboard SAS connector SAS 1-4)
14	FAN2	Fan connectors for hot-pluggable system fans
15	FAN3	
16	FAN4	
17	TPM	Connector for Trusted Platform Module (TPM)
18	USB INT 2	USB 2.0 connectors for USB backup drives
19	USB INT 1	
20	SMB 1	Connector for Local Service Display (LSD)
21	FRONTPANEL	Connector for front panel and front USB connectors
22	FRONT VGA	Connector for optional front VGA connector
23	FRONT LAN	Slot for front LAN connector board
24	PWR HDD/ODD	Power connector for HDD backplane or accessible drives
25	PWR	System power connector
26	PSU CONTROL	Management connector for PSU modules
27	microSD	iRMC microSD card slot

17.3.1.2 Onboard settings

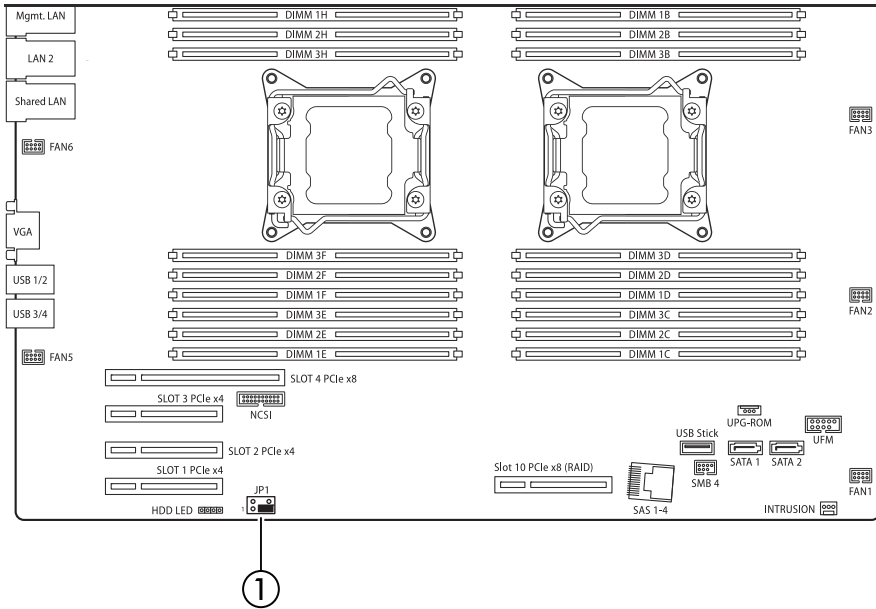


Figure 615: Onboard settings on system board D2949

Setting	Status	Description
1	Jumper settings	<p>Default: Password delete and Recovery BIOS options disabled</p>
		<p>RCVR: Recovery BIOS enabled</p>
		<p>PWD SKIP: Password delete enabled</p> <p>This jumper setting will permanently delete the current BIOS password and apply default BIOS settings.</p>

17.3.1.3 Onboard indicators and controls

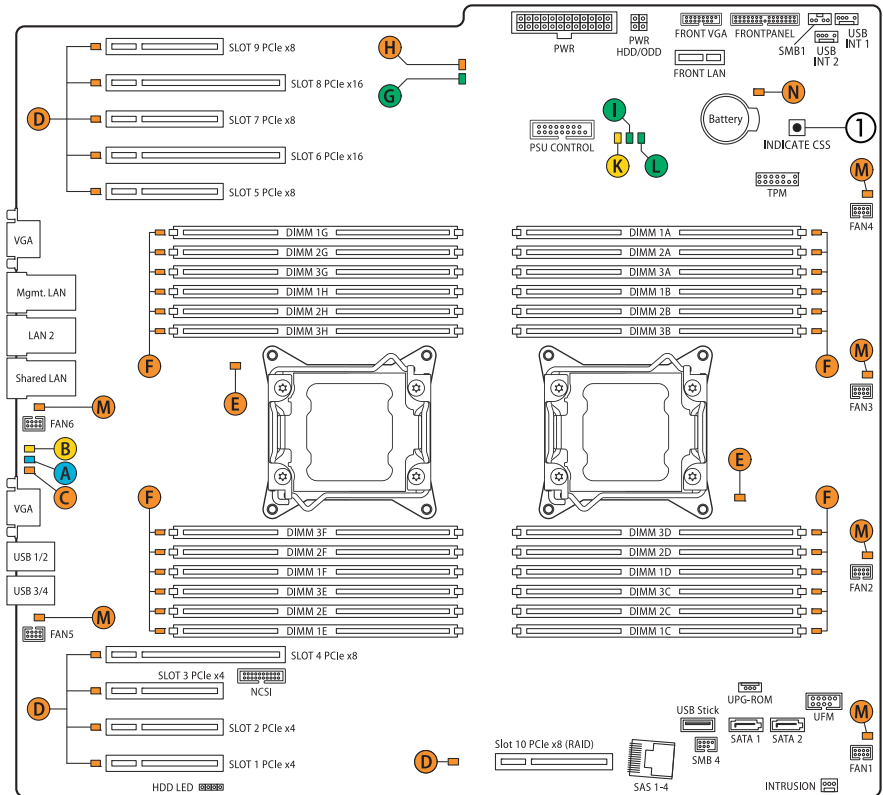


Figure 616: Onboard indicators and Indicate CSS button

No.	Description
1	Indicate CSS button

Using the Indicate CSS button

- ▶ Shut down and power off the server.
- ▶ Disconnect the AC power cords from the system.



It is mandatory to disconnect power cords in order to use the Indicate CSS functionality.

Appendix

- ▶ Remove the air duct as described in section ["Removing the system air duct" on page 81](#).
- ▶ Press the Indicate CSS button (1) to highlight defective components.

Component LEDs



LEDs A, B and C are visible from the outside on the server rear. All other LEDs are only visible if the server cover has been opened.

Indicator	Status	Description
A	ID indicator	blue on Server has been highlighted using ServerView Operations Manager, the iRMC web frontend, or the ID button on the front panel for easy identification
B	CSS (Customer Self Service)	off No critical event (CSS component)
		yellow on Prefailure detected (CSS component)
		yellow flashing CSS component failure
C	GEL (Global Error LED)	off No critical event (non CSS component)
		orange on Prefailure detected (non CSS component)
		orange flashing Non-CSS component failure Possible reasons: <ul style="list-style-type: none">– Sensors report overheating– Sensor is defective– CPU error– Software reports an error
D	PCI card	off PCI card operational
		orange on PCI card failure
E	CPUs	off CPUs operational
		orange on CPU failure
F	Memory	off Memory module operational
		orange on Memory module failure
G	PSU	green on PSUs operational
H		orange on PSU failure

Indicator		Status	Description
I	Main power	green on	Main voltages are within range
K	Standby power	yellow on	Standby voltages are within range
L	iRMC	green flashing	iRMC S4 management controller is operational
M	System fans	off	Fan running
		orange on	Fan failure
N	Battery	orange on	Battery failure

17.3.1.4 I/O panel connectors

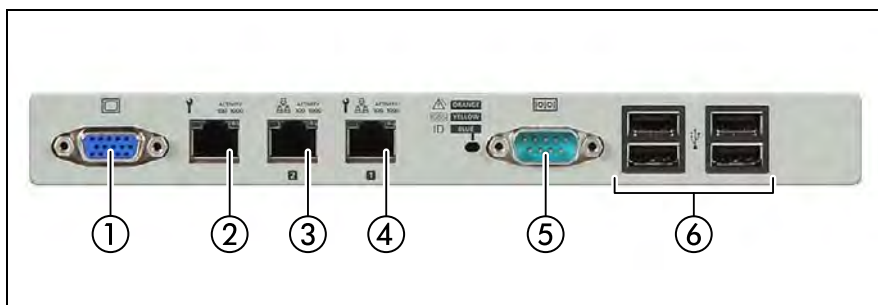


Figure 617: I/O panel connectors

No.	Description
1	Video connector (VGA)
2	Management LAN connector, for iRMC S4 server management functionality
3	Standard LAN connector
4	Shared LAN connector
5	Serial connector COM1
6	USB connectors

Depending on BIOS settings, the shared LAN connector may also be used as a management LAN connector. For further information, please refer to the "D2949 BIOS Setup Utility for PRIMERGY TX300 S8 / RX350 S8" manual.

Appendix

The serial connector COM1 can be used as default interface or to communicate with the iRMC S4.

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.

17.3.1.5 I/O panel indicators

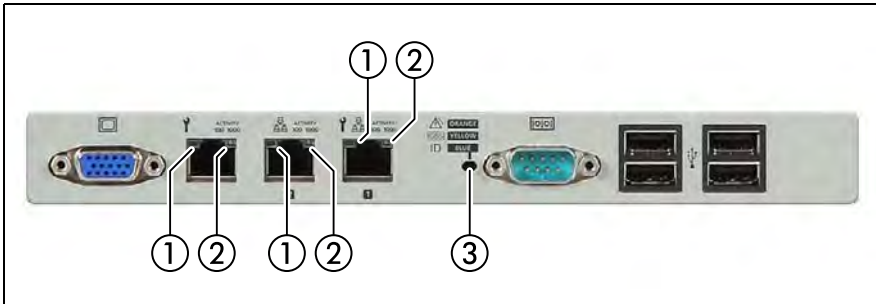


Figure 618: I/O panel indicators

Indicator	Status	Description	
1	LAN link / transfer indicator	green on	LAN connection established
		off	No LAN connection
		green flashing	Data transfer in progress
2	LAN speed indicator	yellow on	Traffic a transfer rate of 1 Gbit/s
		green on	Traffic a transfer rate of 100 Mbit/s
		off	Traffic a transfer rate of 10 Mbit/s

Indicator		Status	Description
3	Global error indicator	off	No critical event (non-CSS component)
		orange on	Prefailure detected (non-CSS component)
		orange flashing	Non-CSS component failure
	CSS indicator	off	No critical event (CSS component)
		yellow on	Prefailure detected (CSS component)
		yellow flashing	CSS component failure
ID indicator	blue on	Server has been highlighted using ServerView Operations Manager, the iRMC web frontend, or the ID button on the front panel for easy identification	

iRMC-related status signals

ID indicator	Global error indicator	Description
blue flashing	off	A remote connection has been established. Local VGA output has been disabled during the remote session.
blue flashing	orange flashing	An emergency flash of the iRMC firmware is in progress.



Note on the onboard LAN controller

The system board is equipped with a Gigabit Ethernet Controller that supports transfer rates of 10 Mbit/s, 100 Mbit/s and 1 Gbit/s.

The separate management LAN connector is used as a management interface (iRMC S4) and is prepared for operation with the Remote Management. Optionally LAN connector 1 can also be used for iRMC S4 server management.

17.3.1.6 PSU indicator

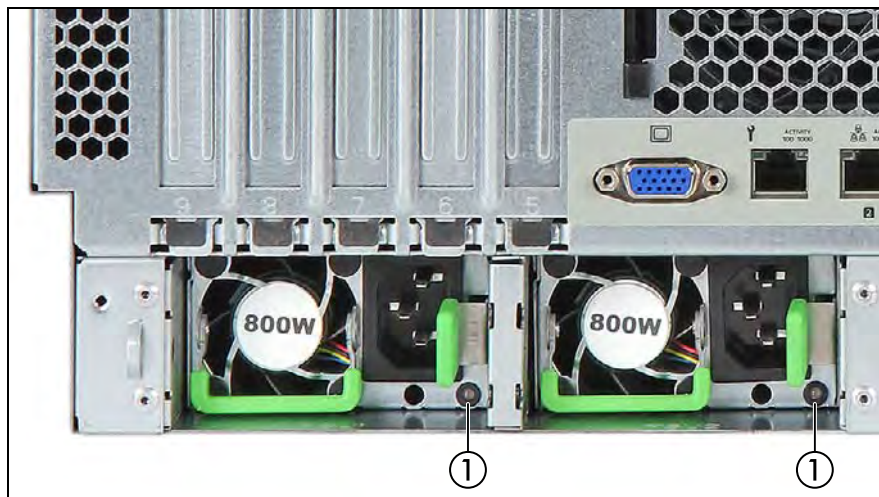


Figure 619: PSU indicator

Indicator		Status	Description
1	PSU operating status	green on	Server is switched on and functioning properly
		green flashing	Server is switched off, main voltage is present (Standby mode)
		orange on	PSU failure (over / under voltage, over temperature or fan failure)
		orange flashing	Overload warning

17.3.2 Connectors and indicators on the front panel

17.3.2.1 Front panel connectors

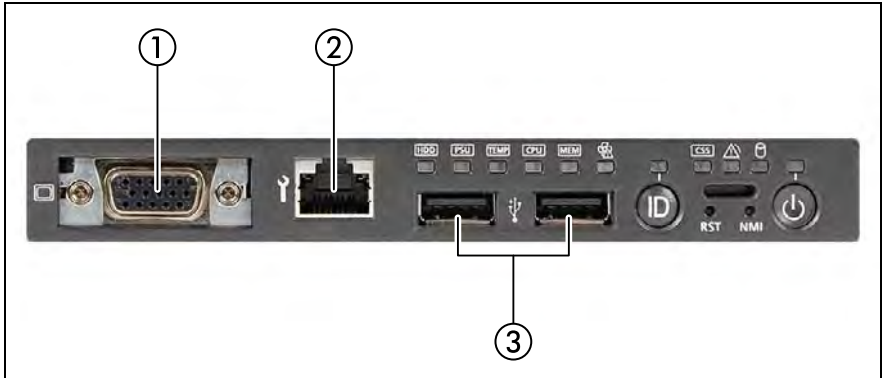


Figure 620: Front panel connectors

Pos.	Component	Reference
1	Video connector (VGA) (optional)	"Replacing the front VGA connector" on page 641
2	Front LAN connector (optional)	"Replacing the front LAN connector and board" on page 630
3	USB connectors (x2)	"Replacing the front panel module" on page 601

17.3.2.2 Front panel controls and indicators

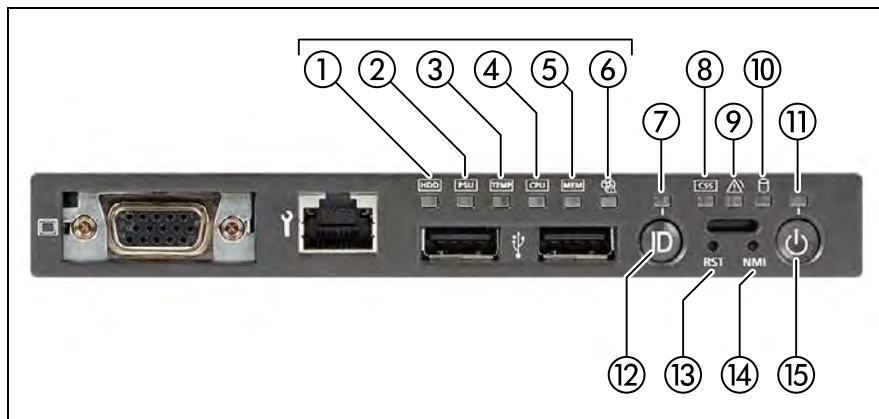


Figure 621: Front panel controls and indicators

Local diagnostic indicators




Pos.	Indicator	Status	Description
1	HDD / SSD error indicator	orange on	HDD / SSD, SAS / SATA backplane or RAID controller failure detected
2	PSU error indicator	orange on	Hot-plug PSU module failure detected i Only available in redundant PSU configurations.
3	Temperature error indicator	orange on	Operating temperature levels above permitted limits
4	CPU error indicator	orange on	CPU prefailure event detected
5	Memory error indicator	orange on	Memory module prefailure or failure event detected
6	Fan error indicator	orange on	Fan prefailure or failure event detected



In addition to local diagnostic indicators, CSS or Global Error LEDs indicate, if the defective component is a customer replaceable unit or if a service technician needs to be dispatched to replace the part.

Status indicators




Pos.	Indicator	Status	Description
7	ID indicator	blue on	Server has been highlighted using ServerView Operations Manager, the iRMC web frontend, or the ID button on the front panel for easy identification
8	CSS indicator	off	No critical event (CSS component)
		yellow on	Prefailure detected (CSS component)
		yellow flashing	CSS component failure
9	Global error indicator	off	No critical event (non CSS component)
		orange on	Prefailure detected (non CSS component)
		orange flashing	Non-CSS component failure
10	HDD / SSD activity indicator	green flashing	Data access in progress

Pos.	Indicator	Status	Description	
11	Power-on indicator	green on	Server is switched on and running.	
		orange on	Server is switched off, but mains voltage is present (standby mode).  After connecting the server to the mains, it will take about 60 seconds until the server will switch into standby mode.	
		With firmware version 7.3.x, two new operating conditions are indicated: iRMC booting and power-on delay.		
		yellow / orange flashing	iRMC booting  After connecting the server to the mains (power cord plugged in / after mains failure) the iRMC will boot. The system cannot be switched on, until the iRMC boot sequence is complete. During this time, the power-on indicator will flash yellow / orange.	
		yellow on	Power-on delay  After shutting down, the server cannot be switched on again right away. If the On / Off button is pressed right after shutting down the server, the power-on indicator will light up yellow until the delay period ends and the server will boot.	

iRMC-related status signals

ID indicator	Global error indicator	Description
blue flashing	off	A remote connection has been established. Local VGA output has been disabled during the remote session.
blue flashing	orange flashing	An emergency flash of the iRMC firmware is in progress.

Buttons

Pos.	Button	Function
12	ID button	This button highlights the ID indicator on the front and I/O panels for easy server identification.
13	Reset button	<p>This button is used to reboot the system. It can be pressed using the end of a paper clip.</p> <p> CAUTION! Risk of data loss!</p>
14	NMI button	<p>This button is used to troubleshoot software and device driver errors. It can be pressed using the end of a paper clip.</p> <p> CAUTION! Use this button only if directed to do so by qualified certified maintenance personnel!</p>
15	On / Off button	<p>This button is used to switch the server on or off.</p> <p> If the system is running an ACPI-compliant operating system, the pressing the On / Off button will perform a graceful shutdown.</p>

17.4 Minimum startup configuration



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 and reference
System board	no TPM, UFM or expansion cards installed
1 CPU with CPU heat sink	installed in socket CPU 1, see section "Installing processors" on page 486
1 memory module	installed in DIMM slot 1A, see section "Memory sequence" on page 468
Front panel module	without connected front LAN module
1 Power supply module	installed in PSU slot 1, see section "Installing PSU modules" on page 166

Table 7: Minimum startup configuration - components

Cable	Notes and reference
Front panel cable	see section "Replacing the front panel module" on page 601
Power cable	see section "Replacing the power backplane" on page 175

Table 8: Minimum startup configuration - cables

- ▶ Shut down the server as described in section ["Shutting down the server" on page 62](#).
- ▶ Remove the AC power cords from the PSU cable brackets and disconnect them from the system as described in section ["Disconnecting the server from the mains" on page 63](#).

- ▶ Take the system down to its minimum startup configuration.
- ▶ Reconnect the AC power cords to the power supply units and secure them with PSU cable brackets as described in section "[Connecting the server to the mains](#)" on page 118.
- ▶ Connect a keyboard, mouse and display to the server.
- ▶ Switch on the server as described in section "[Switching on the server](#)" on page 123.



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!

