

FUJITSU Server PRIMERGY TX1330 M4

Upgrade and Maintenance Manual

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

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Documentation creation according to DIN EN ISO 9001:2015

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 9001:2015.

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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 that these safety notes are understood before using the product. Keep this manual and the "Safety Notes and Regulations" manual 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 printed circuit board assemblies of the product 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, the use of an 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 Japan:
About SATA HDDs

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

For more information on the usage and operation conditions of each available type of HDD, see the following internet address:

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

Only for Japan:

Shielded LAN cables should be used in this product.

Version history

Issue number	Reason for update
1.0 / November 2018	Initial release

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Contents

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 33).



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 29.

1.1 Notational conventions

The following notational conventions are used in this manual:

Text in bold	Indicates references to names of interface elements.
Text in monospace	Indicates commands and 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 section "Classification of procedures" on page 29 .
	Indicates the average task duration, see section "Average task duration" on page 32 .

2 Before you start

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

- ▶ Carefully read the safety instructions in chapter "[Important information](#)" on page 37.
- ▶ Make sure that all necessary manuals are available, see the documentation overview in section "[Documents you need at hand](#)" on page 33. Print the PDF files if required.
- ▶ Make yourself familiar with the procedure categories introduced in section "[Classification of procedures](#)" on page 29.
- ▶ Ensure that all required tools are available according to section "[Tools you need at hand](#)" on page 33.

Advanced Thermal Design (ATD)

The ATD option allows you to operate the system with a wider temperature range either of 5 °C to 40 °C or 5 °C to 45 °C, depending on your system and configuration.



This option can only be ordered from the manufacturer and is indicated by the respective logo on the identification rating plate.



CAUTION

In a system that is configured with ATD, only certain components which support the respectively increased higher operating temperature range may be installed and used. For applicable restrictions, see the official configurator tool.

Installing optional components

The operating manual of your server gives an introduction to server features and provides an overview of available hardware options.

Use the Fujitsu ServerView Suite management software and the iRMC web interface to prepare hardware expansions. ServerView Suite documentation is available online at <http://manuals.ts.fujitsu.com>.

For Japan:

<http://www.fujitsu.com/jp/products/computing/servers/primergy/manual/>

Before you start

Please see the following ServerView Suite topics:

- Operation
- Virtualization
- Maintenance
- Out-Of-Band Management



For the latest information on hardware options, see the hardware configurator of your server, available online at the following address:
http://ts.fujitsu.com/products/standard_servers/index.htm

For Japan:

<http://www.fujitsu.com/jp/products/computing/servers/primergy/>

Please contact your local Fujitsu customer service partner for details on how to order expansion kits or spare parts.

Replacing a defective component

The Global Error indicator on the front of the server reports defective hardware components that need to be replaced. For more information on the controls and indicators of your server, see the operating manual of your server and section "[Connectors and indicators on the system board](#)" on page 455.

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 more information, see section "[Using diagnostics information](#)" on page 51 and section "[Indicators on the front panel](#)" on page 459.

If the defective component is a customer replaceable unit included in the CSS concept (Customer Self Service), the CSS indicator on the server front will light up.

It is recommended to prepare local maintenance tasks using remote diagnostics procedures, see 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 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.

For Japan:

<http://www.fujitsu.com/jp/products/computing/servers/primergy/support/epair.html>

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 PSUs
- 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).



For Japan, customer is only allowed to upgrade. For upgrade units as customer replaceable, see:

<http://www.fujitsu.com/jp/products/computing/servers/primergy/>



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

- Accessible Drives
- Expansion cards
- Flash backup units (FBU)
- Memory modules
- iRMC microSD card
- M.2 SSDs
- Dual microSD 64GB Enterprise

Components that are handled solely as Repair Units

- CMOS battery
- Non hot-plug fans
- Non hot-plug HDDs

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

- CPU (replacement)
- SAS/SATA backplanes
- Power distribution board
- Front panel module
- System board
- Standard PSU
- Trusted Platform Module (TPM)



Please ask your local Fujitsu service center for more information.

2.2 Average task duration



Hardware: 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 the following table 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. For software tasks necessary before maintenance, see section " Starting the maintenance task " on page 97.
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.

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 safe place for future reference.
- Unless stated otherwise, all manuals are available online at: <http://manuals.ts.fujitsu.com> under **x86 Servers**.

For Japan:

<http://www.fujitsu.com/jp/products/computing/servers/primergy/manual/>

Document	Description
"Safety Notes and Regulations" manual "安全上のご注意" for Japan	Important safety information, available online, or as a printed copy
"FUJITSU Server PRIMERGY TX1330 M4 Operating Manual"	Information how to install, set up and operate your server, available online
"FUJITSU Server PRIMERGY TX1330 M4 Upgrade and Maintenance Manual"	Instructions for upgrading the server configuration or replacing defective hardware, available online
"D3673 BIOS Setup Utility for FUJITSU Server PRIMERGY TX1330 M4 Reference Manual"	Information on configurable BIOS options and parameters, available online
System foil	Label inside the top cover outlining connectors, indicators and jumper

Table 2: Documentation overview

Before you start

Document	Description
ID card	<p>Various system information, such as the product name, serial number, order number, MAC addresses and DNS name (for Japan, only the product name and the serial number)</p> <p>The location of the ID card can be found in the overview of the server.</p>
Software documentation	<ul style="list-style-type: none"> – "ServerView Suite Local Service Concept (LSC)" user guide – "ServerView Operations Manager - Server Management" user guide – "iRMC S5 - Concepts and Interfaces" user guide – "iRMC S5 - Configuration and Maintenance" user guide – "iRMC S5 - Web Interface" user guide – "ServerView embedded Lifecycle Management (eLCM)" user guide
Glossary	Contains abbreviations and explanations, available online
"Warranty" manual " 保証書 " for Japan	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 at
"Service Desk" leaflet " サポート & サービス " for Japan	<p>http://ts.fujitsu.com/recycling, or as a printed copy</p> <p>Not applicable in Japan and other countries that have different regulations for recycling</p>
Additional documentation	<p>RAID documentation, available online at http://manuals.ts.fujitsu.com under x86 Servers - Expansion Cards - Storage Adapters</p> <p>For Japan: http://www.fujitsu.com/jp/products/computing/servers/primergy/manual/</p>

Table 2: Documentation overview

Document	Description
Third party documentation	<ul style="list-style-type: none">– Operating system documentation, online help– Peripherals documentation

Table 2: Documentation overview

3 Important information



Depending on your server or the installed options some information is not valid for your server.



CAUTION!

Before installing and starting up a server, 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 server and endanger the data base.

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 server 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 server that do not relate to CSS failures shall be performed by service personnel. Please note that unauthorized interference with the server 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.
- Only valid for non hot-plug components
Before installing/removing internal components 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 server, observe the instructions on environmental conditions for your server.
- If the server is brought in from a cold environment, condensation may form both inside and on the outside of the server.

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

- Only transport the server in its original packaging or in packaging that protects it from impacts and jolts.
In Japan and APAC, transporting the server in its original packaging does not apply.

Installation and operation

- This server should not be operated in ambient temperatures above 35 °C. For servers with Advanced Thermal Design the ambient temperature can increase to 40 °C or 45 °C.
- If the server 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 server automatically adjusts itself to a mains voltage, see the type label of your server. Ensure that the local mains voltage lies within these limits.
- This server must only be connected to properly grounded power outlets or connected to the grounded rack internal power distribution server with tested and approved power cords.
- Ensure that the server is connected to a properly grounded power outlet close to the server.
- Ensure that the power sockets on the server and the properly grounded power outlets are easily accessible.
- The On/Off button or the main power switch (if present) does not isolate the server from the mains power supply. In case of repair or servicing disconnect the server completely from the mains power supply, unplug all power plugs from the properly grounded power outlets.

- Always connect the server and the attached peripheral devices 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.

- The adequately shielded data cables must be used.

All data and signal cables must have sufficient shielding. The use of cable type S/FTP Cat5 or higher is recommended.

Use of unshielded or badly shielded cables may lead to increased emission of interference and/or reduced fault-tolerance of the device.

- 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 (ensure that no-one can trip over them) and that they cannot be damaged. When connecting the server, see the relevant instructions in this manual.
- Never connect or disconnect data transmission lines during a storm (risk of lightning hazard).
- Ensure 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 server administrator or your customer service team. Only disconnect the server from the mains power supply if there is no risk of harming yourself.
- Proper operation of the server (in accordance with IEC 60950-1 resp. EN 60950-1) is only ensured if the server is completely assembled and the rear covers for the installation slots have been fitted (electric shock, cooling, fire protection, interference suppression).
- Only install server 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 server or violate the safety regulations. Information on which server 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.

Important information

- The warranty is void if the server is damaged during installation or replacement of server expansions.
- Only set screen resolutions and refresh rates that are specified in the operating manual for the monitor. Otherwise, you may damage your monitor. If you are in any doubt, contact your sales outlet or customer service center.
- Only valid for non hot-plug components
Before installing/removing internal components 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.

Internal devices remain hot after shutdown. Wait for a while after shutdown before installing or removing internal options.

- Do not damage or modify internal cables or internal devices. Doing so may cause a server failure, fire, or electric shock and will void the warranty and exempt the manufacturer from all liability.
- 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 server.
- 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 position. To use a screw of the different kind can cause a breakdown of equipment.
- The procedure of installation on this notes might change depending on a configuration of option.

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.

- Ensure that you insert the battery the right way round.

- The battery used in this server may present a fire or chemical burn hazard if mistreated. Do not disassemble, heat about 100 °C (212F), or incinerate the battery.
- Replace the lithium battery on the system board in accordance with the instructions in the corresponding Upgrade and Maintenance Manual, chapter "System board and components" > "CMOS 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 (ODDs) and media

When working with ODDs, 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 ODD (equipment damage) and can fly out of the drive (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.

Important information

- Do not pull on, press hard, or otherwise handle the CD/DVD/BD tray roughly.
- Do not disassemble the ODD.
- Before use, clean the ODD tray using a soft, dry cloth.
- As a precaution, remove disks from the ODD when the drive is not to be used for a long time. Keep the ODD tray closed to prevent foreign matter, such as dust, from entering the ODD.
- 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.
- Do not attach stickers or similar to the label side. Doing so may cause rotational eccentricity and abnormal vibrations.
- 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 ODD 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 ODD complies with IEC 60825-1 laser class 1.



CAUTION!

The ODD 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 ODD casing!

Modules with Electrostatic-Sensitive Devices (ESD modules)

ESD modules are identified by the following sticker:

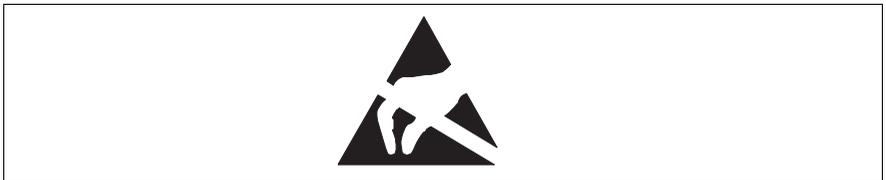


Figure 1: ESD label



The ESD label can be different.

When you handle ESD modules, you must always observe the following points:

- Switch off the server and remove the power plugs from the power outlets before installing or removing ESD modules.
- 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 ESD modules and connect it to an unpainted, conducting metal part of the server.
- 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 server.
- Always hold ESD modules at the edges or at the points marked green (touch points).

Important information

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



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

Transporting the server



CAUTION!

Only transport the server in its original packaging or in packaging that protects it from impacts and jolts.
In Japan and APAC, transporting the server 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.

Never lift or carry the server by the handles or the Quick Release Levers (QRLs) on the front panel.

Notes on installing the server in the rack



CAUTION!

- For safety reasons, at least 2 people are required to install the server in the rack because of its weight and size.
(For Japan, see "安全上のご注意".)
- Never lift the server into the rack using the QRLs 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, ensure that the anti-tilt mechanism is correctly fitted.
- Do not extend more than one server out of the rack simultaneously even if the tilt protection is in place. If several servers are simultaneously extended from the rack, there is a risk that the rack could tip over. See the safety information of the rack and the warning label.

- If the server/rack is intended for permanent connection to the mains only an authorized specialist (electrician) is allowed to work. Please follow the regulation of each country.
- 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.

Other important information

- During cleaning, observe the instructions in the corresponding Operating Manual chapter "Starting up and operation" > "Cleaning the server".
- Keep all manuals close to the server. All documentation must be included if the equipment is passed on to a third party.

3.2 ENERGY STAR



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

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

3.3 CE conformity



The system complies with the requirements of European Regulations. Find the CE declaration on certificate portal: <https://sp.ts.fujitsu.com/sites/certificates/default.aspx>

To open the CE declaration applicable for your system, proceed as follows:

- ▶ Select **Industry Standard Servers**.
- ▶ Select your model, e.g. **Rack server**.
- ▶ Select your system, e.g. **PRIMERGY RX2530 M1**.
- ▶ **Select CE Cert <your system>**.



CAUTION!

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

3.4 FCC Class A Compliance Statement

If there is an FCC statement on the device, it applies to the products covered in this manual, unless otherwise specified herein. The statement for other products will appear in the accompanying documentation.

NOTE:

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

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

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

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

3.5 Environmental protection

Environmentally-friendly product design and development

This product has been designed in accordance with the Fujitsu standard for "environmentally friendly product design and development". This means that key factors such as durability, selection and labeling of materials, emissions, packaging, ease of dismantling and recycling have been taken into account. This saves resources and thus reduces the harm done to the environment.

More information can be found at:

http://ts.fujitsu.com/products/standard_servers/index.html

For Japan:

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

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 does not apply in Japan and APAC.

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

Information on handling consumables

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

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

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

Cd Cadmium

Hg Mercury

Pb Lead

Labels on plastic casing parts

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

Returns, recycling and disposal

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



The device must not be disposed of with domestic waste. This device is labeled in compliance with European directive 2012/19/EU 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.

More 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 at:

<http://ts.fujitsu.com/recycling>

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:

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

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



In Japan remote diagnostics procedures are not used.

Please contact your local Fujitsu customer service partner for details on the service concept and on how to order expansion kits or spare parts.

4.1.1 Locating the defective server

For easy identification of the server, switch on the ID indicator, especially when working in a datacenter environment or a server room.

- ▶ Press the ID button on the front panel, use the iRMC web interface or the ServerView Operations Manager user interface to switch on the system identification LEDs.



For more information, see the "ServerView Suite Local Service Concept (LSC)" manual and the iRMC user guides.

- ▶ 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 (for non CSS components) events that need to be resolved by maintenance personnel
- Customer Self Service (for CSS components) error events that may be resolved by operating personnel

The Global Error indicator and the CSS indicator can be found on the front side and the rear side of the server.



In some cases the indicator on the rear is designed as a combined indicator (Global Error, ID and CSS indicator).



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

- ▶ Check the Global Error indicator and the CSS indicator.

4.1.3 Locating the defective component

After determining the error class by the CSS indicator or the Global Error indicator (see section ["Determining the error class" on page 52](#)), indicators on the components and onboard indicators on the system board allow you to identify the defective component.



For more information, see the "ServerView Suite Local Service Concept (LSC)" manual.

Possibilities to get more information about the defective component

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



For more information, see the "ServerView System Monitor" user guide.

- Checking the System Event Log (SEL), see section ["Viewing and clearing the System Event Log \(SEL\)" on page 114](#).
- Checking the indicators on the components, see section ["Connectors and indicators" on page 455](#).

- Checking the onboard indicators on the system board using the Indicate CSS button, see section ["Using the CSS button on the system board" on page 53](#).

Using the CSS button on the system board

If the system has been powered off, the onboard indicators guides you to the faulty component.



CAUTION

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

- ▶ Shut down and power off the server.
- ▶ Disconnect all power cords from the system.
- ▶ Press the Indicate CSS button to highlight defective components, see section ["Using the CSS button on the system board" on page 53](#). The indicator next to the defective component lights up.

4.2 Shutting down the server



CAUTION!

For more information, see chapter ["Important information" on page 37](#).



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.
- ▶ Perform the required procedures described in the preliminary steps of each upgrade or maintenance task.
- ▶ 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 panel and I/O panel of the server, see section ["Locating the defective server" on page 51](#).

4.3 Disconnecting the power cord

4.3.1 Standard power supply



Figure 2: Unlocking the cable tie of a standard PSU

- ▶ Pull out the locking lever on the cable tie (1) and loosen the loop (2).
- ▶ Disconnect the power cord from the PSU and remove it from the cable tie.

4.3.2 Redundant power supply

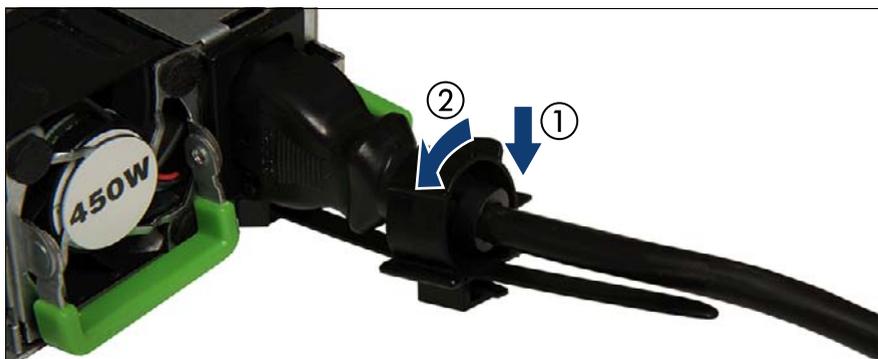


Figure 3: Unlocking the cable clamp of a PSU

- ▶ Press the cable clamp down until it disengages (1).
- ▶ Open the cable clamp (2).
- ▶ Disconnect the power cord from the PSU and remove it from the cable clamp.

4.4 Getting access to the component



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 server must not run while the server cover is removed.
- For more information, see chapter "[Important information](#)" on [page 37](#).
- **Only valid for the floorstand model:** Do not lift the server by the front cover in order not to damage the locking clips.

4.4.1 Rack model

4.4.1.1 Extending the server out of the rack



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 more safety information, see chapter "[Important information](#)" on [page 37](#).
- ▶ Remove all remaining external cables from the rear connector panel and expansion cards.

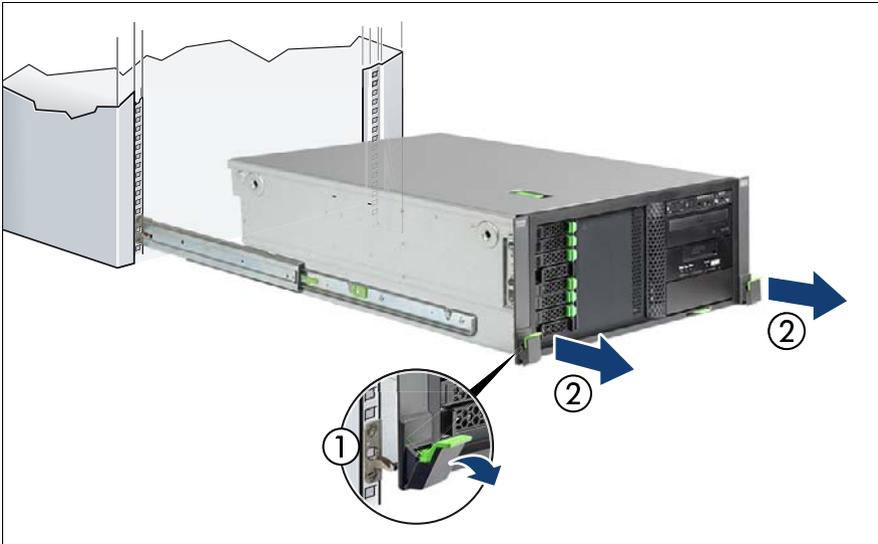


Figure 4: Extending the server out of the rack

- ▶ Fold down the two quick release levers (1).
- ▶ 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.

4.4.1.2 Removing the server from the rack



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!

At least two people are needed to lift the server out of the rack cabinet. (For Japan, 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.

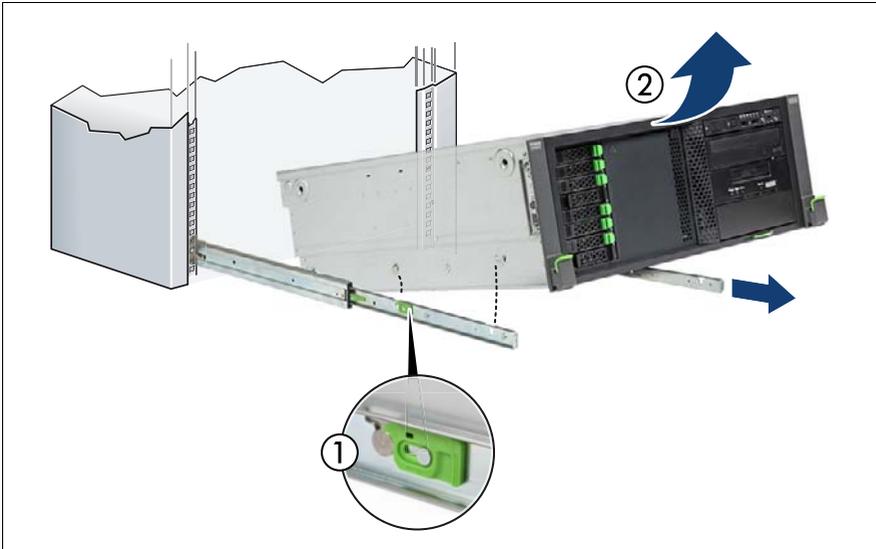


Figure 5: Removing the server from the rack

- ▶ Release the locking bars on both rack rails (1).
- ▶ Lift the server out of the rack rails (2) and place it on an even surface.

4.4.1.3 Removing the top cover



Figure 6: Removing the top cover (rack server)

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



Figure 7: Removing the top cover (rack server)

- ▶ Remove the top cover.

4.4.1.4 Removing the rack front cover

- i** You remove the rack front cover when installing/removing accessible drives or HDD extension boxes.



Figure 8: Removing the ID card (rack model)

- ▶ 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.



Figure 9: Removing the rack front cover (A)

- ▶ Remove two screws from the side brackets on either side.

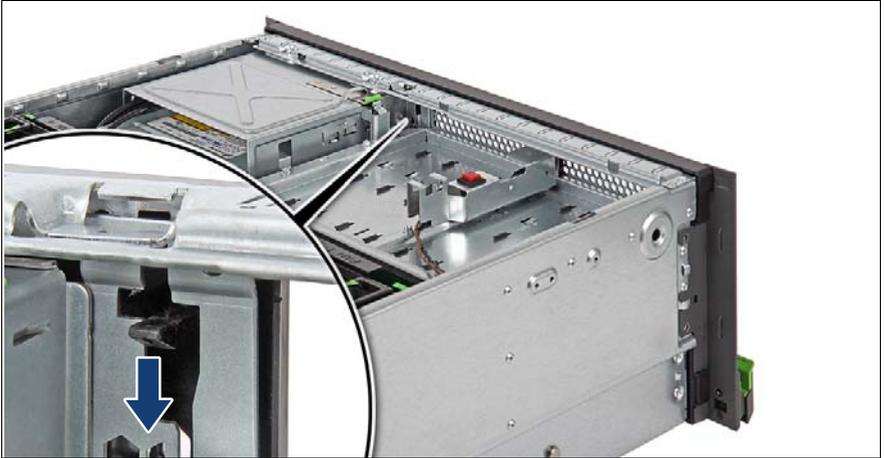


Figure 10: Removing the rack front cover (B)

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

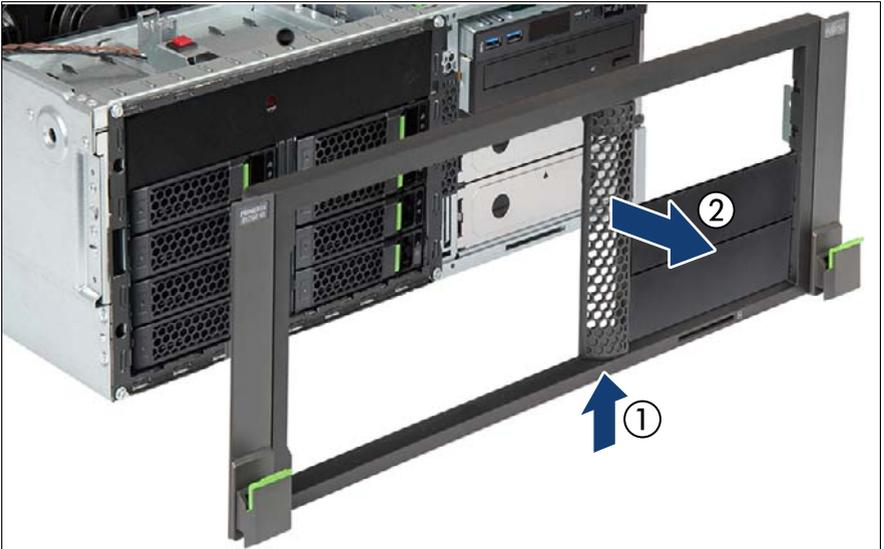


Figure 11: Removing the rack front cover (C)

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

4.4.2 Floorstand model

4.4.2.1 Unlocking the server

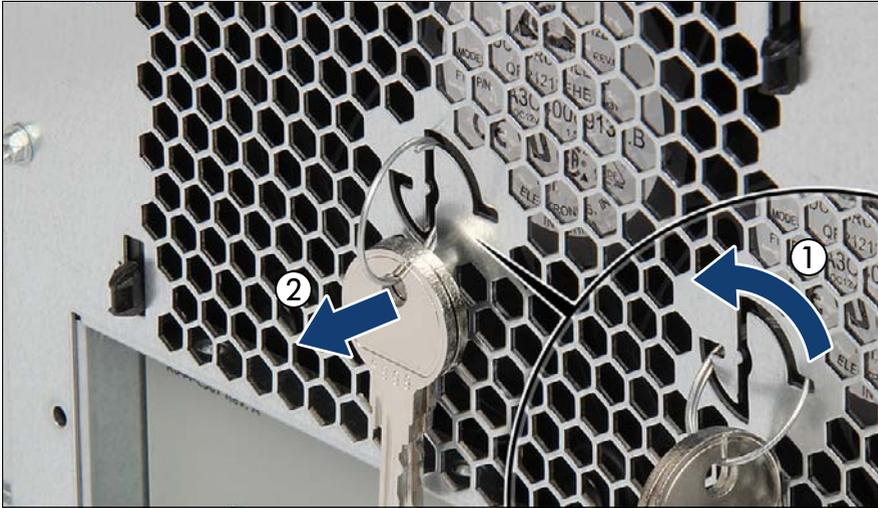


Figure 12: Removing the key

- ▶ Turn the keychain counter-clockwise by 90 degrees (1).
- ▶ Remove the key ring with keys from the server rear (2).



Figure 13: 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.

4.4.2.2 Removing the side cover



Figure 14: Removing the side cover (floorstand model)

- ▶ Pull on the locking lever (1). This will slide the side cover back disengaging the locking mechanism.
- ▶ Remove the side cover (2) and set aside for later use.

4.4.2.3 Removing the bay covers



Figure 15: Removing the accessible drive bay cover

- ▶ Fold out the accessible drive bay cover in the direction of the arrow and remove it.



Figure 16: Storing the accessible drive bay cover

- ▶ Place the accessible drive bay cover on the HDD bay cover as shown.



Figure 17: Removing the HDD bay cover

- ▶ Fold out the HDD bay cover in the direction of the arrow and remove it.

4.4.2.4 Removing the front cover



You remove the front cover when:

- Installing/removing accessible drives or HDD extension boxes
- Converting a floorstand model to a rack model



Figure 18: Removing the ID card (floorstand model)

- ▶ 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.



Figure 19: Removing the front cover (floorstand model)

- ▶ 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).

4.5 Reassembling



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 server must not run while the top/side cover is removed.
- For further safety information, see chapter ["Important information" on page 37](#).

4.5.1 Rack model

4.5.1.1 Installing the rack front cover



Figure 20: Installing the rack front cover

- ▶ Fit the rack front cover 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 21: Installing the rack front cover (B)

- ▶ Fasten the rack front cover to the chassis with two screws on either side.

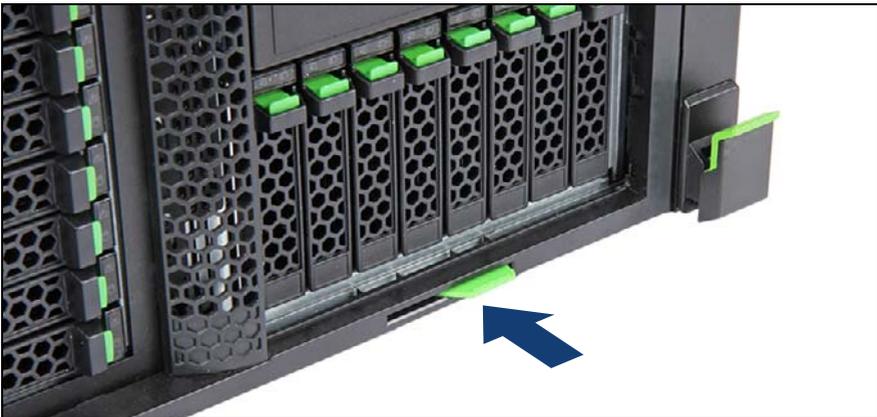


Figure 22: Installing the ID card (rack server)

- ▶ Insert and push the ID card into its slot until it locks in place as shown.

4.5.1.2 Installing the top cover



Figure 23: Installing 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.

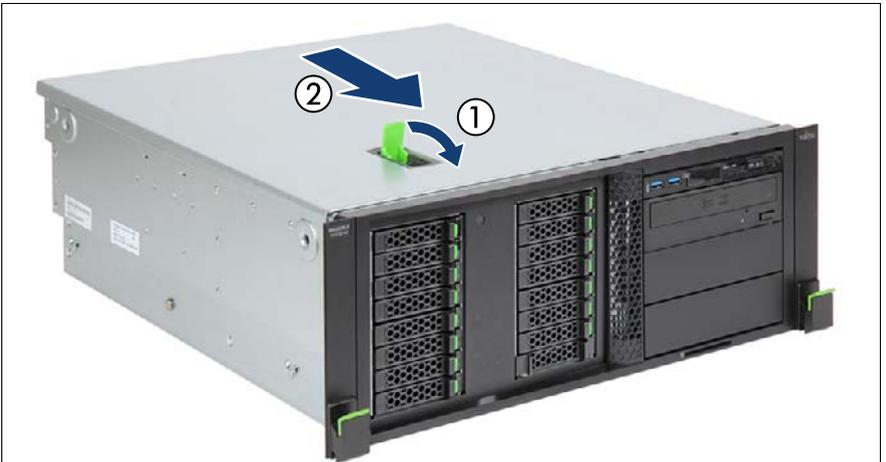


Figure 24: Installing the top cover (rack server) (B)

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

4.5.1.3 Installing the server in the rack



CAUTION!

At least two people are needed to position the server on the rack rails.
(For Japan, see " 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.

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.

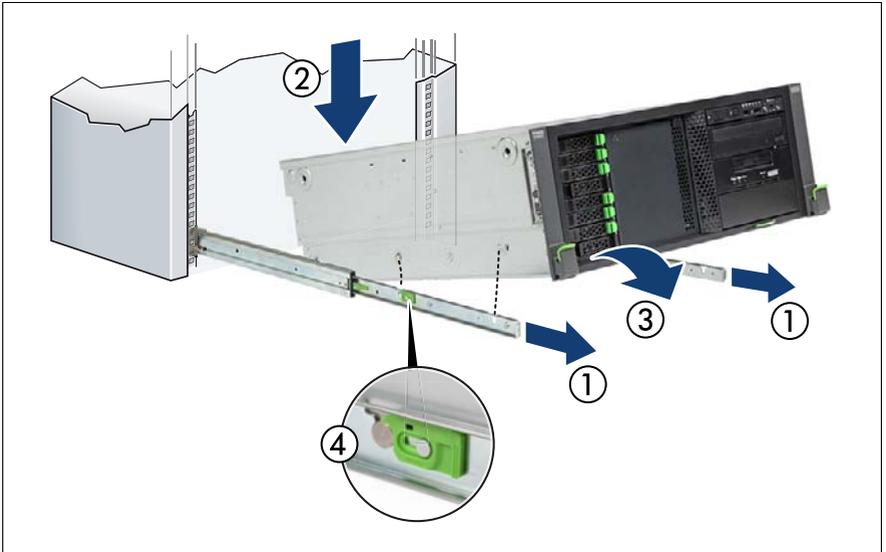


Figure 25: Mounting the server onto the rack rails

- ▶ Fully extend the rack rails until they lock in place (1).



The rack rails must click into place so that they can no longer be moved.

- ▶ At a slight angle, lower the server onto the rear mounting point on the rack rails (2).
- ▶ Fold down the server, while pressing the rail to the server side (3). Ensure that all six rack mounting bolts are properly seated in the mounting points on the rack rails and that the locking bars engage (4).

4.5.1.4 Sliding the server into the rack

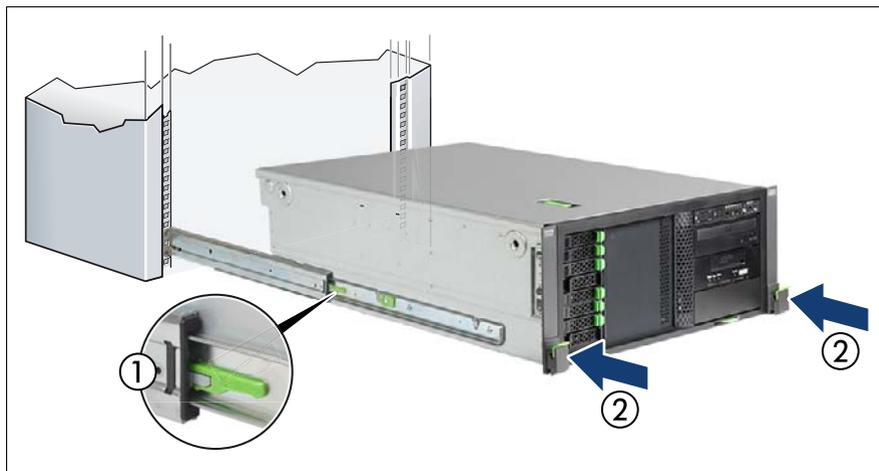


Figure 26: Sliding the server into the rack

- ▶ Release the locking mechanism of both rack rails (1).
- ▶ Push the server as far as it will go into the rack (2) until the quick release levers engage.



CAUTION!

Be careful with your fingers. You can pinch them when the quick-release levers change to the release position.

- ▶ Connect all cables except the power cord to the server rear.

4.5.2 Floorstand model

4.5.2.1 Installing the front cover



Figure 27: Installing the front cover (A)

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



Figure 28: Installing the front cover (B)

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



Figure 29: Installing the ID card (floorstand model)

- ▶ Insert and push the ID card into its slot until it locks in place as shown.

4.5.2.2 Installing the bay covers



Figure 30: Installing the HDD bay cover

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



Figure 31: Installing the accessible drive bay cover

- ▶ Insert the accessible drive bay cover to the upper side of the front cover (1).
- ▶ Fold down the accessible drive bay cover until it locks in place (2).

4.5.2.3 Installing the side cover



Figure 32: Installing the side cover (floorstand model)

- ▶ Open the locking lever on the side cover.
- ▶ Fit the side cover on the chassis, recessed by 2 cm.
- ▶ Close the locking lever on the side cover (1). This will slide the top cover shut engaging the locking mechanism (2).
- ▶ Connect all cables except the power cord to the server rear.

4.5.2.4 Locking the server



Figure 33: Locking 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.

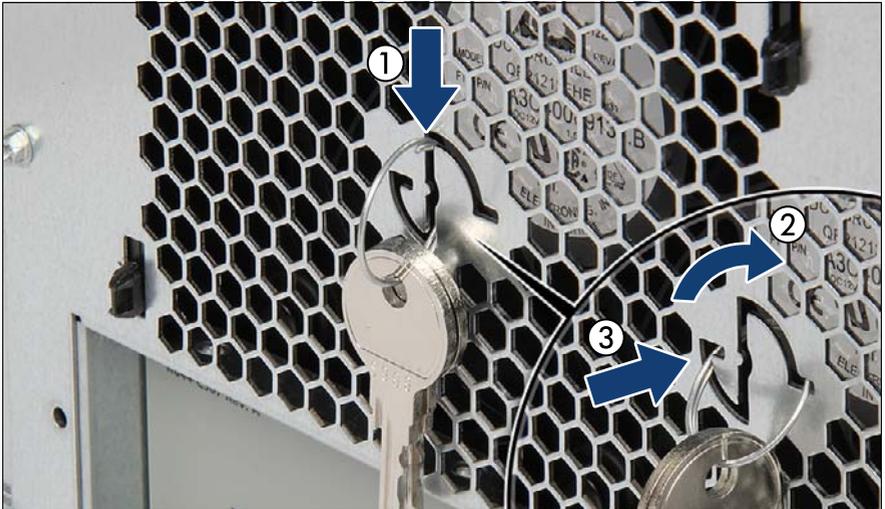


Figure 34: Storing the key ring

- ▶ Insert the key ring into the slot on the server rear (1).
- ▶ Turn the key ring clockwise by 90 degrees (2) until it latches in place as shown (3).

4.6 Connecting the power cord



CAUTION!

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

Standard power supply

- ▶ Connect the power cord to the PSU.
- ▶ If applicable, connect the mains plug to a grounded mains outlet in the in-house power supply network.

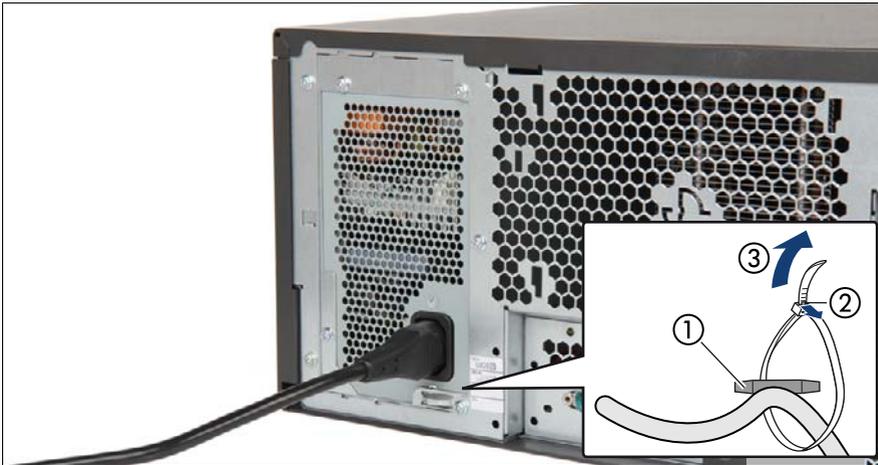


Figure 35: Securing power cord

- ▶ Thread the cable tie through the eye (1).
- ▶ Pull the cable tie tight to secure the power cord (2).

The insulated connector cannot now be disconnected from the server accidentally.

You can loosen the cable tie by opening the small locking lever (2).



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

Redundant power supply

- ▶ Connect the power cords to the PSUs.
- ▶ If applicable, connect the mains plug to a grounded mains outlet in the in-house power supply network.

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

- ▶ Ensure that the status indicator on the PSU is lit green (see section ["Indicator on hot-plug PSU" on page 469](#)).

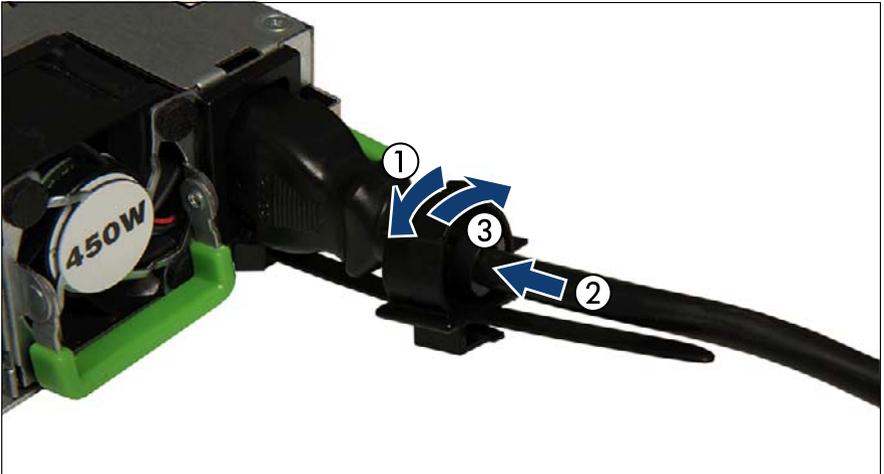


Figure 36: Locking the cable clamp of a PSU

- ▶ Pull the cable clamp up (1).
- ▶ Thread the power cord through the cable clamp (2).
- ▶ Press the cable clamp down until it engages to secure the cable (3).

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

4.7 Switching on the server



CAUTION!

- Before switching on the server, make sure the top cover is closed. In order to comply with applicable EMC regulations (regulations on electromagnetic compatibility) and satisfy cooling requirements, the server must not run while the top cover is removed.
 - For more information, see chapter ["Important information" on page 37](#).
- ▶ Press the On/Off button to start up the server.
- ▶ Ensure that the power-on indicator is lit green.

4.8 Handling the system fan module

4.8.1 Removing the system fan module

Removing the standard system fan module



Figure 37: Disconnecting the fan cable

- ▶ Disconnect the fan cable from the system board connector "FAN1".

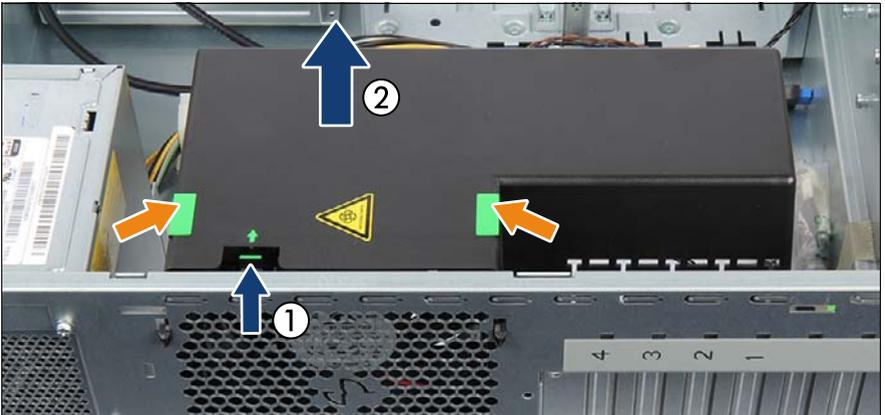


Figure 38: Removing the standard system fan module

- ▶ Press in on the locking tab while slightly lifting up the system fan module (1).
- ▶ Hold the fan module by the two green grips (see orange arrows) and lift it out of the chassis (2).

Removing the redundant system fan module

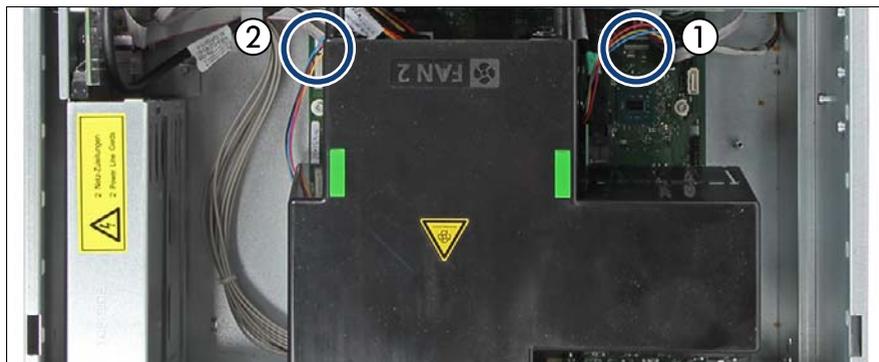


Figure 39: Disconnecting the fan cables

- ▶ Disconnect the fan cables from the system board connectors "FAN1" (1) and "FAN4" (2).

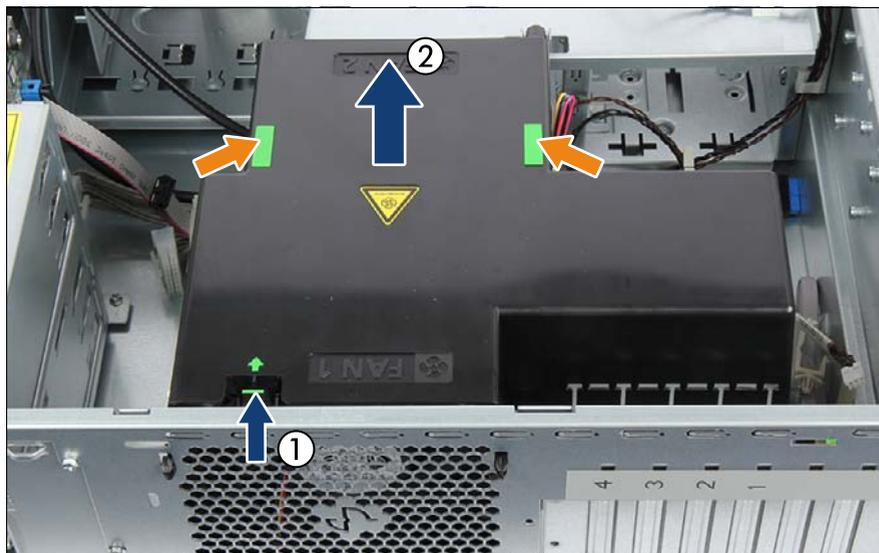


Figure 40: Removing the redundant system fan module

- ▶ Press in on the locking tab while slightly lifting up the system fan module (1).
- ▶ Hold the fan module by the two green grips (see orange arrows) and lift it out of the chassis (2).

4.8.2 Installing the system fan module

Installing the standard system fan module

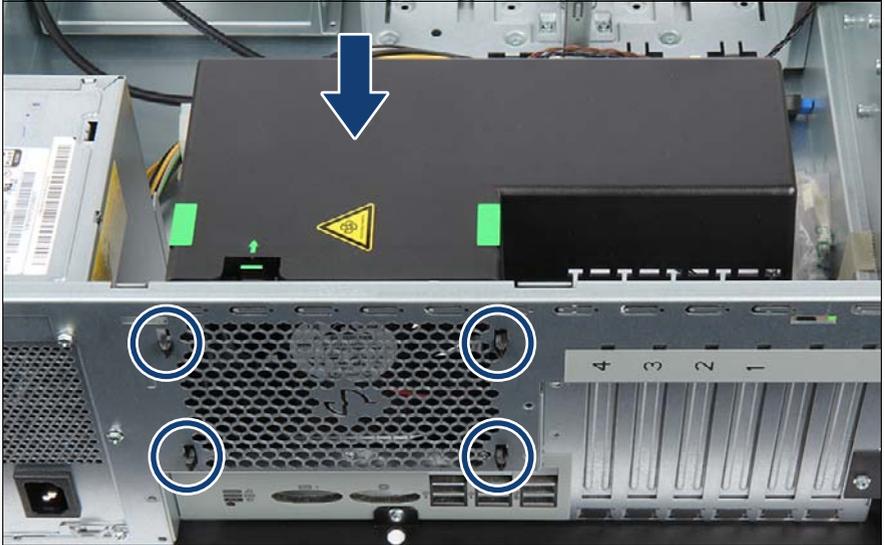


Figure 41: Installing the standard system fan module

- ▶ Insert the system fan module into the chassis.



Be careful not to pinch any cables under the air duct.

- ▶ Fit the four hooks on the system fan module into the keyhole slots in the chassis.
- ▶ Press down on the system fan module until the four hooks lock in the narrow ends of the keyhole slots (see circles).

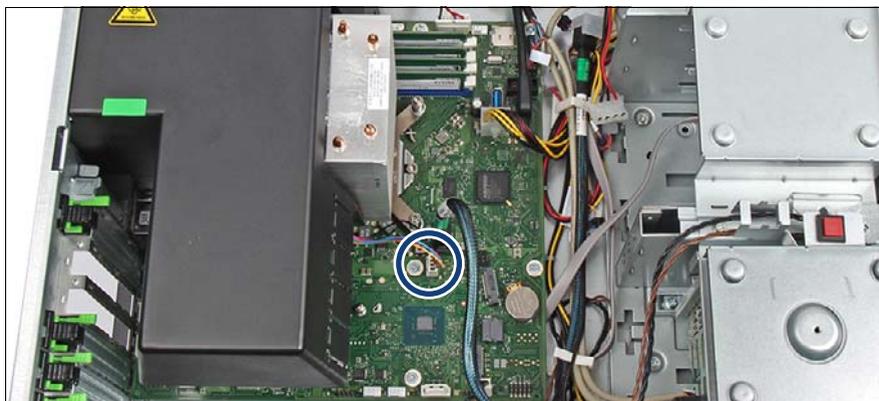


Figure 42: Connecting the system fan cable

- ▶ Connect the fan cable to system board connector "FAN1" (see circle).

Installing the redundant system fan module

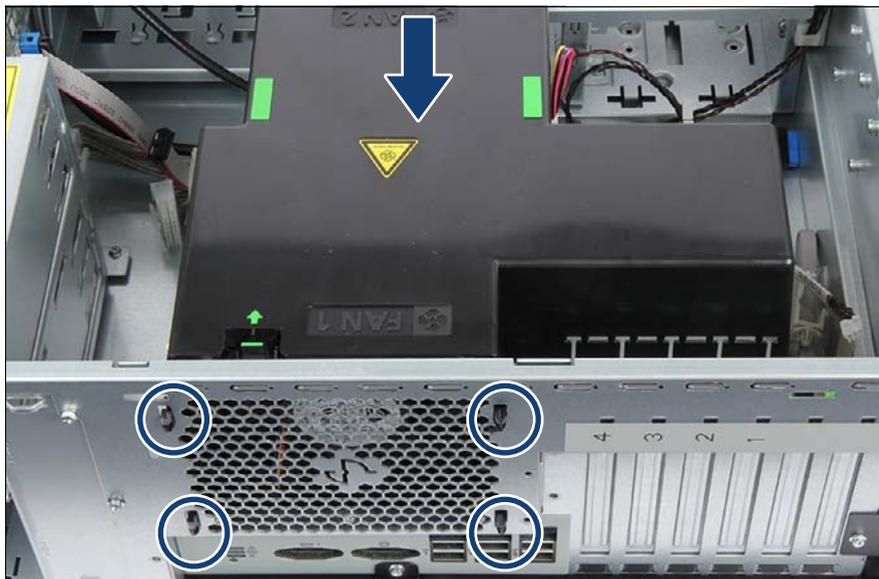


Figure 43: Installing the redundant system fan module

- ▶ Insert the system fan module into the chassis.



Be careful not to pinch any cables under the air duct.

- ▶ Fit the four hooks on the system fan module into the keyhole slots in the chassis.
- ▶ Press down on the system fan module until the four hooks lock in the narrow ends of the keyhole slots (see circles).

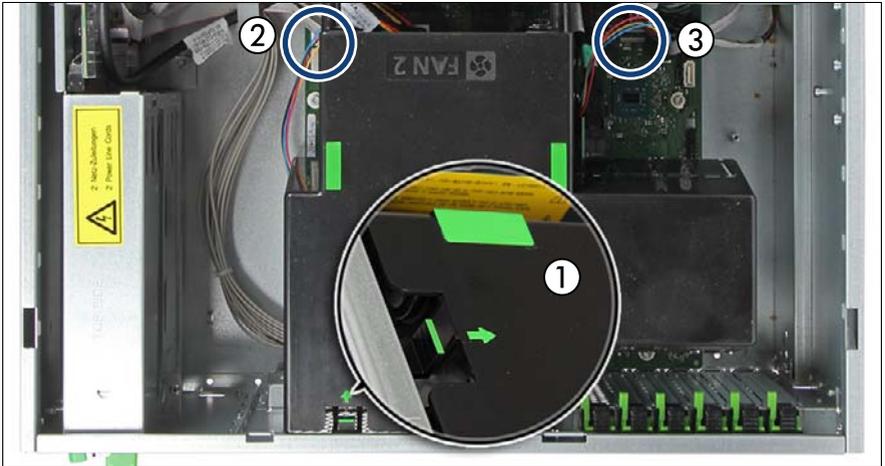


Figure 44: Connecting the system fan cable

- ▶ Ensure that the locking tab on the system fan module is properly engaged with the upper rim of the chassis rear (1).
- ▶ Connect the fan cable from fan 1 to system board connector FAN4 (2).
- ▶ Connect the fan cable from fan 2 to system board connector FAN1 (3).

4.9 Handling accessible drive bays

4.9.1 Opening the accessible drive locking bar

4.9.1.1 Floorstand model

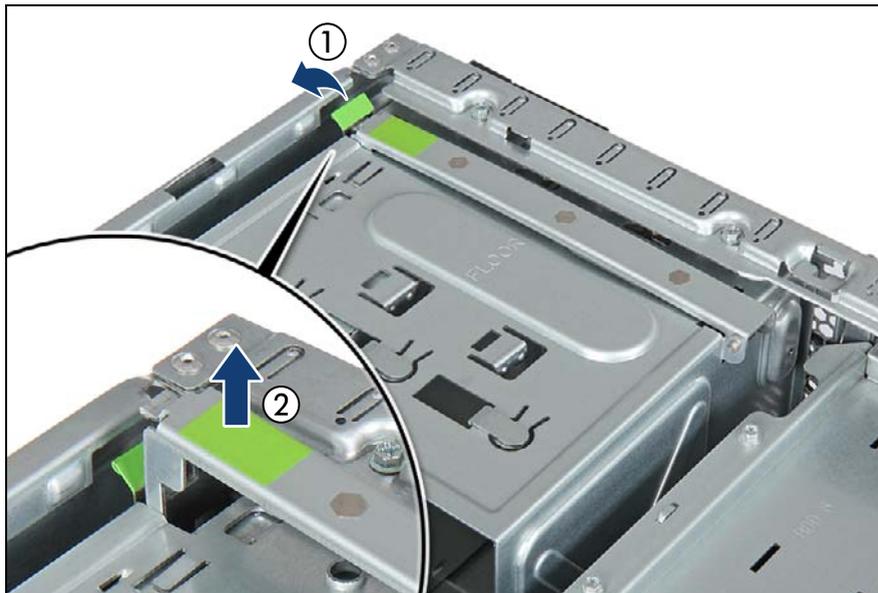


Figure 45: Opening the accessible drive locking bar (floorstand model)

- ▶ 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 model

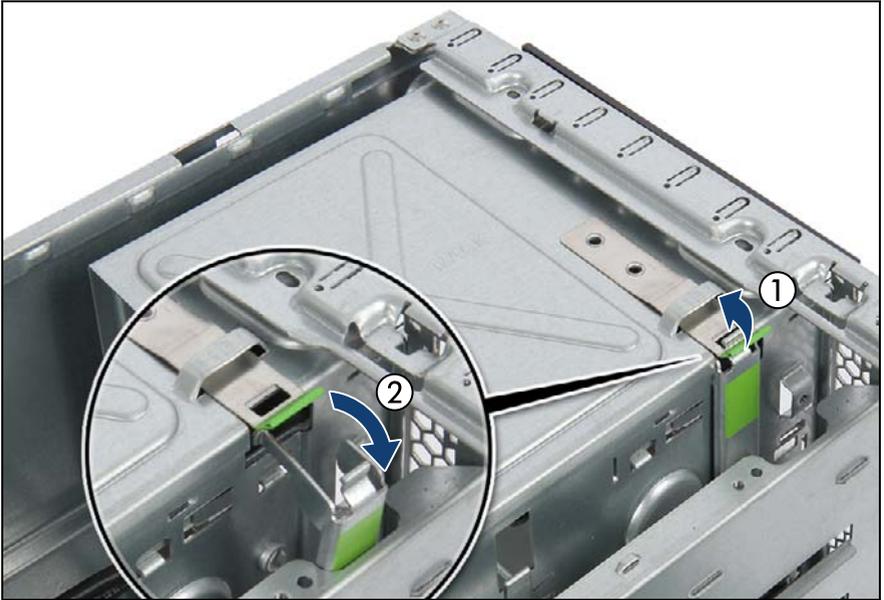


Figure 46: Opening the accessible drive locking bar (rack model)

- ▶ Pull up 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 Floorstand model

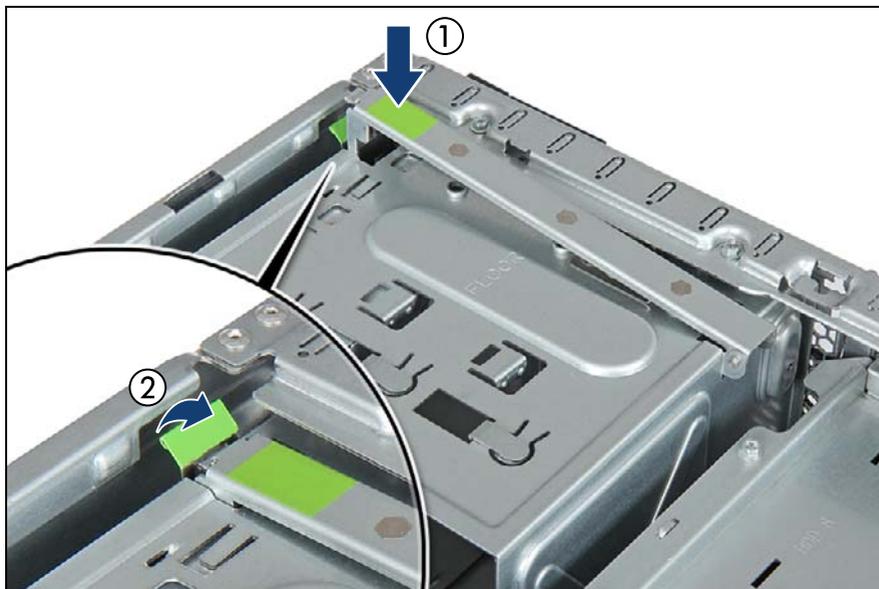


Figure 47: Closing the accessible drive locking bar (floorstand model)

- ▶ Close the locking bar (1) until it locks in place (2).

4.9.2.2 Rack model

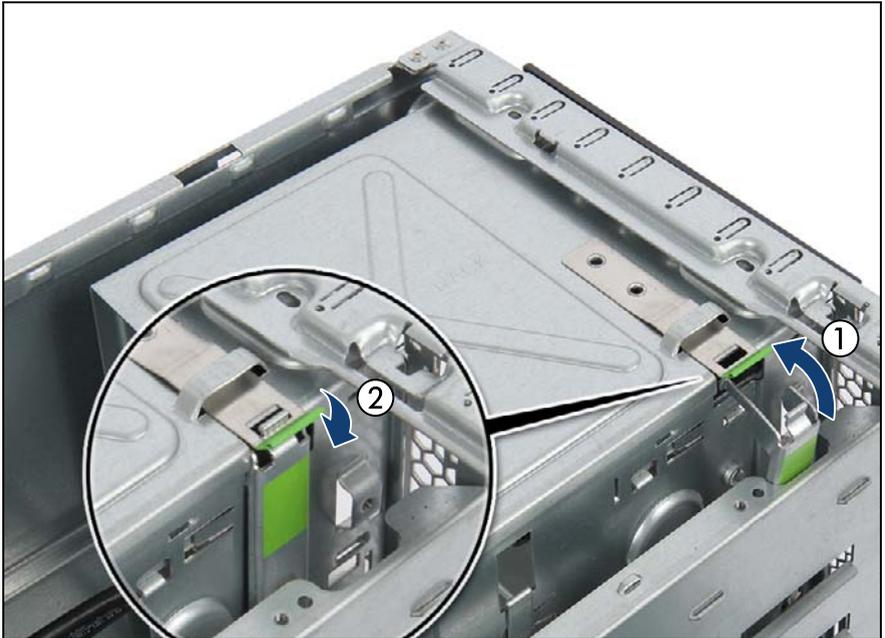


Figure 48: Closing the accessible drive locking bar (rack model)

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

4.9.3 Accessible drive filler covers

4.9.3.1 Removing accessible drive filler covers



Figure 49: 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 50: Installing an accessible drive filler cover

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



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

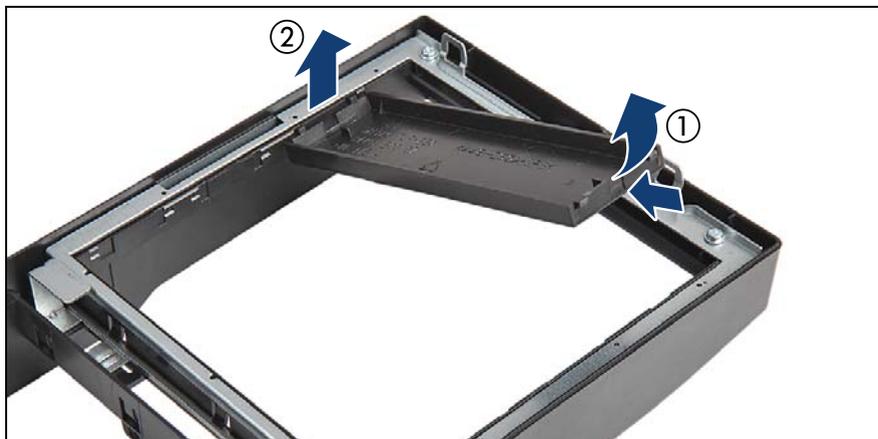


Figure 51: Removing an accessible drive cover



Removing accessible drive covers is illustrated by the example of the floorstand model. 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

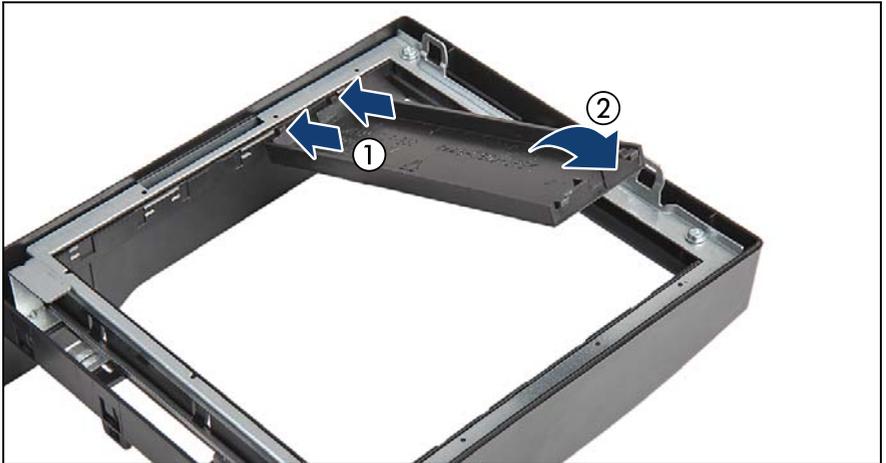


Figure 52: Installing accessible drive covers

i Installing accessible drive covers is illustrated by the example of the floorstand model. 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 with the right inner edge of the front cover (1).
- ▶ Fold down the accessible drive cover until it snaps in place (2).

4.10 Handling the anti-tilt bracket



The anti-tilt bracket is only necessary for the floorstand model.

4.10.1 Installing the anti-tilt bracket



Figure 53: Installing the anti-tilt bracket (A)

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

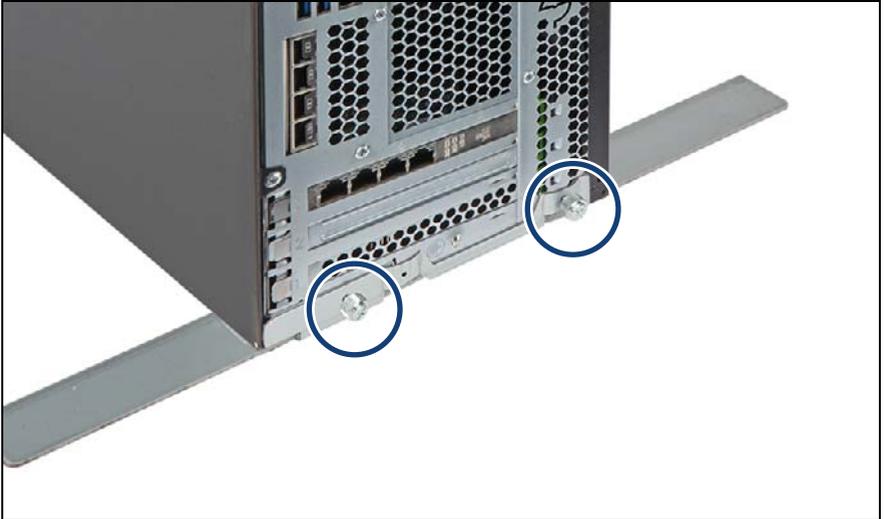


Figure 54: Installing the anti-tilt bracket (B)

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

4.10.2 Removing the anti-tilt bracket

- ▶ Loosen the two knurled thumb screws on the anti-tilt bracket (see figure 54).
- ▶ Remove the anti-tilt bracket from the rear of the server.

5 Basic software procedures



Depending on your server and the installed features some information is not valid for your server.

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 more information on how to use BitLocker on a computer without a compatible TPM, see 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 that you 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.

- ▶ Click **Start - Control Panel - System and Security - BitLocker Drive Encryption** to open the 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 more information on how to suspend BitLocker drive encryption, see the Microsoft TechNet library at

<http://technet.microsoft.com/library/cc731549.aspx>.

For more information, see the Fujitsu web pages.

5.1.2 Disabling the boot watchdog

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

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 interface.

Disabling the boot watchdog 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 more information on BIOS settings, see the corresponding BIOS Setup Utility reference manual.

Disabling the boot watchdog using the iRMC web interface

- ▶ Log in to the ServerView iRMC web interface.
- ▶ Select the **Settings** menu.
- ▶ Open the *Server Management* page.
- ▶ In the **Boot Watchdog** group, check the *Enable Boot Watchdog* option. The *Enable Boot Watchdog* option must be selected.
- ▶ Select **Continue** from the **Watchdog Action** list.
- ▶ Click **Apply** for the changes to take effect.



For more information on iRMC settings, see the iRMC user guides.

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 more information on "forcible" tape ejection, see the "Tape Facts" pages available to Fujitsu service partners from the following https address: <https://partners.ts.fujitsu.com/com/service/ps/Servers/PRIMERGY/Pages/TapeFacts.aspx>

For Japan:

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 Japan.

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.

 For more information on suitable backup software solutions and related documentation, see the Fujitsu web pages.

5.1.5 Switching on the ID indicator

For easy identification of the server, switch on the ID indicator, especially when working in a datacenter environment or a server room. The ID indicator can also be activated via the iRMC web interface and its status is reported to the BMC.

 For more information, see section "[Locating the defective server](#)" on [page 51](#) or the "ServerView Suite Local Service Concept (LSC)" and iRMC 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 more information, see section "[Indicators on the front panel](#)" on [page 459](#).

Using the ID icon in the iRMC web interface

- ▶ Log in to the iRMC S5 web interface.

The icon that represents the ID indicator LED resides on the right of the menu bar. Its color symbolizes its status:

blue: the ID LED is on.

grey: the ID LED is off

- ▶ Click the icon to switch the ID indicator LED on or off.

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 BIOS and the iRMC S5



For Japan:
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/>

For Japan:

<http://www.fujitsu.com/jp/products/computing/servers/primergy/downloads/>



Note on the boot watchdog

Before updating or recovering the BIOS and iRMC, ensure that the boot watchdog is disabled, see section "[Disabling the boot watchdog](#)" on [page 98](#).

After updating or recovering the BIOS and iRMC, enable the boot watchdog again, see section "[Enabling the boot watchdog](#)" on [page 111](#).



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 BIOS

BIOS flash procedure

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

BIOS recovery procedure

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

5.2.1.2 Updating the iRMC firmware

- ▶ Enter the ServerView iRMC web interface.
- ▶ Select the **Tools** menu.

- ▶ Select **Update** to open the Update page.
- ▶ Select **iRMC Update**.
- ▶ In the **iRMC Update** group click **Select** to search the new firmware.
- ▶ Select the new firmware and click **Start Update**.



For more information on iRMC settings, see the iRMC user guides.

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 114](#)).

After replacing the system board

- ▶ Check the SEL log files as described in section ["Viewing and clearing the System Event Log \(SEL\)" on page 114](#) to verify whether the backup data on the Chassis ID EPROM has been restored to the system board:
Chassis IDPROM: Motherboard Exchange detected
Chassis IDPROM: BMC FW restore successful
Chassis IDPROM: BIOS restore successful

After replacing the front panel or Chassis ID EPROM

- ▶ Check the SEL log files as described in section ["Viewing and clearing the System Event Log \(SEL\)" on page 114](#) to verify whether a backup copy of the system board settings has been transferred to the Chassis ID EPROM:
Chassis IDPROM: BMC FW backup successful

5.2.3 Updating expansion card firmware



For Japan:
Follow the instructions provided separately.

After replacing the expansion card, it is essential to upgrade the firmware to the latest version without connecting any storage devices. The latest expansion card firmware version is available from the Fujitsu support web pages at: <http://ts.fujitsu.com/support/>

For Japan:
<http://www.fujitsu.com/jp/products/computing/servers/primergy/downloads/>



Note on the boot watchdog

Before updating expansion card firmware, ensure that the boot watchdog is disabled, see section "[Enabling the boot watchdog](#)" on page 111.

After updating expansion card firmware, enable the boot watchdog again, see section "[Enabling the boot watchdog](#)" on page 111.



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

Using the ServerView Update Manager

For more information on how to update the expansion card firmware using the ServerView Update Manager or Update Manager Express (UME), see 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/>

For Japan:
<http://www.fujitsu.com/jp/products/computing/servers/primergy/downloads/>

- ▶ Select **Drivers & Downloads**.
- ▶ From the **Select Product** drop down lists, choose your PRIMERGY server

- ▶ Select *Server*
- ▶ Select **Fujitsu Server Primergy**
- ▶ Select **Product Group**
- ▶ Select **Product Family**
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 Option ROM of the card has to be enabled in the BIOS. The firmware of the card is called by the 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 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 BIOS at a time.

For more information on how to access the BIOS and modify settings, see the corresponding 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 firmware of the expansion card.

- ▶ Press the displayed key combination.

- ▶ Modify the expansion card firmware options as desired.
- ▶ Save your changes and exit the firmware.



The option ROM of the expansion card can now be disabled in the BIOS.

Exception: If the expansion card controls a permanent boot device, the Option ROM of the expansion card has to remain enabled.

5.2.5 Reconfiguring the backup software solution



This task only applies to Japan.

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.



More information on suitable backup software solutions and related documentation is available from the Fujitsu 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 "[Verifying and configuring the backup software solution](#)" on page 100, it has to be re-enabled to complete the maintenance task.

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



More information on suitable backup software solutions and related documentation is available from the Fujitsu 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 **Management** 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 **Management** menu.
- ▶ Under **Boot Retry Counter** press the \boxplus or \boxminus 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 interface

- ▶ Log in to the ServerView iRMC web interface.
- ▶ Open the **Settings** menu.
- ▶ Open the **Server Management** page.
- ▶ The following boot retry counter settings are available in the Automatic System Recovery & Restart (**ASR&R**) group:
 - ▶ For **Retry Counter Max** specify the maximum number of attempts to boot the operating system (0 to 7).
 - ▶ In the **Retry Counter** field 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 more information on iRMC settings, see the iRMC user guides.

5.2.7 Resetting the error status after replacing memory modules or CPUs

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 ServerView Maintenance Tools (Windows only)

- ▶ Launch the ServerView Maintenance Tools:
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/VMware 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 more Information, see 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 CPUs

ServerView Operations Manager may report a defective CPU 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:
Start > Apps > Fujitsu > Maintenance Tools
- ▶ 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 CPU:

- ▶ Log in as root.
 - ▶ Enter the command below, followed by **[ENTER]**:
 - For rack and floorstand 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 CPUs:
 - ▶ 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 Enabling the boot watchdog

If the boot watchdog has been disabled for firmware upgrade purposes (see section ["Disabling the boot watchdog" on page 98](#)), 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 interface.

Enabling the boot watchdog 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 more information on how to access the BIOS and modify settings, see the corresponding BIOS Setup Utility reference manual.

Enabling the boot watchdog using the iRMC web interface

- ▶ Log in to the ServerView iRMC web interface.
- ▶ Select the **Settings** menu.

- ▶ Open the *Server Management* page.
- ▶ In the **Boot Watchdog** group, check the *Enable Boot Watchdog* option. The *Enable Boot Watchdog* option must be selected.
- ▶ Select **Reset** from the **Watchdog Action** list.
- ▶ Click **Apply** for the changes to take effect.



For more information on iRMC settings, see the iRMC user guides.

5.2.9 Enabling replaced components in the BIOS

When a CPU, an expansion card, or a memory module fails, the defective component will be set to **Disabled** or **Failed** in the 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 BIOS.

- ▶ Enter the BIOS.
- ▶ Select the **Advanced** menu.
- ▶ Select the status menu of the desired component:

- CPUs: **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 more information on how to access the BIOS and modify settings, see the corresponding BIOS Setup Utility reference manual.

5.2.10 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 more information on memory operation modes available for your server, see section ["Memory sequence" on page 312](#).

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

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

5.2.11 Verifying the system time settings

 This task only applies to Linux and VMware 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/VMware 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 more information on how to access the BIOS and modify settings, see the corresponding BIOS Setup Utility reference manual.

5.2.12 Viewing and clearing the System Event Log (SEL)

5.2.12.1 Viewing the SEL

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

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 Driver Monitor of the ServerView Operations Manager

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 more information on how to view and sort the SEL using ServerView Operations Manager, see the "ServerView Operations Manager - Server Management" user guide.

Viewing the SEL using the iRMC web interface

- ▶ Log in to the ServerView iRMC web interface.
- ▶ Open the **Logs** menu.
- ▶ Click *System Event Log* to open the System Event Log page.

All events concerning the system are displayed in a table in the Event Log Content group.

- ▶ You can sort the table based on a column using the arrows in the header field.
- ▶ You can also filter the table using the filter lists in the header of some columns.

 For more information on iRMC settings, see the iRMC user guides.

5.2.12.2 Clearing the SEL

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

- ▶ Log in to the ServerView iRMC web interface.
- ▶ Open the **Logs** menu.
- ▶ Click *System Event Log* to open the System Event Log page.

All events concerning the system are displayed in a table in the Event Log Content group.

- ▶ Click the *Clear Logs* button below the table to clear the SEL.

 For more information on iRMC settings, see the iRMC user guides.

5.2.13 Updating the NIC configuration file in a Linux and VMware 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/VMware OS. When replacing a network controller or the system board with onboard LAN controllers in a server running Linux/VMware 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/VMware 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 80](#).

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

5.2.14 Resuming BitLocker functionality

If BitLocker Drive Encryption has been suspended for maintenance purposes (see section "[Suspending BitLocker functionality](#)" on page 97), 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:
 - ▶ Click **Start - Control Panel - System and Security - BitLocker Drive Encryption** to open the BitLocker Drive Encryption.
 - ▶ Select the system volume, and click **Resume Protection**.

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

For more information, see the Fujitsu web pages.

5.2.15 Performing a RAID array rebuild

After replacing an HDD 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.

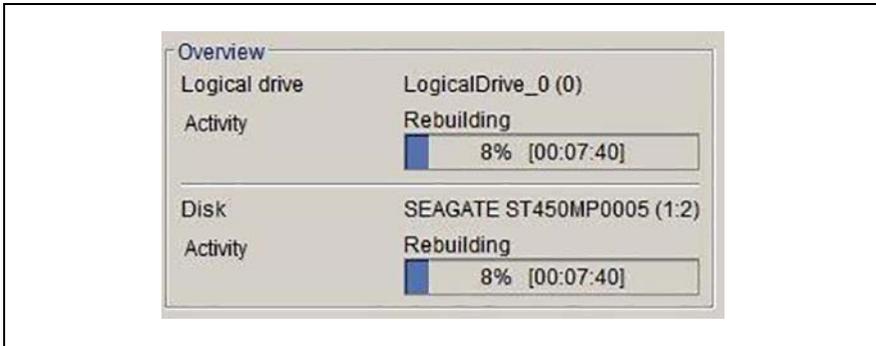


Figure 55: Progress bar (RAID array rebuild)



CAUTION!

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



You may notice a slight performance impact during rebuild.

5.2.16 Looking for MAC/WWN/GUID and SAS addresses

The customer needs to know the new address of the controller:

- When replacing the system board with an onboard LAN controller
- When adding or replacing a network controller
- When adding or replacing a SAS controller

Different controllers send different addresses:

- LAN controller: MAC (Media Access Control) address
- Fibre channel controller: WWN (World Wide Name) address
- Infiniband/Omni-Path controller: GUID (Globally Unique Identifier) address
- SAS controller: SAS (Serial Attached SCSI) address

5.2.16.1 Looking for the MAC address of a LAN controller

There are several possible locations where these addresses can be found.

- ▶ Inform the customer about the new or changed MAC address.

Checking the label

- ▶ If available, check the label on the controller.
Beside the part number, you may find the MAC address.

Using an UEFI BIOS

- ▶ Enter the BIOS setup menu.
- ▶ Select the *Advanced* menu.
The addresses are displayed at the *Advanced* menu main page.

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

LAN controller always provide the MAC addresses.

Using the iRMC web interface

- ▶ Log into the ServerView iRMC web interface.
- ▶ Open the **System** menu.
- ▶ Open the *Network* page.
- ▶ In the **Ethernet Ports** group, 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 S5 or above.
Only network controllers supporting the Command Line Protocol (CLP) will be displayed.

 For add-in cards the vendors provide documentation and tools, offered on the Fujitsu support web pages:
<http://ts.fujitsu.com/support/>
Select the server, select *Downloads - More Details - Driver*.
Some vendors bundle the documentation together with the driver package.

5.2.16.2 Looking for the WWN address of a fibre channel controller

There are several possible locations where these addresses can be found.

- ▶ Inform the customer about the new or changed WWN address.

Checking the label

- ▶ If available, check the label on the controller.
Beside the part number, you may find the WWN address.

Using an UEFI BIOS

- ▶ Enter the BIOS setup menu.
- ▶ Select the *Advanced* menu.
The addresses are displayed at the *Advanced* menu main page.



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

5.2.16.3 Looking for the GUID address of an infiniband or Omni-Path controller

There are several possible locations where these addresses can be found.

- ▶ Inform the customer about the new or changed GUID address.

Checking the label

- ▶ If available, check the label on the controller.
Beside the part number, you may find the GUID address.

5.2.16.4 Looking for SAS addresses of SAS controllers for external devices

There are several possible locations where these addresses can be found.

- ▶ Inform the customer about the new SAS address. The customer need the new SAS address, especially when the server is connected to a Fujitsu Storage ETERNUS system.

Using ServerView RAID Manager

- ▶ Start the ServerView RAID Manager and log in.
- ▶ Select the desired SAS controller.
In the *General* tab you can find data on the selected object including its SAS address.



For more information, see the "ServerView Operations Manager - Server Management" user guide and the "ServerView RAID Manager" - user guide.

5.2.17 Using the Chassis ID Prom Tool

The Chassis ID EPROM located on a dedicated Chassis ID board or on the front panel board of your server 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 web pages:

<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 Japan:
Follow the instructions provided separately.

Note on Advanced Thermal Design (ATD)



If the 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 ATD logo and more information on Advanced Thermal Design (ATD), see the operating manual of your server.



CAUTION!

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

5.2.18 Configuring LAN teaming

Use ServerView Operations Manager to obtain more 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 information, see the "ServerView Operations Manager - Server Management" user guide.

5.2.18.1 After replacing/upgrading LAN controllers

- ▶ You need to restore the configuration for the LAN Teaming, using the LAN driver utility or OS teaming software.

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



For more information, see the relevant LAN driver manual.

5.2.18.2 After replacing a system board



The following procedure must be done for each system board that is replaced.

- ▶ 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 or OS teaming software.



For more information, see the relevant LAN driver manual.

5.2.19 Switching off the ID indicator

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



For more information, see section ["Locating the defective server" on page 51](#) or the "ServerView Suite Local Service Concept (LSC)" and "iRMC S5 - Web Interface" 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 ID icon in the RMC web interface

- ▶ Log in to the iRMC S5 web interface.

The icon that represents the ID indicator LED resides on the right of the menu bar. Its color symbolizes its status:

blue: the ID LED is on.

grey: the ID LED is off

- ▶ Click the icon to switch the ID indicator LED on or off.

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.

5.2.20 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 information on installing ServerView agents, see the "ServerView Operations Manager - Installation ServerView Agents for Windows" user guide.

5.2.21 Performing a fan test



Notes on replacing a defective fan

After replacing a defective system fan or PSU 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.
The **System** menu is displayed on default.
- ▶ Open the **Cooling** page.

- ▶ Expand the *Cooling Devices* group.
- ▶ Click *Start Fan Test*



For more information on iRMC settings, see the iRMC user guides.

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**.

In case of maintenance done by Fujitsu engineers in Japan:

Executing the fan test via Chassis ID Prom Tool



Please follow the instructions provided separately.

6 Power supply unit (PSU)

Safety notes



CAUTION!

- Do not disassemble the PSU. Doing so may cause electric shock.
- Areas around the PSU may remain extremely hot after shutdown. After shutting down the server, wait for hot components to cool down before removing the PSU.
- When installing a PSU, ensure that the connector of the PSU is not damaged or bent.
- The PSU is heavy, so handle it carefully. If you drop it by mistake, injuries may result.
- For more information, see chapter ["Important information" on page 37](#).

6.1 Basic information

The server can be equipped:

- with a standard PSU (permanently built-in)

The PSU adjusts automatically to any mains voltage in the range of 100 V - 240 V.

- or up to two hot-plug PSUs

In its basic configuration, the server has one PSU that adjusts automatically to any mains voltage in the range of 100 V - 240 V. Besides the PSU, a second PSU can be installed optionally to serve as a redundant power supply. If one PSU fails, the second PSU in the redundant configuration ensures operation can continue uninterrupted and the defective PSU can be replaced during operation (hot-plug).

- or one hot-plug PSU and one Fujitsu battery unit (FJBU)

Besides the PSU, an FJBU can be installed optionally as a modular UPS. When power fail happened, the server can operate by FJBU battery for a while. The FJBU can be replaced during operation (hot-plug).



CAUTION!

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

Assembly rules

- Always install a dummy cover into an unused PSU bay to comply with applicable EMC regulations and satisfy cooling requirements.
- For a redundant power supply configuration you need always two PSUs with the same power class.

6.2 Standard power supply

6.2.1 Replacing the standard PSU



**Field Replaceable Unit
(FRU)**



Hardware: 10 minutes

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

6.2.1.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

6.2.1.2 Removing the defective standard PSU



Figure 56: Disconnecting the power cables

- ▶ Open the cable clamps (1).
- ▶ Disconnect the power cables from the system board (2).



Figure 57: Removing the screws

- ▶ Remove the five screws (see circles).



Figure 58: Taking out the standard PSU

- ▶ Push the PSU a few centimeters toward the inside (1) to disengage the locking mechanism.
- ▶ Lift the PSU out of the chassis (2).

Power supply unit (PSU)



Figure 59: Removing the installation frame from the PSU (A)

- ▶ Remove the two screws (see circles).



Figure 60: Removing the installation frame from the PSU (B)

- ▶ Remove the installation frame from the PSU.

6.2.1.3 Installing the new standard PSU



Figure 61: Attaching the installation frame to the PSU

- ▶ Attach the installation frame to the PSU.



Figure 62: Securing the installation frame to the PSU

- ▶ Fasten the installation frame to the PSU with two screws (see circles).

Power supply unit (PSU)



Figure 63: Installing the standard PSU

- ▶ Insert the PSU so that the two hooks on the server floor (see close-up) rest in the recesses in the installation frame (1).
- ▶ Push the PSU towards the rear of the chassis (2).
- ▶ Fasten the PSU to the chassis with five screws (see figure 57).



Figure 64: Connecting the power cables

- ▶ Connect the power cables to the system board:

- 1 PSU power cable to connector "PWR MAIN".
- 2 Power signal cable to connector "PC98".



For the cable plans, see chapter ["Appendix B" on page 477](#).

- ▶ Run the power cables through the cable clamps as shown.

6.2.1.4 Concluding steps

- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#).
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

Power supply unit (PSU)

- ▶ "Resuming BitLocker functionality" on page 117
- ▶ "Performing a fan test" on page 124

6.3 Redundant power supply

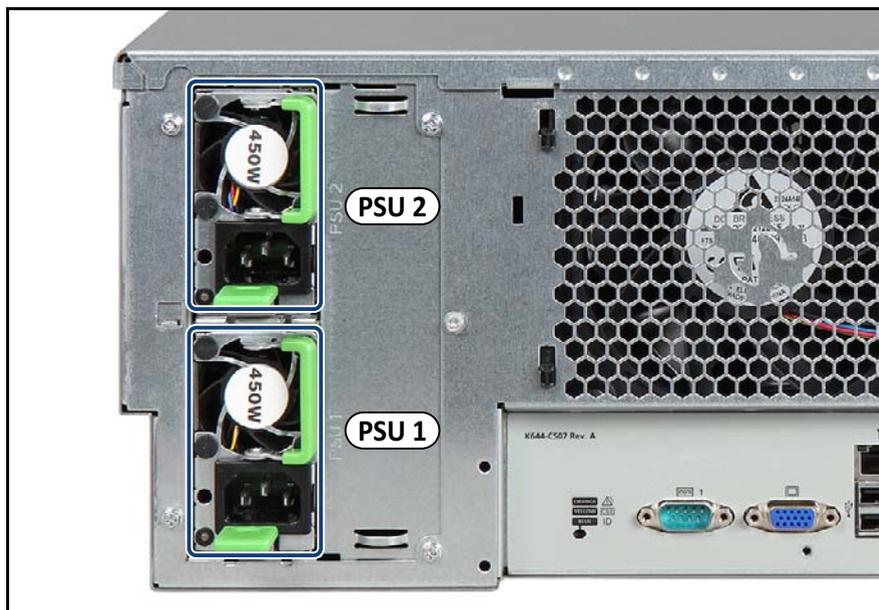


Figure 65: PSU bays

6.3.1 Installing a hot-plug PSU



Customer Replaceable Unit (CRU)



Hardware: 5 minutes

Tools: tool-less

6.3.1.1 Preliminary steps

No steps needed.

6.3.1.2 Removing the dummy cover

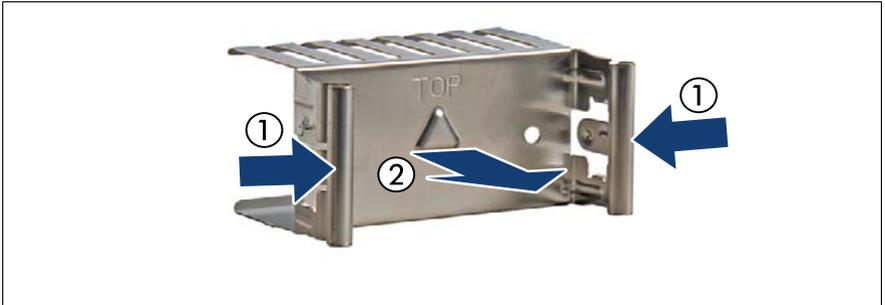


Figure 66: Removing the dummy cover

- ▶ Press in on both release latches (1) and remove the PSU dummy cover (2).



CAUTION!

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

6.3.1.3 Installing a hot-plug PSU

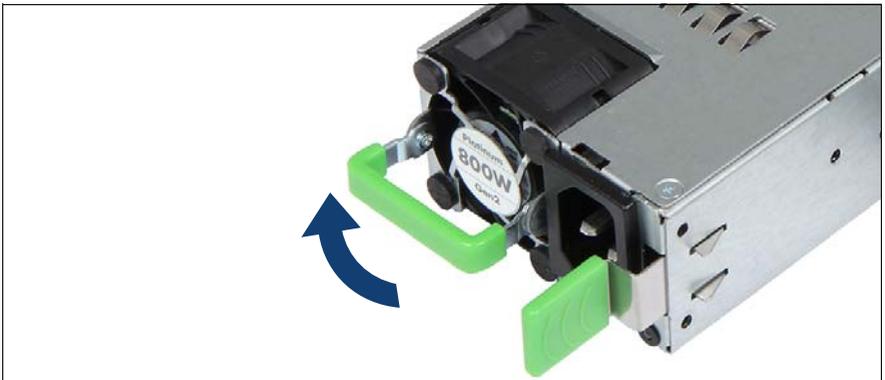


Figure 67: Folding up the handle

- ▶ Push the handle of the PSU halfway upward in the direction of the arrow.

Power supply unit (PSU)

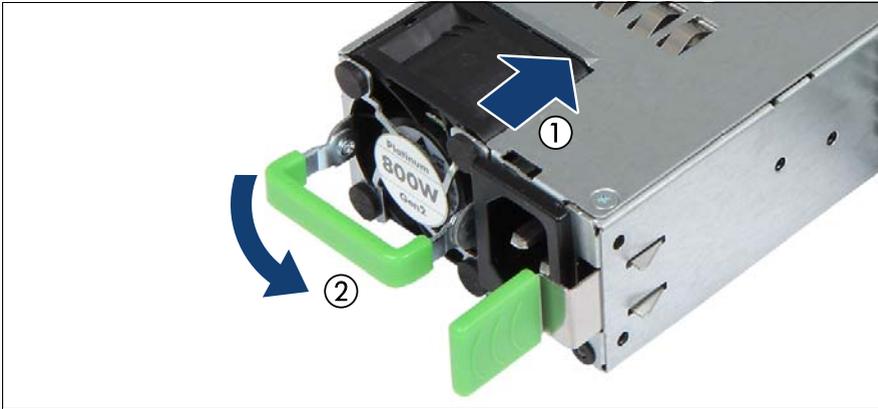


Figure 68: Installing the PSU

- ▶ Push the PSU into its bay (1) as far as it will go until the release latch snaps in place.
- ▶ Fold down the handle on the PSU (2).

i Ensure that the PSU engages correctly in the bay and is locked in position. This is the only way to prevent the PSU from sliding out of its bay and being damaged during transportation.

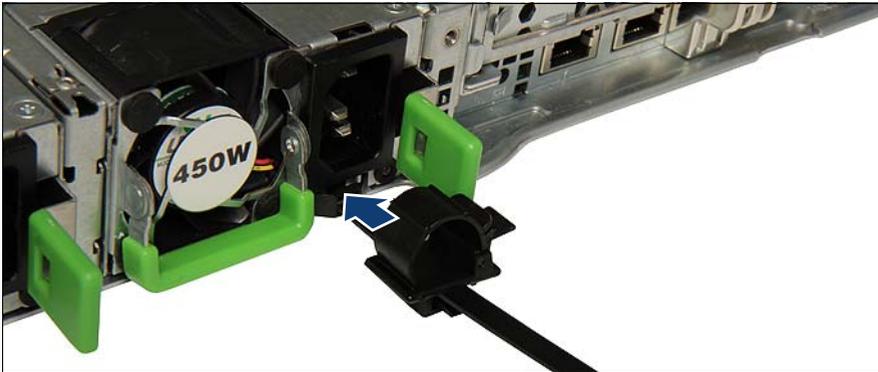


Figure 69: Installing the cable clamp

- ▶ Push the cable clamp into the corresponding hole until it clicks in.
- ▶ If applicable, configure the redundant power supply.

6.3.1.4 Concluding steps

- ▶ "Connecting the power cord" on page 78
- ▶ "Performing a fan test" on page 124

6.3.2 Removing a hot-plug PSU



Customer Replaceable Unit (CRU)



Hardware: 5 minutes

Tools: tool-less

Note for servers using CMA (Cable Management Arm)

Regarding of removing PSUs, additional tasks are needed, due to an interference between CMA stopper and the PSUs.

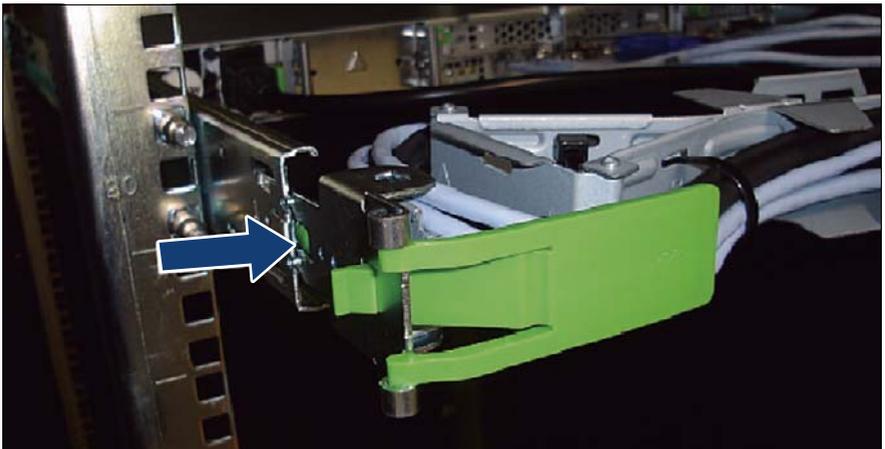


Figure 70: Unlocking the CMA stopper

- ▶ Push the lock spring inward to unlock the CMA stopper.



CAUTION!

In case of not enough space at the under side, unlock the CMA stopper of the server below and pull out the CMA to the rear side.

Power supply unit (PSU)

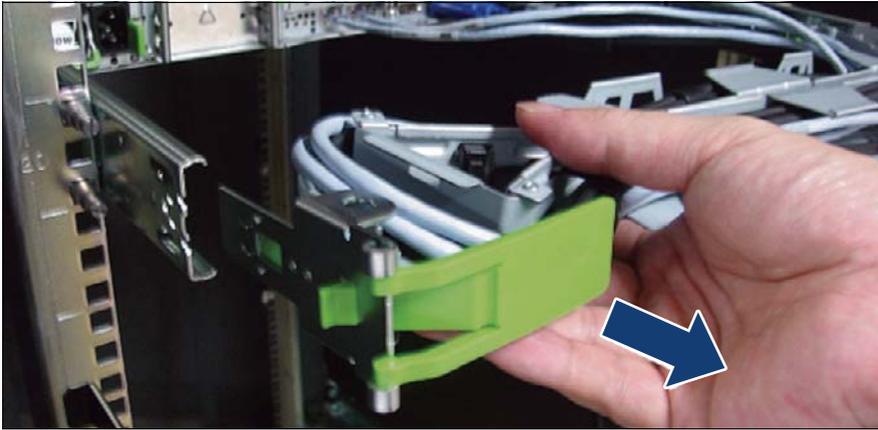


Figure 71: Removing the CMA stopper

- ▶ Remove the CMA stopper with the mounted crossbar.
- ▶ Hold the CMA stopper, the crossbar and the CMA including cables in the one hand.

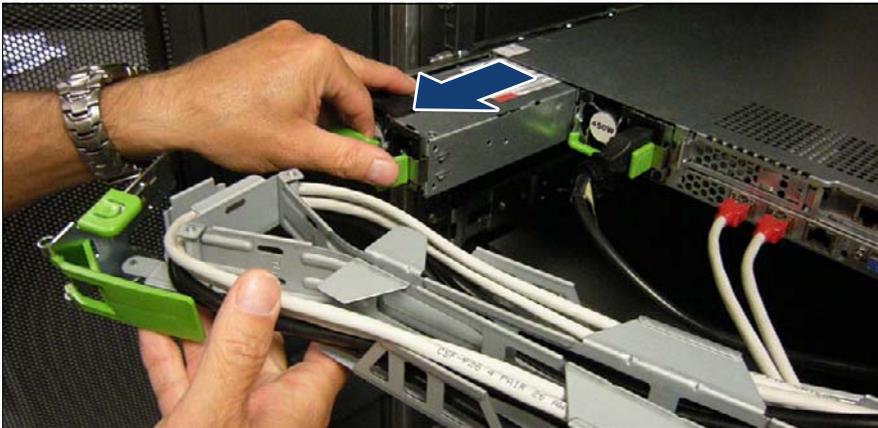


Figure 72: Removing the PSU

- ▶ Remove the PSU and install the dummy cover carefully.
- ▶ Mount the complete assembly (CMA stopper, the crossbar and the CMA) again into the rail.

6.3.2.1 Preliminary steps

- ▶ Only when replacing a PSU in a non-redundant configuration: "[Shutting down the server](#)" on page 53.
- ▶ Remove the power cord from the hot-plug PSU, see section "[Disconnecting the power cord](#)" on page 54.

6.3.2.2 Removing a hot-plug PSU

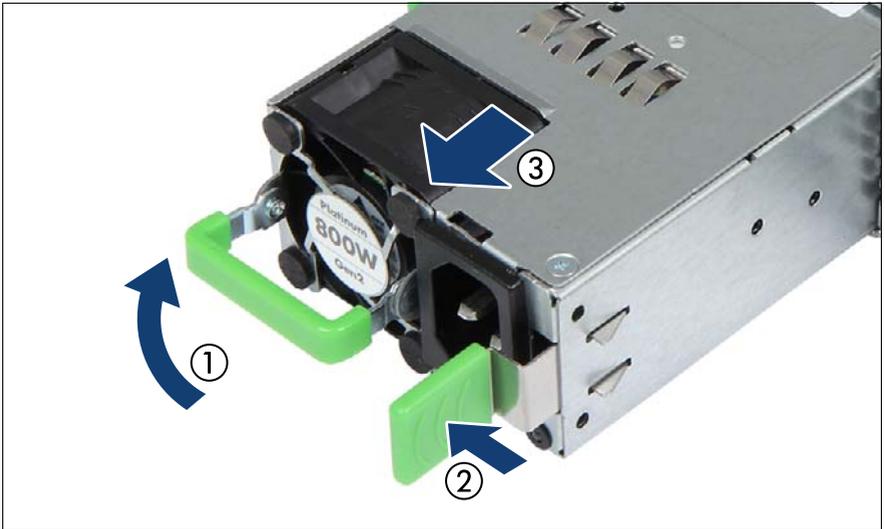


Figure 73: Removing the PSU

- ▶ Push the handle of the PSU halfway upward in the direction of the arrow (1).
- ▶ Press in on the green locking latch (2).
- ▶ While keeping the green locking latch pressed, pull the PSU out of its bay (3).



CAUTION!

Never leave the bay for the hot-plug PSU empty for more than two minutes during operation. Otherwise, excessive temperatures could damage system components.

6.3.2.3 Installing a dummy cover



Figure 74: Installing the dummy cover

- ▶ Insert the dummy cover into the empty bay with the impressed arrow symbol facing to the left (see circle).
- ▶ Push the PSU dummy cover into its bay until it locks in place.



CAUTION!

Always install dummy covers into unused bays to comply with applicable EMC regulations and satisfy cooling requirements.

6.3.2.4 Concluding steps

- ▶ No steps needed.

6.3.3 Replacing hot-plug PSUs



**Customer Replaceable Unit
(CRU)**



Hardware: 5 minutes

Tools: tool-less



CAUTION!

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

Note for servers using CMA (Cable Management Arm)

Regarding of replacing PSUs, additional tasks are needed, due to an interference between CMA stopper and the PSUs.

- ▶ Push the lock spring inward to unlock the CMA stopper (see figure 70).



CAUTION!

In case of not enough space at the under side, unlock the CMA stopper of the server below and pull out the CMA to the rear side.

- ▶ Remove the CMA stopper with the mounted crossbar (see figure 71).
- ▶ Hold the CMA stopper, the crossbar and the CMA including cables in the one hand.
- ▶ Remove the PSU (see figure 72) and install the new PSU carefully.
- ▶ Mount the complete assembly (CMA stopper, the crossbar and the CMA) again into the rail.

6.3.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Locating the defective component" on page 52](#)
- ▶ Check which PSU is defective.
A PSU is defective when the PSU status indicator lights orange. For more information, see section ["Indicator on hot-plug PSU" on page 469](#).
- ▶ Only when replacing a PSU in a non-redundant configuration: ["Shutting down the server" on page 53](#)
- ▶ Remove the power cord from the defective PSU, see section ["Disconnecting the power cord" on page 54](#)

6.3.3.2 Removing the defective hot-plug PSU

- ▶ Remove the hot-plug PSU, see section ["Removing a hot-plug PSU" on page 141](#).

6.3.3.3 Installing the new hot-plug PSU

- ▶ Install the hot-plug PSU, see section ["Installing a hot-plug PSU" on page 137](#).

6.3.3.4 Concluding steps

- ▶ Connect the power cord to the new hot-plug PSU and secure it with a cable tie, see section ["Connecting the power cord" on page 78](#).
- ▶ Only when replacing a hot-plug PSU in a non-redundant configuration: ["Switching on the server" on page 80](#)
- ▶ ["Performing a fan test" on page 124](#)

6.3.4 Replacing the power distribution board



**Field Replaceable Unit
(FRU)**



Hardware: 15 minutes

Tools: tool-less

6.3.4.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

6.3.4.2 Removing the defective power distribution board

- ▶ Remove all PSUs, see section ["Removing a hot-plug PSU" on page 141](#).

Power supply unit (PSU)

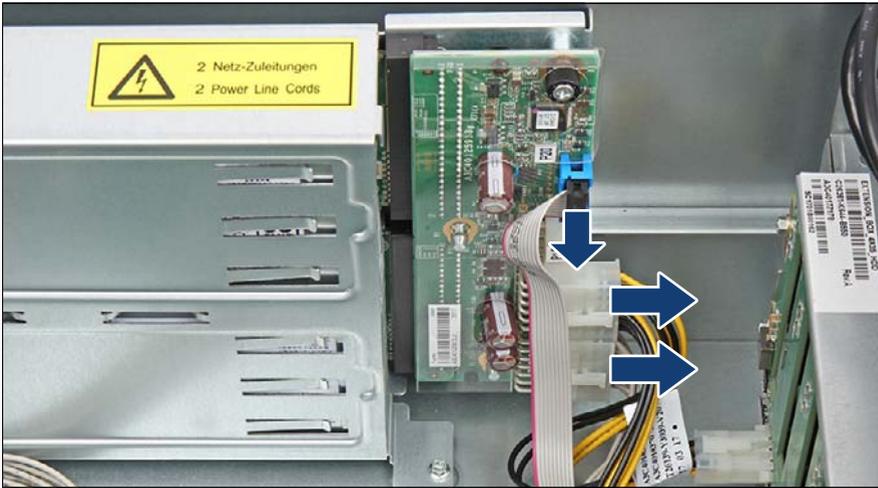


Figure 75: Disconnecting all cables from the power distribution board

- ▶ Disconnect all cables from the power distribution board.

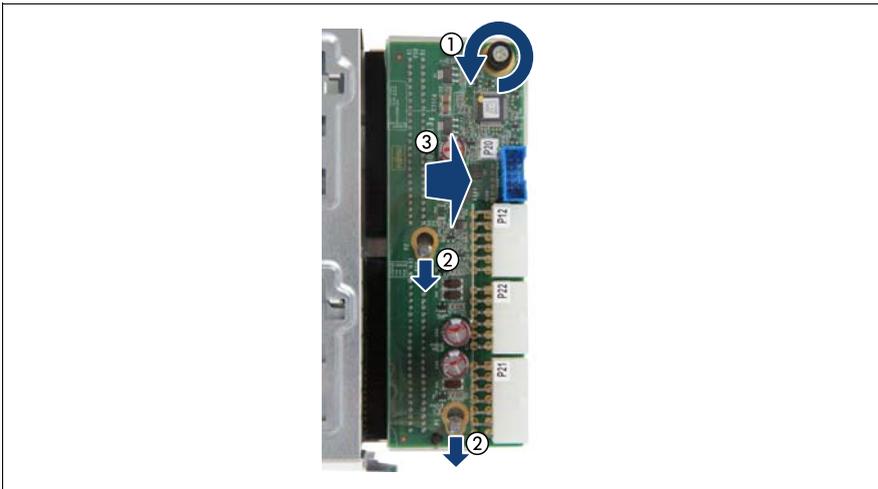


Figure 76: Removing the power distribution board

- ▶ Loosen the captive screw (1).
- ▶ Push the power distribution board in direction of the arrows (2).
- ▶ Remove the power distribution board (3).

6.3.4.3 Installing the new power distribution board

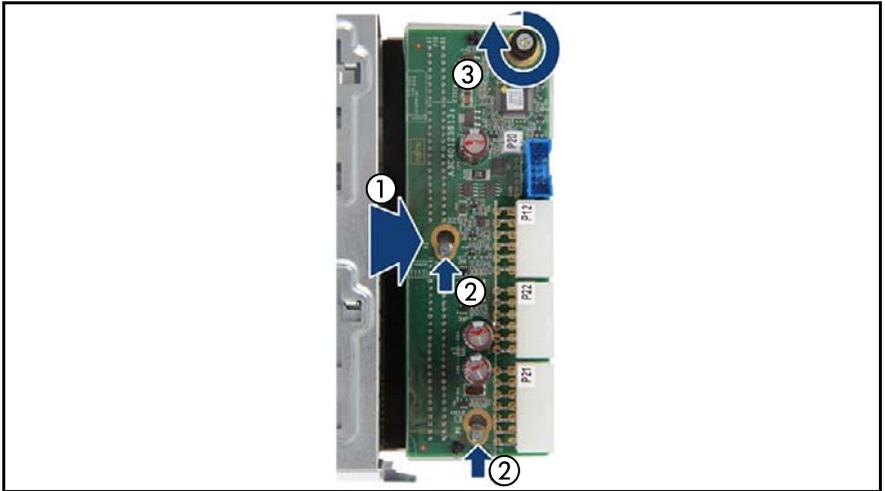


Figure 77: Installing the power distribution board

- ▶ Insert the new power distribution board (1).
- ▶ Push the power distribution board in direction of the arrow (5).
- ▶ Fasten the captive screw (6).



Figure 78: Connecting the power distribution board

- ▶ Connect the cables to the power distribution board:

- 1 PSU signal cable to connector "P20"
- 2 Power cable (from backplanes) to connector "P22"
- 3 PSU power cable (from system board) to connector "P21"

 For the cable plans, see chapter ["Appendix B" on page 477](#).

- ▶ Install the PSUs, see section ["Installing a hot-plug PSU" on page 136](#).

6.3.4.4 Concluding steps

- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)

6.4 Fujitsu battery unit (FJBU)

6.4.1 Installing the FJBU



Customer Replaceable Unit (CRU)



Hardware: 5 minutes

Tools: tool-less

6.4.1.1 Preliminary steps

No steps needed.

6.4.1.2 Removing the dummy cover

- ▶ Remove the dummy cover, see section ["Removing the dummy cover" on page 137](#).

Power supply unit (PSU)

6.4.1.3 Installing an FJBU



Figure 79: Installing a FJBU

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



CAUTION!

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

6.4.1.4 Concluding steps

- ▶ No steps needed.



To execute auto shutdown after power fail, you should install the FJBU management software. How to install and configure the FJBU management software, see the FJBU user guide.

6.4.2 Removing the FJBU



**Customer Replaceable Unit
(CRU)**



Hardware: 5 minutes

Tools: tool-less

Note for servers using CMA (Cable Management Arm)

Regarding of replacing the FJBU, additional tasks are needed, due to an interference between CMA stopper and the FJBU.

- ▶ Push the lock spring inward to unlock the CMA stopper (see figure 70).



CAUTION!

In case of not enough space at the under side, unlock the CMA stopper of the server below and pull out the CMA to the rear side.

- ▶ Remove the CMA stopper with the mounted crossbar (see figure 71).
- ▶ Hold the CMA stopper, the crossbar and the CMA including cables in the one hand.
- ▶ Remove the FJBU (see figure 72) and install the new FJBU carefully.
- ▶ Mount the complete assembly (CMA stopper, the crossbar and the CMA) again into the rail.

6.4.2.1 Preliminary steps

- ▶ No steps needed.

6.4.2.2 Removing an FJBU



Figure 80: Removing a FJBU

- ▶ Press in on the green locking latch (1).
- ▶ While keeping the green locking latch pressed, pull the FJBU out of its bay (2).



CAUTION!

Never leave the bay for the FJBU empty. Install a new FJBU or install the dummy cover.

6.4.2.3 Installing a dummy cover

- ▶ Install the dummy cover, see section ["Installing a dummy cover" on page 142](#).

6.4.3 Replacing the FJBU



**Customer Replaceable Unit
(CRU)**



Hardware: 5 minutes

Tools: tool-less

Note for servers using CMA (Cable Management Arm)

Regarding of replacing the FJBU, additional tasks are needed, due to an interference between CMA stopper and the FJBU.

- ▶ Push the lock spring inward to unlock the CMA stopper (see figure 70).



CAUTION!

In case of not enough space at the under side, unlock the CMA stopper of the server below and pull out the CMA to the rear side.

- ▶ Remove the CMA stopper with the mounted crossbar (see figure 71).
- ▶ Hold the CMA stopper, the crossbar and the CMA including cables in the one hand.
- ▶ Remove the FJBU (see figure 72) and install the new FJBU carefully.
- ▶ Mount the complete assembly (CMA stopper, the crossbar and the CMA) again into the rail.

6.4.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)

6.4.3.2 Removing the defective FJBU

- ▶ Remove the FJBU, see section ["Removing an FJBU" on page 152](#).

6.4.3.3 Installing the new FJBU

- ▶ Install the FJBU, see section ["Installing an FJBU" on page 150](#).

6.4.3.4 Concluding steps

- ▶ No steps needed.

6.5 Converting a standard power supply to a redundant power supply

The standard power supply can be replaced by a redundant power supply. The redundant power supply consists of up to two PSUs. The upgrade kit contains only one PSU (for PSU redundancy the second PSU must be additionally ordered).

The upgrade kit for the redundant power supply consists of the following parts:

- PSU cage with power distribution board
- two power cables
- one hot-plug PSU
- dummy cover (if only one PSU is installed, you have to install the dummy cover in the second bay)
- several screws
- one fan module



Field Replaceable Unit (FRU)



Hardware: 10 minutes

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

6.5.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

6.5.2 Removing the standard PSU

- ▶ Remove the standard PSU, see section ["Removing the defective standard PSU" on page 130](#).

6.5.3 Installing the upgrade kit

Installing the PSU cage

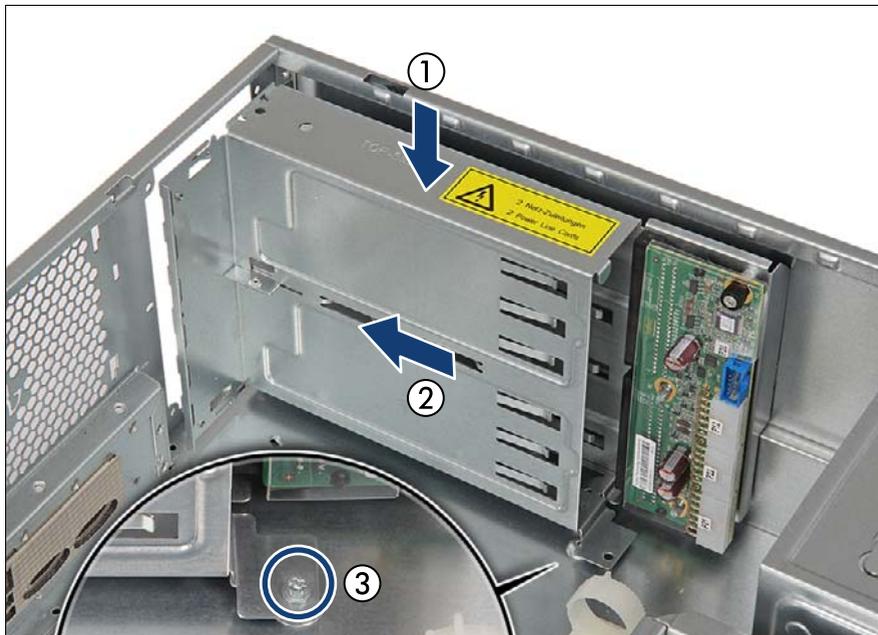


Figure 81: Installing the PSU cage

- ▶ Insert the PSU cage into the chassis (1).
- ▶ Push the PSU cage towards the rear of the chassis (2).
- ▶ Fasten the PSU cage with one screw (3).



Figure 82: Securing the PSU cage

- ▶ Fasten the PSU cage to the chassis with five screws (see circles)

Connecting the power distribution board

- ▶ Connect the cables to the power distribution board (see figure 78).

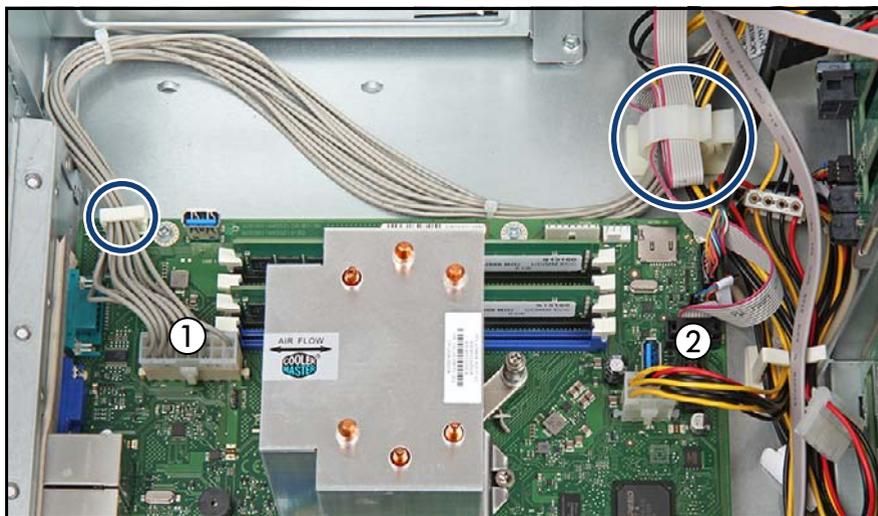


Figure 83: Connecting cables to the system board

- ▶ Connect the cables to the system board:
 - 1 PSU power cable to connector "PWR MAIN".
 - 2 PSU signal cable to connector "P30".
- ▶ Run the cables through the corresponding cable clamps (see circles).
- ▶ Connect the power cables to the corresponding accessible drives / backplanes.



For the cable plan, see chapter ["Appendix B" on page 477](#).

Installing hot-plug PSU and dummy cover

- ▶ Install the hot-plug PSU, see section ["Installing a hot-plug PSU" on page 137](#).



The PSU must be installed in the first bay. The dummy cover must be installed in the second bay.

- ▶ Install the dummy cover, see section ["Installing a dummy cover" on page 142](#).

6.5.4 Concluding steps

- ▶ Install the system fan module, see section "[Installing the system fan module](#)" on page 83
- ▶ "[Reassembling](#)" on page 67
- ▶ "[Connecting the power cord](#)" on page 78
- ▶ "[Switching on the server](#)" on page 80
- ▶ "[Resuming BitLocker functionality](#)" on page 117

7 Hard disk drives (HDD) / solid state drives (SSD)

Safety notes



CAUTION!

- Before removing several HDD/SSD modules, make sure that all HDD/SSD modules can be reinstalled into their original bay. Otherwise, data may be lost.
- Do not touch the circuitry on boards or soldered parts. Hold circuit boards by their metallic areas or edges.
- Before removing an HDD, wait for about 30 seconds until the disk has stopped spinning completely.
- When an HDD is starting up, a resonant noise may be audible for a short while. This does not indicate a failure.
- Depending on the operating system, you can configure the write cache settings for the HDDs. If a power failure should occur while the write cache is enabled, cached data may be lost.
- When disposing of, transferring, or returning an HDD or SSD, wipe out the data on the drive for your own security.
- Rough handling of HDDs may damage the stored data. To cope with any unexpected problems, always back up important data. When backing up data to another HDD, you should make backups on a file or partition basis.
- Be careful not to hit the HDD or bring it into contact with metallic objects.
- Handle the HDD and SSD on a shock and vibration free surface.
- Do not use the HDD and SSD in extremely hot or cold locations, or locations with extreme temperature changes.
- Never attempt to disassemble the HDD or SSD.
- For more information, see chapter ["Important information" on page 37](#).

7.1 Basic information

The HDD or SSD and the installation frame together make up the HDD module or SSD module.

The server is shipped with one of the following HDD or SSD subsystems:

- 3.5-inch HDD subsystem:

Up to four, eight or 12 3.5-inch SAS/SATA HDD modules can be installed. The HDD module is connected to the HDD backplane wirelessly. This allows HDD modules to be plugged in or pulled out easily.

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

- 2.5-inch HDD/SSD subsystem:

Up to eight, 16, or 24 2.5-inch SAS/SATA HDD/SSD modules can be installed. The HDD/SSD module is connected to the HDD backplane wirelessly. This allows HDD/SSD modules to be plugged in or pulled out easily. |

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



In the configuration with up to 12x 3.5-inch HDDs or 24x 2.5-inch HDD/SSDs, up to four PCIe SSDs can be installed in the 8x 2.5 HDD/SSD extension box.



For information on RAID controllers controlling the HDD/SSD modules see chapter ["Expansion cards and backup units" on page 269](#).



In the following sections the figures are shown for the TX1330 M4 (rack model).

The only difference to a TX1330 M4 (floorstand model) in horizontal position: the accessible drive cage is turned around clockwise for 90 degrees.



Figure 84: Rack model versus floorstand model with drive cage turned

7.2 Handling HDDs or SSDs without installation frame

7.2.1 2.5-inch HDD/SSD and 2.5-inch installation frame



Customer Replaceable Unit
(CRU)



Hardware: 5 minutes

Tools: Phillips PH1 / (+) No. 1 screw driver

Installing a 2.5-inch HDD/SSD in a 2.5-inch installation frame



Figure 85: Installing the 2.5-inch HDD/SSD in the 2.5-inch installation frame (A)

- Lay the 2.5-inch HDD/SSD into the 2.5-inch installation frame as shown.



Figure 86: Installing the 2.5-inch HDD/SSD in the 2.5-inch installation frame (B)

- ▶ Fasten the 2.5-inch HDD/SSD with four screws.

Removing a 2.5-inch HDD/SSD from a 2.5-inch installation frame

- ▶ Proceed in reversed order.

7.2.2 2.5-inch HDD/SSD and 3.5-inch installation frame



Customer Replaceable Unit (CRU)



Hardware: 5 minutes

Tools: Phillips PH1 / (+) No. 1 screw driver



In order to use 2.5-inch HDD/SSD, you can install a 2.5-inch HDD/SSD in the 3.5-inch installation frame.

Installing a 2.5-inch HDD/SSD in a 3.5-inch installation frame

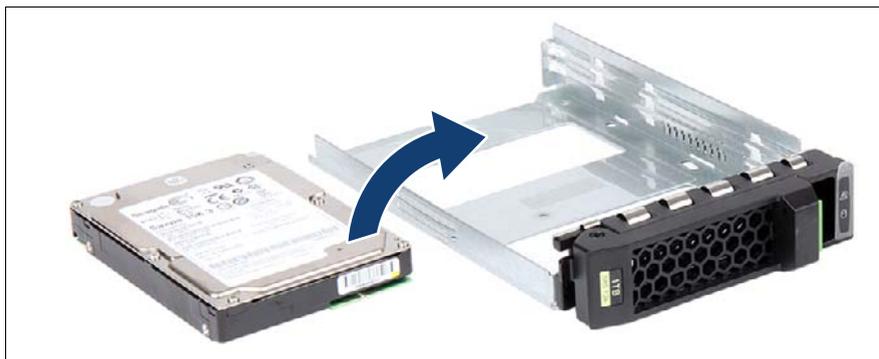


Figure 87: 2.5-inch HDD/SSD and 3.5-inch installation frame

- ▶ Lay the 2.5-inch HDD/SSD into the 3.5-inch installation frame as shown.



Figure 88: Installing the 2.5-inch HDD/SSD in the 3.5-inch installation frame (A)



Figure 89: Installing the 2.5-inch HDD/SSD in the 3.5-inch installation frame (B)

- Fasten the 2.5-inch HDD/SSD with four screws.

Removing a 2.5-inch HDD/SSD from a 3.5-inch installation frame

- Please proceed in reversed order.

7.2.3 3.5-inch HDD and 3.5-inch installation frame



Customer Replaceable Unit (CRU)



Hardware: 5 minutes

Tools: Phillips PH1 / (+) No. 1 screw driver

Installing a 3.5-inch HDD in a 3.5-inch installation frame



Figure 90: Installing the 3.5-inch HDD in the 3.5-inch installation frame (A)

- ▶ Lay the 3.5-inch HDD into the 3.5-inch installation frame as shown.



Figure 91: Installing the 3.5-inch HDD in the 3.5-inch installation frame (B)

- ▶ Fasten the 3.5-inch HDD with four screws.

Removing a 3.5-inch HDD from a 3.5-inch installation frame

- ▶ Please proceed in reversed order.

7.3 3.5-inch HDD configurations

7.3.1 Equipping the 3.5-inch HDD bays

The HDD bays can be equipped with 3.5-inch HDD modules or 2.5-inch HDD/SSD modules, see section ["2.5-inch HDD/SSD and 3.5-inch installation frame"](#) on page 166.

7.3.2 Backplane overview



Figure 92: 3.5-inch HDD SAS backplanes - rack model



Figure 93: 3.5-inch HDD SAS backplanes - floorstand model

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 4x 3.5-inch HDD extension box

7.3.3 Configuration with up to four HDD modules



Figure 94: Configuration with up to four 3.5-inch HDDs

i The HDD numbering as listed in the ServerView RAID Manager differs from the HDD mounting order:

With one SAS controller

Position	Logical drive number	ServerView RAID Manager display name (Enclosure number: Port number)
0	0	Vendor Product (0)
1	1	Vendor Product (1)
2	2	Vendor Product (2)
3	3	Vendor Product (3)

7.3.4 Configuration with up to eight HDD modules



Figure 95: Configuration with up to eight 3.5-inch HDDs

With one SAS controller

Position	Logical drive number	ServerView RAID Manager display name (Enclosure number: Port number)
0	0	Vendor Product (0)
1	1	Vendor Product (1)
2	2	Vendor Product (2)
3	3	Vendor Product (3)
4	4	Vendor Product (4)
5	5	Vendor Product (5)
6	6	Vendor Product (6)
7	7	Vendor Product (7)

7.3.5 Configuration with up to 12 HDD modules



Figure 96: Configuration with up to 12 3.5-inch HDDs

With SAS expander board and one SAS controller

Position	Logical drive number	ServerView RAID Manager display name (Enclosure number: Port number)
0	0	Vendor Product (0)
1	1	Vendor Product (1)
2	2	Vendor Product (2)
3	3	Vendor Product (3)
4	4	Vendor Product (4)
5	5	Vendor Product (5)
6	6	Vendor Product (6)
7	7	Vendor Product (7)
8	8	Vendor Product (1:8)
9	9	Vendor Product (1:9)
10	10	Vendor Product (1:10)
11	11	Vendor Product (1:11)

7.3.6 Configuration with additional PCIe SSDs

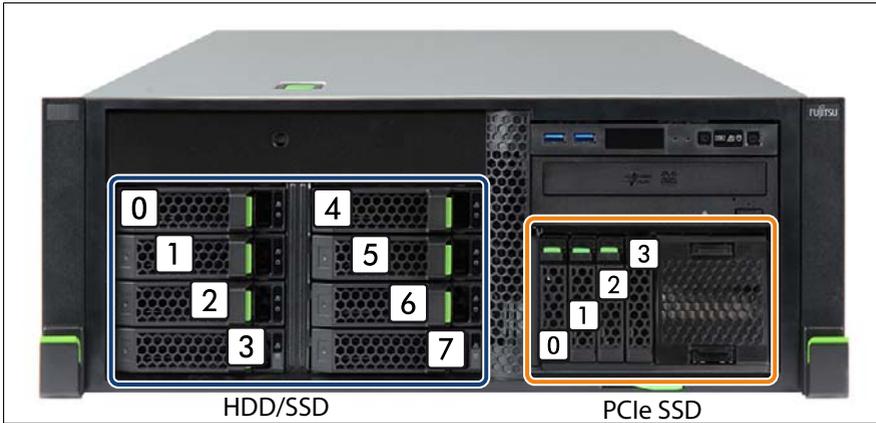


Figure 97: Configuration with up to eight 3.5-inch HDDs/SSDs and up to four PCIe SSDs

With SAS expander board and one SAS controller

Position	Logical drive number	ServerView RAID Manager display name (Enclosure number: Port number)
0	0	Vendor Product (1:0)
1	1	Vendor Product (1:1)
2	2	Vendor Product (1:2)
3	3	Vendor Product (1:3)
4	4	Vendor Product (1:4)
5	5	Vendor Product (1:5)
6	6	Vendor Product (1:6)
7	7	Vendor Product (1:7)

With the 4x 2.5-inch PCIe SSD backplane

Position	Logical drive number	ServerView RAID Manager display name (Enclosure number: Port number)
0	16	SSD PCIe3 Main (1): SSD PCIe3 Capacity Main 2.5" H-P EP (0)
1	17	SSD PCIe3 Main (2): SSD PCIe3 Capacity Main 2.5" H-P EP (0)

Hard disk drives (HDD) / solid state drives (SSD)

Position	Logical drive number	ServerView RAID Manager display name (Enclosure number: Port number)
2	18	SSD PCIe3 Main (3): SSD PCIe3 Capacity Main 2.5" H-P EP (0)
3	19	SSD PCIe3 Main (4): SSD PCIe3 Capacity Main 2.5" H-P EP (0)

7.3.7 Installing 3.5-inch HDD modules



Customer Replaceable Unit (CRU)



**Hardware:
5 minutes**

Tools: tool-less

7.3.7.1 Preliminary steps

- ▶ If applicable, ["Getting access to the component"](#) on page 55.
- ▶ Locate the correct drive bay, see section ["3.5-inch HDD configurations"](#) on page 170.

7.3.7.2 Removing a 3.5-inch HDD dummy module

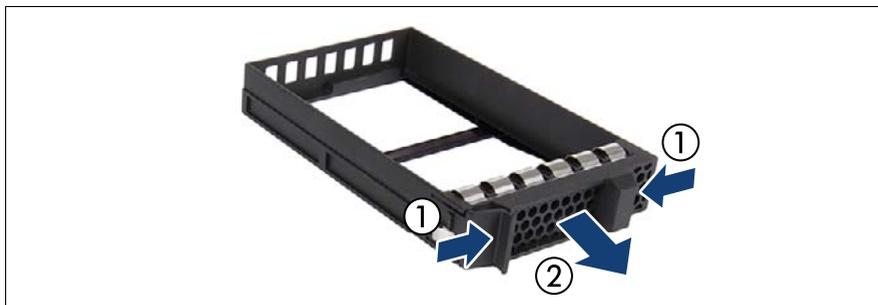


Figure 98: Removing a 3.5-inch dummy module

- ▶ Press both tabs together (1) and 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.

7.3.7.3 Installing a 3.5-inch HDD module

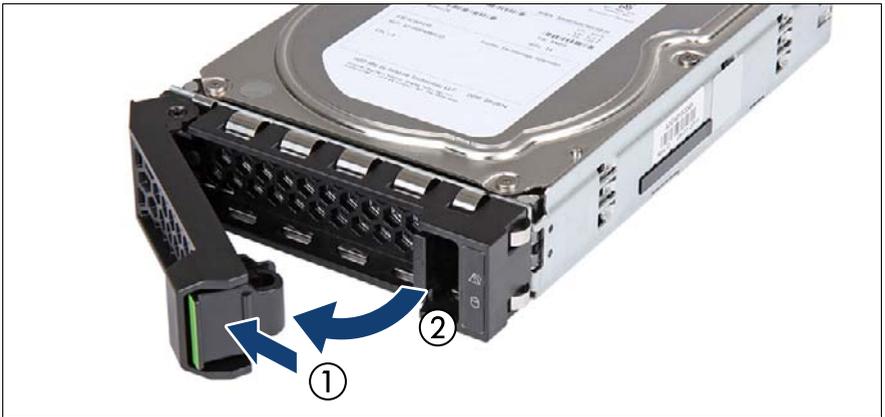


Figure 99: Opening the 3.5-inch HDD module locking lever

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

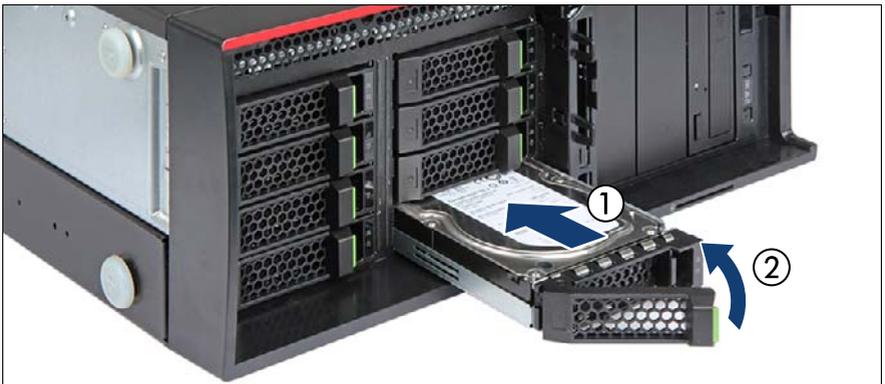


Figure 100: Installing the 3.5-inch HDD module

- ▶ Insert the HDD module into a drive bay and carefully push back as far as it will go (1).
- ▶ Close the locking lever to lock the HDD in place (2).
- ▶ When using a RAID array, add the additional HDD/SSD to the RAID array.

i Configuring the RAID array, see the documentation of the RAID controller, used in your configuration, see section ["Documents you need at hand" on page 33](#).

7.3.7.4 Concluding steps

- ▶ If applicable, ["Reassembling" on page 67](#).



Please refer to your controller manual to configure the installed HDD.

7.3.8 Removing 3.5-inch HDD modules



Customer Replaceable Unit (CRU)



**Hardware:
5 minutes**

Tools: tool-less

7.3.8.1 Preliminary steps

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

RAID level	Procedure
RAID 0	 CAUTION! RAID 0 provides no data redundancy. In case of an HDD/SSD module is defect, all data are lost!
RAID 1 RAID 5	Removing an HDD from a RAID 1 or RAID 5 array will not result in data loss. However, the removed drive needs to be replaced immediately by an HDD module of the same or larger capacity.  After replacing the HDD module, RAID rebuild will be performed as a background process, see section "Performing a RAID array rebuild" on page 117 .

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 in the array will be lost when deleting the RAID array! Be sure to back up your data before deleting a RAID array. For more information, see the "ServerView Suite RAID Management" user guide.

- ▶ If applicable, ["Getting access to the component" on page 55](#).

7.3.8.2 Removing a 3.5-inch HDD module

- ▶ Pinch the green locking clips and open the locking lever (see figure 99).
- ▶ Pull the HDD module out a few centimeters.
- ▶ Wait about 30 seconds to allow the HDD to spin down.



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

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

7.3.8.3 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 bay to comply with applicable EMC regulations and satisfy cooling requirements.



Figure 101: Installing a 3.5-inch HDD dummy module

- ▶ Push the dummy module into the empty bay until it engages.

7.3.8.4 Concluding steps

- ▶ If applicable, ["Reassembling" on page 67](#).

7.3.9 Replacing a 3.5-inch HDD module



Customer Replaceable Unit (CRU)



Hardware: 5 minutes

Tools:

Installation frame included: tool-less

Installation frame excluded: Phillips (+1) No. 1 screw driver



CAUTION!

- Only remove an HDD/SSD module during operation if the drive is not currently being accessed. Observe the indicators for the corresponding HDD/SSD modules, see section ["Indicators on the hot-plug HDD/SSD module" on page 463](#).
- An HDD/SSD module can be replaced while the system is in operation.

RAID configuration with a RAID controller:

Modular Host Bus Adapter with "Integrated RAID" (IR). RAID levels 0 and 1 are supported for internal HDD configurations.

- Modular RAID 0/1 controller with "MegaRAID functionality" (integrated MegaRAID). RAID levels 0, 1, 10, 5 and 50 are supported for internal HDD configurations.
- Modular RAID 5/6 controller with "MegaRAID functionality" (MegaRAID). RAID levels 0, 1, 10, 5, 50, 6 and 60 are supported for internal HDD configurations. As an option, a flash backup unit (FBU) can save the memory content even if the power fails. Cache memory size of up to 8 GB is available.

RAID configuration without a RAID controller:

Please follow the instruction of each software e.g. VSAN, Storage Spaces, and Storage Spaces Direct, provided separately to use the software RAID function of OS or Hypervisor.

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

7.3.9.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ If applicable, ["Getting access to the component" on page 55.](#)
- ▶ ["Locating the defective component" on page 52](#)

7.3.9.2 Removing a 3.5-inch HDD module

- ▶ Remove the HDD module, see section ["Removing a 3.5-inch HDD module" on page 179.](#)
- ▶ If applicable, remove the HDD from the installation frame, see section ["Handling HDDs or SSDs without installation frame" on page 164.](#)

7.3.9.3 Installing a 3.5-inch HDD module

- ▶ If applicable, install the HDD in the installation frame, see section ["Handling HDDs or SSDs without installation frame" on page 164.](#)
- ▶ Install the HDD module, see section ["Installing a 3.5-inch HDD module" on page 182.](#)

7.3.9.4 Concluding steps

- ▶ If applicable, ["Reassembling" on page 67.](#)
- ▶ If the HDD/SSD is configured using a RAID controller with a RAID level higher than "0", the rebuild will start automatically, see section ["Performing a RAID array rebuild" on page 117.](#)

7.3.10 Replacing a 3.5-inch backplane



**Field Replaceable Unit
(FRU)**



Hardware: 15 minutes

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

7.3.10.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ If applicable, ["Removing the bay covers" on page 64](#)
- ▶ Release all HDD/SSD modules and pull them out a few centimeters, see section ["Removing 3.5-inch HDD modules" on page 178](#)



The HDD modules need not to be removed completely. But if you want to remove them nevertheless, check if all HDD modules are uniquely identified so that you can reinsert them into their original bays.

- ▶ Release all dummy modules and pull them out a few centimeters, see section ["Removing a 3.5-inch HDD dummy module" on page 176](#)
- ▶ Disconnect all cables from the defective SAS backplane.

7.3.10.2 Removing the 3.5-inch HDD bay top cover



The 3.5-inch HDD front cover does not need to be removed in order to replace a 3.5-inch HDD SAS backplane. In the figures, the front cover has been removed for illustration purposes only.

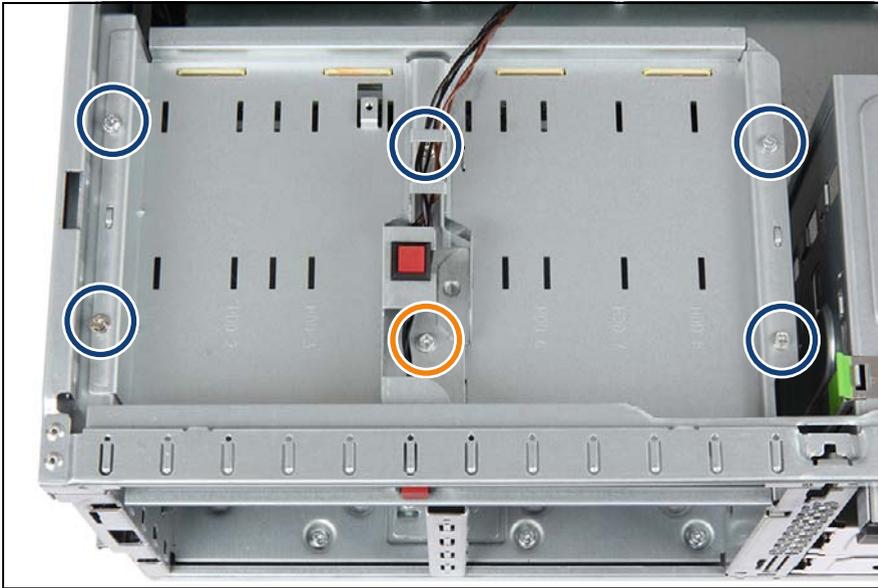


Figure 102: Removing the 3.5-inch HDD bay top cover (A)

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

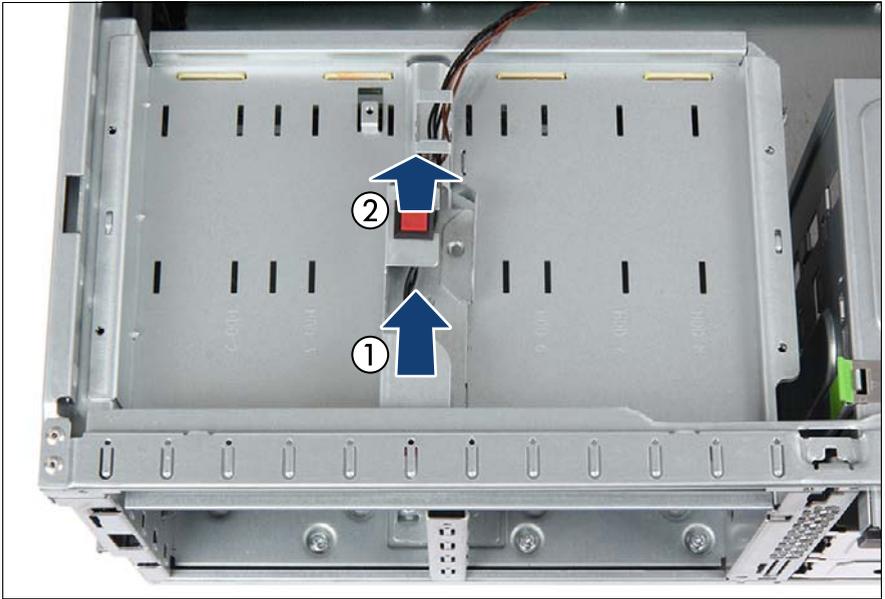


Figure 103: Removing the 3.5-inch HDD bay top cover (B)

- ▶ 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.

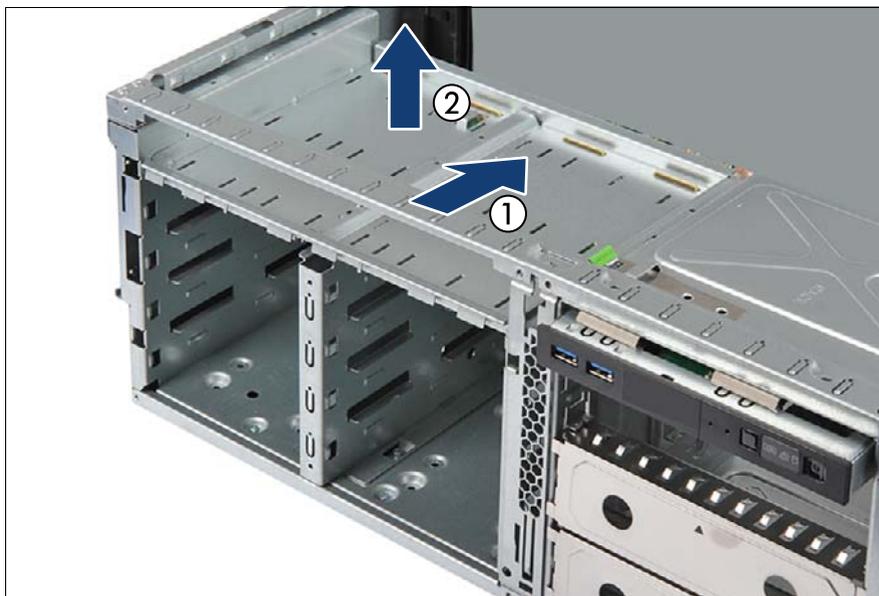


Figure 104: Removing the 3.5-inch HDD bay top cover (C)

- ▶ 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 a 3.5-inch HDD SAS backplane

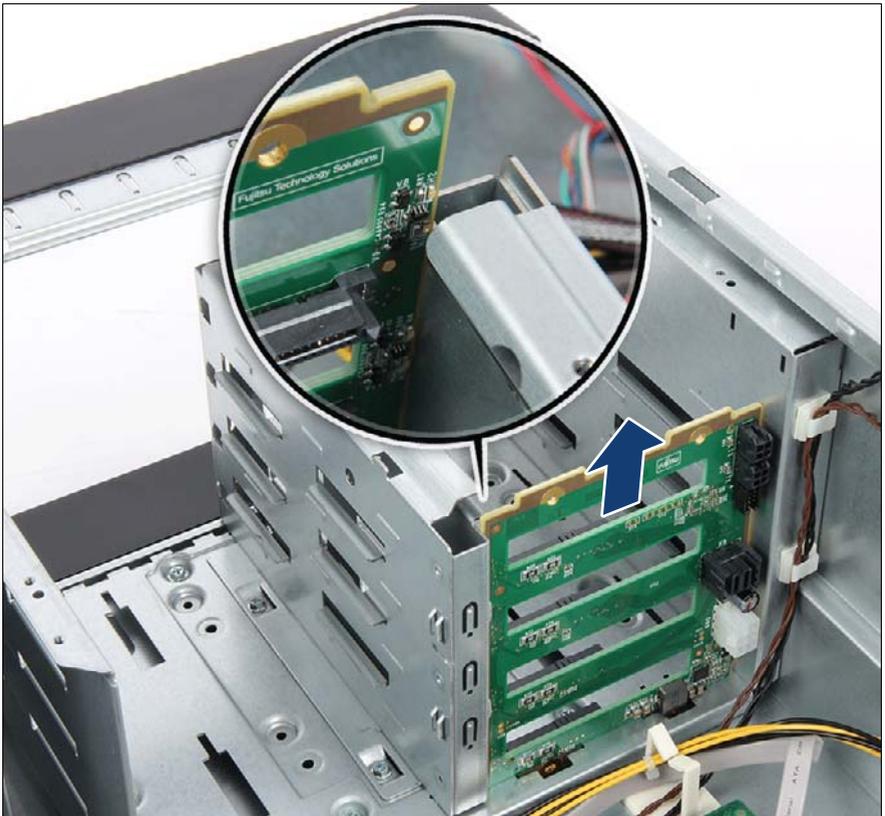


Figure 105: Removing the 3.5-inch HDD SAS backplane

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



Please be careful not to damage the components of the SAS backplane by the metal frame of HDD bay (see close-up).

7.3.10.4 Installing a 3.5-inch HDD SAS backplane

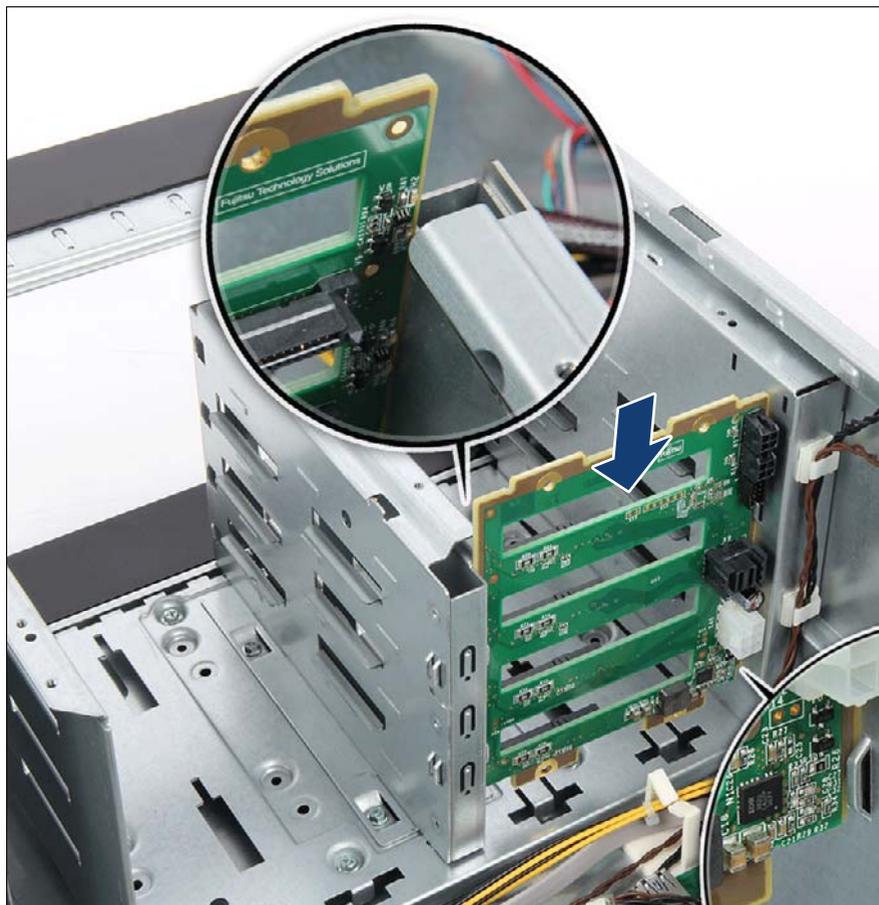


Figure 106: Installing the new 4x 3.5-inch HDD SAS backplane (A)

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



Please be careful not to damage the components of the SAS backplane by the metal frame of HDD bay (see close-up).

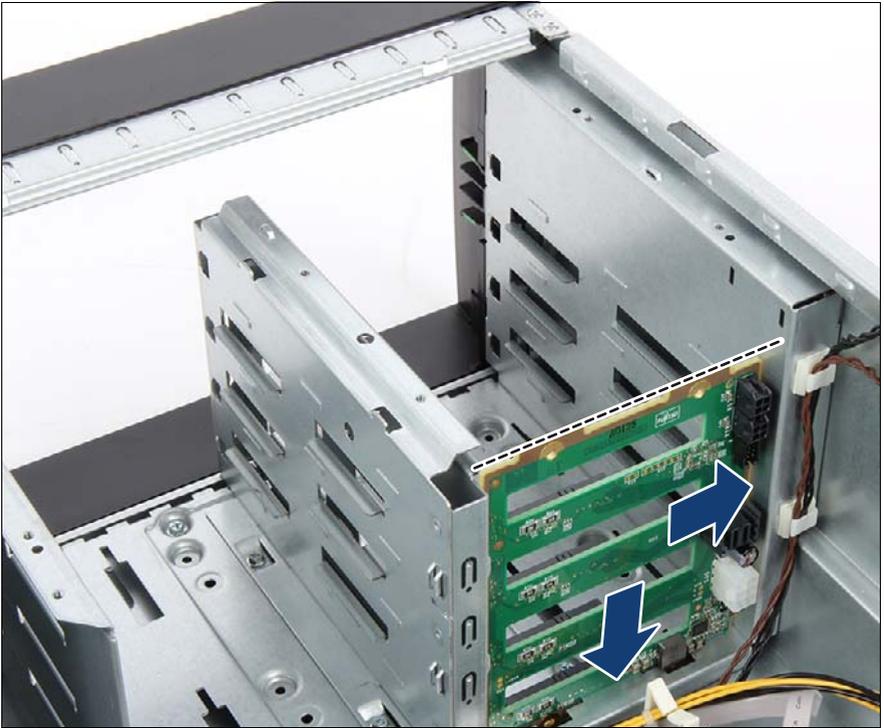


Figure 107: Installing the new 4x 3.5-inch HDD SAS backplane (B)

- ▶ Ensure that the 4x 3.5-inch HDD SAS backplane is properly seated 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).

7.3.10.5 Installing the 3.5-inch HDD bay top cover

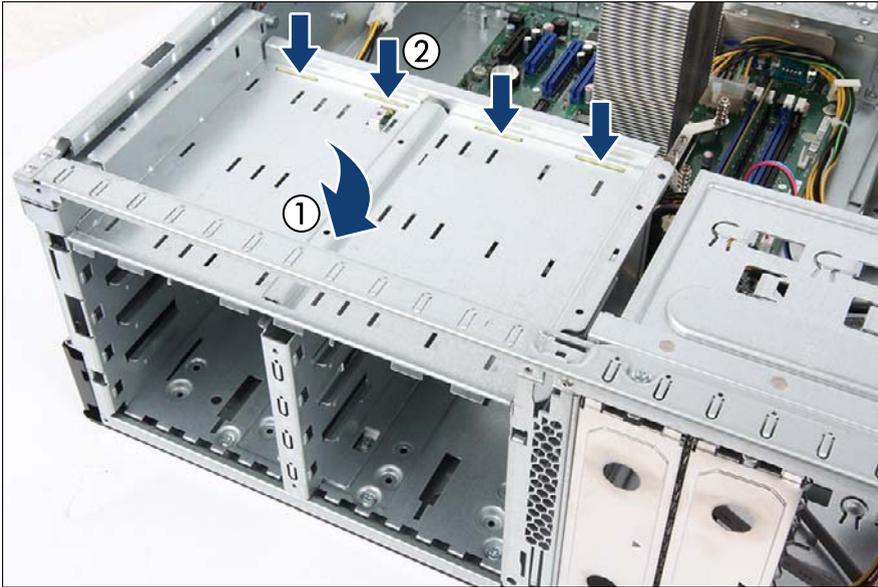


Figure 108: Installing the 3.5-inch HDD bay top cover (A)

- ▶ Lower the 3.5-inch HDD bay top cover onto the HDD bays (1).
- ▶ Place the 3.5-inch HDD bay top cover on the latches of the 4x 3.5-inch HDD SAS backplane (2).



CAUTION!

Ensure that the latches of the 4x 3.5-inch HDD SAS backplane are properly seated in the openings in the HDD bay top cover.

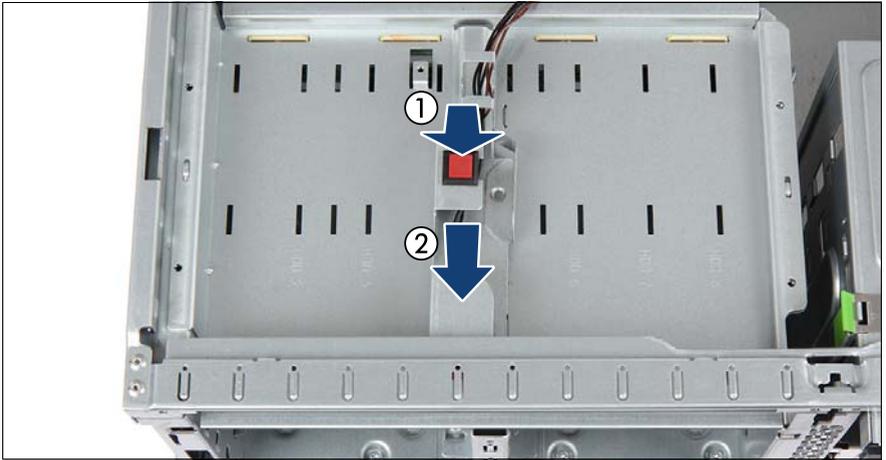


Figure 109: Installing the 3.5-inch HDD bay top cover (B)

- ▶ Place the intrusion switch holder on the HDD bay top cover as shown (1).
- ▶ Push the intrusion switch holder under the front chassis rim so that the hole of screws can match with (2).

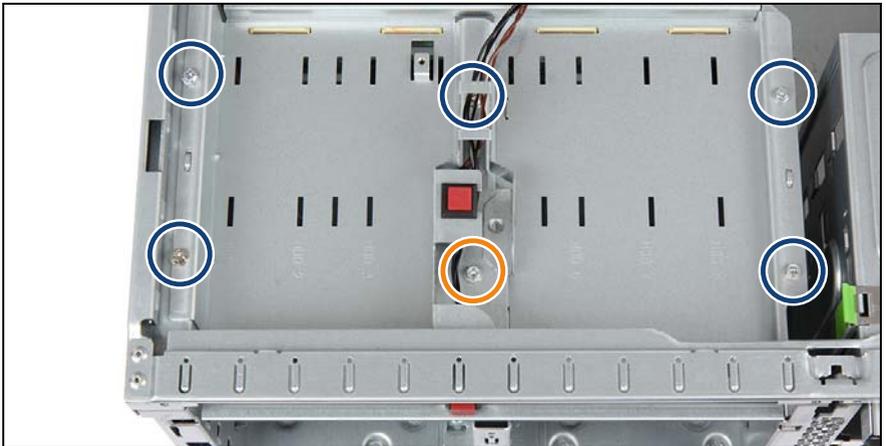


Figure 110: Installing the 3.5-inch HDD bay top cover (C)

- ▶ Fasten the HDD bay top cover to the chassis with five screws (see blue circles).
- ▶ Fasten the intrusion switch holder on the HDD bay top cover with one screw (see orange circle).

7.3.10.6 Connecting cables

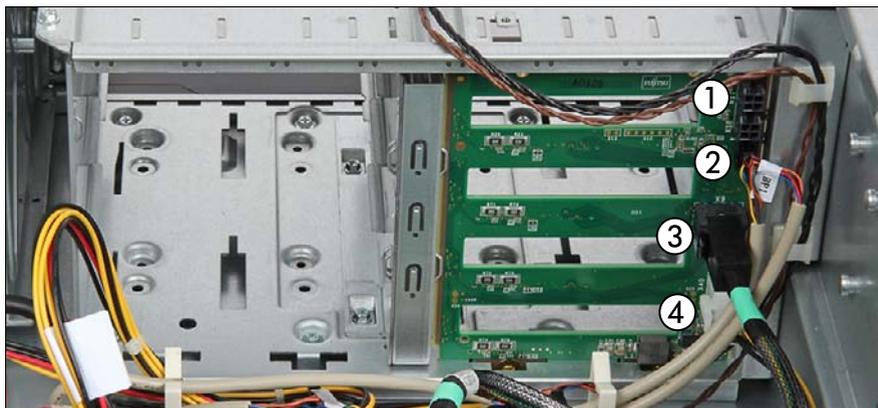


Figure 111: Connecting cables to the SAS backplane (example 4. 3.5-inch HDDs)

▶ Connect the cables to the backplane:

- 1 If applicable, riser card power cable
- 2 If applicable, OOB cable
- 3 SAS cable
- 4 Power cable



For the cable plan, see chapter ["Appendix B" on page 477](#).

7.3.10.7 Concluding steps

- ▶ Insert all HDD/SSD modules, see section ["Installing 3.5-inch HDD modules" on page 176](#).



Make sure that you reinstall the HDD/SSD module in the bay it was located before the HDD backplane replacement.

- ▶ ["Installing the SAS expander board" on page 251](#)
- ▶ ["Installing a system fan" on page 266](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

7.3.11 Upgrading configuration from up to four to up to eight 3.5-inch HDDs



Upgrade and Repair Unit (URU)



Hardware:20 minutes

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

7.3.11.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove all HDD/SSD modules, see section ["Removing 2.5-inch HDD/SSD modules" on page 207](#).

7.3.11.2 Removing the 3.5-inch HDD bay top cover

- ▶ Remove the 3.5-inch HDD bay top cover, see section ["Removing the 3.5-inch HDD bay top cover" on page 183](#)).

7.3.11.3 Removing the 4x 3.5-inch HDD front panel



Figure 112: Removing the 4x 3.5-inch HDD front panel

- ▶ Remove four screws from the 4x 3.5-inch HDD front panel (see circles).
- ▶ Pull up the 4x 3.5-inch HDD front panel to disengage it from the chassis (see arrow).
- ▶ Remove the 4x 3.5-inch HDD front panel.

7.3.11.4 Installing the second 3.5-inch HDD SAS backplane

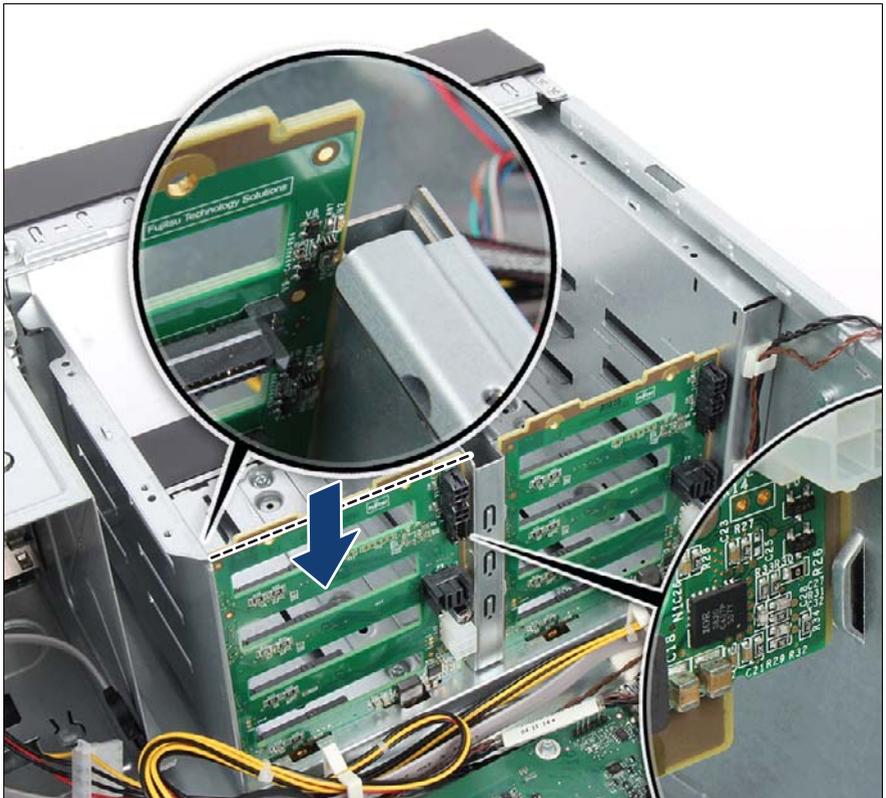


Figure 113: Installing the second 3.5-inch HDD SAS backplane

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

i Please be careful not to damage the components of the SAS backplane by the metal frame of HDD bay (see close-up).

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

7.3.11.5 Installing the 8x 3.5-inch HDD front panel

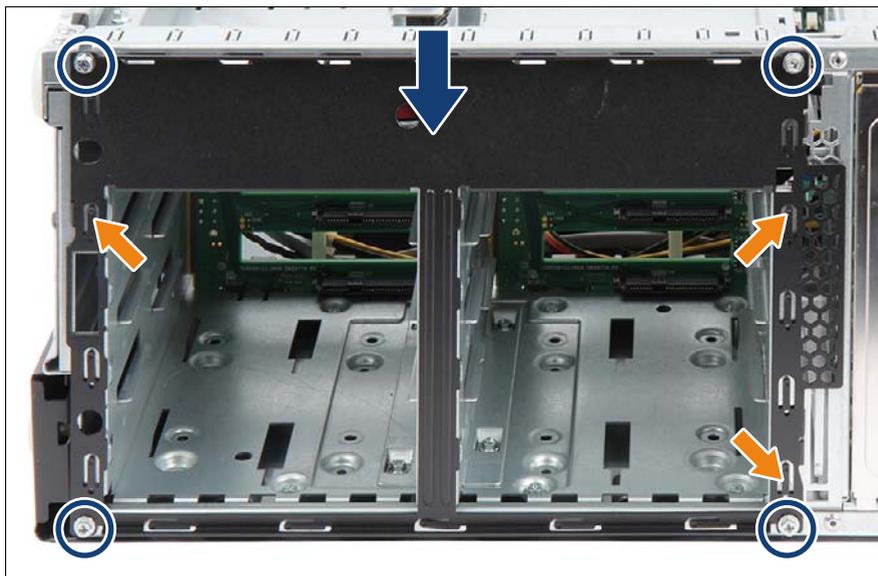


Figure 114: Securing the 8x 3.5-inch HDD front panel

- ▶ Fit the three hooks on the HDD front panel into the slots in the server front (see orange arrows).
- ▶ Firmly press down on the HDD front panel until its upper edge is flush with the chassis (see blue arrow).
- ▶ Fasten the HDD front panel to the server front with four M3 x 4.5 mm screws (see circles).

7.3.11.6 Installing the 3.5-inch HDD bay top cover

- ▶ Install the HDD bay top cover, see section ["Installing the 3.5-inch HDD bay top cover"](#) on page 190.

7.3.11.7 Connecting cables

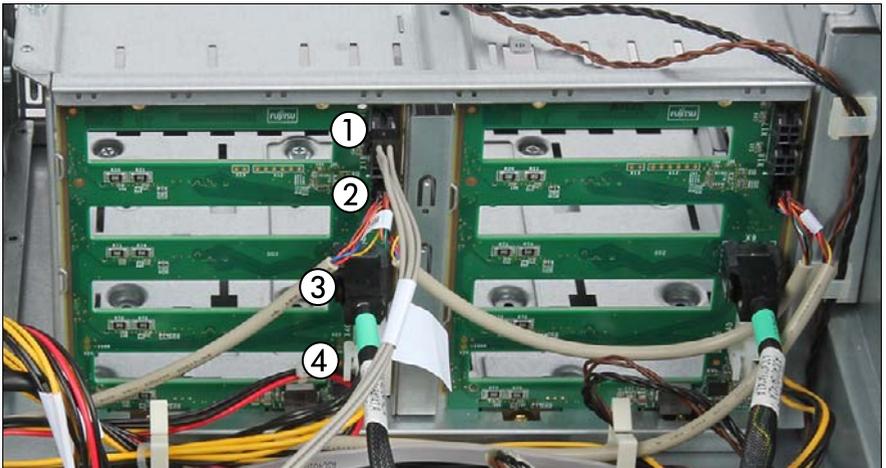


Figure 115: Connecting cables to the SAS backplane 2 (example 8x 3.5-inch HDDs)

► Connect the cables to the backplane:

- 1 If applicable, SAS expander board power cable
- 2 If applicable, OOB cable
- 3 SAS cable
- 4 Power cable

i For more information about connecting SAS cables to the corresponding controller see section ["Expansion cards and riser card"](#) on page 279.

i For the cable plan, see chapter ["Appendix B"](#) on page 477.

7.3.11.8 Concluding steps

- ▶ Install all removed HDD/SSD modules, see section "[Installing 2.5-inch HDD/SSD modules](#)" on page 205.



For detailed information on HDD mounting order, see section "[3.5-inch HDD configurations](#)" on page 170.

- ▶ "[Reassembling](#)" on page 67
- ▶ "[Connecting the power cord](#)" on page 78
- ▶ "[Resuming BitLocker functionality](#)" on page 117
- ▶ "[Switching on the server](#)" on page 80

7.4 2.5-inch HDD/SSD configurations

7.4.1 Backplane overviews



Figure 116: Example three backplanes - rack model



Figure 117: Example three backplanes - floorstand model

1	SAS backplane 1 in HDD cage 1 (basic configuration)
2	SAS backplane 2 in optional HDD cage 2
3	SAS backplane 3 in optional 8x 2.5-inch HDD/SSD extension box



This numbering is based on ["Configuration with up to 24 HDDs/SSDs" on page 202.](#)

7.4.2 Configuration with up to eight HDDs/SSDs



Figure 118: Configuration with up to eight 2.5-inch HDDs/SSDs

With one SAS controller

Position	Logical drive number	ServerView RAID Manager display name (Enclosure number: Port number)
0	0	Vendor Product (0)
1	1	Vendor Product (1)
2	2	Vendor Product (2)
3	3	Vendor Product (3)
4	4	Vendor Product (4)
5	5	Vendor Product (5)
6	6	Vendor Product (6)
7	7	Vendor Product (7)

7.4.3 Configuration with up to 16 HDDs/SSDs

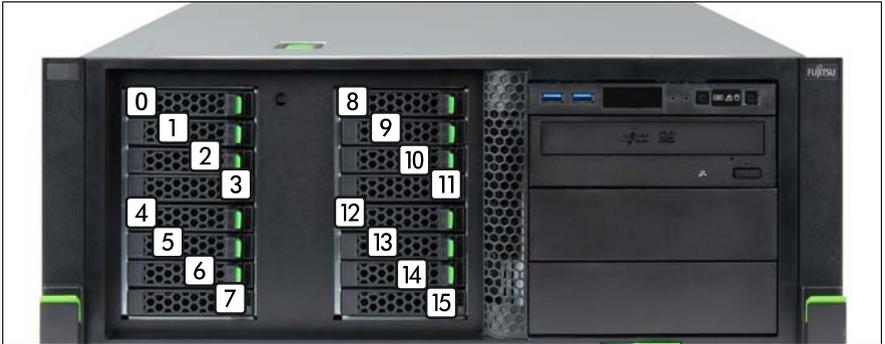


Figure 119: Configuration with up to 16 2.5-inch HDDs/SSDs

With SAS expander board and one SAS controller

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

7.4.4 Configuration with up to 24 HDDs/SSDs



Figure 120: Configuration with up to 24 2.5-inch HDDs/SSDs with HDD extension box

With SAS expander board and one SAS controller

Position	Logical drive number	ServerView RAID Manager display name (Enclosure number: Port number)
0	0	Vendor Product (1:0)
1	1	Vendor Product (1:1)
2	2	Vendor Product (1:2)
3	3	Vendor Product (1:3)
4	4	Vendor Product (1:4)
5	5	Vendor Product (1:5)
6	6	Vendor Product (1:6)
7	7	Vendor Product (1:7)
8	8	Vendor Product (1:8)
9	9	Vendor Product (1:9)
10	10	Vendor Product (1:10)
11	11	Vendor Product (1:11)
12	12	Vendor Product (1:12)
13	13	Vendor Product (1:13)
14	14	Vendor Product (1:14)

Position	Logical drive number	ServerView RAID Manager display name (Enclosure number: Port number)
15	15	Vendor Product (1:15)
16	16	Vendor Product (1:16)
17	17	Vendor Product (1:17)
18	18	Vendor Product (1:18)
19	19	Vendor Product (1:19)
20	20	Vendor Product (1:20)
21	21	Vendor Product (1:21)
22	22	Vendor Product (1:22)
23	23	Vendor Product (1:23)

7.4.5 Configuration with additional PCIe SSDs

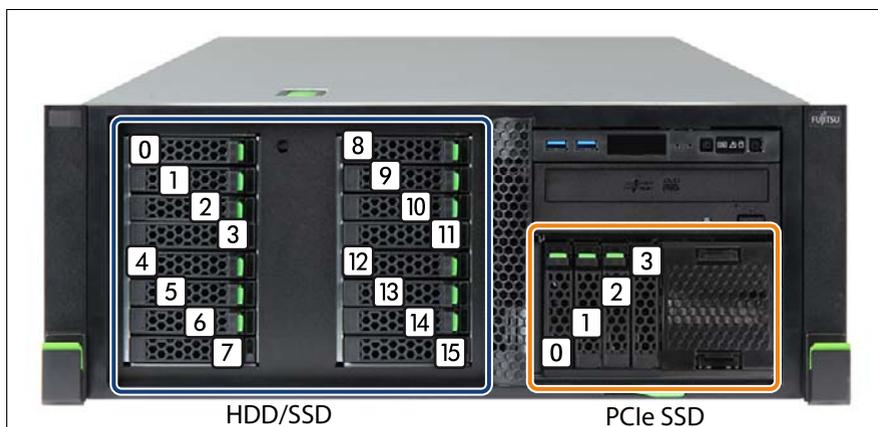


Figure 121: Configuration with up to 16 2.5-inch HDDs/SSDs and up to four PCIe SSDs

With SAS expander board and one SAS controller

Position	Logical drive number	ServerView RAID Manager display name (Enclosure number: Port number)
0	0	Vendor Product (1:0)
1	1	Vendor Product (1:1)
2	2	Vendor Product (1:2)
3	3	Vendor Product (1:3)

Hard disk drives (HDD) / solid state drives (SSD)

Position	Logical drive number	ServerView RAID Manager display name (Enclosure number: Port number)
4	4	Vendor Product (1:4)
5	5	Vendor Product (1:5)
6	6	Vendor Product (1:6)
7	7	Vendor Product (1:7)
8	8	Vendor Product (1:8)
9	9	Vendor Product (1:9)
10	10	Vendor Product (1:10)
11	11	Vendor Product (1:11)
12	12	Vendor Product (1:12)
13	13	Vendor Product (1:13)
14	14	Vendor Product (1:14)
15	15	Vendor Product (1:15)

With the 4x 2.5-inch PCIe SSD backplane

Position	Logical drive number	ServerView RAID Manager display name (Enclosure number: Port number)
0	16	SSD PCIe3 Main (1): SSD PCIe3 Capacity Main 2.5" H-P EP (0)
1	17	SSD PCIe3 Main (2): SSD PCIe3 Capacity Main 2.5" H-P EP (0)
2	18	SSD PCIe3 Main (3): SSD PCIe3 Capacity Main 2.5" H-P EP (0)
3	19	SSD PCIe3 Main (4): SSD PCIe3 Capacity Main 2.5" H-P EP (0)

7.4.6 Installing 2.5-inch HDD/SSD modules



Customer Replaceable Unit
(CRU)



Hardware: 5 minutes

Tools: tool-less

7.4.6.1 Preliminary steps

- ▶ If applicable, ["Getting access to the component"](#) on page 55.
- ▶ Locate the correct drive bay, see section ["2.5-inch HDD/SSD configurations"](#) on page 199.

7.4.6.2 Removing a 2.5-inch HDD/SSD dummy module

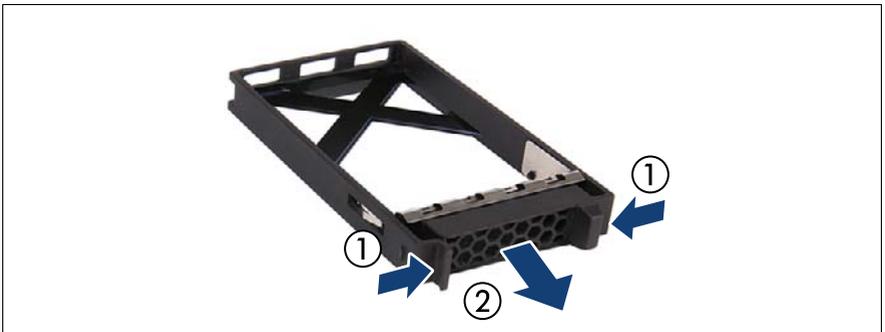


Figure 122: Removing a 2.5-inch HDD/SSD dummy module

- ▶ Press both tabs together (1) and pull the dummy module out of its bay (2).



CAUTION!

Keep 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.

7.4.6.3 Installing a 2.5-inch HDD/SSD module



Figure 123: Opening the 2.5-inch HDD/SSD module locking lever

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



Figure 124: Installing 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 (1).
- ▶ Close the locking lever to lock the HDD in place (2).
- ▶ When using a RAID array, add the additional HDD/SSD to the RAID array.



Configuring the RAID array, see the documentation of the RAID controller, used in your configuration, see section ["Documents you need at hand"](#) on page 33.

7.4.6.4 Concluding steps

- ▶ If applicable, ["Reassembling" on page 67](#)

7.4.7 Removing 2.5-inch HDD/SSD modules



Customer Replaceable Unit (CRU)



Hardware: 5 minutes

Tools: tool-less

7.4.7.1 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>CAUTION! RAID 0 provides no data redundancy. In case of an HDD module is defect, all data are lost!</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 see section "Performing a RAID array rebuild" on page 117.</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 when deleting the array! Be sure to back up your data before deleting a RAID array.

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

- ▶ If applicable, ["Getting access to the component" on page 55](#).

7.4.7.2 Removing a 2.5-inch HDD/SSD module

- ▶ Pinch the green locking clips and open the locking lever (see [figure 118 on page 200](#)).
- ▶ Pull the HDD/SSD module out a few centimeters.
- ▶ Wait about 30 seconds to allow the HDD to spin down.



This is not necessary when removing an SSD.



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

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

7.4.7.3 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 125: Installing a 2.5-inch HDD/SSD dummy module

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

7.4.7.4 Concluding steps

- ▶ If applicable, ["Reassembling" on page 67](#)

7.4.8 Replacing a 2.5-inch HDD/SSD module



Customer Replaceable Unit (CRU)



Hardware: 5 minutes

Tools: Installation frame included: tool-less

Installation frame excluded: Phillips (+1) No. 1 screw driver



CAUTION!

- Only remove an HDD/SSD module during operation if the drive is not currently being accessed. Observe the indicators for the corresponding HDD/SSD modules, see section ["Indicators on the hot-plug HDD/SSD module" on page 463](#).
- An HDD/SSD module can be replaced while the system is in operation.

RAID configuration with a RAID controller:

Modular Host Bus Adapter with "Integrated RAID" (IR). RAID levels 0 and 1 are supported for internal HDD configurations.

- Modular RAID 0/1 controller with "MegaRAID functionality" (integrated MegaRAID). RAID levels 0, 1, 10, 5 and 50 are supported for internal HDD configurations.
- Modular RAID 5/6 controller with "MegaRAID functionality" (MegaRAID). RAID levels 0, 1, 10, 5, 50, 6 and 60 are supported for internal HDD configurations. As an option, a flash backup unit (FBU) can save the memory content even if the power fails. Cache memory size of up to 8 GB is available.

RAID configuration without a RAID controller:

Please follow the instruction of each software e.g. VSAN, Storage Spaces, and Storage Spaces Direct, provided separately to use the software RAID function of OS or Hypervisor.

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

7.4.8.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ If applicable, ["Getting access to the component" on page 55.](#)
- ▶ ["Locating the defective component" on page 52](#)

7.4.8.2 Removing the defective 2.5-inch HDD/SSD module

- ▶ Remove the HDD/SSD module, see section ["Removing a 2.5-inch HDD/SSD module" on page 208.](#)
- ▶ If applicable, remove the HDD/SSD from the installation frame, see section ["Handling HDDs or SSDs without installation frame" on page 164.](#)

7.4.8.3 Installing the new 2.5-inch HDD/SSD module

- ▶ If applicable, install the HDD/SSD in the installation frame, see section ["Handling HDDs or SSDs without installation frame" on page 164.](#)
- ▶ Install the HDD/SSD module, see section ["Installing 2.5-inch HDD/SSD modules" on page 205.](#)

7.4.8.4 Concluding steps

- ▶ If the HDD/SSD is configured using a RAID controller with a RAID level higher than "0", the rebuild will start automatically, see section ["Performing a RAID array rebuild" on page 117.](#)
- ▶ If applicable, ["Reassembling" on page 67](#)

7.4.9 Replacing a 2.5-inch backplane



Field Replaceable Unit (FRU)



Hardware: 10 minutes

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

7.4.9.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Release all HDD/SSD modules and pull them out a few centimeters, see section ["Removing 2.5-inch HDD/SSD modules" on page 207](#).



CAUTION!

The HDD modules need not to be removed completely. But if you want to remove them nevertheless, check if all HDD modules are uniquely identified so that you can reinsert them into their original bays.

- ▶ Release all dummy modules and pull them out a few centimeters, see section ["Removing a 3.5-inch HDD dummy module" on page 176](#)
- ▶ ["Removing a system fan" on page 262](#)
- ▶ If applicable, ["Removing the SAS expander board" on page 255](#)
- ▶ Disconnect all cables from the defective SAS backplane.

7.4.9.2 Removing the 2.5-inch HDD/SSD bay top cover



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

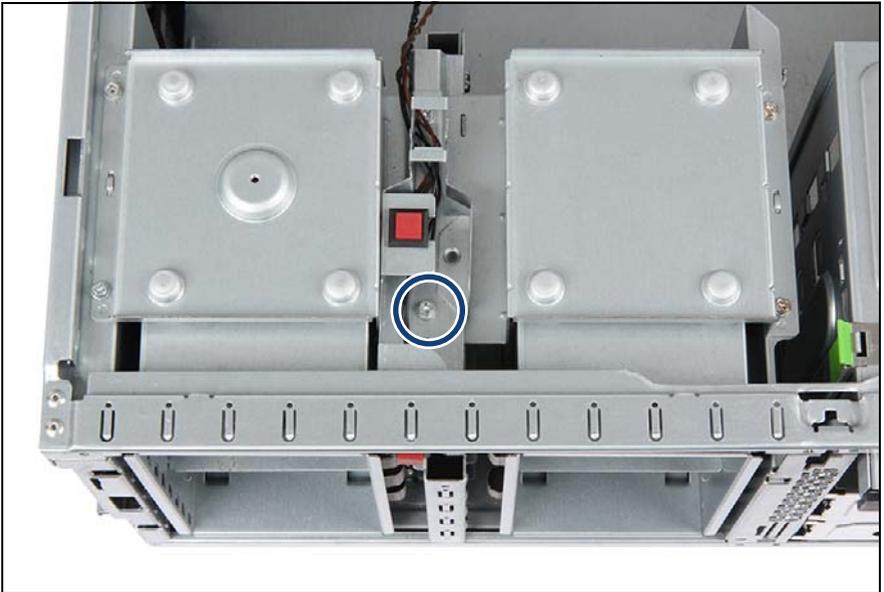


Figure 126: Removing the intrusion switch holder (A)

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

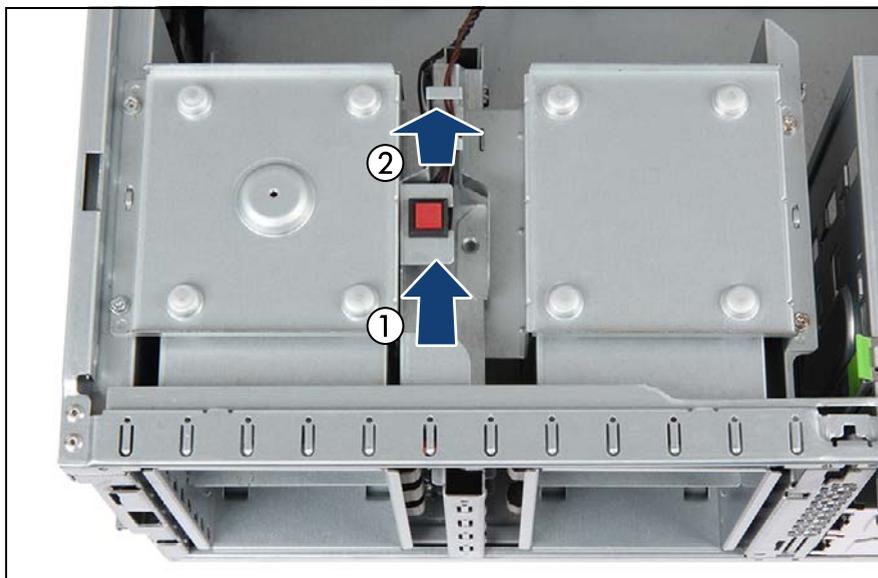


Figure 127: Removing the intrusion switch holder (B)

- ▶ Push 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.

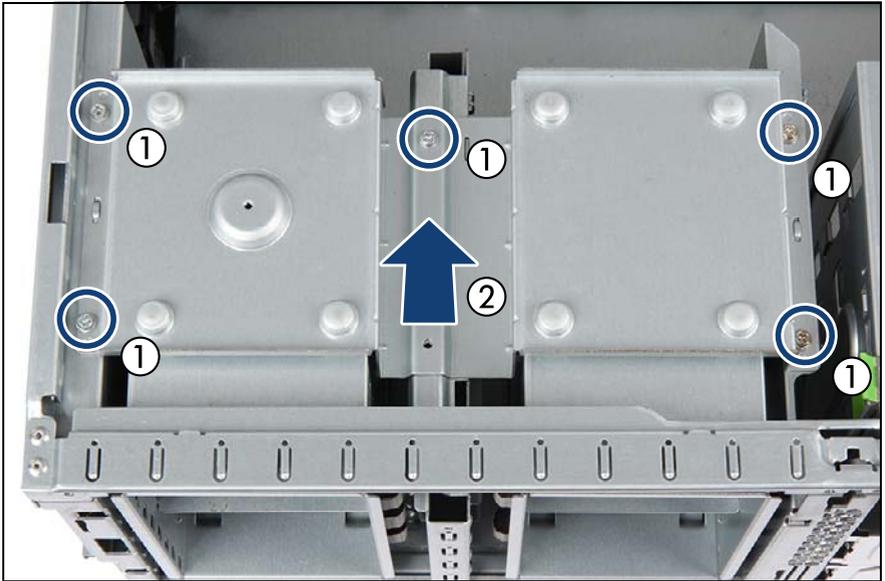


Figure 128: Removing the 2.5-inch HDD/SSD bay top cover

- ▶ Remove five screws from the 2.5-inch HDD/SSD bay top cover (1).
- ▶ Remove the 2.5-inch HDD/SSD bay top cover from the chassis (2).

7.4.9.3 Removing a 2.5-inch HDD/SSD SAS backplane

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

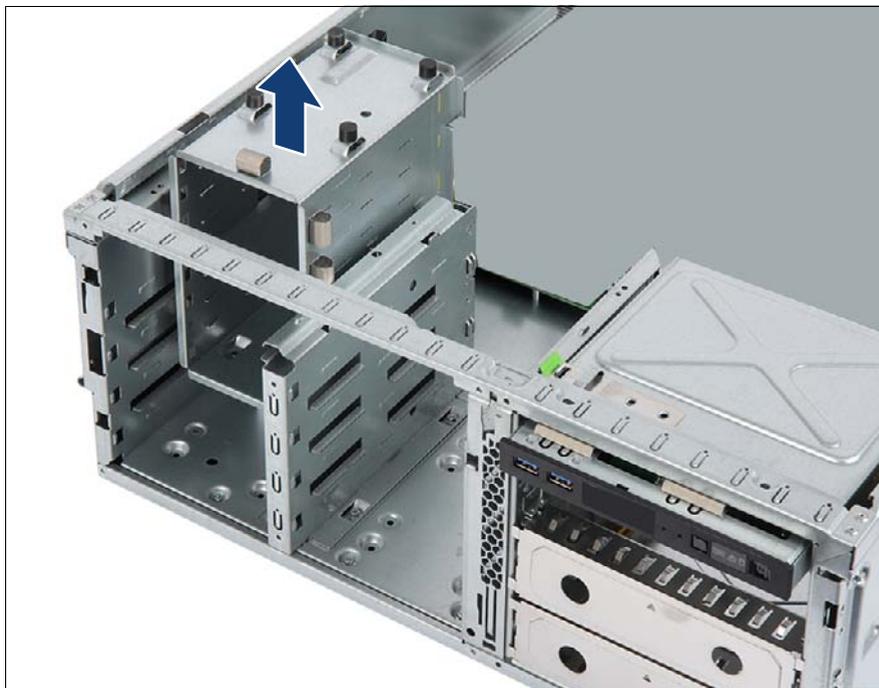


Figure 129: Removing the 2.5-inch HDD cage

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

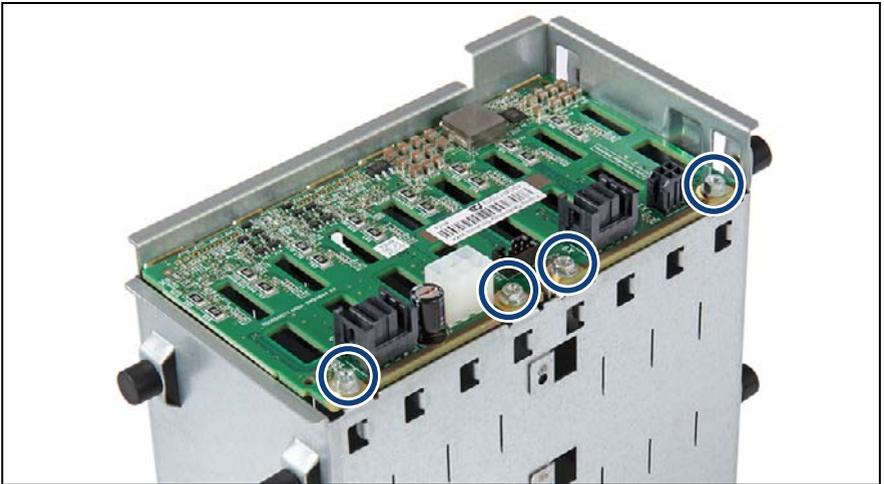


Figure 130: Removing the defective 2.5-inch HDD/SSD SAS backplane (A)

- ▶ Remove four screws from the defective 2.5-inch HDD/SSD SAS backplane (see circles).

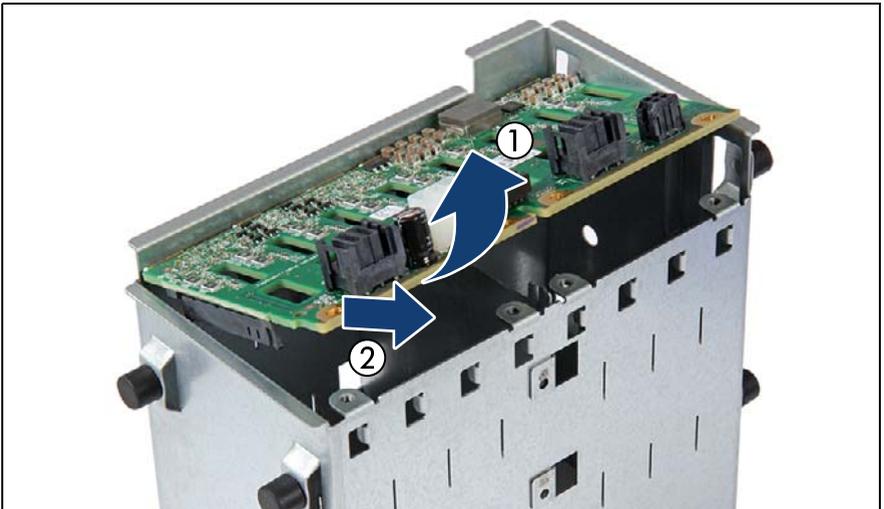


Figure 131: Removing the defective 2.5-inch HDD/SSD SAS backplane (B)

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

7.4.9.4 Installing a 2.5-inch HDD/SSD SAS backplane

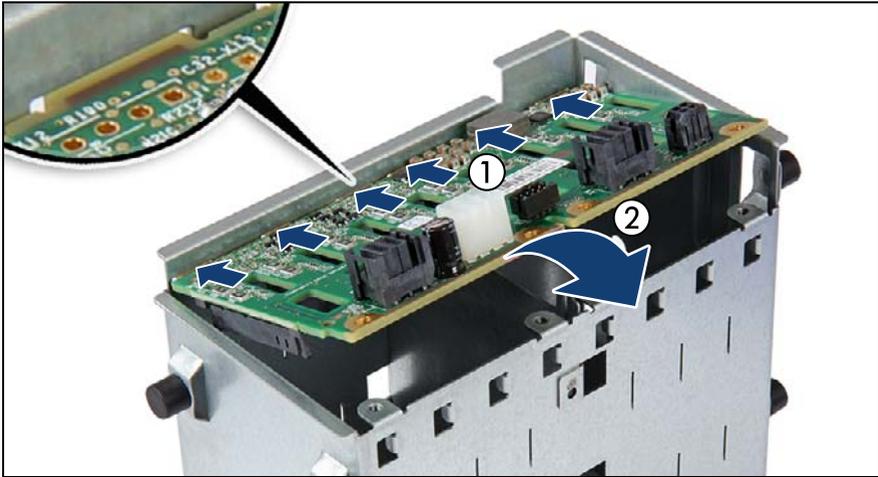


Figure 132: Installing the new 2.5-inch HDD/SSD SAS backplane (A)

- ▶ At a slight angle, fit the new 2.5-inch HDD/SSD SAS backplane into the six recesses in the HDD cage (1).
- ▶ Fold down the 2.5-inch HDD/SSD SAS backplane (2).

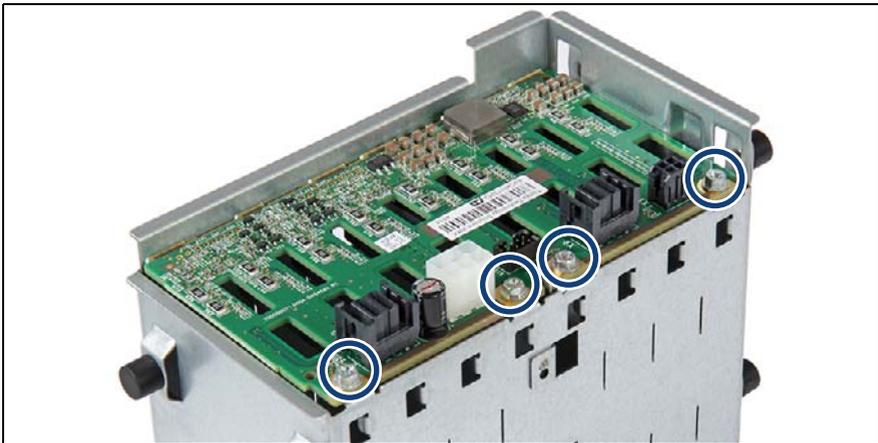


Figure 133: Installing the new 2.5-inch HDD/SSD SAS backplane (B)

- ▶ Secure the 2.5-inch HDD/SSD SAS backplane in the HDD cage with four screws (see circles).

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



Figure 134: Installing the 2.5-inch HDD/SSD cage

- ▶ Lower the 2.5-inch HDD/SSD cage into the HDD installation bay as shown (1).
- ▶ Ensure that the four rubber bolts on the bottom of the cage properly engage with the corresponding dents in the chassis floor (2).

7.4.9.5 Installing the 2.5-inch HDD/SSD bay top cover

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

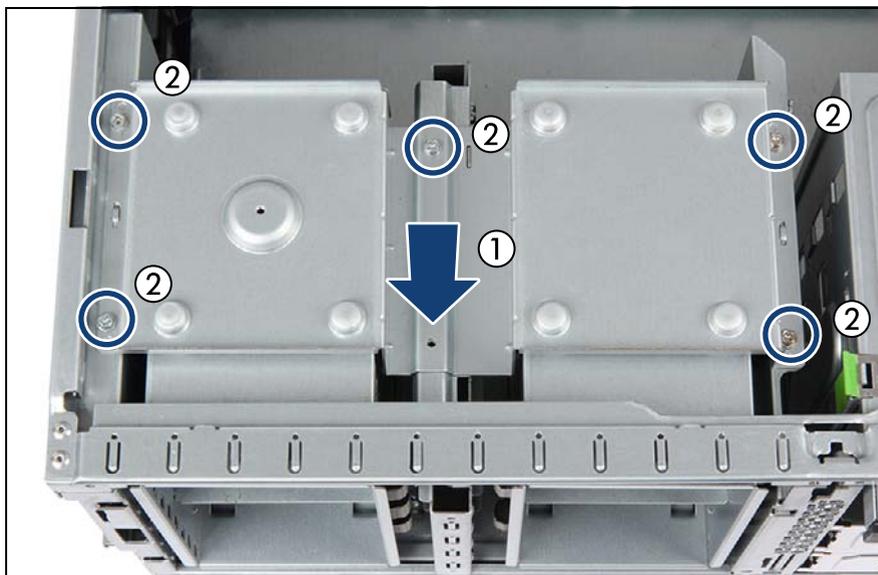


Figure 135: Installing the 2.5-inch HDD/SSD bay top cover

- ▶ Lower the 2.5-inch HDD/SSD bay top cover onto the HDD installation bays (1).
- ▶ Ensure that the four rubber bolts on top of the cage properly engage with the corresponding dents in the HDD bay top cover.
- ▶ Fasten the HDD bay top cover to the chassis with five screws (2).

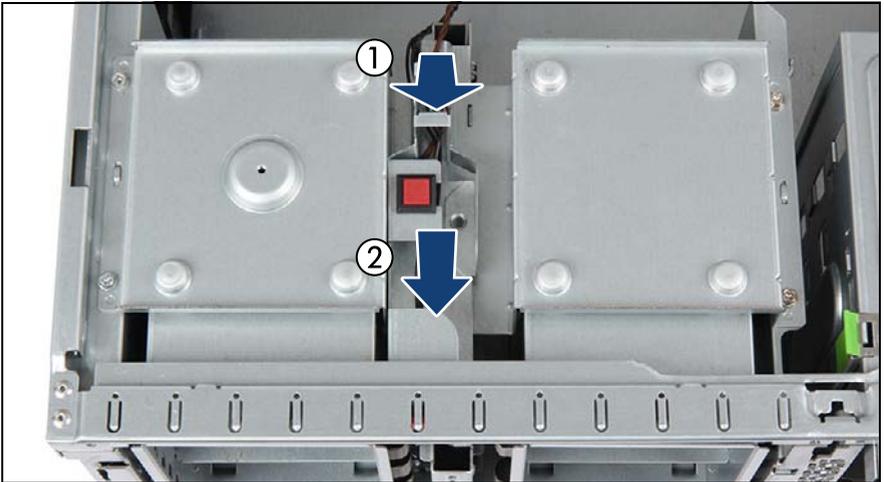


Figure 136: Installing the intrusion switch holder (A)

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

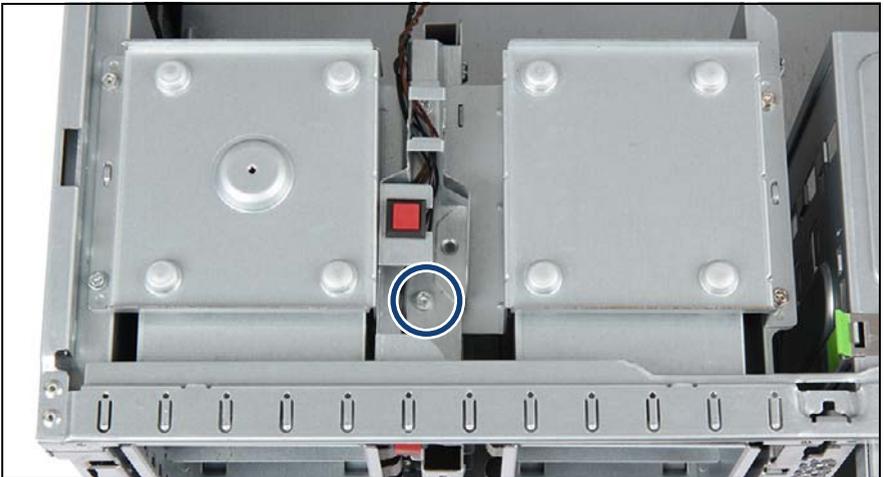


Figure 137: Installing the intrusion switch holder (B)

- ▶ Fasten the intrusion switch holder on the HDD bay top cover with one screw.

7.4.9.6 Connecting cables

Example 8x 2.5-inch HDD/SSD configuration (backplane 1)

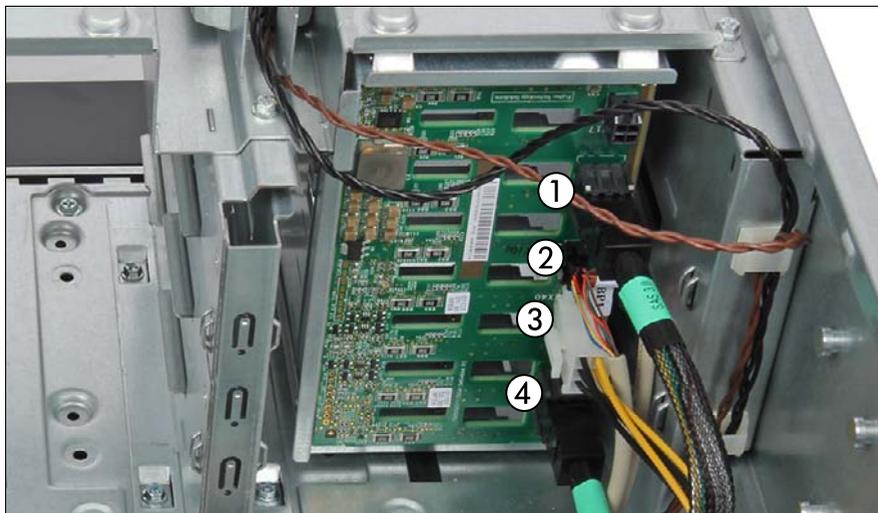


Figure 138: Connecting cables to the backplane (example 8x 2.5-inch HDD/SSD)

- ▶ Connect the cables to the backplane:
 - 1 If applicable, riser card power cable
 - 2 SAS cable to backplane connector "X9"
 - 3 If applicable, OOB cable
 - 4 Power cable
 - 5 SAS cable to backplane connector "X10"



For the cable plan, see chapter ["Appendix B" on page 477](#).

Configuration with SAS expander board

- ▶ For the cabling with a SAS expander board, see section ["Connecting cables to the SAS expander board" on page 252](#).



For the cable plan, see chapter ["Appendix B" on page 477](#).

7.4.9.7 Concluding steps

- ▶ If applicable, ["Installing the SAS expander board" on page 251](#)
- ▶ ["Installing a system fan" on page 266](#)
- ▶ Insert all HDD/SSD modules, see section ["Installing 3.5-inch HDD modules" on page 176](#).



Make sure that you reinstall the HDD/SSD module in the bay it was located before the HDD backplane replacement.

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

7.4.10 Upgrading configuration from up to eight to up to 16 2.5-inch HDDs/SSDs



Upgrade and Repair Unit (URU)



Hardware: 20 minutes

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

7.4.10.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove all HDD/SSD modules, see section ["Removing 2.5-inch HDD/SSD modules" on page 207](#).

7.4.10.2 Removing the 8x 2.5-inch HDD/SSD front panel

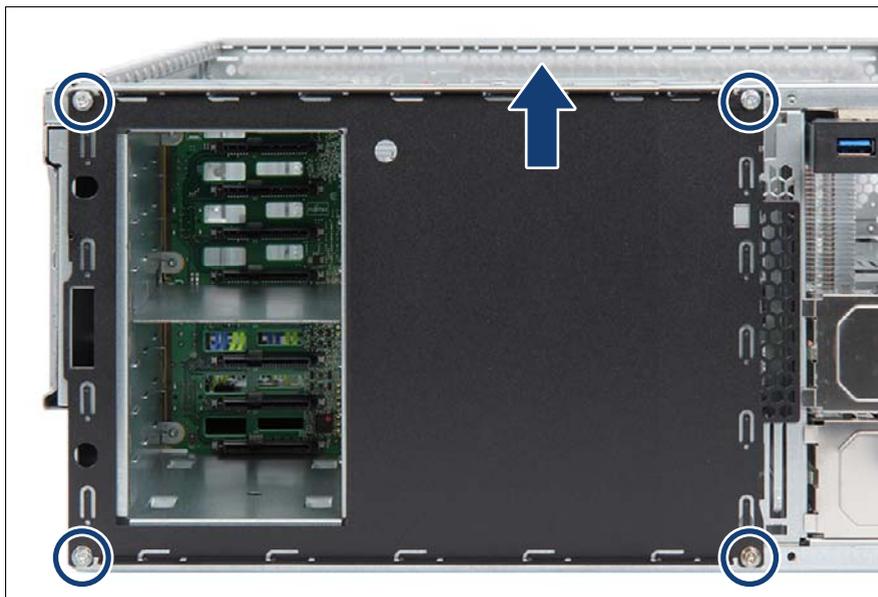


Figure 139: Removing the 8x 2.5-inch HDD/SSD front panel

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

7.4.10.3 Removing the 2.5-inch HDD/SSD bay top cover

- ▶ Remove the 2.5-inch HDD/SSD bay cover, see section "[Removing the 2.5-inch HDD/SSD bay top cover](#)" on page 212.

7.4.10.4 Installing the second 2.5-inch HDD/SSD SAS backplane

- ▶ Install the second 2.5-inch HDD/SSD SAS backplane and the second HDD cage, see section "[Installing a 2.5-inch HDD/SSD SAS backplane](#)" on page 218.

7.4.10.5 Installing the 2.5-inch HDD/SSD bay top cover

- ▶ Install the 2.5-inch HDD/SSD bay top cover, see section "[Installing the 2.5-inch HDD/SSD bay top cover](#)" on page 219.

7.4.10.6 Installing the 16x 2.5-inch HDD/SSD front panel

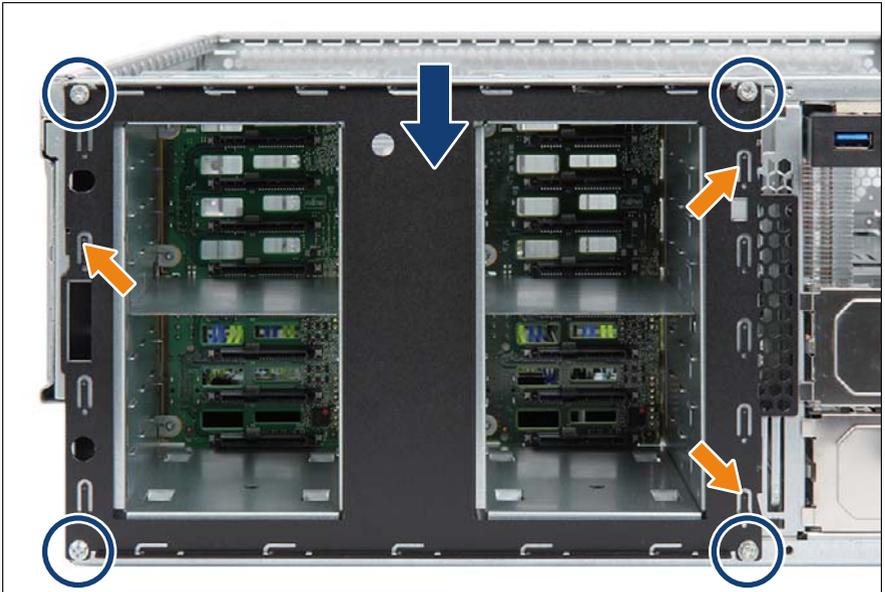


Figure 140: Securing the 16x 2.5-inch HDD/SSD front panel

- ▶ Fit the three hooks on the 2.5-inch HDD/SSD front panel into the slots in the server front (see orange arrows).
- ▶ Firmly press down on the HDD front panel until its upper edge is flush with the chassis (see blue arrow).
- ▶ Fasten the HDD front panel to the server front with four screws (see circles).

7.4.10.7 Connecting cables

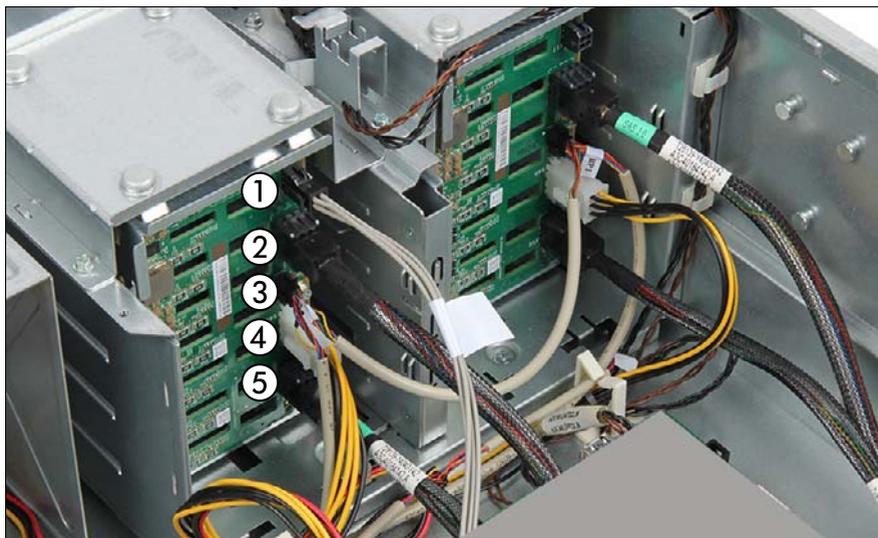


Figure 141: Connecting cables to the backplane (example 16x 2.5-inch HDD/SSD)

► Connect the cables to the backplane:

- 1 SAS expander board power cable
- 2 SAS cable to backplane connector "X10"
- 3 If applicable, OOB cable
- 4 Power cable
- 5 SAS cable to backplane connector "X9"



For the cable plan, see chapter ["Appendix B" on page 477](#).

7.4.10.8 Installing the expander board

- Install the expander board, see section ["Installing the SAS expander board" on page 251](#).

7.4.10.9 Concluding steps

- ▶ Install all removed HDD/SSD modules, see section ["Installing 2.5-inch HDD/SSD modules" on page 205](#).



For detailed information on HDD mounting order, see section ["2.5-inch HDD/SSD configurations" on page 199](#).

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)

7.5 HDD extension boxes

7.5.1 HDD extension boxes overview

7.5.1.1 8x 2.5-inch HDD/SSD extension box

i The 8x 2.5-inch HDD/SSD extension box can be equipped with a 8x 2.5-inch HDD/SSD backplane or a 4x 2.5-inch PCIe backplane.



Figure 142: 8x 2.5-inch HDD/SSD extension box

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

7.5.1.2 4x 3.5-inch HDD extension box



Figure 143: 4x 3.5-inch HDD extension box

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

7.5.2 Installing the 8x 2.5-inch HDD/SSD extension box



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

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

7.5.2.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)

7.5.2.2 Removing accessible drive dummy covers

- ▶ Remove accessible drive filler covers from the required bays, see section ["Accessible drive filler covers" on page 90](#).
- ▶ Remove accessible drive covers, see section ["Accessible drive covers" on page 92](#).

7.5.2.3 Installing the HDD/SSD or PCIe SSD backplane

- ▶ If applicable, install the HDD/SSD backplane or the PCIe backplane on the 8x 2.5-inch HDD/SSD extension box, see section ["Installing the new HDD/SSD backplane" on page 239](#).

7.5.2.4 Installing the 8x 2.5-inch HDD/SSD extension box



Figure 144: Bending in mounting brackets

- ▶ Using a screw driver, bend the four mounting brackets of the middle installation bay (bay 2) inwards (see close-up):
 - ▶ Bend in the lower two mounting brackets on each side of the drive cage.
- ▶ Open the accessible drive locking bar, see section ["Opening the accessible drive locking bar" on page 86](#).



Figure 145: Inserting the 8x 2.5-inch HDD/SSD extension box

- ▶ Insert the 8x 2.5-inch HDD/SSD extension box into installation bays 2 and 3 and carefully push in until it lines up with the front panel.
- ▶ Closing the locking bar, see section "[Closing the accessible drive locking bar](#)" on page 88.

7.5.2.5 Connecting cables

Example with 8x 2.5-inch HDD/SSD backplane

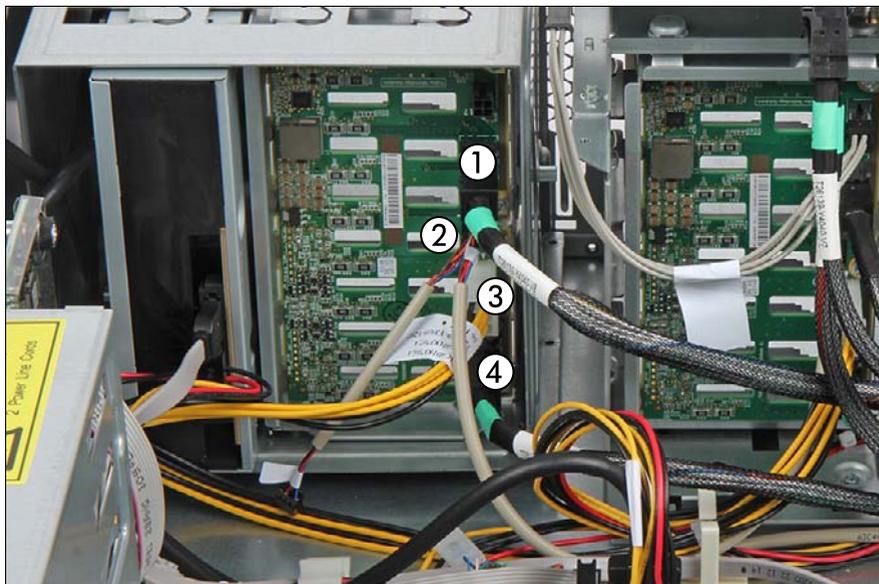


Figure 146: Connecting the 8x 2.5-inch HDD/SSD extension box

► Connect the cables to the backplane:

- 1 SAS cable to backplane connector "X9"
- 2 Power cable
- 3 If applicable, OOB cable
- 4 SAS cable to backplane connector "X10"

i For more information about connecting SAS cables to the SAS expander board, see section ["Connecting cables to the SAS expander board" on page 252](#).

i For the cable plan, see chapter ["Appendix B" on page 477](#).

Example with 4x 2.5-inch PCIe SSD backplane

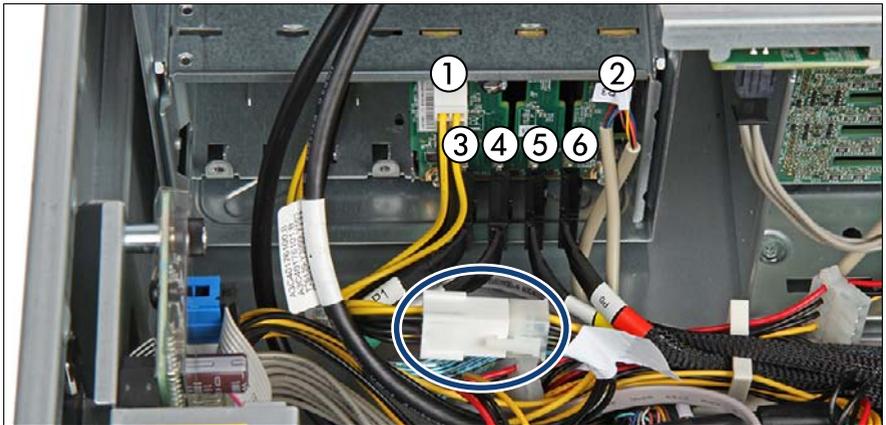


Figure 147: Connecting the PCIe cables to the backplane

► Connect the cables to the backplane:

- 1 Power cable
- 2 If applicable, OOB cable
- 3 Oculink cable (black) to backplane connector "P3-X4"
- 4 Oculink cable (green) to backplane connector "P2-X3"
- 5 Oculink cable (yellow) to backplane connector "P1-X2"
- 6 Oculink cable (red) to backplane connector "P0-X1"

i For more information about connecting SAS cables to the PRAID EP5x0i, see section "[Installing expansion cards](#)" on page 279.

i For the cable plan, see chapter "[Appendix B](#)" on page 477.

7.5.2.6 Installing HDDs/SSDs modules into the 8x 2.5-inch HDD/SSD extension box

- ▶ Install HDD modules or HDD dummy modules into the additional HDD bays, see sections ["Installing a 2.5-inch HDD/SSD module" on page 206](#) and ["Installing a 2.5-inch HDD/SSD dummy module" on page 209](#).



For detailed information on HDD mounting order, see section ["2.5-inch HDD/SSD configurations" on page 199](#).

7.5.2.7 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)
- ▶ ["Switching on the server" on page 80](#)

7.5.3 Removing the 8x 2.5-inch HDD/SSD extension box



Upgrade and Repair Unit (URU)



Hardware:10 minutes

Tools: tool-less

7.5.3.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ Remove all HDD modules from the HDD extension box, see section ["Removing 2.5-inch HDD/SSD modules" on page 207](#).
- ▶ ["Getting access to the component" on page 55](#)

7.5.3.2 Removing the 8x 2.5-inch HDD/SSD extension box

- ▶ Remove all cables from the 8x 2.5-inch HDD/SSD extension box backplane.
- ▶ Open the accessible drive locking bar, see section ["Opening the accessible drive locking bar"](#) on page 86.



Figure 148: Removing the 8x 2.5-inch HDD/SSD extension box

- ▶ Carefully pull the 8x 2.5-inch HDD/SSD extension box out of its installation bays.
- ▶ Close the locking bar, see section ["Closing the accessible drive locking bar"](#) on page 88.

7.5.3.3 Installing accessible drive dummy covers

- ▶ Install accessible drive filler covers into empty drive bays, see section ["Accessible drive filler covers" on page 90](#).
- ▶ Install accessible drive covers into the front cover, see section ["Accessible drive covers" on page 92](#).

7.5.3.4 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)
- ▶ ["Switching on the server" on page 80](#)

7.5.4 Replacing the HDD/SSD backplane or PCIe SSD backplane on the 8x 2.5-inch HDD/SSD extension box



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

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

7.5.4.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ Remove all HDD/SSD modules from the HDD extension box, see section ["Removing 2.5-inch HDD/SSD modules" on page 207](#).
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Unlock and pull the 8x 2.5-inch HDD/SSD extension box out of its installation bays, see section ["Removing the 8x 2.5-inch HDD/SSD extension box" on page 234](#).

7.5.4.2 Removing the defective HDD/SSD backplane

8x 2.5-inch HDD/SSD backplane

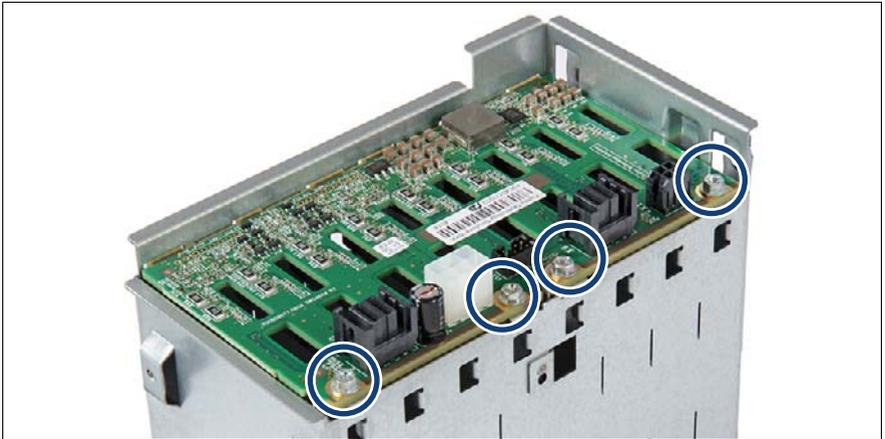


Figure 149: Removing the HDD/SSD backplane (A)

- ▶ Remove the four screws (see circles).

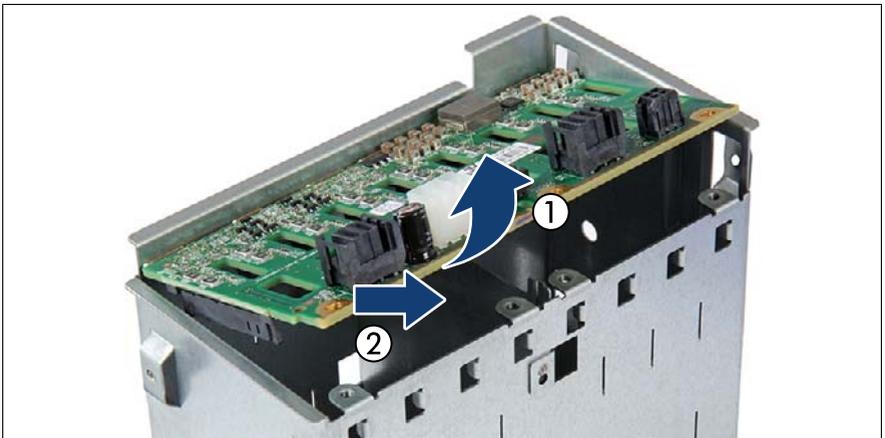


Figure 150: Removing the HDD/SSD backplane (B)

- ▶ Fold up the HDD/SSD backplane and at a slight angle (1), remove it from the recesses in the HDD extension box (2).

4x 2.5-inch PCIe SSD backplane

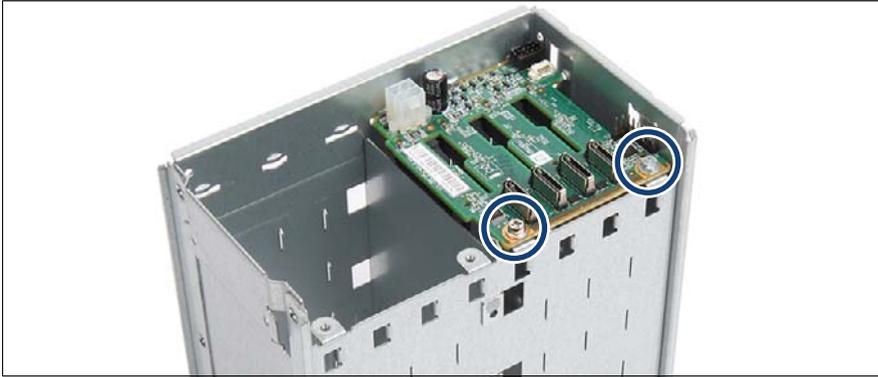


Figure 151: Removing the PCIe SSD backplane (A)

- ▶ Remove the two screws (see circles).

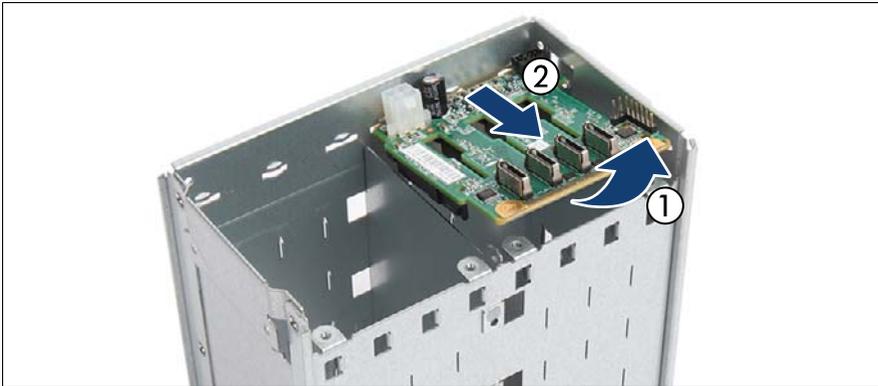


Figure 152: Removing the PCIe SSD backplane (B)

- ▶ Fold up the PCIe SSD backplane and at a slight angle (1), remove it from the recesses in the PCIe SSD extension box (2).

7.5.4.3 Installing the new HDD/SSD backplane

8x 2.5-inch HDD/SSD backplane

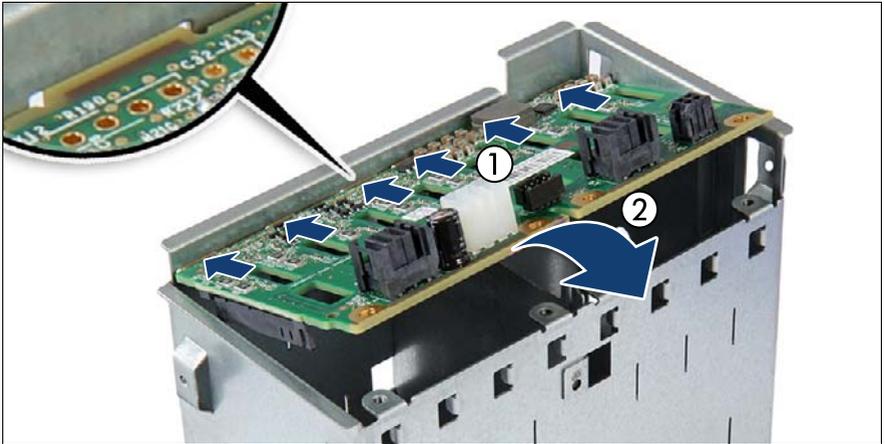


Figure 153: Installing the HDD/SSD backplane

- ▶ At a slight angle, fit the HDD/SSD backplane into the six recesses in the HDD extension box (1).
- ▶ Fold down the HDD/SSD backplane (2).
- ▶ Fasten the HDD/SSD backplane with four screws (see figure [149](#)).

4x 2.5-inch PCIe SSD backplane

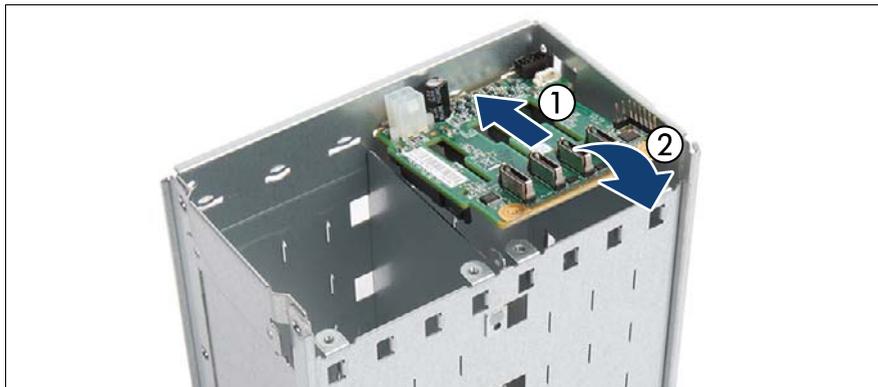


Figure 154: Installing the PCIe SSD backplane

- ▶ At a slight angle, fit the PCIe SSD backplane into the three recesses in the PCIe SSD extension box (1).
- ▶ Fold down the PCIe SSD backplane (2).
- ▶ Fasten the PCIe SSD backplane with two screws (see figure 151).

7.5.4.4 Concluding steps

- ▶ Install the 8x 2.5-inch HDD/SSD extension box, see section "[Installing the 8x 2.5-inch HDD/SSD extension box](#)" on page 229.
- ▶ "[Reassembling](#)" on page 67
- ▶ Reinstall all HDDs/SSDs into their original bays in the HDD extension box, see section "[Installing 2.5-inch HDD/SSD modules](#)" on page 205.
- ▶ "[Connecting the power cord](#)" on page 78
- ▶ "[Switching on the server](#)" on page 80

7.5.5 Installing the 4x 3.5-inch HDD extension box



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

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

7.5.5.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)

7.5.5.2 Removing accessible drive dummy covers

- ▶ Remove accessible drive filler covers from the required bays, see section ["Accessible drive filler covers" on page 90](#).
- ▶ Remove accessible drive covers, see section ["Accessible drive covers" on page 92](#).

7.5.5.3 Installing the ultraslim ODD into the HDD extension box

- ▶ If applicable, install the ultraslim ODD into the new 4x 3.5-inch HDD extension box, see section ["Installing the ultraslim ODD" on page 360](#).

7.5.5.4 Installing the HDD backplane

- ▶ If applicable, install the HDD backplane on the 4x 3.5-inch HDD extension box, see section ["Installing the new HDD backplane" on page 249](#).

7.5.5.5 Installing the 4x 3.5-inch HDD extension box



Figure 155: Bending in mounting brackets

- ▶ Using a screw driver, bend the mounting brackets of the top and middle installation bays (bay 1 and bay 2) inwards (see close-up):
 - ▶ Bend in the four mounting brackets on each side of the drive cage.
- ▶ Open the accessible drive locking bar, see section "[Opening the accessible drive locking bar](#)" on page 86.

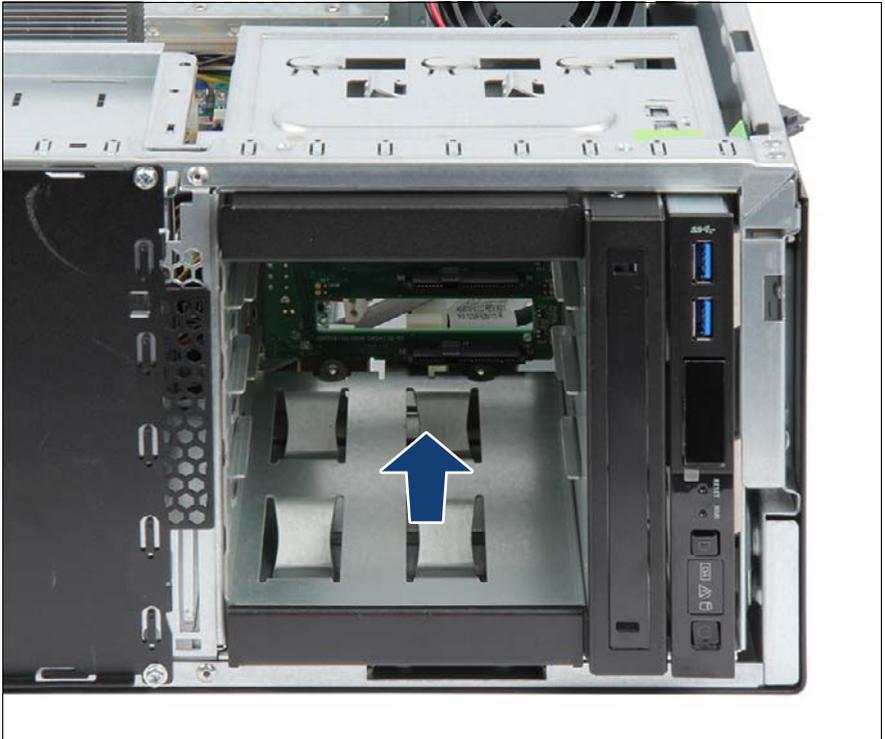


Figure 156: Inserting the 4x 3.5 HDD extension box

- ▶ If applicable, route the cables of the ultraslim ODD through the bay.
- ▶ Insert the 4x 3.5-inch HDD extension box into installation bays 1 to 3 and carefully push in until it lines up with the front panel.
- ▶ Close the locking bar, see section "[Closing the accessible drive locking bar](#)" on page 88.

7.5.5.6 Connecting cables

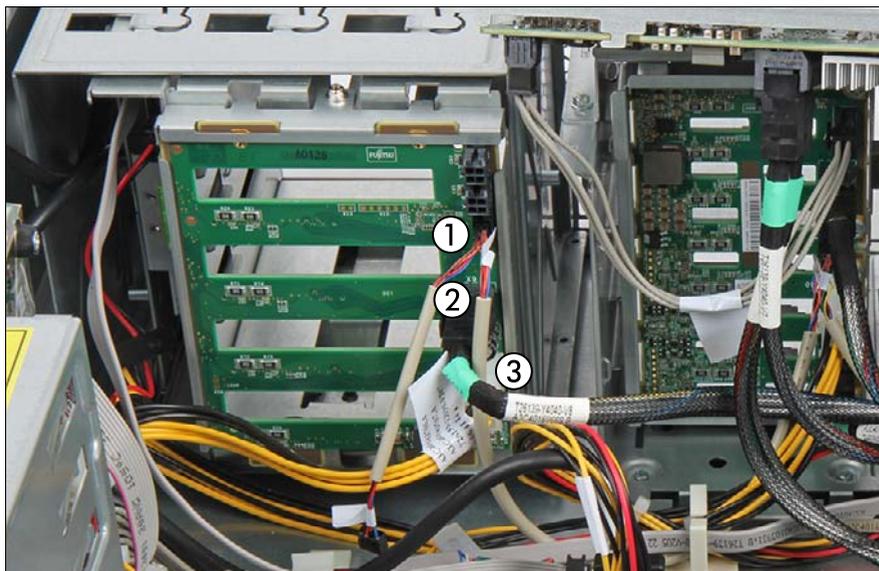


Figure 157: Connecting cables to the 4x 3.5-inch HDD extension box

► Connect the cables to the backplane:

- 1 If applicable, OOB cable
- 2 SAS cable

i For more information about connecting SAS cables to the SAS expander board, see section ["Installing the SAS expander board" on page 251](#).

- 3 Power cable

► If applicable, connect the SATA cable of the ultraslim ODD to the system board (see section ["Installing the ultraslim ODD" on page 360](#)).

i For the cable plan, see chapter ["Appendix B" on page 477](#).

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

- ▶ Install HDD modules or HDD dummy modules into the additional HDD bays, see sections ["Installing a 3.5-inch HDD module" on page 177](#) and ["Installing a 3.5-inch HDD dummy module" on page 179](#).



For detailed information on HDD mounting order, see section ["3.5-inch HDD configurations" on page 170](#).

7.5.5.8 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)
- ▶ ["Switching on the server" on page 80](#)

7.5.6 Removing the 4x 3.5-inch HDD extension box



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

Tools: tool-less

7.5.6.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ Remove all HDD modules from the HDD extension box, see section ["Removing 3.5-inch HDD modules" on page 178](#).
- ▶ ["Getting access to the component" on page 55](#)

7.5.6.2 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.
- ▶ Open the accessible drive locking bar, see section "[Opening the accessible drive locking bar](#)" on page 86.

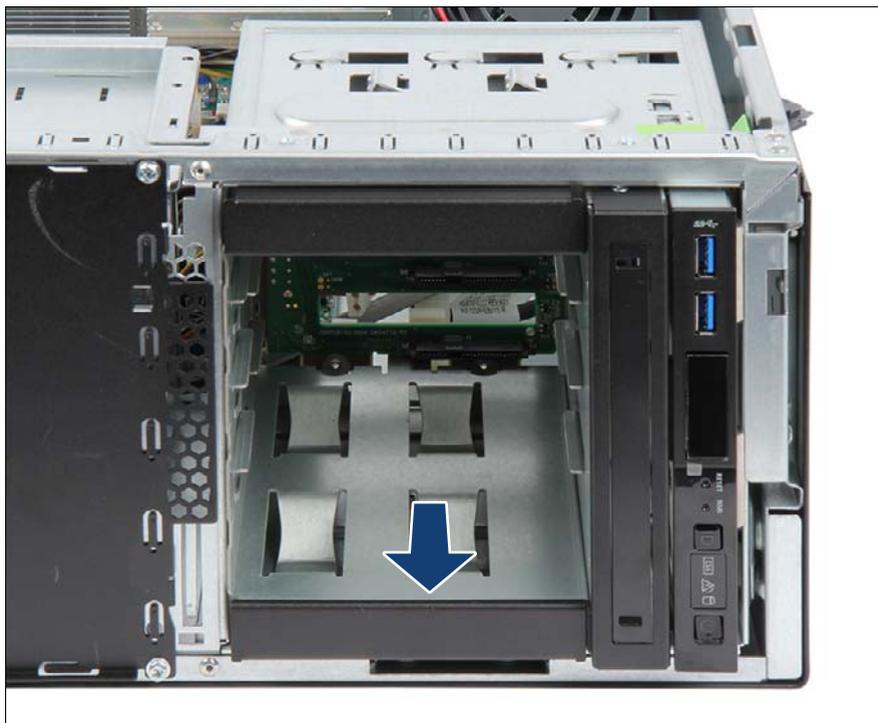


Figure 158: Removing the HDD extension box

- ▶ Carefully pull the 4x 3.5-inch HDD extension box out of its installation bays.
- ▶ Close the locking bar, see section "[Closing the accessible drive locking bar](#)" on page 88.

7.5.6.3 Installing accessible drive dummy covers

- ▶ Install accessible drive filler covers into empty drive bays, see section ["Installing accessible drive filler covers"](#) on page 91.
- ▶ Install accessible drive covers into the front cover, see section ["Installing accessible drive covers"](#) on page 93.

7.5.6.4 Concluding steps

- ▶ ["Reassembling"](#) on page 67
- ▶ ["Connecting the power cord"](#) on page 78
- ▶ ["Resuming BitLocker functionality"](#) on page 117
- ▶ ["Switching on the server"](#) on page 80

7.5.7 Replacing the HDD backplane on the 4x 3.5-inch HDD extension box



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

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

7.5.7.1 Preliminary steps

- ▶ ["Locating the defective server"](#) on page 51
- ▶ ["Shutting down the server"](#) on page 53
- ▶ ["Disconnecting the power cord"](#) on page 54
- ▶ Remove all HDD modules from the HDD extension box, see section ["Removing 3.5-inch HDD modules"](#) on page 178.
- ▶ ["Getting access to the component"](#) on page 55

7.5.7.2 Removing the defective HDD backplane

- ▶ Unlock and pull the 4x 3.5-inch HDD extension box out of its installation bays, see section ["Removing the 4x 3.5-inch HDD extension box" on page 245](#).



Figure 159: Removing the HDD backplane (A)

- ▶ Remove the two screws (see circles).

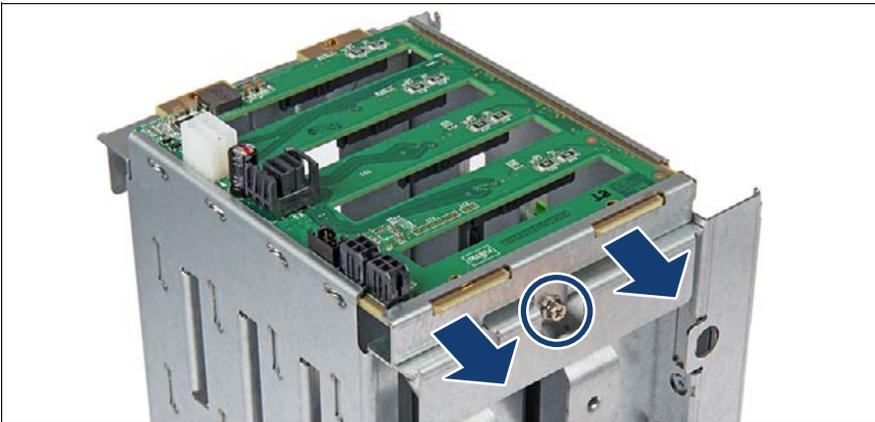


Figure 160: Removing the HDD backplane (B)

- ▶ Remove the screw (see circle).
- ▶ Remove the bracket.

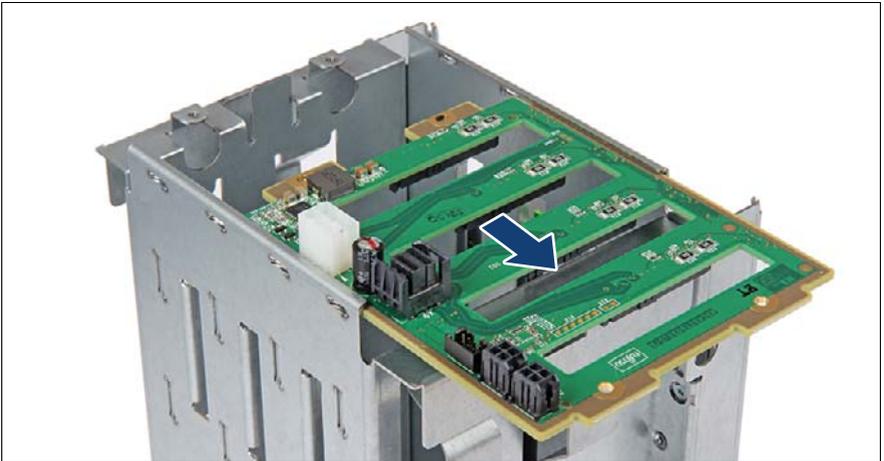


Figure 161: Removing the HDD backplane (C)

- ▶ Pull out the HDD backplane in the direction of the arrow.

7.5.7.3 Installing the new HDD backplane

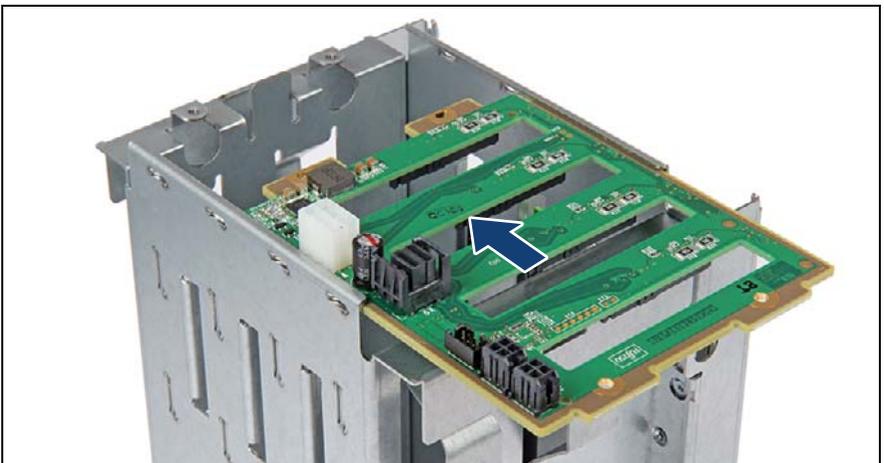


Figure 162: Installing the HDD backplane (A)

- ▶ Fit the HDD backplane into the guides.
- ▶ Push the HDD backplane in the direction of the arrow.

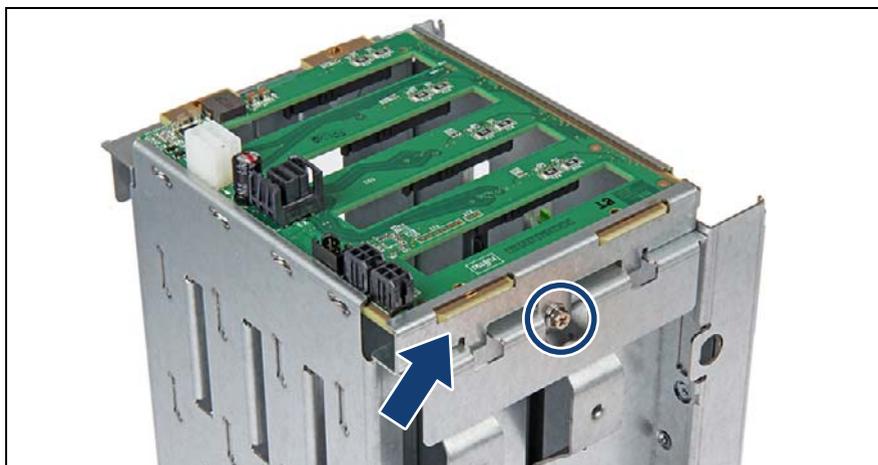


Figure 163: Installing the HDD backplane (B)

- ▶ Place the bracket (see arrow) and fasten it with one screw (see circle).
- ▶ Fasten the HDD backplane with two screws (see [figure 159 on page 248](#)).
- ▶ Install the 4x 3.5-inch HDD extension box, see section "[Installing the 4x 3.5-inch HDD extension box](#)" on page 241.

7.5.7.4 Concluding steps

- ▶ "[Reassembling](#)" on page 67
- ▶ Install all HDDs into their original bays in the HDD extension box, see section "[Installing 3.5-inch HDD modules](#)" on page 176.
- ▶ "[Connecting the power cord](#)" on page 78
- ▶ "[Switching on the server](#)" on page 80

7.6 SAS expander board

7.6.1 Installing the SAS expander board



Field Replaceable Unit (FRU)



Hardware: 10 minutes

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

7.6.1.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)

7.6.1.2 Installing the SAS expander board

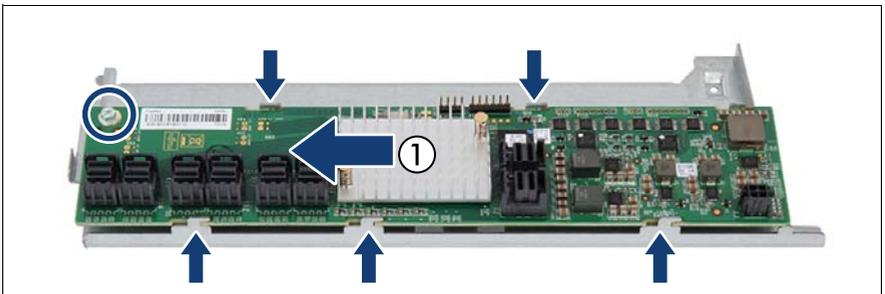


Figure 164: Installing the SAS expander board

- ▶ Position the SAS expander board on the SAS expander holder. Notice the recesses and hooks (see arrows).
- ▶ Push the SAS expander board in the direction of the arrow (1).
- ▶ Fasten the SAS expander board with one screw M3 x 4.5 mm (see circle).

7.6.1.3 Connecting cables to the SAS expander board

2.5-inch HDD/SSD configurations

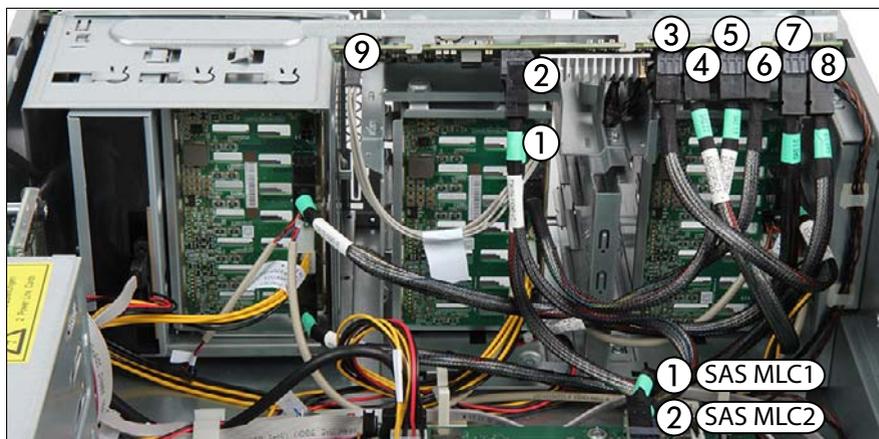


Figure 165: Connecting cables to expander board (example 24x 2.5-inch HDDs/SSDs)

- Connect the cables to the SAS expander board:

	Cable	Connector on backplane/controller	Connector on SAS expander board
1	SAS cable	Backplane 1: X9	X10
2	SAS cable	Backplane 1: X10	X11
3	SAS cable	Backplane 2: X9	X12
4	SAS cable	Backplane 2: X10	X13
5	SAS cable	Backplane 3: X9	X14
6	SAS cable	Backplane 3: X10	X15
7	SAS cable	SAS controller: MLC1	X1
8	SAS cable	SAS controller: MLC2	X2
9	Power cable	Backplane 2: X17	X3



For the cable plan, see chapter ["Appendix B" on page 477](#).

3.5-inch HDD/SSD configurations

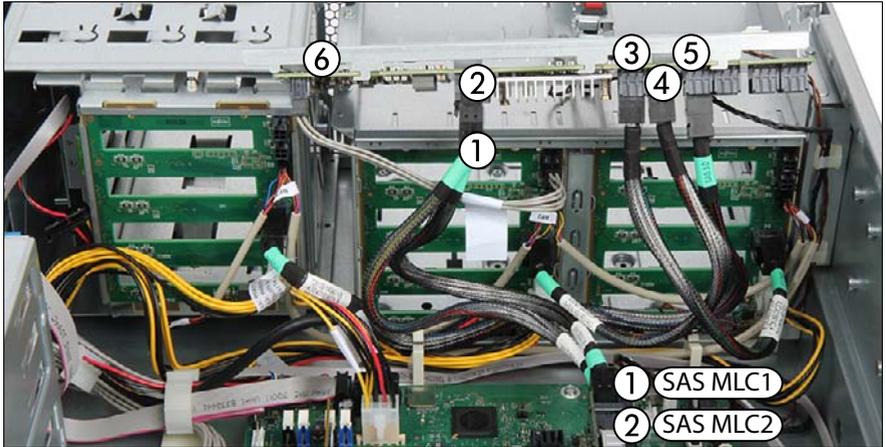


Figure 166: Connecting cables to expander board (example 12x 3.5-inch HDDs)

- Connect the cables to the SAS expander board:

	Cable	Connector on backplane/controller	Connector on SAS expander board
1	SAS cable	Backplane 1: X9	X10
2	SAS cable	Backplane 2: X9	X11
3	SAS cable	Backplane 3: X9	X12
4	SAS cable	SAS controller: MLC1	X1
5	SAS cable	SAS controller: MLC2	X2
6	Power cable	Backplane 2: X17	X3



For the cable plan, see chapter "[Appendix B](#)" on page 477.

7.6.1.4 Installing the SAS expander holder

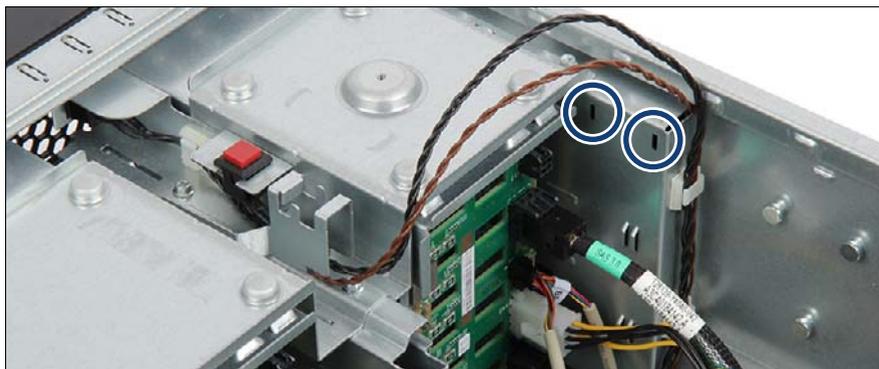


Figure 167: Installing the SAS expander holder (A)

- ▶ Take note of the two recesses (see circles).

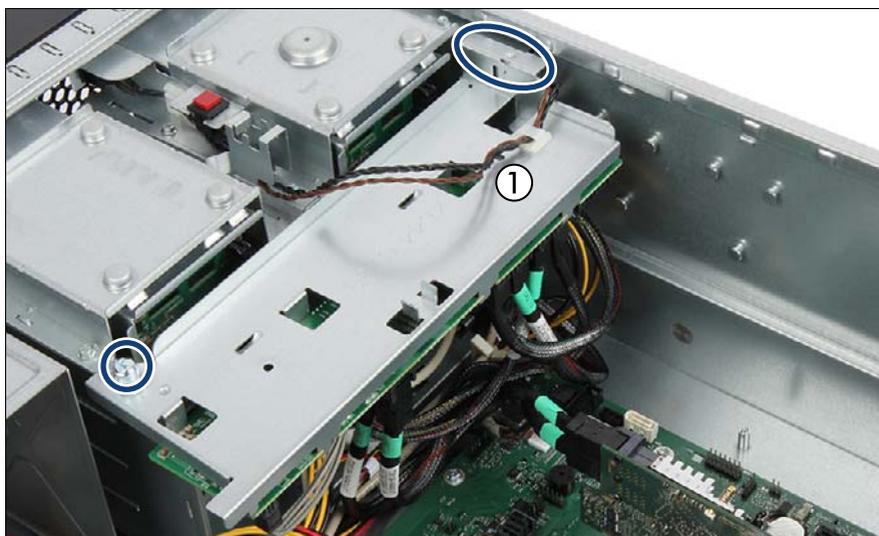


Figure 168: Installing the SAS expander holder (B)

- ▶ Place the expander board that the two hooks fit with the two recesses (see oval).
- ▶ Fasten the expander board with the knurled screw (see circle)
- ▶ Route the intrusion switch cable as shown (1).

7.6.1.5 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)
- ▶ ["Switching on the server" on page 80](#)

7.6.2 Removing the SAS expander board



Field Replaceable Unit (FRU)



Hardware: 10 minutes

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

7.6.2.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)

7.6.2.2 Removing the SAS expander holder

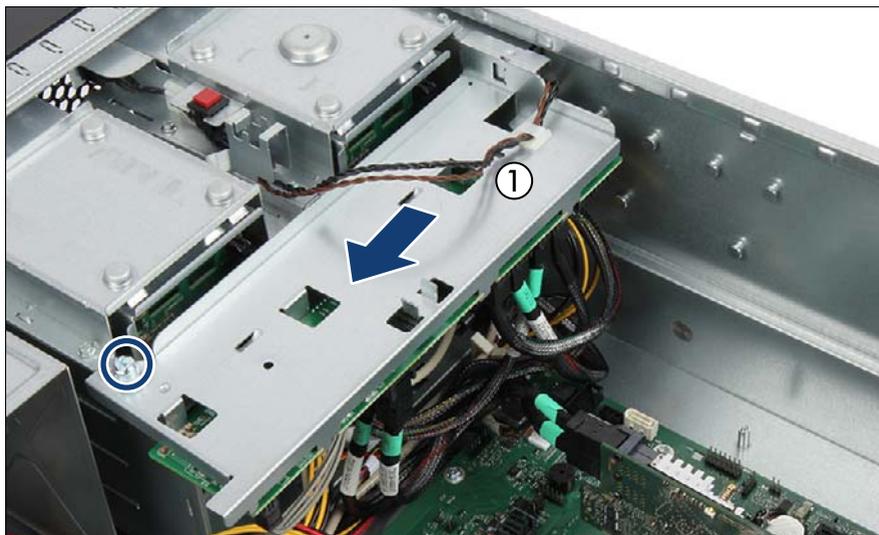


Figure 169: Removing the SAS expander holder

- ▶ Remove the intrusion switch cable from the cable clamp (1).
- ▶ Remove the knurled screw (see circle).
- ▶ Slide the SAS expander board holder in the direction of the arrow and take it out of the chassis.
- ▶ Disconnect all cables from the expander board.

7.6.2.3 Removing the SAS expander board

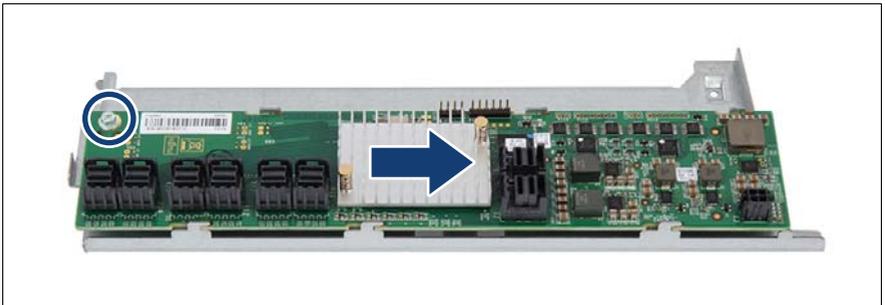


Figure 170: Removing the SAS expander board

- ▶ Remove one screw (see circle).
- ▶ Push the SAS expander board in the direction of the arrow.
- ▶ Take off the SAS expander board from the SAS expander holder.

7.6.2.4 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)
- ▶ ["Switching on the server" on page 80](#)

7.6.3 Replacing the SAS expander board



Field Replaceable Unit (FRU)



Hardware:10 minutes

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

7.6.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)

7.6.3.2 Removing the defective SAS expander board

- ▶ ["Removing the SAS expander board" on page 255](#)

7.6.3.3 Installing the new SAS expander board

- ▶ ["Installing the SAS expander board" on page 251](#)

7.6.3.4 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)
- ▶ ["Switching on the server" on page 80](#)

8 Fans

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.
- The procedure of installation on this notes might change depending on a configuration of options.
- For more information, see chapter ["Important information" on page 37](#).

8.1 Basic information

Two variants of system fan modules can be equipped:

- The standard system fan module contains one fan in an air duct
- The redundant system fan module contains two fans in an air duct

The system fan modules direct the airflow directly onto the CPU heat sink and the memory slots.



Additional fans in PSUs are integral parts of the PSUs and cannot be replaced separately.

8.1.1 Standard system fan module

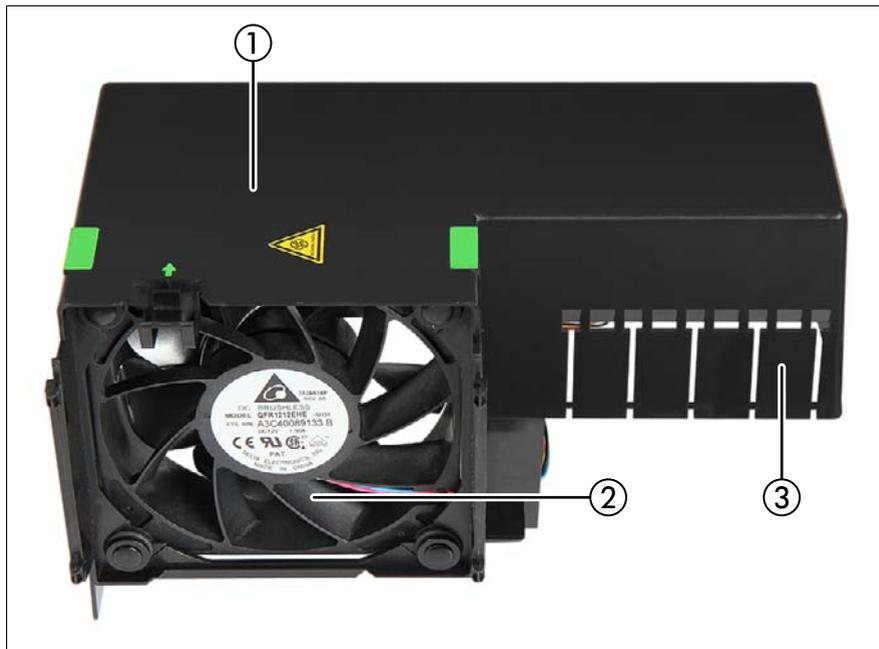


Figure 171: Standard system fan module

1	Air duct
2	System fan 1, 120 x 38 mm
3	Breakouts



CAUTION!

Since the system fan is not redundant it has to be replaced immediately in case of defects or prefailure events.

8.1.2 Redundant system fan module

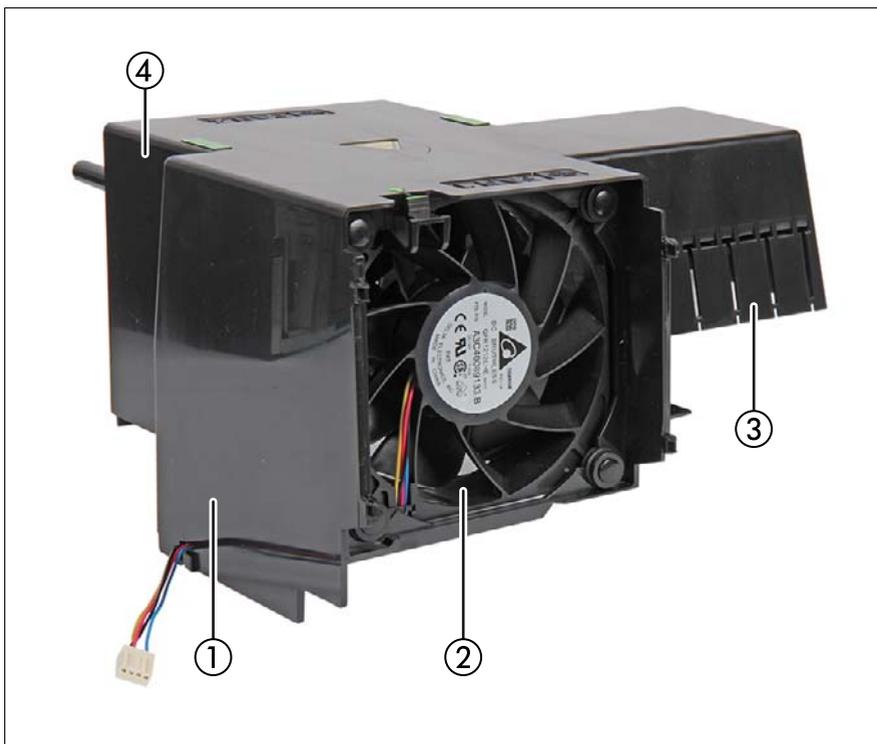


Figure 172: Redundant system fan module

1	Air duct
2	System fan 1, 120 x 38 mm
3	Breakouts
4	System fan 2, 120 x 38 mm

8.2 Replacing the system fan



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

Tools: tool-less

8.2.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

8.2.2 Removing a system fan

8.2.2.1 Removing the fan cable

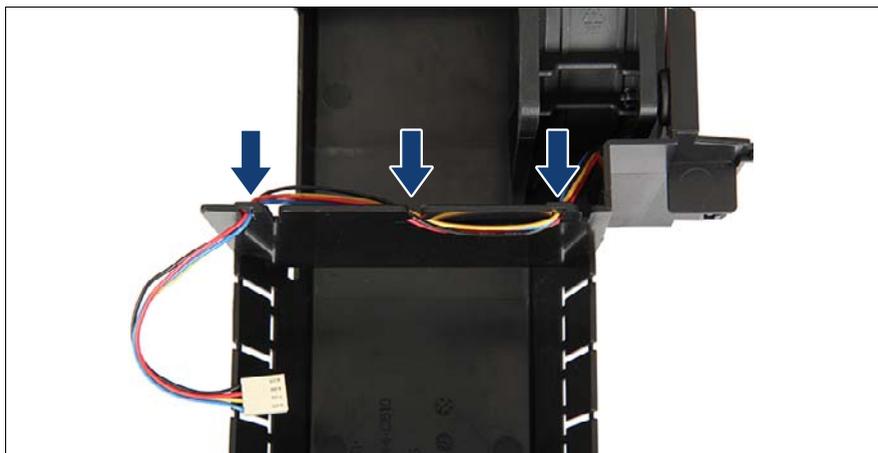


Figure 173: Standard system fan: Removing the fan cable from the guidings

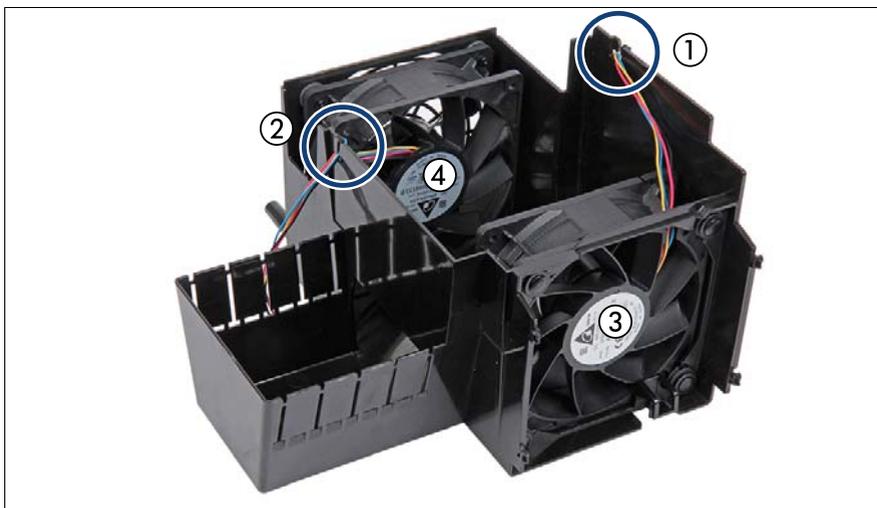


Figure 174: Redundant system fan: Removing the fan cable from the guidings

1	Guiding for the fan cable from system fan 1
2	Guiding for the fan cable from system fan 2
3	Label system fan 1
4	Label system fan 2

- ▶ Remove the fan cable from the corresponding guiding(s).

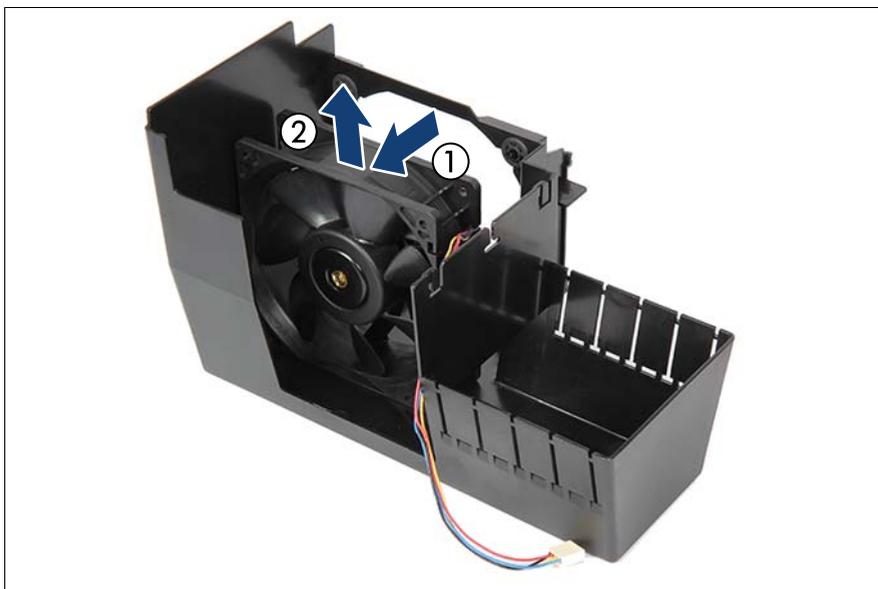


Figure 176: Removing the system fan from the air duct

- ▶ Pull the system fan from the snap rivets (1).
- ▶ Remove the system fan from the air duct (2).

8.2.3 Installing a system fan

8.2.3.1 Installing the new system fan

- ▶ Insert the system fan into the air duct.

i Take note of the mounting direction! The labels of all system fans must show to the rear (see figure 174).



Figure 177: Installing the system fan in the air duct

- ▶ Push the system fan on the snap rivets (1).

i Notice the position of the fan cable. Ensure that the fan cable is not pressed.

- ▶ Insert and tightly push the four safety pins into the snap rivets (2).
- ▶ Take note of the air flow (3).

8.2.3.2 Running the fan cables

- ▶ Insert the fan cable in the corresponding guidings (see figure 173 and figure 174).

8.2.4 Concluding steps

- ▶ ["Installing the standard system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)



When a system fan module fails, the remaining fans will start operating at full speed. After the defective fan module 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 fans reset to a normal operating speed.

- ▶ ["Performing a fan test" on page 124](#)

9 Expansion cards and backup units

Safety notes



CAUTION!

- Do not damage or modify internal cables or devices. Doing so may cause a device failure, fire, or electric shock.
- Devices and components inside the server remain hot after shutdown. After shutting down the server, wait for hot components to cool down before installing or removing internal options.
- Circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. Always discharge static build-up (e.g. by touching a grounded object) before handling electrostatic-sensitive devices (ESDs).
- Do not touch the circuitry on boards or soldered parts. Hold circuit boards by their metallic areas or edges.
- If devices are installed or disassembled using methods other than those outlined in this chapter, the warranty will be invalidated.
- For more information, see chapter ["Important information" on page 37](#).

9.1 Basic information

The system board is equipped with four expansion slots.

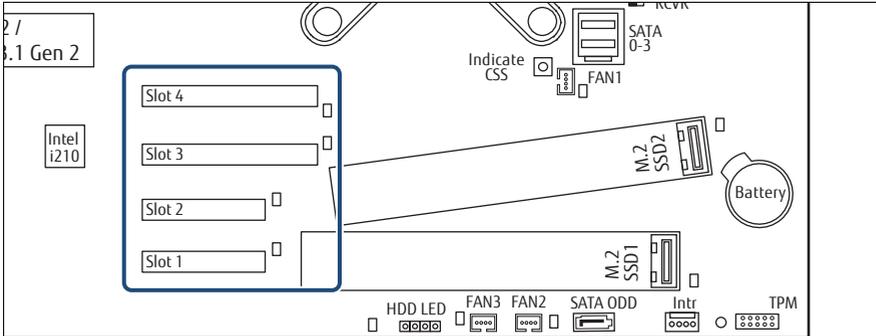


Figure 178: PCI slot overview

PCI slot	Type	Length / Form factor	Function
1	PCIe Gen3 x1 (mech. x4)	167,65 mm / low profile	Slot for optional PCIe expansion cards
2	PCIe Gen3 x4 (notched) (mech. x4)	167,65 mm / low profile	Slot for optional PCIe expansion cards
3	PCIe Gen3 x8 (notched) (mech. X8)	167,65 mm / low profile	Dedicated slot for boot controllers
4	PCIe Gen3 x8 (notched)(mech. X8)	167,65 mm / low profile	Dedicated slot for PCIe graphics card



An additional PCI 32-bit slot is available with an optional riser card. This riser card can be mounted on two spacer bolts positioned under slot 1. In this case a PCI adapter board occupies slot 1 (see section ["Installing the new riser card"](#) on page 291).



For the latest information on supported expansion cards, refer to your server's hardware configurator available online at the following address: http://ts.fujitsu.com/products/standard_servers/index.html

In Japan:

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

9.2 Handling slot brackets

9.2.1 Installing a slot bracket



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

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



Use the low profile bracket perforated for relevant controllers.

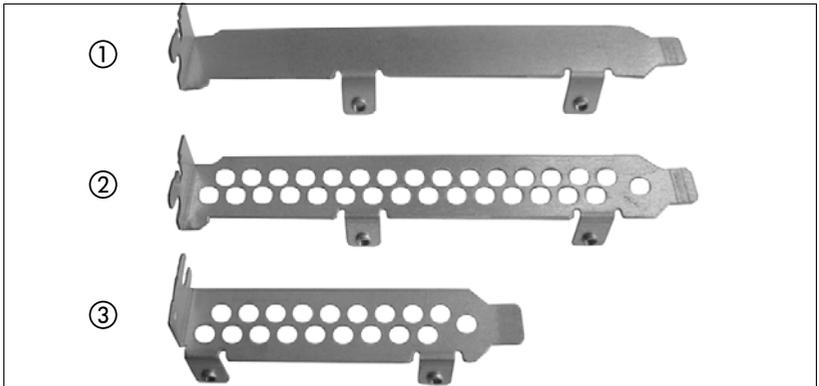


Figure 179: Perforated and non-perforated slot brackets

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

Installing the slot bracket

- ▶ Place the controller on the mounting tabs on the slot bracket.
- ▶ Fasten the slot bracket to the controller with two screws.

Example: EP4x0i

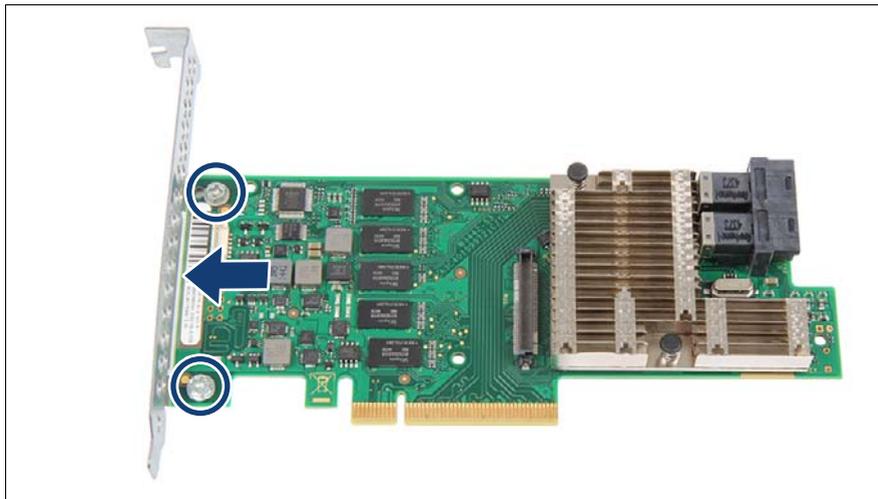


Figure 180: Placing the slot bracket

- ▶ Place the controller on the slot bracket (see arrow).
- ▶ Secure the slot bracket to the expansion card with two screws (see circles).

9.2.2 Removing a slot bracket



**Upgrade and Repair Unit
(URU)**



Hardware: 5 minutes

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

Removing the slot bracket

- ▶ Remove the two screws.
- ▶ Remove the controller from the mounting tabs on the slot bracket.

9.3 Handling SFP+ transceiver modules

A network adapter is equipped with one or two SFP+ (small form-factor pluggable) transceiver modules. SFP+ transceiver modules are hot-pluggable.

9.3.1 Installing the SFP+ transceiver modules



Upgrade and Repair Unit
(URU)



Hardware: 5 minutes

Tools: tool-less

Preparing the SFP+ transceiver module



Figure 181: Removing the protective cap

- ▶ Remove the SFP+ transceiver module from its protective packaging.
- ▶ Remove the protective cap from the new/additional SFP+ transceiver module.



CAUTION!

- Always keep the protective caps attached to the SFP+ transceiver modules and fiber-optic cable connectors until you are ready to make a connection.
- Keep the protective cap for future use.



Figure 182: Unlatching the locking bail

- ▶ Carefully unlatch and fold down the locking bail on the SFP+ transceiver module.

Inserting the SFP+ transceiver module



Figure 183: Inserting the SFP+ transceiver module

- ▶ Insert and slide the SFP+ transceiver module into the socket connector as far as it will go.



If only one slot is equipped with a SFP+ transceiver module, use the left connector as shown.

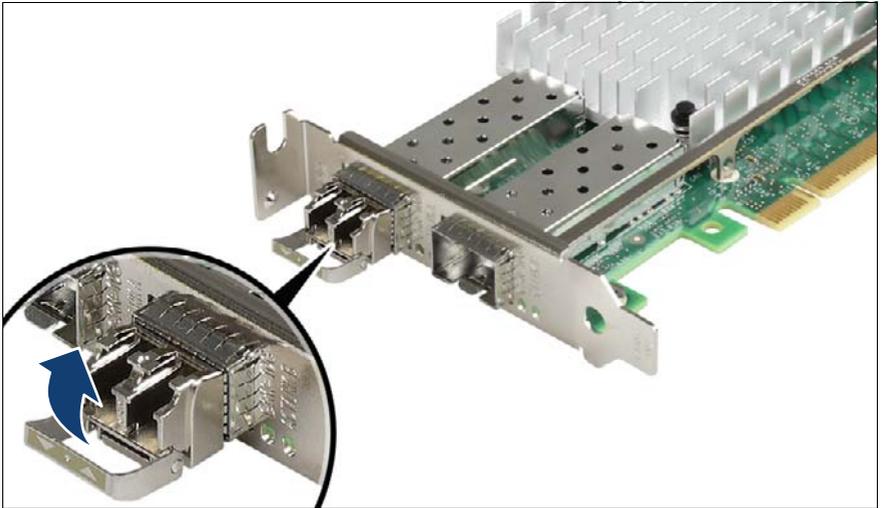


Figure 184: Latching the locking bail

- ▶ Carefully fold up and latch the locking bail.

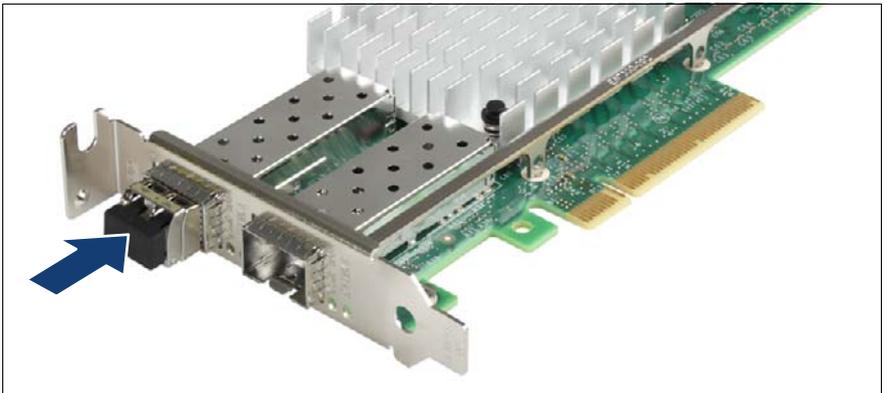


Figure 185: Installing the protective cap

- ▶ If the SFP+ transceiver module is not immediately connected to an LC connector, attach the protective cap to the SFP+ transceiver module.

Installing the secondary SFP+ transceiver module



Figure 186: Installing the secondary SFP+ transceiver module

- ▶ If applicable, install the secondary SFP+ transceiver module accordingly.

9.3.2 Removing an SFP+ transceiver module



**Upgrade and Repair Unit
(URU)**



Hardware: 5 minutes

Tools: tool-less

A network adapter is equipped with one or two SFP+ (small form-factor pluggable) transceiver modules. SFP+ transceiver modules are hot-pluggable.

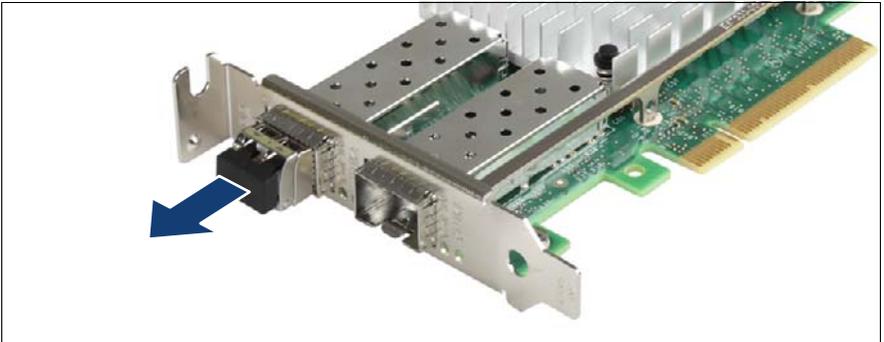


Figure 187: Removing the protective cap

- ▶ If present, remove the protective cap from the SFP+ transceiver module.



CAUTION!

Save the protective cap for future use.

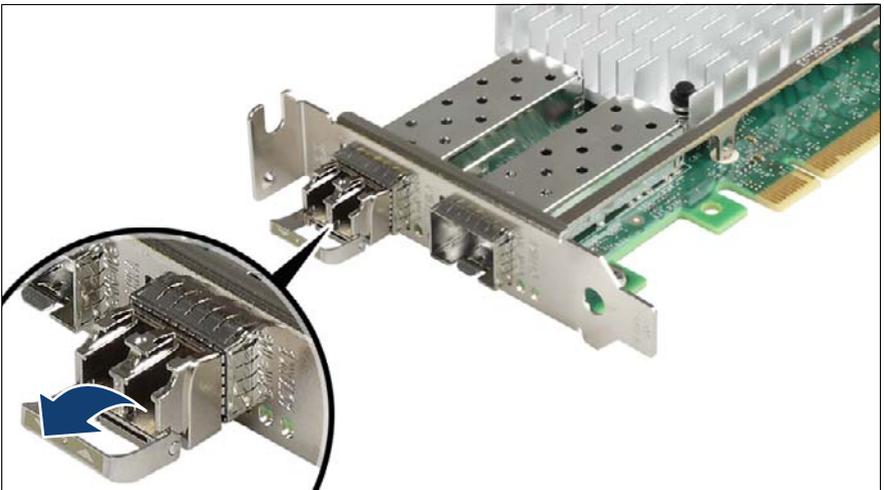


Figure 188: Unlatching the locking bail

- ▶ Carefully unlatch and fold down the locking bail on the SFP+ transceiver module to eject the transceiver from the socket connector.

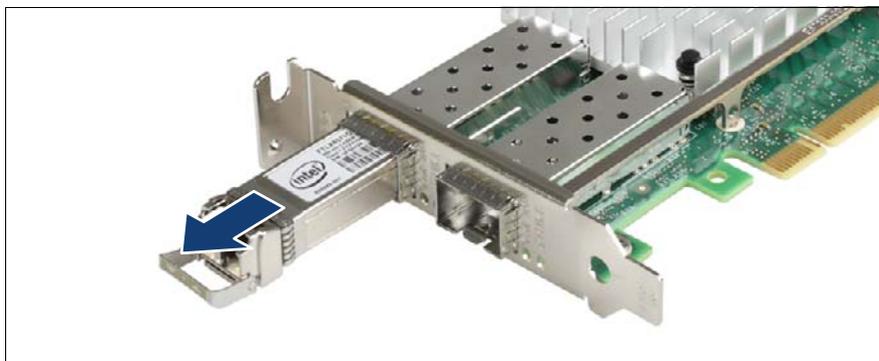


Figure 189: Removing the SFP+ transceiver module

- ▶ Pull the SFP+ transceiver module out of its socket connector.
 - ▶ Attach the protective cap to the SFP+ transceiver module.
- i** Place the removed SFP+ transceiver module in an antistatic bag or other protective environment.

9.4 Expansion cards and riser card

9.4.1 Installing expansion cards



**Upgrade and Repair Unit
(URU)**



**Hardware: 5 minutes
Software: 5 minutes**

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

9.4.1.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)
- ▶ If applicable, remove the SAS expander holder without disconnecting cables, see section ["Removing the SAS expander holder" on page 256](#). Position the SAS expander holder on the HDD cages to get more space.

9.4.1.2 Removing a PCI slot cover

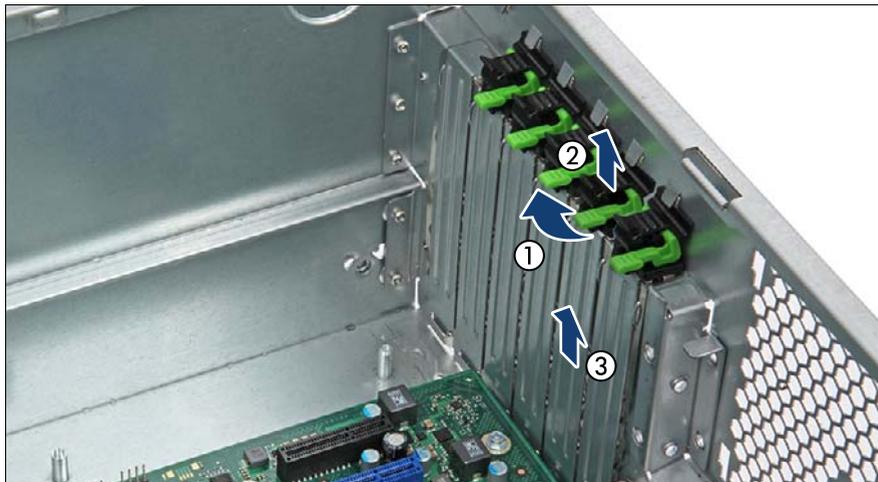


Figure 190: Removing the slot cover

- ▶ Fold up the locking handle on the slot cover clamp (1).
- ▶ Remove the slot cover clamp (2).
- ▶ Remove the slot cover (3).



CAUTION!

Keep the slot cover for future use.

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

9.4.1.3 Installing an expansion card

-  If an optional FBU will be installed in the system, install a TFM on the RAID controller, before proceeding.
- ▶ Remove the expansion card from its protective packaging.
 -  For further instructions regarding controller settings, see the accompanying documentation.
- ▶ If applicable, attach the required slot bracket to the expansion card, see section ["Installing a slot bracket" on page 271](#).
- ▶ If applicable, connect internal cables to the expansion card.
 -  For the cable plan, see chapter ["Appendix B" on page 477](#).

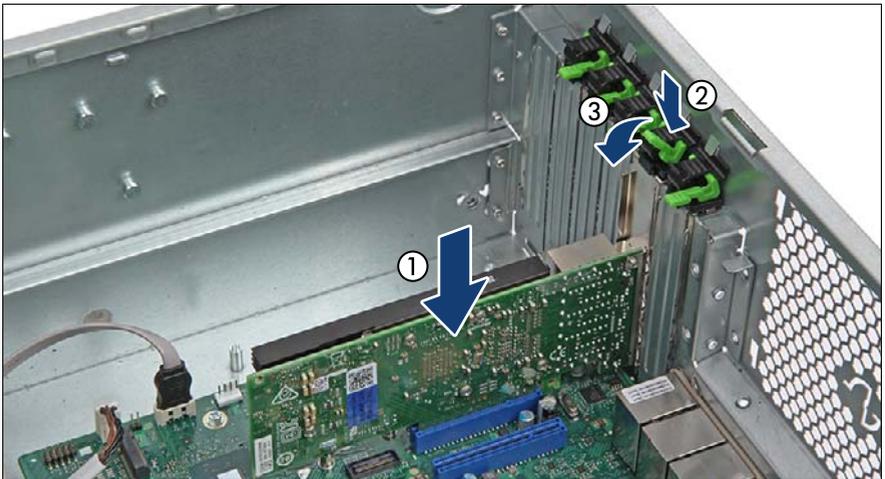


Figure 191: Installing the expansion card

- ▶ Carefully insert the expansion card into the desired PCI slot and press down firmly until it is fully seated in the slot (1).
- ▶ Clip on the slot cover clamp (2).
- ▶ Fold down the locking handle on the slot cover clamp until it locks in place (3).
- ▶ If applicable, connect a FBU to the expansion card, see section ["Installing an FBU" on page 299](#).

Example PRAID EP5x0i

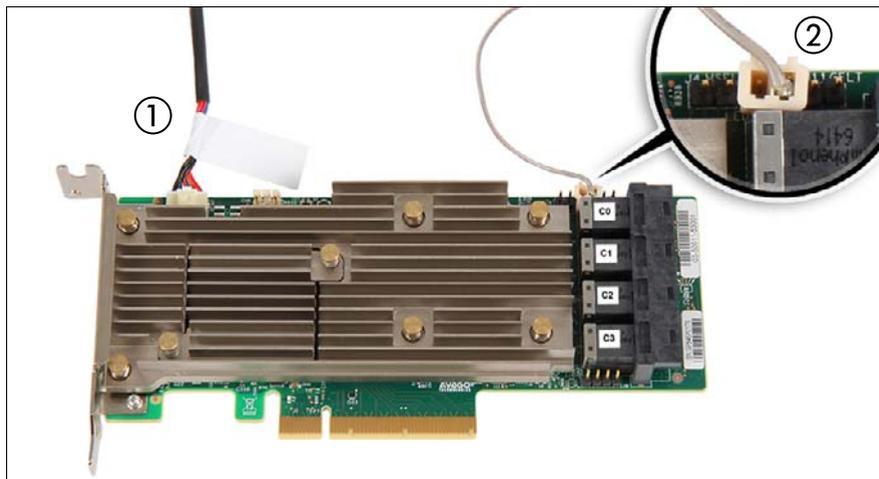


Figure 192: Connecting cables - PRAID EP5x0ixi

- ▶ Connect the cables to the PRAID EP5x0i:
 - 1 If applicable, FBU cable
 - 2 HDD LED cable

- ▶ Install the PRAID EP5x0i in slot 3, see section ["Installing expansion cards" on page 279](#).

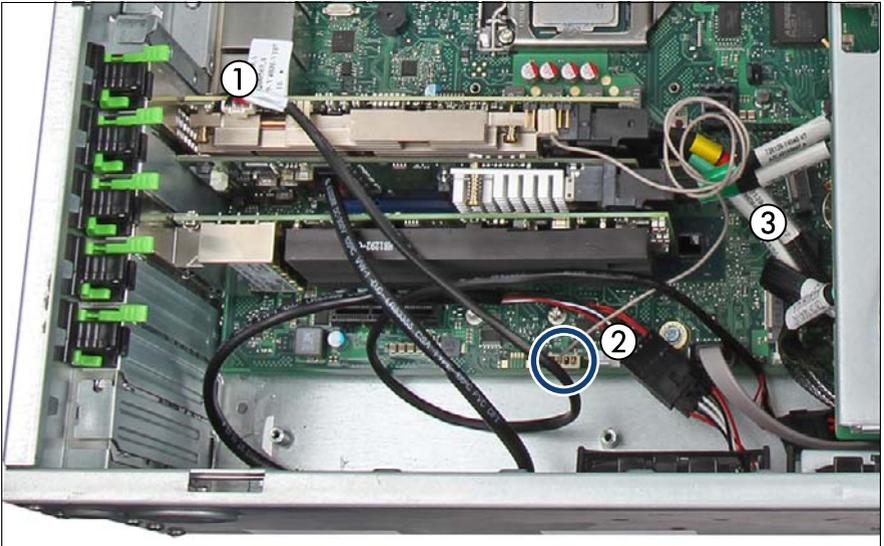


Figure 193: PRAID EP5x0i - Connecting cables (B)

► Connect the cables of the PRAID EP5x0i:

- 1 If applicable, FBU cable to the FBU
- 2 HDD LED cable to connector "HDD LED" on the system board
- 3 SAS cables or Oculink cables to the backplanes (depending on the configuration)

For Oculink cables:

Color	Connector on EP5x0i	Connector on PCIe SSD backplane
red	C0	P3_X4
yellow	C1	P2_X3
green	C2	P1_X2
black	C3	P0_X1



For the cable plan, see chapter ["Appendix B" on page 477](#).

9.4.1.4 Concluding steps

- ▶ If applicable, install the SAS expander holder, see section ["Installing the SAS expander holder" on page 254](#)
- ▶ If applicable, remove break-outs from the system fan module (see figure 171 or figure 172).
- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ Connect all external cables to the replaced expansion card.
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)
- ▶ ["Updating expansion card firmware" on page 104](#)
- ▶ ["Enabling Option ROM scan" on page 105](#)
- ▶ ["Enabling the boot watchdog" on page 111](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)
- ▶ If applicable, ["After replacing/upgrading LAN controllers" on page 122](#)

9.4.2 Removing expansion cards



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: tool-less

9.4.2.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ Remove all external cables from the expansion card to be removed.
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)
- ▶ If applicable, remove the SAS expander holder without disconnecting cables, see section ["Removing the SAS expander holder" on page 256](#). Position the SAS expander holder on the HDD cages to get more space.

9.4.2.2 Removing an expansion card

- ▶ If applicable, disconnect internal cables from the expansion card.

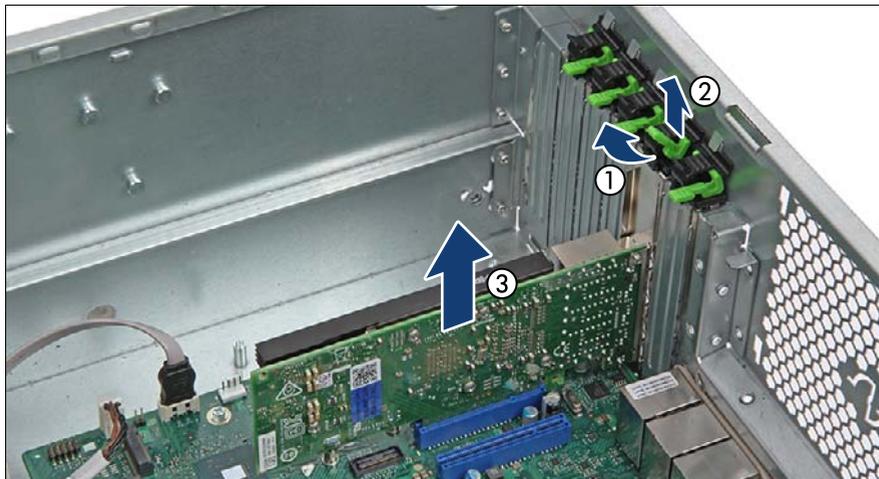


Figure 194: Removing an expansion card

- ▶ Fold up the locking handle on the slot cover clamp (1).
- ▶ Remove the slot cover clamp (2).
- ▶ Carefully remove the expansion card from its slot (3).

9.4.2.3 Installing the slot cover



CAUTION!

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

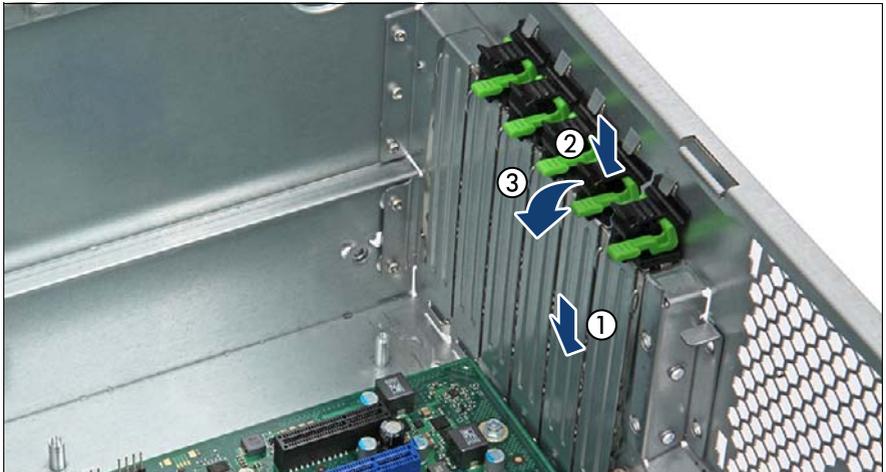


Figure 195: Installing a slot cover

- ▶ Insert a slot cover into the unused PCI slot opening (1).
- ▶ Clip on the slot cover clamp (2).
- ▶ Fold down the locking handle on the slot cover clamp until it locks in place (3).

9.4.2.4 Concluding steps

- ▶ If applicable, install the SAS expander holder, see section ["Installing the SAS expander holder" on page 254](#)
- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)

9.4.3 Replacing expansion cards



Upgrade and Repair Unit (URU)



Hardware: 5 minutes
Software: 5 minutes

Tools: Phillips PH2 / (+) No. 2 screw driver (only for installing slot brackets)

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 network controller or the system board.

9.4.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)
- ▶ If applicable, remove the SAS expander holder without disconnecting cables, see section ["Removing the SAS expander holder" on page 256](#). Position the SAS expander holder on the HDD cages to get more space.
- ▶ ["Locating the defective component" on page 52](#)
- ▶ Remove all external cables from the expansion card to be replaced.

9.4.3.2 Removing an expansion card

- ▶ Remove the expansion card, see section ["Removing expansion cards" on page 285](#).

- ▶ If applicable, ["Removing an SFP+ transceiver module" on page 276](#).
- ▶ If the slot bracket on the defective expansion card is to be reused: ["Removing a slot bracket" on page 272](#).

9.4.3.3 Installing the new expansion card

- ▶ If applicable, ["Installing a slot bracket" on page 271](#).
- ▶ If applicable, ["Installing the SFP+ transceiver modules" on page 273](#).
- ▶ Install the expansion card, see section ["Installing an expansion card" on page 281](#).

9.4.3.4 Concluding steps

- ▶ If applicable, install the SAS expander holder, see section ["Installing the SAS expander holder" on page 254](#)
- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#).
- ▶ ["Reassembling" on page 67](#)
- ▶ Connect all external cables to the replaced expansion card.
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)
- ▶ ["Enabling replaced components in the BIOS" on page 112](#)
- ▶ Inform the customer about changed WWN, MAC and SAS addresses, see section ["Looking for MAC/WWN/GUID and SAS addresses" on page 118](#).
- ▶ ["Updating the NIC configuration file in a Linux and VMware environment" on page 116](#)
- ▶ ["Updating expansion card firmware" on page 104](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)
- ▶ If applicable, 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 more information, see section ["Note on network settings recovery" on page 288](#).

- ▶ If applicable, restore LAN teaming configurations, see section ["After replacing/upgrading LAN controllers"](#) on page 122.

9.4.4 Replacing the riser card



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

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

9.4.4.1 Preliminary steps

- ▶ ["Locating the defective server"](#) on page 51
- ▶ ["Suspending BitLocker functionality"](#) on page 97
- ▶ ["Shutting down the server"](#) on page 53
- ▶ ["Disconnecting the power cord"](#) on page 54
- ▶ Remove all external cables from the expansion card installed in the riser card slot.
- ▶ ["Getting access to the component"](#) on page 55
- ▶ Remove the system fan module, see section ["Removing the system fan module"](#) on page 81
- ▶ If applicable, remove the SAS expander holder without disconnecting cables, see section ["Removing the SAS expander holder"](#) on page 256. Position the SAS expander holder on the HDD cages to get more space.

9.4.4.2 Removing the defective riser card

- ▶ Remove the expansion card from the riser card slot, see section ["Removing an expansion card"](#) on page 286.

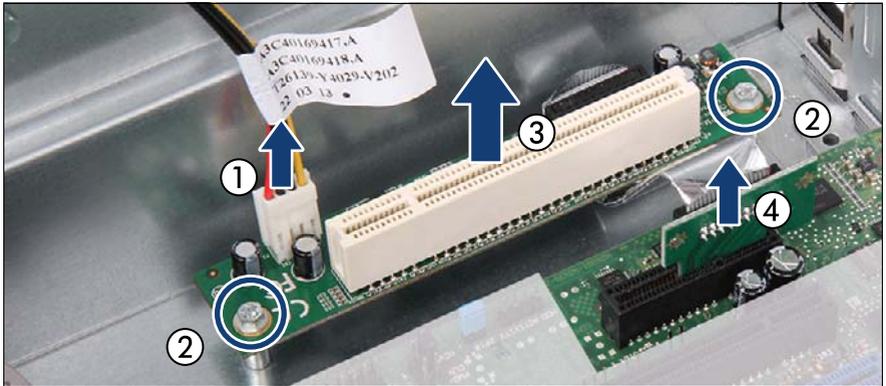


Figure 196: Removing the riser card

- ▶ Disconnect the power cable (1).
- ▶ Remove the two screws (2).
- ▶ Remove the riser card (3).
- ▶ Remove the PCI adapter board from slot 1 (4).

9.4.4.3 Installing the new riser card

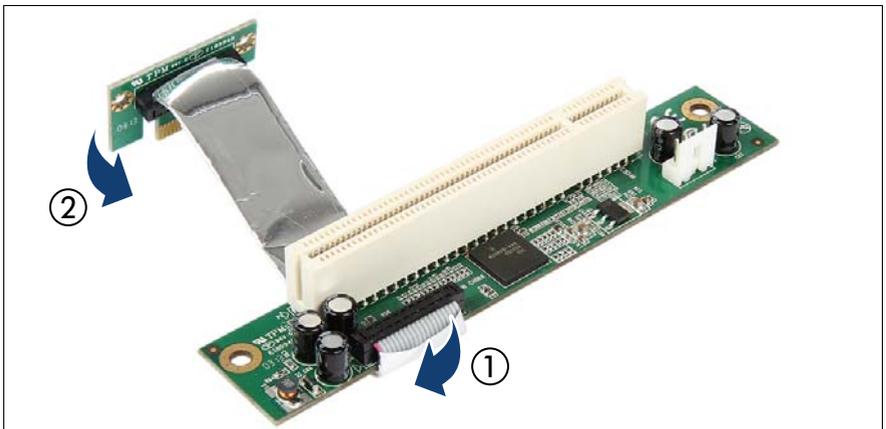


Figure 197: Preparing the riser card

- ▶ Fold the cable under the riser card (1).
- ▶ Angle the PCI adapter board (2).

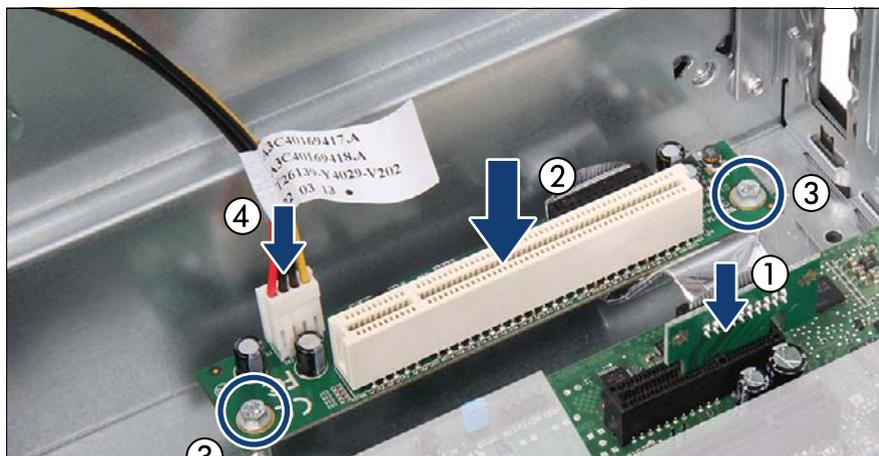


Figure 198: Installing the riser card

- ▶ Insert the PCI adapter board in slot 1 (1).
- ▶ Fit the riser card onto the two spacer bolts (2).
- ▶ Fasten the riser card with the two screws (3).
- ▶ Connect the power cable (4).
- ▶ Install the expansion card in the riser card slot, see section ["Installing expansion cards" on page 279](#).

9.4.4.4 Concluding steps

- ▶ If applicable, install the SAS expander holder, see section ["Installing the SAS expander holder" on page 254](#)
- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ When working on a rack-mounted server:
["Sliding the server into the rack" on page 72](#)
- ▶ Connect all external cables to the expansion card installed in the riser card slot.
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

9.4.5 Replacing a TFM



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

Tools: Phillips PH1 / (+) No. 1 screw driver



Depending on the RAID controller, different TFM kits are available.

9.4.5.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

9.4.5.2 Removing the defective TFM

- ▶ Remove the depending expansion card, see section ["Removing expansion cards" on page 285](#).

Example RAID controller



Figure 199: Disconnecting the FBU adapter cable from the TFM

- ▶ Disconnect the FBU adapter cable from the TFM.

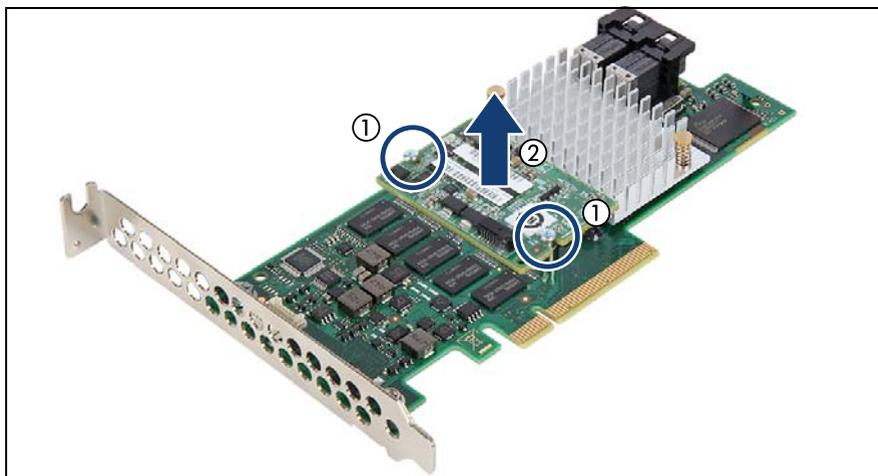


Figure 200: Removing the TFM

- ▶ Remove the two screws (1).
- ▶ Remove the TFM (2).



Note for replacing the TFM:

The two spacer bolts can remain on the RAID controller.

9.4.5.3 Installing the new TFM

Example RAID controller

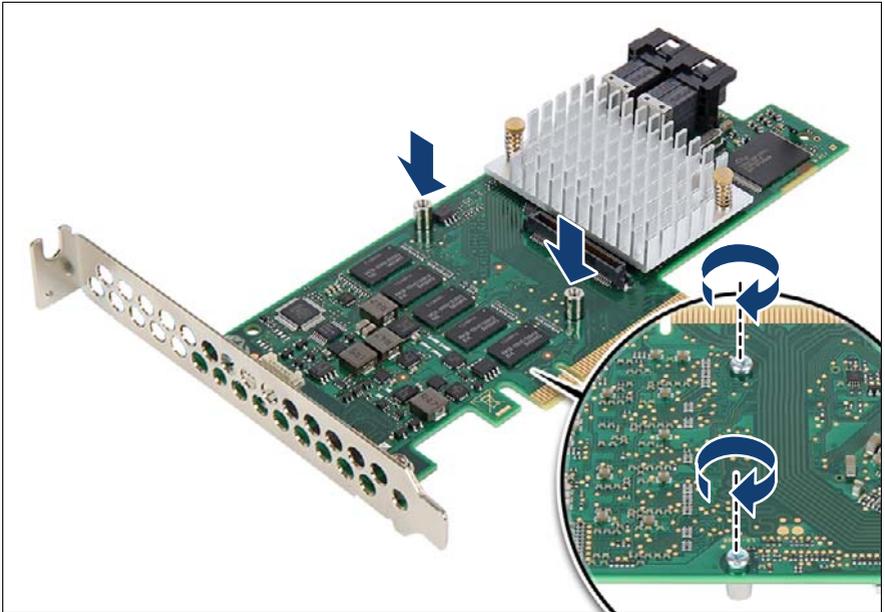


Figure 201: Mounting the TFM (A)

- ▶ If no TFM has been installed before: fit the two spacer bolts on the RAID controller.

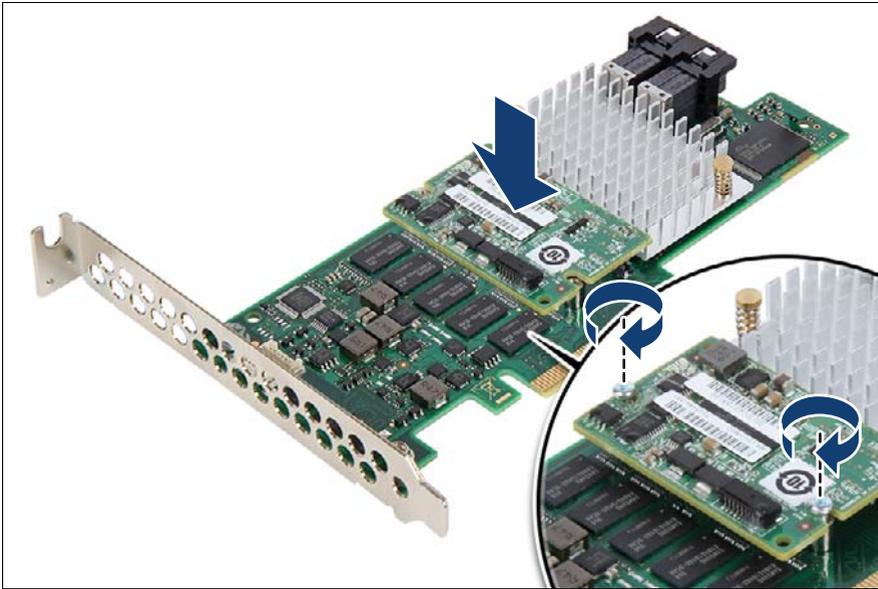


Figure 202: Mounting the TFM (B)

- ▶ Fasten the TFM on the RAID controller with two screws from the TFM kit.



Figure 203: Mounting the TFM (C)

- ▶ Connect the FBU adapter cable to the TFM.
- ▶ Install the expansion card, see section ["Installing expansion cards" on page 279](#).
- ▶ Connect the SAS cables to their original connectors on the SAS RAID controller.

9.4.5.4 Concluding steps

- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

9.5 Flash Backup Unit (FBU)

The FBU backs up the memory contents of the RAID controller in the event of a power failure. Up to two FBUs can be installed in the system.



CAUTION!

Depending on the RAID controller, different FBUs are available. In configurations with PRAID EP5x0i, an FBU345 is required.

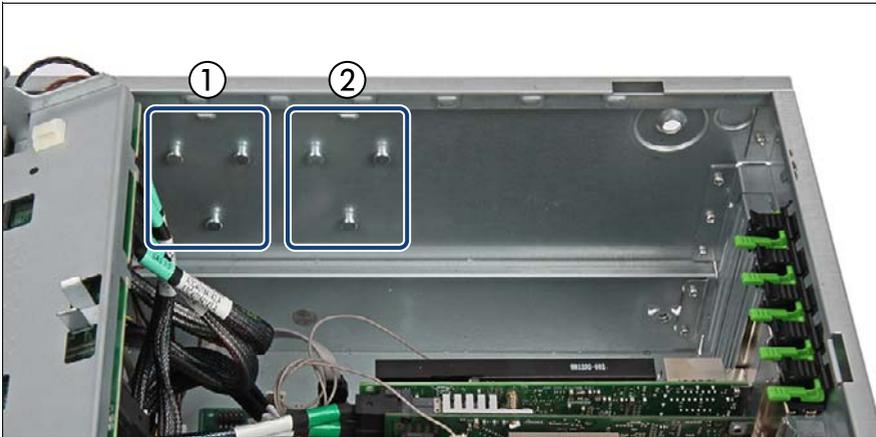


Figure 204: Position of the shoulder screw caps

Pos.	Component
1	FBU 1
2	FBU 2

9.5.1 Installing an FBU



**Upgrade and Repair Unit
(URU)**



Hardware: 5 minutes

Tools: FBU: tool-less

9.5.1.1 Preliminary steps

- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)
- ▶ If applicable, remove the SAS expander holder without disconnecting cables, see section ["Removing the SAS expander holder" on page 256](#). Position the SAS expander holder on the HDD cages to get more space.

9.5.1.2 Preparing the FBU

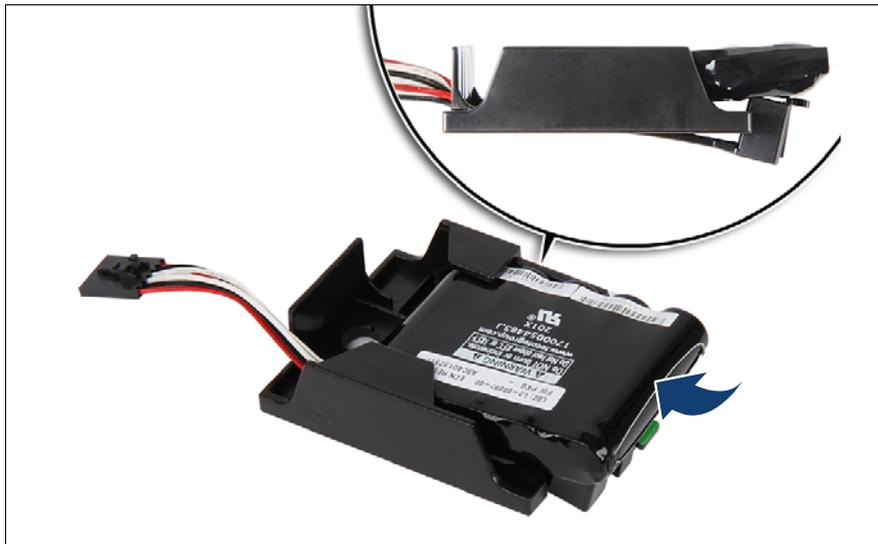


Figure 205: Installing the FBU in the FBU holder

- ▶ At a slight angle, fit the FBU under the right retaining bracket of the holder.
- ▶ Push in the FBU until it locks in place.
- ▶ Ensure that the FBU is properly seated in the FBU holder.

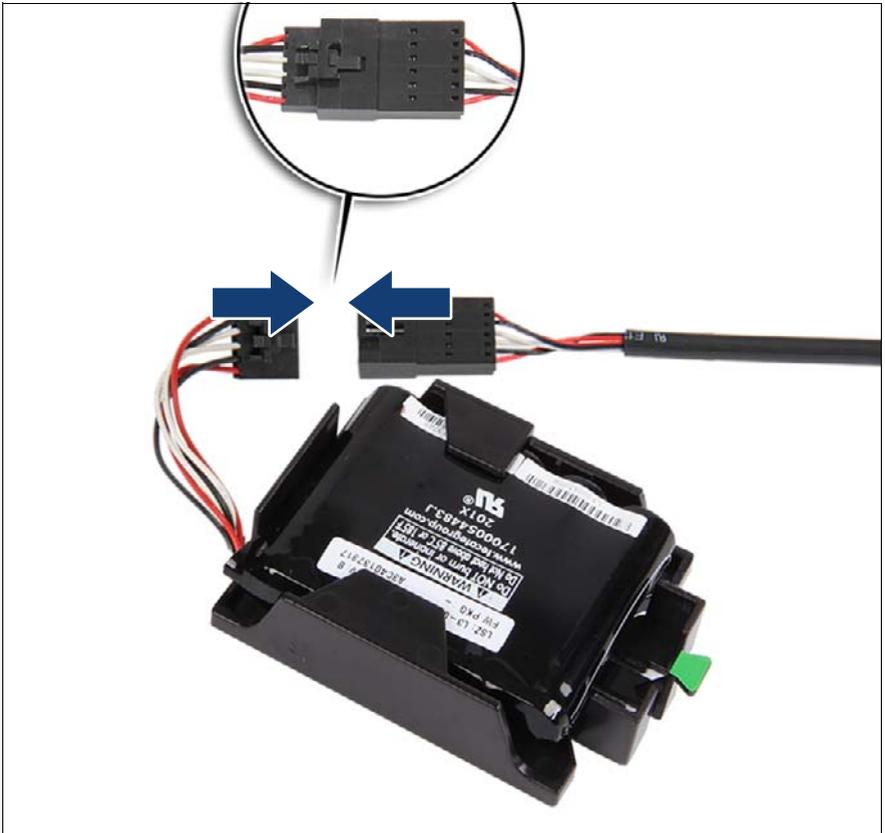


Figure 206: Connecting the FBU adapter cable to the FBU

- ▶ Connect the FBU cable to the FBU adapter cable.

9.5.1.3 Installing the FBU

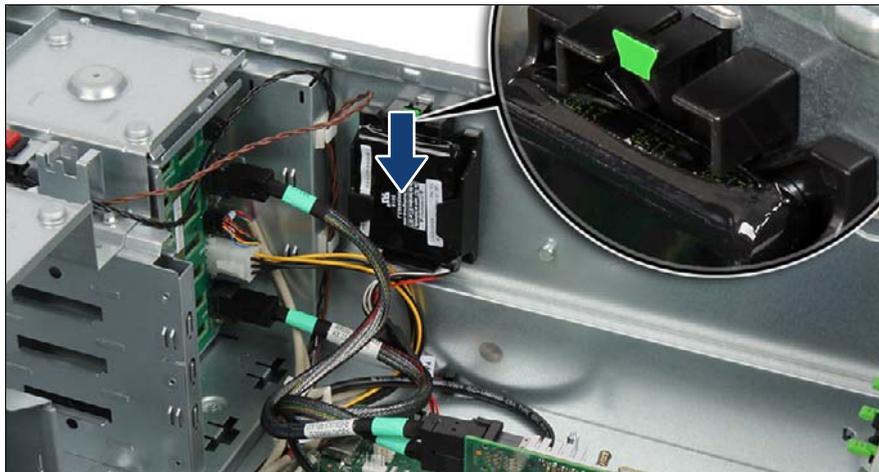


Figure 207: Installing the FBU with the FBU holder

- ▶ Place the FBU holder to the three shoulder screw caps in the chassis.
- ▶ Push the FBU holder direction of the arrow until it engages.
- ▶ Ensure that the locking handle on the FBU holder properly snaps in place (see close-up).

Example FBU (PRAID EP4x0i) and FBU 345 (PRAID EP5x0i)

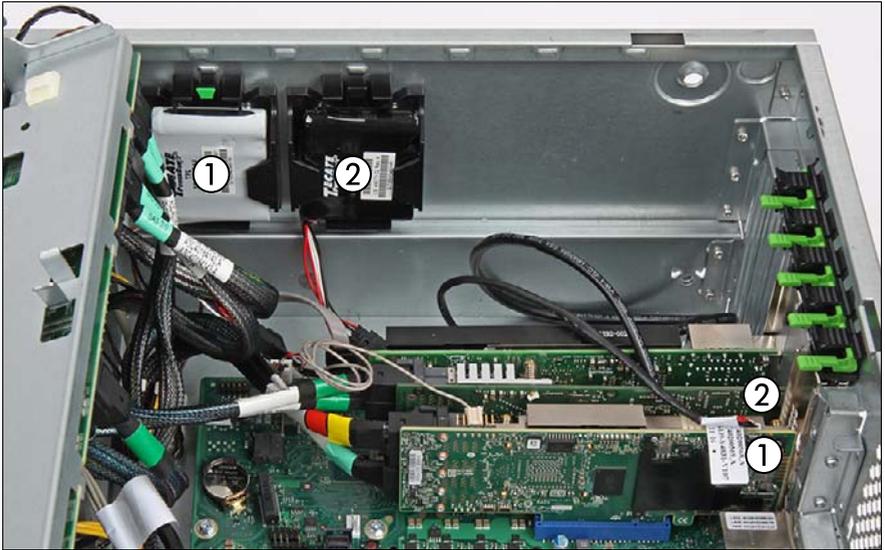


Figure 208: Example configuration with FBU and FBU 345

Pos.	Component
1	FBU 345 with PRAID EP5x0i
2	FBU with PRAID EP4x0i

9.5.1.4 Concluding steps

- ▶ If applicable, install the SAS expander holder, see section ["Installing the SAS expander holder" on page 254](#)
- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)
- ▶ ["Updating expansion card firmware" on page 104.](#)

9.5.2 Removing an FBU



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: tool-less



CAUTION!

- Dispose of used battery properly. Keep away from children.
- Do not throw flash backup units into the trash can. Batteries must be disposed of in accordance with local regulations concerning special waste.

9.5.2.1 Preliminary steps

- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ If applicable, remove the SAS expander holder without disconnecting cables, see section ["Removing the SAS expander holder" on page 256](#). Position the SAS expander holder on the HDD cages to get more space.

9.5.2.2 Removing the FBU

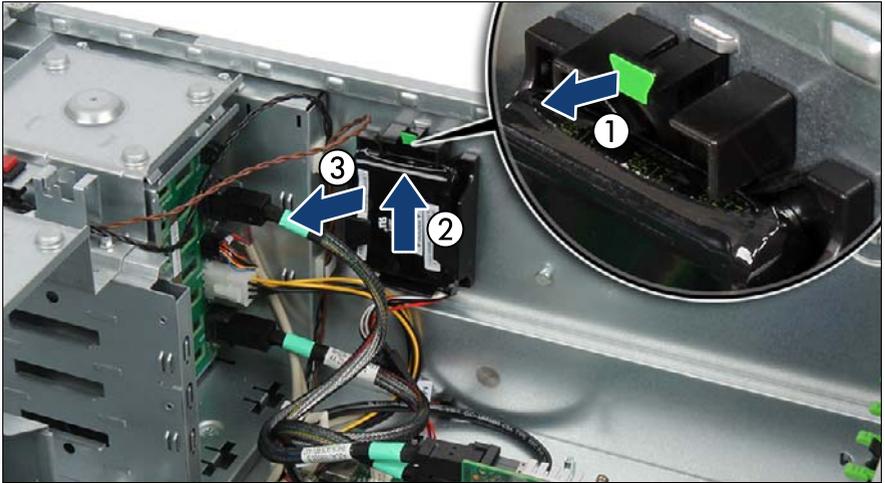


Figure 209: Removing the FBU holder from the chassis

- ▶ Lift up the green locking handle on the FBU holder (1) while sliding the FBU holder in the direction of the arrow as far as it will go (2).

i After that, the shoulder screw caps on the chassis will rest in the wide ends of the keyhole slots on the FBU holder.

- ▶ Lift the FBU holder out of the chassis (3).

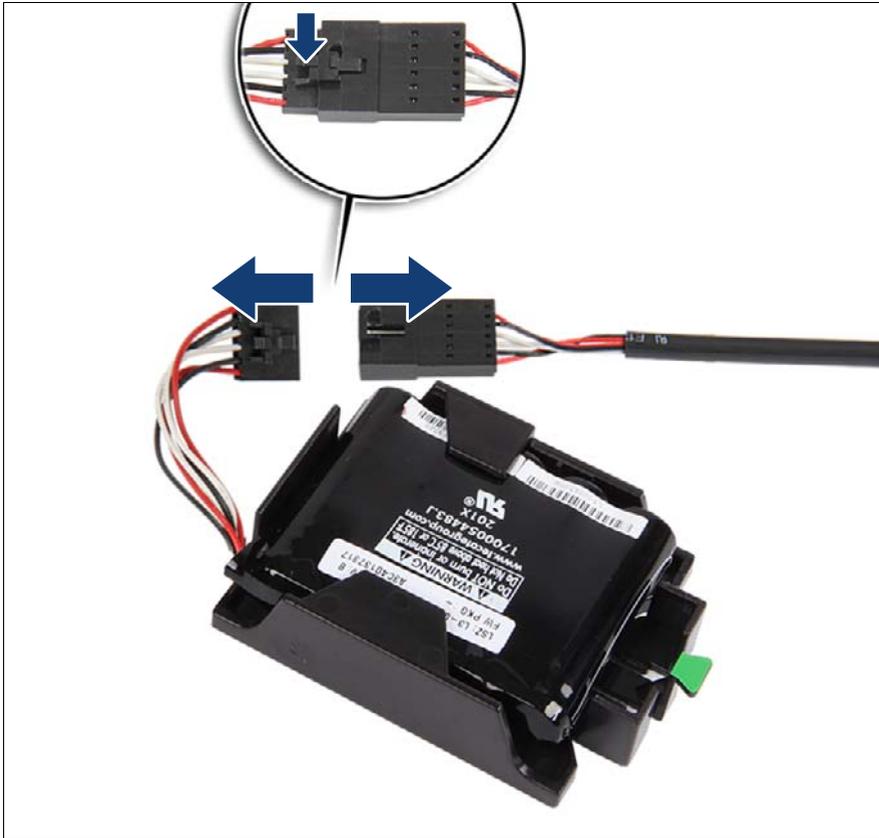


Figure 210: Disconnecting the FBU adapter cable from the FBU cable

- ▶ Disconnect the FBU cable from the FBU.

9.5.2.3 Removing the FBU from the FBU holder

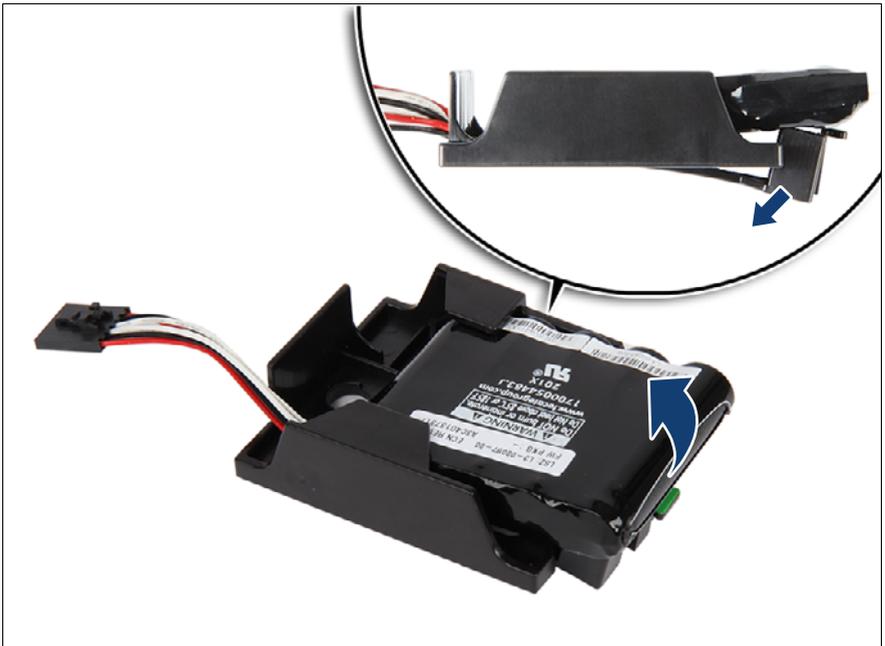


Figure 211: Removing the FBU from the FBU holder

- ▶ Pull the FBU at a slight angle out of the holder.

9.5.2.4 Concluding steps

- ▶ If applicable, install the SAS expander holder, see section "[Installing the SAS expander holder](#)" on page 254
- ▶ "[Reassembling](#)" on page 67
- ▶ "[Connecting the power cord](#)" on page 78
- ▶ "[Switching on the server](#)" on page 80

9.5.3 Replacing an FBU



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

Tools: tool-less



CAUTION!

- Dispose of used battery properly. Keep away from children.
- Do not throw battery backup units into the trash can. Batteries must be disposed of in accordance with local regulations concerning special waste.

9.5.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)
- ▶ If applicable, remove the SAS expander holder without disconnecting cables, see section ["Removing the SAS expander holder" on page 256](#). Position the SAS expander holder on the HDD cages to get more space.
- ▶ ["Locating the defective component" on page 52](#)

9.5.3.2 Removing the defective FBU

- ▶ Remove the FBU with the FBU holder, see section ["Removing an FBU" on page 304](#).
- ▶ Remove the FBU from the FBU holder, see section ["Removing the FBU from the FBU holder" on page 307](#).

9.5.3.3 Installing a new FBU

- ▶ Install the FBU into the FBU holder, see section ["Preparing the FBU" on page 300](#).
- ▶ Install the FBU with the FBU holder, see section ["Installing the FBU" on page 302](#).

9.5.3.4 Concluding steps

- ▶ If applicable, install the SAS expander holder, see section ["Installing the SAS expander holder" on page 254](#)
- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)
- ▶ ["Updating expansion card firmware" on page 104](#)

10 Main memory

Safety notes



CAUTION!

- Do not install unsupported third party memory modules. For more information on supported memory modules, see section "[Basic information](#)" on [page 312](#). Doing so may cause electric shock, a fire, or failures.
- 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.
- If the memory module has not been correctly inserted, it may cause a fire. Insert the memory module with attention.
- 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 more information, see chapter "[Important information](#)" on [page 37](#).

10.1 Basic information

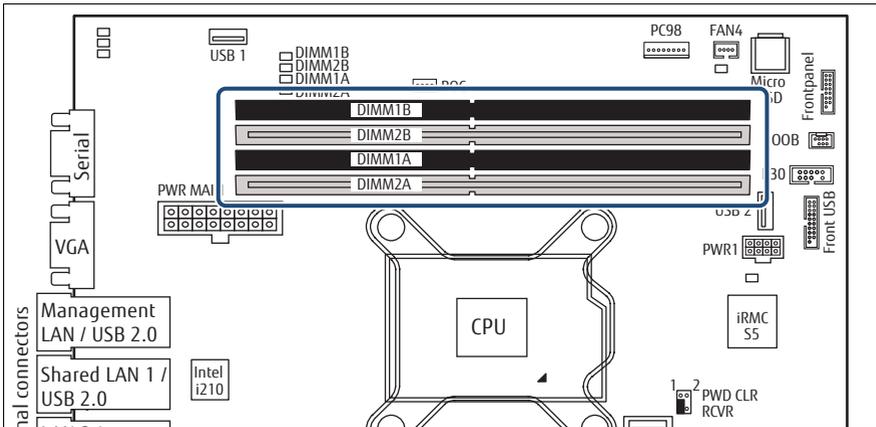


Figure 212: Memory slots overview

The system board is equipped with 4 memory connectors

The system has to be equipped with at least one memory module.

10.1.1 Memory sequence

10.1.1.1 Population rules

- Populate memory slot 1 / channel A (DIMM 1A) first.
- Within all channels memory slot 1 must be populated prior to slot 2.
- For maximum performance, populate both channels with the same amount of memory (symmetric dual channel configuration).
- If memory modules with different capacities are used:
 - Install modules with higher capacities first.
 - Within a channel, install modules in descending order of capacity.
- If memory modules with different speeds are used, the lowest clock rate applies for all DIMMs.

Supported memory modules

- DDR4-2666 unbuffered single rank (SR) or dual rank (DR) UDIMMs with ECC
- Support for up to four UDIMM modules
- Supported capacities: 4 GB, 8 GB, 16 GB
- Maximum amount of RAM: 64 GB

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

Table 3: Mounting order - dual channel mode and single channel mode: Single CPU

10.1.1.2 Modes of operation

- The maximum performance can be achieved in a symmetric dual-channel configuration. Therefore both channels have to be populated with the same amount of memory. The DRAM device technology (1 Gbit / 2 Gbit / 4 Gbit) may vary from one channel to the other.
- If the amount of memory differs between the two channels, the system board will run in dual-channel asymmetric mode.
- Regardless of the mode, all DIMMs will run at the highest common frequency that is allowed by the SPD Data of the DIMMs and the maximum speed of the selected configuration.
- Single-channel mode is used if one memory module is populated in DIMM 1A.

10.2 Installing memory modules



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: tool-less

10.2.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

10.2.2 Selecting the memory slot

- ▶ Choose the memory slot according to the configuration rules in ["Basic information" on page 312](#).

10.2.3 Installing a memory module

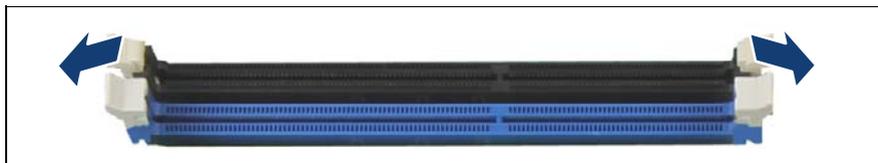


Figure 213: Opening the securing clips

- ▶ Press the securing clips on both sides of the memory slot concerned outward.

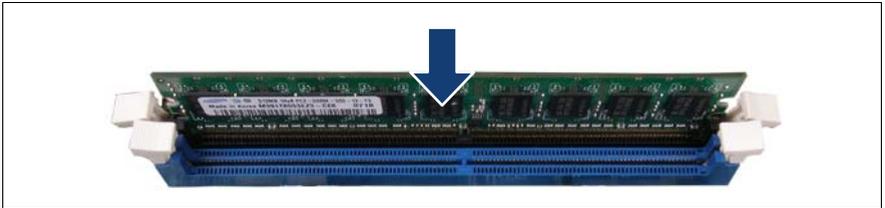


Figure 214: Installing a memory module

- ▶ Align the notch on the bottom of the module with the crossbar in the slot.
- ▶ Press down on the memory module until the securing clips snap into the cutouts at each end of the module.

10.2.4 Concluding steps

- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)

10.3 Removing memory modules



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: tool-less

10.3.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)

Main memory

- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

10.3.2 Removing a memory module

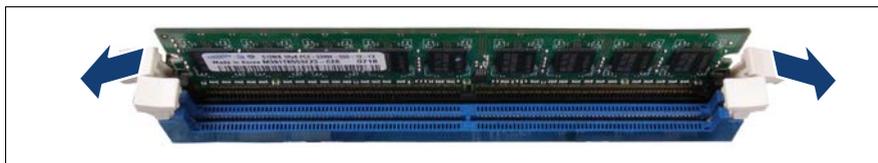


Figure 215: Removing memory modules (A)

- ▶ Eject the desired memory module by pressing out the securing clips at each end of the memory slot.

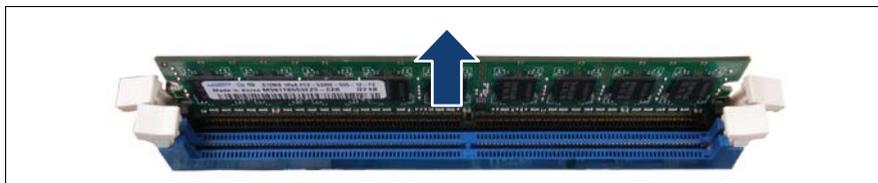


Figure 216: Removing memory modules (B)

- ▶ Remove the ejected memory module.

10.3.3 Concluding steps

- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)

10.4 Replacing the memory modules



Upgrade and Repair Unit (URU)



Hardware: 5 minutes
Software: 5 minutes

Tools: tool-less

10.4.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)
- ▶ ["Locating the defective component" on page 52](#)).

10.4.2 Removing the defective memory module

- ▶ Remove the memory module, see section ["Removing a memory module" on page 316](#).

10.4.3 Installing the new memory module

- ▶ Install the memory module, see section ["Installing a memory module" on page 314](#).

10.4.4 Concluding steps

- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)
- ▶ ["Resetting the error status after replacing memory modules or CPUs" on page 108](#)
- ▶ ["Enabling replaced components in the BIOS" on page 112](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)

11 Processor (CPU)

Safety notes



CAUTION!

- Do not install unsupported CPUs. For more information on supported CPUs, see section "[Basic information](#)" on page 320.
- 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 CPUs, be careful not to touch or bend the spring contacts on the CPU sockets.
- Never touch the underside of the CPUs. Even minor soiling such as grease from the skin can impair the CPU's operation or destroy the CPUs.
- For more information, see chapter "[Important information](#)" on page 37.

11.1 Basic information

The system board D3673 offers one socket for Intel Xeon CPUs.

Supported CPUs

- Intel Xeon E3-12nnV6 series CPUs and Pentium G4560, Core i3-7100
- Socket type: LGA 1150 package
- Thermal Design Power (TDP) class: up to 80 W



For system relevant information, see the hardware configurator of your server available online at the following address:

http://ts.fujitsu.com/products/standard_servers/index.html

For Japan:

<http://www.fujitsu.com/jp/products/computing/servers/primergy/>

11.2 Upgrading or replacing the CPU



Field Replaceable Unit (FRU)



**Hardware: 15 minutes
Software: 5 minutes**

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



CAUTION!

CPUs are modules which are extremely sensitive to electro-static discharges and therefore must always be handled with care. After a CPU has been removed from its protective sleeve or from its socket, place it with its smooth side down on a non-conducting, antistatic surface. Never push a CPU over a surface.

11.2.1 Preliminary steps

- ▶ If applicable, "[Locating the defective server](#)" on page 51
- ▶ "[Suspending BitLocker functionality](#)" on page 97
- ▶ "[Shutting down the server](#)" on page 53

- ▶ "Disconnecting the power cord" on page 54
- ▶ "Getting access to the component" on page 55
- ▶ Remove the system fan module, see section "Removing the system fan module" on page 81

11.2.2 Removing the heat sink

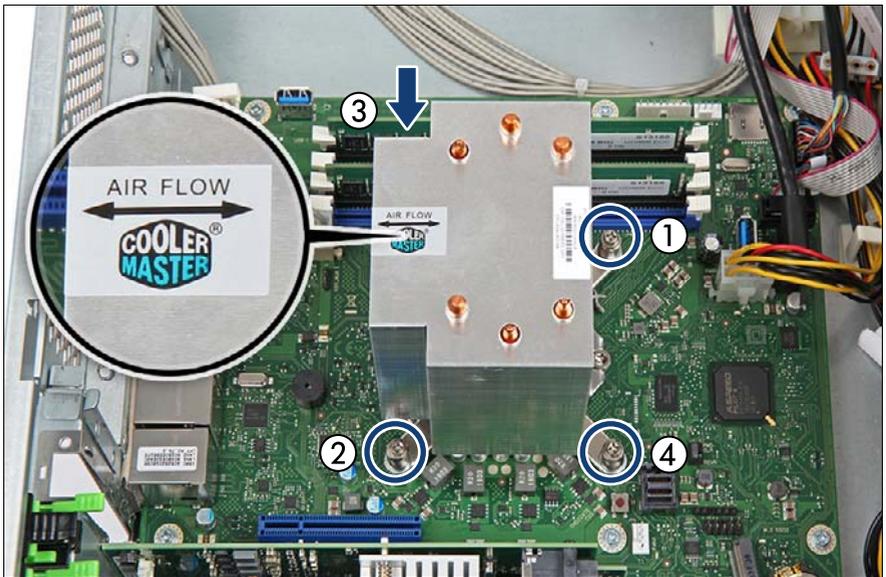


Figure 217: Removing the heat sink

- ▶ Loosen the four captive screws on the heat sink in a crossover pattern (1-4).
- ▶ Carefully twist the heat sink back and forth to detach it from the CPU.



This may be necessary due to the adhesive quality of the thermal paste located between the heat sink and CPU.



CAUTION!

Pay special attention not to damage any system board components surrounding the CPU socket.

- ▶ Lift the heat sink out of the chassis.

Processor (CPU)

- ▶ Clean residual thermal paste from the CPU surface using a lint-free cloth and store the CPU in a safe place.

11.2.3 Removing the CPU

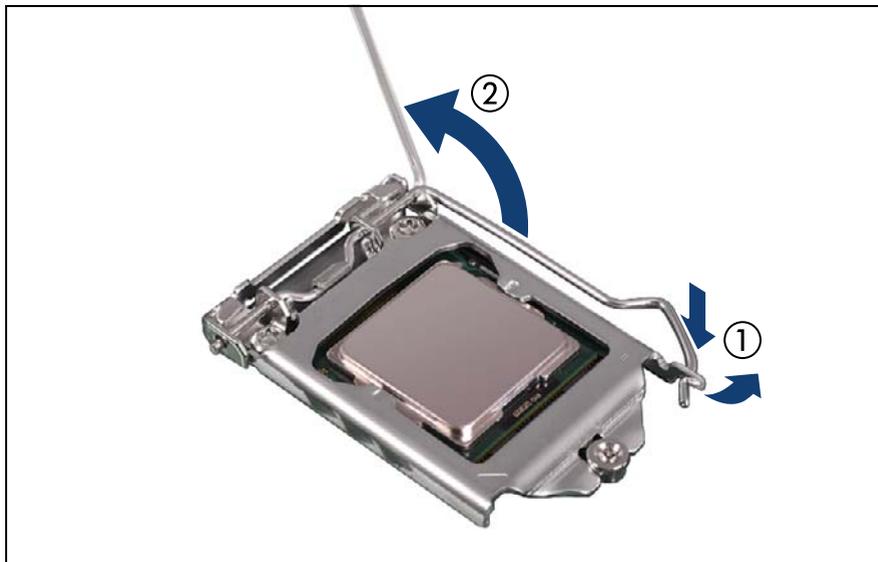


Figure 218: Opening the socket lever

- ▶ Unlatch the socket lever by pushing it down and away from the socket (1).
- ▶ Fold back the socket lever (2).

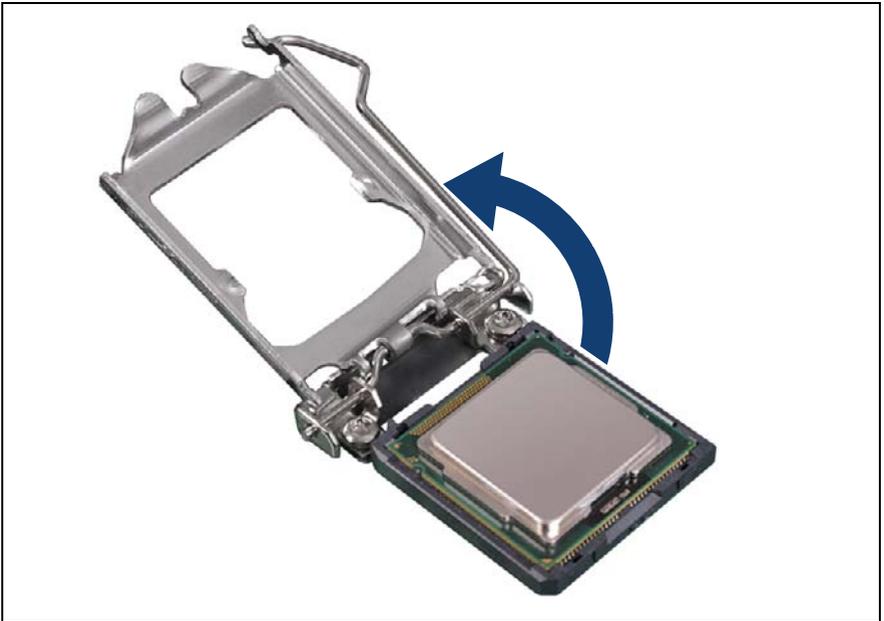


Figure 219: Opening the load plate

- ▶ Rotate the socket lever to lift the load plate away from the socket.
- ▶ Make sure that the load plate is in the fully open position.

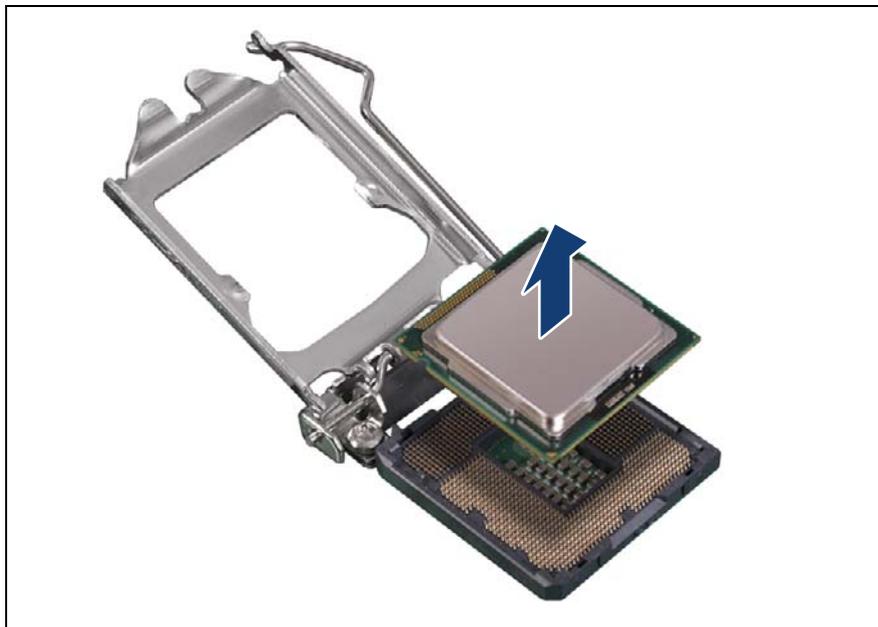


Figure 220: Removing the CPU

- ▶ Carefully remove the CPU from its socket in a vertical motion.



CAUTION!

Be careful not to touch or bend the spring contacts on the CPU socket.

11.2.4 Installing the CPU

- ▶ Confirm that the CPU model number printed on the top of the CPU fits with the requirements.
- ▶ If applicable, remove the protective cap from the bottom side of the CPU.

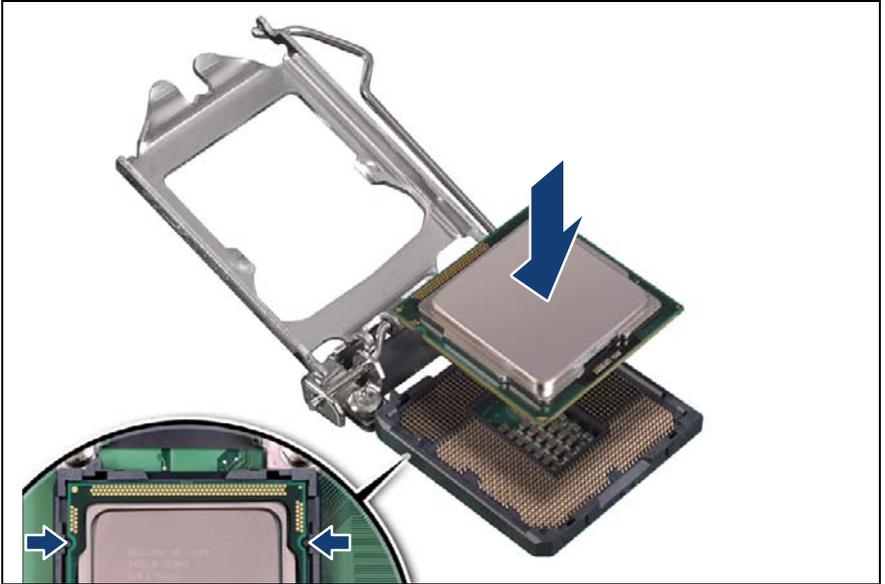


Figure 221: Installing the CPU

- ▶ Hold the CPU with your thumb and index finger.
- ▶ Make sure that the notches on the CPU align with the posts on the socket (see close-up).
- ▶ Lower the CPU straight down without tilting or sliding it in the socket.



CAUTION!

- Ensure that the CPU is level in the socket.
- Be careful not to touch or bend the pins on the CPU socket.
- Never touch the underside of the CPU. Even minor soiling such as grease from the skin can impair the CPU's operation or destroy the CPU.
- Ensure not to scrape or dent the CPU edges.

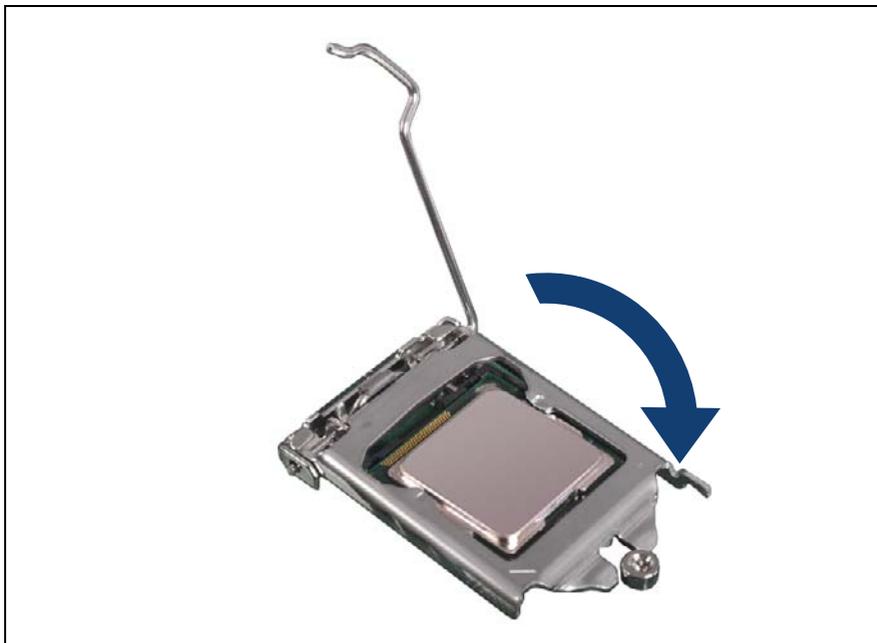


Figure 222: Closing the load plate (A)

- ▶ Lower the load plate over the CPU while leaving the socket lever in the open position.

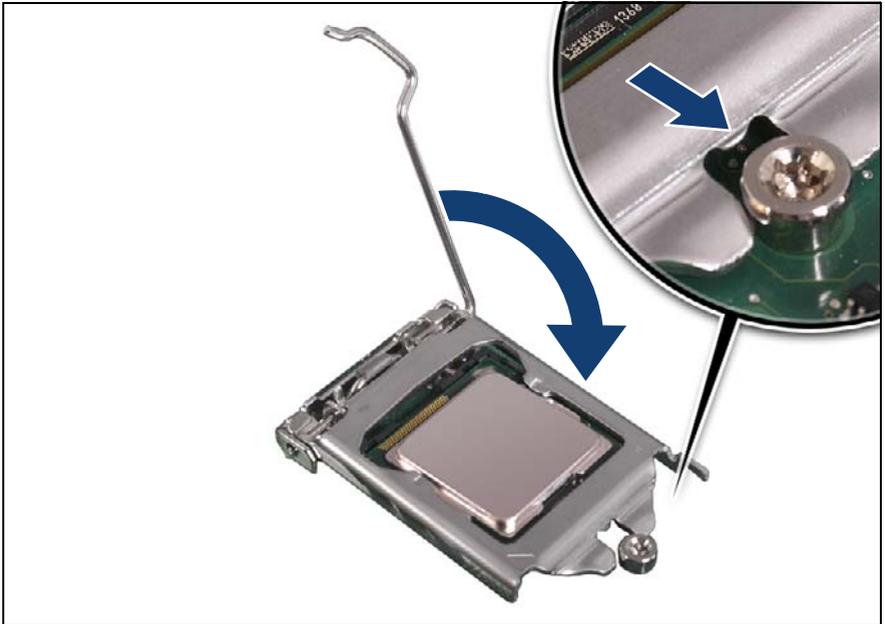


Figure 223: Closing the load plate (B)

- ▶ Lower the socket lever while making sure that the front edge of the load plate slides under the shoulder screw cap (see close-up) as the lever is lowered.



Figure 224: Closing the socket release lever

- ▶ Latch the socket lever under the load plate tab.

11.2.5 Applying thermal paste

-  For Japan, the service engineer must follow the instruction provided separately.
-  If the CPU 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 CPU heat sink"](#) on page 330.

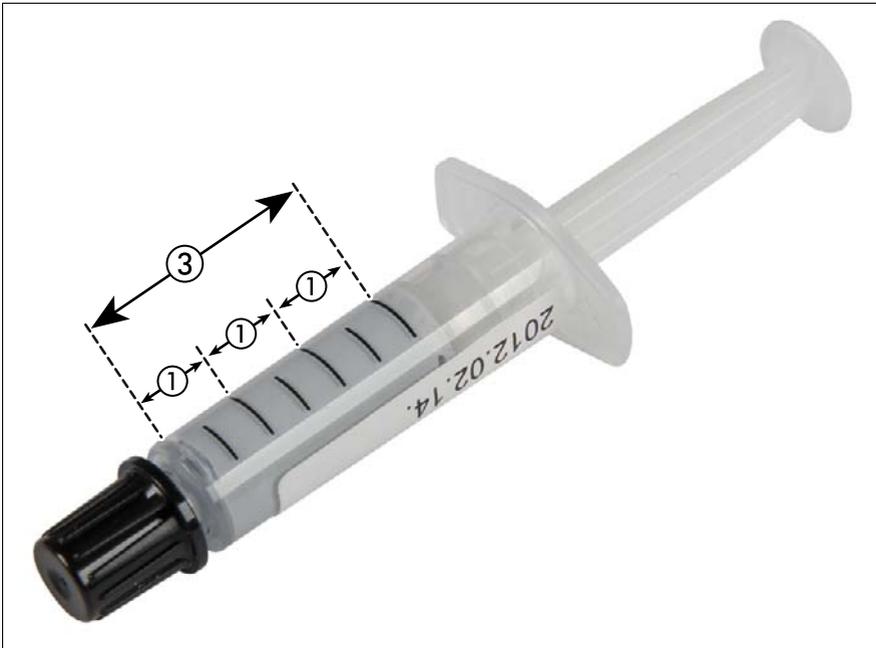


Figure 225: Thermal paste syringe

One thermal compound syringe (FTS-FSP:P304000004) contains thermal paste for three CPUs.

In order to determine the correct amount of thermal paste (equal to 1.0 gram), divide the grey area of the syringe up into three equal segments.

-  Add graduation marks to the syringe using a permanent marker to help you apply the thermal paste.



Figure 226: Applying thermal paste

- ▶ Apply a small point-shaped amount of thermal paste (1.0 gram, see description above) to the center of the CPU surface as shown.



CAUTION!

Do not mix different types of thermal paste.

11.2.6 Installing the CPU heat sink

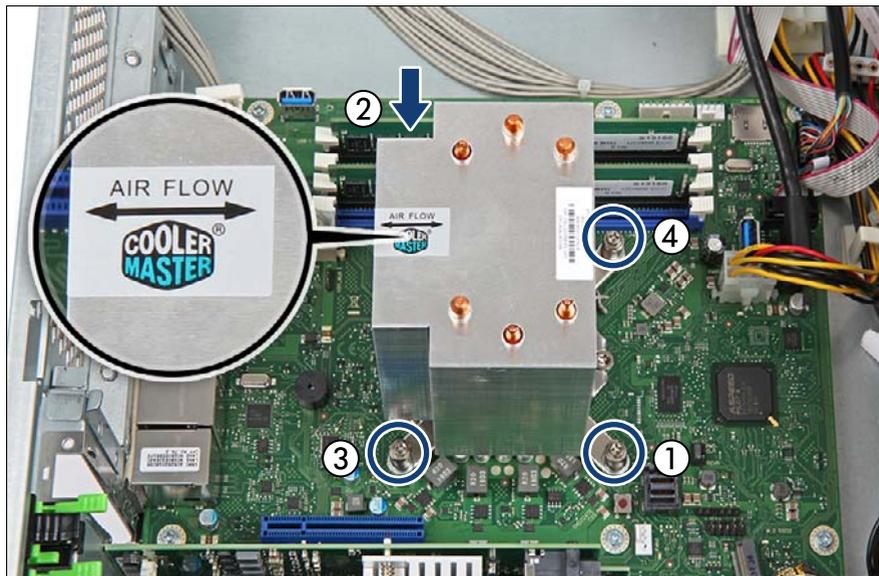


Figure 227: Installing the heat sink

- ▶ Carefully seat the heat sink on the four threaded holes as shown.



CAUTION!

- Ensure that the screws on the heat sink are properly seated on the threaded holes.
 - Ensure that the heat sink cooling fins match the direction of the airflow!
- ▶ Fasten the four captive screws on the heat sink in a crossover pattern (screw torque: 0.6 Nm, not applicable for Japan) (1-4).

11.2.7 Concluding steps

- ▶ Install the system fan module, see section "[Installing the system fan module](#)" on page 83
- ▶ "[Reassembling](#)" on page 67
- ▶ "[Connecting the power cord](#)" on page 78
- ▶ "[Switching on the server](#)" on page 80



When the system is powered on after a CPU has been replaced or upgraded, the Global Error indicator will start flashing with the message CPU has been changed.

This only indicates that the CPU configuration has been altered. There is no technical problem.

Proceed as follows:

- ▶ Restart your server.
 - ▶ As soon as the startup screen appears, press the **[F2]** function key to enter the BIOS.
 - If a password is assigned, enter the password and press **[Enter]**.
 - ▶ Select the *Save & Exit* menu.
 - ▶ Select *Save Changes and Exit* or *Save Changes and Reset*.
 - ▶ Verify that the Global Error indicator stops flashing.
- ▶ If applicable, "[Updating or recovering the BIOS and the iRMC S5](#)" on page 102
 - ▶ "[Resetting the error status after replacing memory modules or CPUs](#)" on page 108
 - ▶ "[Enabling replaced components in the BIOS](#)" on page 112
 - ▶ "[Resuming BitLocker functionality](#)" on page 117

11.3 Replacing the heat sink



Field Replaceable Unit
(FRU)



Hardware: 15 minutes

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

11.3.1 Preliminary steps

- ▶ If applicable, ["Locating the defective server"](#) on page 51
- ▶ ["Shutting down the server"](#) on page 53
- ▶ ["Disconnecting the power cord"](#) on page 54
- ▶ ["Getting access to the component"](#) on page 55
- ▶ Remove the system fan module, see section ["Removing the system fan module"](#) on page 81

11.3.2 Removing the defective heat sink

- ▶ Remove the CPU heat sink, see section ["Removing the heat sink"](#) on page 321.
- ▶ Remove the residual thermal paste from the CPU surface.
- ▶ Clean the CPU surface using a lint-free cloth.

11.3.3 Installing the new heat sink

- ▶ Remove the protective cover on the underside of the new heat sink.



CAUTION!

Do not touch the thermal paste on the underside of the heat sink.

- ▶ Install the CPU heat sink, see section ["Installing the CPU heat sink"](#) on page 330.

11.3.4 Concluding steps

- ▶ Install the system fan module, see section "[Installing the system fan module](#)" on page 83
- ▶ "[Reassembling](#)" on page 67
- ▶ "[Connecting the power cord](#)" on page 78
- ▶ "[Switching on the server](#)" on page 80

11.4 Handling the protective cover

11.4.1 Installing the protective cover



Figure 228: Attaching the protective socket cover

- ▶ Carefully lower the protective socket cover onto the CPU socket in a vertical motion until it snaps in place.

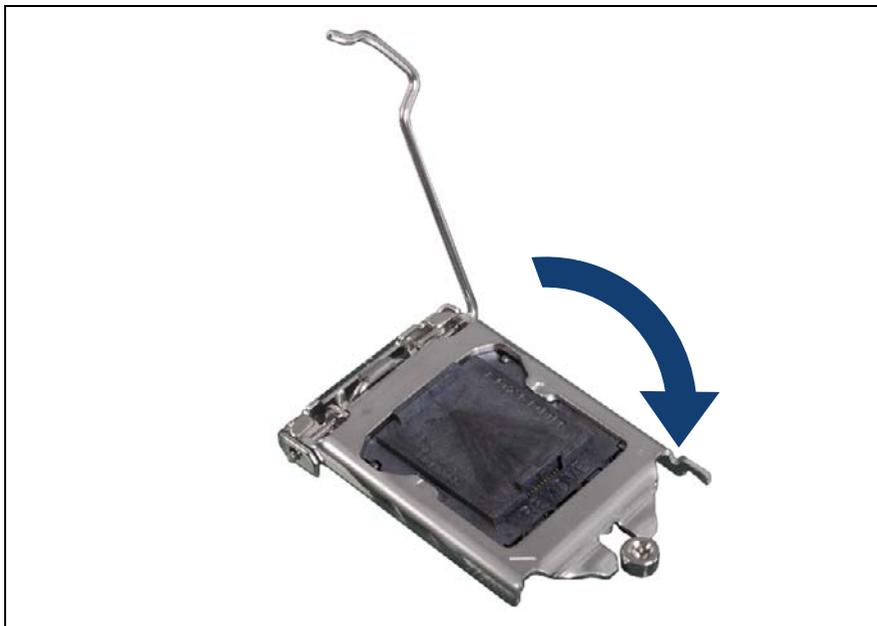


Figure 229: Closing the load plate (A)

- ▶ Lower the load plate over the CPU cover while leaving the socket lever in its open position.



Figure 230: Closing the load plate (B)

- ▶ Lower the socket lever while making sure that the front edge of the load plate slides under the shoulder screw cap (see close-up) as the lever is lowered.



Figure 231: Latching the socket lever

- ▶ Latch the socket lever under the load plate tab.

11.4.2 Removing the protective cover

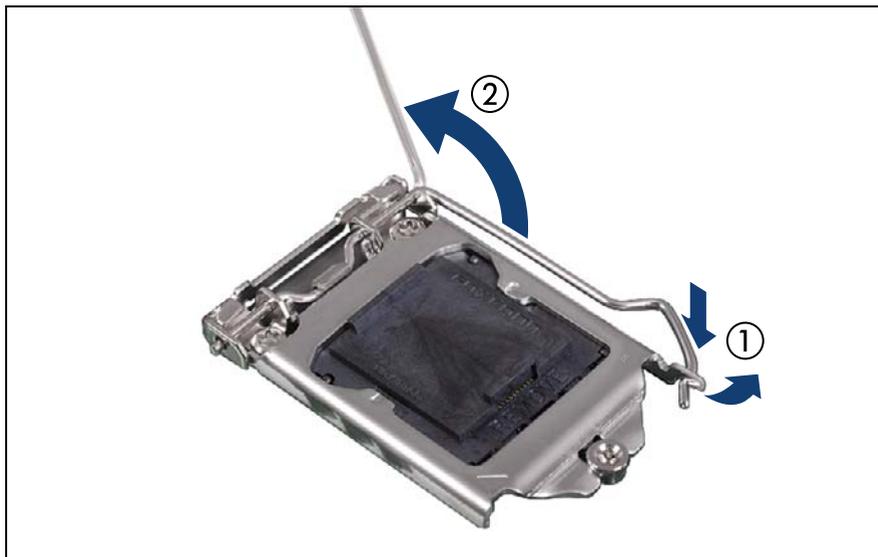


Figure 232: Opening socket release lever

- ▶ Unlatch the socket release lever by pushing it down and away from the socket (1).
- ▶ Fold back the socket release lever (2).



Figure 233: Opening the load plate

- ▶ Press down on the socket lever to lift the load plate away from the socket.
- ▶ Fully open the load plate.



Figure 234: Removing the protective cover

- ▶ Remove the protective cover from the CPU socket. Proceed as follows:
 - ▶ Place your thumb against the front edge of the protective socket cover and rest your index finger on the rear grip.
 - ▶ Lift the front edge of the socket to disengage the cover from the socket and lift the cover up and away from the socket.



CAUTION!

- ▶ Be careful not to touch or bend the pins on the CPU socket.
- ▶ Save the socket cover for future use. Always replace the socket cover if you remove the CPU from the socket.

12 Accessible drives

Safety notes



CAUTION!

- Before installing an accessible drive, acquaint yourself with the drive's user documentation.
- When inserting an accessible drive into the server, ensure not to pinch or strain any connected cables.
- When installing an accessible drive, hold it by its sides. Applying force to the top of the casing may cause failures.
- When disposing of, transferring, or returning a backup drive, ensure that all backup media has been removed from the drive.
- 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 more information, see chapter ["Important information"](#) on [page 37](#).

12.1 Basic information

Accessible drive bays

PRIMERGY TX1330 M4 server offers three 5.25-inch accessible drive bays for ODDs and backup drives.

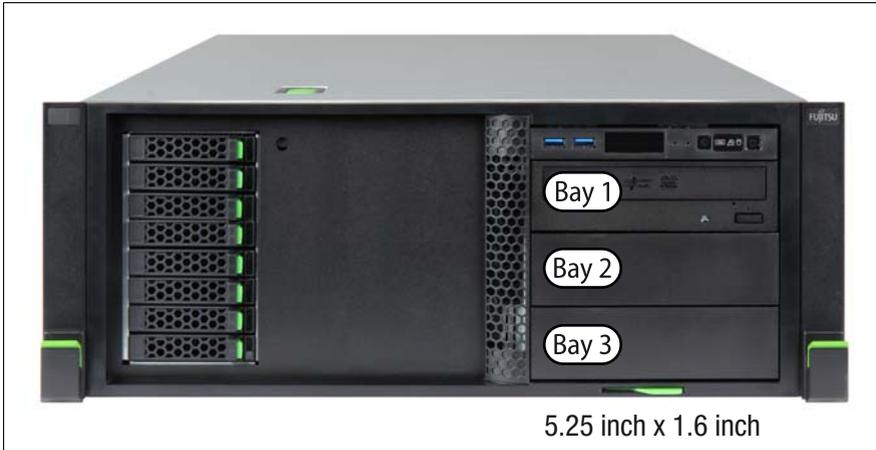


Figure 235: Accessible drives mounting order (rack model)



Figure 236: Accessible drives mounting order (floorstand model)

Mounting order for accessible drives

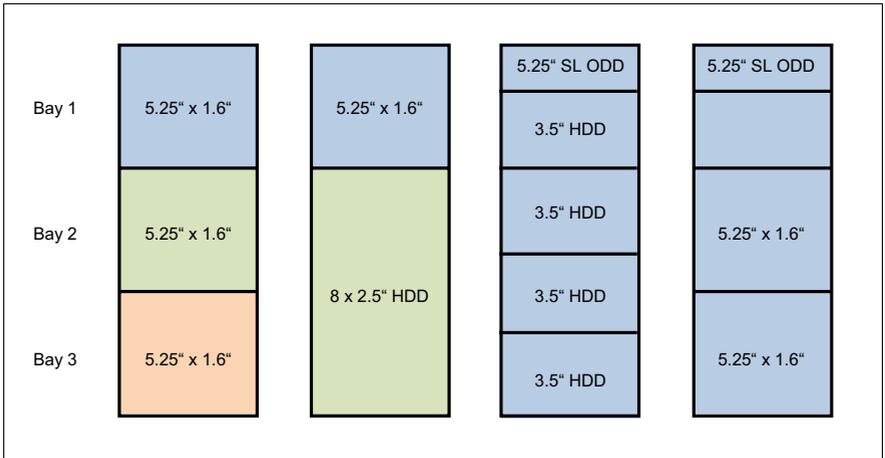


Figure 237: Accessible drive configurations

Order	Accessible drive	Drive bay	Max.	Occupied	Interface
1	ODD (full height)	Bay 1	1	1.6" x 5.25"	SATA
1	Slimline ODD in Multibay	Bay 1	1	0.5" x 5.25"	SATA
2	Backup drive LTo	Bay 3 if occupied: Bay 2 or 1	1	1.6" x 5.25"	SAS
3	RDX drive USB	Bay 3 if occupied: Bay 2 or 1	2	1.6" x 5.25"	USB 3.0
4	3.5-inch SAS HDD box (4x HDD, ODD)	Bays 2+3	1	3.2" x 5.25"	PCIe
4	2.5-inch SAS HDD box (8x HDD)	Bays 2+3	1	3.2" x 5.25"	SAS
4	Ultraslim ODD in 4x 3.5-inch HDD extension box	Bays 1+2+3	1	4.8" x 5.25"	SATA

Table 4: Accessible drive mounting sequence

12.2 Installing accessible drives



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

Tools: Slotted screw driver (for bending in or out accessible drive mounting brackets)
Phillips PH2 / (+) No. 2 screw driver (for installing mounting brackets)

12.2.1 Preliminary steps

- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)



The front cover only needs to be removed in order to remove accessible drive dummy covers.

12.2.2 Removing accessible drive dummy covers

- ▶ Remove accessible drive filler covers from the required bays, see section ["Accessible drive filler covers" on page 90](#).
- ▶ Remove accessible drive covers, see section ["Accessible drive covers" on page 92](#).

12.2.3 Installing mounting brackets to RDX backup drives

This section is not applied for Japan.

Backup drive mounting brackets are contained in mounting kit S26361-F3753-E1 (to be ordered separately with the backup drive).



No new mounting brackets are available when replacing a backup drive during service.

- ▶ If applicable, remove existing mounting brackets from the backup drive.

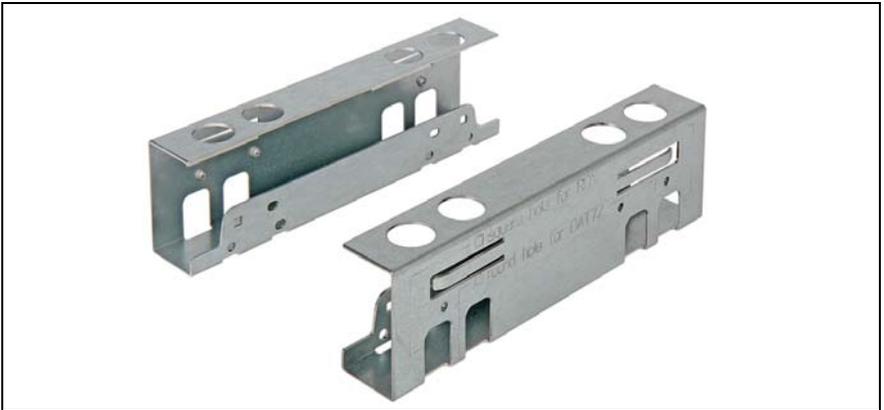


Figure 238: Backup drive mounting brackets

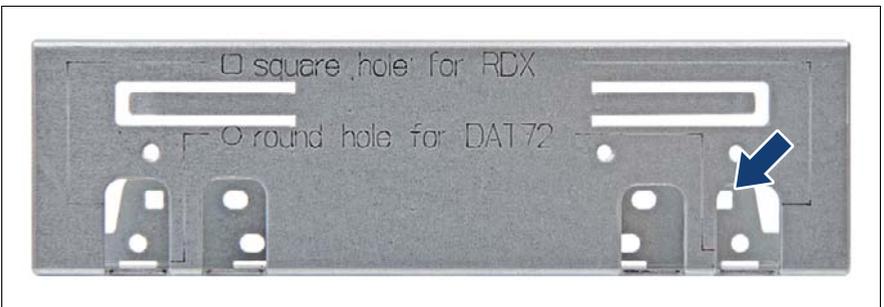


Figure 239: Screw holes on backup drive mounting brackets

- ▶ Note the screw hole description stamped onto the mounting bracket:
 - ▶ Use the square screw hole for RDX backup drives (see blue arrow).



Figure 240: Securing mounting brackets to an RDX backup drive

- ▶ Fasten the backup drive mounting brackets to the RDX backup drive with two screws per bracket as shown.

12.2.4 Installing an accessible drive



Figure 241: Mounting brackets in right position

- ▶ Ensure that the four mounting brackets in the desired accessible drive bay have not been bent inwards as for installing HDD extension boxes. If applicable, bend the mounting brackets back to the original positions (see close-up).
- ▶ Open the locking bar, see section ["Opening the accessible drive locking bar" on page 86](#).



Figure 242: Inserting the accessible drive

- ▶ Insert the accessible drive into its installation bay and carefully push in until it lines up with the front panel.



CAUTION!

For installing a LTO drive: ensure that the power cables routed behind the accessible drive cage are not trapped when pushing the LTO drive in its bay.

- ▶ Close the locking bar, see section ["Closing the accessible drive locking bar" on page 88](#).

12.2.5 Connecting cables to a accessible drive

Example RDX drive

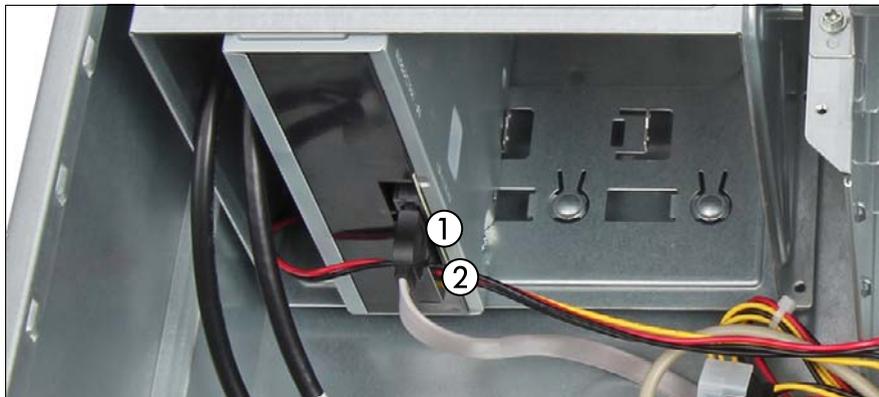


Figure 243: Connecting the RDX drive

► Connect the cables to the RDX drive:

- 1 SATA cable
- 2 Power cable

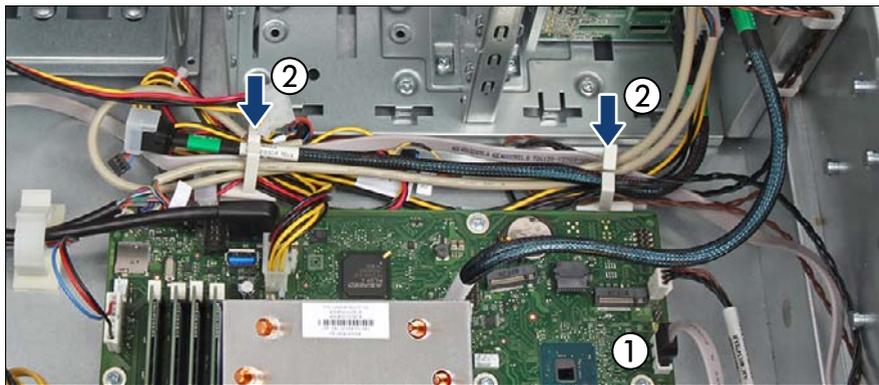


Figure 244: Connecting SATA cable

- Connect the SATA cable to the system board connector "SATA ODD" (1).
- Run the cables through the cable guide as shown (2).

Example LTO drive or ODD



For connecting an LTO drive or a ODD, see the cable plan in chapter ["Appendix B" on page 477](#).

12.2.6 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

12.3 Removing accessible drives



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

Tools: tool-less

12.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Removing backup and optical disk media" on page 99](#)
- ▶ ["Verifying and configuring the backup software solution" on page 100](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Getting access to the component" on page 55](#)



The front cover only needs to be removed in order to install accessible drive dummy covers.

12.3.2 Removing an accessible drive

- ▶ Remove all cables from the accessible drive.
- ▶ Open the locking bar, see section "[Opening the accessible drive locking bar](#)" on page 86.



Figure 245: Removing the accessible drive

- ▶ Carefully pull the accessible drive out of its installation bay.
- ▶ Close the locking bar, see section "[Closing the accessible drive locking bar](#)" on page 88.

12.3.3 Installing accessible drive dummy covers

- ▶ If applicable, install accessible drive filler covers, see section "[Accessible drive filler covers](#)" on page 90.
- ▶ If applicable, install accessible drive covers, see section "[Accessible drive covers](#)" on page 92.

12.3.4 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

12.4 Replacing accessible drives



Upgrade and Repair Unit (URU)



Hardware: 15 minutes

Tools: Phillips PH2 / (+) No. 2 screw driver (for installing mounting brackets)

12.4.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Removing backup and optical disk media" on page 99](#)
- ▶ ["Verifying and configuring the backup software solution" on page 100](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)



Removing the front cover is not required in order to replace an accessible drive. The front cover only needs to be removed in order to remove/install accessible drive dummy covers and this is not necessary here.

12.4.2 Removing the defective accessible drive

- ▶ Remove all cables from the accessible drive.
- ▶ Remove the accessible drive, see section ["Removing an accessible drive" on page 348](#).

12.4.3 Installing the new accessible drive

- ▶ Install the accessible drive, see section ["Installing an accessible drive" on page 344](#).
- ▶ Connect all cables to their original accessible drive connectors, see cable plans in chapter ["Appendix B" on page 477](#).

12.4.4 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

12.5 Slimline ODD in Multibay box

12.5.1 Installing the slimline ODD



Upgrade and Repair Unit (URU)



Hardware: 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 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ If applicable, ["Removing the Multibay box" on page 356](#)

12.5.1.2 Removing the ODD dummy module

- ▶ Press up on the locking tab to disengage the slimline ODD dummy module (see figure [252](#)).
- ▶ From inside the Multibay module, press out on the ODD dummy module and pull it out of its bay.

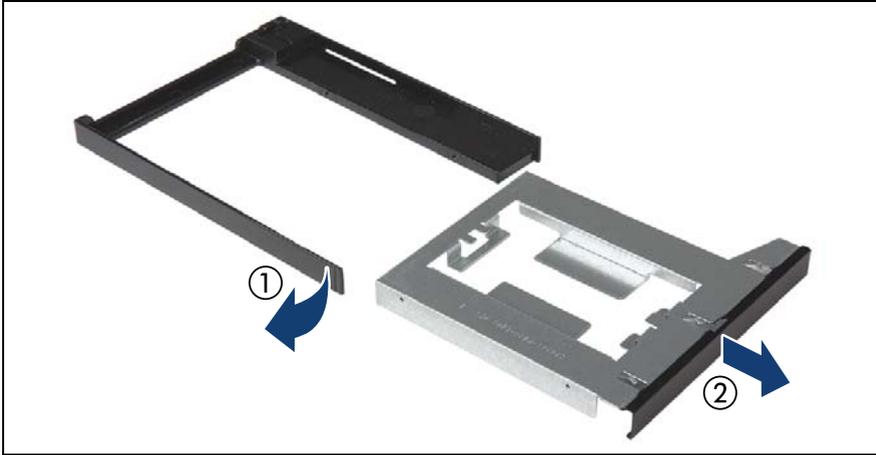


Figure 246: Disassembling the slimline ODD dummy module

- ▶ Disengage (1) and remove (2) the slimline ODD dummy from the slimline ODD installation frame.

12.5.1.3 Installing the slimline ODD into the Multibay box

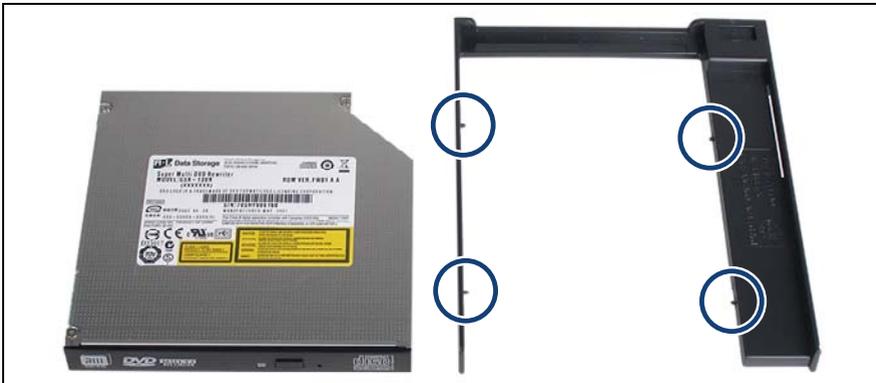


Figure 247: Mounting the slimline ODD in the installation frame

- ▶ 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.
- ▶ Ensure that the ODD is properly seated in the installation frame.



Figure 248: 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.

12.5.1.4 Removing accessible drive dummy covers

- ▶ If applicable, remove the accessible drive filler cover from installation bay 1, see section "[Accessible drive filler covers](#)" on page 90.
- ▶ If applicable, remove the accessible drive cover from installation bay 1, see section "[Accessible drive covers](#)" on page 92.

12.5.1.5 Installing the Multibay box

- ▶ Ensure that the four mounting brackets in installation bay 1 have not been bent out (see figure 241).
- ▶ Open the locking bar, see section "[Opening the accessible drive locking bar](#)" on page 86.

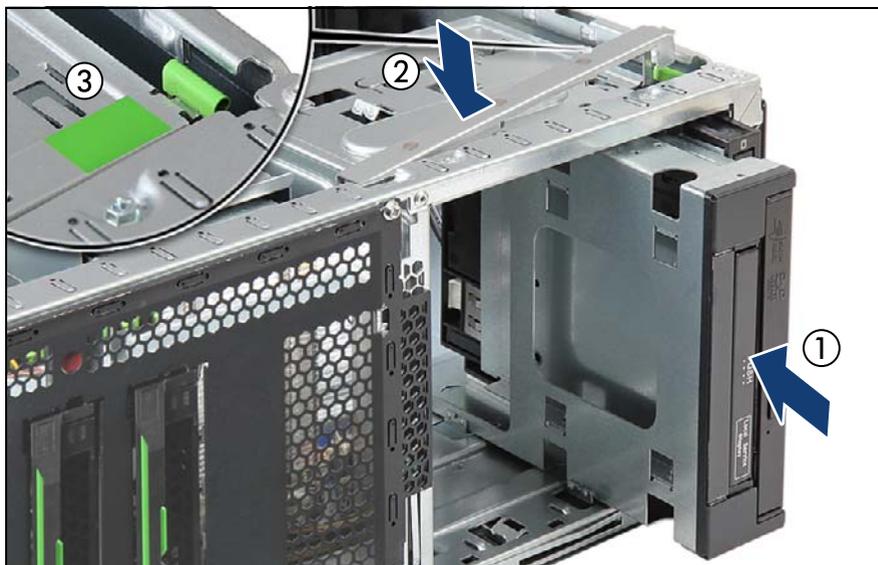


Figure 249: Inserting the Multibay box

- ▶ Insert the Multibay box into installation bay 1 and carefully push in until it lines up with the front panel (1).
- ▶ Close the locking bar (2) until it locks in place (3).



Figure 250: Connecting cables to the slimline ODD

- ▶ Connect the cables to the slimline ODD:
 - 1 SATA power cable
 - 2 SATA cable
- ▶ Connect the SATA cable to the system board, see figure [244](#).

12.5.1.6 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

12.5.2 Removing a slimline ODD



**Upgrade and Repair Unit
(URU)**



Hardware: 10 minutes

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

12.5.2.1 Preliminary steps

- ▶ ["Removing backup and optical disk media" on page 99](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)

12.5.2.2 Removing the Multibay box

- ▶ Remove all cables from the slimline ODD.
- ▶ Open the locking bar, see section "[Opening the accessible drive locking bar](#)" on page 86.

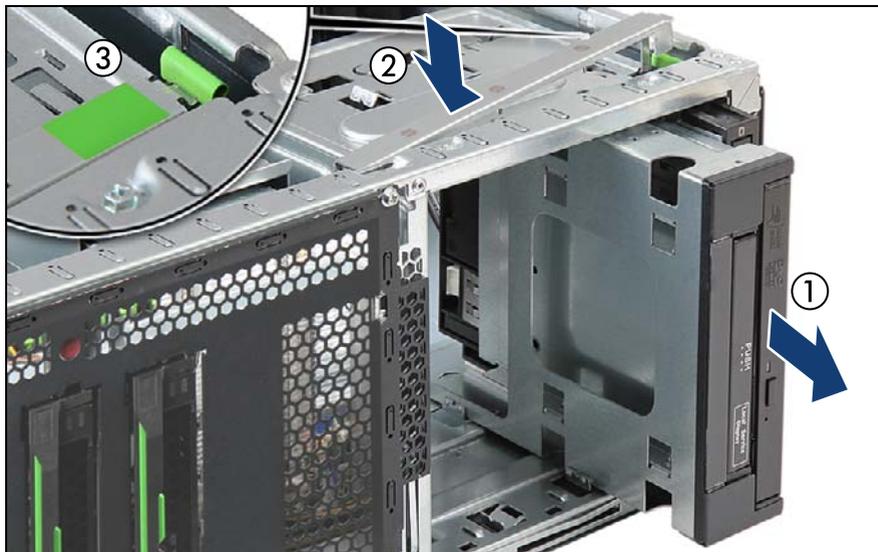


Figure 251: Removing the Multibay box

- ▶ Carefully pull the Multibay box out of its installation bay (1).
- ▶ Close the locking bar (2) until it locks in place (3).

12.5.2.3 Removing the slimline ODD from the Multibay box

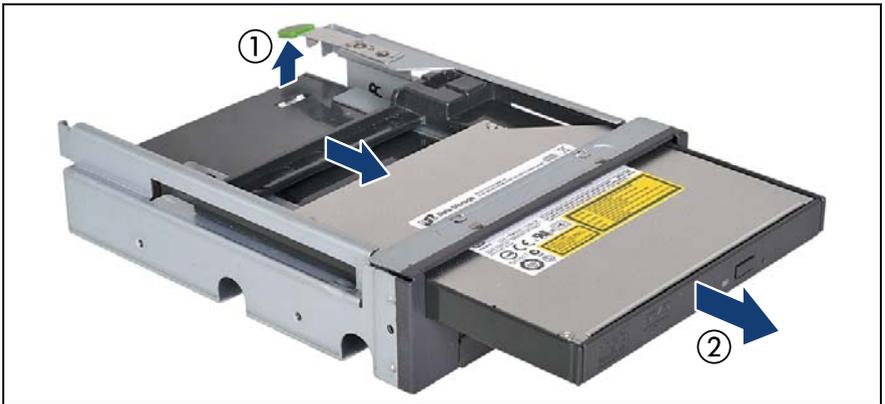


Figure 252: Removing the slimline ODD from the Multibay box

- ▶ 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).

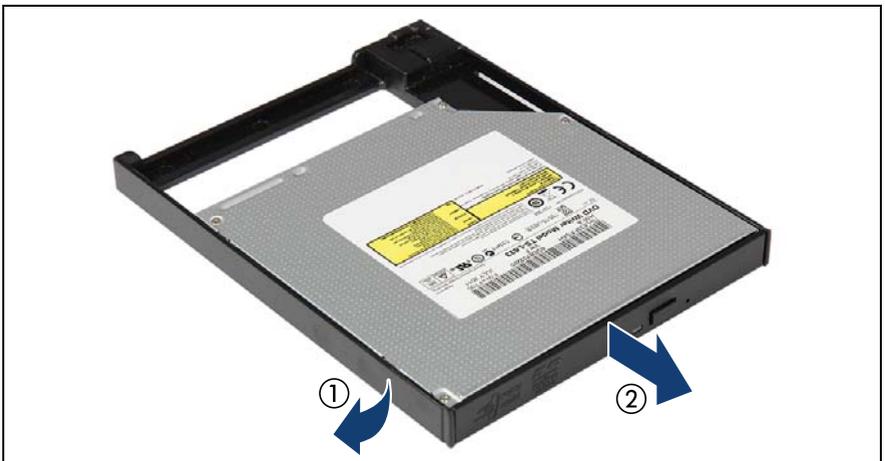


Figure 253: Removing the slimline ODD from its installation frame

- ▶ Disengage (1) and remove (2) the slimline ODD from its installation frame.

12.5.2.4 Installing a ODD dummy

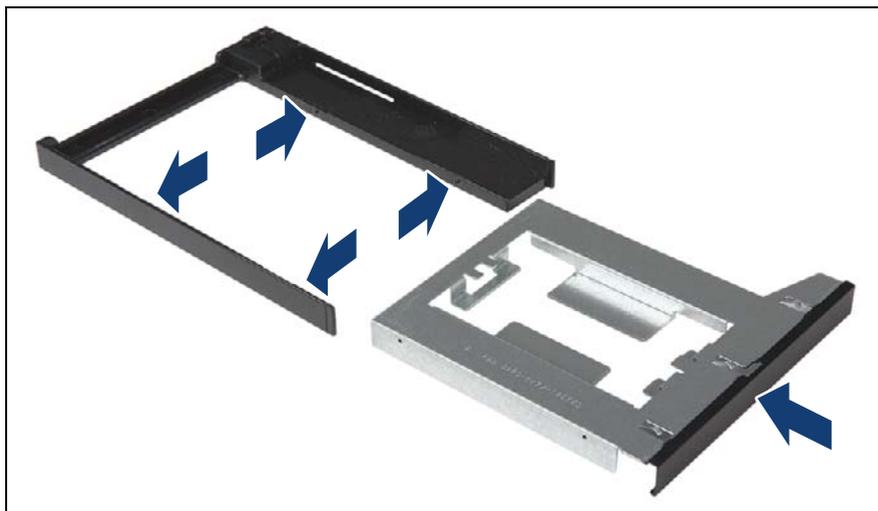


Figure 254: Mounting the slimline ODD dummy insert in the installation frame

- ▶ 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 (see figure 248).

12.5.2.5 Installing the Multibay box

- ▶ Install the Multibay box, see section ["Installing the Multibay box" on page 353](#).

12.5.2.6 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

12.5.3 Replacing a slimline ODD



Upgrade and Repair Unit (URU)



Hardware: 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 51](#)
- ▶ ["Removing backup and optical disk media" on page 99](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ ["Removing the Multibay box" on page 356](#)

12.5.3.2 Removing the defective slimline ODD

- ▶ Remove the slimline ODD from the Multibay box, see section ["Removing the slimline ODD from the Multibay box" on page 357](#).

12.5.3.3 Installing the new slimline ODD

- ▶ Install the slimline ODD into the Multibay box, see section ["Installing the slimline ODD into the Multibay box" on page 352](#).

12.5.3.4 Concluding steps

- ▶ ["Installing the Multibay box" on page 353](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

- ▶ If applicable, ["Verifying and configuring the backup software solution"](#) on page 100

12.6 Ultralim ODD in 4x 3.5-inch HDD extension box

12.6.1 Installing the ultraslim ODD



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

Tools: <ul style="list-style-type: none">– Phillips PH1 / (+) No. 1 screw driver– Slotted screw driver (for bending in or out accessible drive mounting brackets)

12.6.1.1 Preliminary steps

- ▶ ["Shutting down the server"](#) on page 53
- ▶ ["Disconnecting the power cord"](#) on page 54
- ▶ ["Getting access to the component"](#) on page 55



The front cover only needs to be removed in order to remove accessible drive dummy covers. If the HDD extension box is already installed in the server and will be removed in order to install an ultraslim ODD, skip this step.

- ▶ If applicable, ["Removing the 4x 3.5-inch HDD extension box"](#) on page 246

12.6.1.2 Installing the ultraslim ODD into the HDD extension box



Figure 255: Removing the ultraslim ODD dummy cover

- ▶ Remove the ultraslim ODD dummy cover.



CAUTION!

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

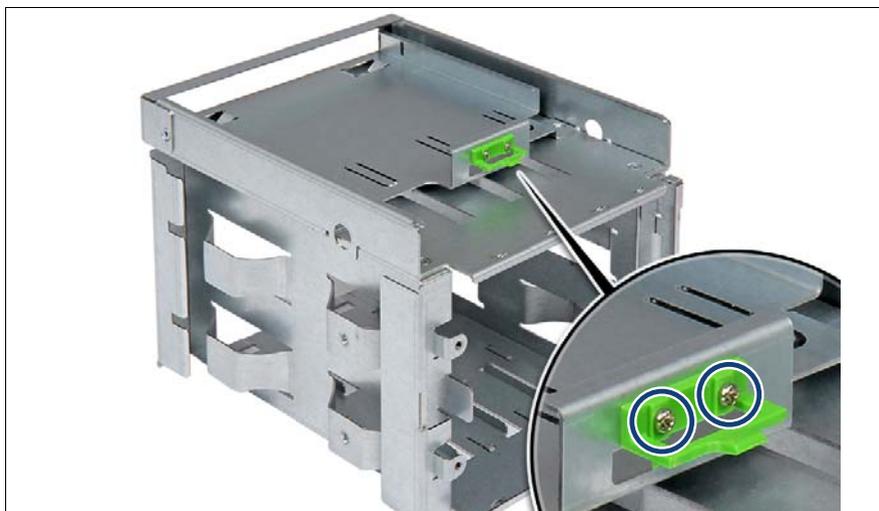


Figure 256: Removing the ultraslim ODD latch

- ▶ Remove the two screws from the locking latch (see circles).
- ▶ Remove the locking latch.

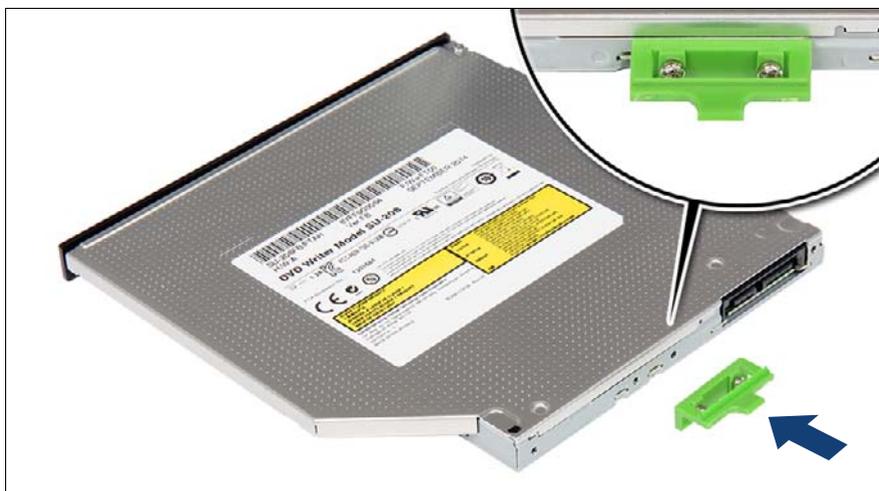


Figure 257: Installing the locking latch on the ultraslim ODD

- ▶ Fasten the locking latch to the ultraslim ODD with its two original screws (see close-up).

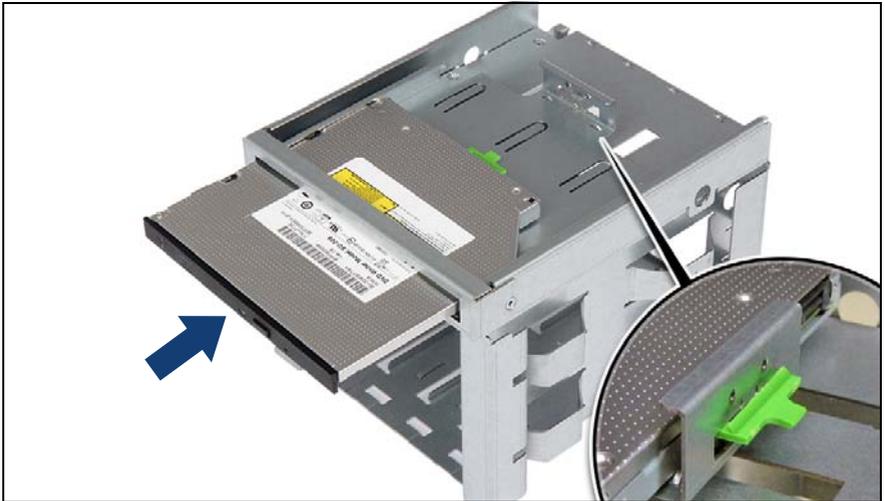


Figure 258: Installing the ultraslim ODD on the HDD extension box

- ▶ Slide the ultraslim ODD into its bay until it locks into place (see close-up).

12.6.1.3 Installing the 4x 3.5-inch HDD extension box

- ▶ Install the 4x 3.5-inch HDD extension box, see section ["Installing the 4x 3.5-inch HDD extension box"](#) on page 242.



Figure 259: Connecting cables to the ultraslim ODD

- ▶ Connect the cables to the ultraslim ODD:
 - 1 SATA power cable
 - 2 SATA cable
- ▶ Connect the SATA cable from the ultraslim ODD to the system board, see [figure 244](#).

12.6.1.4 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

12.6.2 Removing the ultraslim ODD



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

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

12.6.2.1 Preliminary steps

- ▶ ["Removing backup and optical disk media" on page 99](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)



The front cover only needs to be removed in order to remove accessible drive dummy covers. If the HDD extension box is already installed in the server and will be removed in order to install an ultraslim ODD, skip this step.

12.6.2.2 Removing the 4x 3.5-inch HDD extension box

- ▶ Remove the 4x 3.5-inch HDD extension box, see section ["Removing the 4x 3.5-inch HDD extension box" on page 246](#).

12.6.2.3 Removing the ultraslim ODD from the extension box

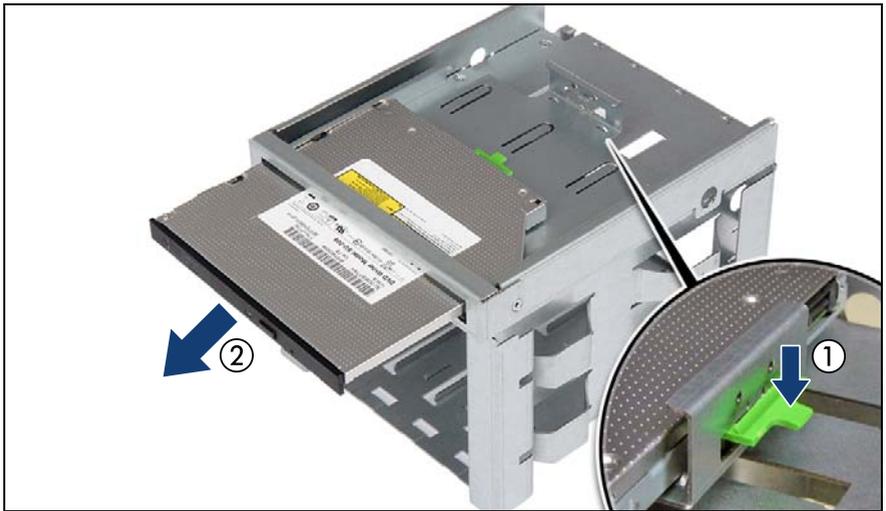


Figure 260: Removing the ultraslim ODD from the extension box

- ▶ Pull down the locking latch (1).
- ▶ Remove the ultraslim ODD (2).



Figure 261: Removing the locking latch from the ultraslim ODD

- ▶ Remove the two screws (1).
- ▶ Remove the locking latch (2).

Accessible drives

- ▶ If the removed ultraslim ODD is not to be replaced by a new drive:
 - ▶ Fasten the locking latch to the ultraslim ODD with its two original screws to the HDD cage (see figure [256](#)).
 - ▶ Insert the ultraslim ODD dummy cover (see figure [255](#)).

12.6.2.4 Installing the 4x 3.5-inch HDD extension box

- ▶ Install the 4x 3.5-inch HDD extension box, see section "[Installing the 4x 3.5-inch HDD extension box](#)" on page [241](#).

12.6.2.5 Concluding steps

- ▶ "[Reassembling](#)" on page [67](#)
- ▶ "[Connecting the power cord](#)" on page [78](#)
- ▶ "[Switching on the server](#)" on page [80](#)

12.6.3 Replacing the ultraslim ODD



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

Tools: – Phillips PH2 / (+) No. 2 screw driver
– Slotted screw driver (for bending in or out accessible drive mounting brackets)

12.6.3.1 Preliminary steps

- ▶ "[Locating the defective server](#)" on page [51](#)
- ▶ "[Removing backup and optical disk media](#)" on page [99](#)
- ▶ "[Shutting down the server](#)" on page [53](#)
- ▶ "[Disconnecting the power cord](#)" on page [54](#)
- ▶ "[Getting access to the component](#)" on page [55](#)



Removing the front cover is not required in order to replace the ultraslim ODD in the 4x 3.5-inch HDD extension box.

12.6.3.2 Removing the defective ultraslim ODD

- ▶ Remove the 4x 3.5-inch HDD extension box, see section ["Removing the 4x 3.5-inch HDD extension box" on page 246](#).
- ▶ Remove the ultraslim ODD, see section ["Removing the ultraslim ODD from the extension box" on page 365](#).

12.6.3.3 Installing the new ultraslim ODD

- ▶ Install the ultraslim ODD, see section ["Installing the ultraslim ODD into the HDD extension box" on page 361](#).
- ▶ Install the 4x 3.5-inch HDD extension box, see section ["Installing the 4x 3.5-inch HDD extension box" on page 242](#).

12.6.3.4 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

12.7 Ultralim ODD in ultralim ODD adapter

12.7.1 Installing the ultralim ODD



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

Tools:

- Phillips PH0 / (+) No. 0 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 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)



The front cover only needs to be removed in order to remove accessible drive dummy covers.

12.7.1.2 Installing the ultraslim ODD into the ultraslim ODD adapter



Figure 262: Removing the ultraslim ODD dummy cover - ultraslim ODD adapter

- ▶ Remove the ultraslim ODD dummy cover.



CAUTION!

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



Figure 263: Installing the ultraslim ODD in the ultraslim ODD adapter (A)

- ▶ Slide the ultraslim ODD into its bay.



Figure 264: Installing the ultraslim ODD in the ultraslim ODD adapter (B)

- ▶ Secure the ultraslim ODD to the ultraslim ODD adapter with two screws (see circles).
- ▶ Connect the power cable and the SATA cable to the ultraslim ODD (see figure 259).

12.7.1.3 Installing the ultraslim ODD adapter

- ▶ Install the ultraslim ODD adapter, see section "[Installing an accessible drive](#)" on page 344.
- ▶ Connect the SATA cable from the ultraslim ODD to the system board, see figure 244.

12.7.1.4 Concluding steps

- ▶ "[Reassembling](#)" on page 67
- ▶ "[Connecting the power cord](#)" on page 78
- ▶ "[Switching on the server](#)" on page 80

12.7.2 Removing the ultraslim ODD



**Upgrade and Repair Unit
(URU)**



Hardware: 10 minutes

Tools: Phillips PH0 / (+) No. 0 screw driver

12.7.2.1 Preliminary steps

- ▶ ["Removing backup and optical disk media" on page 99](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)



The front cover only needs to be removed in order to remove or install accessible drive dummy covers.

12.7.2.2 Removing the ultraslim ODD adapter

- ▶ Remove the ultraslim ODD adapter, see section ["Removing an accessible drive" on page 348](#).

12.7.2.3 Removing the ultraslim ODD from the ultraslim ODD adapter

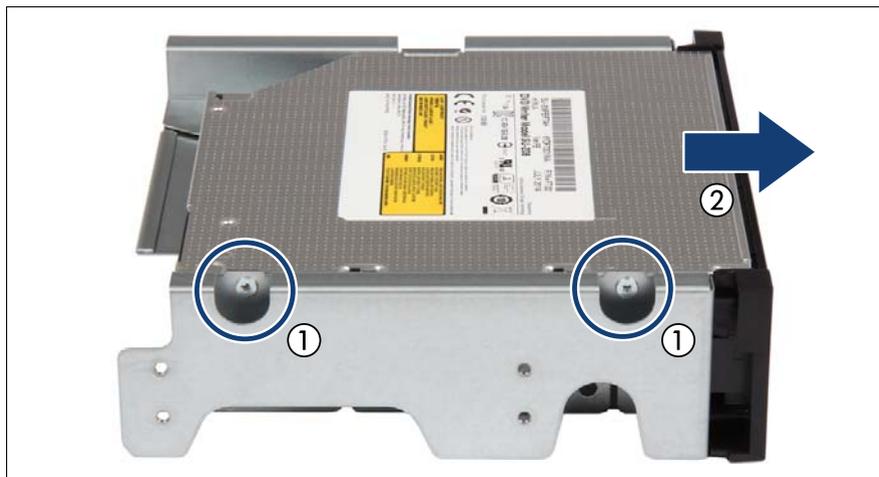


Figure 265: Removing the ultraslim ODD from the ultraslim ODD adapter

- ▶ Remove the two screws (1).
- ▶ Remove the ultraslim ODD (2).
- ▶ If the removed ultraslim ODD is not to be replaced by a new drive:
 - ▶ Insert the ultraslim ODD dummy cover (see [figure 262 on page 369](#)).

12.7.2.4 Installing the ultraslim ODD adapter

- ▶ Install the ultraslim ODD adapter, see section "[Installing an accessible drive](#)" on page 344.

12.7.2.5 Concluding steps

- ▶ "[Reassembling](#)" on page 67
- ▶ "[Connecting the power cord](#)" on page 78
- ▶ "[Switching on the server](#)" on page 80

12.7.3 Replacing the ultraslim ODD



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

Tools: – Phillips PH0 / (+) No. 0 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 51](#)
- ▶ ["Removing backup and optical disk media" on page 99](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)



Removing the front cover is not required in order to replace the ultraslim ODD.

12.7.3.2 Removing the defective ultraslim ODD

- ▶ Remove the ultraslim ODD adapter, see section ["Removing an accessible drive" on page 348](#).
- ▶ Remove the ultraslim ODD, see section ["Removing the ultraslim ODD from the ultraslim ODD adapter" on page 372](#).

12.7.3.3 Installing the new ultraslim ODD

- ▶ Install the ultraslim ODD, see section ["Installing the ultraslim ODD into the ultraslim ODD adapter" on page 369](#).
- ▶ Install the ultraslim ODD adapter, see section ["Installing an accessible drive" on page 344](#).

12.7.3.4 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

13 Front panel

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 more information, see chapter ["Important information" on page 37](#).

13.1 Replacing the front panel



Field Replaceable Unit (FRU)



Hardware: 10 minutes
Software: 5 minutes

Tools: Phillips PH2 / (+) No. 2 screw driver (for removing the rack front cover)
Other procedures: tool-less

Note on system information backup/restore

The front panel (front panel module, front panel board or front panel on QRL) 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.



CAUTION!

For that reason the front panel and system board must not be replaced simultaneously! In this case, restoring the system configuration data on the system board would fail.

When replacing the front panel, the system information like server name and model, housing type, serial number and manufacturing data are not restored automatically. So never forget to restore it manually by Chassis ID Prom Tool.

13.1.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

- ▶ If applicable, remove the SAS expander holder without disconnecting cables, see section ["Removing the SAS expander holder" on page 256](#). Position the SAS expander holder on the HDD cages to get more space.

13.1.2 Removing the defective front panel module

Disconnecting the front panel cables from the system board

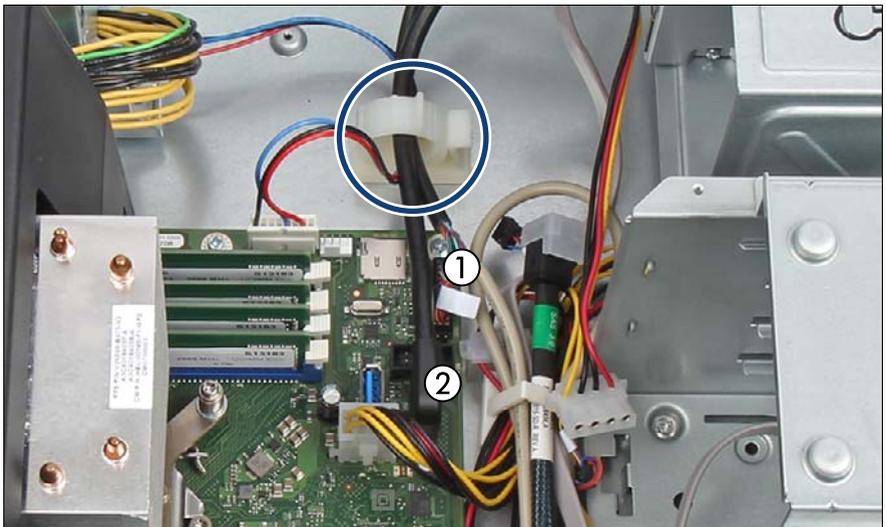


Figure 266: Disconnecting cables from system board

- ▶ Disconnect the front panel cables from the system board (1,2).
- ▶ Remove the front panel cables from the cable guide (see circle).

Removing the front panel module

- i** Unlocking and securing the front panel is illustrated by the example of the rack server. In case of floorstand models, the accessible drive locking bar is located on the top of the drive bay. Further information, see section ["Opening the accessible drive locking bar" on page 86](#).

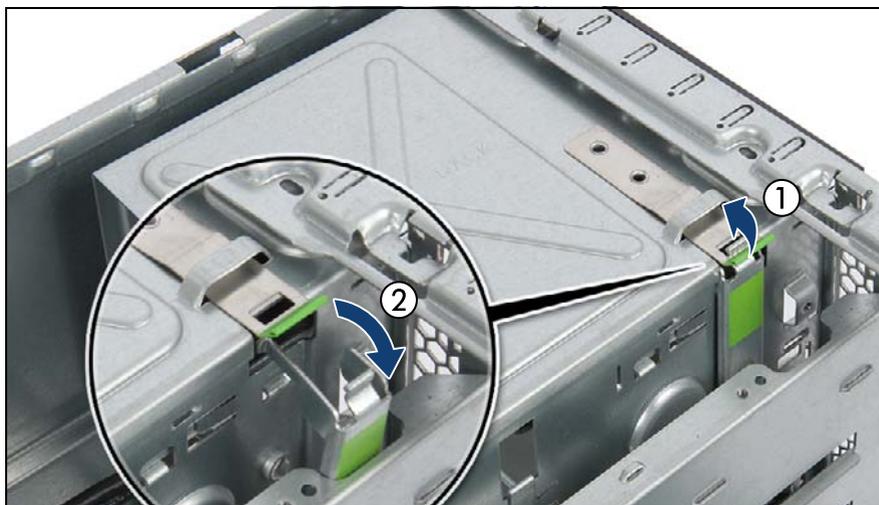


Figure 267: Opening the accessible drive locking bar

i The front cover (floorstand model) / rack front cover (rack server) does not need to be removed in order to replace the front panel module. In the figures, the front cover / rack front cover has been removed for illustration purposes only.

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

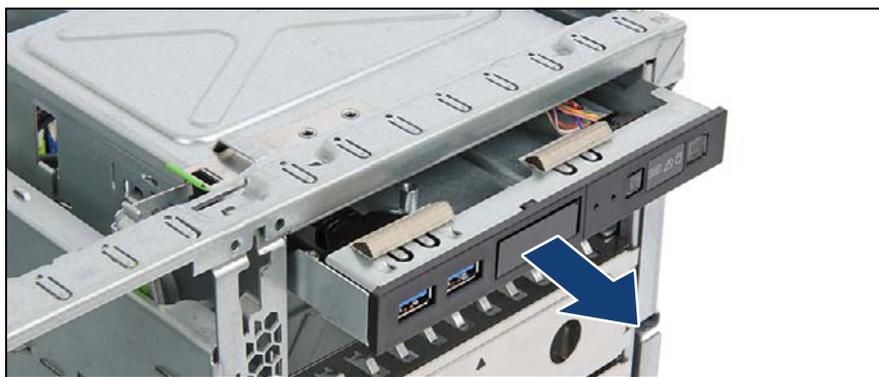


Figure 268: Removing the front panel module

- ▶ Pull out the front panel module.

13.1.3 Removing cables from the front panel module

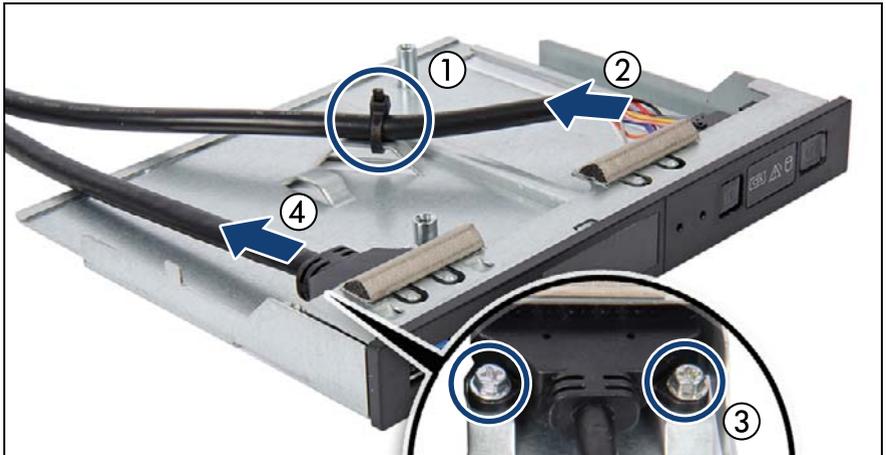


Figure 269: Removing the front panel cables

- ▶ Open the cable tie (1) and remove the front panel cable (2).
- ▶ Remove the two screws (3) and remove the front USB cable (4).

13.1.4 Connecting cables to the front panel module

- ▶ Connect the front panel cable to the new front panel module and secure it to the lug with a new cable tie (see figure 269).
- ▶ Connect the front USB cable to the new front panel module and secure it with two screws (see figure 269).

13.1.5 Installing the front panel module

Installing the front panel module

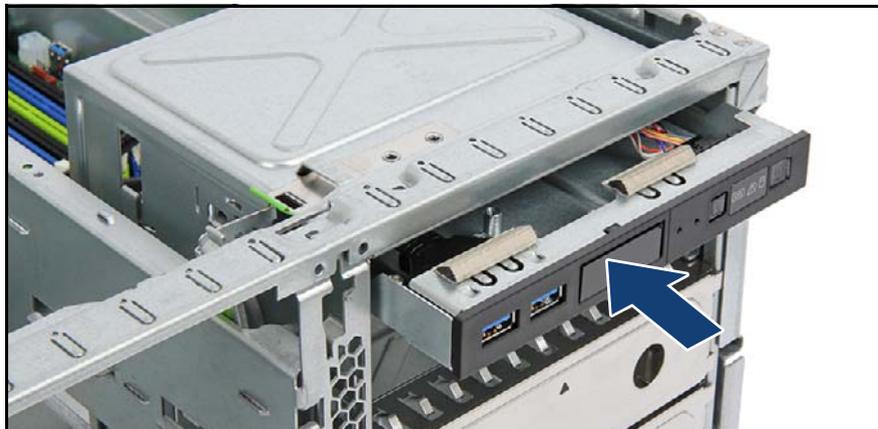


Figure 270: Installing the front panel module

- ▶ 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.

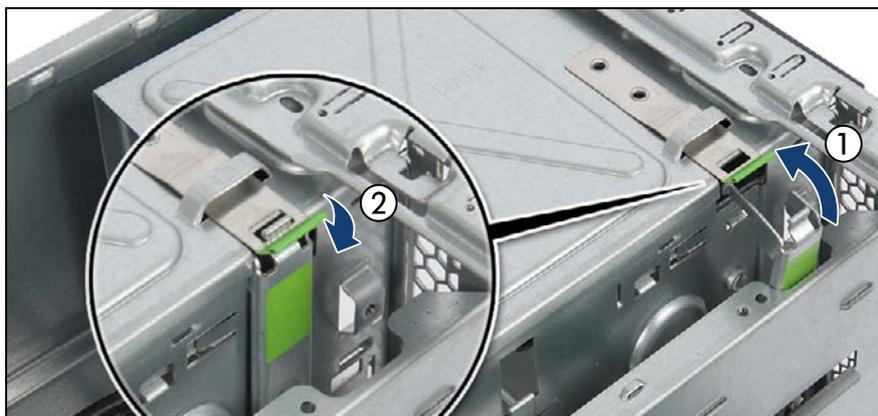


Figure 271: Closing the accessible drive locking bar (rack server)

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

Connecting front panel cables to the system board

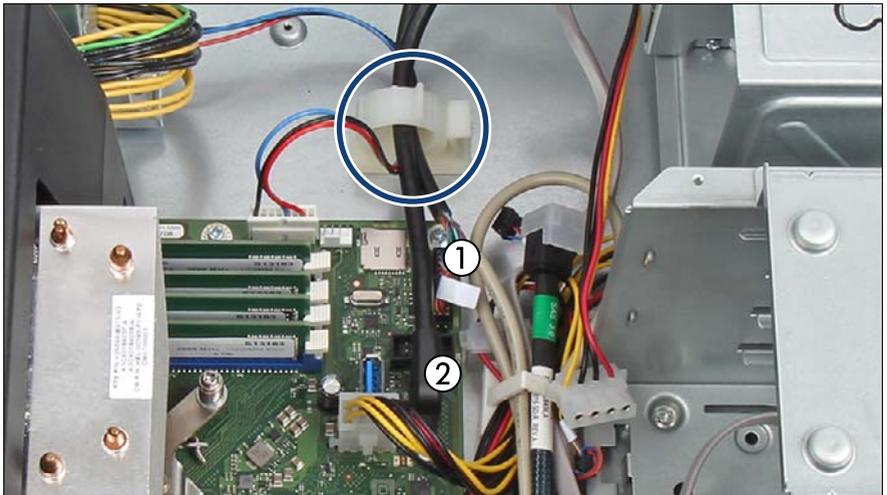


Figure 272: Connecting front panel cables

- ▶ Connect the cables of the front panel to the system board:
 - 1 Front panel cable to connector "Frontpanel"
 - 2 Front USB cable to connector "USB 3.1 Front"
- ▶ Run the front panel cables through the cable guide (see circle).

13.1.6 Concluding steps

- ▶ If applicable, install the SAS expander holder, see section ["Installing the SAS expander holder" on page 254](#)
- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)
- ▶ ["Verifying system information backup/restore" on page 103](#)

Front panel

- ▶ ["Using the Chassis ID Prom Tool" on page 121.](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)

14 System board and components

Safety notes



CAUTION!

- Devices and components inside the server remain hot after shutdown. After shutting down the server, wait for hot components to cool down before installing or removing internal options.
- Circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. Always discharge static build-up (e.g. by touching a grounded object) before handling electrostatic-sensitive devices (ESDs).
- Do not touch the circuitry on boards or soldered parts. Hold circuit boards by their metallic areas or edges.
- For more information, see chapter ["Important information" on page 37](#).

14.1 Basic information

This section provides instructions for the system board and the following components:

- CMOS battery

The real-time clock is powered by a lithium coin cell (CMOS battery) when mains get lost. This cell lasts up to five 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.

- TPM (Trusted Platform Module)

The system board is optionally equipped with a TPM. This module enables programs from third party manufacturers to store key information, for example drive encryption using Windows Bitlocker Drive Encryption.

- iRMC microSD card

The iRMC microSD card is necessary for using the embedded Lifecycle Management (eLCM) functionality of the iRMC.

- M.2 SSD

The system board offers two M.2 slots (Key M) with support for 42 mm, 60 mm, 80 mm and 110 mm long M.2 SSDs. With the M.2 SSD an internal SSD is offered. This SSD can be configured as a boot device or data storage device.

- Dual microSD 64GB Enterprise

The system board is optionally equipped with a Dual microSD 64GB Enterprise. The Dual microSD 64GB Enterprise offers an Integrated Hardware RAID solution based on RAID-on-Chip (ROC) technology.

14.2 CMOS battery

14.2.1 Replacing the CMOS battery



Upgrade and Repair Unit
(URU)



Hardware: 5 minutes

Tools: tool-less; recommended: tooth pick

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 more information, see section "[Environmental protection](#)" on [page 48](#).
- **Ensure to insert the CMOS battery with the positive pole facing up!**

14.2.1.1 Preliminary steps

- ▶ "[Locating the defective server](#)" on [page 51](#)
- ▶ "[Shutting down the server](#)" on [page 53](#)
- ▶ "[Disconnecting the power cord](#)" on [page 54](#)
- ▶ "[Getting access to the component](#)" on [page 55](#)
- ▶ Remove the system fan module, see section "[Removing the system fan module](#)" on [page 81](#).
- ▶ If applicable, remove the SAS expander holder without disconnecting cables, see section "[Removing the SAS expander holder](#)" on [page 256](#). Position the SAS expander holder on the HDD cages to get more space.

- ▶ If applicable, ["Removing expansion cards" on page 285](#)

14.2.1.2 Replacing the defective CMOS battery

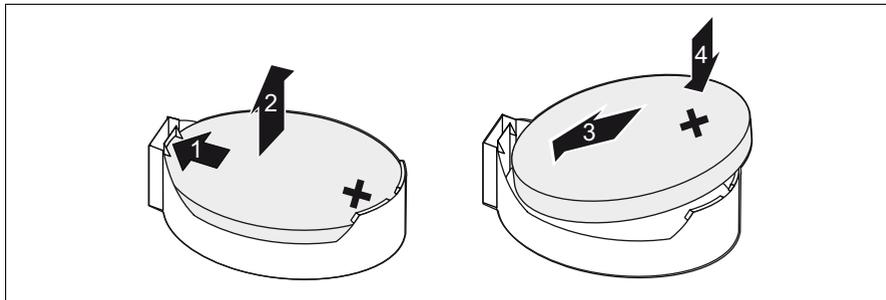


Figure 273: Replacing the CMOS battery

- ▶ Press the locking spring into direction of the arrow (1), so that the CMOS battery jumps out of its socket.
- ▶ Remove the CMOS battery (2).



CAUTION!

Sharp tools such as screw drivers might damage system board components in case of slipping.

If the CMOS battery cannot be ejected without the help of a tool, it is recommended to use a tooth pick.

- ▶ Insert a new CMOS battery of the same type into the socket (3) and (4).

14.2.1.3 Concluding steps

- ▶ Dispose of the CMOS battery in accordance with local regulations concerning special waste.
- ▶ If applicable, ["Installing expansion cards" on page 279](#)
- ▶ If applicable, install the SAS expander holder, see section ["Installing the SAS expander holder" on page 254](#)
- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)

- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)
- ▶ ["Verifying the system time settings" on page 113](#)

14.3 Trusted Platform Module (TPM)

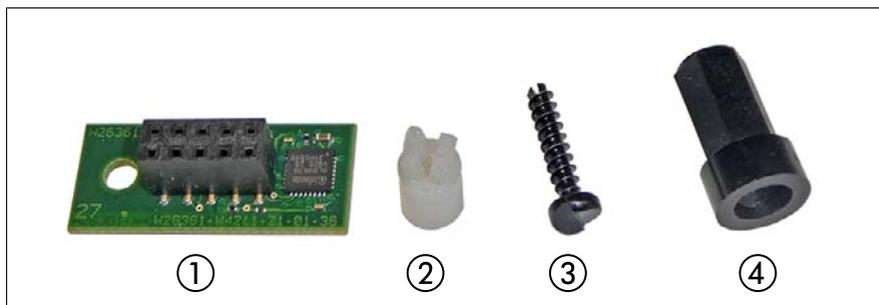


Figure 274: TPM kit

1	TPM SPI (Trusted Platform Module)	3	Special screw for TPM
2	TPM spacer	4	TPM bit insert for TPM special screw

14.3.1 Installing the TPM



Field Replaceable Unit (FRU)



Hardware: 5 minutes
Software: 5 minutes

Tools:

- Bit screw driver
- TPM bit insert (*)

(*) For Japan:

- TPM module fixing tool (S26361-F3552-L909)

14.3.1.1 Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)

- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)
- ▶ If applicable, remove the SAS expander board, see section ["Removing the SAS expander board" on page 255](#)
- ▶ If applicable, remove the expansion cards, see section ["Removing expansion cards" on page 285](#)

14.3.1.2 Installing the TPM

i The onboard position of the TPM connector can be found in section ["Onboard connectors" on page 455](#).



Figure 275: Position for the TPM spacer



Figure 276: Inserting the TPM spacer on the system board

- ▶ Insert the TPM spacer into the hole on the system board.



Figure 277: TPM bit insert

- ▶ Attach the TPM bit insert or TPM module fixing tool (for Japan) to a bit screw driver.

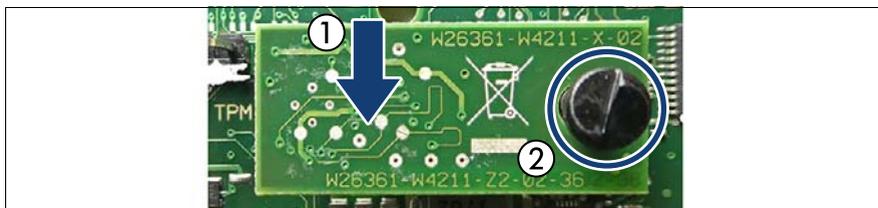


Figure 278: Installing the TPM

- ▶ Connect the TPM to the system board (1).
- ▶ Fasten the TPM with the special screw for the TPM using the TPM bit insert or TPM module fixing tool (Japan) (2).



CAUTION!

Do not fasten the screw too firmly. Stop it by extent where the head of the screw lightly touches the TPM (torque value of 0.6 Nm, the description of this torque value doesn't apply to Japan).

14.3.1.3 Concluding steps

- ▶ If applicable, install the SAS expander board, see section "[Installing the SAS expander board](#)" on page 251.
- ▶ Install the system fan module, see section "[Installing the system fan module](#)" on page 83
- ▶ If applicable, install the expansion cards, see section "[Installing expansion cards](#)" on page 279
- ▶ "[Reassembling](#)" on page 67
- ▶ "[Connecting the power cord](#)" on page 78
- ▶ "[Switching on the server](#)" on page 80
- ▶ "[Resuming BitLocker functionality](#)" on page 117
- ▶ Enable TPM in the system board BIOS. Proceed as follows:
 - ▶ Switch on or restart your server.
 - ▶ As soon as the startup screen appears, enter the BIOS setup menu.
 - ▶ Select the **Advanced** menu.
 - ▶ Select the **Trusted Computing** submenu.

- ▶ Set the **TPM Support** and **TPM State** settings to **Enabled**.
- ▶ Under **Pending TPM operation**, select the desired TPM operation mode.
- ▶ Save your changes and exit the BIOS.



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

14.3.2 Removing the TPM



Field Replaceable Unit (FRU)



Hardware: 30 minutes

Tools: Removing the system board:

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

Removing the TPM:

- Bit screw driver
- flat nose pliers
- TPM bit insert (*)

(*) For Japan:

- TPM module fixing tool (S26361-F3552-L909)



CAUTION!

Advise your contact persons that they must provide you with all recovery keys which belong to the system to restore them in the TPM later.

14.3.2.1 Preliminary steps



Preliminary steps are not necessary, if a system board has to be replaced and the TPM is used again.

- ▶ Before removing the TPM, it is necessary to remove BitLocker-protection from the computer and to decrypt the volume.
Ask the system administrator to turn off BitLocker-protection using the BitLocker setup wizard available either from the Control Panel or Windows Explorer:

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



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 more information on how to disable BitLocker drive encryption, see the Microsoft Knowledge Base.

For more information, see the Fujitsu 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, enter the BIOS setup menu.
 - ▶ 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 more information on how to access the BIOS and modify settings, refer to the corresponding BIOS Setup Utility reference manual.

- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)
- ▶ If applicable, remove the SAS expander board, see section ["Removing the SAS expander board" on page 255](#)

- ▶ If applicable, remove the expansion cards, see section "[Removing expansion cards](#)" on page 285

14.3.2.2 Removing the TPM board

- ▶ Remove the system board, see section "[Removing the defective system board](#)" on page 420.
- ▶ Lay the system board on a soft, antistatic surface with its component side facing down.

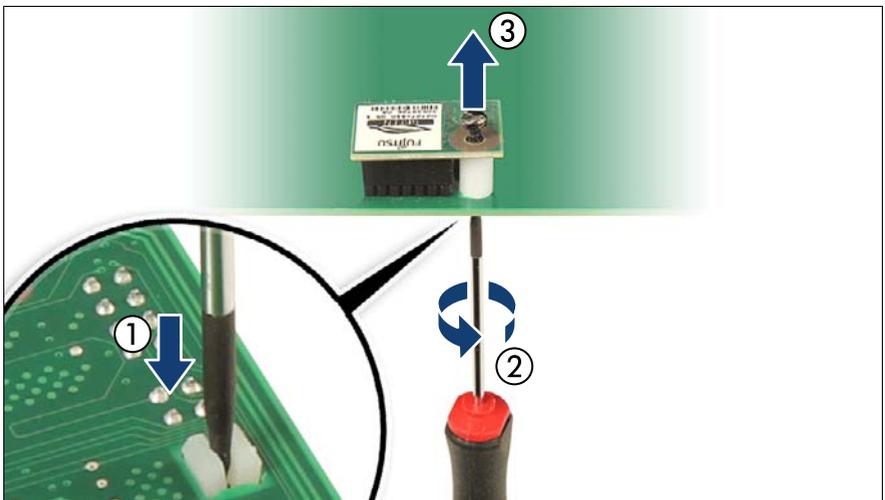


Figure 279: Removing the TPM screw

- ▶ Locate the slotted lower end of the TPM screw (1).
- ▶ Carefully loosen the TPM screw using a thin slotted screw driver (e.g. watchmaker's screw driver) or the dedicated TPM screw driver (for Japan) (2).



CAUTION!

Ensure to turn the screw **clockwise** in order to remove it! Slowly and carefully increase the pressure on the screw until it begins to turn. The effort when 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 (3).
- ▶ Remove the TPM on the upper side of the system board.

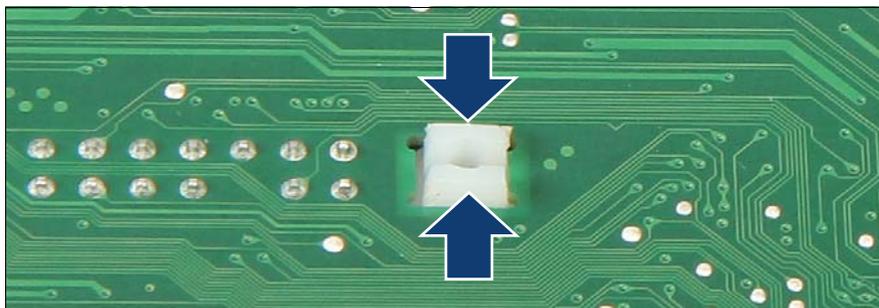


Figure 280: Removing the TPM spacer

- ▶ Using a flat nose pliers, press together the hooks on the TPM spacer and remove it from the system board (2).



If the TPM is to be replaced, the TPM spacer may remain on the system board.

- ▶ Install the system board, see section ["Installing the new system board" on page 422](#)

14.3.2.3 Concluding steps

- ▶ If applicable, install the SAS expander board, see section ["Installing the SAS expander board" on page 251](#).
- ▶ If applicable, install the expansion cards ["Installing expansion cards" on page 279](#)
- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

14.3.3 Replacing the TPM



Field Replaceable Unit (FRU)



Hardware: 40 minutes

Tools: Removing the system board:

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

Replacing the TPM:

- Bit screw driver
- TPM bit insert (*)
- thin slotted screw driver (2 x 0.4 mm) (*)
- Flat nose pliers

(*) For Japan:

- Dedicated TPM screw driver (CWZ8291A)
- TPM module fixing tool (S26361-F3552-L909)



CAUTION!

Advise your contact persons that they must provide you with all recovery keys which belong to the system to restore them in the TPM later.

14.3.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)
- ▶ If applicable, remove the expander board, see section ["Removing the SAS expander board" on page 255](#)
- ▶ If applicable, ["Removing expansion cards" on page 285](#)

14.3.3.2 Removing the defective TPM

- ▶ Remove the TPM, see section ["Removing the TPM" on page 391](#).
- ▶ Leave the TPM spacer on the system board when removing the defective TPM.

14.3.3.3 Installing the new TPM



The TPM spacer is already present on the system board.

- ▶ Install the TPM, see section ["Installing the TPM" on page 388](#).

14.3.3.4 Concluding steps

- ▶ If applicable, ["Installing expansion cards" on page 279](#)
- ▶ If applicable, install the expander board, see section ["Installing the SAS expander board" on page 251](#).
- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)



You can find information on configuring the TPM in the corresponding BIOS Setup Utility reference manual.

14.4 iRMC microSD card

i 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 interface.

For more information, see the “ServerView embedded Lifecycle Management (eLCM)” user guide.

14.4.1 Installing the iRMC microSD card



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: tool-less

14.4.1.1 Preliminary steps

- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

14.4.1.2 Installing the iRMC microSD card



Figure 281: iRMC microSD card

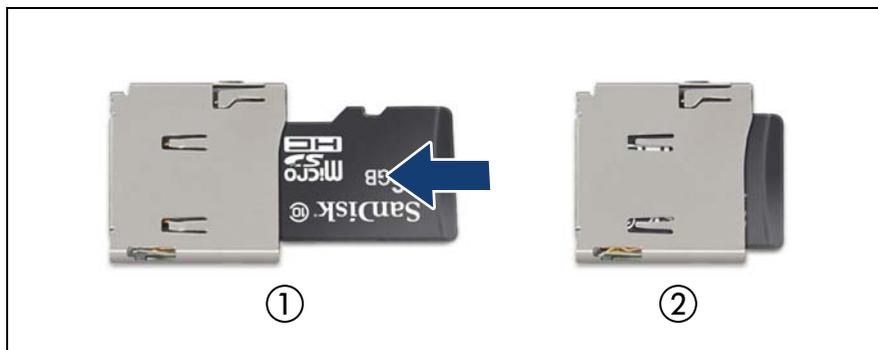


Figure 282: Installing the iRMC microSD card

- ▶ 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 455.

14.4.1.3 Concluding steps

- ▶ Install the system fan module, see section ["Installing the system fan module"](#) on page 83
- ▶ ["Reassembling"](#) on page 67
- ▶ ["Connecting the power cord"](#) on page 78
- ▶ ["Switching on the server"](#) on page 80

14.4.2 Removing the iRMC microSD card



Upgrade and Repair Unit
(URU)



Hardware: 5 minutes

Tools: tool-less

14.4.2.1 Preliminary steps

- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

14.4.2.2 Removing the iRMC microSD card

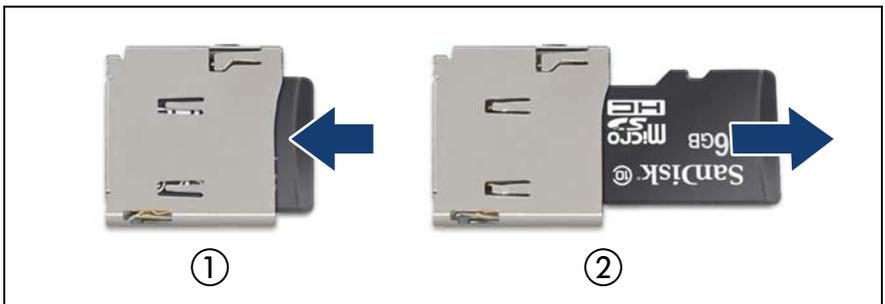


Figure 283: Removing the iRMC microSD card

- ▶ 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).



CAUTION!

The iRMC microSD card contains customer information. After removing the iRMC microSD card, hand the card over to the customer.

14.4.2.3 Concluding steps

- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

14.4.3 Replacing the iRMC microSD card



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: a pair of side-cutting pliers

14.4.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

14.4.3.2 Replacing the iRMC microSD card

- ▶ Remove the defective iRMC microSD card, see section ["Removing the iRMC microSD card" on page 399](#).



CAUTION!

The microSD card contains customer information. After replacing the microSD card, hand the defective card over to the customer. If the customer requests disposal of the defective microSD card, proceed as follows:

- ▶ Using a pair of side-cutting pliers, cut the microSD card in half.

- ▶ Install the new iRMC microSD card, see section ["Installing the iRMC microSD card"](#) on page 397.

14.4.3.3 Concluding steps

- ▶ Install the system fan module, see section ["Installing the system fan module"](#) on page 83
- ▶ ["Reassembling"](#) on page 67
- ▶ ["Connecting the power cord"](#) on page 78
- ▶ ["Switching on the server"](#) on page 80

14.5 M.2 SSD

The system board offers two M.2 slots (Key M) with support for 42 mm, 60 mm, 80 mm and 110 mm long M.2 SSDs. With the M.2 SSD an internal SSD is offered. This SSD can be configured as a boot device or data storage device.

14.5.1 Installing an M.2 SSD



Upgrade and Repair Unit (URU)



Hardware: 5 minutes
Software: 15minutes

Tools: <ul style="list-style-type: none">- Phillips PH1 / (+) No. 1 screw driver- Hexagon screw driver
--

14.5.1.1 Preliminary steps

- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)
- ▶ If applicable, remove the SAS expander holder without disconnecting cables, see section ["Removing the SAS expander holder" on page 256](#). Position the SAS expander holder on the HDD cages to get more space.
- ▶ If applicable, ["Removing expansion cards" on page 285](#)

14.5.1.2 Installing the M.2 SSD



Figure 284: Example M.2 SSD

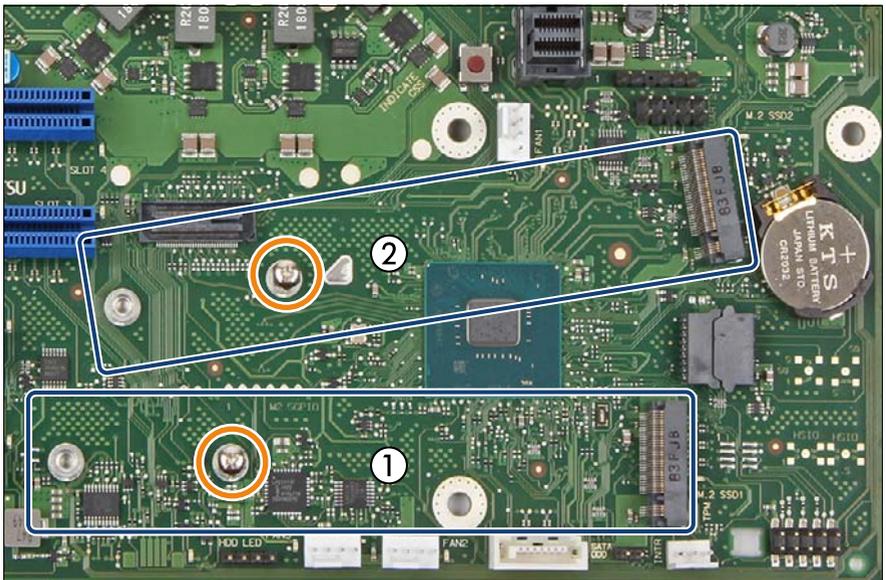


Figure 285: Slots for M.2 SSDs

1	M.2 slot 1
2	M.2 slot 2

System board and components



CAUTION!

The M.2 slot 1 must be equipped first. An M.2 SSD in M.2 slot 2 is not recognized, if M.2 slot 1 is free.



Each M.2 SSD needs one hexagon stand-off for fastening. To support different length of M.2 SSD, several nuts are on the system board indicating the positions for fastening the M.2 SSD.

- ▶ If no M.2 SSD has been installed before:

- ▶ Remove the screw (see orange circles in figure 285).



If the hexagon stand-off is unscrewed as well, remove the screw from the hexagon stand-off.

- ▶ Install the hexagon stand-off on the right position depending on the length of the M.2 SSD.



Figure 286: Installing the M.2 SSD

- ▶ With the label facing up, insert the M.2 SSD into the M.2 slot at a slight angle.



Figure 287: Fastening the M.2 SSD

- ▶ Fasten the M.2 SSD with the screw (see circle).

14.5.1.3 Concluding steps

- ▶ If applicable, "[Installing expansion cards](#)" on page 279.
- ▶ If applicable, install the SAS expander holder, see section "[Installing the SAS expander holder](#)" on page 254
- ▶ Install the system fan module, see section "[Installing the system fan module](#)" on page 83
- ▶ "[Reassembling](#)" on page 67
- ▶ "[Connecting the power cord](#)" on page 78
- ▶ "[Switching on the server](#)" on page 80

14.5.1.4 Software configuration

In order to install the ESXi to the M.2 SSD, the VMware ESXi installer CD is required. To obtain the ESXi installer CD by purchasing the OEM Media Kit, or downloading the ESXi Custom Image ISO file from VMware's website and burn the image to the CD.

<https://www.vmware.com/go/download-vsphere>.

To install the ESXi to the M.2 SSD by following the steps below:

- ▶ Disconnect all storage devices from the server beside the M.2 SSD.
- ▶ Power on the server. Once the server has been started, then enter the BIOS setup menu and select the DVD drive as primary boot device.
- ▶ Insert the CD into the DVD drive and reboot the server. The server will boot from the installer CD.
- ▶ Follow the on-screen instructions to install the ESXi. When the installation is complete, you will be asked to reboot the server.
- ▶ While the server is rebooting, enter the BIOS setup menu again and select the M.2 SSD as primary boot device.

The installation of the ESXi to the M.2 SSD is complete.



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



The M.2 SSD can be used only for boot device. Do not use VMFS on the M.2 SSD because of not meeting required endurance. For more information, see the VMware Knowledge Base 2145210.

<http://kb.vmware.com/s/article/2145210>



For Japan

In order to setup the ESXi, see the corresponding version of the "VMware vSphere Software Description" from the following URL and reinstall ESXi to the M.2 SSD.

<http://jp.fujitsu.com/platform/server/primergy/software/vmware/manual/>

14.5.2 Removing the M.2 SSD



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

<p>Tools:</p> <ul style="list-style-type: none">– Phillips PH1 / (+) No. 1 screw driver– Hexagon screw driver (for moving the screw to another hexagon stand-off)

14.5.2.1 Preliminary steps

- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)
- ▶ If applicable, remove the SAS expander holder without disconnecting cables, see section ["Removing the SAS expander holder" on page 256](#). Position the SAS expander holder on the HDD cages to get more space.
- ▶ If applicable, ["Removing expansion cards" on page 285](#)

14.5.2.2 Removing the M.2 SSD



Figure 288: Removing the M.2 SSD (A)

- ▶ Remove the screw (see circle).



Figure 289: Removing the M.2 SSD (B)

- ▶ Pull the M.2 SSD out of its slot.
- ▶ If no new M.2 SSD will be installed:
 - ▶ Fasten the screw to the corresponding hexagon stand-off (see orange circles in figure [285](#) on page [403](#)).

14.5.2.3 Concluding steps

- ▶ If applicable, "[Installing expansion cards](#)" on page [279](#).
- ▶ If applicable, install the SAS expander holder, see section "[Installing the SAS expander holder](#)" on page [254](#)
- ▶ Install the system fan module, see section "[Installing the system fan module](#)" on page [83](#)
- ▶ "[Reassembling](#)" on page [67](#)

- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

14.5.3 Replacing the M.2 SSD



**Upgrade and Repair Unit
(URU)**



**Hardware: 5 minutes
Software: 15 minutes**

Tools: – Phillips PH1 / (+) No. 1 screw driver

14.5.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)
- ▶ If applicable, remove the SAS expander holder without disconnecting cables, see section ["Removing the SAS expander holder" on page 256](#). Position the SAS expander holder on the HDD cages to get more space.
- ▶ If applicable, ["Removing expansion cards" on page 285](#)

14.5.3.2 Replacing the M.2 SSD

- ▶ Remove the defective M.2 SSD, see section ["Removing the M.2 SSD" on page 406](#).
- ▶ Install the new M.2 SSD, see section ["Installing an M.2 SSD" on page 402](#).

14.5.3.3 Concluding steps

- ▶ If applicable, ["Installing expansion cards" on page 279](#).
- ▶ If applicable, install the SAS expander holder, see section ["Installing the SAS expander holder" on page 254](#)
- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

14.5.3.4 Software configuration



To install the ESXi to the M.2 SSD, see ["Software configuration" on page 405](#).

14.6 Dual microSD 64GB Enterprise

14.6.1 Installing the Dual microSD 64GB Enterprise



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: tool-less

14.6.1.1 Preliminary steps

- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

14.6.1.2 Installing the Dual microSD 64GB Enterprise

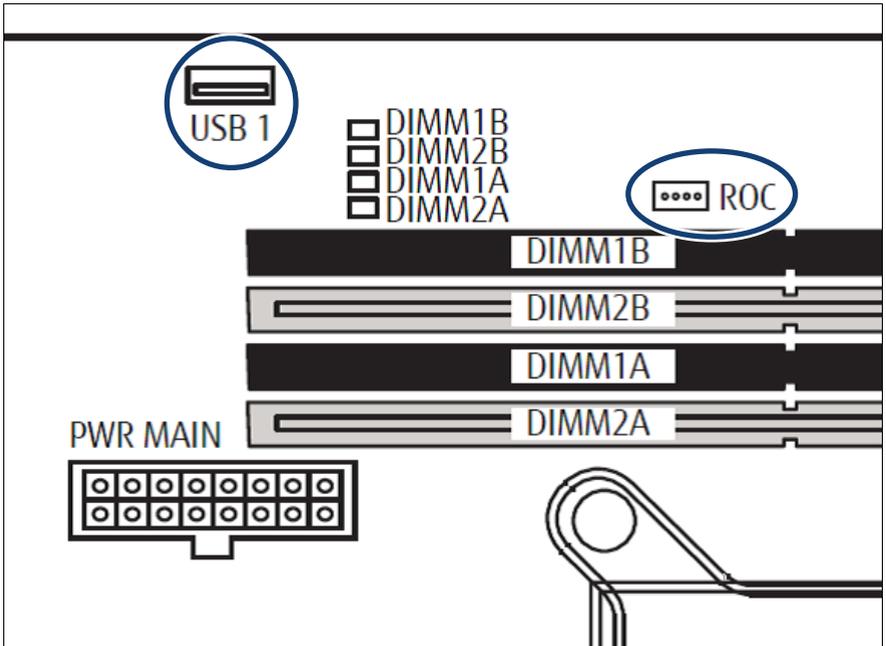


Figure 290: Position on the system board

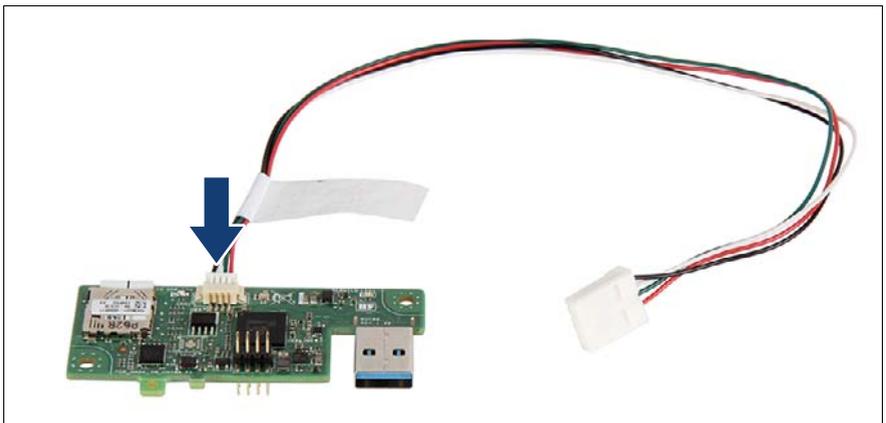


Figure 291: Connecting the cable to the Dual microSD 64GB Enterprise

- ▶ Connect the cable to the Dual microSD 64GB Enterprise.

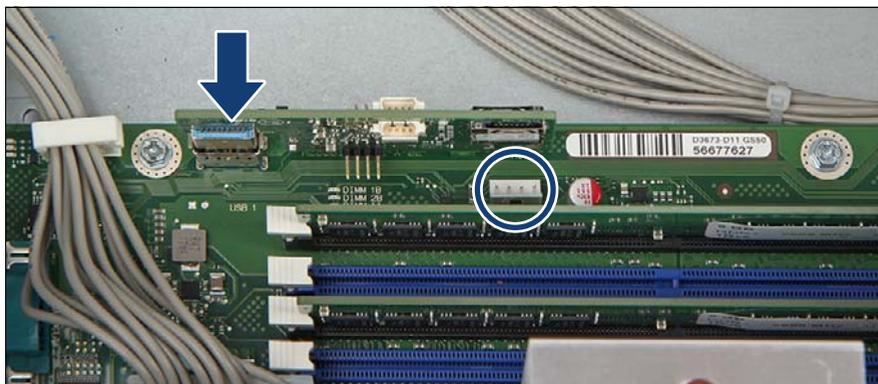


Figure 292: Installing the Dual microSD 64GB Enterprise

- ▶ Insert the Dual microSD 64GB Enterprise into the system board connector "USB 1" (see arrow).
- ▶ Connect the ROC cable to the system board connector "ROC" (see circle).

14.6.1.3 Concluding steps

- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

14.6.2 Removing the Dual microSD 64GB Enterprise



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: tool-less

14.6.2.1 Preliminary steps

- ▶ ["Shutting down the server" on page 53](#)

- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

14.6.2.2 Removing the Dual microSD 64GB Enterprise

- ▶ Disconnect the cable from the connector "ROC" on the system board (see [figure 292](#)).

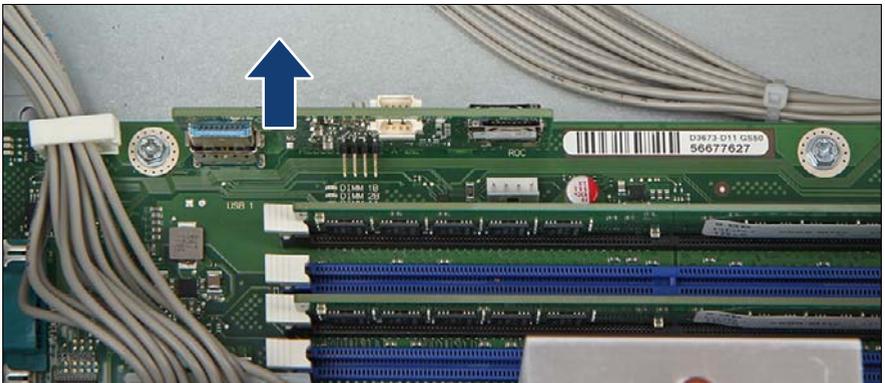


Figure 293: Installing the Dual microSD 64GB Enterprise

- ▶ Pull the Dual microSD 64GB Enterprise out of its connector.

14.6.2.3 Concluding steps

- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

14.6.3 Replacing the Dual microSD 64GB Enterprise



Upgrade and Repair Unit
(URU)



Hardware: 5 minutes

Tools: tool-less

14.6.3.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

14.6.3.2 Replacing the Dual microSD 64GB Enterprise

- ▶ Remove the defective Dual microSD 64GB Enterprise, see section ["Removing the Dual microSD 64GB Enterprise" on page 412](#).
- ▶ Remove both microSD cards from the defective Dual microSD 64GB Enterprise. Proceed as described in the following:

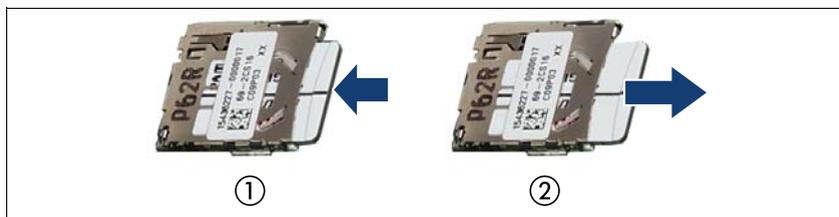


Figure 294: Removing the microSD card

- ▶ To eject the microSD card, gently push it in and then let go (1).
- ▶ Pull the microSD card straight out of its slot (2).
- ▶ Install both microSD cards on the new Dual microSD 64GB Enterprise. Proceed as described in the following:



Figure 295: Installing the microSD card

- ▶ With the label facing up, insert the microSD card into the microSD slot on the controller (1) until it locks in place (2).
- ▶ Install the new Dual microSD 64GB Enterprise, see section ["Installing the Dual microSD 64GB Enterprise"](#) on page 410.

14.6.3.3 Concluding steps

- ▶ Install the system fan module, see section ["Installing the system fan module"](#) on page 83
- ▶ ["Reassembling"](#) on page 67
- ▶ ["Connecting the power cord"](#) on page 78
- ▶ ["Switching on the server"](#) on page 80

14.6.4 Replacing the microSD card



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: a pair of side-cutting pliers

14.6.4.1 Preliminary steps

- ▶ ["Locating the defective server"](#) on page 51
- ▶ ["Shutting down the server"](#) on page 53
- ▶ ["Disconnecting the power cord"](#) on page 54
- ▶ ["Getting access to the component"](#) on page 55

- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)

14.6.4.2 Replacing the microSD card

- ▶ Remove the Dual microSD 64GB Enterprise, see section ["Removing the Dual microSD 64GB Enterprise" on page 412](#).
- ▶ Remove the defective microSD card from the Dual microSD 64GB Enterprise. Proceed as described in the following:
 - ▶ To eject the defective microSD card, gently push it in and then let go (see figure [294](#)).
 - ▶ Pull the microSD card straight out of its slot.



CAUTION!

The microSD card contains customer information. After replacing the microSD card, hand the defective card over to the customer. If the customer requests disposal of the defective microSD card, proceed as follows:

- ▶ Using a pair of side-cutting pliers, cut the microSD card in half.
- ▶ Install the new microSD card on the Dual microSD 64GB Enterprise. Proceed as described in the following:
 - ▶ With the label facing up, insert the microSD card into the microSD slot on the controller until it locks in place (see figure [295](#)).
- ▶ Install the Dual microSD 64GB Enterprise, see section ["Installing the Dual microSD 64GB Enterprise" on page 410](#).

14.6.4.3 Concluding steps

- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

14.7 System board

14.7.1 Replacing the system board



Field Replaceable Unit (FRU)



Hardware: 50 minutes
Software: 10 minutes

Tools: Replacing the system board:

- Phillips PH2 / (+) No. 2 screw driver
- Magnifying glass for inspecting CPU socket springs (recommended)

Replacing the TPM:

- Bit screw driver
- flat nose pliers
- TPM bit insert (*)
- thin slotted screw driver (2 x 0.4 mm) (*)

(*) For Japan:

- Dedicated TPM screw driver (CWZ8291A)
- TPM module fixing tool (S26361-F3552-L909)

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, see ["Replacing the TPM" on page 395](#).

The TPM is enabled in the system BIOS.



CAUTION!

- Before replacing the system board, ask the customer whether TPM functionality is used.

System board and components

- 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 all recovery keys which belong to the system to restore them in the TPM later.

Note on system information backup/restore

The front panel (front panel module, front panel board or front panel on QRL) 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.



CAUTION!

For that reason the front panel and system board must not be replaced simultaneously! In this case, restoring the system configuration data on the system board would fail.

After replacing the system board the backup data is restored from the Chassis ID board to the new system board.

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 network controller or the system board.

14.7.1.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Note on network settings recovery" on page 288](#)
- ▶ ["Suspending BitLocker functionality" on page 97](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ Disconnect all external cables.
- ▶ ["Getting access to the component" on page 55](#)
- ▶ Remove the system fan module, see section ["Removing the system fan module" on page 81](#)
- ▶ If applicable, remove the SAS expander board, see section ["Removing the SAS expander board" on page 255](#)
- ▶ Remove the following components from the system board as shown in the related sections:
 - Heat sinks: ["Removing the heat sink" on page 321](#)
 -  Leave the CPU on the defective board for now.
 - Memory modules: ["Removing memory modules" on page 315](#)
 -  Ensure to take note of the memory modules' mounting positions for reassembly.
 - Expansion cards:
 - If applicable, disconnect the riser card.
 - ["Removing expansion cards" on page 285](#)
 -  Ensure to take note of the controllers' mounting positions and cable connections for reassembly.
 - iRMC microSD card: ["Removing the iRMC microSD card" on page 399](#)
 - If applicable, M.2 SSD, see section ["Removing the M.2 SSD" on page 406](#)
 - If applicable, Dual microSD 64 GB Enterprise, see section ["Removing the Dual microSD 64GB Enterprise" on page 412](#)

System board and components

14.7.1.2 Removing the defective system board

- ▶ Disconnect all cables from the system board.

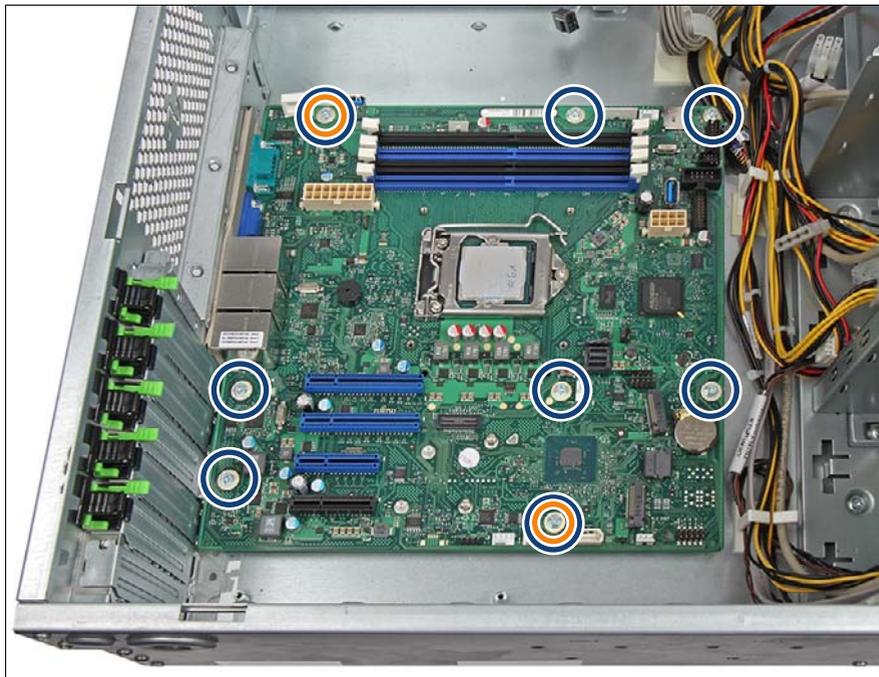


Figure 296: Screws system board

- ▶ Remove the eight screws from the system board (see blue circles, orange circles show the centering bolts).



Figure 297: Removing the system board

- ▶ Use both hands to lift the system board carefully out of the chassis in a slight angle. Thereby you pull the connectors out of the I/O panel (see arrows).



CAUTION!

Always take the system board with both hands!

Never lift the system board one-sided or at a heat sink, because the solder connections between the socket and the system board come under tension and increase the risk of damage and malfunction!

Don't damage the EMI springs which are essential to comply with applicable EMC regulations and satisfy cooling requirements and fire protection measures.

- ▶ Place the removed and the new system board on an antistatic surface.
- ▶ If applicable, remove the TPM, see section ["Removing the TPM" on page 391](#).

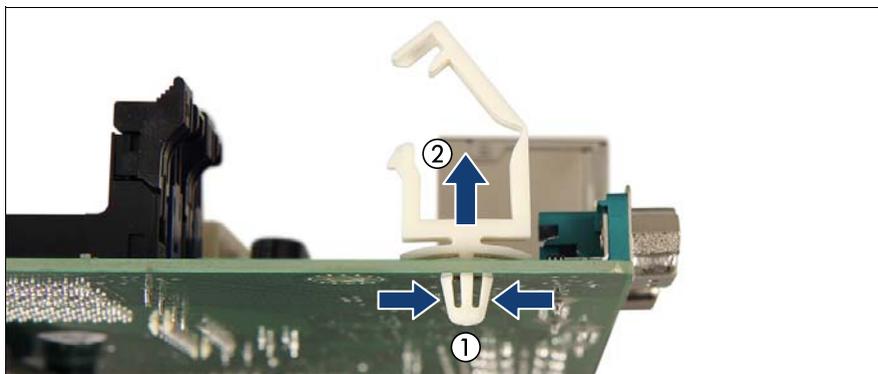


Figure 298: Removing the power cable clamp

- ▶ Using a small pair of combination pliers, press together the hooks on the power cable clamp (1) and remove it from the defective system board (2).

14.7.1.3 Installing the new system board

- ▶ If applicable, install the iRMC microSD card, see section ["Installing the iRMC microSD card" on page 397](#).
- ▶ If applicable, install the TPM, see section ["Installing the TPM" on page 388](#).
- ▶ Check the settings on the new system board (see section ["Onboard settings" on page 473](#)).
- ▶ Insert the system board by holding it at a slight angle. Slide the connectors into the I/O panel (see figure [297](#)).
- ▶ Lower the system board carefully into the chassis.
- ▶ Adjust the system board. If necessary adjust the position of the system board with a gentle twisting motion (orange circles in figure [296](#) show the centering bolts).
- ▶ Fasten the system board with the eight screws (see figure [296](#)).

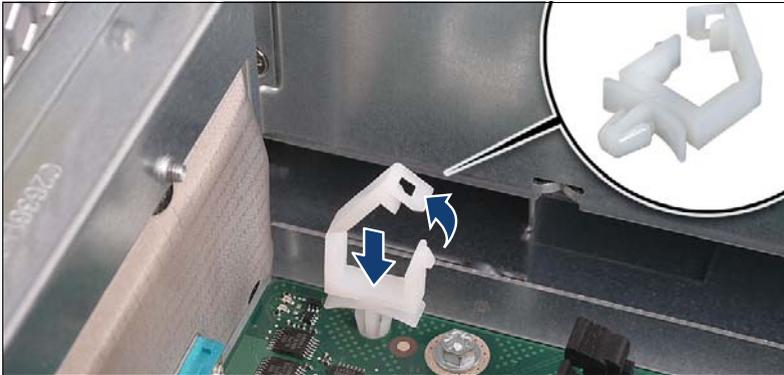


Figure 299: Installing the power cable clamp

- ▶ Press down on the power cable clamp until it snaps into place.
- ▶ Remove the protective plastic cover from the CPU socket of the new system board.
- ▶ Remove the CPU from the defective system board, see section ["Removing the CPU" on page 322](#).
- ▶ Confirm that the CPU model number printed on the top of the CPU fits with the requirements.
- ▶ Install the CPU on the new system board, see section ["Installing the CPU" on page 324](#).
- ▶ Fit the protective plastic cover onto the socket of the defective system board which will be sent to spares.



Returned system boards without this cover probably have to be scrapped.

- ▶ ["Installing the CPU heat sink" on page 330](#)

14.7.1.4 Concluding steps

- ▶ Connect all cables to the system board.



For the cable plan, see chapter ["Appendix B" on page 477](#).

- ▶ Reinstall all remaining system board components as shown in the related sections:

System board and components

- If applicable, M.2 SSD, see section ["Installing an M.2 SSD" on page 402](#)
- If applicable, Dual microSC 64 GB Enterprise, see section ["Installing the Dual microSD 64GB Enterprise" on page 410](#)
- Memory modules: ["Installing a memory module" on page 314](#)



Make sure that you reinstall each memory module in the slot it was located before the replacement.

- Expansion cards: ["Installing expansion cards" on page 279](#)

If applicable, connect the riser card.

- ▶ If applicable, install the expander board, see section ["Installing the SAS expander board" on page 251](#).
- ▶ Install the system fan module, see section ["Installing the system fan module" on page 83](#)
- ▶ ["Reassembling" on page 67](#)
- ▶ Connect all external cables.
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)



When the system is powered on after a CPU has been replaced or upgraded, the Global Error indicator will start flashing with the message CPU has been changed.

This only indicates that the CPU configuration has been altered. There is no technical problem.

Proceed as follows:

- ▶ Restart your server.
 - ▶ As soon as the startup screen appears, press the **[F2]** function key to enter the BIOS.
 - If a password is assigned, enter the password and press **[Enter]**.
 - ▶ Select the *Save & Exit* menu.
 - ▶ Select *Save Changes and Exit* or *Save Changes and Reset*.
 - ▶ Verify that the Global Error indicator stops flashing.
- ▶ ["Verifying the system time settings" on page 113](#)

- ▶ ["Updating or recovering the BIOS and the iRMC S5" on page 102](#)
- ▶ If applicable, activate TPM functionality in the system BIOS under **Security > TPM (Security Chip) Setting > Security Chip**. For more information, refer to the corresponding BIOS Setup Utility reference manual.
- ▶ ["Verifying system information backup/restore" on page 103](#)
- ▶ ["Looking for MAC/WWN/GUID and SAS addresses" on page 118](#)
- ▶ ["Updating the NIC configuration file in a Linux and VMware environment" on page 116](#)
- ▶ ["Resuming BitLocker functionality" on page 117](#)
- ▶ If applicable, 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 more information, see section ["Note on network settings recovery" on page 288](#).
- ▶ If applicable, restore LAN teaming configurations, see section ["After replacing a system board" on page 122](#).

15 Converting a floorstand model to a rack model



Field Replaceable Unit (FRU)



Hardware: 20 minutes

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

Safety notes

For more information, see chapter ["Important information" on page 37](#).

15.1 Preliminary steps

- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ Remove all external cables.
- ▶ ["Getting access to the component" on page 55](#)
- ▶ ["Removing the anti-tilt bracket" on page 95](#)

15.2 Converting a floorstand model to a rack model

Removing the right side cover



Figure 300: Removing the right side cover (A)

- ▶ Remove two screws on the server rear (see circles).

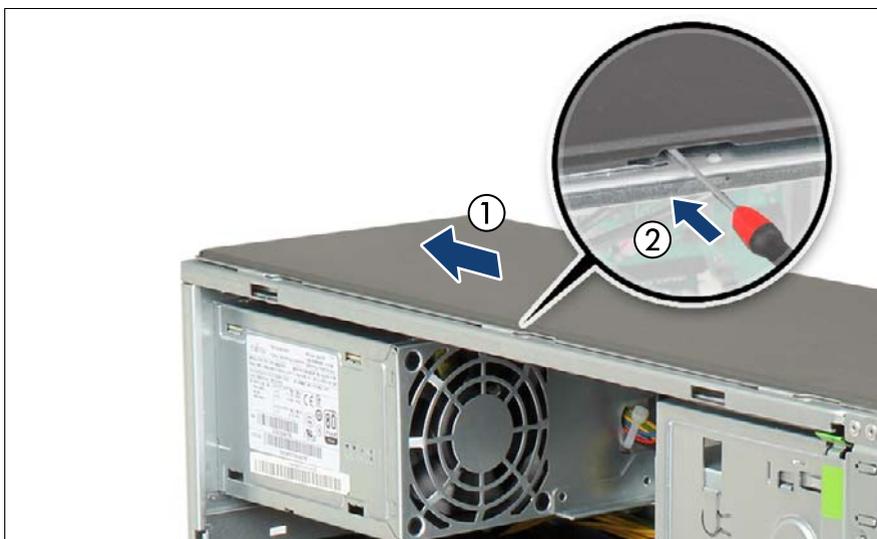


Figure 301: Removing the right side cover (B)

- ▶ Slide the right side cover towards the server rear as far as it will go (1).
- ▶ 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 (2).
 - ▶ 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.
- ▶ 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 HDDs and hot-plug PSUs in order to facilitate the task.
- ▶ Lift off and remove the right side cover.
 - i The right side cover is no longer required.
- ▶ Leave the server in its upside down position.

Converting a floorstand model to a rack model

Removing rubber feet

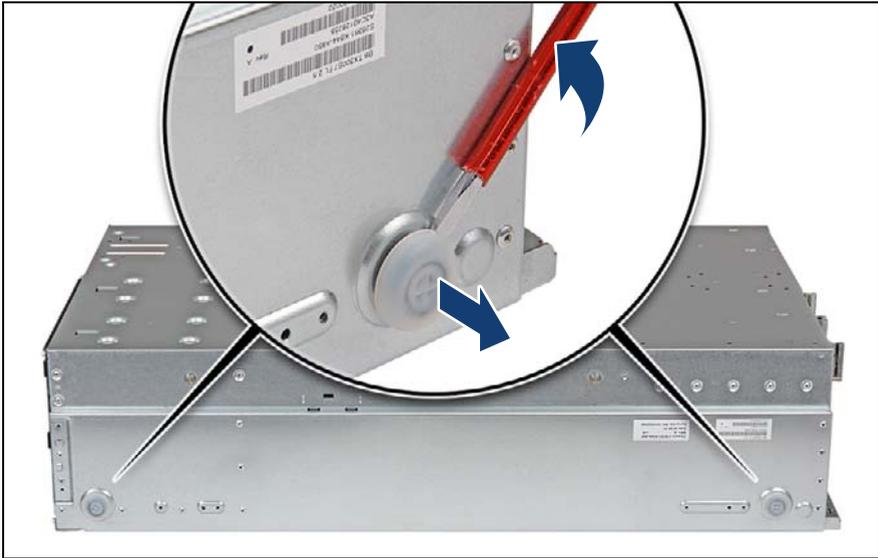


Figure 302: Removing rubber feet

- ▶ Using a slotted screw driver, slightly pry up on each rubber 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 HDDs and PSUs in order to facilitate the task.

Removing the accessible drive cage

- ▶ Remove the front panel module, see section ["Removing the defective front panel module" on page 377](#).
- ▶ If applicable, remove all accessible drives, see section ["Removing an accessible drive" on page 348](#).
- ▶ If applicable, remove an HDD extension box, see section ["HDD extension boxes" on page 228](#).



Figure 303: 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 HDDs and PSUs in order to facilitate the task.

Converting a floorstand model to a rack model



Figure 304: Detaching the accessible drive cage (B)

- ▶ Remove two screws from the right chassis edge (1).
- ▶ Remove two screws from the top edge of the chassis (2).

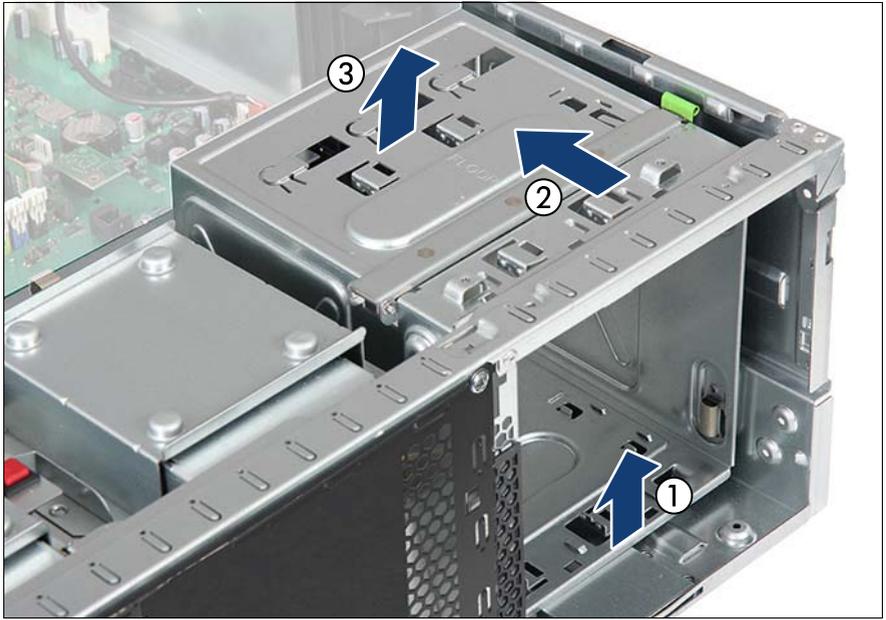


Figure 305: Removing the accessible drive cage

- ▶ 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).
- ▶ Lift the accessible drive cage out of the chassis (3).

Converting a floorstand model to a rack model

Converting the accessible drive cage

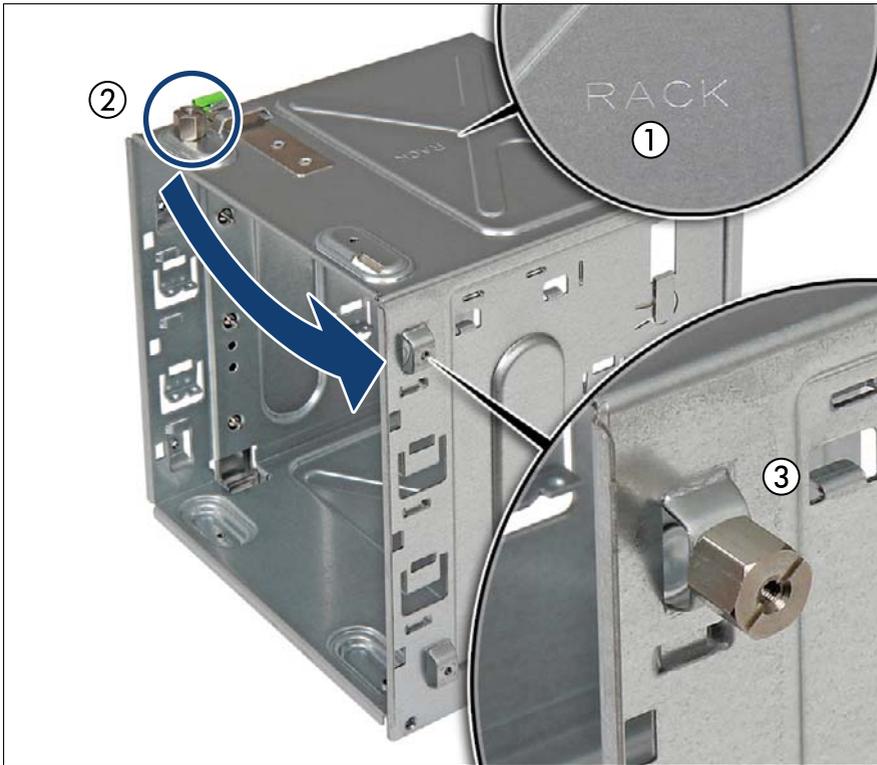


Figure 306: Converting the accessible drive cage

- ▶ 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).
- ▶ Reinstall the threaded bolt on the side of the accessible drive cage as shown (3, see close-up).

Reinstalling the accessible drive cage

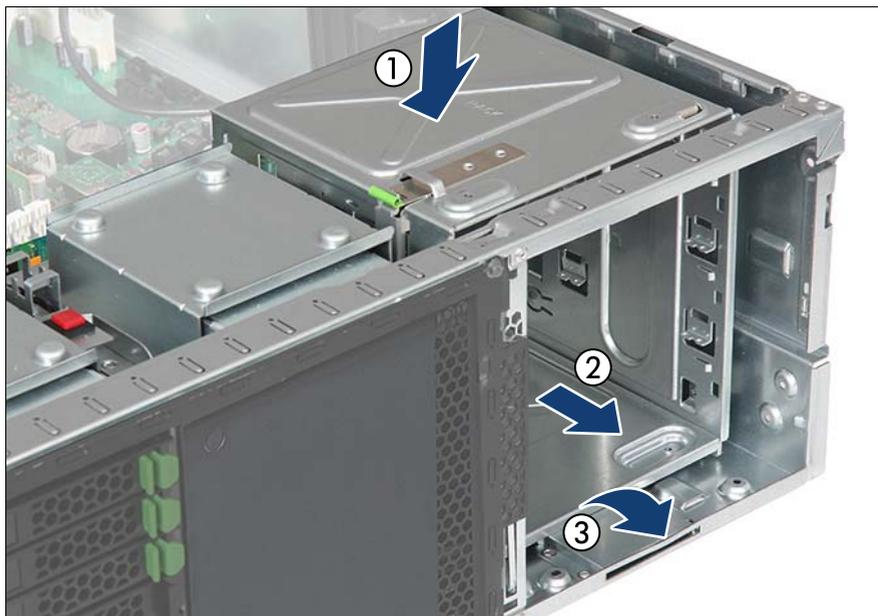


Figure 307: Mounting the accessible drive cage

- ▶ With its "RACK" stamping facing up, lower the accessible drive cage into the chassis (1).
- ▶ Slide the accessible drive cage towards the server front as far as it will go (2).
- ▶ Ensure that the front bottom edge on the accessible drive cover properly engages in the slot in the chassis floor (3).



Figure 308: Securing the accessible drive cage (A)

- ▶ Secure the accessible drive cage with two screws to the right chassis edge (1).
- ▶ Secure the accessible drive cage with two screws to the top edge of the chassis (2).
- ▶ Ensure that all cables and components are properly secured inside the server and that there are no loose pieces.



Figure 309: Securing the accessible drive cage (B)

- ▶ Carefully turn the server upside down.



At least two people are needed to turn over a fully equipped server. Remove HDDs and hot-plug PSUs in order to facilitate the task.

- ▶ Secure the accessible drive cage with the two screws (see circles) to the bottom side of the server.



Note the correct screw positions: The screw hole on the right that has been used in the floorstand model configuration remains empty.

- ▶ Reinstall the front panel (rotated by 90 degrees), see section ["Installing the front panel module" on page 380](#).
- ▶ Reinstall all accessible drives into their original bays (rotated by 90 degrees), see section ["Installing an accessible drive" on page 344](#).
- ▶ Reinstall all accessible drive filler covers and front covers, see section ["Installing accessible drive dummy covers" on page 236](#).
- ▶ If applicable, install an HDD extension box, see section ["HDD extension boxes" on page 228](#).

Preparing the intrusion switch

- ▶ Remove the intrusion switch module, see section ["Removing the intrusion switch cable" on page 441](#).



It is not necessary to disconnect the intrusion switch cable from the system board.

Converting a floorstand model to a rack model

- ▶ Attach a rubber bumper to the front intrusion switch and reinstall the intrusion switch module, see section "[Installing the intrusion switch cable](#)" on [page 445](#).

Assembling the rack front cover



Figure 310: 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.

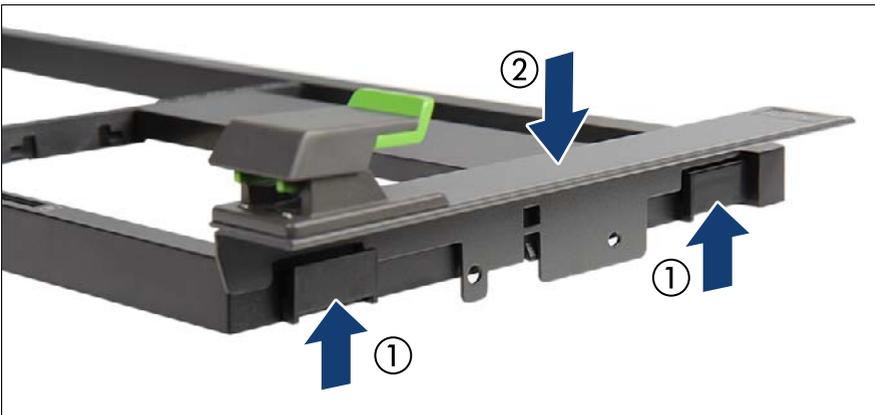


Figure 311: Installing rack mounting brackets

- ▶ Fit the rack mounting bracket with the FUJITSU logo on the two hooks on the right side of the rack front bezel (1).
- ▶ Firmly press down on the rack mounting bracket until it is fully seated in the rack front bezel (2).
- ▶ Mount the second rack mounting bracket to the left side of the rack front bezel accordingly.



Figure 312: Installing accessible drive dummy covers

- ▶ If available, 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 with the right inner edge of the front cover (1).
 - ▶ Fold down the accessible drive cover until it snaps in place (2).



Use the dummy covers that have been removed from the front cover during the preliminary steps.

- ▶ Install the rack front cover, see section "Installing the rack front cover" on page 67.

15.3 Concluding steps

- ▶ "Reassembling" on page 67
- ▶ Mount the support bracket and rack mounting rails in the rack, see the "Rack Mounting Kit - RMK-F2 Drop-In" Mounting Instructions.



For Japan:

The document is available online at <http://manuals.ts.fujitsu.com> (<http://www.fujitsu.com/jp/products/computing/servers/primergy/manual/>).

The printed poster is contained in the rack mounting kit.

- ▶ Connect all external cables.
- ▶ "Connecting the power cord" on page 78
- ▶ "Switching on the server" on page 80
- ▶ 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, see section "Using the Chassis ID Prom Tool" on page 121.
- ▶ Change the chassis model setting to "rack server", see section "Specifying the chassis model" on page 123.

16 Cabling

16.1 Replacing the intrusion switch cable



Field Replaceable Unit
(FRU)



Hardware: 10 minutes

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

16.1.1 Preliminary steps

- ▶ ["Locating the defective server" on page 51](#)
- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ ["Getting access to the component" on page 55](#)

16.1.2 Removing the intrusion switch cable

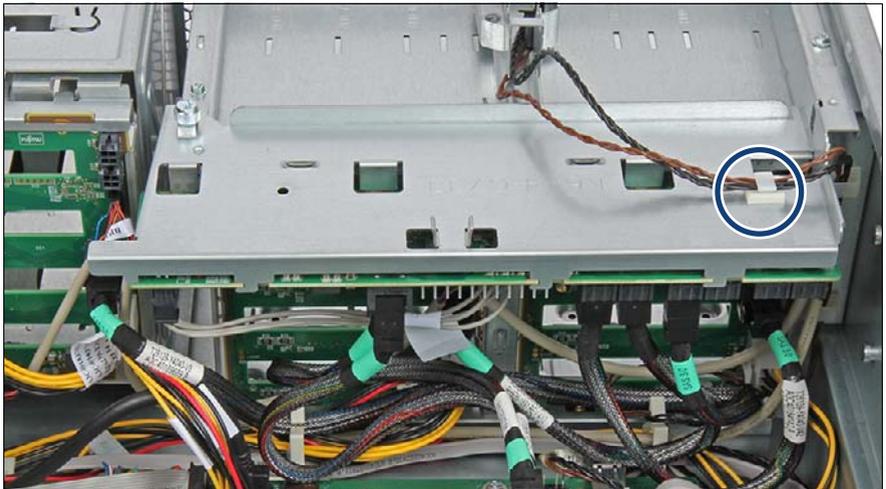


Figure 313: Removing the intrusion switch cable from the cable clamp

Cabling

- ▶ If applicable, remove the intrusion switch cable from the cable clamp on the expander board (see circle).

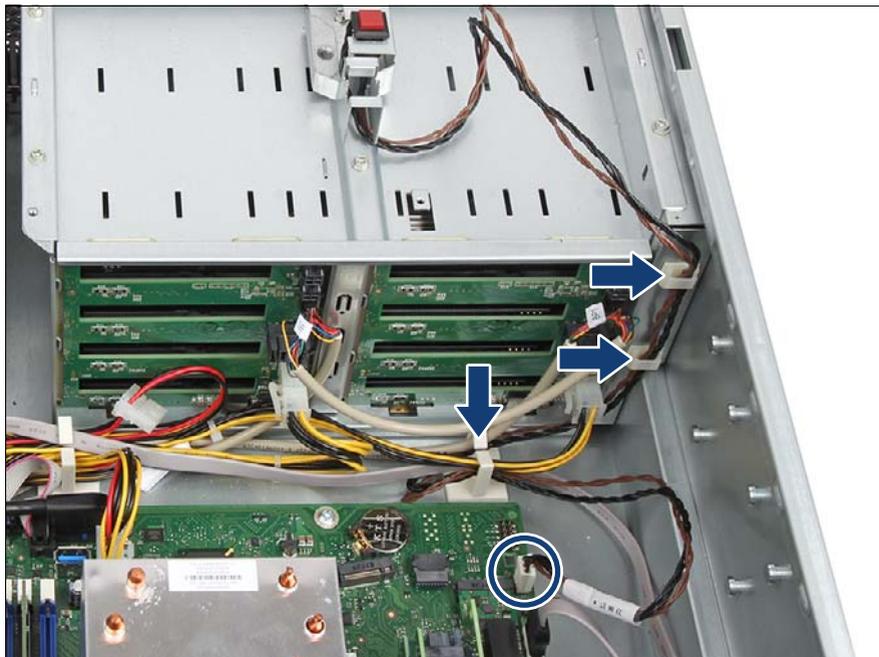


Figure 314: Disconnecting the intrusion switch cable

- ▶ Disconnect the intrusion switch cable from the system board (see circle).
- ▶ Remove the intrusion switch cable from the cable guide and the two cable clamps (see arrows).

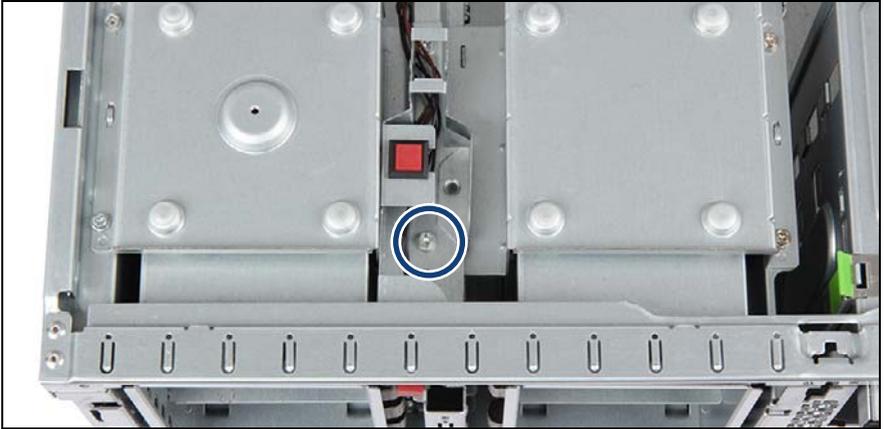


Figure 315: Removing the intrusion switch holder (A)

- ▶ 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:

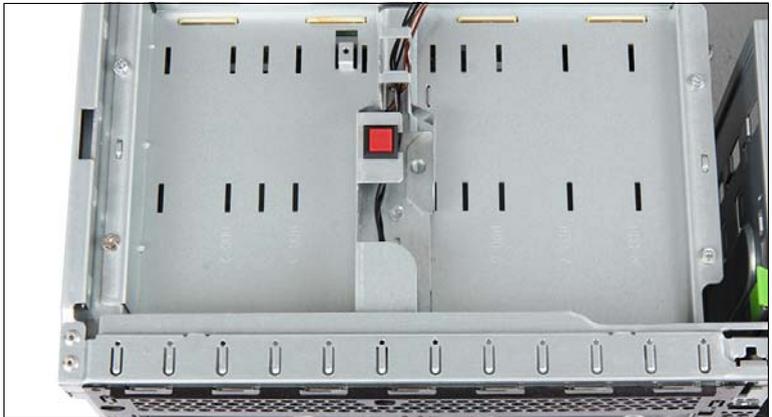


Figure 316: HDD bay top cover in 3.5-inch HDD configurations

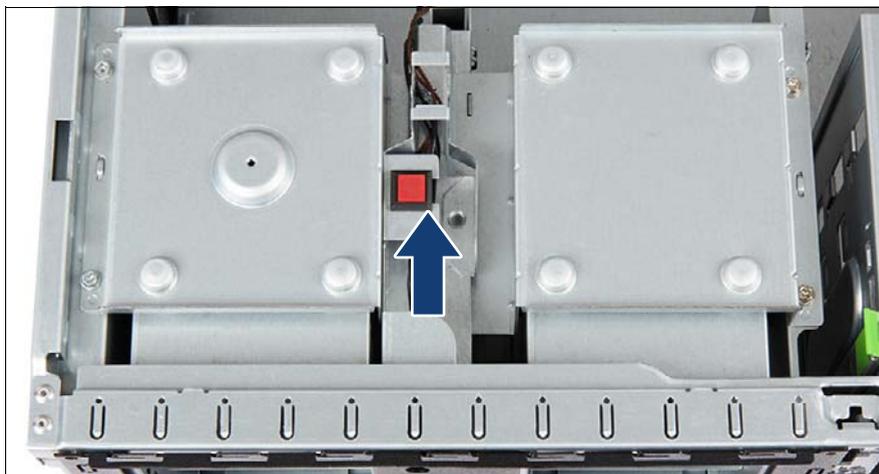


Figure 317: Removing the intrusion switch cable (B)

- ▶ Slide back the intrusion switch holder until it disengages from the HDD bay top cover.
- ▶ Remove the defective intrusion switch holder.

16.1.3 Installing the intrusion switch cable

i The rubber bumper is only necessary in case of rack server configuration.

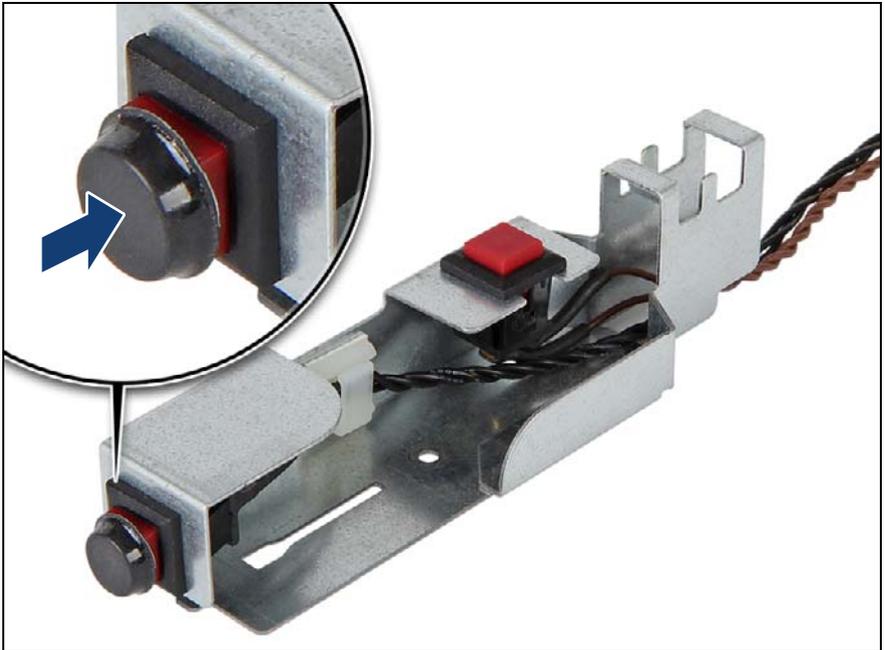


Figure 318: Attaching a rubber bumper to the front intrusion switch

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 floorstand model, please skip this step.

- ▶ Attach a rubber bumper (C26192-Y26-C43) to the front intrusion switch as shown.

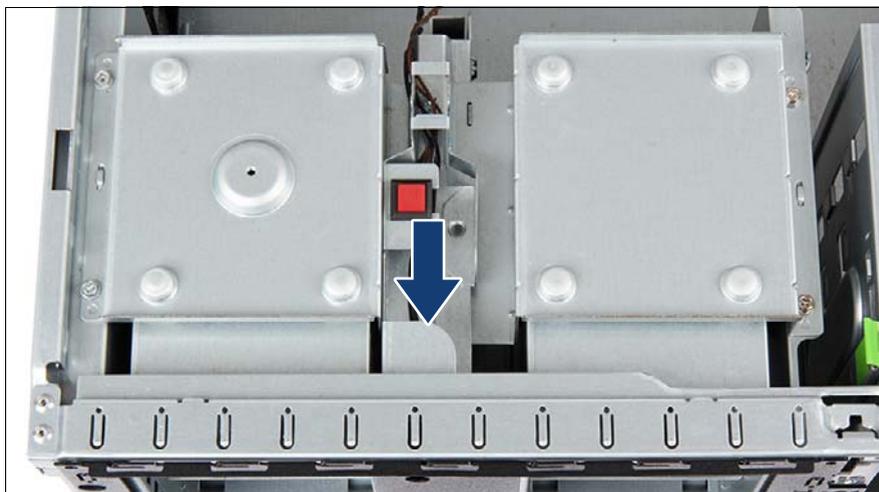


Figure 319: Installing the intrusion switch cable (A)

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

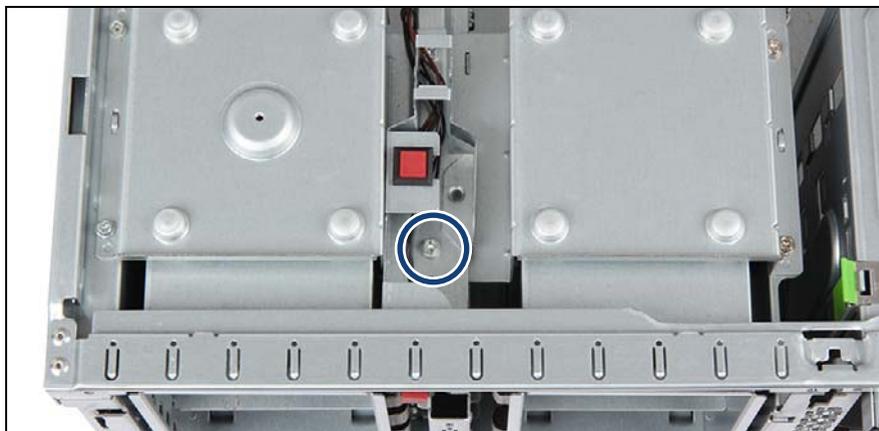


Figure 320: Installing the intrusion switch cable (B)

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

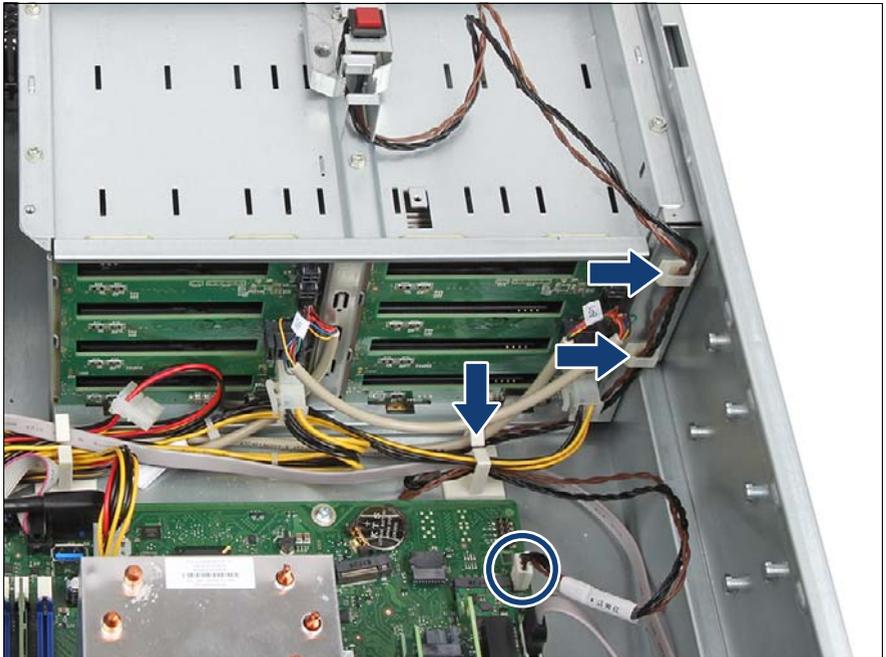


Figure 321: Connecting the intrusion switch cable

- ▶ Run the intrusion switch cable through the cable clamps and the cable guide (see arrows).
- ▶ Connect the intrusion switch cable to the system board (see circle).



CAUTION!

Please make sure that the intrusion switch cable is connected to the right connector "INTR" on the system board, see section ["Onboard connectors" on page 455](#).

Please do not connect the intrusion switch cable to the connector "FAN2" near the "INTR". The system may occur "Sudden Power Down" and "system board defect", if the intrusion switch cable is connected to "FAN2".

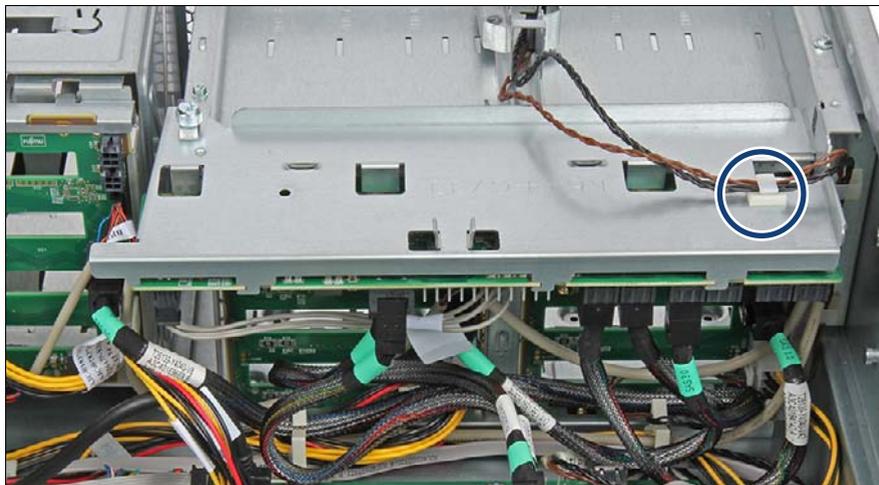


Figure 322: Removing the intrusion switch cable from the cable clamp

- ▶ If applicable, run the intrusion switch cable through the cable clamp on the expander board (see circle).

16.1.4 Concluding steps

- ▶ ["Reassembling" on page 67](#)
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ ["Switching on the server" on page 80](#)

17 Appendix A

17.1 Mechanical overview

17.1.1 Server front

2.5-inch HDDs/SSDs

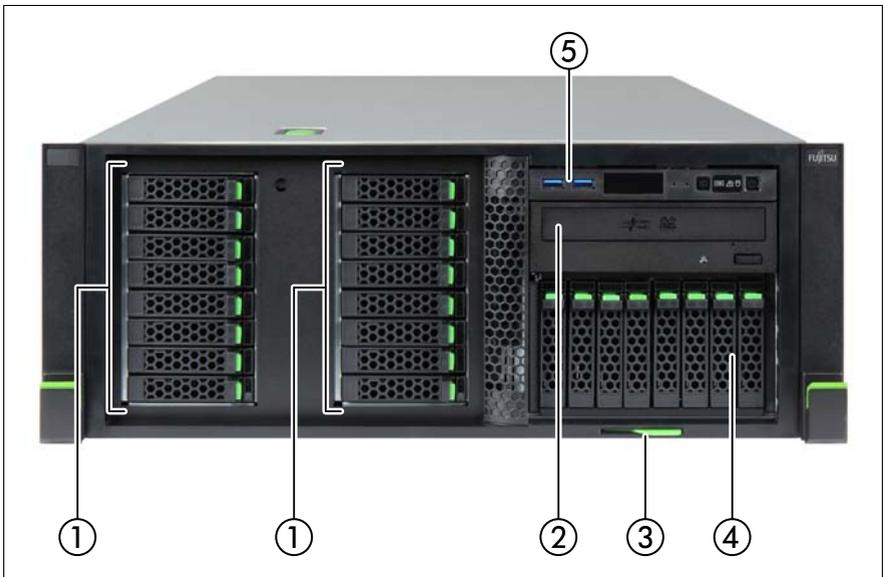


Figure 323: Server front 2.5-inch HDDs/SSDs - example TX1330 M4 rack model

Pos.	Component
1	2.5-inch HDDs//SSDs / dummy modules
2	ODD / 2.5-inch dummy cover
3	ID card
4	8x 2.5-inch HDD extension box / 8x 2.5-inch PCIe SSD extension box
5	Front panel module

3.5-inch HDDs

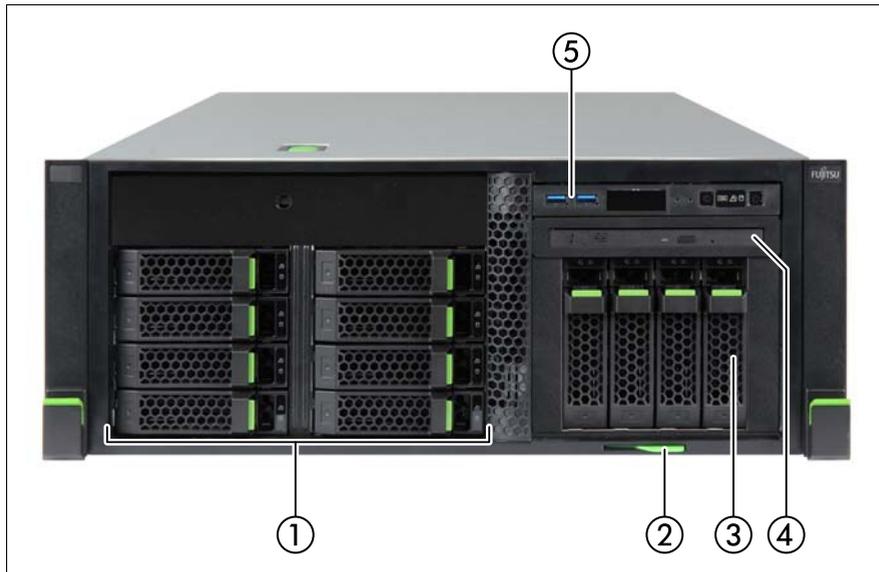


Figure 324: Server front 3.5-inch HDDs - example TX1330 M4 rack model

Pos.	Component
1	3.5-inch HDDs /dummy modules
2	ID card
3	4x 3.5-inch HDD extension box
4	ODD
5	Front panel module

3.5-inch HDDs and 2.5-inch PCIe SSDs

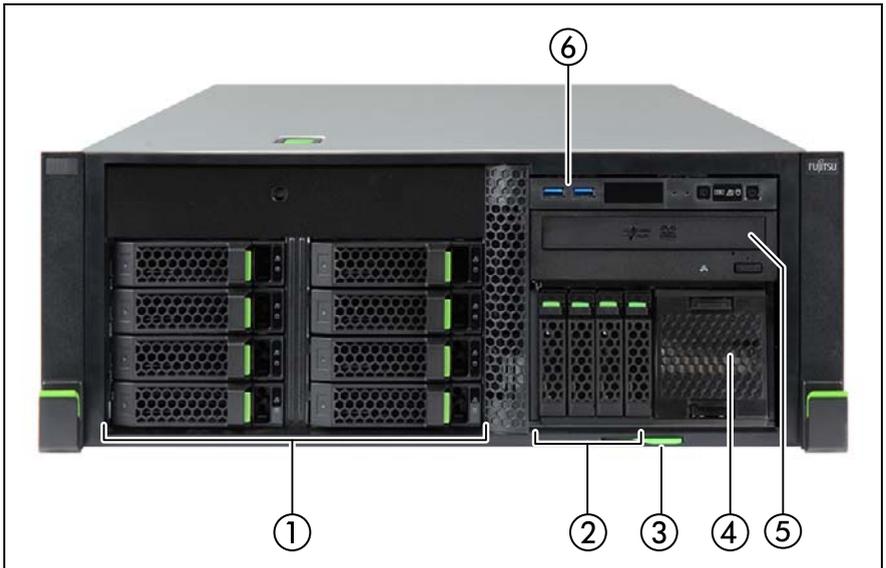


Figure 325: Server front 3.5-inch HDD model with PCIe SSD - example TX1330 M4 rack model

Pos.	Component
1	3.5-inch HDDs / dummy modules
2	4x 2.5-inch PCIe SSD
3	ID card
4	Dummy module
5	ODD
6	Front panel module

17.1.2 Server rear

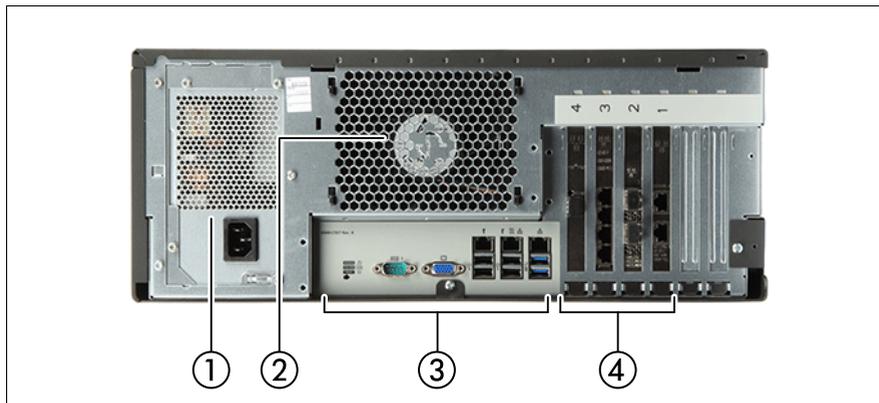


Figure 326: Server rear (example: standard power supply)

1	PSU	3	I/O panel
2	System fan	4	Optional expansion cards

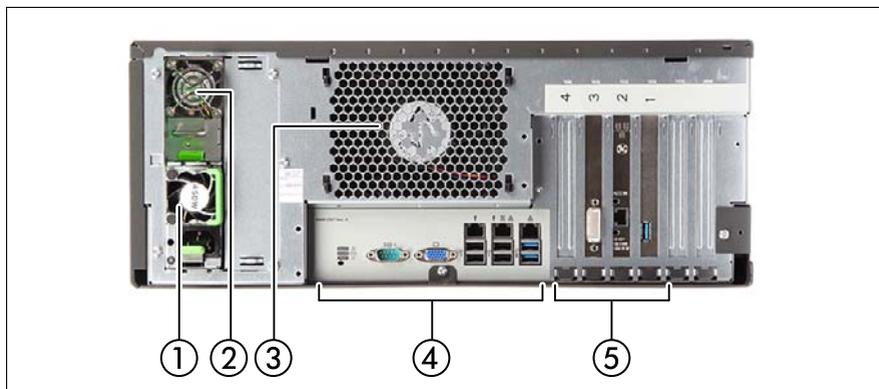


Figure 327: Server rear (example: redundant power supply)

1	PSU	4	I/O panel
2	Fujitsu battery unit (FJBU)	5	Optional expansion cards
3	System fan		

17.1.3 Server interior

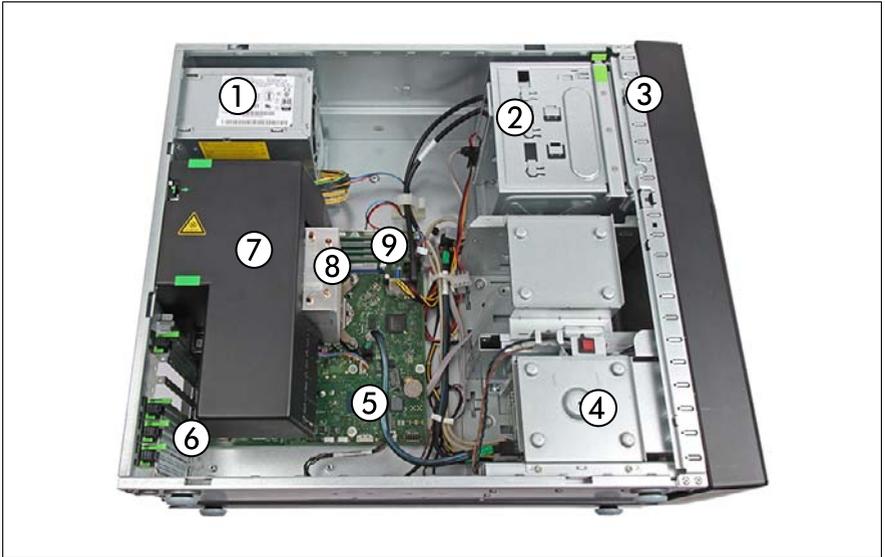


Figure 328: Interior (example: 2.5-inch HDD model, standard power supply)

1	Standard PSU	6	Expansion card slots
2	Accessible drive bay	7	Standard system fan
3	Front panel module bay	8	CPU/heat sink
4	HDD/SSD bays	9	Memory modules
5	System board D3673		



Figure 329: Interior (example: 2.5-inch HDD model, redundant power supply)

1	PSU bays	6	System board D3673
2	Accessible drive bay	7	Expansion card slots
3	Front panel module bay	8	Redundant system fan
4	HDD/SSD bays	9	CPU/heat sink
5	Expander board	10	Memory modules

17.2 Connectors and indicators

17.2.1 Connectors and indicators on the system board

17.2.1.1 Onboard connectors

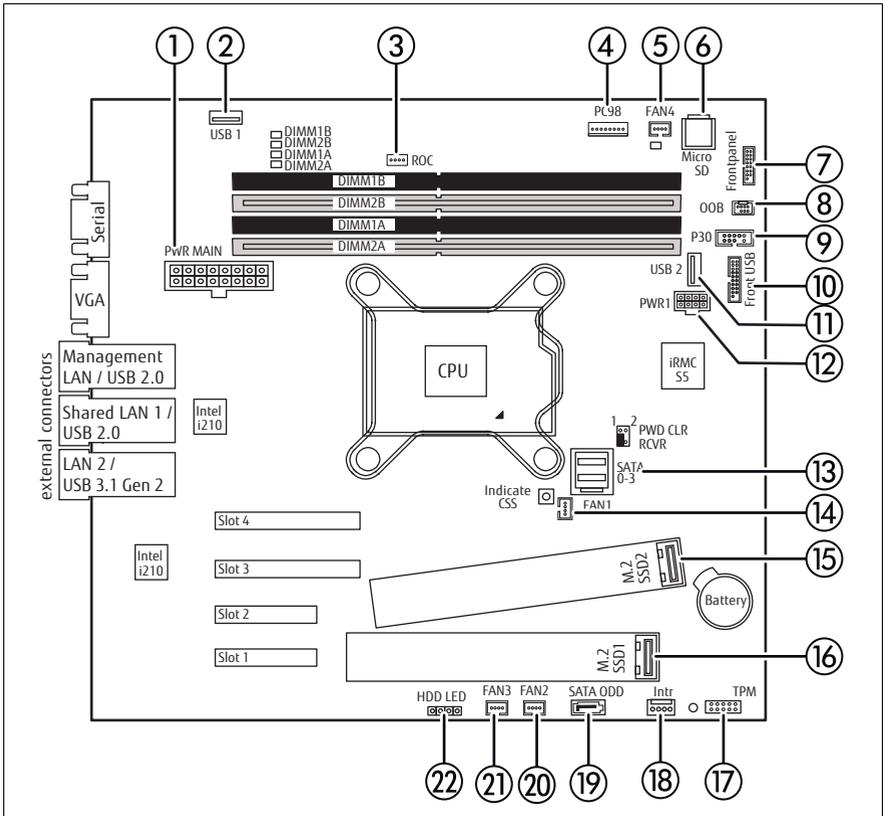


Figure 330: Internal connectors of system board D3673

Appendix A

No.	Print	Description
1	PWR MAIN	PSU connector
2	USB 1	Connector for Dual microSD 64GB Enterprise
3	ROC	Connector for Dual microSD 64GB Enterprise cable
4	PC98	Data cable connector for standard PSU
5	FAN4	Power connector for HDD fan 2 (2.5-inch HDD)
6	MICRO SD	iRMC microSD card
7	FRONTPANEL	Front panel connector
8	OOB	OOB (Out-Of-Band) connector for HDD backplanes
9	P30	PSU connector
10	USB 3.1 FRONT	Connector for front USB
11	USB 2	Connector for RDX drive
12	PWR1	Connector for SATA power cable
13	SATA 0-3	SATA HDD connector
14	FAN1	Connector for CPU fan cable
15	M.2 SSD2	M.2 slot 2
16	M.2 SSD1	M.2 slot 1
17	TPM	Connector for optional TPM
18	INTR	Intrusion switch cable connector (not used)
19	SATA ODD	Connector for SATA ODD
20	FAN2	Power connector for HDD fan 1 (2.5-inch HDD) or HDD fan (3.5-inch HDD)
21	FAN3	(not used)
22	HDD LED	Connector for HDD LED cable (e.g. PRAID EP5x0i)

17.2.1.2 Onboard indicators and controls

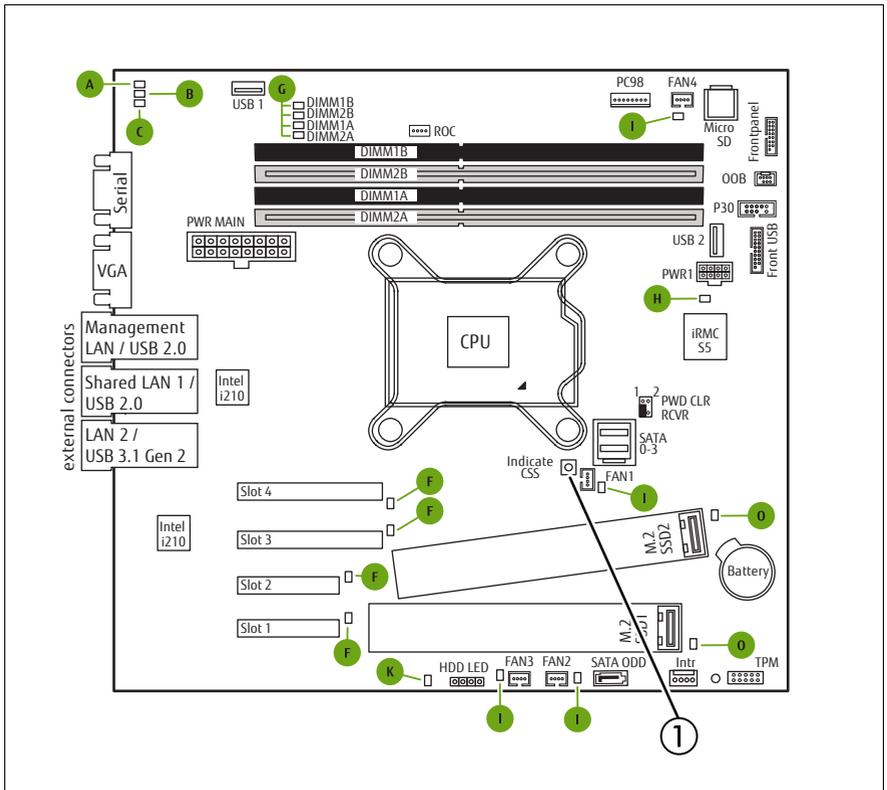


Figure 331: Onboard indicators and Indicate CSS button

1	Indicate CSS button
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Component LEDs

i 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.

If the server has been powered off (power plugs must be disconnected) it is possible to indicate the faulty component by pressing the indicate CSS button.

Appendix A

The LEDs have the following meaning:

Indicator	Status	Description
A - Identification	blue on	The server has been highlighted using ServerView Operations Manager, iRMC web interface or the ID button on the front panel for easy identification.
	blue flashing	The server has been highlighted for easy identification using the iRMC (AVR) with disabled local VGA output.
B - CSS (Customer Self Service)	off	No critical event detected (CSS component).
	orange on	Prefailure event detected (CSS component).
	orange flashing	CSS component failure detected.
C - GEL (Global Error LED)	off	No critical event detected (non CSS component).
	orange on	Prefailure event detected (non CSS component).
	orange flashing	Non CSS component failure detected. Possible causes: <ul style="list-style-type: none"> – System is out of the specified temperature range – Defective sensor – CPU error – Error detected by server management software
F - Controller	off	Controller okay
	orange on	Controller failure (PCI card installed on riser card)
G - Memory	off	memory module running
	orange on	memory module failure
H - iRMC	off	iRMC S5 inactive
	green flashing	iRMC S5 okay
I - Fans	off	system fan running
	orange on	system fan failure
K - Standby Power	orange on	All standby voltages ok
O - M.2 SSD	orange on	M.2 SSD faulty

17.2.2 Server front

17.2.2.1 Indicators on the front panel

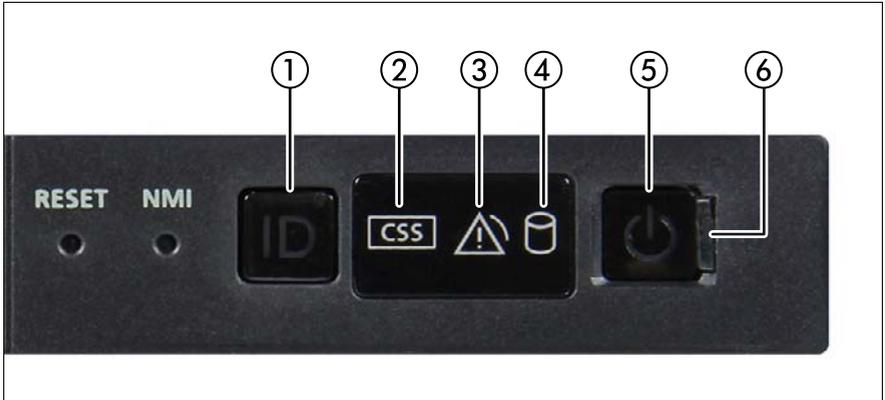


Figure 332: Indicators on the front panel

Pos.	Label	Indicator	Status	Description
1	ID	ID indicator, see also "iRMC-related status signals" on page 461	blue on	The server has been highlighted using ServerView Operations Manager, iRMC web interface or the ID button on the front panel for easy identification
			flashing blue	The server has been highlighted for easy identification using the iRMC with disabled local VGA output.
2	CSS	CSS indicator	off	No critical event detected (CSS component).
			orange on	Preailure event detected (CSS component). For HDDs/SSDs, see also "HDD preailure detection" on page 462.
			flashing orange	CSS component failure detected.

Appendix A

Pos.	Label	Indicator	Status	Description
3		Global Error indicator, see also "iRMC-related status signals" on page 461	off	No critical event detected (non CSS component).
			orange on	Prefailure event detected (non CSS component).
			flashing orange	Non CSS component failure detected. Possible causes: <ul style="list-style-type: none"> – System is out of the specified temperature range – Defective sensor – CPU error – Error detected by server management software
4		HDD/SSD activity indicator	flashing green	Data access in progress.
5		Power-on indicator	off	The server is switched off.
			green on	<ul style="list-style-type: none"> – The server has been switched on but Power Cycle Delay settings delay it from turning on for a specified time. – The server is switched on and operating normally.
			flashing green slowly	The BMC firmware is starting up after the server has been connected to the mains.

Pos.	Label	Indicator	Status	Description
6		AC connected indicator	green on	<ul style="list-style-type: none"> The server is switched off and connected to the mains (standby mode). The server has been switched on but Power Cycle Delay settings delay it from turning on for a specified time. <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-top: 10px;"> i After connecting the server to the mains, it will take about 60 seconds until the server will enter standby mode and can be switched on. </div>
			off	<ul style="list-style-type: none"> The server is switched off and not connected to the mains. The server is switched on and operating normally.

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.

 For further information, see section ["Updating or recovering the BIOS and the iRMC S5"](#) on page 102.

HDD prefailure detection

Depending on your hardware configuration HDD prefailure detection will be supported.

The requirements are:

- iRMC S5 Firmware 1.2 or later
- supported OOB RAID system

17.2.2.2 Indicator on the ODD

i ODDs may have an indicator or not.

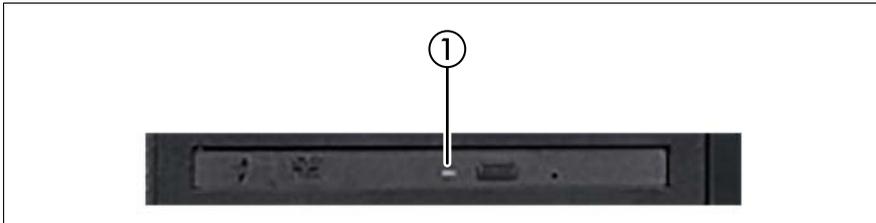


Figure 333: Example: Indicator on the ODD

Pos.	Indicator	Status	Description
1	Activity indicator	off	The ODD is inactive.
		green on	The storage medium is being accessed.

17.2.2.3 Indicators on the hot-plug HDD/SSD module

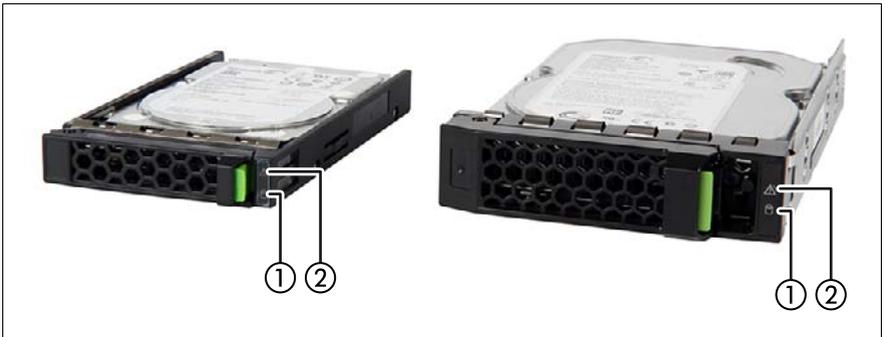


Figure 334: Indicators on the hot-plug HDD/SSD module

Pos.	Label	Indicator	Status	Description
1		Access indicator	off	The HDD/SSD is inactive.
			green on	The HDD/SSD being accessed
2		Error indicator	off	No HDD/SSD error detected.
			orange on	An HDD/SSD error has been detected. Possible causes: <ul style="list-style-type: none"> – The drive is defective and needs replacing. – A RAID rebuild process has failed. – The HDD/SSD module has not been inserted correctly.
			flashing orange slowly	HDD/SSD RAID rebuild is in progress. Data is being restored after replacing a drive that has been combined into a RAID array.

17.2.3 Server rear

17.2.3.1 Connectors on the I/O panel

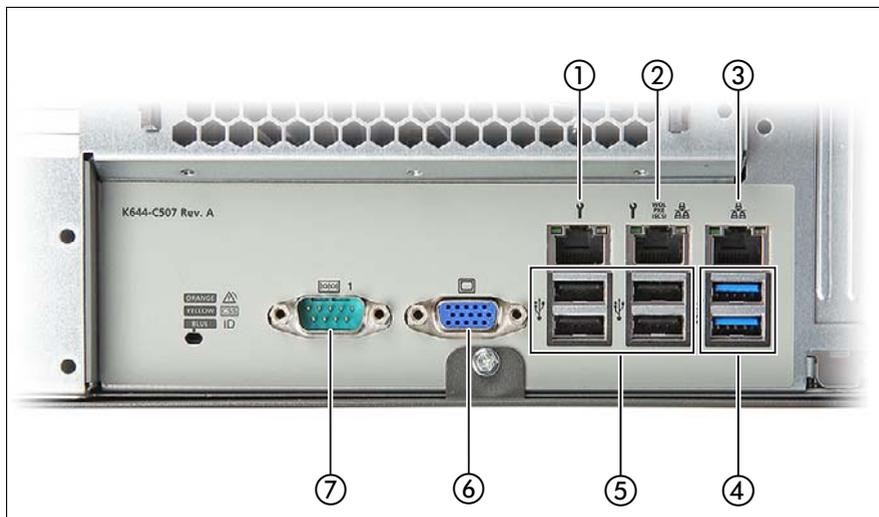


Figure 335: Connectors on the I/O panel

1	Management LAN connector for iRMC server management function	5	4x USB 2.0 connectors
2	Shared LAN connector (LAN1)	6	Video connector (VGA)
3	Standard LAN connector (LAN2)	7	Serial connector COM1*
4	2x USB 3.1 Gen 2 connectors		

* The serial connector can be used as the standard interface or for communication with iRMC.

i Depending on the BIOS settings, the shared LAN connector may also be used as a management LAN connector. For more information, see the corresponding BIOS Setup Utility reference manual.

i Some of the devices connected require special software (e.g. drivers) (see documentation for the connected device).

17.2.3.2 Indicators on the I/O panel

ID, CSS and Global Error indicators



Figure 336: ID, CSS and Global Error indicators

Pos.	Label	Indicator	Status	Description
1	ID	ID indicator, see also "iRMC-related status signals" on page 466	blue on	The server has been highlighted using ServerView Operations Manager, iRMC web frontend or the ID button on the front panel for easy identification.
			blue flashing	The server has been highlighted for easy identification using the iRMC (AVR) with disabled local VGA output.
	CSS	CSS indicator	off	No critical event detected (CSS component).
			orange on	Prefailure event detected (CSS component).
			orange flashing	CSS component failure detected.

Pos.	Label	Indicator	Status	Description
		Global Error indicator, see also "iRMC-related status signals" on page 466	off	No critical event detected (non CSS component).
			orange on	Prefailure event detected (non CSS component).
			orange flashing	Non CSS component failure detected. Possible causes: <ul style="list-style-type: none"> – System is out of the specified range – Defective sensor – CPU error – Error detected by server management software



Note on CSS and Global Error indicators on the I/O panel:

If CSS and Global Error indicators are located in the same place on the I/O panel of the server, also check the indicators on the front panel to determine if a CSS or Global Error event has been detected.



For more information on detected errors, see the System Event Log or use the ServerView Operations Manager or iRMC web interface.

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.



For further information see section ["Updating or recovering the BIOS and the iRMC S5" on page 102.](#)

HDD prefailure detection

Depending on your hardware configuration HDD prefailure detection will be supported.

The requirements are:

- iRMC S5 Firmware 1.2 or later
- supported OOB RAID system

LAN indicators

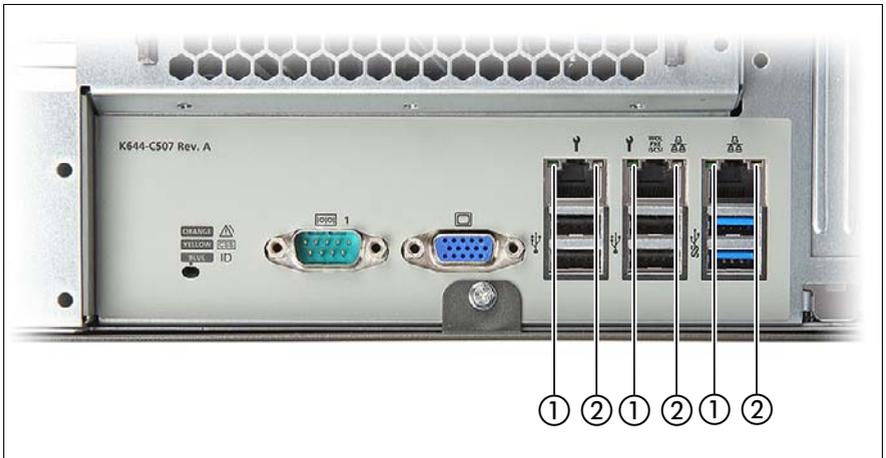


Figure 337: LAN indicators

Pos.	Indicator	Status	Description
1	LAN link/transfer indicator	green on	A LAN connection has been established.
		off	LAN is not connected.
		flashing green	LAN data transfer is in progress.
2	LAN speed indicator	yellow on	Data traffic at a transfer rate of 1 Gbit/s.
		green on	Data traffic at a transfer rate of 100 Mbit/s.
		off	Data traffic at a transfer rate of 10 Mbit/s.

Indication of LAN connection supporting Energy Efficient Ethernet (EEE mode)

To configure the EEE mode, it is necessary that the on board LAN or an add in LAN card supports this mode and the connected switch supports this mode as well.

Pos.	Indicator	Status	Description
1	LAN link/transfer indicator	short flashing green 3x, then off	A LAN connection has been established (1 Gbit or 100 Mbit) and EEE mode is active
2	LAN speed indicator	short flashing yellow 1x, then 2 seconds off green off	Data traffic at a transfer rate of 1 Gbit/s.
		short flashing green 1x, then 2 seconds off yellow off	Data traffic at a transfer rate of 100 Mbit/s

Table 5: LAN indicators if EEE mode is active



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 S5) and is prepared for operation with the Remote Management. Optionally LAN connector 1 can also be used for iRMC S5 server management.

17.2.3.3 Indicator on hot-plug PSU



Figure 338: Indicator on hot-plug PSU

Pos.	Indicator	Status	Description
1	PSU status indicator	flashing green	The server is switched off, but mains voltage is present (standby mode).
		green on	The server is switched on and operating properly.
		flashing orange	An overload has been detected. The PSU is still running, but failure might be imminent.
		orange on	An PSU failure has been detected. Possible causes: <ul style="list-style-type: none"> – Over/under voltage – Overheating – Fan failure

17.2.3.4 Indicator on FJBU

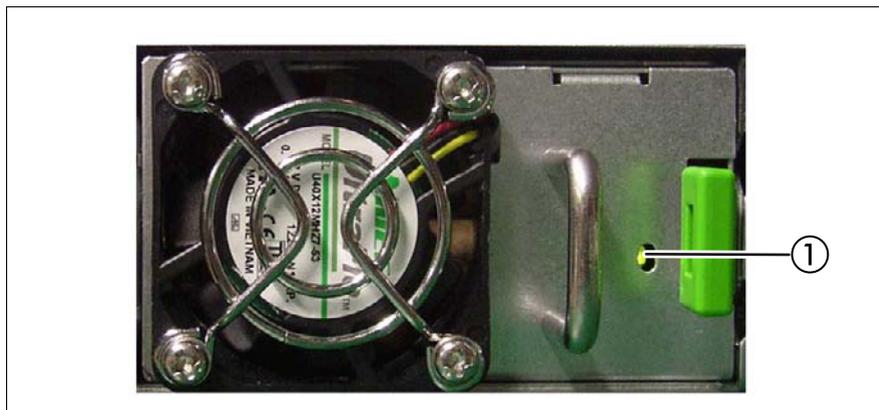


Figure 339: Indicator on FJBU

Pos.	Indicator	Status	Description
1	FJBU status indicator	flashing green	The battery unit is charging.
		flashing green slowly	The battery unit is discharging.
		green on	The battery unit is fully charged.
		flashing orange	A battery unit failure has been detected. Possible causes: – Capacity failure – Overheating
		orange on	A general battery failure has occurred.

17.2.4 Acoustic indicators

PEI Beep Codes

Pre-EFI Initialization (PEI) - memory Initialization (bootblock)

# of Beep	Description	Action
1	Memory not installed	<ul style="list-style-type: none"> ▶ Check if the memory module is installed. ▶ Check if the memory module is installed correctly.
2	Recovery started	<p>Recovery procedure is initialized by jumper settings on the system board and announced with two beep.</p> <p>This is only an information.</p>
4	Recovery failed	<ul style="list-style-type: none"> ▶ Restart the recovery procedure again. ▶ If the same beep code sounds again, replace the system board.

DXE Beep Codes

Driver Execution Environment (DXE) - main hardware Initialization (POST)

# of Beep	Description	Action
1	Invalid password	<ul style="list-style-type: none"> ▶ Check for the correct password and try again. <p>Make sure that the caps lock key is deactivated.</p>
5	No Console Input devices ¹ or Output devices ² are found	<p>Bootling will continue.</p> <p>¹ Serial console redirection is considered a console output device if enabled.</p> <p>² Serial console redirection is considered a console input device if enabled.</p> <p>This beep code is only an information.</p>

Appendix A

# of Beep	Description	Action
6	Flash update is failed	<p>A processing bar and an error message is displayed on the screen.</p> <p>This beep code is only an information.</p>
8	Platform PCI resource requirements cannot be met	<ul style="list-style-type: none">▶ Check the connection of your expansion card whether it is installed in a correct slot.▶ Enter the BIOS setup menu.▶ Open the <i>Advanced</i> menu.▶ Check in the <i>PCI Subsystem Settings</i> the parameter <i>Above 4G Decoding</i>. This parameter must be set to <i>Enabled</i>.

17.3 Onboard settings

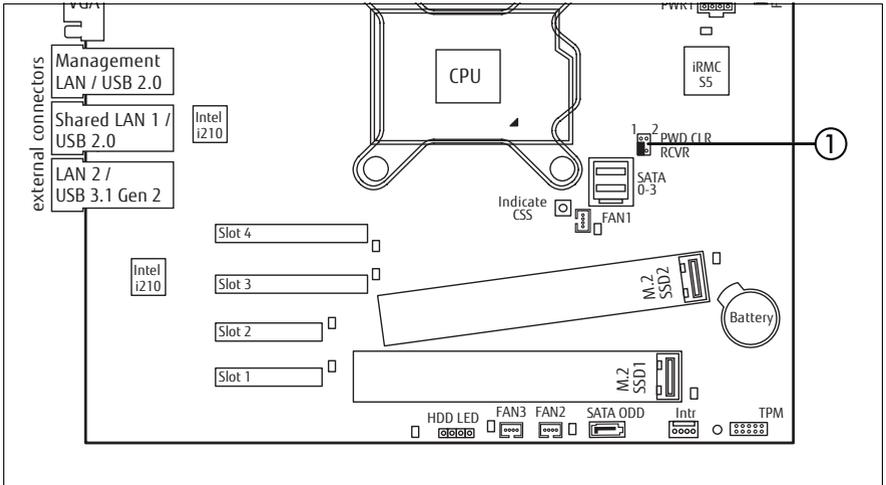


Figure 340: Onboard settings on system board D3673

Setting	Status	Description
1	PWD CLR / BIOS-RCVR	<p>Default (place to keep the jumper)</p>
		<p>Recovery BIOS enabled</p>
		<p>Password Clear enabled</p> <p>This jumper setting will permanently delete the current BIOS password and apply default BIOS settings.</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
System board	no TPM, expansion cards or M.2 SSD installed
1 CPU with CPU heat sink	installed in CPU1
1 memory module	installed in DIMM slot 1A
Front panel module	
PSU	Standard PSU or hot-plug PSU installed in bay PSU 1

Table 6: Minimum startup configuration - components

Cable	Notes
Front panel cable	connected to the system board
Power cable	

Table 7: Minimum startup configuration - cables

- ▶ ["Shutting down the server" on page 53](#)
- ▶ ["Disconnecting the power cord" on page 54](#)
- ▶ Take the system down to its minimum startup configuration.
- ▶ ["Connecting the power cord" on page 78](#)
- ▶ Connect a display to the server.
- ▶ ["Switching on the server" on page 80](#)



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!

18 Appendix B

The following documents are available in this appendix:

- "Cable plan for FUJITSU Server PRIMERGY TX1330 M4 Reference Manual"
- "List of Released Adapters incl. Installation sequence and priority"
- "List of all used screws for PRIMERGY Servers - Assembled in Germany and Japan"

Cable Plan for FUJITSU Server PRIMERGY TX1330 M4

Reference Manual

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OoBCabling2Bpl_with_NVMe	7
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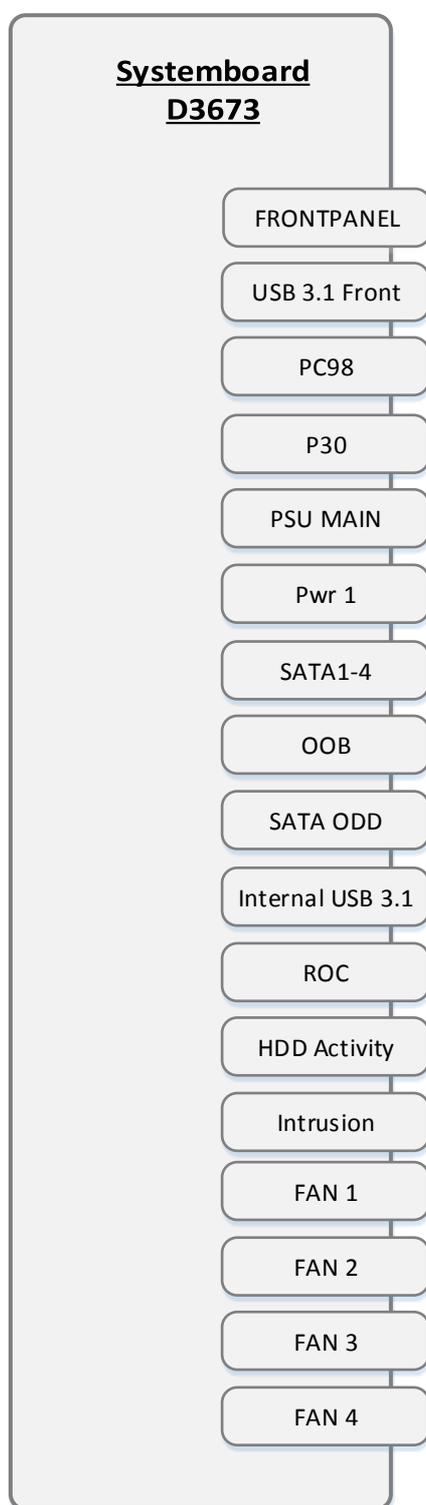
List of used cables

Ref.	Name	Number	Routing
Basic			
C1	CBL_FRONTANEL	T26139-Y4015-V301	BasicCabling3Bpl
C2	CBL_FRONT_USB	T26139-Y3999-V503	BasicCabling3Bpl
C3	CBL_MoBo_DVD	T26139-Y3928-V205	BasicCabling3Bpl
C4	CBL_Intruison_Sw	T26139-Y3922-V121	BasicCabling3Bpl
C5	CBL_MoBo_DRV_Pwr	T26139-Y4012-V503	PowerCablingStdPSU; PowerCablingRedPSU2Bpl; PowerCablingRedPSU3Bpl; PowerCablingRedPSU2BPLwithNVME; PowerCablingRedPSU3BPLwithNVME
C19	CBL_SAS_320	T26139-Y4040-V7	SATA_1x4_3.5; SATA_1x8_2.5; SAS_1x4_3.5_EP4x0i; SAS_2x4_3.5_EP4x0i; SAS_1x4_3.5_EP5x0i; SAS_2x4_3.5_EP5x0i; SAS_EP4x0i_Exp; SAS_EP5x0i_Exp; SAS_1x8_2.5_EP4x0i; SAS_1x8_2.5_EP5x0i
Red PSU			
C10	CBL_PDB_MoBo_Pwr	T26139-Y3952-V611	PowerCablingRedPSU2Bpl; PowerCablingRedPSU3Bpl; PowerCablingRedPSU2BPLwithNVME; PowerCablingRedPSU3BPLwithNVME
C11	CBL_PDB_MoBo_Sig	T26139-Y3956-V2	PowerCablingRedPSU2Bpl; PowerCablingRedPSU3Bpl; PowerCablingRedPSU2BPLwithNVME; PowerCablingRedPSU3BPLwithNVME
C12	CBL_PWR_12P_2x6P	T26139-Y3939-V207	PowerCablingRedPSU2Bpl; PowerCablingRedPSU3Bpl; PowerCablingRedPSU2BPLwithNVME; PowerCablingRedPSU3BPLwithNVME
C13	CBL_PWR_6P_2x4P	T26139-Y4041-V4	PowerCablingRedPSU2BPLwithNVME; PowerCablingRedPSU3BPLwithNVME
Accessible drives			
C21	CBL_SAS_Dev_PwSig_700	T26139-Y4044-V2	AccDrv_LTO_RiserPCI32; AccDrv_LTO_RDX
C22	CBL_USB30_Dev	T26139-Y4039-A80	AccDrv_LTO_RDX
C23	CBL_OOB_4Bpl	T26139-Y4015-V607	BasicCabling3Bpl; OOBCabling2Bpl_with_NVMe; OOBCabling3Bpl_with_NVMe
C24	CBL_I2C_ROC_330	T26139-Y4018-V8	Dual_Micro_SD_64GB_Enterprise
C25	CBL_PWR_4P_2x4P	T26139-Y3959-V307	AccDrv_LTO_RiserPCI32
C26			

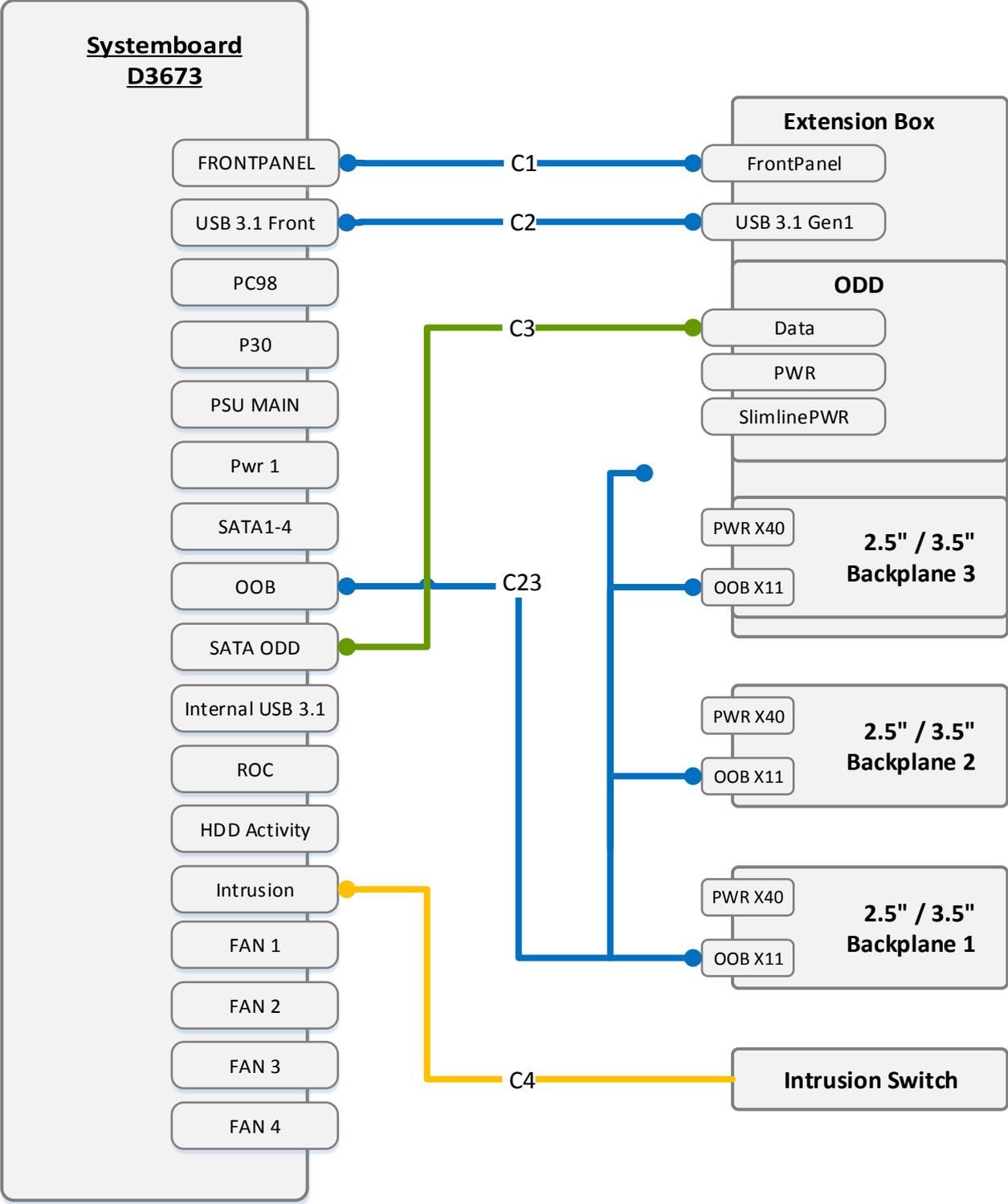
List of used cables (continuation)

Ref.	Name	Number	Routing
Basic			
C32	CBL_FBU03_550	T26139-Y4031-V102	SAS_1x4_3.5_EP4x0i; SAS_2x4_3.5_EP4x0i; SAS_EP4x0i_Exp; SAS_1x8_2.5_EP4x0i
C33	CBL_BPL_RisCrd_Pwr	T26139-Y4029-V202	Option RiserSlot, AccDrv_LTO_RiserPCI32
C34	CBL_SAS_Exp_Pwr	T26139-Y3959-V354	SAS_Exp_3x4_3.5; SAS_Exp_2x8_2.5; SAS_Exp_3x8_2.5;
C35	CBL_SAS_250	T26139-Y4040-V42	SAS_Exp_3x4_3.5; SAS_Exp_2x8_2.5; SAS_Exp_3x8_2.5;
C36	CBL_SAS_470	T26139-Y4040-V8	SAS_Exp_3x4_3.5; SAS_Exp_3x8_2.5;
C37	CBL_HDD_Signal	If one EP5x0i installed => Cable C41 If two EP5x0i installed => Cable C42	SAS_1x4_3.5_EP5x0i; SAS_2x4_3.5_EP5x0i; SAS_1x8_2.5_EP5x0i SAS_EP5x0i_Exp; EP5x0i_NVMe_ExtensionBox;
C38	CBL_FBU345_550	T26139-Y4031-V107	SAS_1x4_3.5_EP5x0i; SAS_2x4_3.5_EP5x0i; SAS_1x8_2.5_EP5x0i SAS_EP5x0i_Exp; EP5x0i_NVMe_ExtensionBox;
C39	CBL_HOST-BP_430	T26139-Y4050-V12	EP5x0i_NVMe_ExtensionBox;
C40	CBL_HOST-BP_530	T26139-Y4050-V13	EP5x0i_NVMe_ExtensionBox;
C41	CBL_HDD_Signal_220	T26139-Y2361-V103	SAS_1x4_3.5_EP5x0i; SAS_2x4_3.5_EP5x0i; SAS_1x8_2.5_EP5x0i SAS_EP5x0i_Exp; EP5x0i_NVMe_ExtensionBox
C42	CBL_HDD_SIGL_2X450	T26139-Y2361-V105	SAS_1x4_3.5_EP5x0i; SAS_2x4_3.5_EP5x0i; SAS_1x8_2.5_EP5x0i SAS_EP5x0i_Exp; EP5x0i_NVMe_ExtensionBox

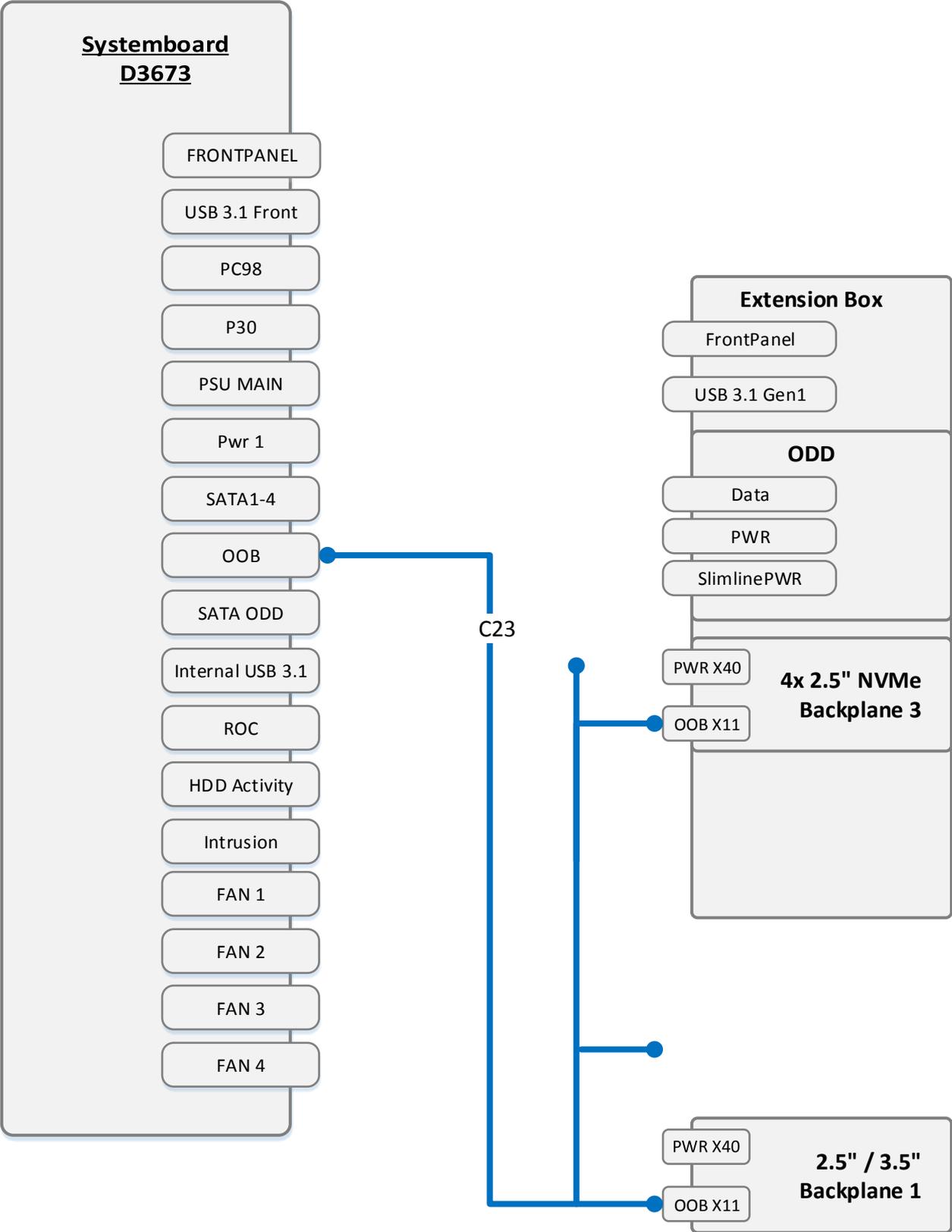
SYS Board Connector D3673



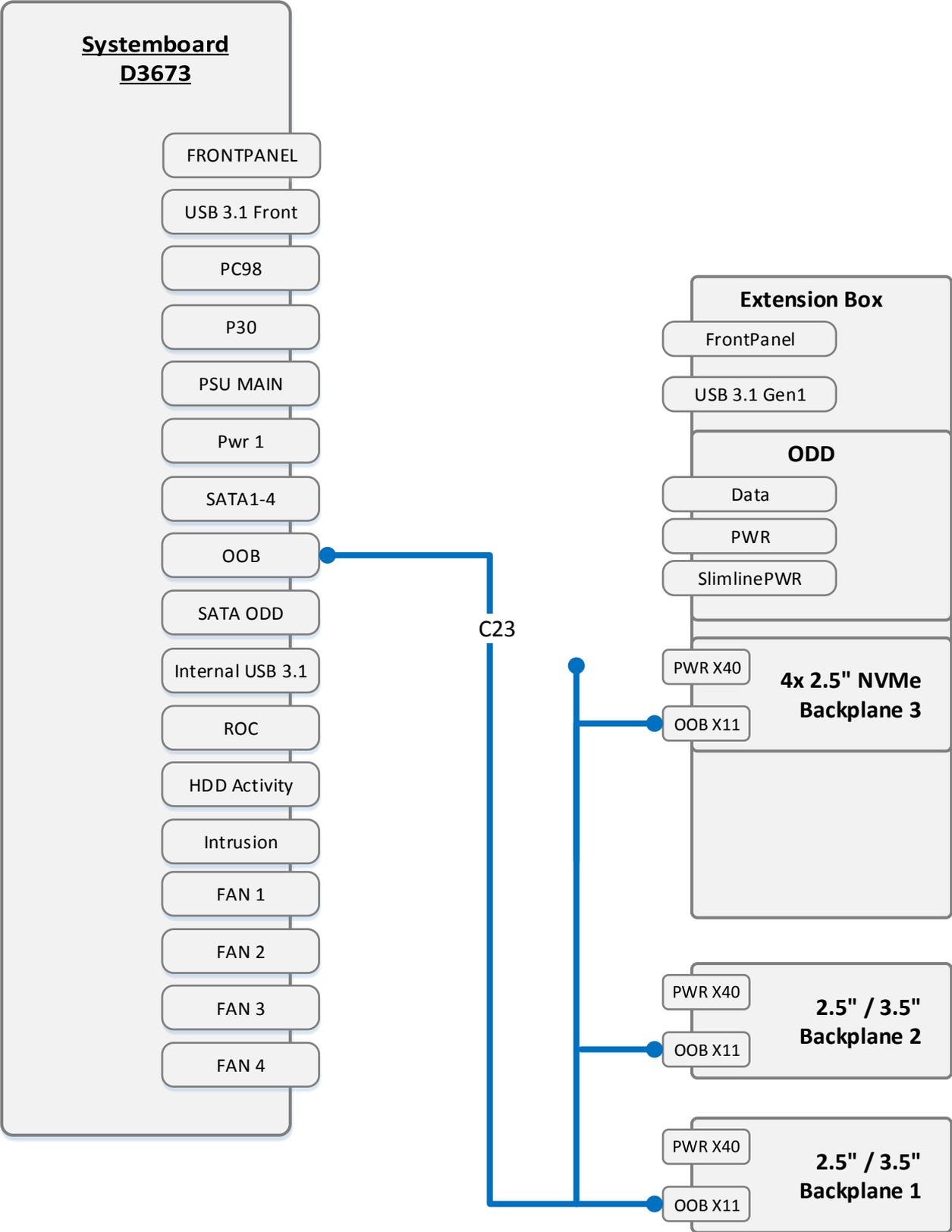
BasicCabling3Bpl



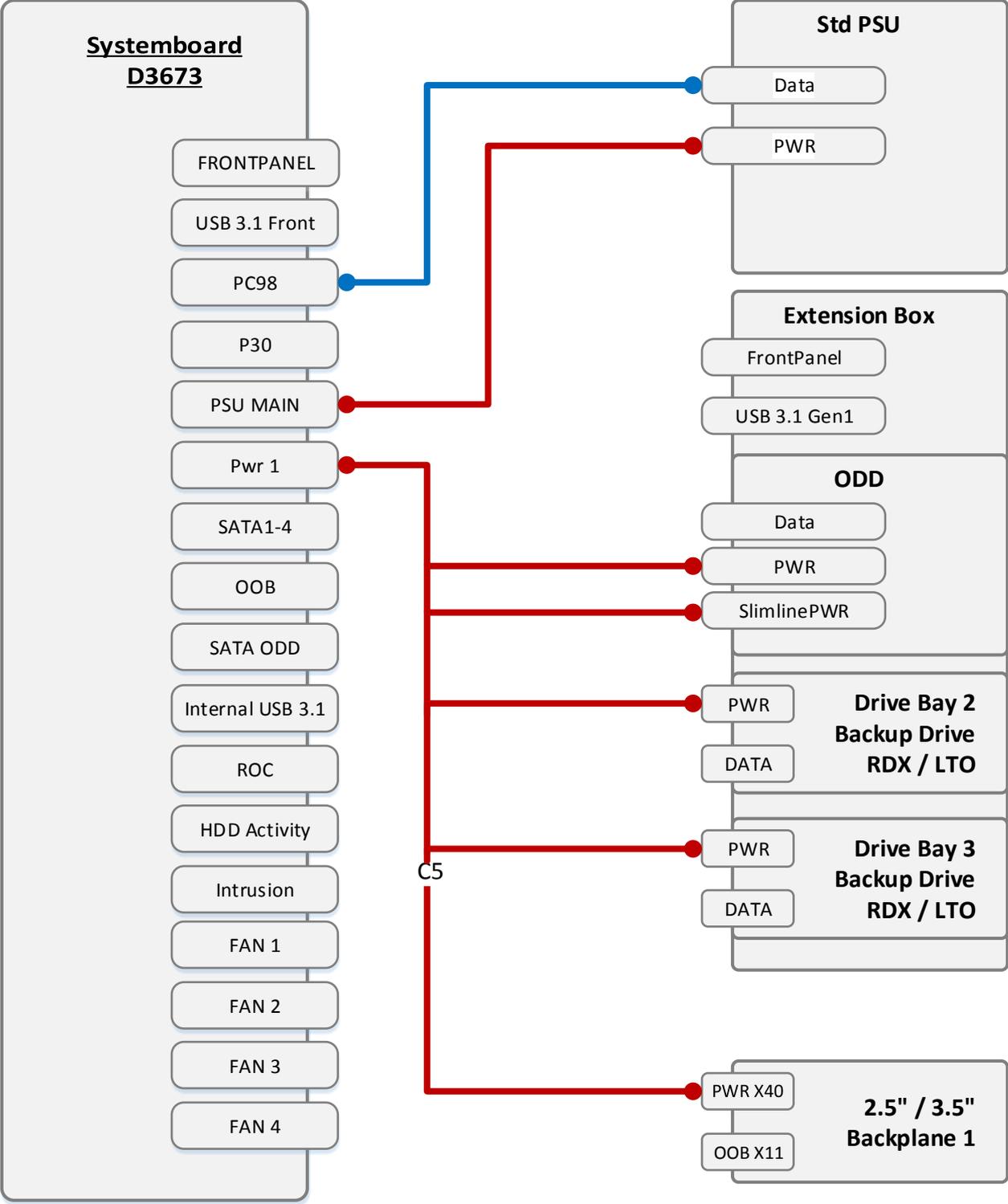
OOB Cabling 2Bpl_with_NVMe



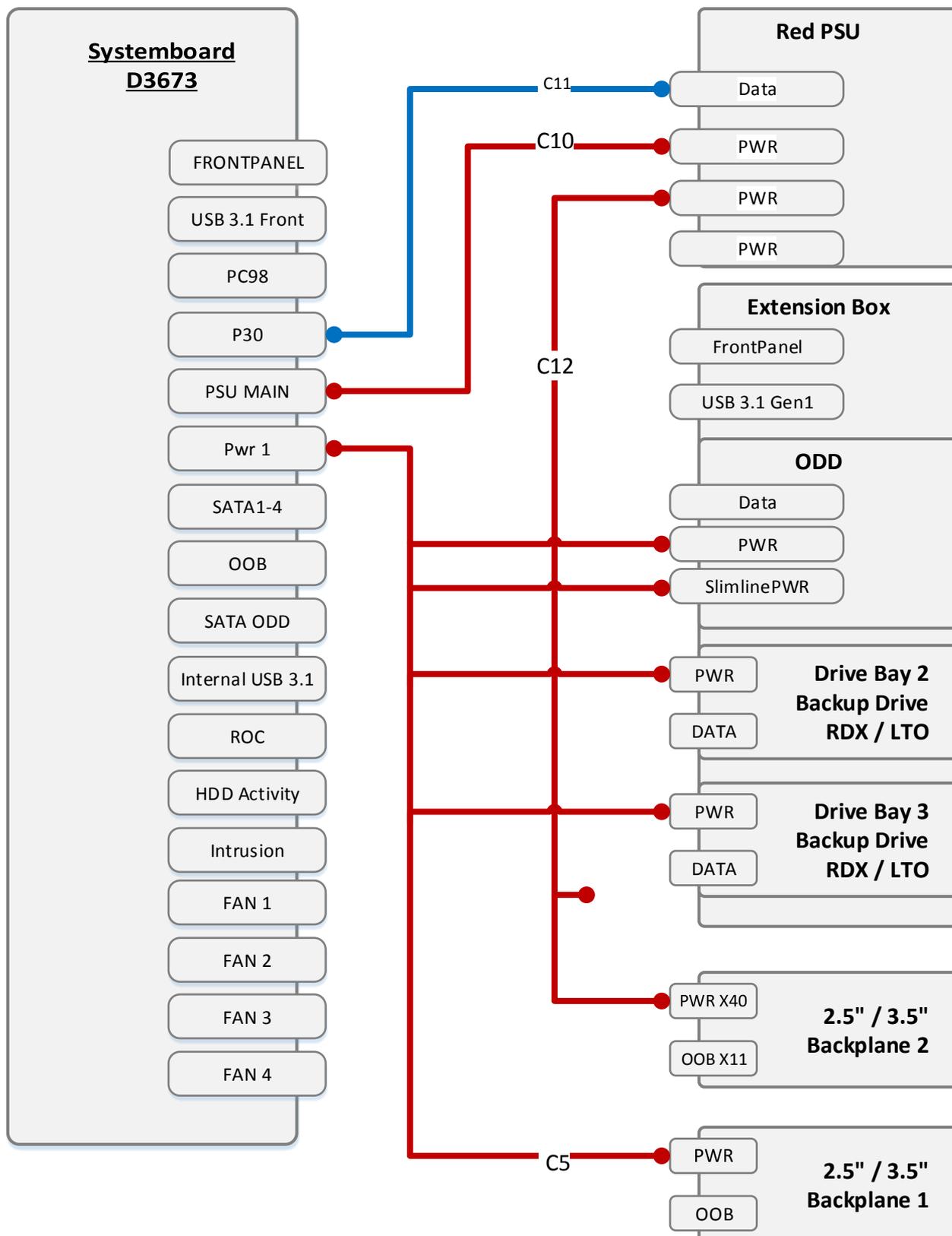
OOB Cabling 3Bpl_with_NVMe



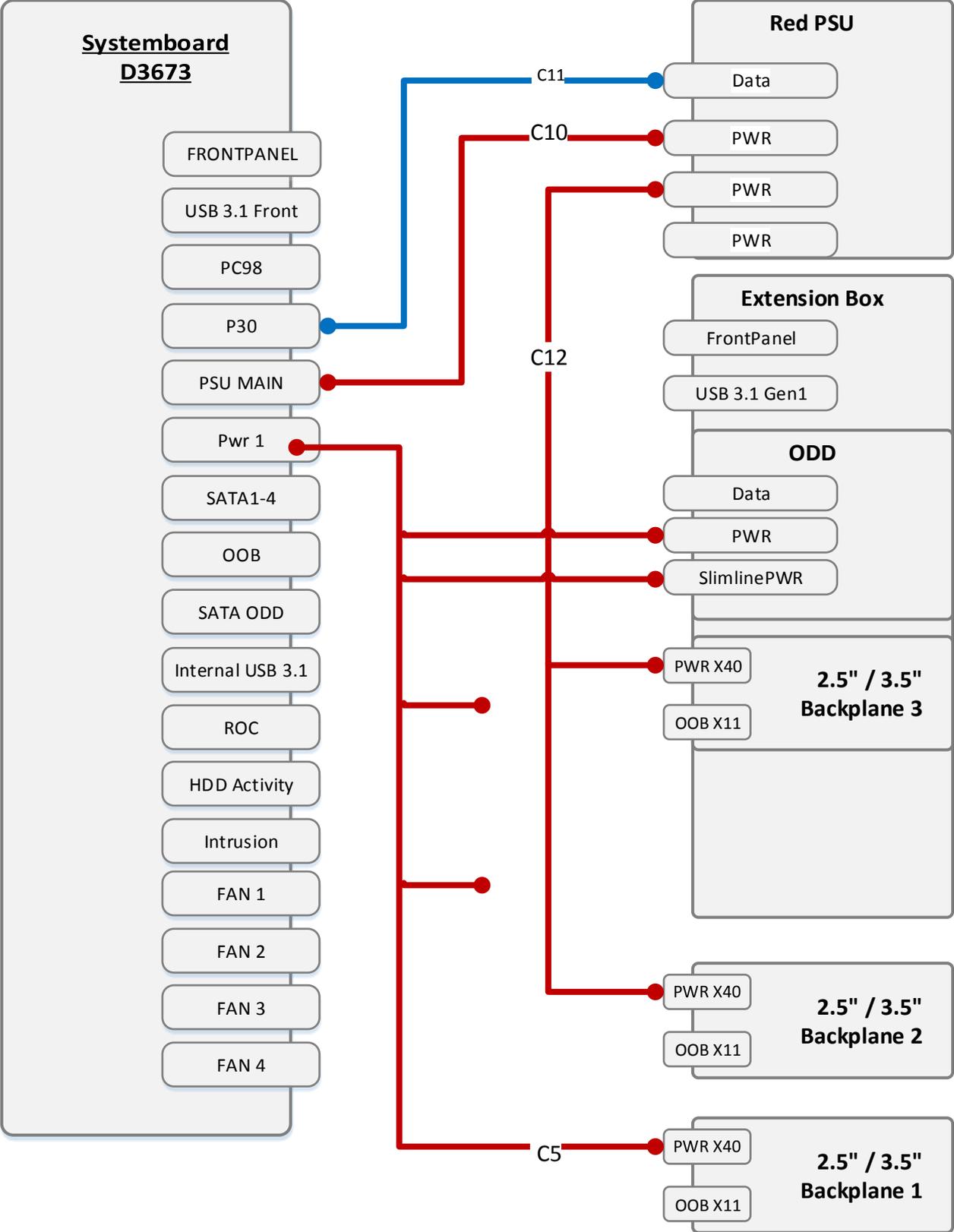
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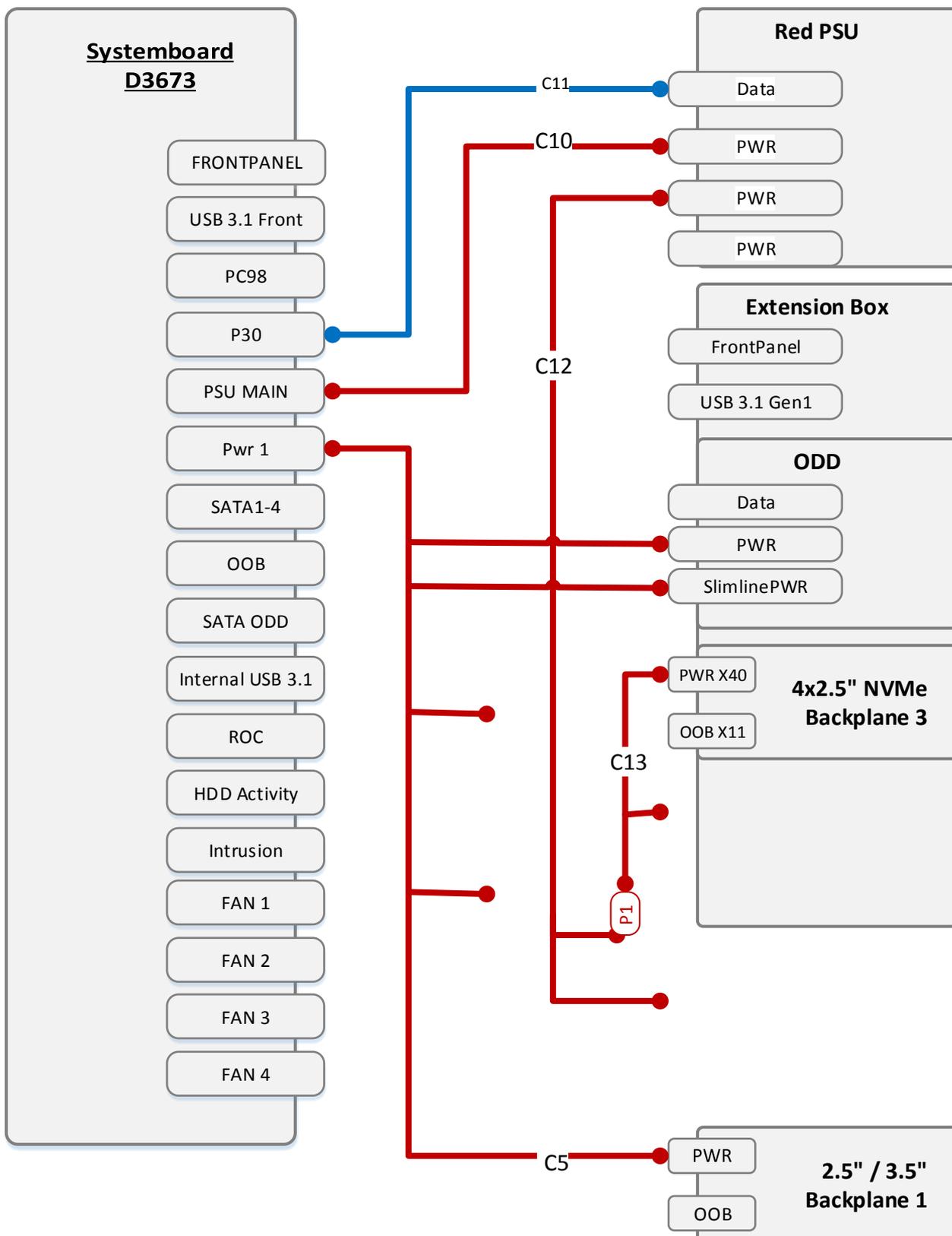
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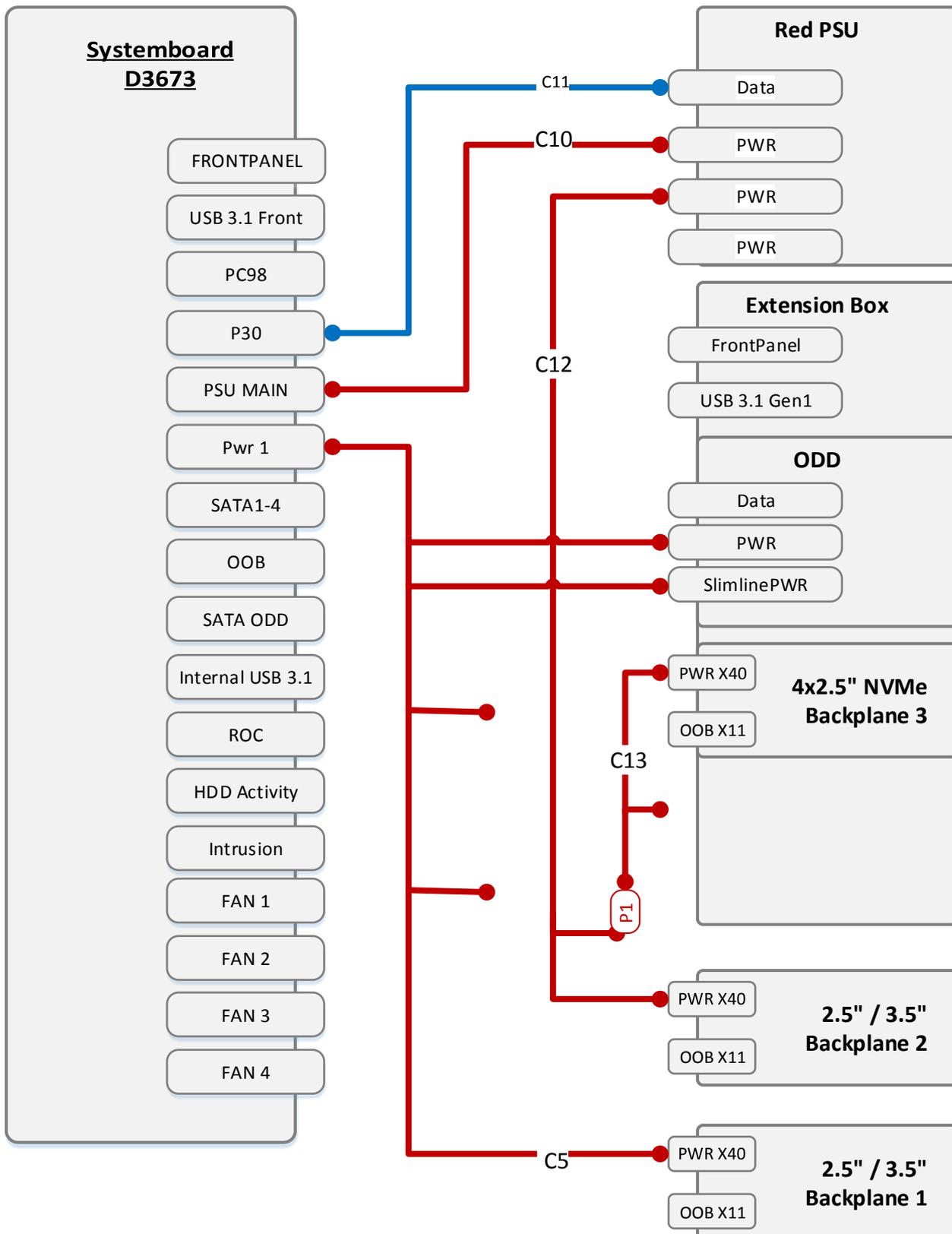
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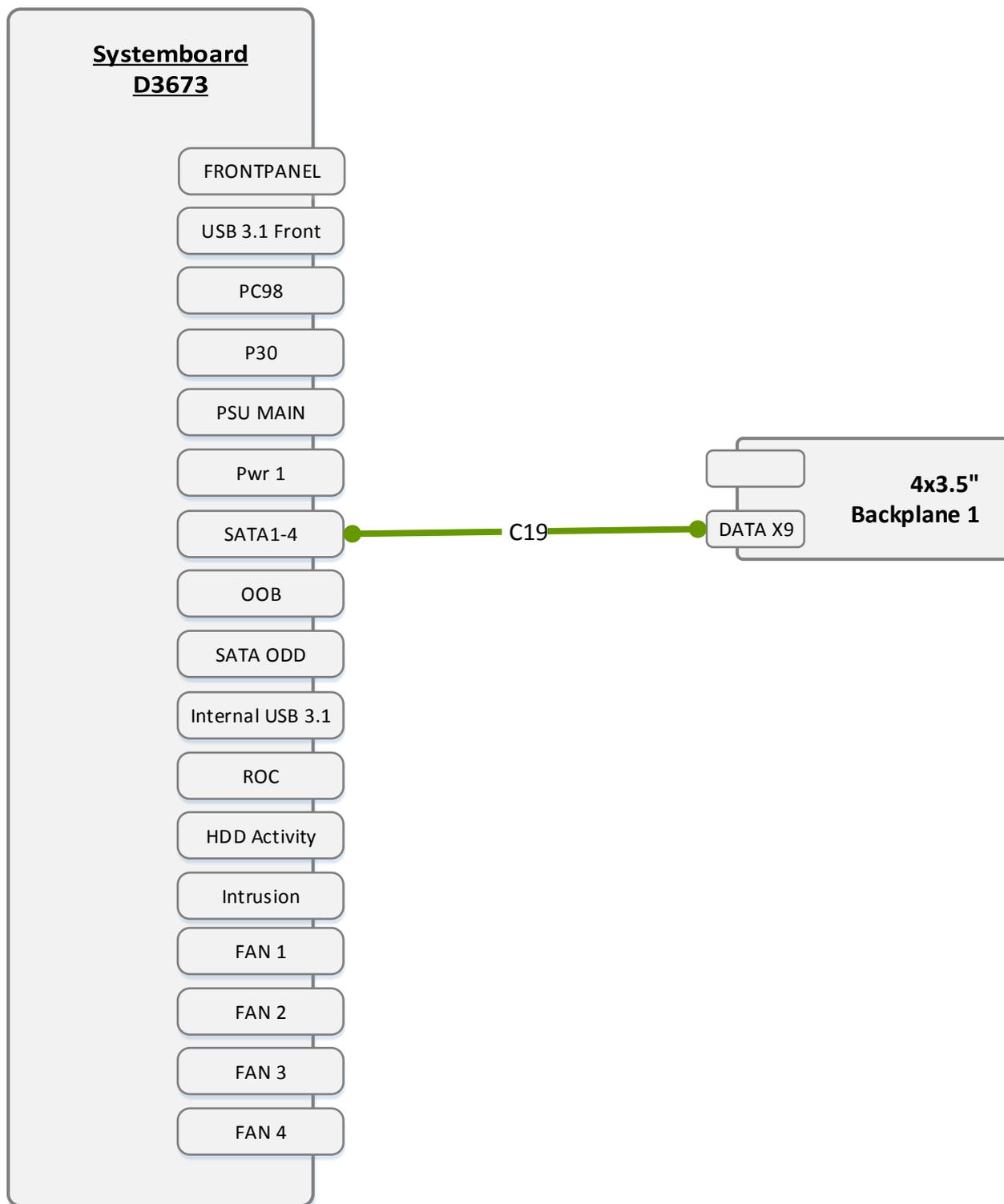
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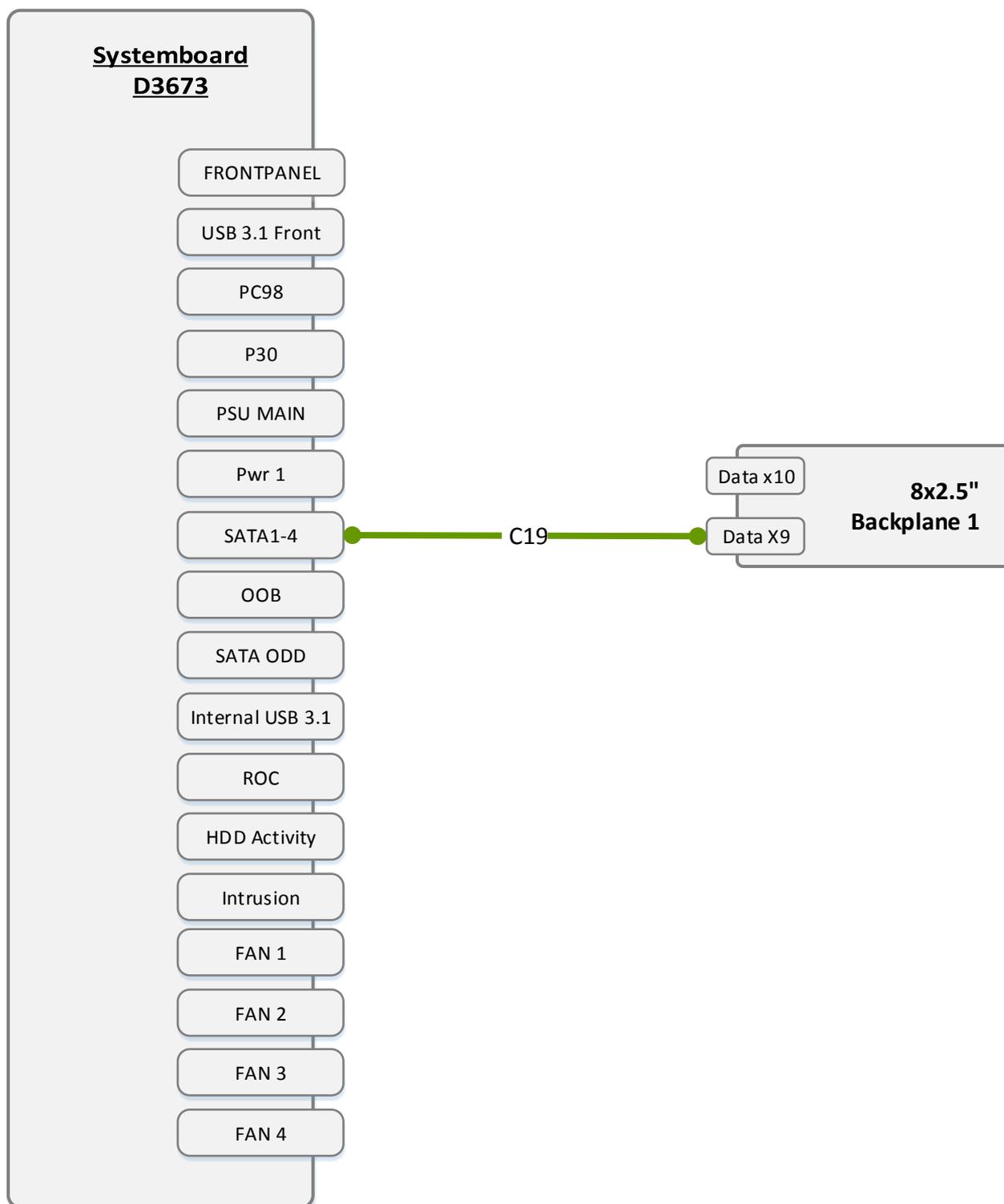
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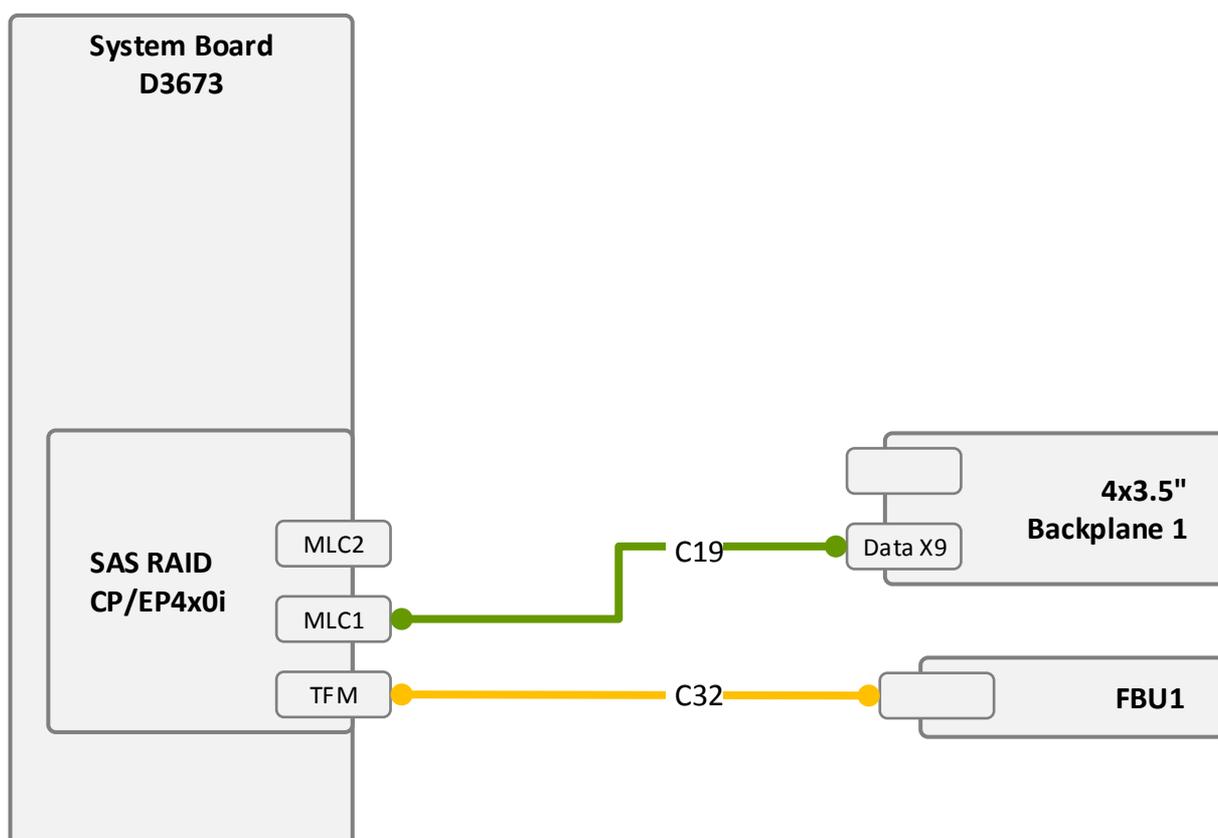
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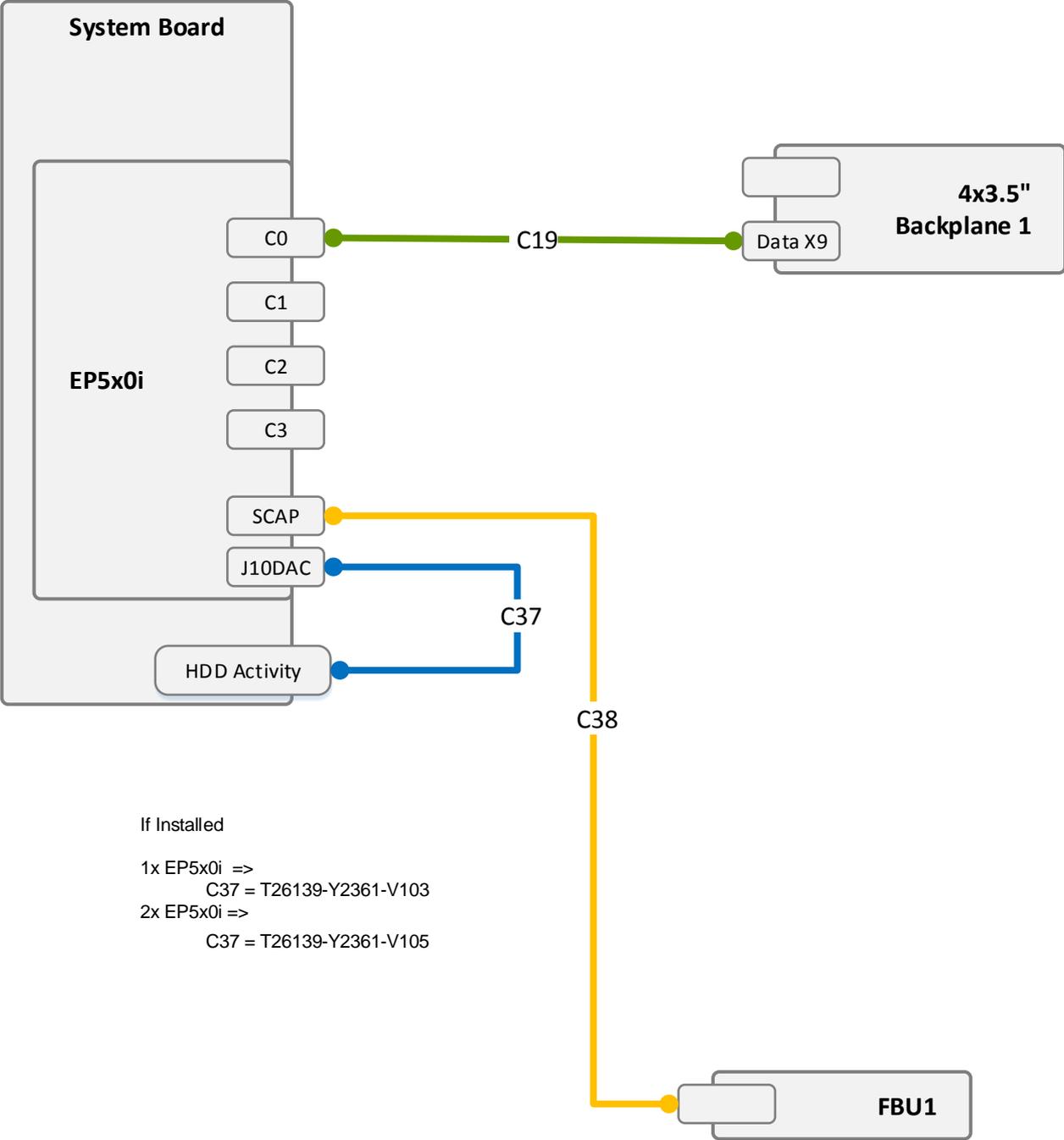
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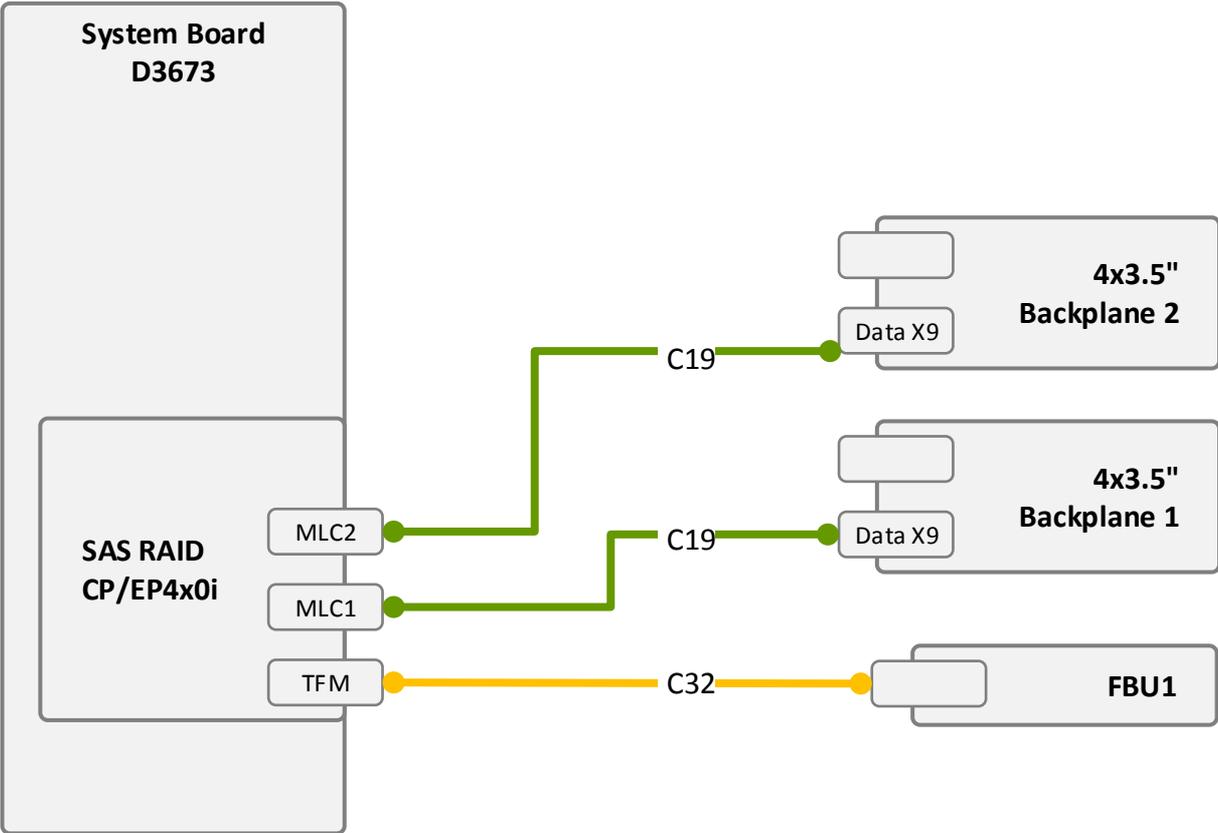
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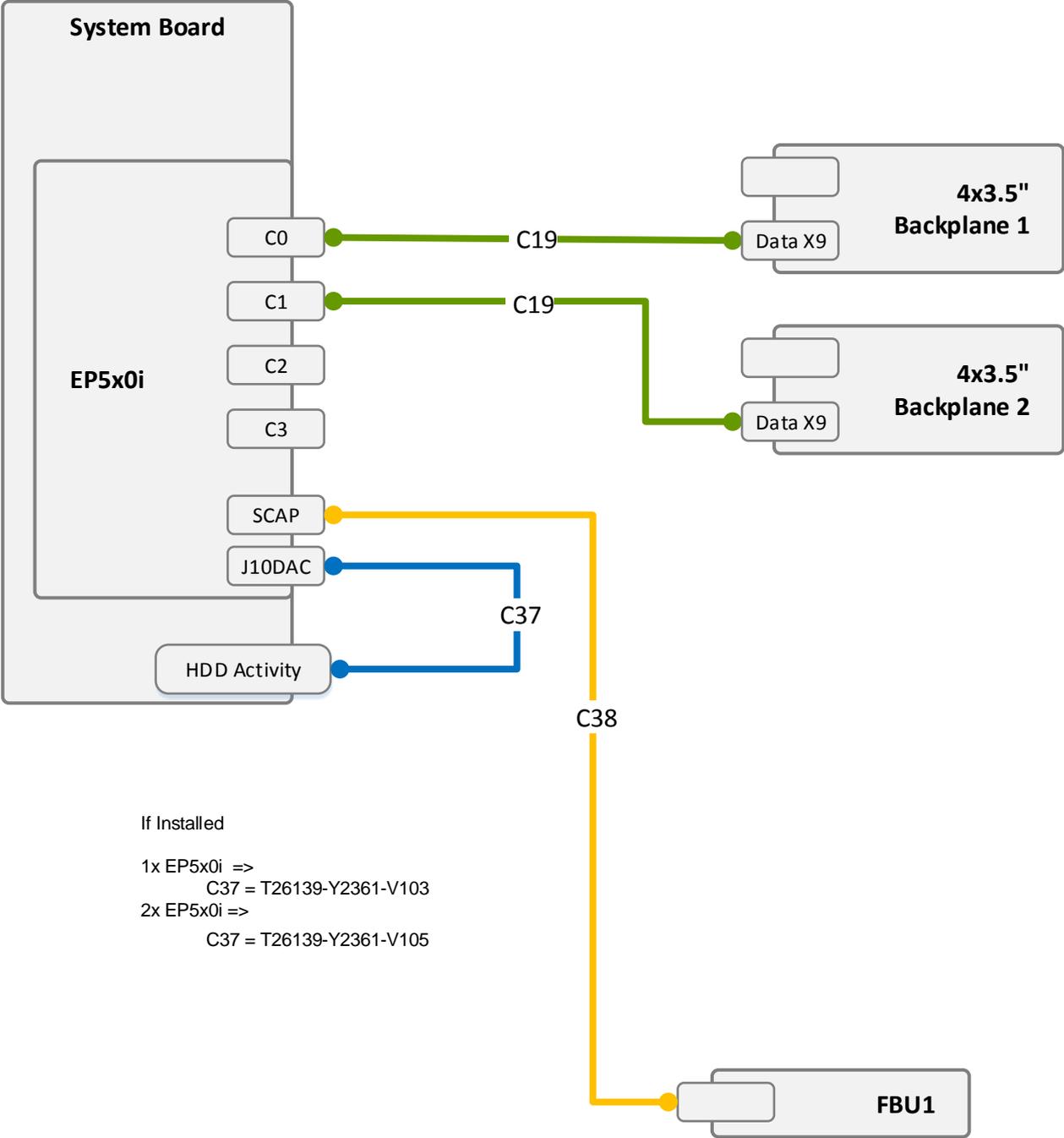
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SAS_2x4_3.5_CPEP4x0i

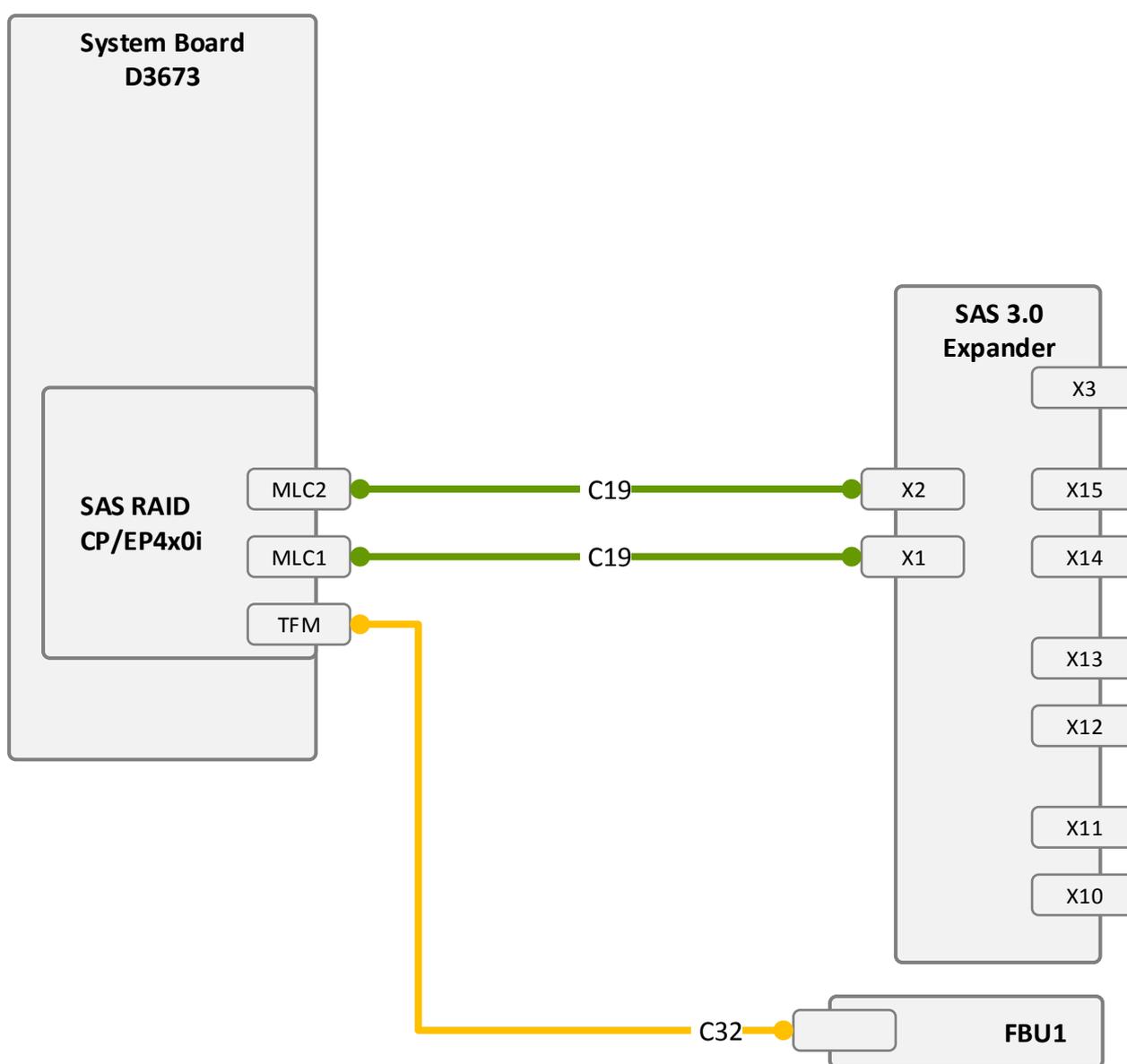


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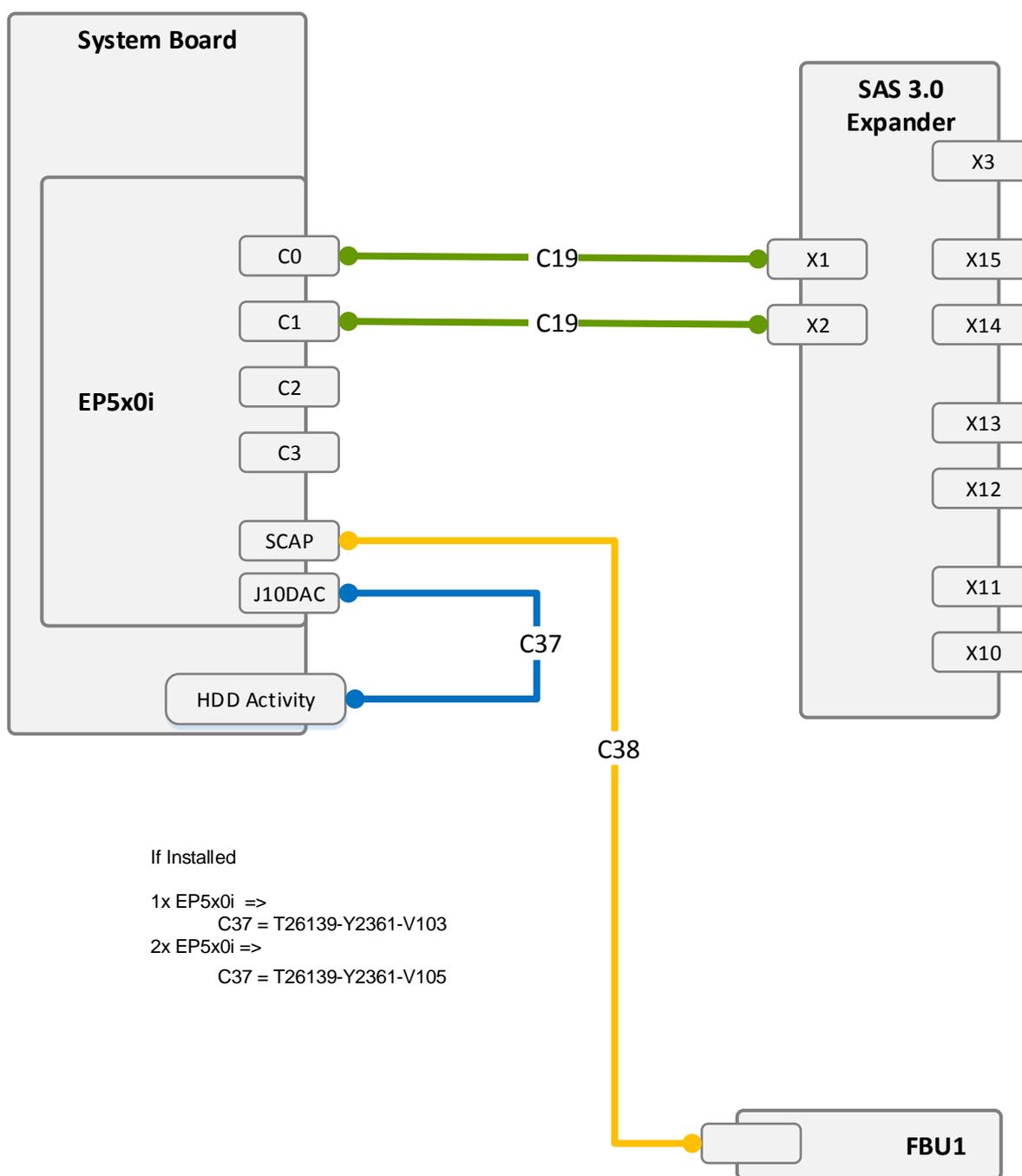


If Installed
1x EP5x0i =>
C37 = T26139-Y2361-V103
2x EP5x0i =>
C37 = T26139-Y2361-V105

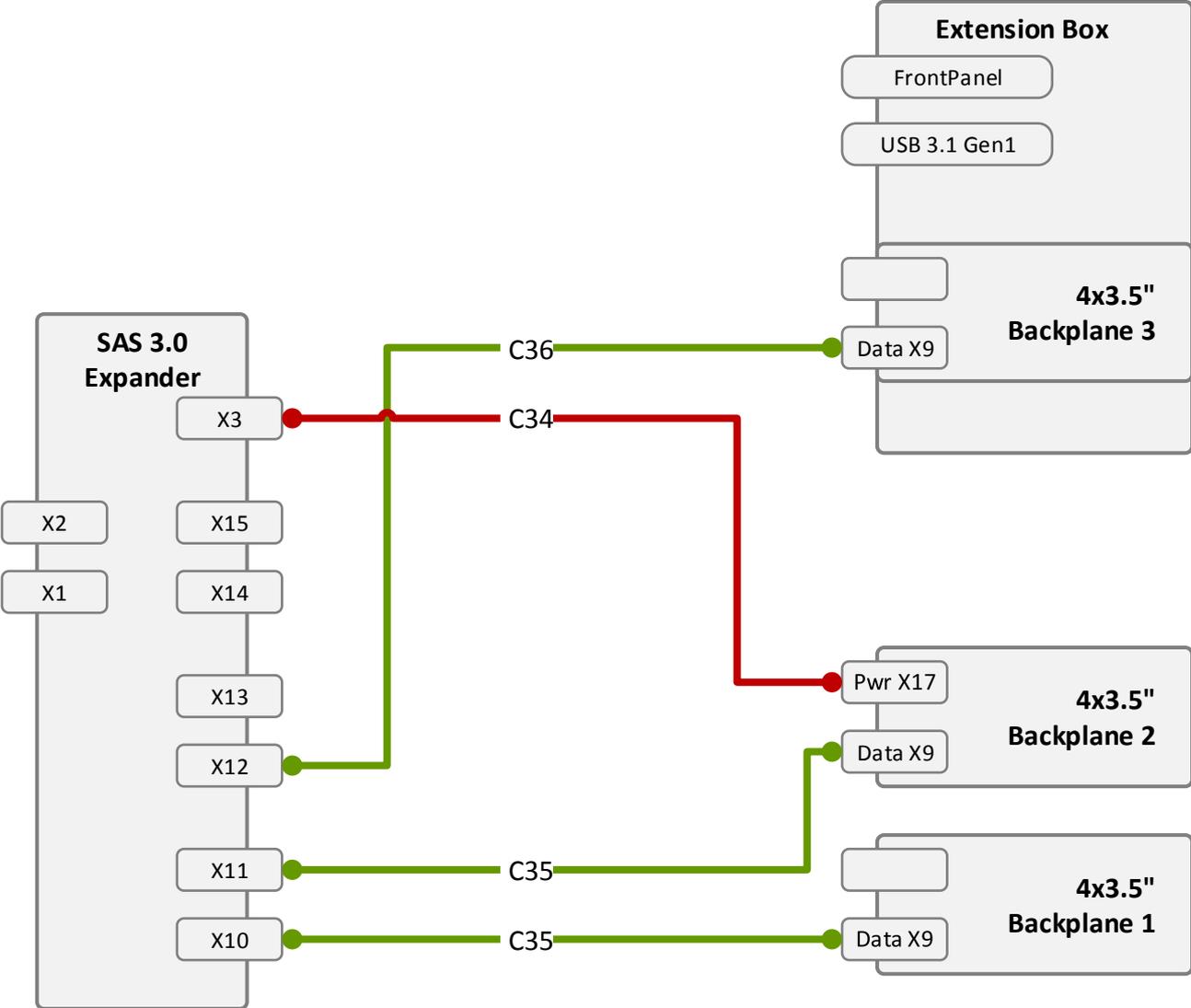
SAS_CPEP4x0i_Exp



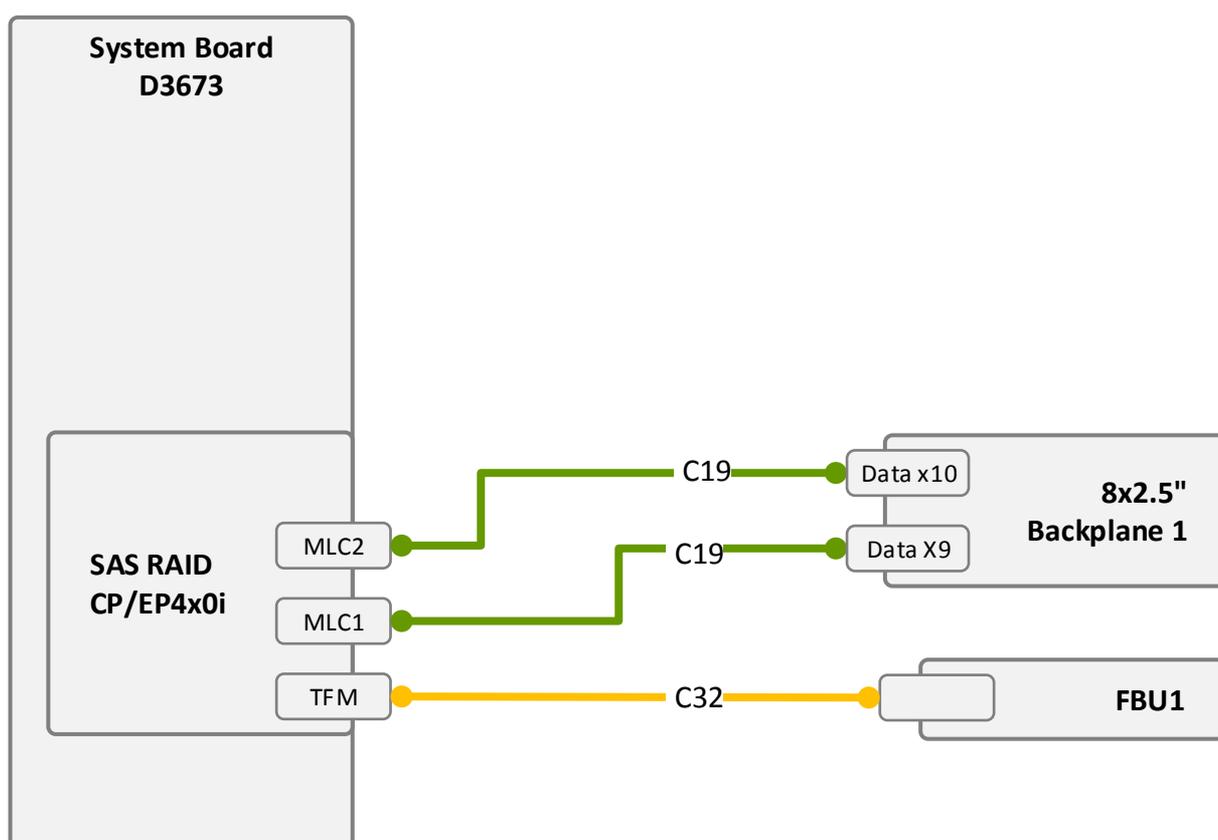
SAS_EP5x0i_Exp



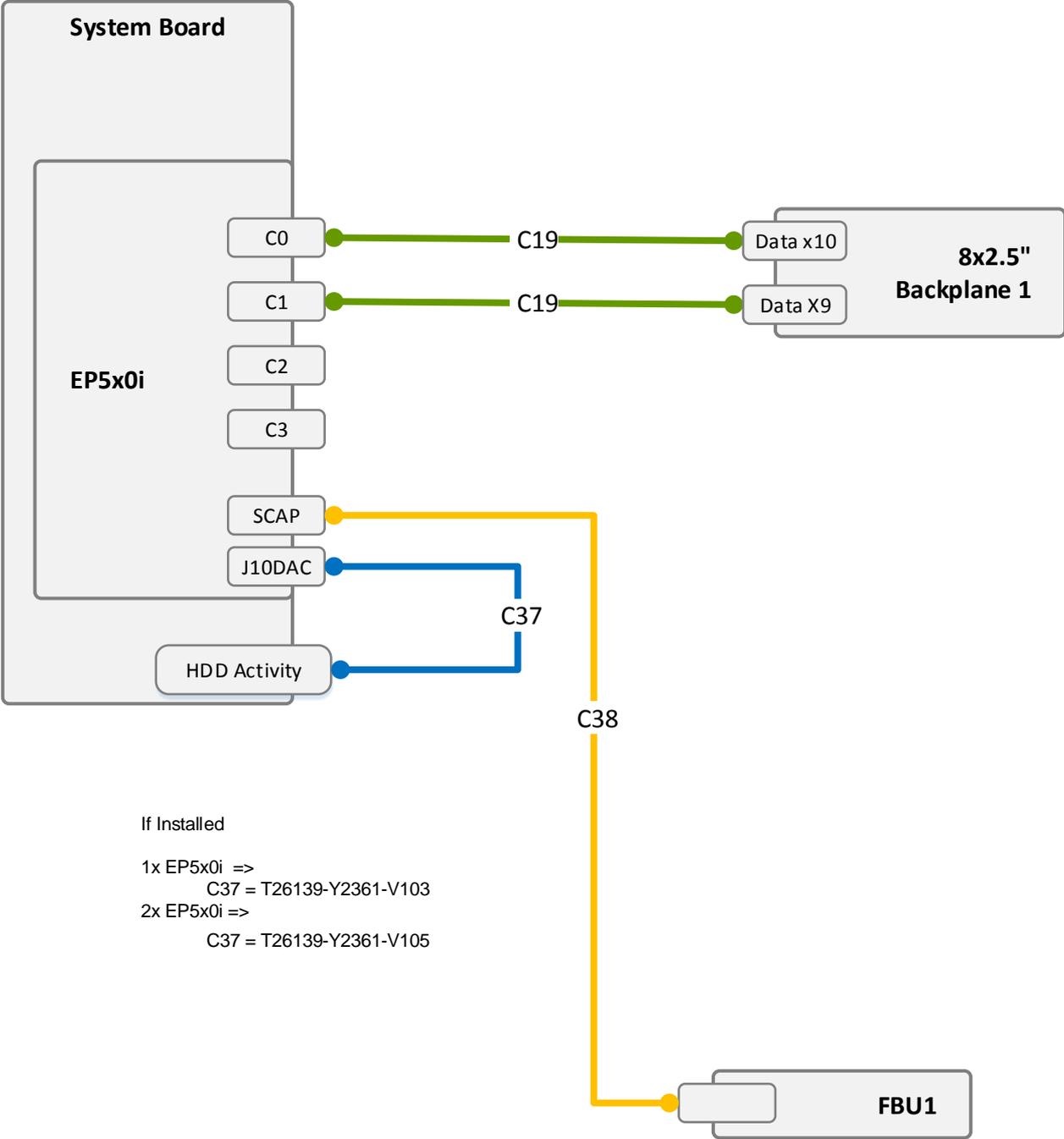
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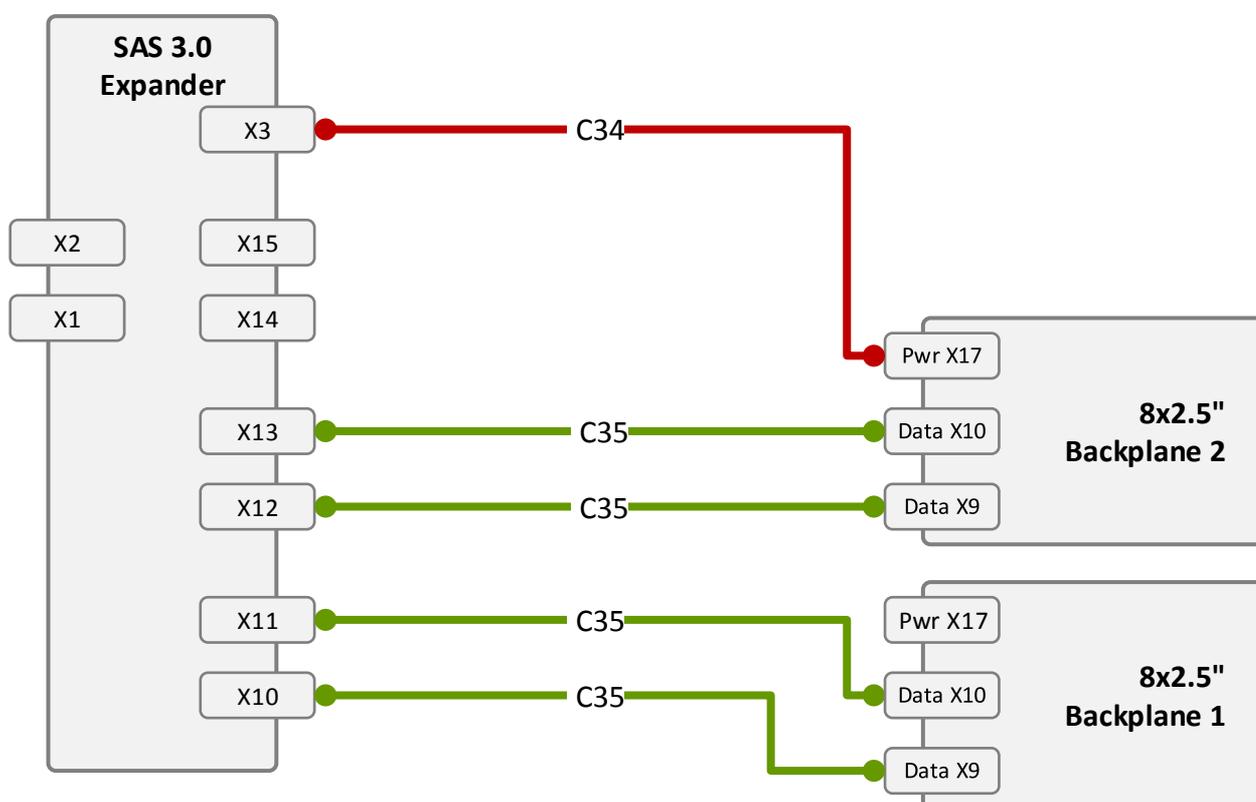
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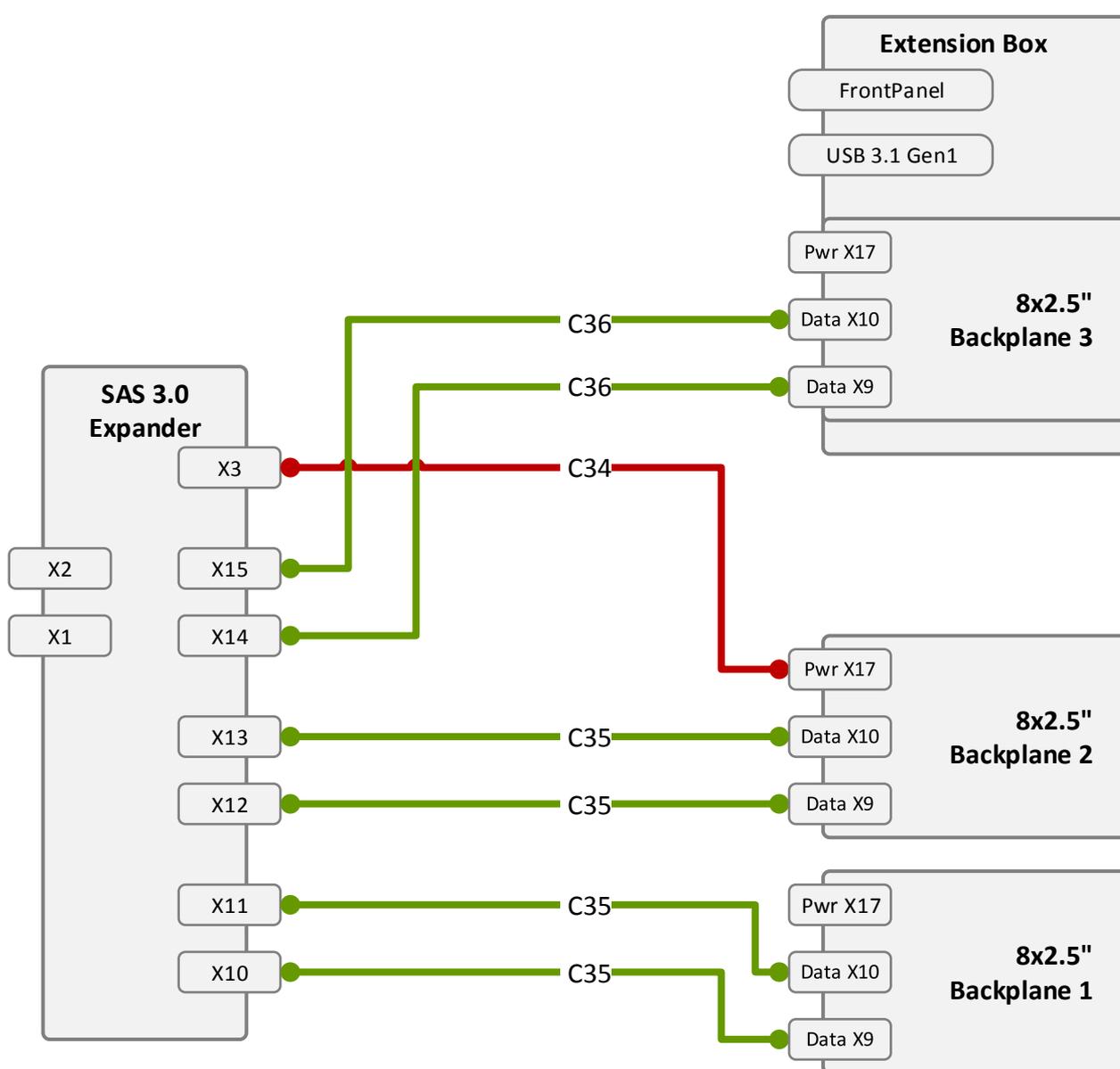
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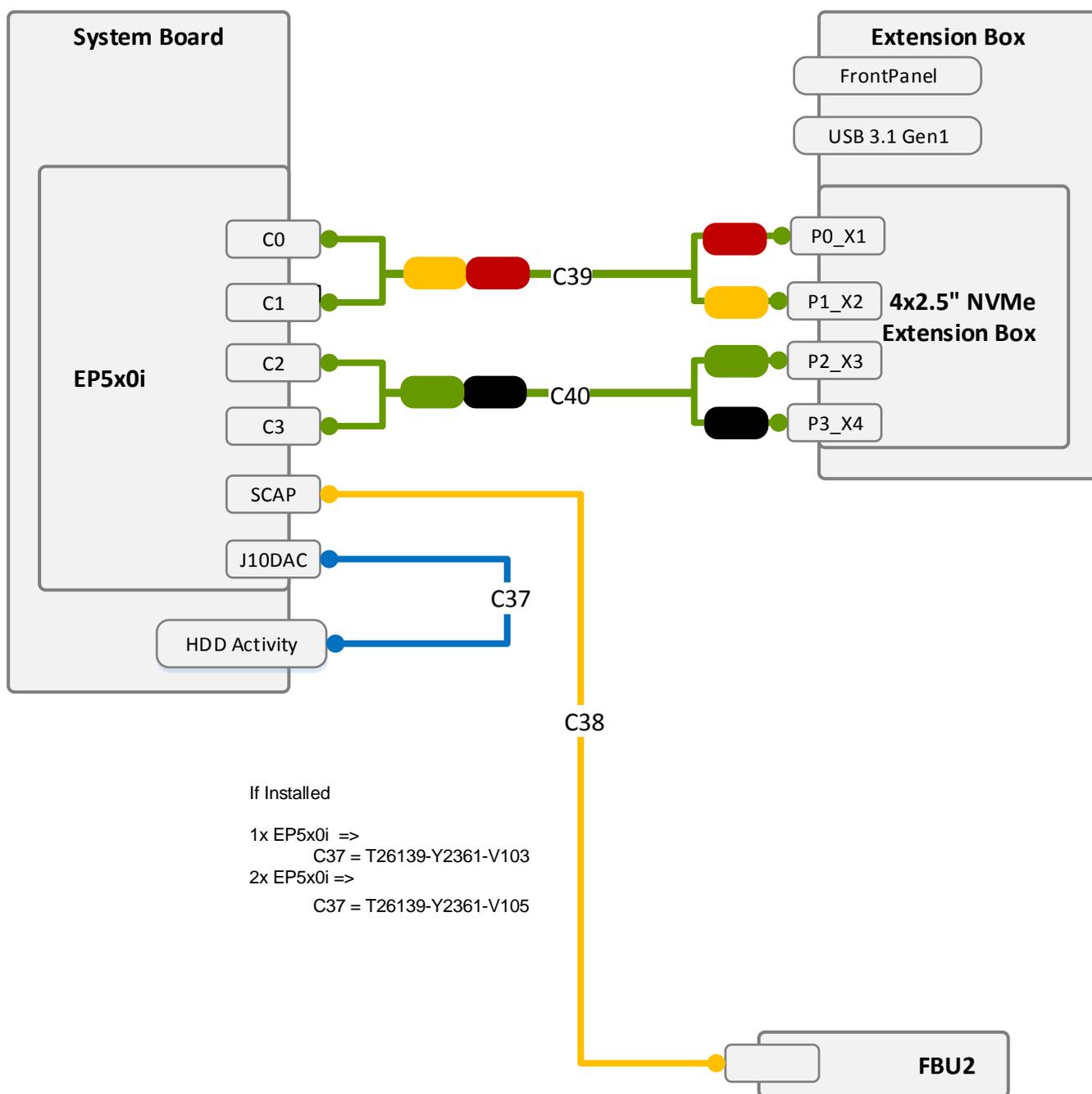
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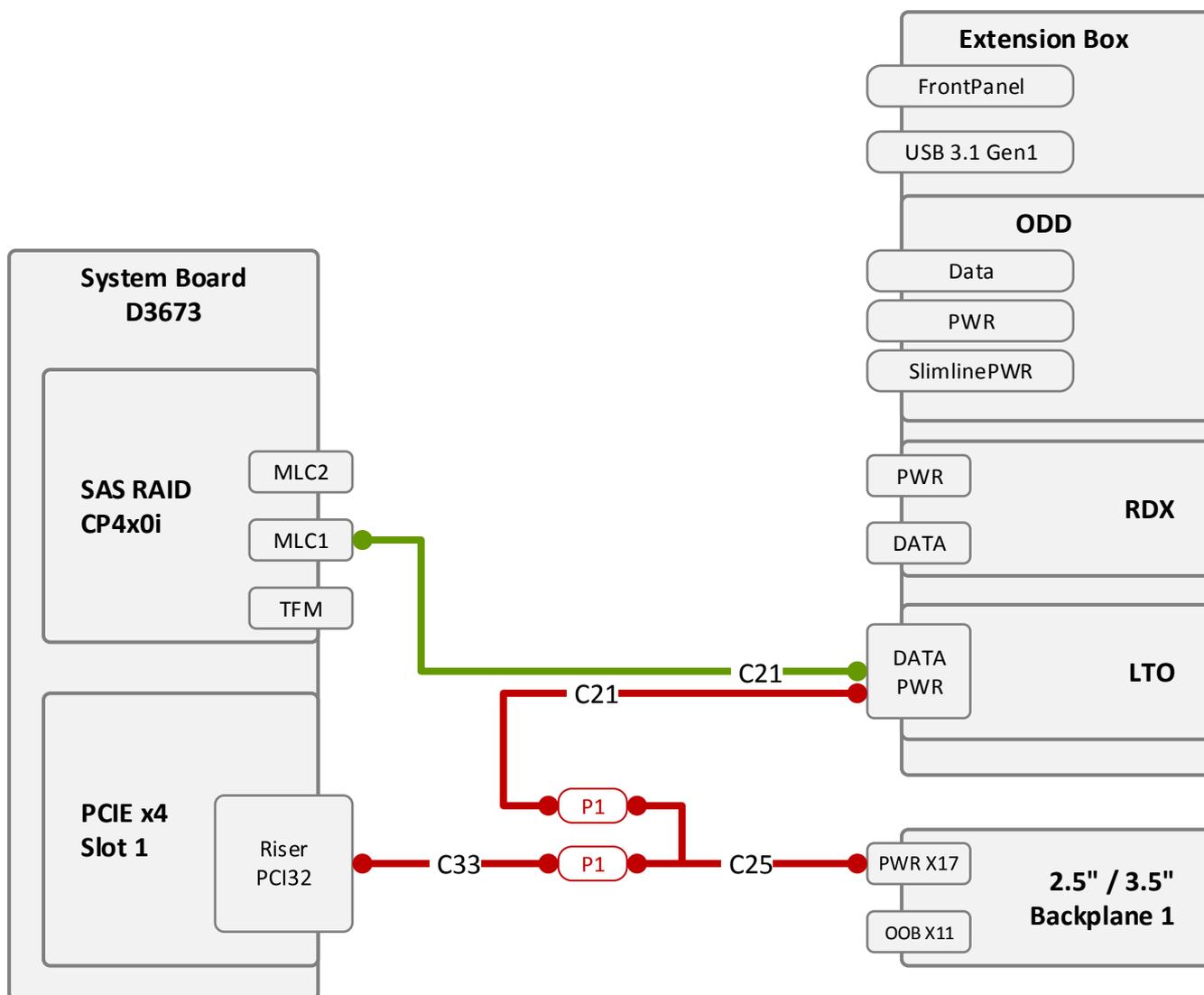
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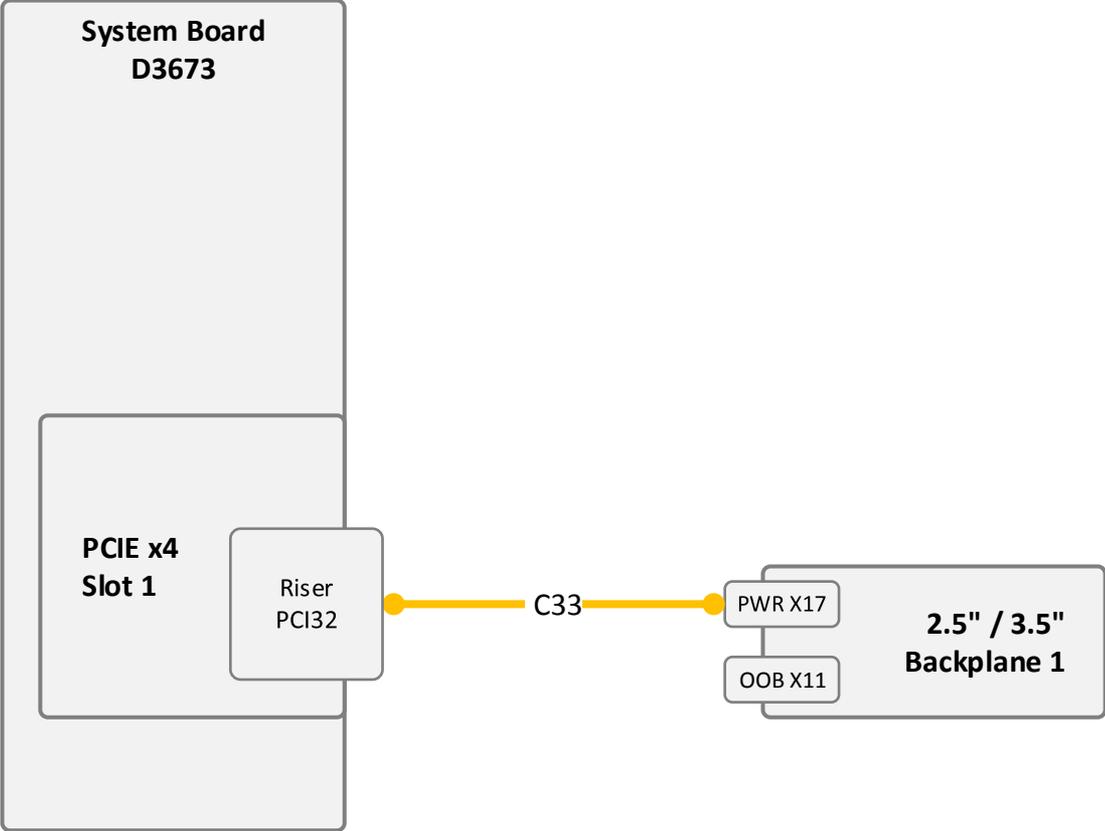
EP5x0i_NVMe_ExtensionBox



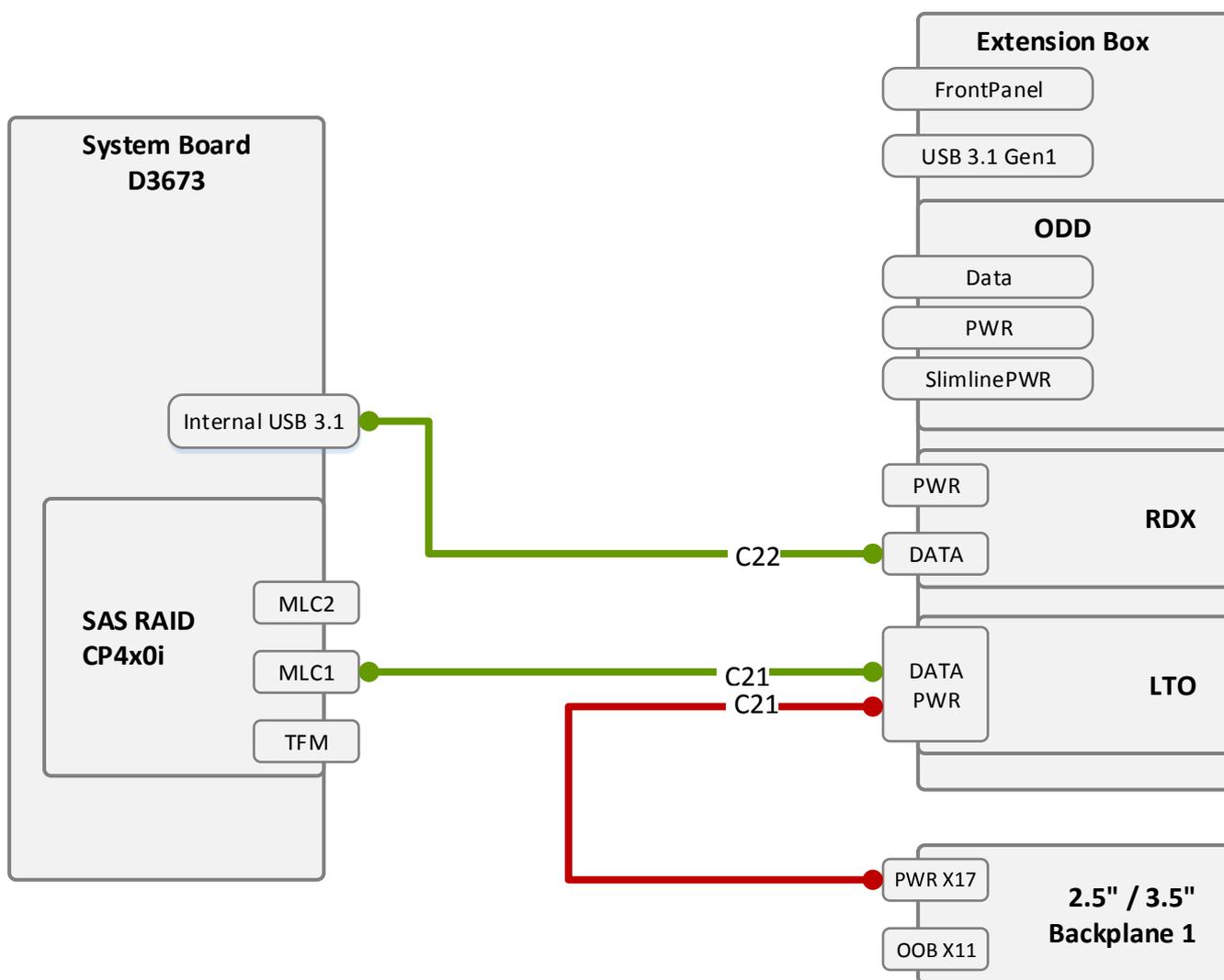
AccDrv_LTO_RiserPCI32



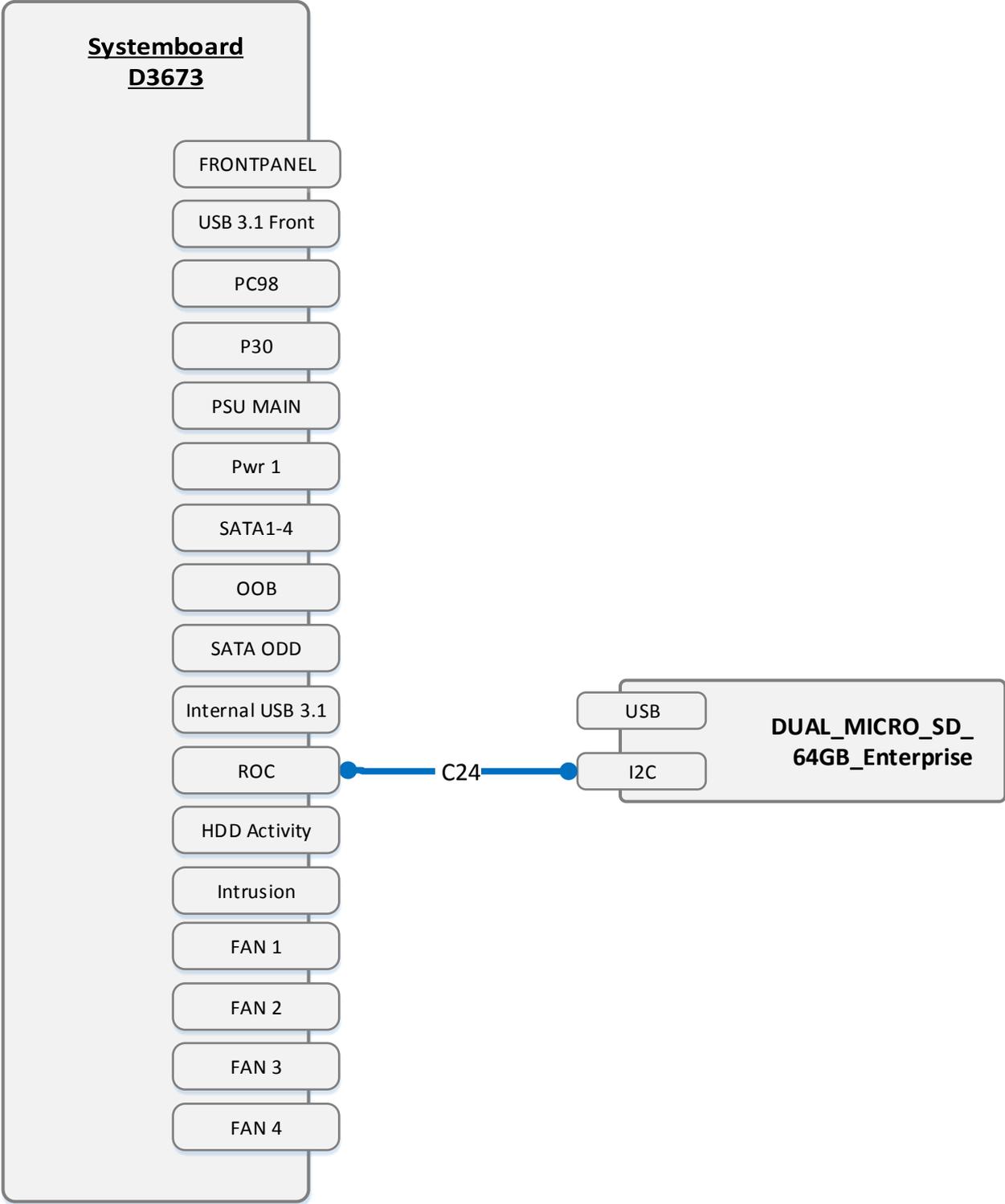
Option RiserSlot



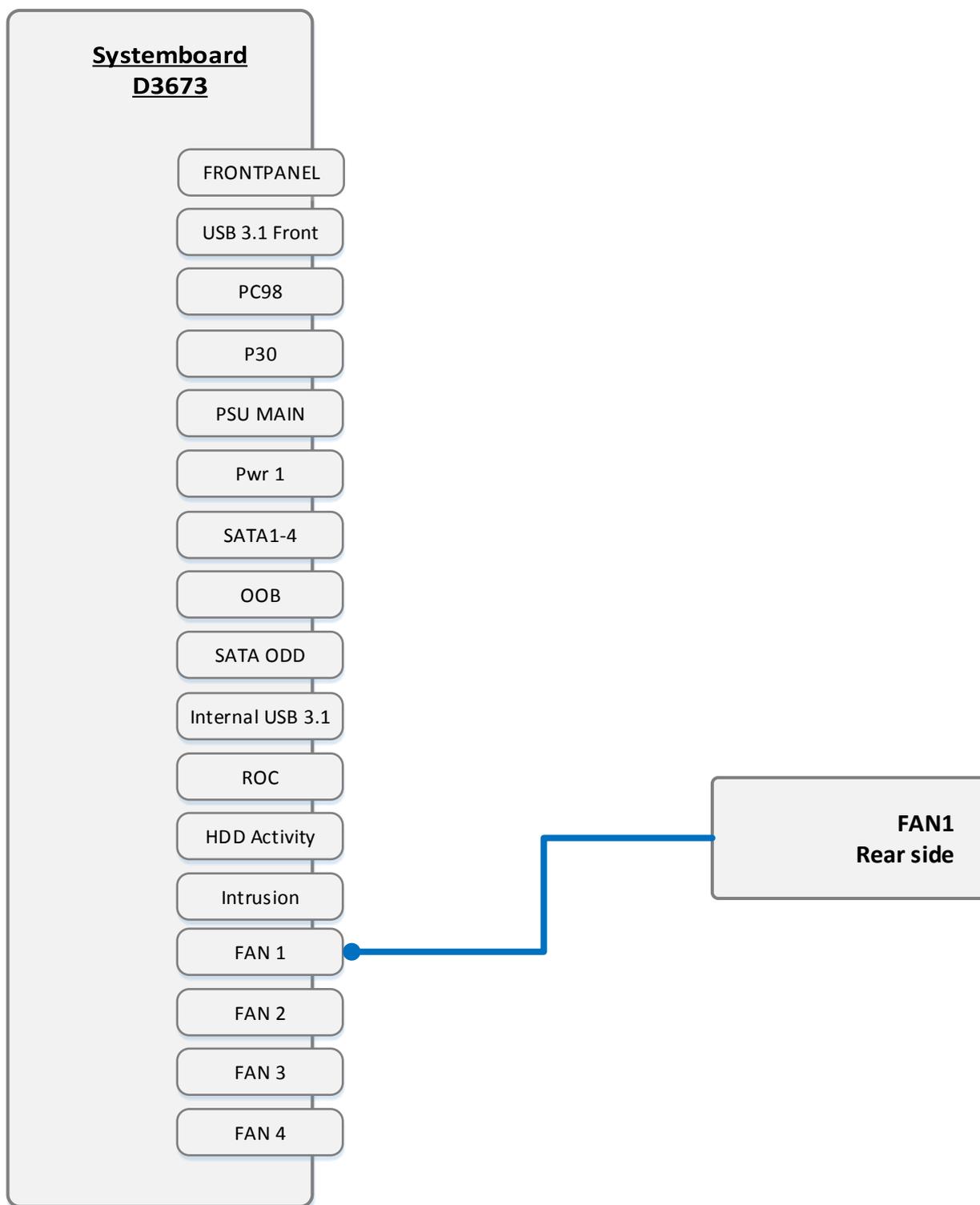
AccDrv_LTO_RDX



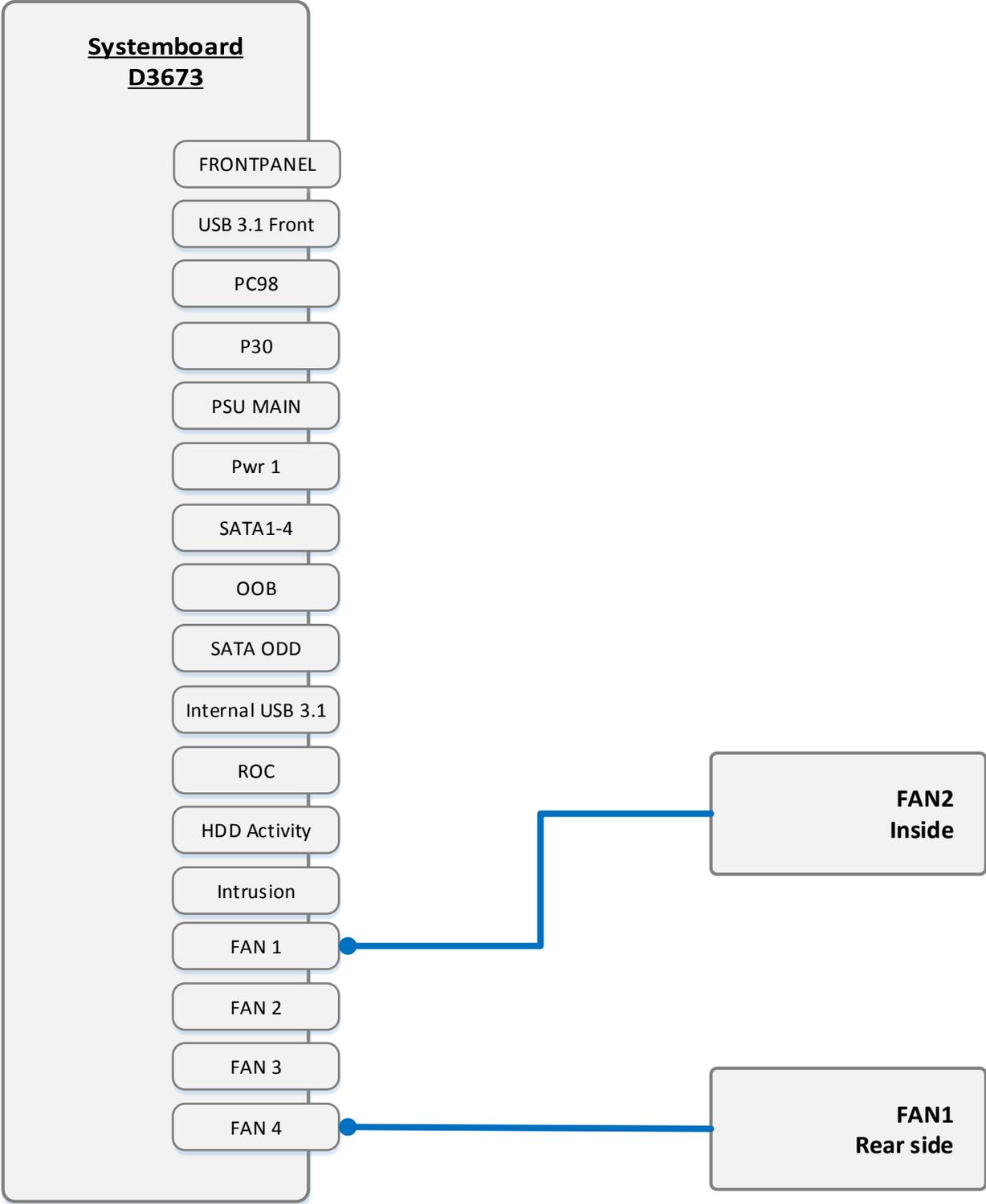
Dual_Micro_SD_64GB_Enterprise



System FANs Standard



System FANs Redundant



System Name: PRIMERGY TX1330 M4

CPU sockets 1

#PCIe Slots of system 8

Riser Option support (y/n) y

Overview and properties of System PCI devices and slots

List of Released Adapters incl. Installation sequence and priority

				System PCI Slot #						
				1	2	3	4	M.2 SSD1	M.2 SSD2	
				PCI Slot attached CPU #	PCH	PCH	CPU1	CPU1	PCH	PCH
				Riser Slot y/n	y	n	n	n	n	n
Adapter Class Category	Adapter Installation Sequence Order within Adapter Category (Cluster)	Adapter Product Name Description (Softwarepool)	Max # Adapter	1	2	3	4	M.2 SSD1	M.2 SSD2	
Solid-State-Drive										
	1	SSD SATA 6G <Capacity> M.2 N H-P for VMware	1	-	-	-	-	1	-	
	2	SSD SATA 6G <Capacity> M.2 N H-P	2	-	-	-	-	1	2	
Controller Card – Graphic										
	1	NVIDIA Quadro P400	1	-	-	-	1	-	-	
Controller Card - PCIe-Switch										
	1	PRAID EP580i NVMe function	1	-	-	1	-	-	-	
	2	PRAID EP540i NVMe function	1	-	-	1	-	-	-	
Controller Card - SAS RAID int										
	1	PRAID EP540i	2	-	3	1	2	-	-	
	2	PRAID CP400i	1	-	3	1	2	-	-	
	3	PRAID EP580i	2	-	3	1	2	-	-	
	4	PRAID EP400i	1	-	3	1	2	-	-	
	5	PRAID EP420i	1	-	3	1	2	-	-	
	6	PRAID EP520i	1	-	3	1	2	-	-	
Controller Card - SAS int										
	1	PSAS CP400i	1	-	-	1	2	-	-	
Controller Card - LAN										
	1	PLAN EP X710-T4 4x10GBASE-T	2	-	-	2	1	-	-	
	2	PLAN EP XXV710-DA2 25Gb 2p SFP28	2	-	-	2	1	-	-	
	3	PLAN EP X710-DA4 4x10Gb SFP+	2	-	-	2	1	-	-	
	4	PLAN EP QL41212 25Gb 2p SFP28	2	-	-	2	1	-	-	
	5	PLAN EP X550-T2 2x10GBASE-T	2	-	3	2	1	-	-	

	6	PLAN CP 4x1Gbit Cu Intel I350-T4	2	4	1	3	2	-	-
	7	PLAN CP 2x1Gbit Cu Intel I350-T2	2	4	1	3	2	-	-
	8	PLAN EP MCX4-LX 25Gb 2p SFP28	2	-	-	2	1	-	-
	9	PLAN EP X710-DA2 2x10Gb SFP+	2	-	3	2	1	-	-
	10	PLAN EP QL41134 4X 10G SFP+	2	-	-	2	1	-	-
	11	PLAN EP QL41134 4X 10GBASE-T	2	-	-	2	1	-	-
	12	PCNA EP QL41262 2X 25G SFP28	2	-	-	2	1	-	-
	13	PLAN EP QL41132 2X 10G SFP+	2	-	3	2	1	-	-
	14	PLAN EP QL41112 2X 10GBASE-T	2	-	3	2	1	-	-
Controller Card - SAS int. Backup									
	1	PSAS CP400i for LTO	1	-	3	2	1	-	-
Controller Card - Fibre Channel									
	1	PFC EP QLE 2740 1x32Gb	2	-	-	2	1	-	-
	2	PFC EP QLE 2742 2x32Gb	2	-	-	2	1	-	-
	3	PFC EP LPe 32002 2x32Gb	2	-	-	2	1	-	-
	4	PFC EP LPe 32000 1x32Gb	2	-	-	2	1	-	-
	5	PFC EP LPe31002 2x 16Gb Emulex	2	-	-	2	1	-	-
	6	PFC EP LPe31000 1x 16Gb Emulex	2	-	3	2	1	-	-
	7	PFC EP QLE2692 2x 16Gb Qlogic	2	-	-	2	1	-	-
	8	PFC EP QLE2690 1x 16Gb Qlogic	2	-	3	2	1	-	-

List of all used screws for PRIMERGY Servers

Assembled in Germany and Japan

January 2017

List of all used screws for PRIMERGY Servers, assembled in Germany (Abg) or in Japan (FIT)

screw reference number	ABG	FIT	code number	type	photo	head tool / insert bit	color	Torque tolerance +-10%
S201	X		EOL: C26192-Y10-C62 C26192-Y10-C163	M2 x 2.5 mm		Torx 6 Plus	silver	0.2 Nm
		X	F6-SNA2-03121	M2 x3 mm		Torx 6 Plus	silver	0.2 Nm
S202	X		C26192-Y10-C112	M2 x 4 mm countersink		Phillips PH1	silver	0.09 Nm
		X	F6-SW4N2-03121	M2 x 4 mm countersink		Phillips PH1	silver	0.09 Nm
S203	X		C26192-Y10-C166	M2 x 4 mm		Torx 6 Plus	black	0.09 Nm
S204	X	X	C26192-Y10-C103 Replacement screw for A3C40137316 / LSZ: L3-25419-01	M2.5 x 4 mm		Phillips PH1 / JIS 1012 type H1	silver	0,4 Nm
S301	X		C26192-Y10-C151	M3 x 3.5 mm		hexagon head 5 mm / cross PZ2	black	0.6 Nm
		X	F6-SW2N3-05121	M3 x 5 mm with spring and washer		Phillips PH2	silver	0.6 Nm

screw reference number	ABG	FIT	code number	type	photo	head tool / insert bit	color	Torque tolerance +-10%
S302	X		C26192-Y10-C102	M3 x 3.5 mm		Phillips PH1	silver	0.4 Nm
		X	CA32432-0023	M3 x 3.5 mm		Phillips PH1 / JIS 1012 type H1	silver	0.4 Nm
S303	X	X	A3C40109082	M3 x 4 mm		Phillips PH1	white	0.09 Nm
S304	X		A3C40142649	M3 x 4 mm countersink		Phillips PH1	silver	0,4 Nm
S305	X	X	Screws in kit: S26361-D3305-A10	M3 x 4 mm		Phillips PH1	silver	0,4Nm
S306	X		C26192-Y10-C67	M3 x 4.5 mm		hexagon head 5 mm / cross PZ2	silver	0.6 Nm
		X	F6-SW2N3-06121	M3 x 5 mm with spring and washer		Phillips PH2	silver	0.6 Nm
S307	X		C26192-Y10-C68	M3 x 6 mm		hexagon head 5 mm / cross PZ2	silver	0.6 Nm
		X	F6-SW2N3-06121	M3 x 6 mm with spring and washer		Phillips PH2	silver	0.6 Nm
S308	X		C26192-Y10-C111	M3 x 6 mm countersink		Phillips PH2	silver	0.6 Nm
		X	F6-SSA3-06121	M3 x 6 mm countersink		Phillips PH2	silver	0.6 Nm

screw reference number	ABG	FIT	code number	type	photo	head tool / insert bit	color	Torque tolerance +-10%
S309	X	X	C26192-Y10-C69	M3 x 8 mm		hexagon head 5 mm / cross PZ2	silver	0.6 Nm
S310	X		C26192-Y10-C207 same as –C67 but not “self-tapping”	M3 x 4.5 mm		hexagon head 5 mm / cross PZ2	silver	0.6 Nm
S501	X	X	C26192-Y10-C209	REM 3 x 12 mm		special bit insert one-way head	black	0.6 Nm
S502	X	X	C26192-Y10-C176	REM 3 x 15 mm		special bit insert one-way head	black	0.6 Nm
S503	X	X	C26192-Y10-C174	Cross head EJOT PT 8 mm			silver	0,4 Nm
S504	X		C26192-Y10-C75	UNC 6-32 x 4.8 mm		hexagon head 5 mm / cross PZ2	black	0.6 Nm
		X	CP126822-01	UNC 6-32 x 4.8 mm		hexagon head 5 mm / cross PZ2	black	0.6 Nm
S505	X		C26192-Y10-C200	UNC 6-32 x 4 mm		Phillips PH1	silver	0.6 Nm
		X	CA32432-0164 or CA32432-0170	UNC 6-32 x 4 mm		Phillips PH1 / JIS 1012 type H1	silver	0.6 Nm
S506	X	X	C26192-Y10-C211	Knurled screw M3 x 4,5 mm		Phillips PH1	black	0,2 Nm
S601	X	X	EOL: V26827-B408- V989 V26827-B265-V5	UNC standoff 4-40 x 7,8 mm bolt: 4,9 mm total: 12,7 mm		hexagon screw driver 5 mm	silver	0.6 Nm

screw reference number	ABG	FIT	code number	type	photo	head tool / insert bit	color	Torque tolerance +-10%
S602	X	X	C26192-Y1-C65	standoff M3 x 4,5 mm bolt: 5 mm total: 9,5 mm		hexagon screw driver 5 mm	silver	0.6 Nm
S603	X	X	C26192-Y1-C66	standoff M3 x 6 mm bolt: 8 mm total: 14 mm		hexagon screw driver 5 mm	silver	0.6 Nm
S604	X	X	C26192-Y1-C67	standoff M3 x 6 mm bolt: 12 mm total: 18 mm		hexagon screw driver 5 mm	silver	0.6 Nm
S605	X	X	C26361-B443-C210	standoff M3 x 3,2 mm bolt: 4 mm total: 7,2 mm		hexagon screw driver 5 mm	silver	0.6 Nm
(mechanic part in one chassis, provided by chassis vendor)	X	X	C26361-K1444-C11	M3 X 4,5 mm cheese head screw with spacer.		hexagon screw driver 5 mm / cross PZ2	silver	0,6 Nm

Denotation scheme

S2xx : Screws M2x

S3xx : Screws M3x

S4xx : Screws M4x

S5xx : Screws for special application

S6xx : Bolts

Document History:

Date	Item	Description
04. July 2017 05. July 2017	Name of a tool for fastening hexagon bolt	Old: "hexagon nut" New: "hexagon spanner head" hexagon screw driver
27. July 2017	S306 F6-SW2N3-06121	Changed part number of the screw