



FUJITSU Server PRIMERGY TX1310 M5

Upgrade and Maintenance Manual

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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.

The product is not suitable for use at visual display workplaces according to §2 of the Workplace Regulations (applies to all server systems except TX server systems).

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:

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

Only for Japan:

Shielded LAN cables should be used in this product.

UK Importer information

Fujitsu Services Limited

22 Baker Street, London, W1U 3BW, United Kingdom

Version history

Issue number	Issue date	Description
V 1.0	11/2021	Initial release
	03/2022	Cable plan updated
V 2.0	07/2022	Supplement (03/2022) integrated Following content was added: <ul style="list-style-type: none">● System Snapshot Following sections were updated: <ul style="list-style-type: none">● Minor editorial changes● Removing/Installing the front cover● Performing a RAID array rebuild● Basic information (HDD)● Cable plan● List of Released Adapters● List of screws used in PRIMERGY Servers - Assembled in Czech and Japan

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Content

1 Introduction

1.1 Concept and target groups of this manual

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 ["Documentation overview" on page 22](#).



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 18](#).

1.2 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.

Introduction

"Quotation marks"	Indicate names of chapters and terms that are being emphasized.
▶	Describes activities that must be performed in the order shown.
[Abc]	Indicates keys on the keyboard.
 CAUTION	Pay particular attention to texts marked with this symbol. Failure to observe this warning may endanger your life, destroy the system or lead to the loss of data.
	Indicates additional information, notes and tips.
  	Indicates the procedure category in terms of complexity and qualification requirements, see "Classification of procedures" on page 18 .
	Indicates the average task duration, see "Average task duration" on page 21 .

2 Before you start

2.1 Basic information

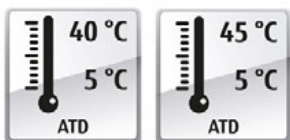
2.1.1 Proceeding

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

- ▶ Carefully read the safety instructions, see "[Important information](#)" on [page 25](#).
- ▶ Make sure that all necessary manuals are available, see "[Documentation overview](#)" on [page 22](#). Print the PDF files if required.
- ▶ Make yourself familiar with the procedure categories, see "[Classification of procedures](#)" on [page 18](#).
- ▶ Ensure that all required tools are available, see "[Tools you need at hand](#)" on [page 22](#).

2.1.2 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.

2.1.3 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 S5 web interface to prepare hardware expansions. For more information about ServerView Suite documentation, see "[Documentation overview](#)" on page 22.

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:

<https://www.fujitsu.com/fts/products/computing/servers/primergy/index.html>

For Japan:

<https://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.

2.2 Classification of procedures

2.2.1 Assignment of unit categories

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 category is indicated by one of the symbols introduced in this section.



Please ask your local Fujitsu service center for more information.

2.2.2 Customer Replaceable Units (CRU)



Customer Replaceable Units (CRU)

Customer Replaceable Units are intended for customer self service.



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

For Japan:

<https://www.fujitsu.com/jp/products/computing/servers/primergy/support/repair.html>

Peripherals that are handled as Customer Replaceable Units

- Keyboard
- Mouse

2.2.3 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 allows only upgrade. For upgrade units as customer replaceable, see:

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



Server management error messages will report defective Upgrade and Repair Unit.

Before you start

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

- CPU (upgrade kits)
- ODDs
- Backup drives
- Expansion cards
- Memory modules

Components that are handled solely as Repair Units

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

2.2.4 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 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 (replacements)
- System board
- Standard PSU
- Trusted Platform Module (TPM)



Please ask your local Fujitsu service center for more information.

2.3 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.

The following table gives an overview of steps taken into account for calculating the average task duration.

Step	included	Explanation
Server shutdown	no	Shutdown time depends on hardware and software configuration and may vary significantly. Software tasks necessary before maintenance, see "Starting the maintenance task" on page 63 .
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.

Before you start

Step	included	Explanation
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

2.4 Tools you need at hand

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

2.5 Documentation overview

2.5.1 Downloading manuals

Maintenance procedures may include references to additional documentation.

- ▶ Ensure to store all printed manuals enclosed with your server in a save place for future reference.
- ▶ When preparing the maintenance task, ensure that all required manuals are available, see [Table 2](#). If applicable, download the manual from the following address:

<https://support.ts.fujitsu.com/>

For Japan:

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

2.5.2 List of documents

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 TX1310 M5 Operating Manual"	Information how to install, set up and operate your server, available online
"FUJITSU Server PRIMERGY TX1310 M5 Upgrade and Maintenance Manual"	Instructions for upgrading the server configuration or replacing defective hardware, available online
"D3930 BIOS Setup Utility for FUJITSU Server PRIMERGY TX1310 M5 Reference Manual"	Information on configurable BIOS options and parameters, available online
"FUJITSU Server PRIMERGY TX1310 M5 Disassembly and Recycling Instructions"	Instructions for disassembling and recycling the server, available online
ID card	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) The location of the ID card can be found in the overview of the server.
"FUJITSU Software Infrastructure Manager V2.7.0 Infrastructure Manager for PRIMEFLEX V2.7.0 User's Guide"	Infrastructure Manager documentation
"ServerView Agentless Management Overview"	ServerView information

Before you start

Document	Description
Illustrated Spares catalog	Spare parts identification and information system (not valid for Japan), available for online use or download (Windows OS) at https://manuals.ts.fujitsu.com/isc_illustrated_spares/
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 https://ts.fujitsu.com/recycling , or as a printed copy
"Service Desk" leaflet "サポート & サービス" for Japan	Not applicable in Japan and other countries that have different regulations for recycling
Additional documentation	RAID documentation, available online at https://support.ts.fujitsu.com/ For Japan: https://www.fujitsu.com/jp/products/computing/servers/primergy/manual/
Third party documentation	<ul style="list-style-type: none">– Operating system documentation, online help– Peripherals documentation

Table 2: List of documents

3 Important information

3.1 Introduction

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



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.

3.2 Safety instructions

3.2.1 Basic 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.

Important information

- ▶ 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.

3.2.2 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.

3.2.3 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.

- ▶ If a DC power cord is used, the server must be connected to a proper DC source and earth ground stud/end.
- ▶ 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.

Important information

- ▶ Proper operation of the server (in accordance with IEC 60950-1/62368-1 resp. EN 60950-1/62368-1) 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.
- ▶ 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.

3.2.4 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

3.2.5 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.
- ▶ 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.

3.2.6 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!

3.2.7 Modules with Electrostatic-Sensitive Devices (ESD modules)

ESD modules are identified by the following sticker:

Important information



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 colored touch points.
- ▶ 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).

3.2.8 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.

3.2.9 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.

3.2.10 Other important information

- ▶ During cleaning, observe the instructions in the corresponding operating manual chapter "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.

3.3 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>



CAUTION

This is a Class A product. In a domestic environment this product may cause RF interference.

- ▶ In this case the user may be required to take adequate measures.

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

- ▶ Select the product class, e.g. "Industry Standard Servers".
- ▶ Select the subclass, e.g. "Tower servers".
- ▶ Select your server, e.g. "PRIMERGY TX1310 M5".
- ▶ Select the document, e.g. "CE Cert PRIMERGY TX1310 M5".

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

Important information

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:

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

For Japan:

<https://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.

Important information



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:

<https://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:

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

4 Basic hardware procedures

4.1 Using diagnostic information

4.1.1 Proceeding

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

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.

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

4.1.2 System Snapshot

This device is not equipped with iRMC. Therefore, ServerView Agentless Service must be installed in order to check the hardware status of the device and to check the internal disk failure and SSD life.

The ServerView Agentless Service includes the System Snapshot, Prime Collect, and RAID Manager features, so you can use the ServerView Agentless Service to check device status, collect logs, and monitor internal storage.

When you execute the command (double-click) of System Snapshot, the new System Snapshot feature for this device saves the device state as a html file, and you can visually check the device state by opening it in the web browser.

For feature descriptions and installation instructions for the ServerView Agentless Service, see "ServerView Agentless Management Overview" in ["List of documents" on page 23](#).

Basic hardware procedures

- ▶ Navigate to the System Snapshot installation folder.

Default System Snapshot installation folder (Windows):

```
C:\Program Files\Fujitsu\ServerView Suite\SVAS\Diagnostics Tools
```

Default System Snapshot installation folder (Linux):

```
/usr/sbin/SystemSnapshot
```

- ▶ Start the System Snapshot by executing `SystemSnapshot.exe` (Windows) or `SystemSnapshot` (Linux).

The System Snapshot saves the device state in an html file. Generated file name: `SystemSnapShot_YYYYMMDDhhmm.html`

- ▶ Open the html file in the web browser to check the device state.

System Snapshot 2022-01-14 03:03:30

System Information

- > System
- > System Board
- > Operating System
- > System Management Software

System Health

- ✔ > Environment
- ⚠ > RAID Logical Drives
- ✖ > RAID Physical Drives

Status	Adapter ID	S.M.A.R.T	Designation	Interface	Size (GByte)
⚠ Available but not configured	0	S.M.A.R.T. OK	MTFDDAV240TD5 (0-6-0-0)	SATA	229
✖ Failed (missing)	1	S.M.A.R.T. status unknown	-- (1)	Unknown	0
✔ Operational	1	S.M.A.R.T. OK	MICRON MTFDDAK240TDT (2)	SATA	229
✔ Operational	1	S.M.A.R.T. OK	MICRON MTFDDAK240TDT (3)	SATA	229
✔ Operational	1	S.M.A.R.T. OK	MICRON MTFDDAK240TDT (0)	SATA	229


- ✔ > System Board

Figure 2: Content of the System Snapshot html file (example)

Icons and descriptions

- ✔ Indicates normal behaviour
- ✘ Indicates an error
- ⚠ Marks notes or additional information
- > ▾ Click to expand and collapse the information within this topic, resp.

The hardware logs remain in the OS log and the Event Log in the BIOS Setup Menu. For OS log event notification, use the trap function and e-mail notification function of each OS.

 The ServerView Event e-mail tool (EventMail.exe) is available on the SVS DVD.

4.2 Unlocking the server

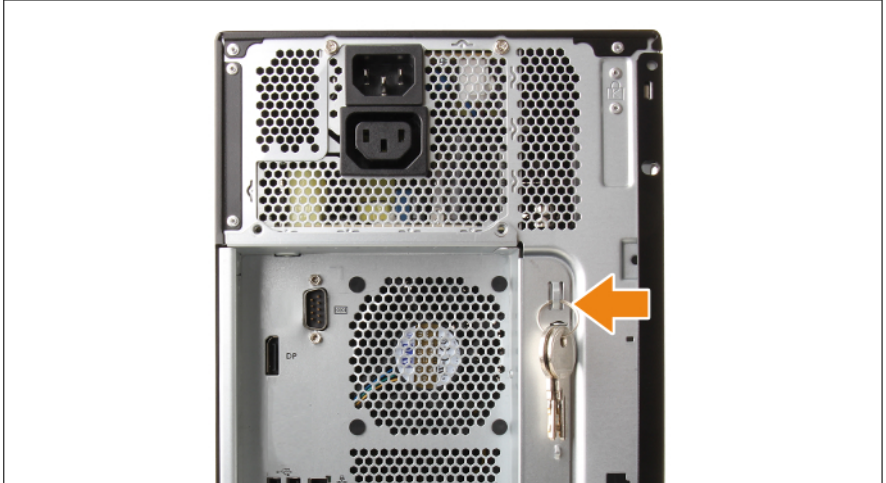


Figure 3: Removing the key

- ▶ Remove the key ring with keys from the server rear.

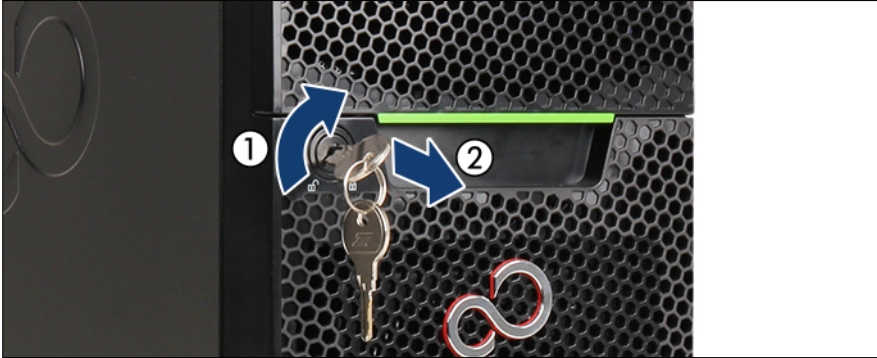


Figure 4: Unlocking the server

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

4.3 Removing the bay cover

- ▶ Unlock the server, see ["Unlocking the server" on page 41](#).



Figure 5: Folding out the bay cover

- ▶ Press up on the locking latch and fold out the bay cover.
- ▶ Remove the bay cover.

4.4 Shutting down the server



CAUTION

- ▶ For more information, see ["Important information" on page 25](#).
- ▶ 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.
- ▶ Unlock the server, see ["Unlocking the server" on page 41](#).
- ▶ Remove the bay cover, see ["Removing the bay cover" on page 42](#).



Figure 6: On/Off button

- ▶ Shut down the server by pressing the On/Off button (1).



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

4.5 Disconnecting the power cord

i Before disconnecting the power cord the server must be shut down.

i In a second socket below the main socket, the PSU can provide the power supply for an optional monitor.



Figure 7: Disconnecting the power cords

- ▶ Disconnect the power cord from the PSU (1).
- ▶ If applicable, disconnect the power supply of the monitor (2).

4.6 Getting access to the component

4.6.1 Safety notes



CAUTION

- ▶ Before removing or installing covers (except the bay cover), turn off the server, all peripheral devices, and any other connected devices, and unplug all power cables from the outlet. Failure to do so can cause an electric shock.
- ▶ In order to comply with EMC regulations (regulations regarding electromagnetic compatibility) and to prevent fires, the server must not run while the side cover is removed.
- ▶ For more information, see ["Important information" on page 25](#).

4.6.2 Removing the side cover



Figure 8: Removing the side cover

- ▶ Pull up on the locking lever (1).
- ▶ Open the side cover (2).

- ▶ Remove the side cover (3).

4.6.3 Removing the front cover



CAUTION

- ▶ The side cover must be removed, before removing the front cover.
- ▶ When removing the front cover, keep the server in a vertical position.



Figure 9: Removing the ID card

- ▶ Remove the ID card before opening and removing the front cover.
- ▶ Store the ID card on a safe place.

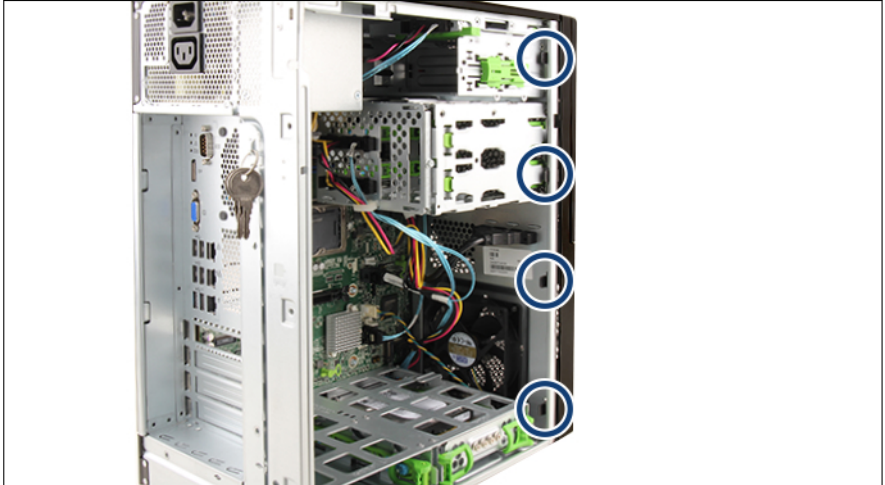


Figure 10: Removing the front cover (A)

- ▶ Disengage the four locking tabs of the front cover (see circles) by pulling it forwards.



Figure 11: Removing the front cover (B)

- ▶ Carefully rotate open (1) and unhook the front cover (2).

4.6.4 Removing the top HDD cage

i Depending on accessibility, it may be required to pull out the top HDD cage for maintenance purposes.

Removing the bay cover

► Remove the bay cover, see ["Removing the bay cover"](#) on page 42.

Removing the HDD cage door



Figure 12: Pulling up the lever

► Pull up the lever of the HDD cage door (see arrow).

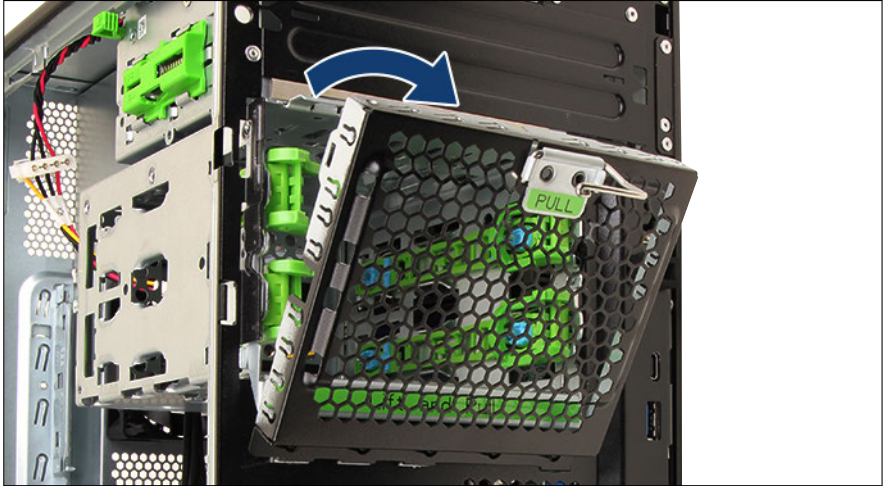


Figure 13: Folding down the HDD cage door

- ▶ Fold down the HDD cage door.
- ▶ Remove the HDD cage door.

Extending the HDD cage out of the chassis

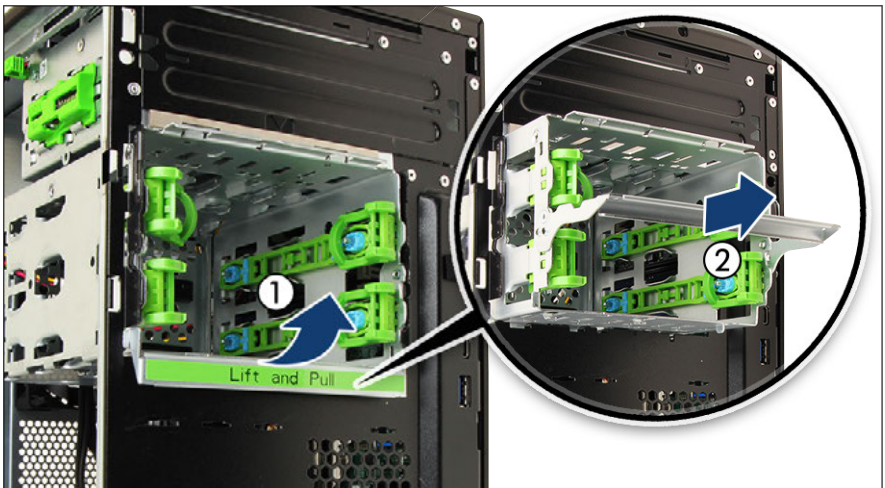


Figure 14: Extending the HDD cage

- ▶ Lift up the locking lever on the HDD cage (1) and pull out the HDD cage (2).

4.6.5 Removing the system board tray

- ▶ Disconnect all cables from the system board.



Figure 15: System board tray - Location of screws

- ▶ Remove five screws from the chassis (see circles).

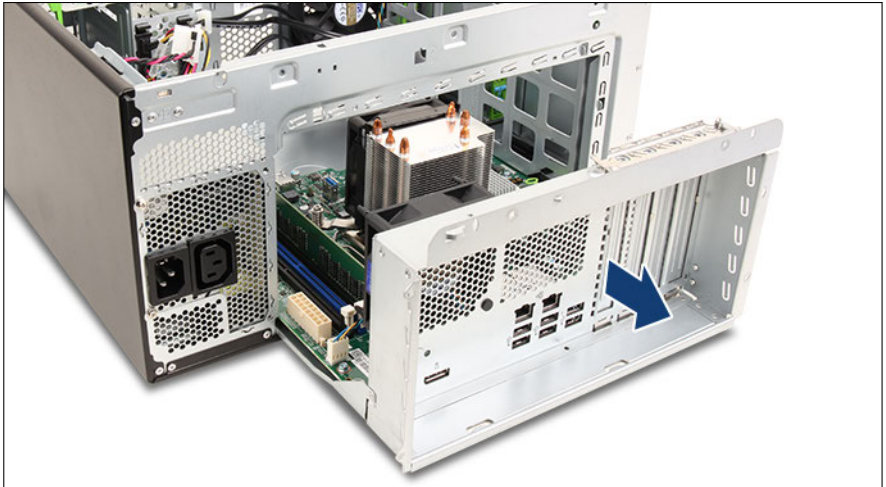


Figure 16: Removing the system board tray

- ▶ Pull the system board tray out of the chassis.

4.7 Reassembling

4.7.1 Safety notes



CAUTION

- ▶ Before attaching the covers, make sure no unnecessary parts or tools are left inside the server.
- ▶ Before switching on the server, make sure the side cover is closed. In order to comply with applicable EMC regulations (regulations on electromagnetic compatibility) and satisfy cooling requirements, the server must not run while the side cover is removed.
- ▶ For more information, see "[Important information](#)" on page 25.

4.7.2 Inserting in the system board tray

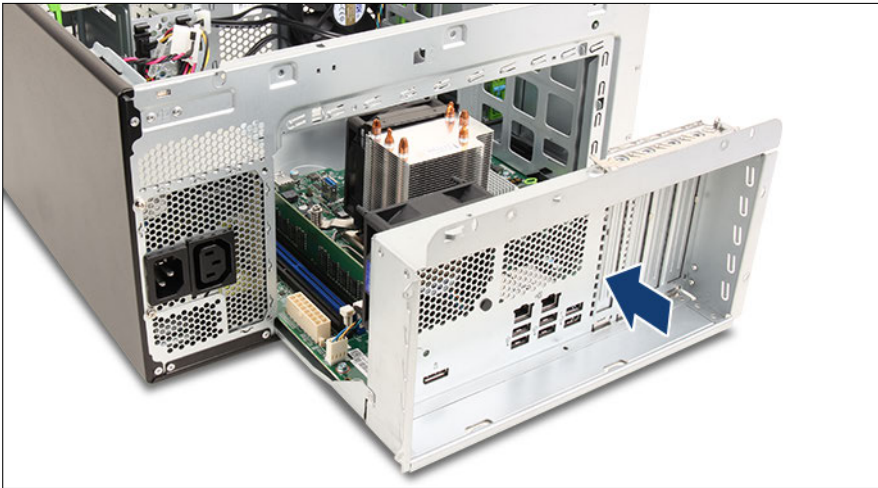


Figure 17: Installing the system board tray

- ▶ Carefully push the system board tray back.

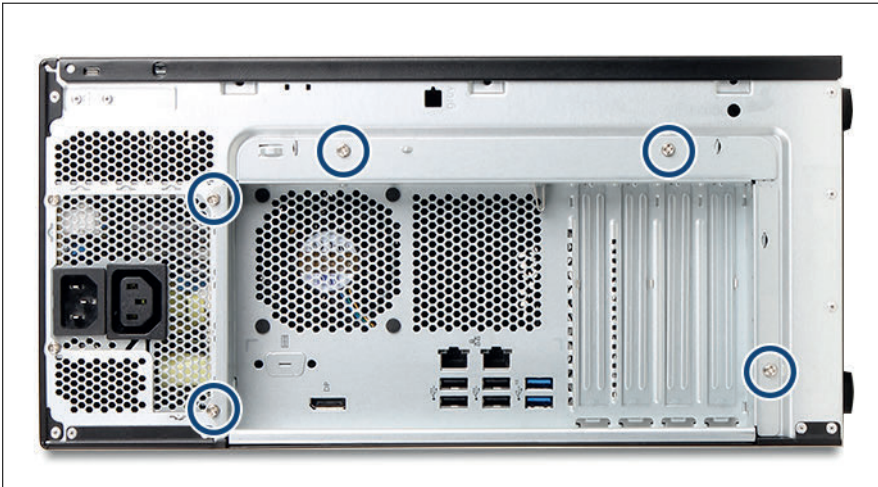


Figure 18: System board tray - Location of screws

- ▶ Fasten the system board tray to the chassis with five screws (see circles).
- ▶ Connect all cables on their place at the system board.

4.7.3 Installing the top HDD cage

Sliding the top HDD cage into the chassis



Figure 19: Pushing the HDD cage in and folding down the lever

- ▶ Push the HDD cage back into the chassis (1) and fold down the lever (2).

Installing the HDD cage door

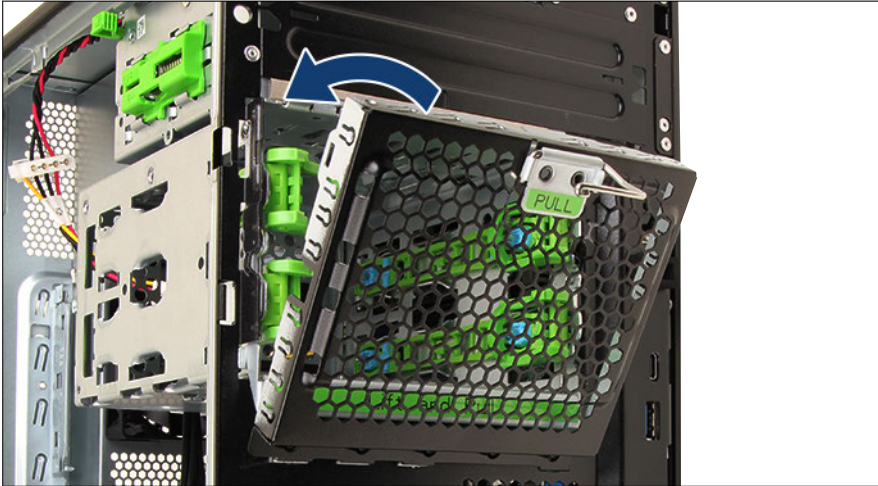


Figure 20: Installing the HDD cage door

- ▶ Install the HDD cage door and fold it up.



Figure 21: Folding down the lever

- ▶ Fold down the lever of the HDD cage door.

Installing the bay cover

- ▶ Install the bay cover, see ["Installing the bay cover" on page 59](#).

4.7.4 Installing the front cover



CAUTION

- ▶ When installing the front cover, keep the server in a vertical position.



Figure 22: Installing the front cover (A)

- ▶ Hook the three tabs on the front cover into the notches of the chassis (see circles).



Figure 23: Installing the front cover (B)

- ▶ Carefully close the front cover. Make sure that all three locking latches properly engage.



Figure 24: Installing the ID card

- ▶ Insert the ID card.

4.7.5 Installing the side cover



Figure 25: Installing the side cover

- ▶ Hook the side cover in the bottom side cant of the chassis (1).
- ▶ Push the side cover against the chassis until the locking mechanism engages (2).

4.8 Connecting the power cord



CAUTION

The server automatically adjusts to a mains voltage in the range from 100 V - 240 V.

- ▶ You may only operate the server if its rated voltage range corresponds to the local mains voltage.



In a second socket below the main socket, the PSU can provide the power supply for an optional monitor.

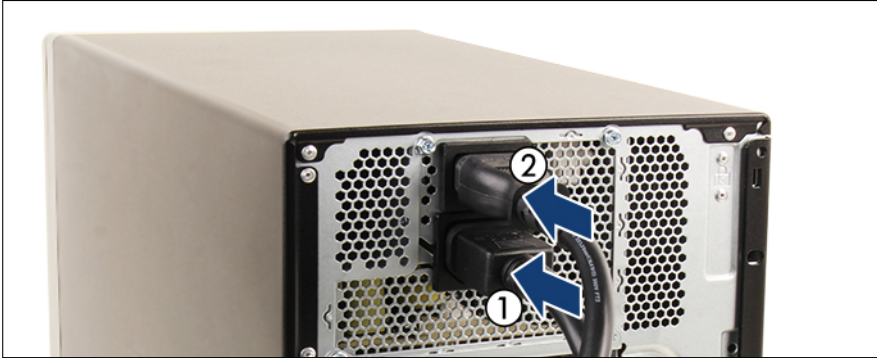


Figure 26: Connecting the power cords

- ▶ If applicable, connect the power cord for the monitor to the lower socket (1).
- ▶ Connect the power cord of the PSU to the upper socket (2).
- ▶ Connect the mains plug to a grounded mains outlet in the in-house power supply network.



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

4.9 Switching on the server



CAUTION

- ▶ Before switching on the server, make sure the side cover is closed. In order to comply with applicable EMC regulations (regulations on electromagnetic compatibility) and satisfy cooling requirements, the server must not run while the side cover is removed.
 - ▶ For more information, see ["Important information" on page 25](#).
- ▶ Connect all peripheral cables to the server.



Figure 27: On/Off button

- ▶ Press the On/Off button to start up the server (1).
- ▶ Ensure that the power-on indicator is lit green.



For more information see ["Indicators on the front panel" on page 234](#).

- ▶ Perform the required procedures described in the concluding steps of each upgrade or maintenance task.

4.10 Installing the bay cover



Figure 28: Notches for the bay cover

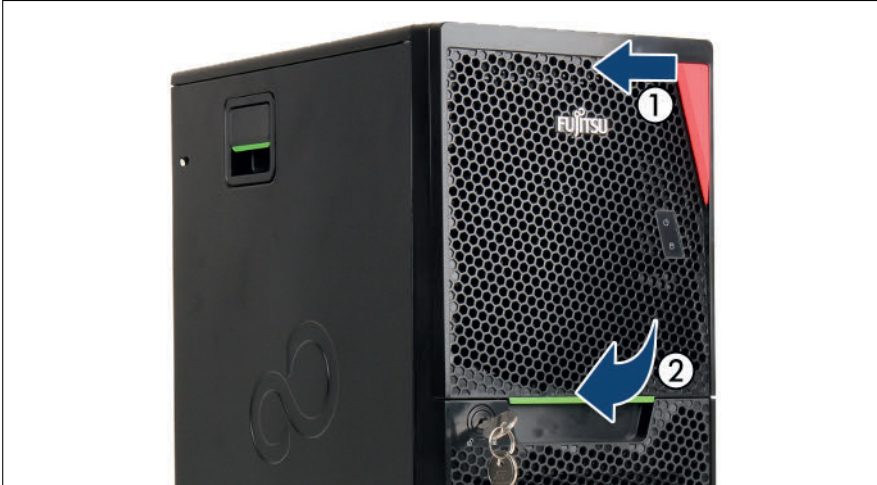


Figure 29: Installing the bay cover

- ▶ Hook the four tabs on the upper side of the bay cover into the notches in the front cover (1, see also circles in [Figure 28](#)).
- ▶ Fold down the bay cover until it locks in place (2).

4.11 Locking the server

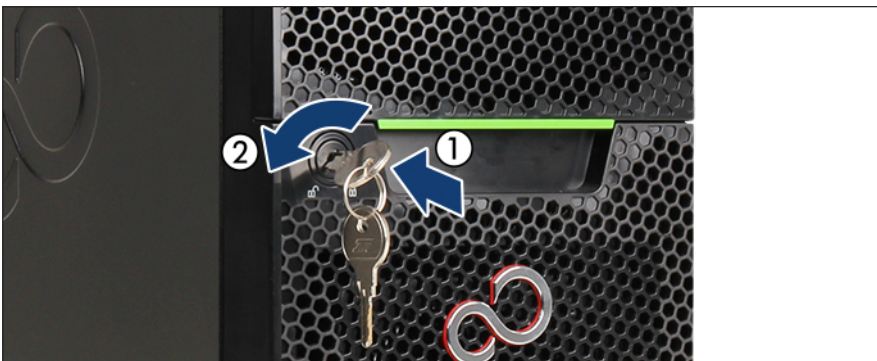


Figure 30: Locking the server

- ▶ Insert the key into the lock on the server front (1).
- ▶ Turn the key counter-clockwise to lock the drive bay cover (2).
- ▶ Remove the key.
- ▶ Store the key at a secure place to prevent unauthorized access.

5 Basic software procedures

5.1 Starting the maintenance task

5.1.1 Suspending BitLocker functionality

BitLocker Drive Encryption provides protection for OS 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:

<https://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.

Basic software procedures

- ▶ Ask the system administrator to suspend BitLocker-protection on the system volume, using the **BitLocker Drive Encryption** control panel item.



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

For Windows Server 2008

- ▶ Click **Start - Control Panel - Security - BitLocker Drive Encryption** to open the BitLocker Drive Encryption.
- ▶ Select the system volume, and click **Turn Off BitLocker**.
- ▶ From the **Turn Off BitLocker** dialog box, click **Disable BitLocker**.

For Windows Server 2008 R2 and above

- ▶ 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: <https://technet.microsoft.com/library/cc731549.aspx>

For more information, see the Fujitsu web pages.

5.1.2 Removing backup and optical disk media

- ▶ Ask the system administrator to eject all remaining backup or optical media from the backup drive or ODD 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.

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.

5.1.3 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.

5.2 Completing the maintenance task

5.2.1 Updating or recovering the BIOS

After replacing the system board or a CPU, it is essential to upgrade the BIOS to the latest version. The latest BIOS version are available from the Fujitsu support internet pages at:

<https://ts.fujitsu.com/support/>

For Japan:

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



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



For Japan, follow the instructions provided separately.

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.

5.2.2 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 (see "[Verifying and configuring the backup software solution](#)" on page 65), 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.


5.2.3 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 reenabled in the BIOS.


- ▶ Enter the BIOS.
- ▶ Select the **Advanced** menu.
- ▶ Select the status menu of the desired component:
 - ▶ Select **CPU Status** for CPUs.

 This option is only available for multi-processor systems.

- ▶ Select **Memory Status** for memory modules.
 - ▶ Select **PCI Status** for expansion cards.
- ▶ 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.

5.2.4 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 OS, 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.

5.2.5 Viewing the System Event Log (SEL)

- ▶ Enter the BIOS.
- ▶ Enter the **Event Logs** menu.
- ▶ Click **View Smbios Event Log**.




For detailed information on how to view the SEL using BIOS, see the "BIOS Setup Utility" reference manual.

5.2.6 Updating the NIC configuration file in a Linux/VMware OS

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.

 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.


To update the MAC address, proceed as follows:

- ▶ After replacing a network controller or the system board, switch on and boot the server, see ["Switching on the server" on page 58](#).

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

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

- ▶ Select **Keep Configuration** and **Ignore** to complete the boot process.
- ▶ Use the **vi** text editor to specify the MAC address in the HWADDR section of the **ifcfg-eth<x>** file.

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

Example:

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

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

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

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

- ▶ Save and close the definition file.
- ▶ For the changes to take effect, you need to reboot the network by entering the following command:

```
# service network restart
```



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

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

5.2.7 Resuming BitLocker functionality

If BitLocker Drive Encryption has been suspended for maintenance purposes (see ["Suspending BitLocker functionality" on page 63](#)), it has to be reenabled 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 suspend BitLocker-protection on the system volume, using the **BitLocker Drive Encryption** control panel item.

For Windows Server 2008

- ▶ Click **Start - Control Panel - Security - BitLocker Drive Encryption** to open the BitLocker Drive Encryption.
- ▶ Select the system volume, and click **Turn On BitLocker**.

For Windows Server 2008 R2 and above

- ▶ 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:

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

For more information, see the Fujitsu web pages.

5.2.8 Performing a RAID array rebuild

After replacing an HDD that has been combined into a RAID array, RAID rebuild will be performed unattended as a background process. Depending on your RAID controller, you may need to manually start a RAID rebuild.

- ▶ Ensure that the RAID array rebuild has started normally. Wait until the progress has reached at least one percent.

The progress is indicated in *PCSysscan_Report.xml* collected by Prime Collect.

- ▶ Open *PCSysscan_Report.xml* and check RebuildProgress.

In *PCSysscan_Report.xml*:

```
<Activity>Rebuilding</Activity>
```

```
<Status>Degraded</Status>
```

```
<RebuildProgress>1</RebuildProgress>
```

```
<ArrayName>SATA_Array_0000</ArrayName>
```



The number "1" in the text above indicates that the rebuild progress is at one percent.



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.

5.2.9 Looking up for MAC/WWN addresses

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



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

Looking up MAC addresses

- ▶ Enter the BIOS.
- ▶ Select the **Advanced** menu.
- ▶ Depending on the UEFI driver behavior of each controller, one or more places below show the MAC address.
 - ▶ The MAC address is shown on the **Advanced** menu of the UEFI driver of each controller.
 - ▶ Select the menu of the UEFI driver of each controller. The MAC address is shown on the menu displayed by the UEFI driver of each controller and the **Help** menu.
- ▶ Note down the new 12-digit MAC address.
- ▶ Press [Esc] to exit the BIOS.
- ▶ Inform the customer about the changed MAC address.

5.2.10 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.

5.2.11 Configuring LAN teaming

After replacing or 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.

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.

Basic software procedures



For more information, see the relevant LAN driver manual.

6 Power supply unit (PSU)

6.1 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 ["Important information" on page 25](#).

6.2 Basic information

The server is equipped with a standard PSU.

6.3 Replacing the standard PSU



Field Replaceable Unit
(FRU)



Hardware: 10 minutes

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

Preliminary steps

- ▶ ["Unlocking the server" on page 41](#).
- ▶ ["Removing the bay cover" on page 42](#).
- ▶ ["Shutting down the server" on page 43](#).

Power supply unit (PSU)

- ▶ ["Disconnecting the power cord"](#) on page 44.
- ▶ ["Getting access to the component"](#) on page 45.
- ▶ ["Removing the top HDD cage"](#) on page 48.

Removing the standard PSU

- ▶ Push the backup drive somewhat to the front to get more space, see ["Removing the RDX backup drive"](#) on page 173.



Figure 31: Disconnecting the power cable

- ▶ Disconnect the power cable from system board connector "PWR1".

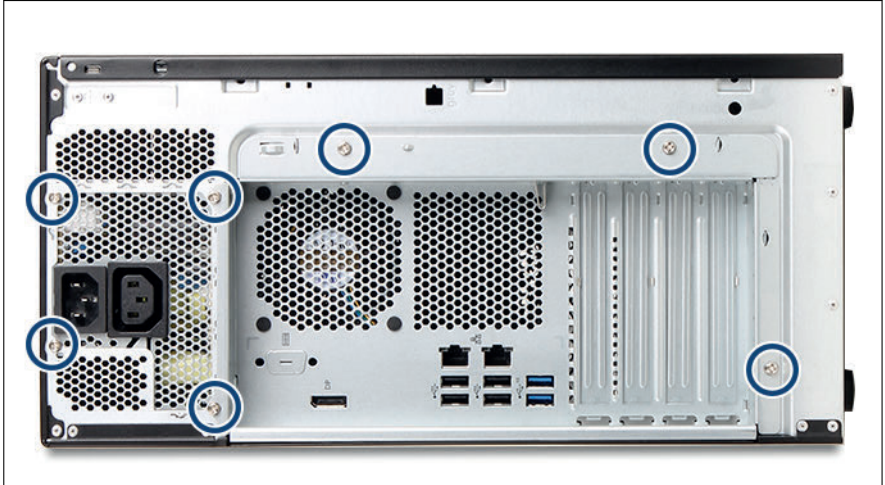


Figure 32: Removing the screws

- Remove seven screws from the PSU and the chassis (see circles).



Figure 33: Pulling out the system board tray by 1-2 cm

- Pull the system board tray out of the chassis by 1-2 cm.

Power supply unit (PSU)

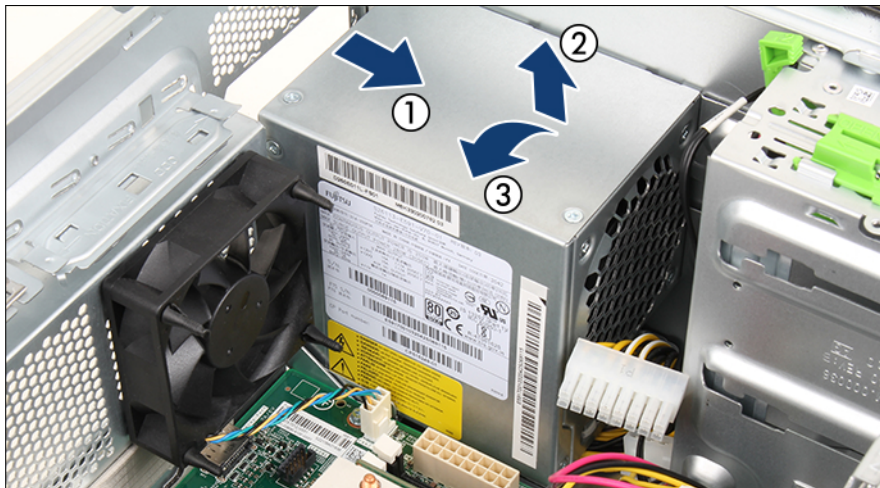


Figure 34: Removing the PSU

- ▶ Slide the PSU to the right about 2 cm to disengage the locking mechanism (1).
- ▶ Lift the PSU about 4 cm (2) and remove it out of the chassis in a slight angle (3).

Installing the standard PSU

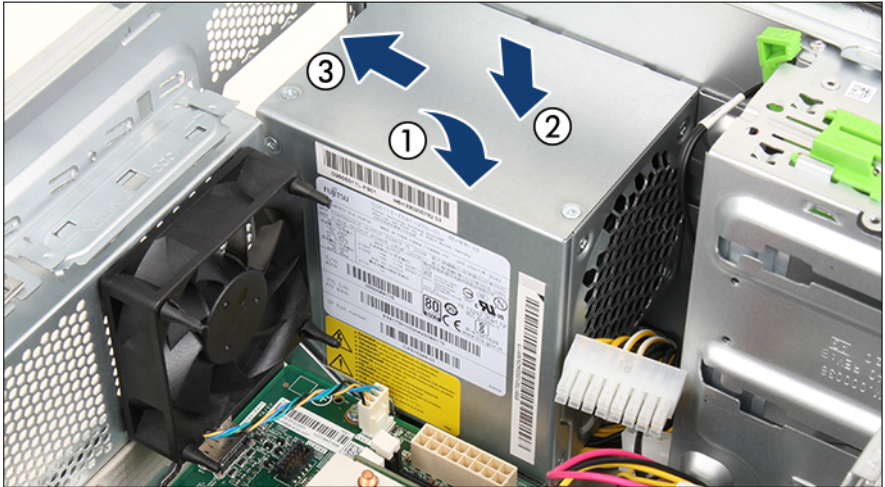


Figure 35: Inserting the PSU

- ▶ Insert the PSU into the chassis in a slight angle (1) and position it in place (2).
- ▶ Slide the PSU towards the rear of the chassis as far as it will go (3).

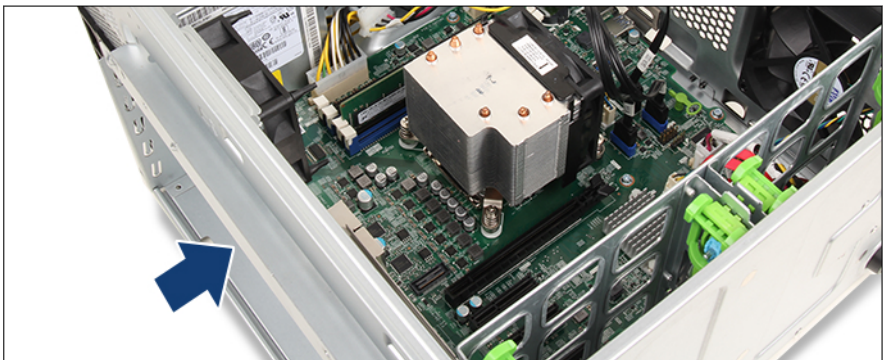


Figure 36: Sliding the system board tray into the chassis

- ▶ Slide the system board tray back into the chassis.

Power supply unit (PSU)



Figure 37: Fastening the screws

- ▶ Fasten the PSU and the chassis with seven screws (see circles).

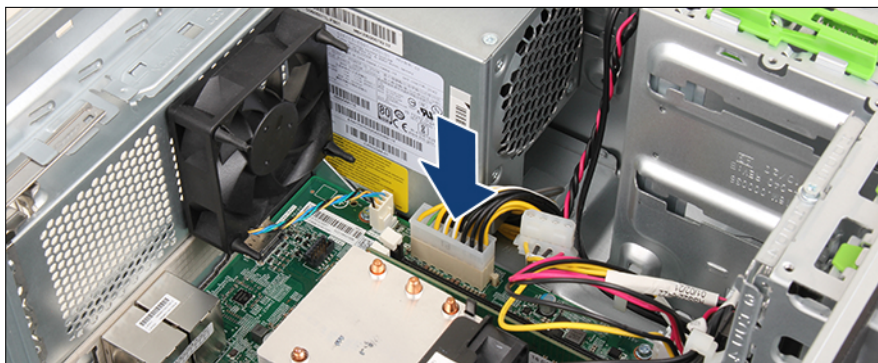


Figure 38: Connecting the power cable

- ▶ Connect the power cable to the system board connector "PWR1".
- ▶ Push back the backup drive until it snaps into place.

Concluding steps

- ▶ "Installing the top HDD cage" on page 53.
- ▶ "Reassembling" on page 51.
- ▶ "Connecting the power cord" on page 57.
- ▶ "Switching on the server" on page 58.
- ▶ "Installing the bay cover" on page 59.
- ▶ "Locking the server" on page 60.

7 Hard disk drives (HDD)

7.1 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 OS, 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 ["Important information" on page 25](#).

7.2 Basic information

General equipping rules

- HDDs with different capacities are installed from highest to lowest capacity.
- HDDs with different rotation speeds are installed from highest to lowest speed.
- Maximum configuration: 4x 3.5-inch HDDs

Location



Figure 39: 3.5-inch HDD location

- | | | | |
|---|------|---|------|
| 1 | HDD1 | 3 | HDD3 |
| 2 | HDD2 | 4 | HDD4 |

Replacing failed or aged drives

The tables show the location of the HDD in the device, BIOS Setup or HII Configuration Utility, and the description in the OS log for each AHCI/VROC/PRAID connection. Refer to when replacing failed or aged drives.



ServerView RAID Software is not provided anymore, If you install ServerView Agentless Service, Server View RAID Manager is running internally. So, the source of the logs is listed as ServerView RAID.

Position	Slot	BIOS Setup	OS Log written by ServerView RAID
1	HDD1	Port 3	Adapter Windows Advanced Host Controller Interface (0): disk (1) *
2	HDD2	Port 4	Adapter Windows Advanced Host Controller Interface (0): disk (2) *
3	HDD3	Port 5	Adapter Windows Advanced Host Controller Interface (0): disk (3) *
4	HDD4	Port 6	Adapter Windows Advanced Host Controller Interface (0): disk (4) *
* disk (n) is changed with the recognized sequence.			

Table 3: Configuration with Onboard SATA Controller (AHCI)

Position	Slot	VROC Configuration Utility	OS Log written by ServerView RAID
1	HDD1	Port 2	Adapter Intel VROC SATA RAID Controller (0): disk (0-2-0-0) or disk (2)
2	HDD2	Port 3	Adapter Intel VROC SATA RAID Controller (0): disk (0-3-0-0) or disk (3)
3	HDD3	Port 4	Adapter Intel VROC SATA RAID Controller (0): disk (0-4-0-0) or disk (4)
4	HDD4	Port 5	Adapter Intel VROC SATA RAID Controller (0): disk (0-5-0-0) or disk (5)

Table 4: Configuration with Onboard SATA Controller (RAID)

Hard disk drives (HDD)

Position	Slot	PRAID Configuration Utility	OS Log written by ServerView RAID
1	HDD1	Port0 3:01:00	Adapter PRAID CP500i (0): disk (0:0)
2	HDD2	Port0 3:01:01	Adapter PRAID CP500i (0): disk (0:1)
3	HDD3	Port0 3:01:02	Adapter PRAID CP500i (0): disk (0:2)
4	HDD4	Port0 3:01:03	Adapter PRAID CP500i (0): disk (0:3)

Table 5: Configuration with SAS Array Controller

7.3 2.5-inch HDD/SSD configurations

7.3.1 Installing a 2.5-inch HDD module



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

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

Preliminary steps

- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)
- ▶ Locate the correct drive bay, see ["Location" on page 84.](#)

Installing a 2.5-inch HDD



HDDs on the bottom and HDDs on the front can be installed in the same way.



Figure 40: Removing the screws from the 3.5-inch HDD carrier

- ▶ Remove the four screws from the 3.5-inch HDD carrier.



Figure 41: Attaching the 2.5-inch HDD to the 3.5-inch HDD carrier

- ▶ Fasten the 4 screws to the 3.5-inch HDD carrier and attach the HDD to the carrier (see circles).

Hard disk drives (HDD)



Figure 42: Installing a 2.5-inch HDD

- ▶ Insert the HDD into its drive bay.
- ▶ Slide the HDD into its drive bay until the Easyrails click in place.
- ▶ When using a RAID array, add the additional HDD/SSD to the RAID array.



Configuring the RAID array used in your configuration, see the documentation of the RAID controller and ["Documentation overview" on page 22.](#)

Concluding steps

- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)
- ▶ ["Locking the server" on page 60.](#)

7.3.2 Removing a 2.5-inch HDD module



Upgrade and Repair Unit (URU)





Hardware: 5 minutes

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

Preliminary steps

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

RAID level	Procedure
RAID 0	<p>Only remove an HDD module combined in a RAID 0 array if defective.</p> <p> CAUTION RAID 0 provides no data redundancy. In case of an HDD module is defect, all data are lost!</p>
RAID 1	<p>Removing an HDD module from a RAID 1 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.</p> <p> After replacing the HDD module, RAID rebuild will be performed as a background process, see "Performing a RAID array rebuild" on page 71.</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 HII Configuration Utility.



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 RAID documentation in ["List of documents" on page 23](#).

Hard disk drives (HDD)

Removing a 2.5-inch HDD

i HDDs on the bottom and HDDs on the front can be removed in the same way.



Figure 43: Removing a 2.5-inch HDD

► Pull the HDD carrier completely out of its drive bay.



Figure 44: Detaching the 2.5-inch HDD from the 3.5-inch HDD carrier

► Loosen the 4 screws on the 3.5-inch HDD carrier (see circles) and separate the HDD from the carrier.

Concluding steps

- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)
- ▶ ["Locking the server" on page 60.](#)

7.3.3 Replacing a 2.5-inch HDD module



**Upgrade and Repair Unit
(URU)**



Hardware: 5 minutes

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



CAUTION

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.

Preliminary steps

- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)

Removing the defective 2.5-inch HDD

- ▶ Remove the HDD, see ["Removing a 2.5-inch HDD" on page 90.](#)

Hard disk drives (HDD)

Installing the new 2.5-inch HDD

- ▶ Install the HDD, see ["Installing a 2.5-inch HDD" on page 86](#).

Concluding steps

- ▶ ["Reassembling" on page 51](#).
- ▶ ["Connecting the power cord" on page 57](#).
- ▶ ["Switching on the server" on page 58](#).
- ▶ ["Installing the bay cover" on page 59](#).
- ▶ ["Locking the server" on page 60](#).
- ▶ ["Performing a RAID array rebuild" on page 71](#).

7.4 3.5-inch HDD configurations

7.4.1 Installing a 3.5-inch HDD module



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: tool-less

Preliminary steps

- ▶ ["Unlocking the server" on page 41](#).
- ▶ ["Removing the bay cover" on page 42](#).
- ▶ ["Shutting down the server" on page 43](#).
- ▶ ["Disconnecting the power cord" on page 44](#).
- ▶ ["Getting access to the component" on page 45](#).
- ▶ Locate the correct drive bay, see ["Location" on page 84](#).

Removing Easyrail out of the upper HDD bay

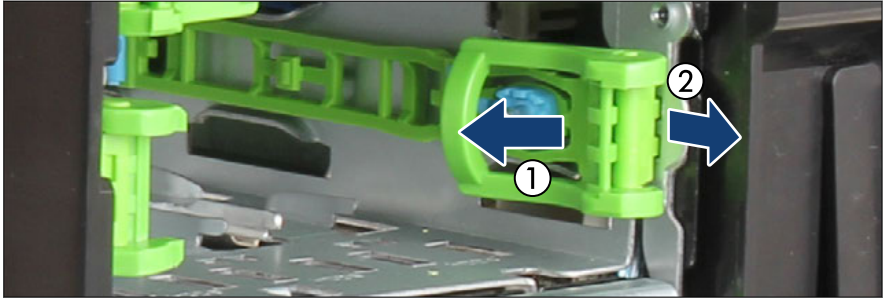


Figure 45: Removing the Easyrails out of the bay

- ▶ Press in the green handle on the Easyrail (1) and pull the rail out of the desired 3.5-inch HDD drive bay (2).



Easyrails can be different (see figures).

Installing a 3.5-inch HDD



Figure 46: Aligning the Easyrails

- ▶ Align the two pins on the Easyrails with the screw holes on the HDD.

Hard disk drives (HDD)



Figure 47: Attaching the Easyrails

- ▶ Attach an Easyrail each side of the HDD.



Figure 48: Inserting the 3.5-inch HDD

- ▶ Insert the HDD into its drive bay.
- ▶ Slide the HDD into its drive bay until the Easyrails click in place.

- ▶ When using a RAID array, add the additional HDD/SSD to the RAID array.



Configuring the RAID array used in your configuration, see the documentation of the RAID controller and ["Documentation overview" on page 22](#).

Concluding steps

- ▶ ["Reassembling" on page 51](#).
- ▶ ["Connecting the power cord" on page 57](#).
- ▶ ["Switching on the server" on page 58](#).
- ▶ ["Installing the bay cover" on page 59](#).
- ▶ ["Locking the server" on page 60](#).

7.4.2 Removing a 3.5-inch HDD module



Upgrade and Repair Unit (URU)





Hardware: 5 minutes

Tools: tool-less

Preliminary steps

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

Hard disk drives (HDD)

RAID level	Procedure
RAID 0	<p>Only remove an HDD module combined in a RAID 0 array if defective.</p> <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 RAID 6 RAID 10	<p>Removing an HDD module from a RAID 1 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.</p> <p> After replacing the HDD module, RAID rebuild will be performed as a background process, see "Performing a RAID array rebuild" on page 71.</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 HII Configuration Utility.



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 RAID documentation in ["List of documents" on page 23](#).

Removing a 3.5-inch HDD

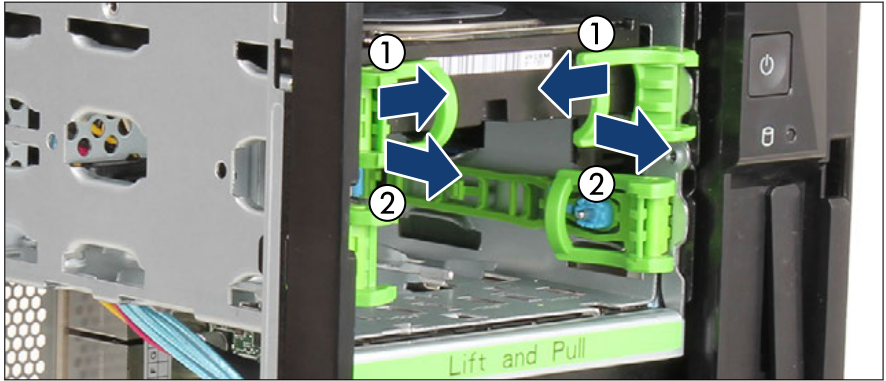


Figure 49: Removing a 3.5-inch HDD

- ▶ Press in the green handles on the Easyrails (1) to disengage the locking mechanism.
- ▶ Pull the HDD completely out of its drive bay (2).

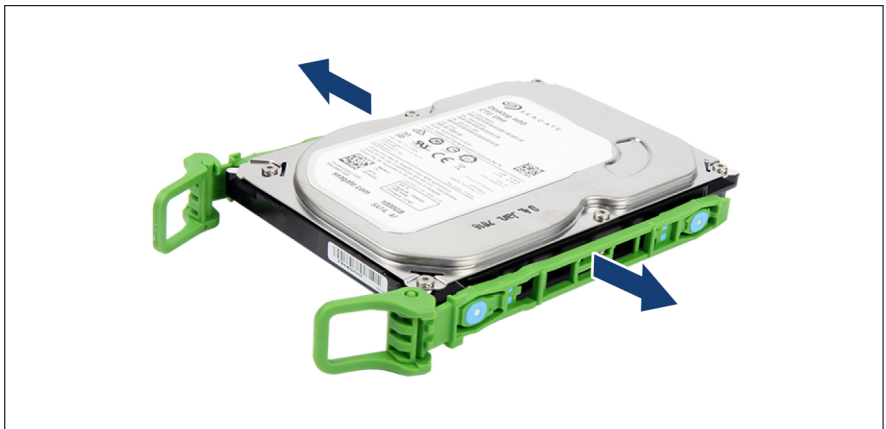



Figure 50: Detaching the Easyrails

- ▶ Detach the Easyrails from the HDD.

Hard disk drives (HDD)

Inserting Easyrails in the upper HDD bay

 Store unused Easyrails inside their drive bays to have them at hand if needed.

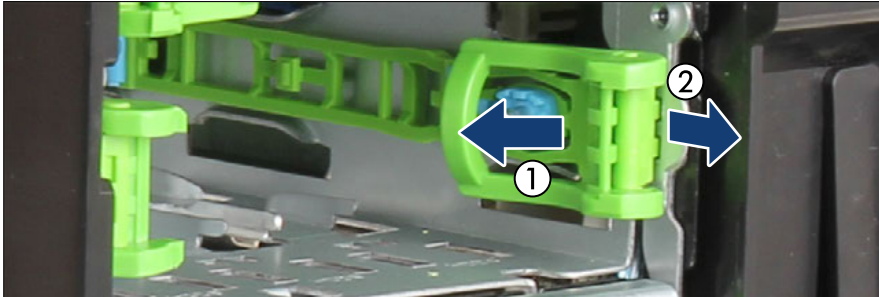


Figure 51: Inserting the Easyrails into their HDD bay

- ▶ Push the Easyrails completely into the bay (1).
- ▶ Pull out on the green handles on the Easyrails to lock them in place (2).

Concluding steps

- ▶ ["Reassembling" on page 51](#)
- ▶ ["Connecting the power cord" on page 57](#)
- ▶ ["Switching on the server" on page 58](#)
- ▶ ["Installing the bay cover" on page 59](#)
- ▶ ["Locking the server" on page 60](#)

7.4.3 Replacing a 3.5-inch HDD module



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: tool-less



CAUTION

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.

Preliminary steps

- ▶ ["Unlocking the server" on page 41](#)
- ▶ ["Removing the bay cover" on page 42](#)
- ▶ ["Shutting down the server" on page 43](#)
- ▶ ["Disconnecting the power cord" on page 44](#)
- ▶ ["Getting access to the component" on page 45](#)

Removing the defective 3.5-inch HDD

- ▶ Remove the HDD, see ["Removing a 3.5-inch HDD" on page 97](#).

Installing the new 3.5-inch HDD

- ▶ Install the HDD, see ["Installing a 3.5-inch HDD" on page 93](#).

Concluding steps

- ▶ ["Reassembling" on page 51](#)
- ▶ ["Connecting the power cord" on page 57](#)
- ▶ ["Switching on the server" on page 58](#)
- ▶ ["Installing the bay cover" on page 59](#)
- ▶ ["Locking the server" on page 60](#)
- ▶ ["Performing a RAID array rebuild" on page 71](#)

8 Fans

8.1 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 "[Important information](#)" on page 25.

8.2 Basic information



CAUTION

Since the system fans are not redundant they have to be replaced immediately in case of defects or pre-failure events.



Figure 52: Positions of the system fans

- | | | | |
|---|--|---|----------------------|
| 1 | Rear fan (Fan2 SYS) | 3 | Front fan (Fan1 SYS) |
| 2 | CPU fan (implemented in the heat sink) | | |



The CPU fan is implemented in the heat sink. When the CPU fan is defective, the heat sink must be replaced, see ["Replacing the heat sink"](#) on page 152.

8.3 Replacing the rear fan



Upgrade and Repair Unit (URU)



Hardware: 15 minutes

Tools: diagonal pliers

Preliminary steps

- ▶ "Unlocking the server" on page 41
- ▶ "Removing the bay cover" on page 42
- ▶ "Shutting down the server" on page 43
- ▶ "Disconnecting the power cord" on page 44.
- ▶ "Getting access to the component" on page 45.
- ▶ "Removing the top HDD cage" on page 48.

Removing the defective rear fan

- ▶ Remove the heat sink, see "Removing the heat sink" on page 140.



Figure 53: Disconnecting the rear fan cable

- ▶ Disconnect the rear fan cable from system board connector "Fan2 (SYS)".

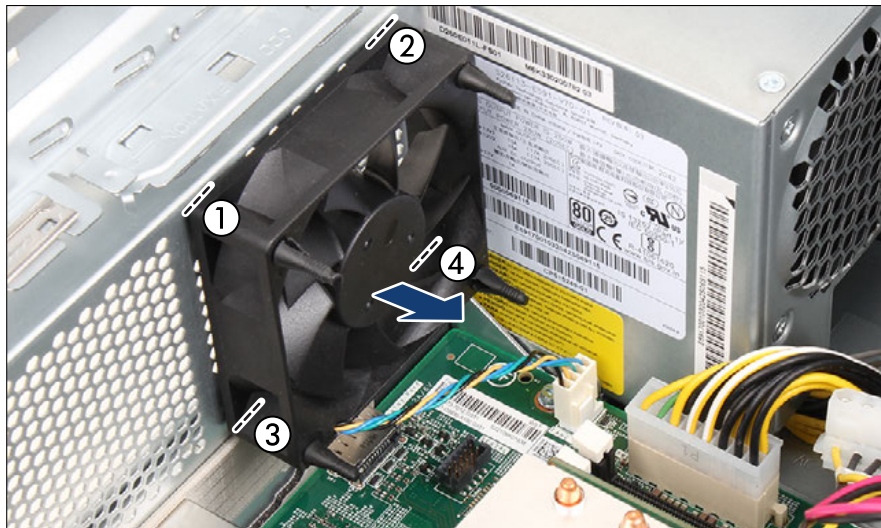


Figure 54: Removing the rear fan

- ▶ Extend the defective rear fan somewhat (see arrow).
- ▶ Cut through the four rubber rivets between the rear fan and the chassis using a diagonal pliers in sequence 1-4.

Installing the new rear fan



Figure 55: Inserting new rubber rivets

- ▶ Lead the four rubber rivets through the screw holes on the rear chassis wall.
- ▶ Pull tight until the sockets on the rubber rivets properly engage with the rear chassis wall.



Figure 56: Installing the rear fan

- ▶ Lead the loose ends of the rubber rivets through the four screw holes on the new rear fan.
- ▶ Pull tight until the expanding plug on the rubber rivet engages with the fan (see close-up).



Ensure that the expanding plugs on all four rubber rivets are securely seated on the fan.



Figure 57: Cutting off the rubber rivets

- ▶ Cut off the loose ends of the four rubber rivets as shown.

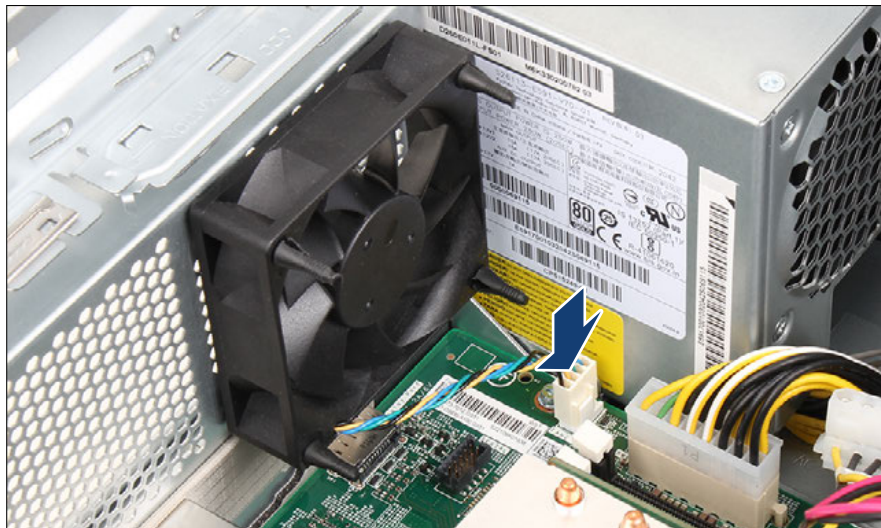


Figure 58: Connecting the rear fan cable

- ▶ Connect the rear fan cable to system board connector "Fan2 (SYS)".
- ▶ Install the heat sink, see ["Installing the heat sink" on page 150](#).

Concluding steps

- ▶ ["Installing the top HDD cage" on page 53](#).
- ▶ ["Reassembling" on page 51](#).
- ▶ ["Connecting the power cord" on page 57](#).
- ▶ ["Switching on the server" on page 58](#)
- ▶ ["Installing the bay cover" on page 59](#)
- ▶ ["Locking the server" on page 60](#)

8.4 Replacing the front fan



Upgrade and Repair Unit
(URU)



Hardware: 15 minutes

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

Preliminary steps

- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)

Removing the defective front fan

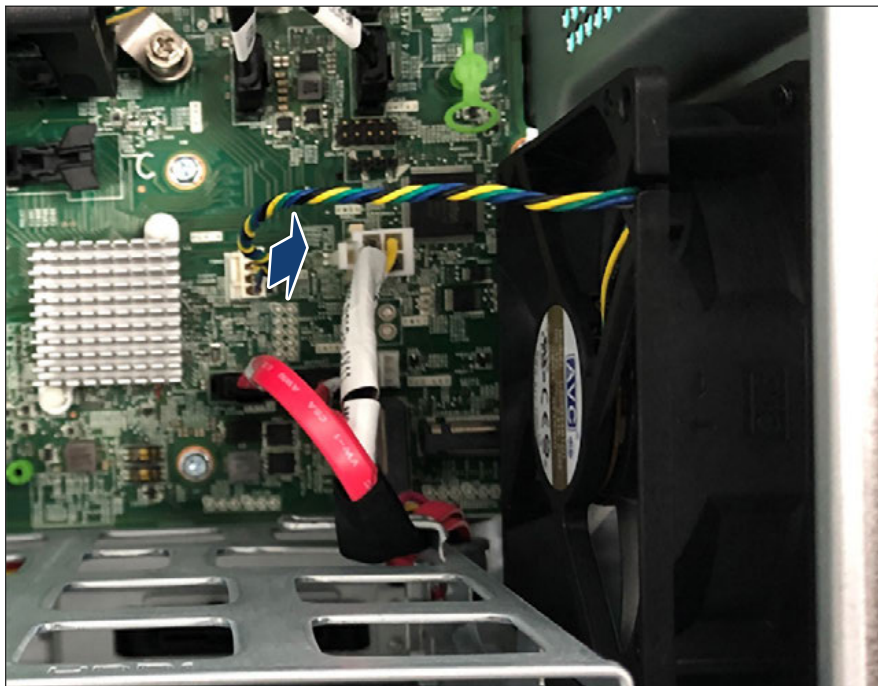


Figure 59: Disconnecting the front fan cable

- ▶ Disconnect the front fan cable from system board connector "Fan1 (SYS)".



Figure 60: Loosening the screws

- Loosen the four screws from the front fan air outlet (see circles).

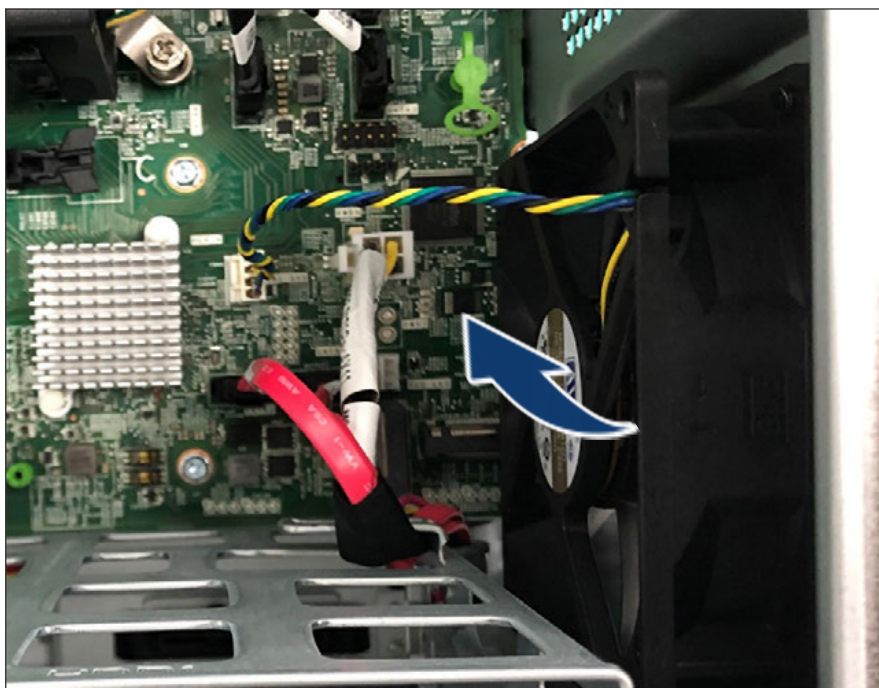


Figure 61: Removing the front fan

Fans

- ▶ Remove the front fan.

Installing the new front fan

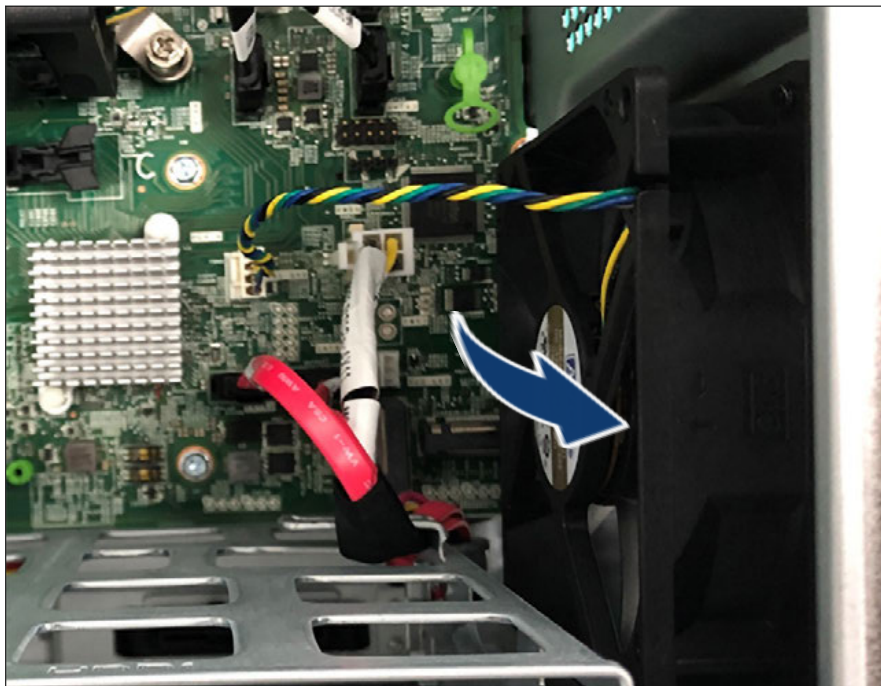


Figure 62: Installing the front fan

- ▶ Install the front fan.



Figure 63: Fastening the screws

- Fasten the four screws to the front fan (see circles). Screw torque: under 0.6 Nm.



Figure 64: Connecting the front fan cable

- ▶ Connect the front fan cable to system board connector "Fan1 (SYS)".

Concluding steps

- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)
- ▶ ["Locking the server" on page 60.](#)

9 Expansion cards

9.1 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 "[Important information](#)" on page 25.

9.2 Basic information

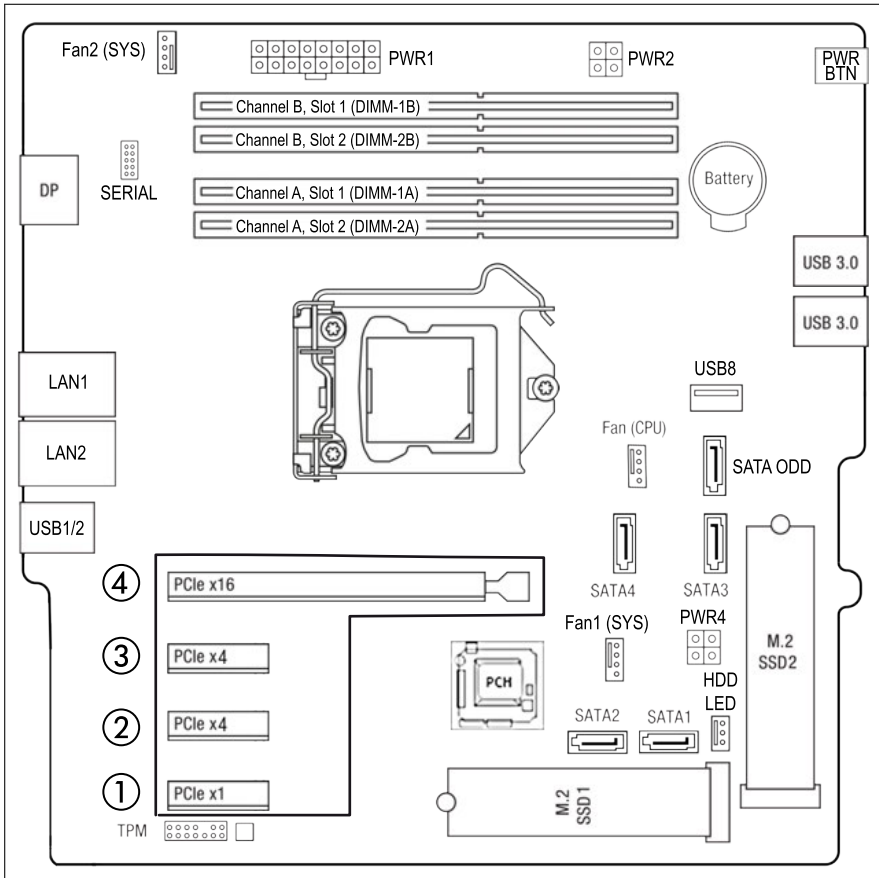


Figure 65: PCI slot overview

PCI slot	Type	Description
1	PCIe x1	PCIe x1 slot Gen 3 (notched)(mechanically x4)
2	PCIe x4	PCIe x4 slot Gen 3 (notched)(mechanically x4)
3	PCIe x4	PCIe x4 slot Gen 3 (notched) (mechanically x4)
4	PCIe x16	PCIe x16 slot Gen 4 (mechanically x16)



For system relevant information, see the hardware configurator of your server available online at the following address: https://ts.fujitsu.com/products/standard_servers/index.htm

For Japan:

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

9.3 Handling slot brackets

9.3.1 Installing slot brackets



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: Phillips PH2 / (+) No. 2 screw driver / hexagon screw driver 5 mm



Use the low profile bracket perforated for relevant controllers. No bracket needed for installing the HDD controller in slot 1 of riser module 1.

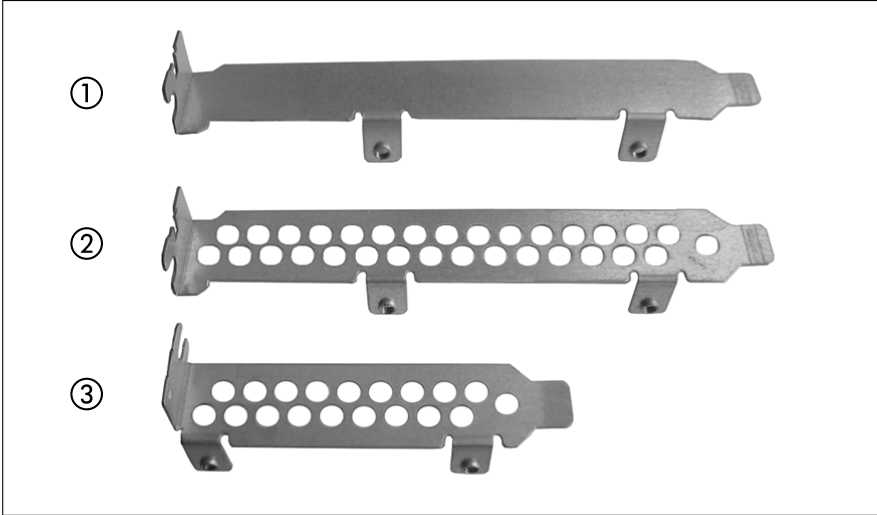


Figure 66: Perforated and non-perforated slot brackets

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

Installing a slot bracket

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

Example network adapter

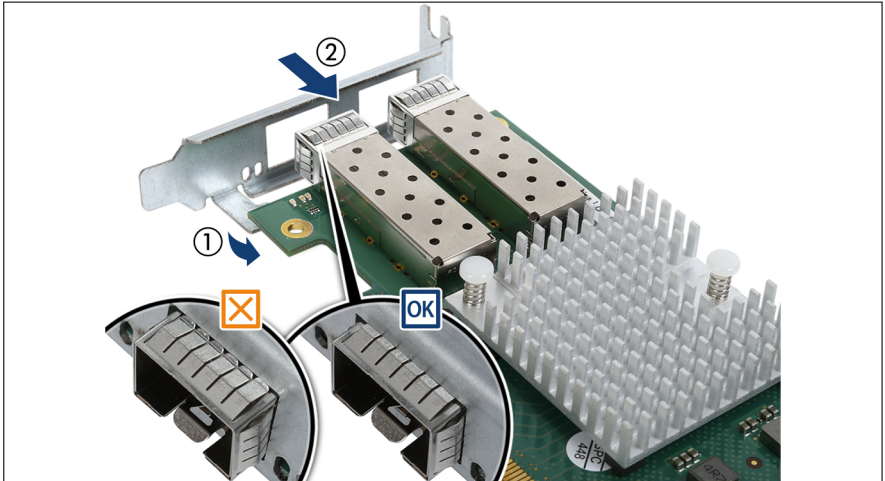


Figure 67: Placing the slot bracket

- ▶ Place the controller on the slot bracket (1).
- ▶ Carefully shift the slot bracket towards the controller (2).
- ▶ Ensure that the ESD springs properly engage with the slot bracket as shown (see circles).

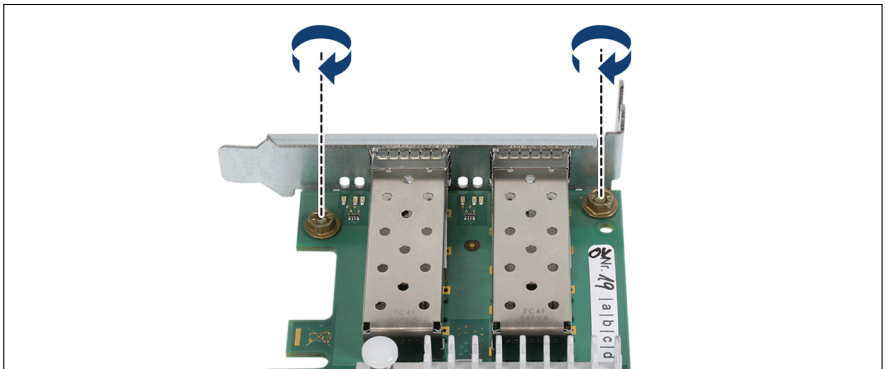


Figure 68: Fastening the slot bracket - D2755

- ▶ Fasten the slot bracket to the controller with two screws.

9.3.2 Removing slot brackets



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools:

- Phillips PH2 / (+) No. 2 screw driver
- Hexagon screw driver (for hexagon bolt)

Removing a slot bracket

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

9.4 Installing an expansion card



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Software: 5 minutes

Tools:

- Only for installing slot brackets:
- Phillips PH2 / (+) No. 2 screw driver
 - Hexagon screw driver (for hexagon bolt)

Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 63.](#)
- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)

Removing the slot cover

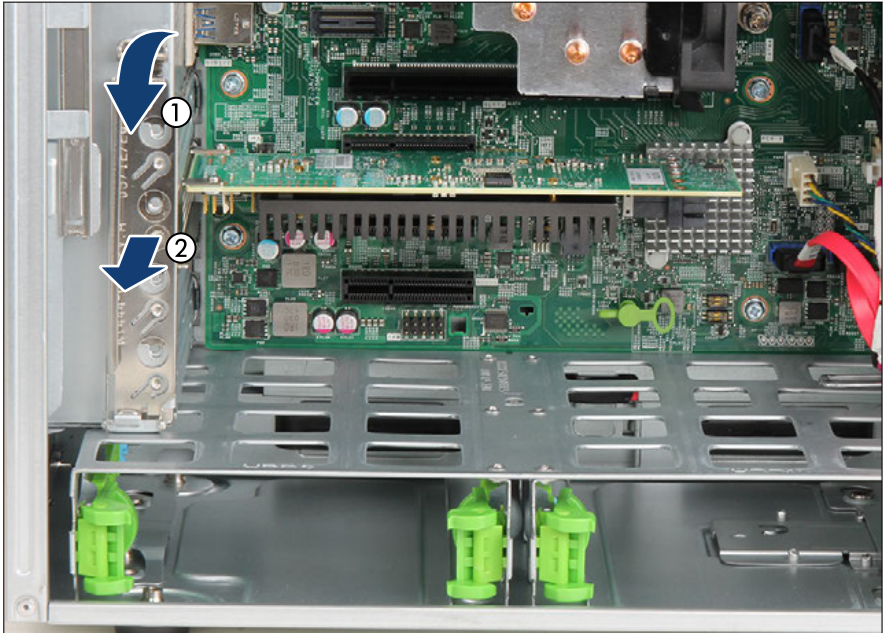


Figure 69: Removing the slot cover

- ▶ Open the slot cover clamp (1).
- ▶ Remove the desired slot cover (2).



CAUTION

- ▶ Keep the slot cover for future use.
- ▶ If the expansion card is removed and not replaced with a new one, the slot cover must be reinstalled due to cooling, to comply with applicable EMC regulations and to protect against fire.

Expansion cards

Installing an expansion card

- ▶ 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 "[Installing a slot bracket](#)" on page 118.

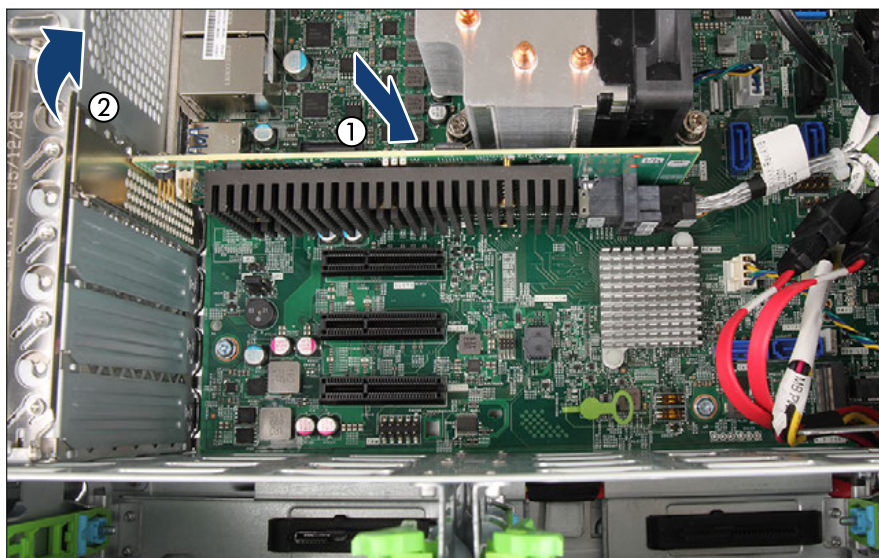


Figure 70: Installing the expansion card

- ▶ Carefully insert the expansion card into the desired PCI slot and press firmly until it is fully seated in the slot (1).
- ▶ Close the slot cover clamp (2).
- ▶ If applicable, connect internal cables to the expansion card (see "[Appendix B](#)" on page 243).

Concluding steps

- ▶ "[Reassembling](#)" on page 51.
- ▶ If applicable, connect external cables to the expansion card.

- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)
- ▶ ["Locking the server" on page 60.](#)
- ▶ ["Resuming BitLocker functionality" on page 70.](#)
- ▶ If applicable, ["After replacing or upgrading LAN controllers" on page 73.](#)

9.5 Removing an expansion card



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

- Tools:** Only for removing slot brackets:
- Phillips PH2 / (+) No. 2 screw driver
 - Hexagon screw driver (for hexagon bolt)

Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 63.](#)
- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ If applicable, disconnect all external cables from the expansion card.
- ▶ ["Getting access to the component" on page 45.](#)

Removing an expansion card

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

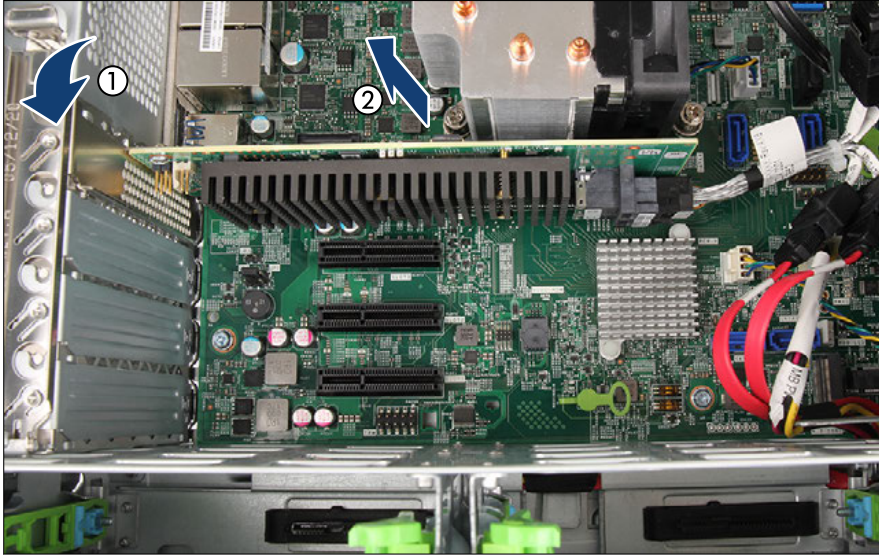


Figure 71: Removing an expansion card

- ▶ Open the slot cover clamp (1).
- ▶ Carefully remove the expansion card from its slot (2).

Installing the slot cover



CAUTION

- ▶ Keep the slot cover for future use.
- ▶ If the expansion card is removed and not replaced with a new one, the slot cover must be reinstalled due to cooling, to comply with applicable EMC regulations and to protect against fire.

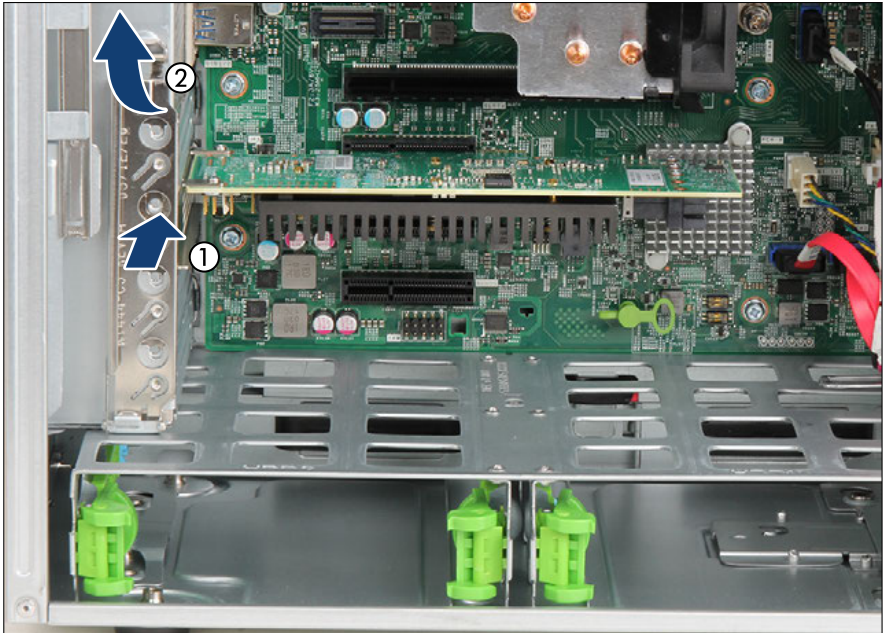


Figure 72: Installing a slot cover

- ▶ Insert a slot cover into the unused PCI slot opening (1).
- ▶ Close the slot cover clamp (2).

Concluding steps

- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)
- ▶ ["Locking the server" on page 60.](#)
- ▶ ["Resuming BitLocker functionality" on page 70.](#)

9.6 Replacing an expansion card



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Software: 5 minutes

Tools: Only for installing or removing slot brackets:

- Phillips PH2 / (+) No. 2 screw driver
- Hexagon screw driver (for hexagon bolt)

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 the system board.

Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 63](#)
- ▶ ["Unlocking the server" on page 41](#)
- ▶ ["Removing the bay cover" on page 42](#)
- ▶ ["Shutting down the server" on page 43](#)
- ▶ ["Disconnecting the power cord" on page 44](#)
- ▶ ["Getting access to the component" on page 45.](#)

Removing an expansion card

- ▶ Remove the defective expansion card, see ["Removing an expansion card" on page 123.](#)
- ▶ If the slot bracket on the defective expansion card is to be reused, remove it from the expansion card, see ["Removing a slot bracket" on page 120.](#)

Installing the new expansion card

- ▶ If applicable, install the slot bracket, see ["Installing a slot bracket" on page 118](#).
- ▶ Install the new expansion card, see ["Installing an expansion card" on page 122](#).

Concluding steps

- ▶ ["Reassembling" on page 51](#)
- ▶ ["Connecting the power cord" on page 57](#)
- ▶ ["Switching on the server" on page 58](#)
- ▶ ["Installing the bay cover" on page 59](#)
- ▶ ["Locking the server" on page 60](#)
- ▶ ["Enabling replaced components in the BIOS" on page 67](#)
- ▶ ["Looking up for MAC/WWN addresses" on page 72](#)
- ▶ ["Updating the NIC configuration file in a Linux/VMware OS" on page 69](#)
- ▶ ["Resuming BitLocker functionality" on page 70](#)
- ▶ If applicable, restore LAN teaming configurations, see ["After replacing or upgrading LAN controllers" on page 73](#).

10 Main memory

10.1 Safety notes



CAUTION

- ▶ Before removing several memory modules, make sure that all memory modules can be reinstalled into their original slots. Otherwise, data may be lost.
- ▶ Do not install unsupported third party memory modules. For more information on supported memory modules, see "[Basic informations](#)" on page 130. 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 install and remove memory modules repeatedly. Doing so may cause failures.
- ▶ If the memory module has not been correctly installed, it may cause a fire. Install 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 "[Important information](#)" on page 25.

10.2 Basic informations

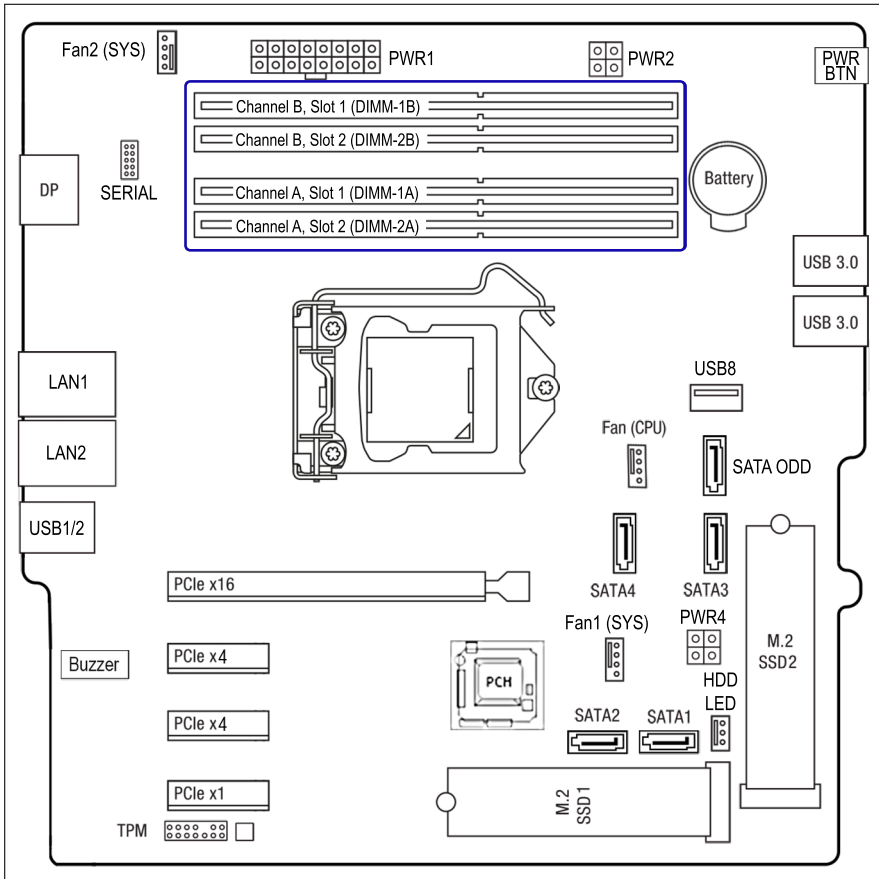


Figure 73: Slots of the main memory

The system board is equipped with four memory slots.

The system has to be equipped with at least one memory module.

Memory sequence

- There should be at least one DDR4 DIMM.
- Populate DIMM-1A (channel A, slot 1) first.

- Within both channels, memory slot 1 (i. e. the black slot) must be populated prior to slot 2 (blue slot).
- For maximum performance, populate both channels with the same amount of memory (symmetric dual channel configuration).

	Channel A		Channel B	
Memory slot	DIMM-1A	DIMM-2A	DIMM-1B	DIMM-2B
Mounting order	1.	3.	2.	4.

Table 6: Mounting order for memory modules

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.
- Single-channel mode is used if only one memory module is populated (in DIMM-1A).
- If the amount of memory modules differs between the two channels, the board will run in dual-channel asymmetric mode.
- Populating two channels with identical DIMMs will generate better memory performance compared to asymmetrical cases.
- If memory modules with different speeds are used, the lowest clock rate applies for all DIMMs.
- If the CPU is Xeon and two Dual Rank 3200 MT/s DIMMs are installed on the same channel, the memory speed is limited to 2933 MT/s.



The following configurations are not supported:

- Mix of ECC and non-ECC UDIMMs
- Mix of different rank DIMMs in one channel
- Mix of memory modules with different technologies or capacities in one channel or between two channels
- Mix of memory modules with different part numbers

10.3 Installing memory modules



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: tool-less

Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 63.](#)
- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)

Installing a memory module

- ▶ Identify the correct memory slot according to the mounting order, see ["Memory sequence" on page 130.](#)

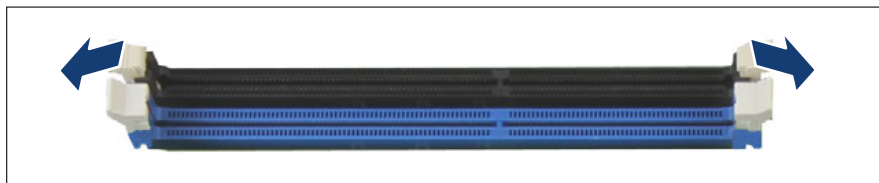


Figure 74: Opening the securing clips

- ▶ Press the securing clips on both sides of the memory slot concerned outward.

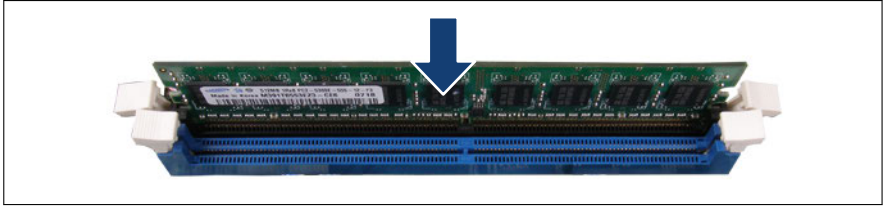


Figure 75: Installing a memory module

- ▶ 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.

Concluding steps

- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)
- ▶ ["Locking the server" on page 60.](#)
- ▶ If applicable, ["Updating or recovering the BIOS" on page 65.](#)
- ▶ ["Resuming BitLocker functionality" on page 70.](#)

10.4 Removing memory modules



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: tool-less

Main memory



CAUTION

- ▶ Use only released configurations to ensure a faultless operation of the system.
- ▶ Before changing the memory configuration, verify if the configuration is released. Please contact your sales outlet or our customer service center.

Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 63.](#)
- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)

Removing a memory module

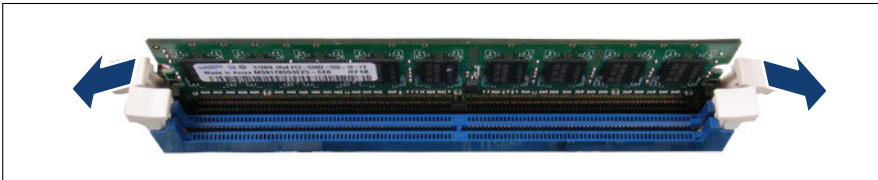


Figure 76: Opening the securing clips

- ▶ Eject the desired memory module by pressing out the securing clips at each end of the memory slot.

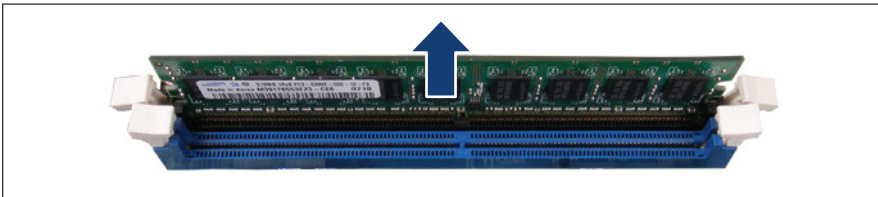


Figure 77: Removing a memory module

- ▶ Remove the ejected memory module.
- ▶ Close the securing clips.

**CAUTION**

If the clips are open, they can collide with a cable clamp.

Concluding steps

- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)
- ▶ ["Locking the server" on page 60.](#)
- ▶ If applicable, ["Updating or recovering the BIOS" on page 65.](#)
- ▶ ["Resuming BitLocker functionality" on page 70.](#)

10.5 Replacing memory modules



**Upgrade and Repair Unit
(URU)**



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

Tools: tool-less

Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 63.](#)
- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)

Removing the defective memory module

- ▶ Remove the memory module, see ["Removing a memory module" on page 134](#).

Installing the new memory module

- ▶ Install the memory module, see ["Installing a memory module" on page 132](#).

Concluding steps

- ▶ ["Reassembling" on page 51](#).
- ▶ ["Connecting the power cord" on page 57](#).
- ▶ ["Switching on the server" on page 58](#).
- ▶ ["Installing the bay cover" on page 59](#).
- ▶ ["Locking the server" on page 60](#).
- ▶ ["Enabling replaced components in the BIOS" on page 67](#).

After replacing memory modules, their **Memory Status** are reset to **Enabled** automatically.

- ▶ ["Resuming BitLocker functionality" on page 70](#).

11 Processor (CPU)

11.1 Safety notes



CAUTION

- ▶ Do not install unsupported CPUs. For more information on supported CPUs, see ["Basic information" on page 138](#).
- ▶ 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 ["Important information" on page 25](#).

11.2 Basic information

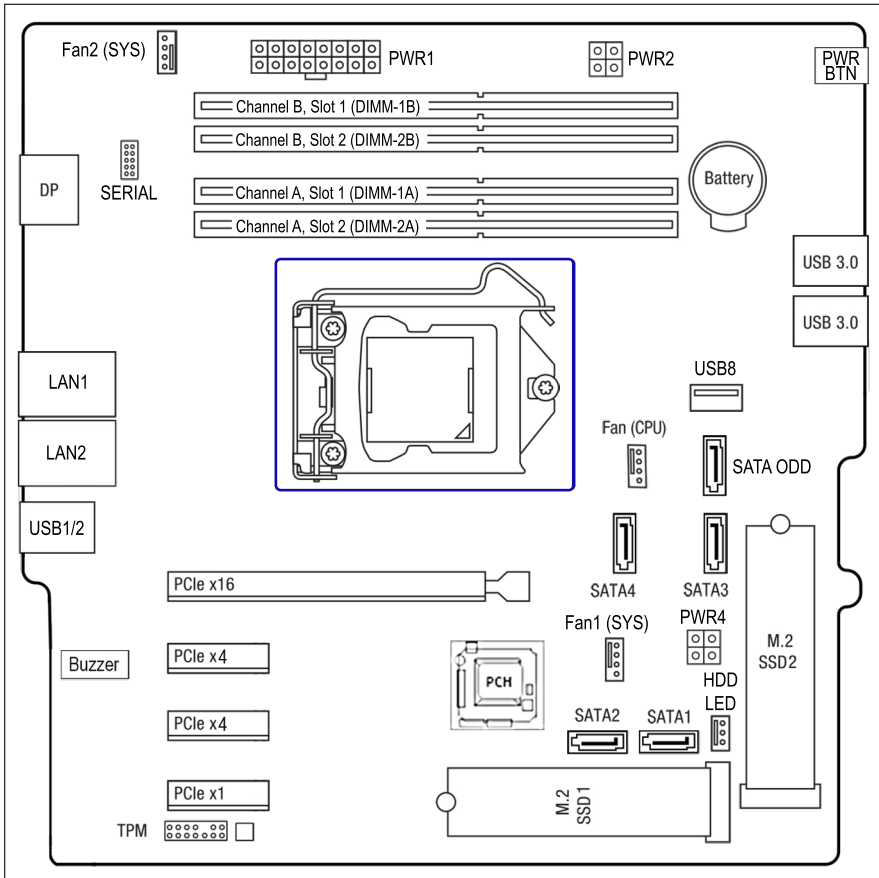


Figure 78: Position CPU socket

The system board supports one CPU socket.

i For system relevant information, see the hardware configurator of your server available online at the following address:

https://ts.fujitsu.com/products/standard_servers/index.htm

For Japan:

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

11.3 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 extremely sensitive to electrostatic discharge and therefore must always be handled with care.

- ▶ After a CPU has been removed from its protective sleeve or from its socket, place it upside down on a nonconducting, antistatic surface.
- ▶ Never push a CPU over a surface.

Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 63.](#)
- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)
- ▶ ["Removing the top HDD cage" on page 48.](#)

Processor (CPU)

Removing the heat sink

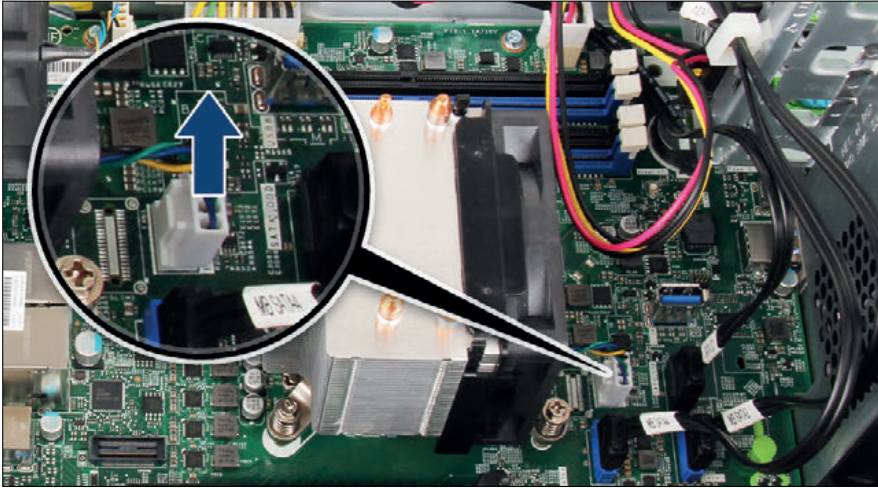


Figure 79: Removing the heat sink (A)

- ▶ Disconnect the CPU fan cable from system board connector "Fan (CPU)"

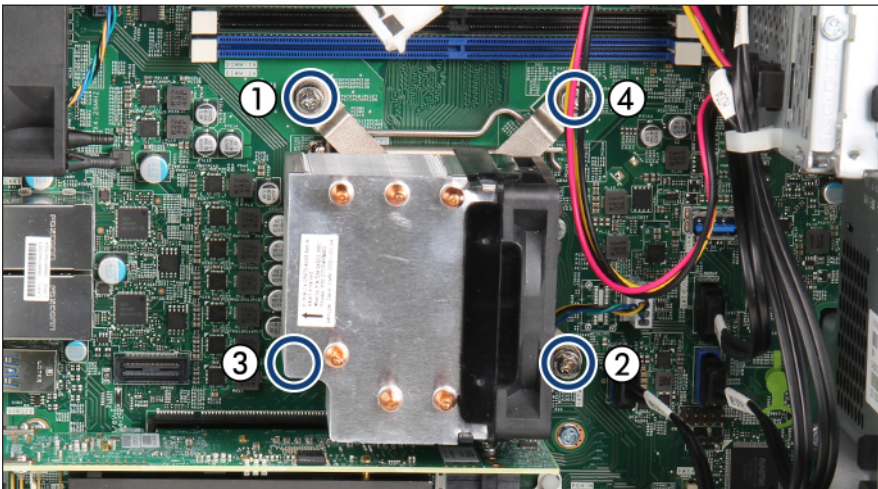


Figure 80: Removing the heat sink (B)

- ▶ Loosen the four captive screws on the heat sink in a crossover pattern (1-4).

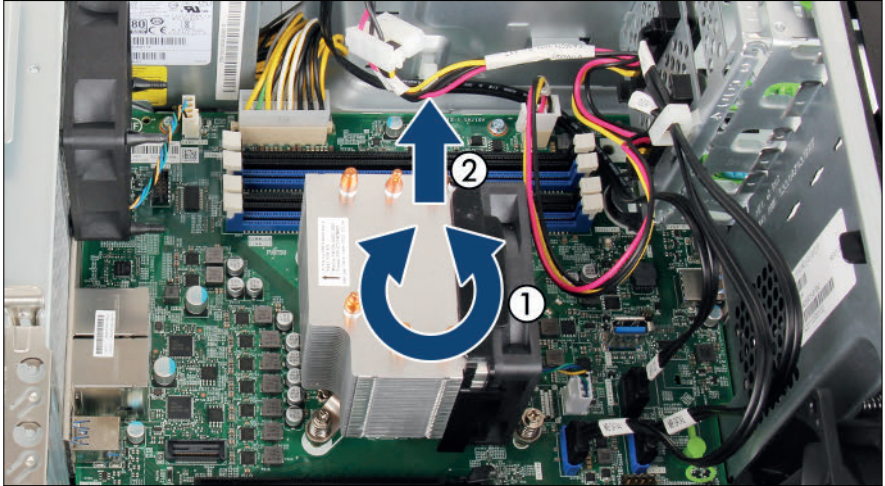


Figure 81: Removing the heat sink (C)

- ▶ Carefully turn the heat sink left and right to detach it from the CPU (1).



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 (2).
- ▶ Thoroughly clean residual thermal paste from the surface of the heat sink and the CPU using a lint-free cloth.

Removing the CPU

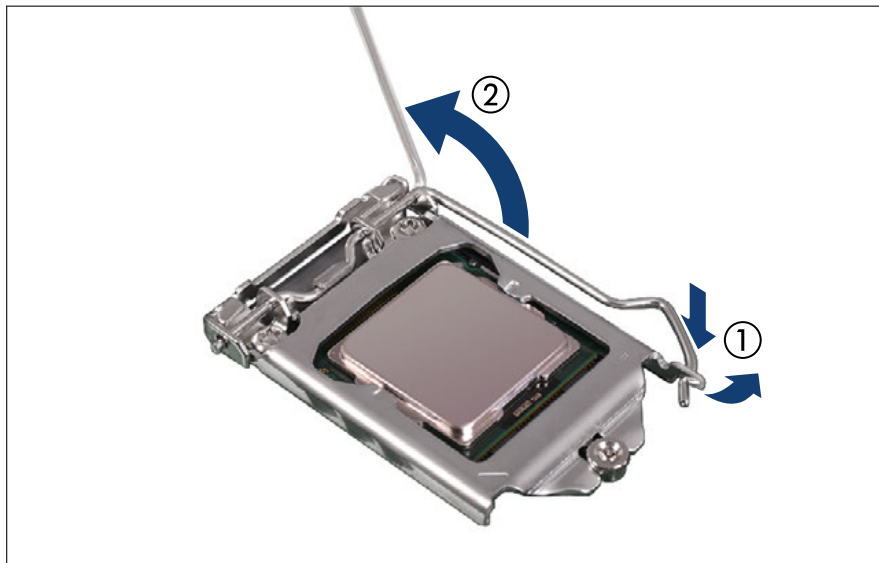


Figure 82: Opening socket release lever

- ▶ Unlatch the socket release lever by pushing it down and away from the socket (1).
- ▶ Fold back the socket release lever (2).

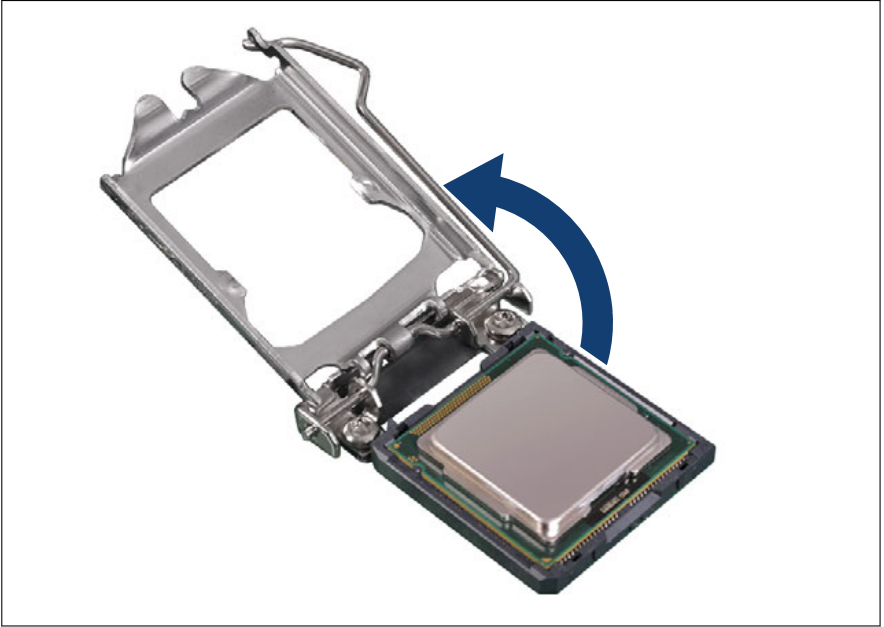


Figure 83: Opening the load plate

- ▶ 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.

Processor (CPU)

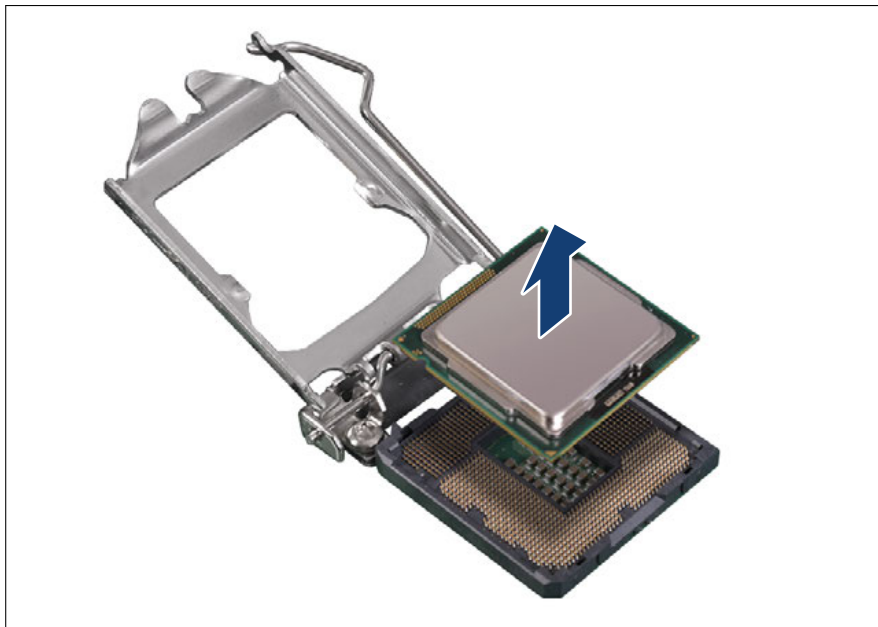


Figure 84: Removing the CPU

- ▶ 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.

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.

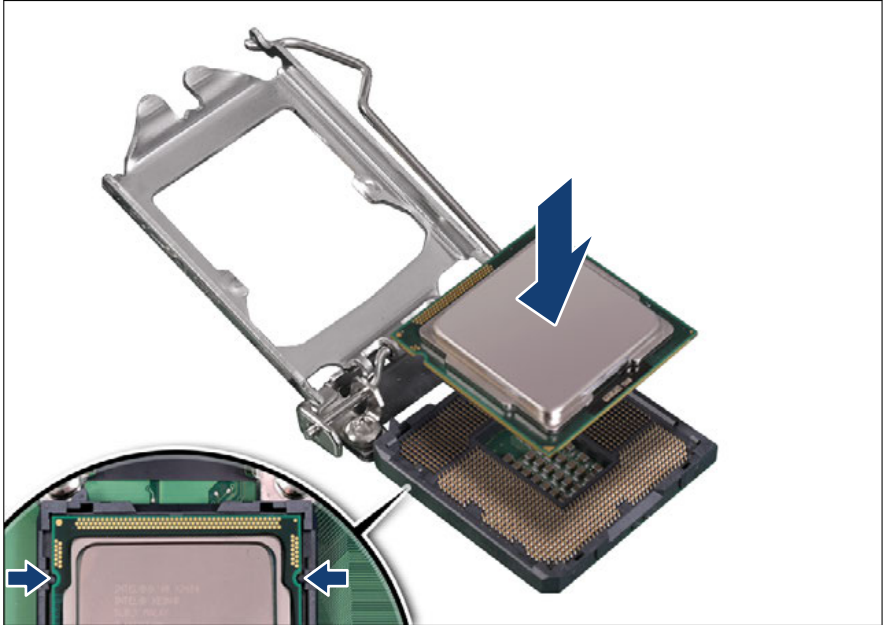


Figure 85: Installing the CPU

- ▶ 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.

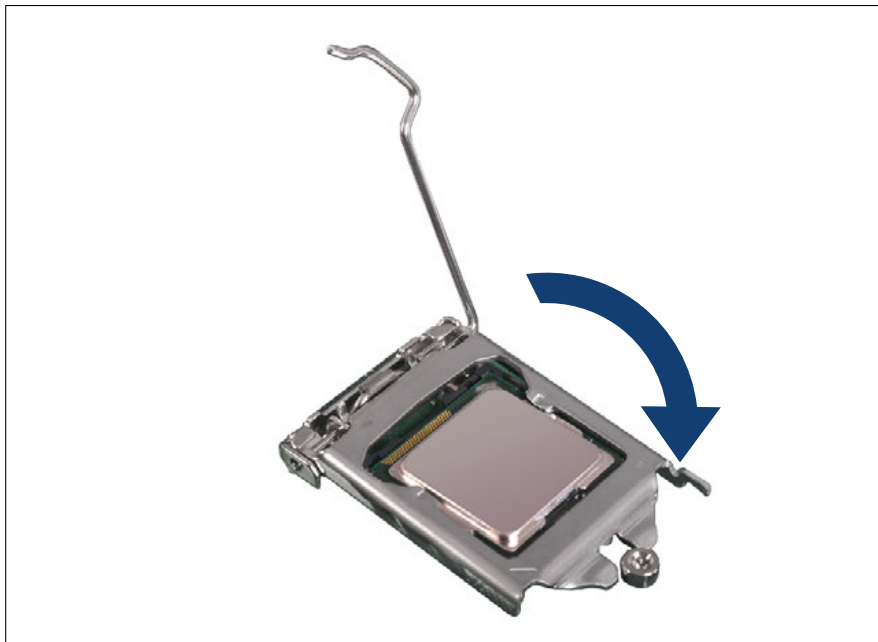


Figure 86: Closing the load plate (A)

- ▶ Lower the load plate over the CPU while leaving the socket lever in its open position.

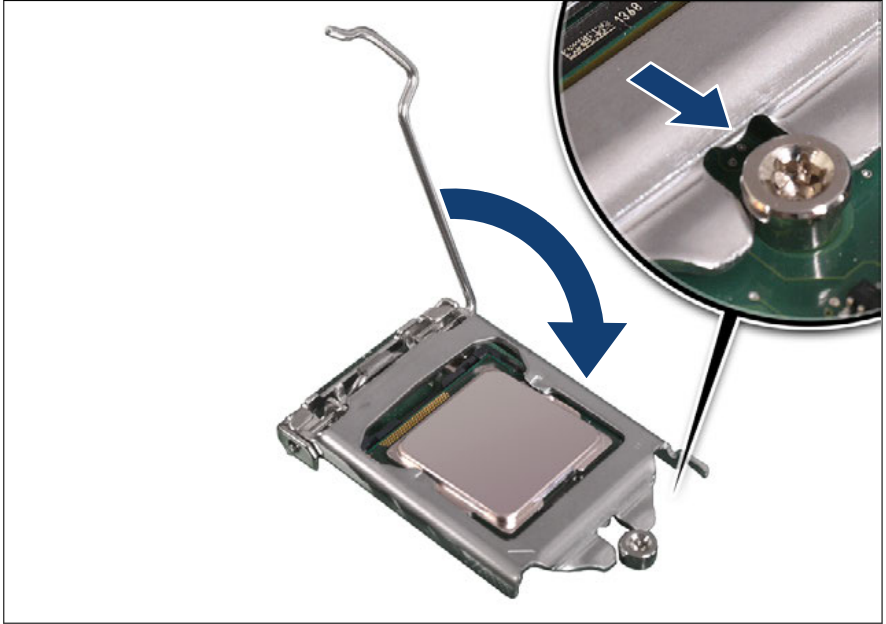


Figure 87: Closing the load plate (B)

- ▶ 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 88: Closing the socket release lever

Processor (CPU)

- ▶ Latch the socket lever under the load plate tab.

Applying thermal paste to the CPU surface

- i** For Japan, the service engineer must follow the instruction provided separately.
- i** If the CPU upgrade or replacement kit contains a new heat sink, a thin layer of thermal compound has already been pre-applied to its lower surface. In this case, it isn't necessary to apply thermal paste to the CPU surface.

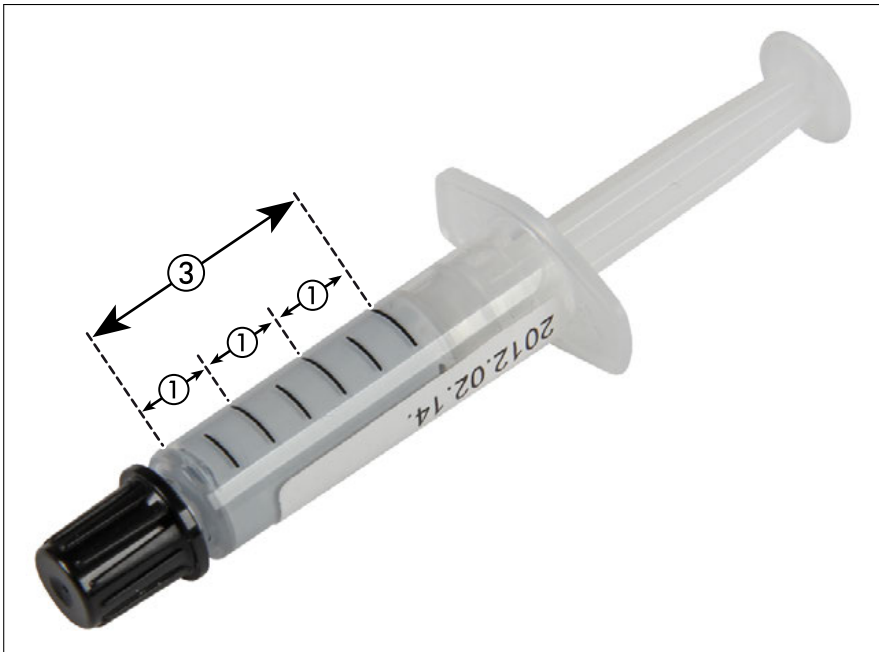


Figure 89: Thermal paste syringe

One thermal compound syringe (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.

- i** Add graduation marks to the syringe using a permanent marker to help you apply the thermal paste.



Figure 90: Applying the 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.

Installing the heat sink

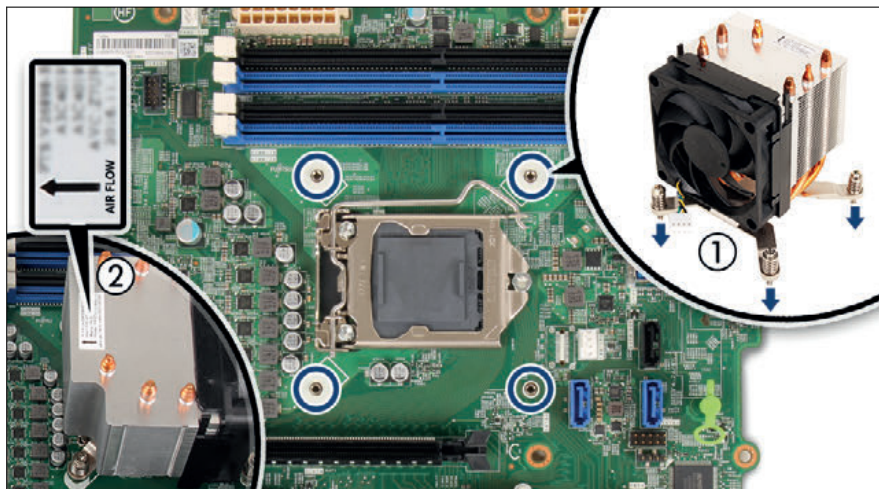


Figure 91: Installing the heat sink (A)

- ▶ Carefully seat the heat sink on the four threaded holes as shown (1).
- ▶ Ensure that the screws on the heat sink are properly seated on the threaded holes (see circles).
- ▶ Ensure that the heat sink cooling fins match the direction of the airflow (2, see close-up).

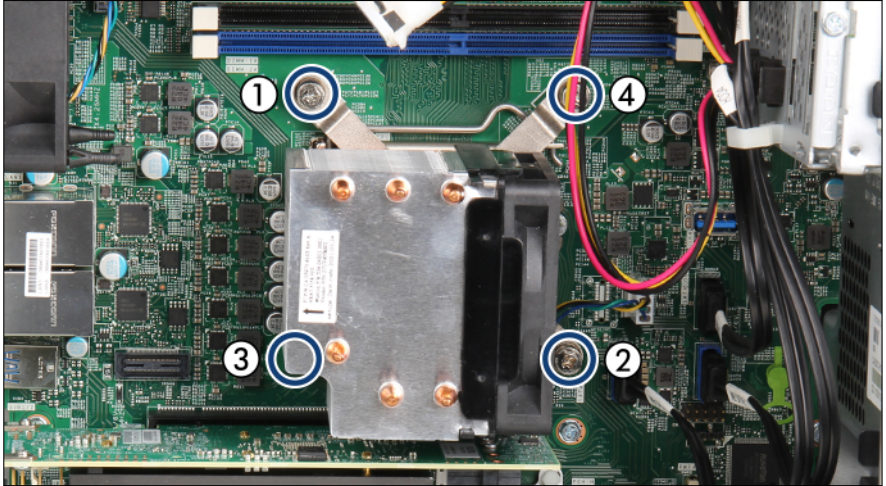


Figure 92: Installing the heat sink (B)

- ▶ Fasten the four captive screws on the heat sink in a crossover pattern (screw torque: 0.6 Nm, not applicable for Japan) (1-4).

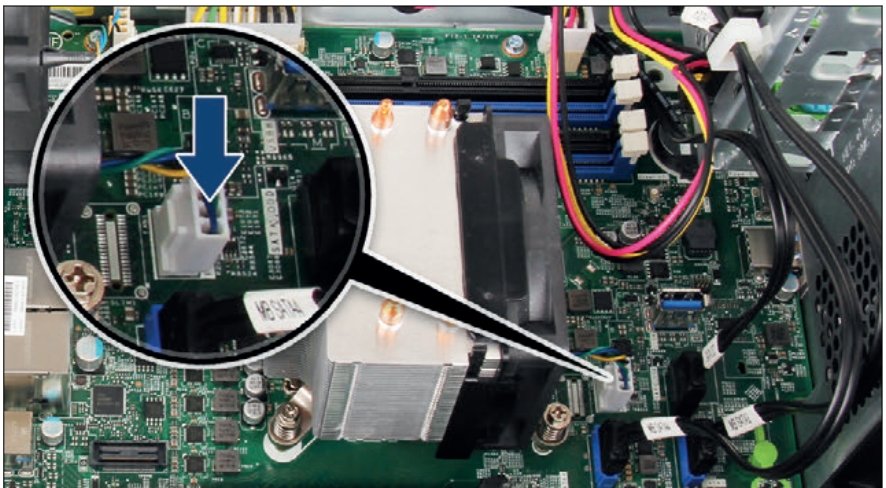


Figure 93: Installing the heat sink (C)

- ▶ Connect the CPU fan cable to system board connector "Fan (CPU)".

Concluding steps

- ▶ ["Installing the top HDD cage" on page 53.](#)
- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)



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.
- ▶ ["Installing the bay cover" on page 59.](#)
 - ▶ ["Locking the server" on page 60.](#)
 - ▶ If applicable, ["Updating or recovering the BIOS" on page 65.](#)
 - ▶ Resume BitLocker, see ["Resuming BitLocker functionality" on page 70.](#)

11.4 Replacing the heat sink



Field Replaceable Unit (FRU)



Hardware: 15 minutes

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



The CPU fan is implemented in the heat sink. When the CPU fan is defective, the heat sink must be replaced.

Preliminary steps

- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)
- ▶ ["Removing the top HDD cage" on page 48.](#)

Removing the heat sink

- ▶ Remove the heat sink, see ["Removing the heat sink" on page 140.](#)
- ▶ Remove the residual thermal paste from the CPU surface.
- ▶ Clean the CPU surface using a lint-free cloth.

Installing the heat sink

- ▶ Remove the protective cover from the heat sink.
- ▶ Install the heat sink, see ["Installing the heat sink" on page 150.](#)

Concluding steps

- ▶ ["Installing the top HDD cage" on page 53.](#)
- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)

- ▶ ["Locking the server" on page 60.](#)

11.5 Handling the protectice cover

Installing the protective cover



Figure 94: Attaching the protective socket cover

- ▶ Carefully lower the protective socket cover onto the CPU socket in a vertical motion until it snaps in place.

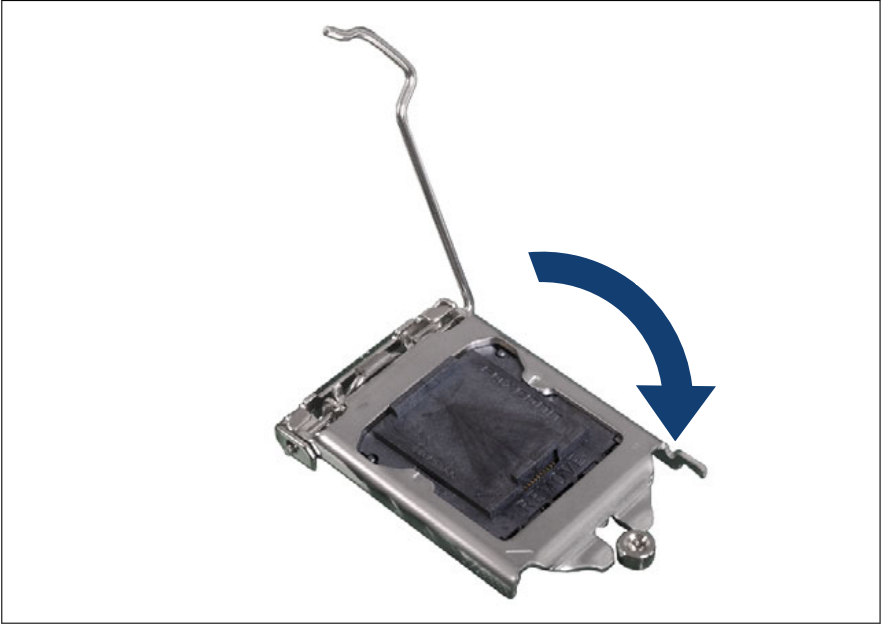


Figure 95: Closing the load plate (A)

- ▶ Lower the load plate over the CPU cover while leaving the socket lever in its open position.

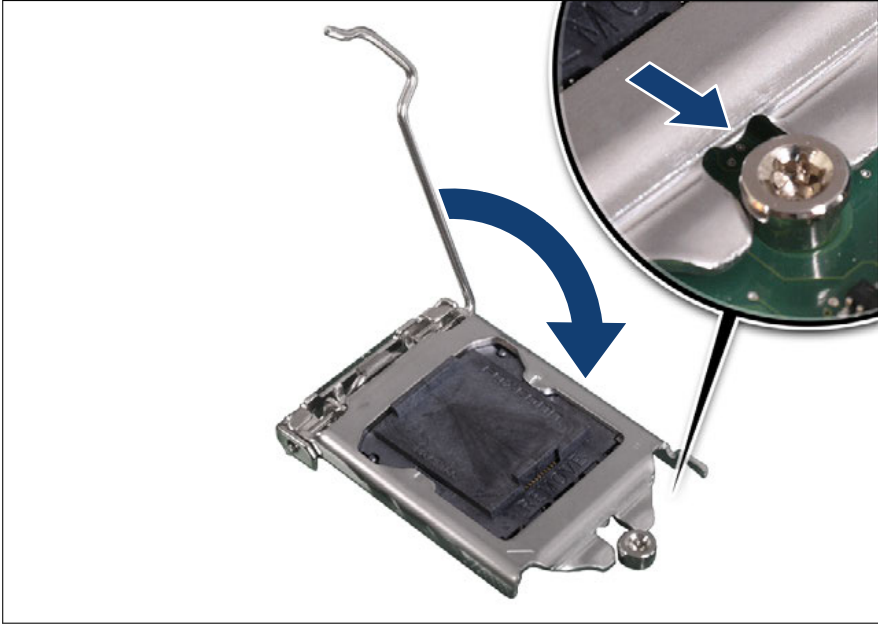


Figure 96: Closing the load plate (B)

- ▶ 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 97: Latching the socket lever

- ▶ Latch the socket lever under the load plate tab.

Removing the protective cover

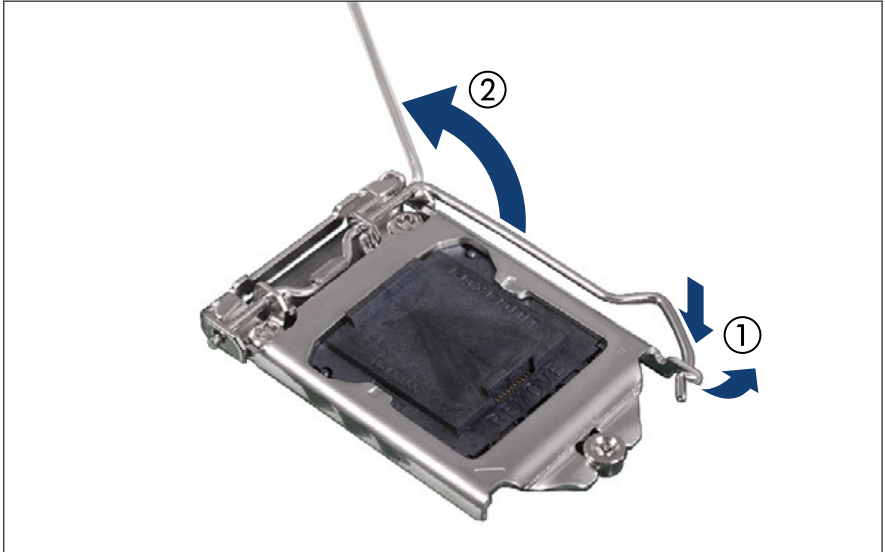


Figure 98: Opening socket release lever

- ▶ Unlatch the socket release lever by pushing it down and away from the socket (1).
- ▶ Fold back the socket release lever (2).



Figure 99: Opening the load plate

- ▶ Press down on the socket lever to lift the load plate away from the socket.
- ▶ Fully open the load plate.

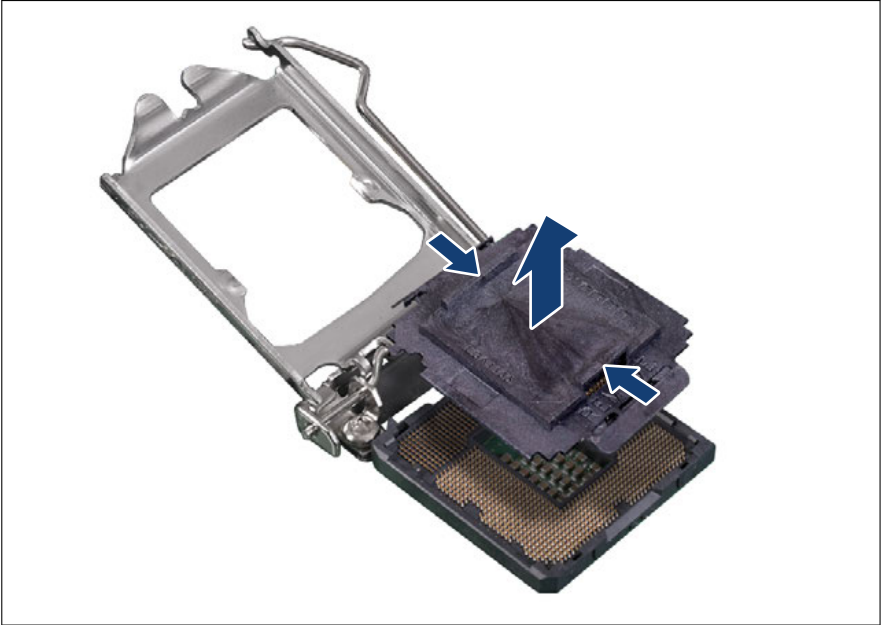


Figure 100: Removing the protective cover

- ▶ 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

12.1 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 ["Important information" on page 25](#).

12.2 Basic information

Mounting order for accessible drives

The server offers one ultra slimline ODD bay and one 5.25-inch bay for backup drives.

Accessible drives



Figure 101: Accessible drive bays

Sequence	Accessible drive	Bay	Max. number
1	Slimline ODD	1	1
2	RDX backup drive	2	1

Table 7: Accessible drive mounting sequence

12.3 Optical disk drive (ODD)

12.3.1 Installing the ODD



Upgrade and Repair Unit
(URU)



Hardware: 10 minutes

Tools: Thin slotted screw driver (for removing the dummy cover)

Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 63.](#)
- ▶ ["Unlocking the server" on page 41.](#)

- ▶ "Removing the bay cover" on page 42.
- ▶ "Shutting down the server" on page 43.
- ▶ "Disconnecting the power cord" on page 44.
- ▶ "Getting access to the component" on page 45.

Removing the dummy cover bay 1



CAUTION

You cannot reinstall the dummy cover.

- ▶ Only remove the dummy cover before installing the ODD/RDX drive to comply with EMC regulations and to satisfy cooling requirements and fire protection measures.

If bay 1 is to be equipped, it is necessary to remove its front dummy cover.

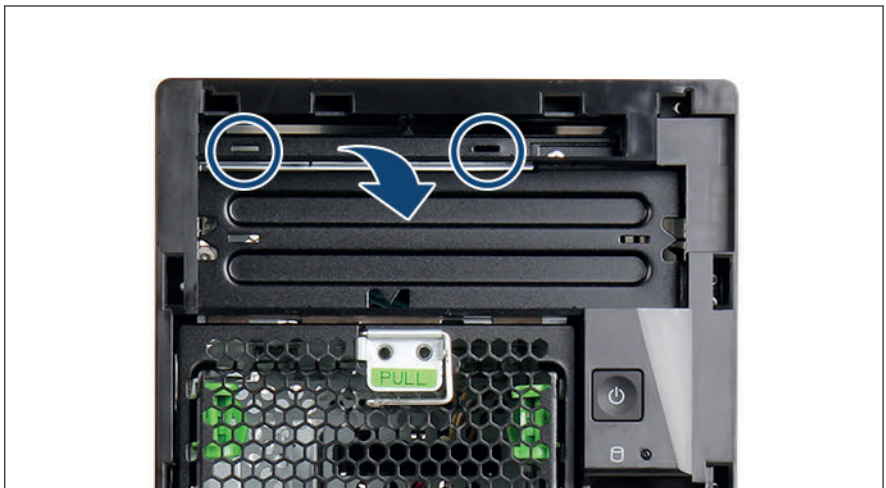


Figure 102: Removing the dummy cover bay 1

- ▶ Insert the screw driver into one slot (see circles) and twist it to break out the dummy cover.
- ▶ Repeat with the other slot.

Preparing the ODD

i There are two fixation plates for accessible drives. You need one fixation plate for every accessible drive to be installed.

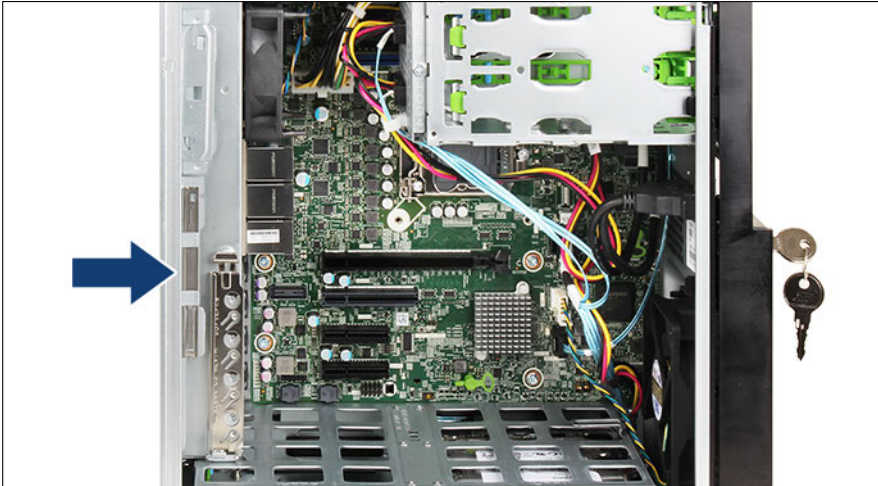


Figure 103: Removing the fixation plate from the chassis

► Unclip the fixation plate (see arrow).



Figure 104: Attaching the fixation plate to the ODD

- Align the two pins on the fixation plate with the screw holes in the ODD.
- Attach the fixation plate to the left side of the ODD.

Installing the ODD



Figure 105: Installing the ODD

- ▶ While pressing the fixation plate against the ODD, insert the ODD into accessible drive bay 1 and push until it is firmly seated in its connector on the ODD back plate.

i Since the ODD is connected to the ODD back plate, no further cable connection is necessary.

Concluding steps

- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)
- ▶ ["Locking the server" on page 60.](#)
- ▶ ["Reconfiguring the backup software solution" on page 66.](#)
- ▶ ["Resuming BitLocker functionality" on page 70.](#)

12.3.2 Removing the ODD



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

Tools: tool-less



CAUTION

- ▶ Always replace drives to comply with applicable EMC regulations and satisfy cooling requirements.

Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 63.](#)
- ▶ ["Removing backup and optical disk media" on page 65.](#)
- ▶ ["Verifying and configuring the backup software solution" on page 65.](#)
- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)

Removing the ODD

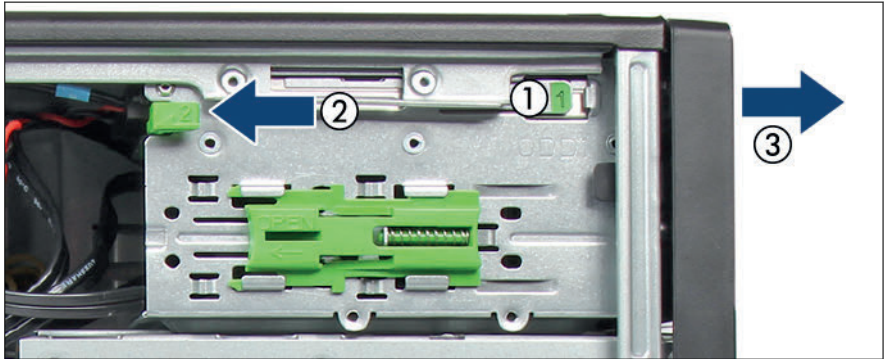


Figure 106: Removing the ODD

- ▶ To disengage the ODD, press down on the latch marked "1" (1) while pulling the locking handle in the drive cage to the left (2).
- ▶ Remove the ODD out of its bay (3).

Concluding steps

- ▶ Remove the fixation plates from the removed accessible drives.
- ▶ Secure the fixation plates in the chassis.
- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)
- ▶ ["Locking the server" on page 60.](#)
- ▶ ["Reconfiguring the backup software solution" on page 66.](#)
- ▶ ["Resuming BitLocker functionality" on page 70.](#)

12.3.3 Replacing the ODD



Upgrade and Repair Unit (URU)



Hardware: 15 minutes

Tools: tool-less

Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 63.](#)
- ▶ ["Removing backup and optical disk media" on page 65.](#)
- ▶ ["Verifying and configuring the backup software solution" on page 65.](#)
- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)

Replacing the ODD

- ▶ Remove the defective ODD, see ["Removing the ODD" on page 167.](#)
- ▶ Remove the fixation plate from the left side of the defective ODD.



Figure 107: Attaching the fixation plate to the ODD

- ▶ Align the two pins on the fixation plate with the screw holes in the ODD.
- ▶ Attach the fixation plate to the left side of the new ODD.
- ▶ Install the new ODD, see ["Installing the ODD" on page 162](#).

Concluding steps

- ▶ ["Reassembling" on page 51](#).
- ▶ ["Connecting the power cord" on page 57](#).
- ▶ ["Switching on the server" on page 58](#).
- ▶ ["Installing the bay cover" on page 59](#).
- ▶ ["Locking the server" on page 60](#).
- ▶ ["Reconfiguring the backup software solution" on page 66](#).
- ▶ ["Resuming BitLocker functionality" on page 70](#).

12.4 RDX drive

12.4.1 Installing the RDX backup drive



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

Tools:

- Thin slotted screw driver (for removing the dummy cover)
- Phillips PH2 / (+) No. 2 screw driver (for removing the PSU)

Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 63](#).
- ▶ ["Unlocking the server" on page 41](#).
- ▶ ["Removing the bay cover" on page 42](#).
- ▶ ["Shutting down the server" on page 43](#).

Accessible drives

- ▶ "Disconnecting the power cord" on page 44.
- ▶ "Getting access to the component" on page 45.
- ▶ "Removing the top HDD cage" on page 48.

Removing the dummy cover bay 2

If bay 2 is to be equipped, it is necessary to remove its front dummy cover.



CAUTION

You cannot reinstall the dummy cover.

- ▶ Only remove the dummy cover before installing the ODD/RDX drive to comply with EMC regulations and to satisfy cooling requirements and fire protection measures.



Figure 108: Removing the dummy cover bay 2

- ▶ Insert the screw driver into one slot (see circles) and twist it to break out the dummy cover.
- ▶ Repeat with the other slot.

Preparing the RDX backup drive

- i** There are two fixation plates for accessible backup drives. You need one fixation plate for every accessible backup drive to be installed.

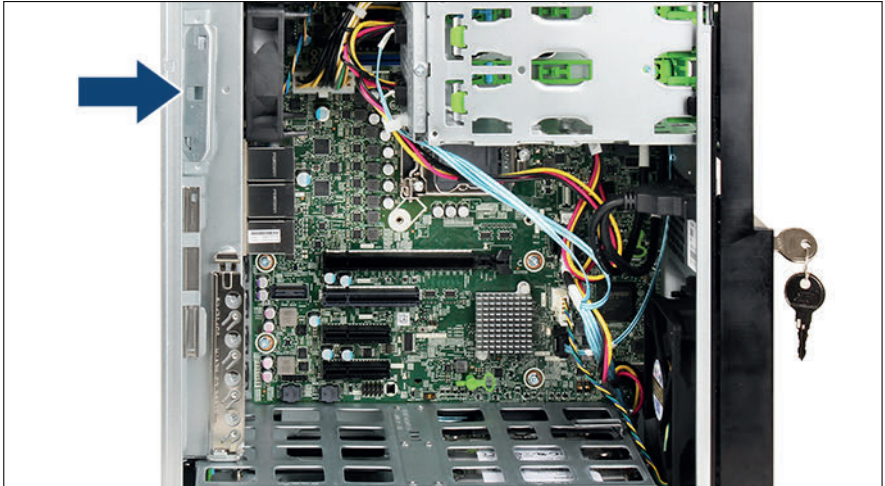


Figure 109: Removing the fixation plate from the chassis

- ▶ Unclip the fixation plate (see arrow).



Figure 110: Attaching the fixation plate to the RDX backup drive

- ▶ Align the four pins on the fixation plate with the screw holes in the RDX backup drive
- ▶ Attach the fixation plate on the left side of the RDX backup drive.

Installing the RDX backup drive

- i** For easier access to the backup drive connectors, it is recommended to remove the PSU before installing the backup drive, see ["Removing the PSU" on page 78](#).



Figure 111: Inserting RDX backup drive into bay 2

- ▶ While pressing the fixation plate against the RDX backup drive, insert the RDX backup drive into accessible drive bay 2.

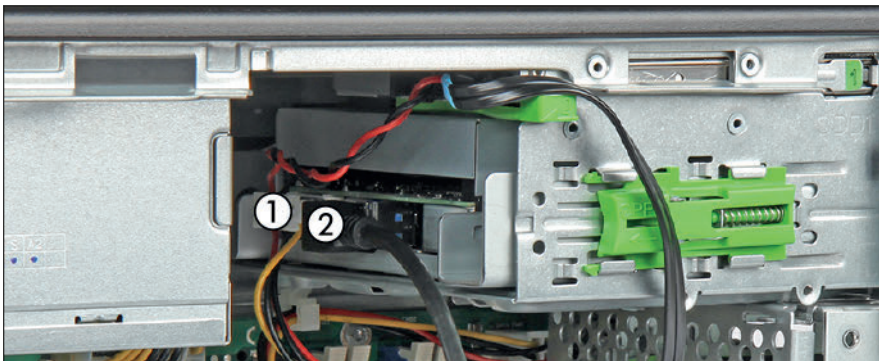


Figure 112: Connecting cables to RDX backup drive

- ▶ Push the RDX backup drive somewhat to the front side to get more space.
- ▶ Connect the power cable to the RDX backup drive (1).
- ▶ Connect the USB 3.0 cable to the RDX backup drive (2).
- ▶ Push the RDX backup drive to the rear side until it snaps into place.

Concluding steps

- ▶ ["Installing the top HDD cage" on page 53.](#)
- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)
- ▶ ["Locking the server" on page 60.](#)
- ▶ ["Reconfiguring the backup software solution" on page 66.](#)
- ▶ ["Resuming BitLocker functionality" on page 70.](#)

12.4.2 Removing the RDX backup drive



Upgrade and Repair Unit (URU)



Hardware: 10 minutes

Tools: Phillips PH2 / (+) No. 2 screw driver (for removing the PSU)



CAUTION

- ▶ Always replace drives to comply with applicable EMC regulations and satisfy cooling requirements.

Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 63.](#)
- ▶ ["Removing backup and optical disk media" on page 65.](#)
- ▶ ["Verifying and configuring the backup software solution" on page 65.](#)

Accessible drives

- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)
- ▶ ["Removing the top HDD cage" on page 48.](#)

Removing the RDX backup drive

i For easier access to the backup drive connectors, it is recommended to remove the PSU before installing the RDX backup drive, see ["Removing the standard PSU" on page 76.](#)

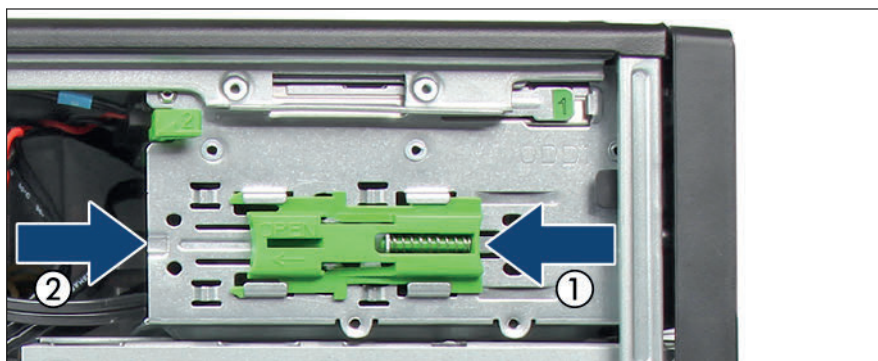


Figure 113: Removing RDX backup drive

- ▶ Slide the locking latch in the direction of the arrow (1) and press somewhat out the RDX backup drive from behind (2).
- ▶ Disconnect all cables from the RDX backup drive.
- ▶ Remove the RDX backup drive out of its bay.

Concluding steps

- ▶ ["Installing the top HDD cage" on page 53.](#)
- ▶ ["Reassembling" on page 51.](#)

- ▶ "Connecting the power cord" on page 57.
- ▶ "Switching on the server" on page 58.
- ▶ "Installing the bay cover" on page 59.
- ▶ "Locking the server" on page 60.
- ▶ "Reconfiguring the backup software solution" on page 66.
- ▶ "Resuming BitLocker functionality" on page 70.

12.4.3 Replacing the RDX backup drive



Upgrade and Repair Unit (URU)



Hardware: 15 minutes

Tools: Phillips PH2 / (+) No. 2 screw driver (for removing the PSU)

Preliminary steps

- ▶ "Suspending BitLocker functionality" on page 63.
- ▶ "Removing backup and optical disk media" on page 65.
- ▶ "Verifying and configuring the backup software solution" on page 65.
- ▶ "Unlocking the server" on page 41.
- ▶ "Removing the bay cover" on page 42.
- ▶ "Shutting down the server" on page 43.
- ▶ "Disconnecting the power cord" on page 44.
- ▶ "Getting access to the component" on page 45.
- ▶ "Removing the top HDD cage" on page 48.

Removing the defective RDX backup drive

- ▶ Remove the defective RDX backup drive, see "Removing the RDX backup drive" on page 174.
- ▶ Remove the fixation plate from the left side of the drive.

Installing the new RDX backup drive

- ▶ Align the four pins on the fixation plate with the screw holes in the new RDX backup drive.



Figure 114: Attaching the fixation plate to the RDX backup drive

- ▶ Attach the fixation plate on the left side of the new RDX backup drive.
- ▶ Install the new RDX backup drive, see ["Installing the RDX backup drive" on page 172](#).

Concluding steps

- ▶ ["Installing the top HDD cage" on page 53](#).
- ▶ ["Reassembling" on page 51](#).
- ▶ ["Connecting the power cord" on page 57](#).
- ▶ ["Switching on the server" on page 58](#).
- ▶ ["Installing the bay cover" on page 59](#).
- ▶ ["Locking the server" on page 60](#).
- ▶ ["Reconfiguring the backup software solution" on page 66](#).
- ▶ ["Resuming BitLocker functionality" on page 70](#).

13 Front panel and front USB



Front connectors and indicators are integral parts of the system board. There is no individual front panel module. In case of defective front connectors or indicators, the system board needs to be replaced. Proceed as described in ["Replacing the system board" on page 209](#).

14 Serial interface

14.1 Safety notes



CAUTION

▶ For more information, see ["Important information" on page 25](#).

14.2 Installing the serial interface



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools:	<ul style="list-style-type: none">• Thin slotted screw driver (for removing the metal cover)• Hexagon screw driver 5 mm
---------------	--

Preliminary steps

- ▶ ["Unlocking the server" on page 41](#).
- ▶ ["Removing the bay cover" on page 42](#).
- ▶ ["Shutting down the server" on page 43](#).
- ▶ ["Disconnecting the power cord" on page 44](#).
- ▶ ["Getting access to the component" on page 45](#).

Serial interface

Breaking off the metal cover



Figure 115: Removing the metal cover

- ▶ Insert the flat screw driver into the slot and twist to break off the metal cover (see close-up).

Installing the serial interface

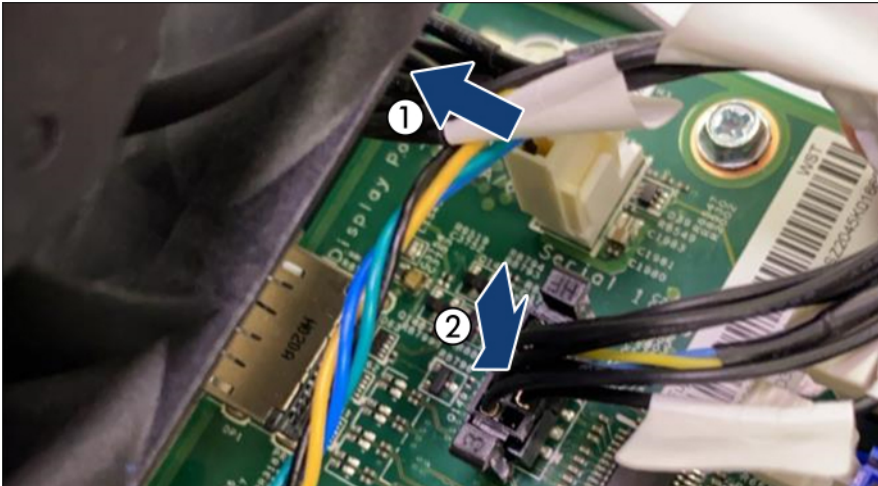


Figure 116: Installing the serial interface (A)

- ▶ Insert the serial interface into the slot (1).
- ▶ Connect the cable to the system board "SERIAL" (2).



Figure 117: Installing the serial interface (B)

- ▶ Fasten the serial interface with two hexagon bolts (see circles).

Concluding steps

- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)
- ▶ ["Locking the server" on page 60.](#)

14.3 Removing the serial interface



**Upgrade and Repair Unit
(URU)**



Hardware: 5 minutes

Serial interface

Tools: Hexagon screw driver 5 mm

Preliminary steps

- ▶ "Unlocking the server" on page 41.
- ▶ "Removing the bay cover" on page 42.
- ▶ "Shutting down the server" on page 43.
- ▶ "Disconnecting the power cord" on page 44.
- ▶ "Getting access to the component" on page 45.

Removing the serial interface



Figure 118: Removing the serial interface (A)

- ▶ Remove the two hexagon bolts.

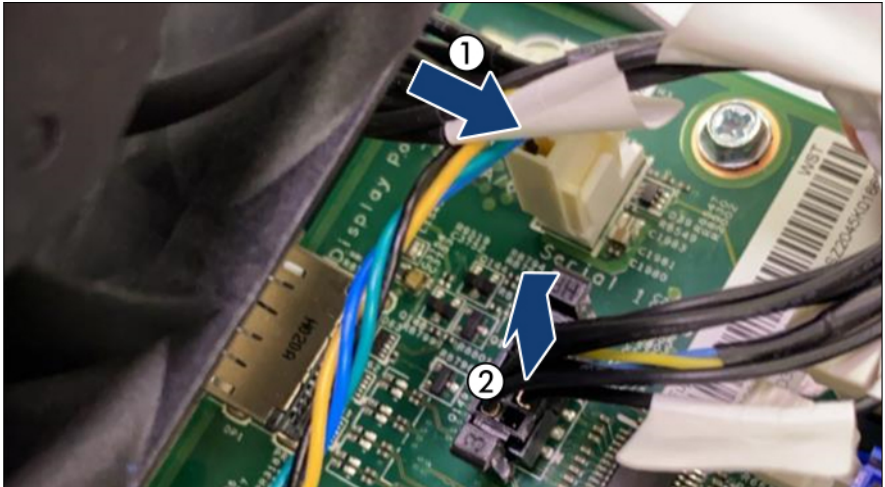


Figure 119: Removing the serial interface (B)

- ▶ Remove the serial interface (1).
- ▶ Remove the cable from the system board (2).

Concluding steps

- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)
- ▶ ["Locking the server" on page 60.](#)

14.4 Replacing the serial interface



**Upgrade and Repair Unit
(URU)**



Hardware: 5 minutes

Tools: Hexagon screw driver 5 mm

Serial interface

Preliminary steps

- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)

Removing the defective serial interface

- ▶ Remove the serial interface, see ["Removing the serial interface" on page 182.](#)

Installing the new serial interface

- ▶ Install the serial interface, see ["Installing the serial interface" on page 180.](#)

Concluding steps

- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)
- ▶ ["Locking the server" on page 60.](#)

15 System board and components

15.1 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 ["Important information" on page 25](#).

15.2 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.

15.3 CMOS battery

15.3.1 Replacing the CMOS battery



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: tool-less; recommended: tooth pick



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 safety information, see "Environmental protection" in the operating manual of your server.
- ▶ **Ensure to insert the CMOS battery with the positive pole facing up!**

Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 63.](#)
- ▶ Take a note of the BIOS settings.
- ▶ ["Unlocking the server" on page 41](#)
- ▶ ["Removing the bay cover" on page 42](#)
- ▶ ["Shutting down the server" on page 43](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)

Replacing the defective CMOS battery

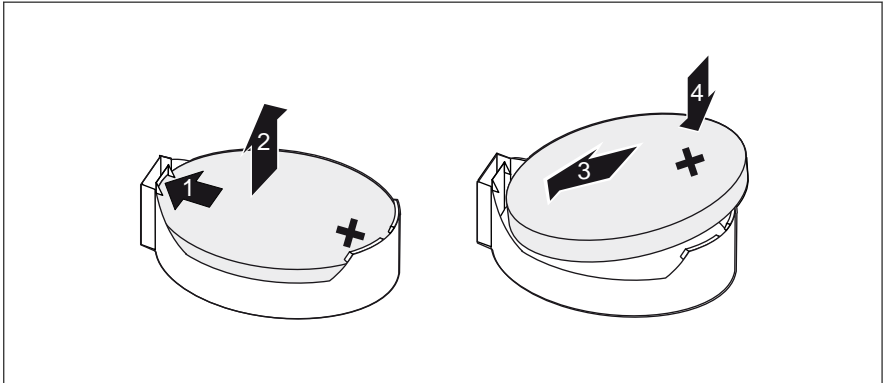


Figure 120: Replacing the CMOS battery

- ▶ 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).

Concluding steps

- ▶ Dispose of the CMOS battery in accordance with local regulations concerning special waste.
- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58](#)
- ▶ ["Installing the bay cover" on page 59](#)
- ▶ ["Locking the server" on page 60](#)

System board and components

- ▶ ["Resuming BitLocker functionality" on page 70.](#)
- ▶ ["Verifying the system time settings" on page 67.](#)
- ▶ If applicable, restore the BIOS settings manually.

15.4 Trusted Platform Module (TPM)

15.4.1 TPM kit

There are different TPM kits available. The procedures of installing, removing and replacing are identic.

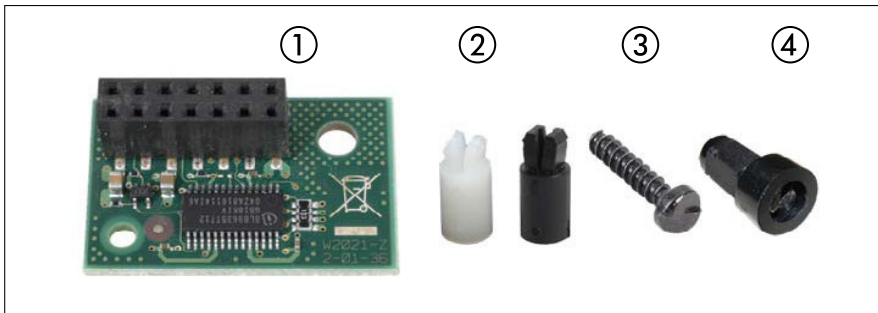


Figure 121: TPM installation kit - example 1

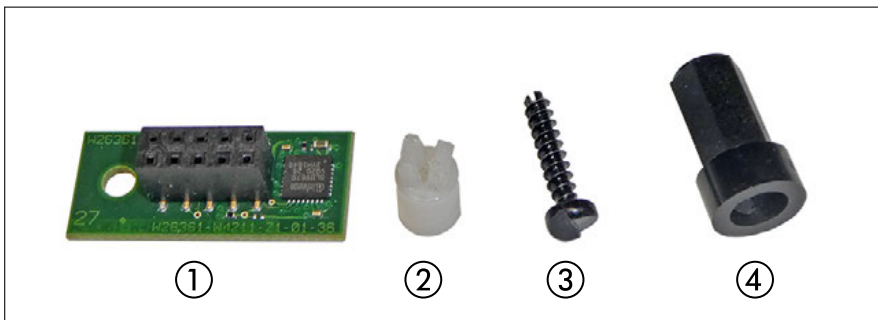



Figure 122: TPM installation kit - example 2

- | | | | |
|---|------------|---|--------------------------------------|
| 1 | TPM | 3 | Special screw for TPM |
| 2 | TPM spacer | 4 | TPM bit insert for TPM special screw |

 The black TPM spacer is not used in this server.

15.4.2 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)

Preliminary steps

- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)
- ▶ Remove all expansion cards, see ["Removing an expansion card" on page 123.](#)



Before removing the expansion cards, take a note on the installation slot number for each card. Ensure that you reinstall the card in the slot it was located before the replacement.

Installing the TPM

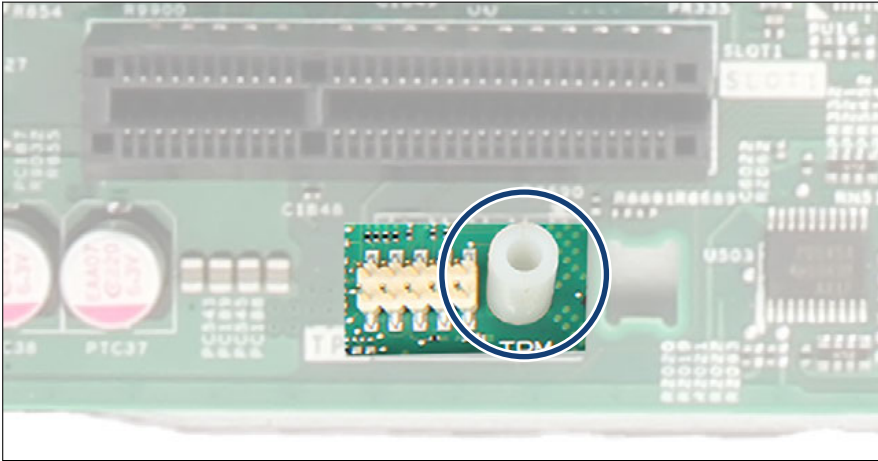


Figure 123: Installing the TPM spacer on the bottom system board

- ▶ Install the TPM spacer on the hole on the bottom system board.



Figure 124: TPM bit insert

- ▶ Attach the TPM bit insert or TPM module fixing tool (for Japan) to a bit screw driver.

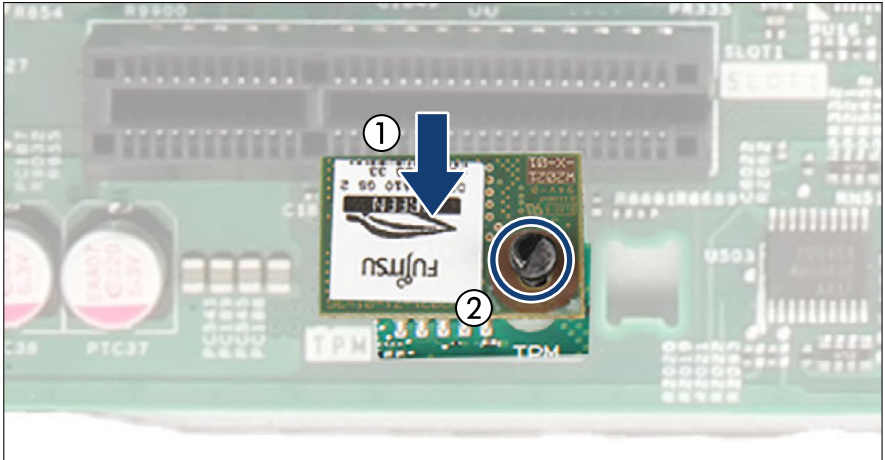


Figure 125: Installing the TPM

- ▶ 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 (for 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: 0.6 Nm (not used in Japan).

Concluding steps

- ▶ Install all expansion cards, see ["Installing an expansion card" on page 122](#).



Ensure that you reinstall each card in the slot it was located before the replacement.

- ▶ ["Reassembling" on page 51](#).
- ▶ ["Connecting the power cord" on page 57](#).
- ▶ ["Switching on the server" on page 58](#).
- ▶ ["Installing the bay cover" on page 59](#).
- ▶ ["Locking the server" on page 60](#).

Enabling the TPM in the system board BIOS

Proceed as follows:

- ▶ Switch on or restart your server.
- ▶ As soon as the startup screen appears, press the [F2] function key to enter the BIOS setup menu.
- ▶ Select the **Advanced** menu.
- ▶ Select the **Trusted Computing** submenu.
- ▶ Set the **TPM Support** setting to **Enabled**.
- ▶ Under **Pending TPM operation**, select the desired TPM operation mode.
- ▶ Save your changes and exit the BIOS.



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

15.4.3 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.

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 board, remove the BitLocker protection and decrypt the volume, see ["Removing BitLocker protection and decrypting the volume" on page 194](#).
- ▶ Disable the TPM in the system board BIOS, see ["Disabling the TPM in the system board BIOS" on page 194](#).
- ▶ ["Suspending BitLocker functionality" on page 63](#).
- ▶ ["Unlocking the server" on page 41](#).
- ▶ ["Removing the bay cover" on page 42](#).
- ▶ ["Shutting down the server" on page 43](#).
- ▶ ["Disconnecting the power cord" on page 44](#).
- ▶ ["Getting access to the component" on page 45](#).

Removing BitLocker protection and decrypting the volume

- ▶ Before removing the TPM board, it is necessary to remove BitLocker protection from the computer and to decrypt the volume. Ask the system administrator to turn off BitLocker protection using the BitLocker setup wizard available either from the Control Panel or Windows Explorer:
 - ▶ Open Bitlocker Drive Encryption by clicking the **Start** button, clicking **Control Panel**, clicking **Security**, and then clicking **Bitlocker Drive Encryption**.



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

- ▶ To turn off BitLocker and decrypt the volume, click **Turn Off BitLocker**, and then click **Decrypt the volume**.



Decrypting the volume may be time-consuming. By decrypting the volume, all of the information stored on that computer is decrypted.

For more information on how to disable BitLocker drive encryption, see the Microsoft Knowledge Base. See the Fujitsu web pages for more details.

Disabling the TPM in the system board BIOS

Proceed as follows:

- ▶ Switch on or restart your server.
- ▶ As soon as the startup screen appears, press the [F2] function key to enter the BIOS setup menu.
- ▶ Select the **Advanced** menu.
- ▶ Select the **Trusted Computing** submenu.
- ▶ Set the **TPM Support** setting to **Disabled**.
- ▶ Save your changes and exit the BIOS.



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

Removing the TPM

- ▶ Remove the system board, see ["Removing the defective system board" on page 212.](#)
- ▶ Lay the system board on a soft, antistatic surface with its component side facing down.

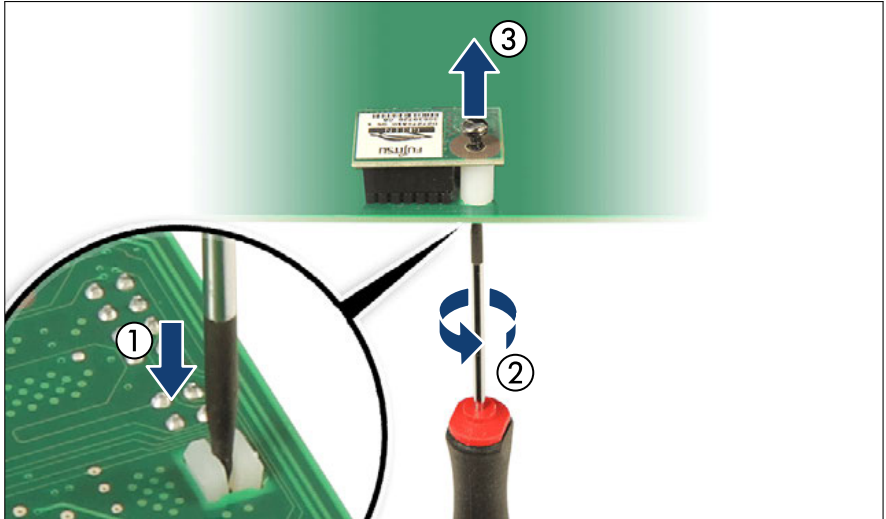


Figure 126: Removing the TPM screw

- ▶ 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 (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.

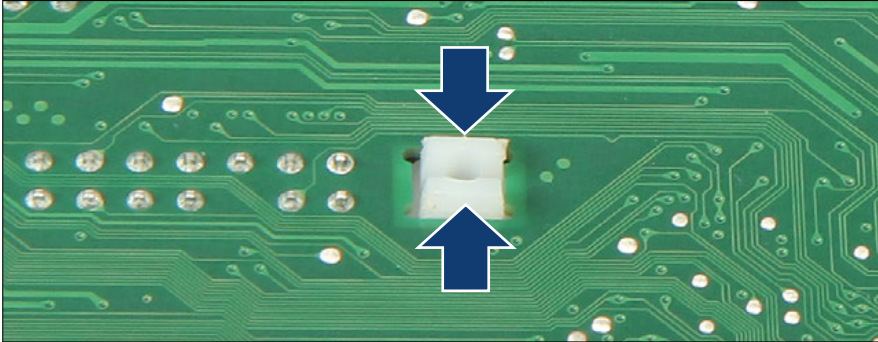


Figure 127: Removing the TPM spacer

- ▶ Using a flat nose pliers, press together the hooks on the TPM spacer (1, see close-up) 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 ["Installing the new system board" on page 215](#).

Concluding steps

- ▶ ["Reassembling" on page 51](#).
- ▶ ["Connecting the power cord" on page 57](#).
- ▶ ["Switching on the server" on page 58](#).
- ▶ ["Installing the bay cover" on page 59](#).
- ▶ ["Locking the server" on page 60](#).
- ▶ ["Resuming BitLocker functionality" on page 70](#).

15.4.4 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 (*)
- Flat nose pliers
- Thin slotted screw driver (2 x 0.4 mm) (*)

(*) 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.

Preliminary steps

- ▶ ["Suspending BitLocker functionality" on page 63.](#)
- ▶ ["Unlocking the server" on page 41](#)
- ▶ ["Removing the bay cover" on page 42](#)
- ▶ ["Shutting down the server" on page 43](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)
- ▶ Remove all expansion cards, see ["Removing an expansion card" on page 123.](#)



Before removing the expansion cards, take a note on the installation slot number for each card. Ensure that you reinstall the card in the slot it was located before the replacement.

Removing the defective TPM

- ▶ Remove the TPM, see ["Removing the TPM" on page 195](#).
- ▶ Leave the TPM spacer on the bottom system board when removing the defective TPM.

Installing the new TPM



The TPM spacer is already present on the system board.

- ▶ Install the TPM, see ["Installing the TPM" on page 190](#).

Concluding steps

- ▶ Install all expansion cards, see ["Installing an expansion card" on page 122](#).



Ensure that you reinstall each card in the slot it was located before the replacement.

- ▶ ["Reassembling" on page 51](#).
- ▶ ["Connecting the power cord" on page 57](#).
- ▶ ["Switching on the server" on page 58](#)
- ▶ ["Installing the bay cover" on page 59](#)
- ▶ ["Locking the server" on page 60](#)
- ▶ ["Resuming BitLocker functionality" on page 70](#).



You can find information on configuring the TPM in the corresponding BIOS Setup Utility reference manual.

15.5 M.2 SSD

15.5.1 Slots and bolts for M.2 SSDs

The system board offers two M.2 slots (Key M) with support for 80 mm and 110 mm long M.2 SSDs.



Figure 128: Example M.2 SSD

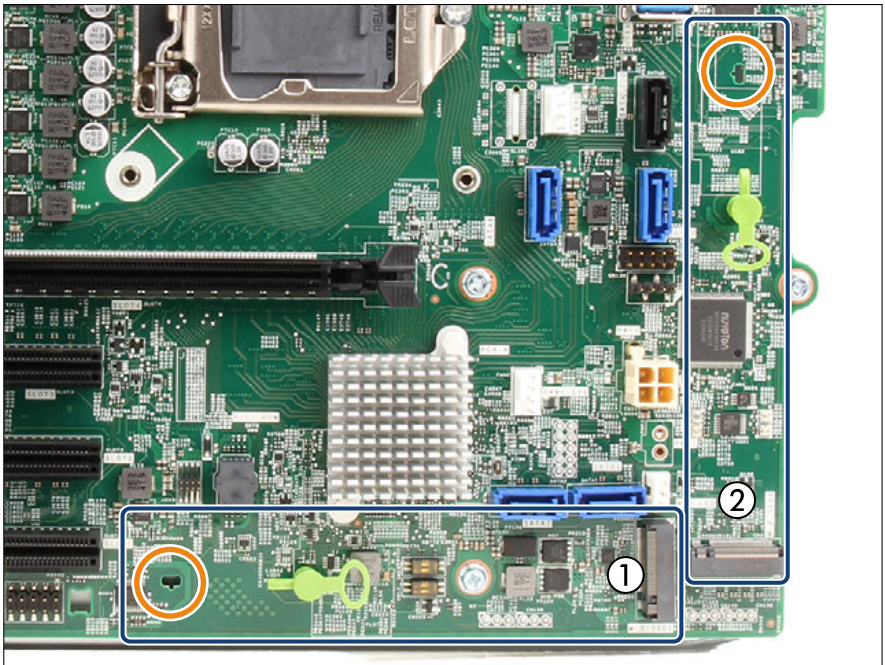


Figure 129: Slots and bolts for M.2 SSDs

1 M.2 slot 1

2 M.2 slot 2



The second hole is for M.2 SSDs with 110 mm length (see orange circles). If necessary, move the M.2 lock to the second hole, see ["Moving the M.2 lock to the second hole" on page 200](#).

15.5.2 Installing an M.2 SSD



Upgrade and Repair Unit (URU)



Hardware: 5 minutes
Software: 15 minutes

Tools: tool-less

Preliminary steps

- ▶ ["Unlocking the server" on page 41](#).
- ▶ ["Removing the bay cover" on page 42](#).
- ▶ ["Shutting down the server" on page 43](#).
- ▶ ["Disconnecting the power cord" on page 44](#).
- ▶ ["Getting access to the component" on page 45](#).
- ▶ Remove the front fan, see ["Removing the defective front fan" on page 110](#).
- ▶ If applicable, remove an expansion card, see ["Removing an expansion card" on page 123](#).

Moving the M.2 lock to the second hole



This step is only necessary when installing M.2 SSDs with 110 mm length.

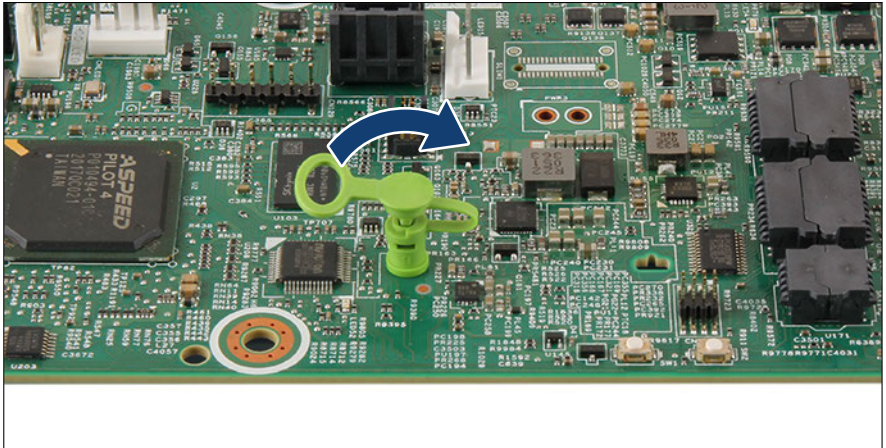


Figure 130: Removing the M.2 lock (A)

- Open the M.2 lock.

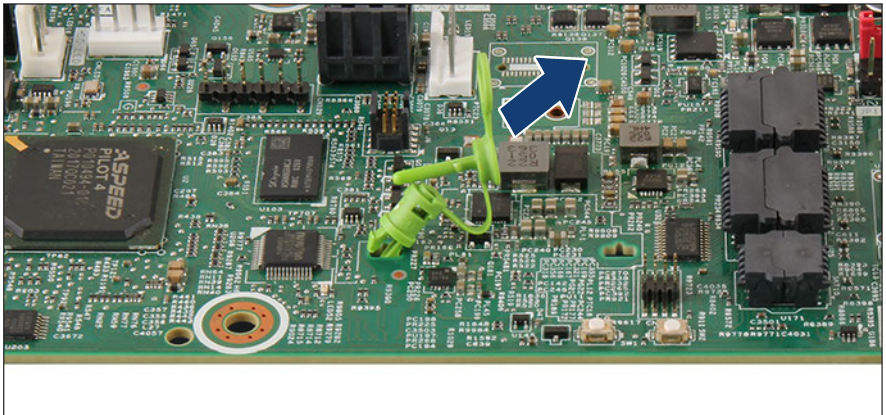


Figure 131: Removing the M.2 lock (B)

- Pull out the M.2 lock in direction of the arrow.



Figure 133: Opening the M.2 lock

- Open the M.2 lock.

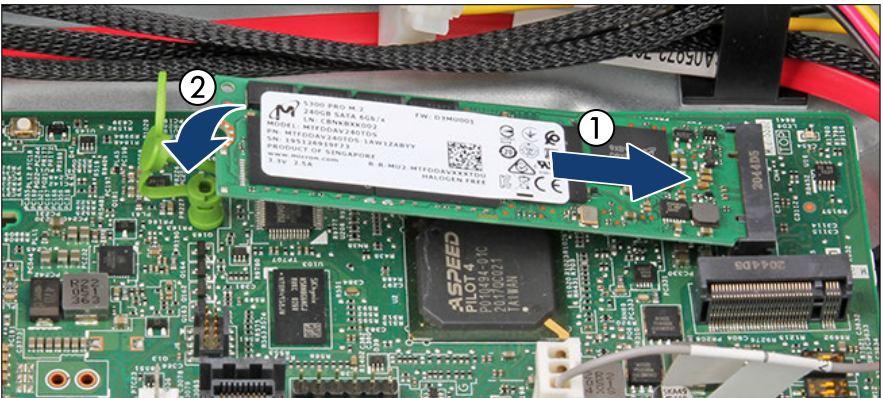


Figure 134: Installing the M.2 SSD (A)

- With the label facing up, insert the M.2 SSD into the M.2 slot at a slight angle (1).
- Place the M.2 SSD on the M.2 lock (2).

System board and components



Figure 135: Installing the M.2 SSD (B)

- ▶ Close the M.2 lock to fasten the M.2 SSD.

Concluding steps

- ▶ If applicable, install an expansion card, see "[Installing an expansion card](#)" on page 122.
- ▶ Install the front fan, see "[Installing the new front fan](#)" on page 112.
- ▶ "[Reassembling](#)" on page 51.
- ▶ "[Connecting the power cord](#)" on page 57.
- ▶ "[Switching on the server](#)" on page 58.
- ▶ "[Installing the bay cover](#)" on page 59.
- ▶ "[Locking the server](#)" on page 60.

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 the VMware website and burn the image to the CD.

<https://www.vmware.com/go/download-vsphere>

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.
<https://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.

<https://jp.fujitsu.com/platform/server/primergy/software/vmware/manual/>

15.5.3 Removing an M.2 SSD



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: tool-less



Figure 137: Removing the M.2 SSD (B)

- ▶ Remove the M.2 SSD out of the M.2 lock (1).
- ▶ Remove the M.2 SSD out of the M.2 SSD slot in direction of the arrow (2).

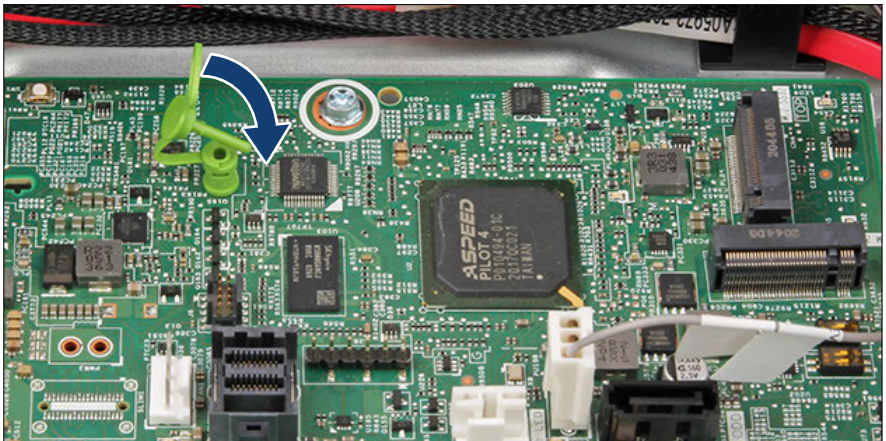


Figure 138: Closing the M.2 lock

- ▶ Close the M.2 lock.

Concluding steps

- ▶ If applicable, install an expansion card, see ["Installing an expansion card" on page 122.](#)
- ▶ Install the front fan, see ["Installing the new front fan" on page 112.](#)
- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58.](#)
- ▶ ["Installing the bay cover" on page 59.](#)
- ▶ ["Locking the server" on page 60.](#)

15.5.4 Replacing an M.2 SSD



**Upgrade and Repair Unit
(URU)**



**Hardware: 5 minutes
Software: 15 minutes**

Tools: tool-less

Preliminary steps

- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)
- ▶ Remove the front fan, see ["Removing the defective front fan" on page 110.](#)
- ▶ If applicable, remove an expansion card, see ["Removing an expansion card" on page 123.](#)

Replacing the M.2 SSD

- ▶ Remove the defective M.2 SSD, see ["Removing the M.2 SSD" on page 206](#).
- ▶ Install the new M.2 SSD, see ["Installing the M.2 SSD" on page 202](#).

Concluding steps

- ▶ If applicable, install an expansion card, see ["Installing an expansion card" on page 122](#).
- ▶ Install the front fan, see ["Installing the new front fan" on page 112](#).
- ▶ ["Reassembling" on page 51](#).
- ▶ ["Connecting the power cord" on page 57](#).
- ▶ ["Switching on the server" on page 58](#).
- ▶ ["Installing the bay cover" on page 59](#).
- ▶ ["Locking the server" on page 60](#).

Software configuration



To install the ESXi to the M.2 SSD, see ["Software configuration" on page 204](#).

15.6 System board

15.6.1 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. 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 more information, see ["Replacing the TPM" on page 196](#).

The TPM has to be enabled in the system BIOS.



CAUTION

- ▶ Before replacing the system board, ask the customer whether TPM functionality is used.
- ▶ If the customer is using TPM functionality, remove the TPM from the old system board and install it on the new system board.
- ▶ Advise your contact persons that they must provide you with all recovery keys which belong to the system to restore them in the TPM later.

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 the system board.

Preliminary steps

- ▶ Backup the BIOS settings manually.
- ▶ ["Suspending BitLocker functionality" on page 63.](#)
- ▶ ["Unlocking the server" on page 41.](#)
- ▶ ["Removing the bay cover" on page 42.](#)
- ▶ ["Shutting down the server" on page 43.](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ Disconnect all external cables.
- ▶ ["Getting access to the component" on page 45.](#)
- ▶ Remove all memory modules, see ["Removing a memory module" on page 134.](#)



Before removing the memory modules, take a note on the installation slot number for each memory module. Ensure that you reinstall the memory modules in the slot they were located before the replacement.

- ▶ Remove the heat sink, see ["Removing the heat sink" on page 153.](#)



Leave the CPU on the defective board for now.

System board and components

- ▶ Remove all expansion cards, see ["Removing an expansion card" on page 123](#).



Before removing the expansion cards, take a note on the installation slot number for each card. Ensure that you reinstall the card in the slot it was located before the replacement.

Removing the defective system board

- ▶ Disconnect all cables from the system board.



Figure 139: System board tray - Location of screws

- ▶ Remove five screws from the chassis (see circles).

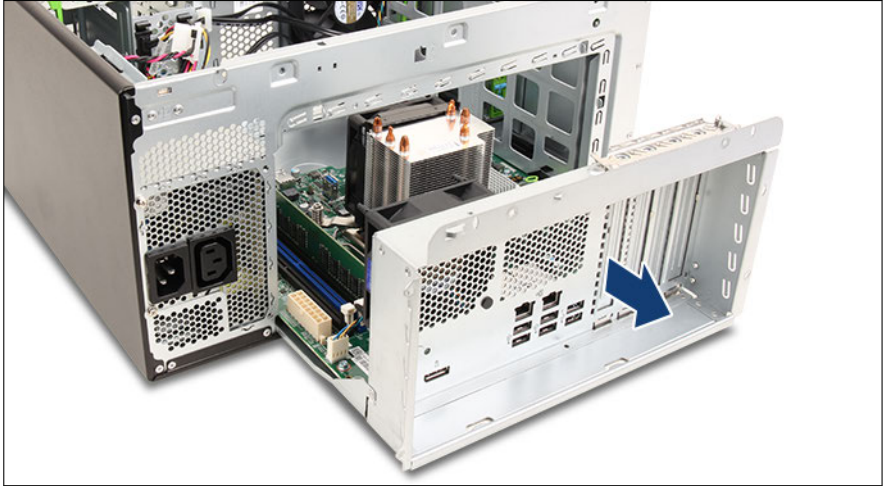


Figure 140: Removing the system board tray

- ▶ Pull the system board tray out of the chassis.

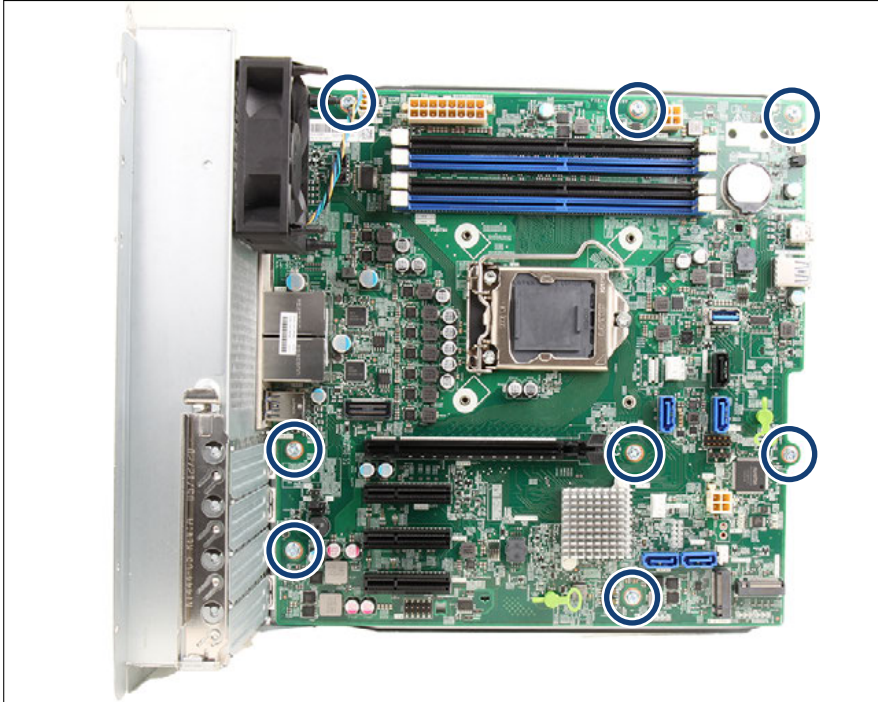


Figure 141: System board screws

- ▶ Remove eight screws from the system board (see circles).
- ▶ Use both hands to carefully pull the plug shells out of the connector panel and remove the system board from its tray.



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!**
 - ▶ Do not 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 ["Removing the TPM" on page 195](#).

Installing the new system board

- ▶ Check the settings on the new system board, see ["Onboard settings" on page 239](#).
- ▶ Insert the system board by holding it at a slight angle.
- ▶ Slide the connectors into the connector panel.

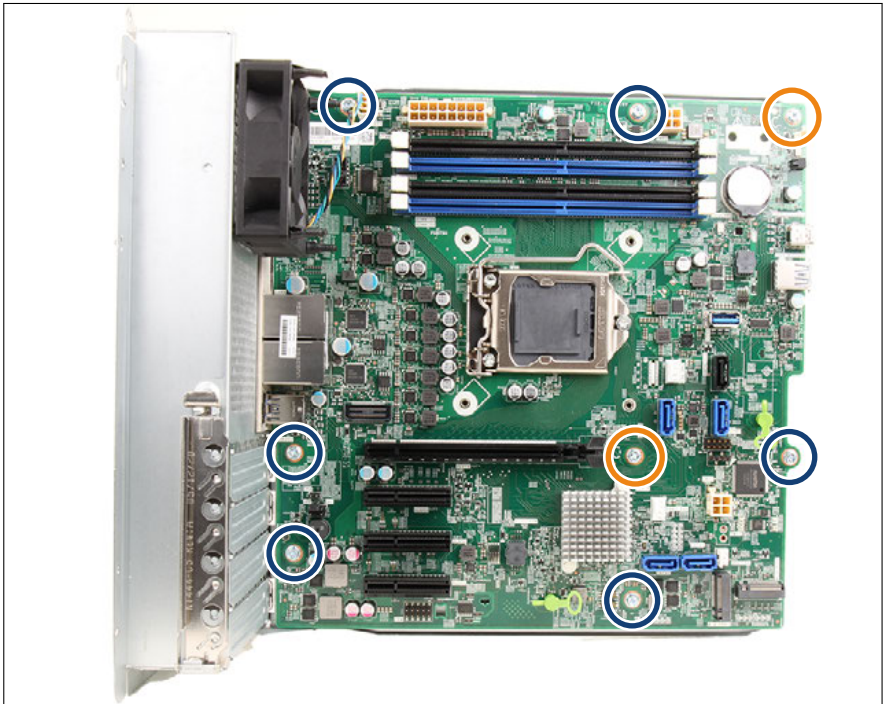


Figure 142: System board screws

- ▶ Lower the system board onto the centering bolts (see orange circles).
- ▶ Ensure that the system board is properly seated on both centering bolts.
- ▶ Fasten the centering bolts of the system board with two screws (see orange circles).

System board and components

- ▶ Fasten the remaining bolts of the system board with six screws (see blue circles).



Figure 143: Installing the system board tray

- ▶ Carefully push the system board tray back.



Figure 144: System board tray - Location of screws

- ▶ Fasten the system board tray to the chassis with five screws (see circles).
- ▶ Remove the protective cover from the CPU socket of the new system board, see ["Removing the protective cover" on page 157](#).
- ▶ Remove the CPU from the defective system board, see ["Removing the CPU" on page 142](#).
- ▶ 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 ["Installing the CPU" on page 144](#).
- ▶ Fit the protective plastic cover of the new system board onto the socket of the defective system board which will to be returned.



Returned system boards without this cover probably have to be scrapped.

Concluding steps

- ▶ Connect all cables to the system board. For the cable plans, see ["Appendix B" on page 243](#).
- ▶ If applicable, ["Installing the TPM" on page 189](#).
- ▶ Install all memory modules, see ["Installing a memory module" on page 132](#).



Ensure that you install each memory module in the slot it was located before the replacement.

- ▶ Install all heat sink, see ["Installing the heat sink" on page 153](#).
- ▶ Install all expansion cards, see ["Installing an expansion card" on page 122](#).



Ensure that you reinstall each card in the slot it was located before the replacement.

- ▶ ["Reassembling" on page 51](#).
- ▶ Connect all external cables.
- ▶ ["Connecting the power cord" on page 57](#).

- ▶ ["Switching on the server" on page 58.](#)



When the system is powered on after a CPU has been replaced or upgraded, the message "CPU has been changed" appears.

This only indicates that the CPU configuration has been altered. There is no technical problem.

To delete this message:

1. Restart the system and wait for screen output to appear.
 2. Press the [F2] to enter the BIOS.
 3. If assigned, enter the BIOS password and press [Enter].
 4. Select the **Save & Exit** menu.
 5. Select **Save Changes and Exit** or **Save Changes and Reset**.
- ▶ ["Installing the bay cover" on page 59.](#)
 - ▶ ["Locking the server" on page 60.](#)
 - ▶ ["Updating or recovering the BIOS" on page 65.](#)
 - ▶ Restore the BIOS settings manually.
 - ▶ Set **Advanced - Trusted Computing - TPM support** to **Enabled** in order to activate the TPM functionality in the system BIOS. For more information, see the corresponding BIOS Setup Utility reference manual.
 - ▶ ["Verifying the system time settings" on page 67.](#)
 - ▶ ["Looking up for MAC/WWN addresses" on page 72.](#)
 - ▶ ["Updating the NIC configuration file in a Linux/VMware OS" on page 69.](#)
 - ▶ If applicable, ["Resuming BitLocker functionality" on page 70.](#)
 - ▶ If applicable, reconfigure your network settings in the operating 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 ["Note on network settings recovery" on page 211.](#)
- ▶ ["Using the Chassis ID Prom Tool" on page 72.](#)

- ▶ If applicable, restore LAN teaming configurations, see ["After replacing a system board" on page 73](#).

16 Cables

16.1 Safety notes



CAUTION

- ▶ Always hold cables by their connectors when disconnecting them. Never pull on the cable to disconnect cables.
- ▶ Ensure that none of the cables are scraped, strained or otherwise damaged while replacing system components.
- ▶ Immediately replace cables with damaged shielding.
- ▶ Always use shielded network cables.

16.2 Basic information



For more cabling information, see ["Appendix B" on page 243](#).

16.3 Replacing the system cable (accessible drives / top HDD cage)



The following steps are only required in case of a defective cable.



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

Tools: tool-less

Preliminary steps

- ▶ "Unlocking the server" on page 41
- ▶ "Removing the bay cover" on page 42
- ▶ "Shutting down the server" on page 43
- ▶ "Disconnecting the power cord" on page 44.
- ▶ "Getting access to the component" on page 45.

Removing the defective system cable

- ▶ "Removing the standard PSU" on page 76.
- ▶ "Removing the ODD" on page 167.
- ▶ If applicable, remove HDD3 and HDD4, see "Removing a 3.5-inch HDD" on page 97.
- ▶ Push the RDX backup drive somewhat to the front to get more space, see "Removing the RDX backup drive" on page 174.

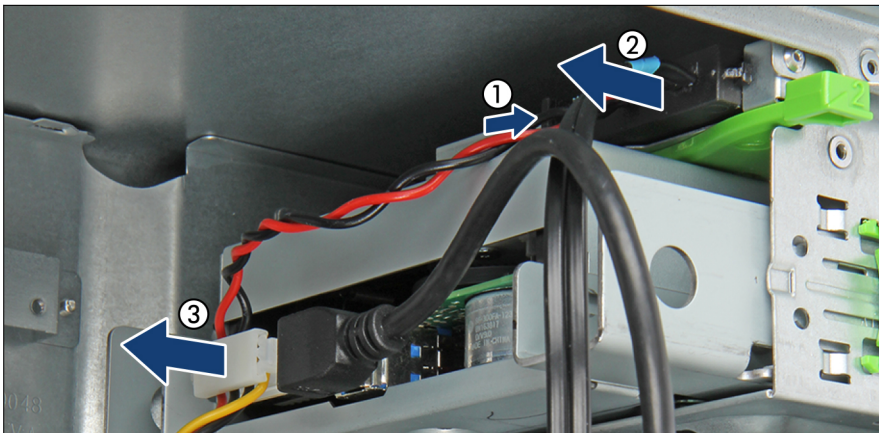


Figure 145: Removing the connectors from accessible drives

- ▶ Pinch the left side of the connector (1) and remove it from the ODD back plate (2).
- ▶ Remove the connector from the RDX backup drive (3).

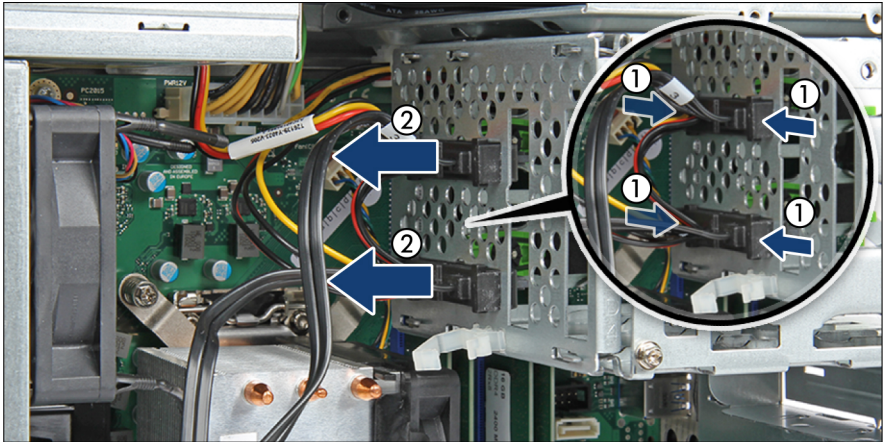


Figure 146: Removing the connectors from top HDD cage

- ▶ Pinch the sides of the connector (1) and remove it from the top HDD cage (2).
- ▶ Disconnect all system cable connectors from the system board.
- ▶ Remove the defective cable.

Installing the new system cable

- ▶ Install the new cable to the top HDD cage and accessible drives.
- ▶ Connect the cables to the system board.



For more cabling information, see ["Appendix B" on page 243](#).

- ▶ ["Installing the standard PSU" on page 79](#).
- ▶ ["Installing the ODD" on page 165](#).
- ▶ Push back the RDX backup drive until it snaps into place.
- ▶ If applicable, install HDD3 and HDD4, see ["Installing a 3.5-inch HDD" on page 93](#).

Concluding steps

- ▶ ["Reassembling" on page 51.](#)
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ ["Switching on the server" on page 58](#)
- ▶ ["Installing the bay cover" on page 59](#)
- ▶ ["Locking the server" on page 60](#)

16.4 Replacing the HDD cable (bottom HDD cage)



The following steps are only required in case of a defective cable.



Upgrade and Repair Unit (URU)



Hardware: 5 minutes

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

Preliminary steps

- ▶ ["Unlocking the server" on page 41](#)
- ▶ ["Removing the bay cover" on page 42](#)
- ▶ ["Shutting down the server" on page 43](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ ["Getting access to the component" on page 45.](#)

Removing the defective HDD cable

- ▶ If applicable, remove HDD1 and HDD2, see ["Removing a 3.5-inch HDD" on page 97](#).
- ▶ Pull the system board tray out of the chassis, see ["Removing the defective system board" on page 212](#).

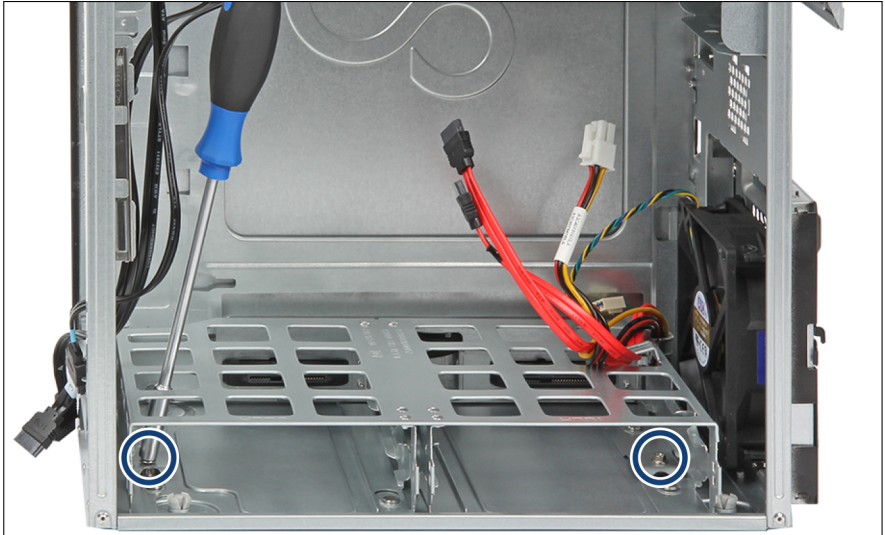


Figure 147: Removing the screws

- ▶ Remove the two screws (see circles).

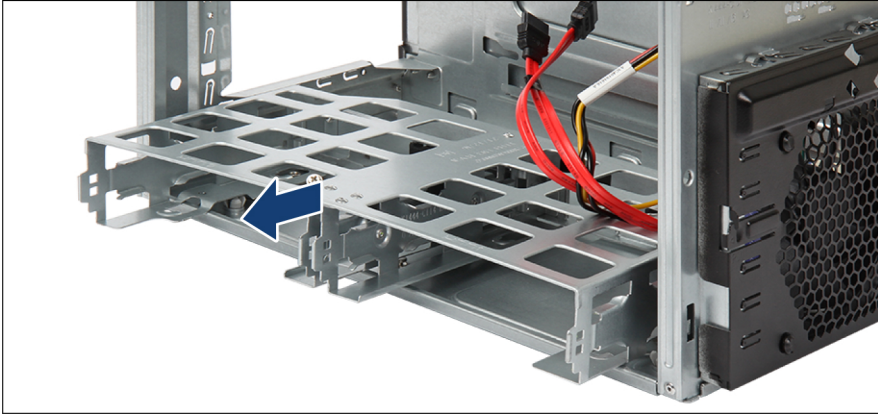


Figure 148: Removing the HDD cage bottom

- ▶ Pull the bottom HDD cage to the front as far as possible, lift it over the cant and remove it.

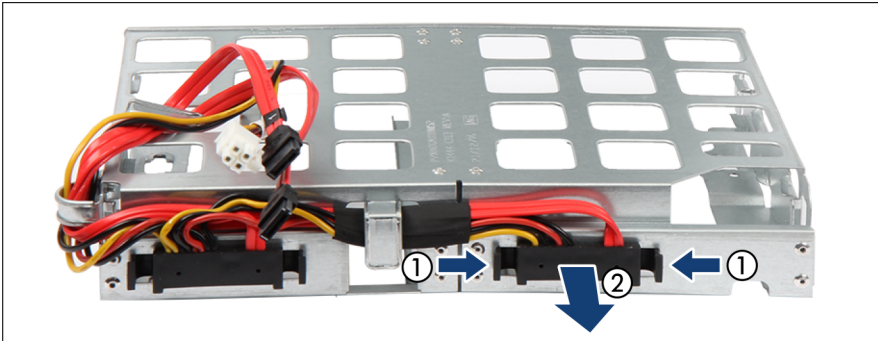


Figure 149: Removing the defective cable

- ▶ Pinch the sides of the connector (1) and remove it from the bottom HDD cage (2).

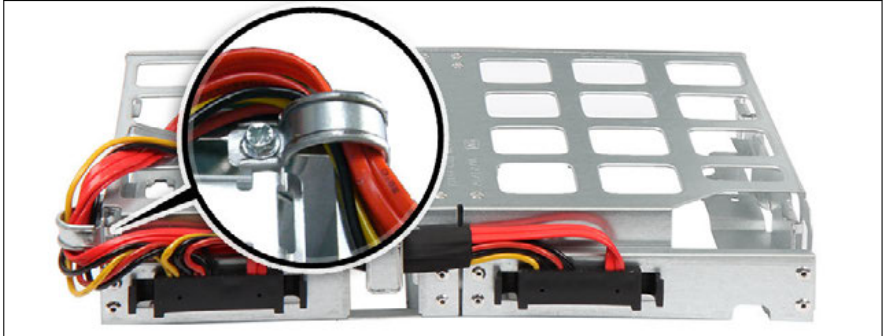


Figure 150: Removing the screw

- ▶ Remove the screw (see close-up).
- ▶ Remove the defective cable from the bottom HDD cage.

Installing the new HDD cable

i When installing the bottom HDD cage into the chassis, make sure that the chassis is in upright position.

- ▶ Install the new cable to the bottom HDD cage.
- ▶ Insert the bottom HDD cage into the chassis so that the fixation bolts fit in the wide ends of the keyhole slots.

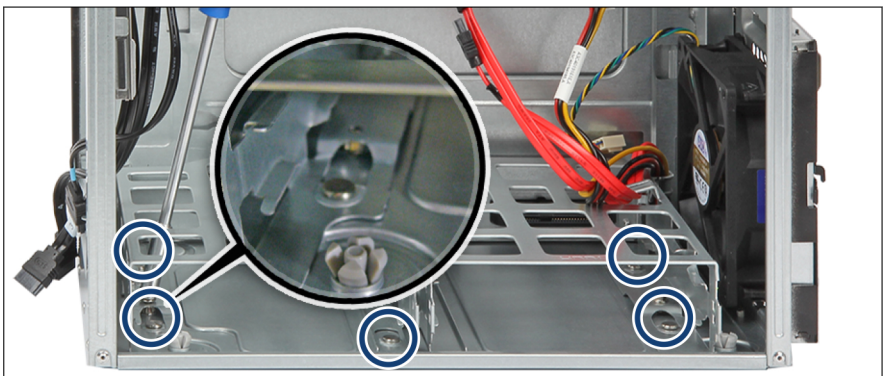


Figure 151: Position of the fixation bolts in chassis

Cables

- ▶ Push the bottom HDD cage back into the chassis until the fixation bolts lock in the narrow ends of the keyhole slots.
- ▶ Fasten the bottom HDD cage with two screws.
- ▶ If applicable, install HDD1 and HDD2, see ["Installing a 3.5-inch HDD" on page 93](#).
- ▶ Push the system board tray back into the chassis, see ["Installing the new system board" on page 215](#).
- ▶ Connect the cables to the system board.



For more cabling information, see ["Appendix B" on page 243](#).

Concluding steps

- ▶ ["Reassembling" on page 51](#).
- ▶ ["Connecting the power cord" on page 57](#).
- ▶ ["Switching on the server" on page 58](#)
- ▶ ["Installing the bay cover" on page 59](#)
- ▶ ["Locking the server" on page 60](#)

17 Appendix A

17.1 Mechanical overview

17.1.1 Server front



Figure 152: Server front with bay cover (left) and without bay cover (right)

- | | | | |
|---|-----------------------------|---|---------------------------|
| 1 | Ultra slim ODD (optional) | 4 | Front USB connectors (2x) |
| 2 | RDX backup drive (optional) | 5 | Key lock |
| 3 | On/Off button | | |

17.1.2 Server rear

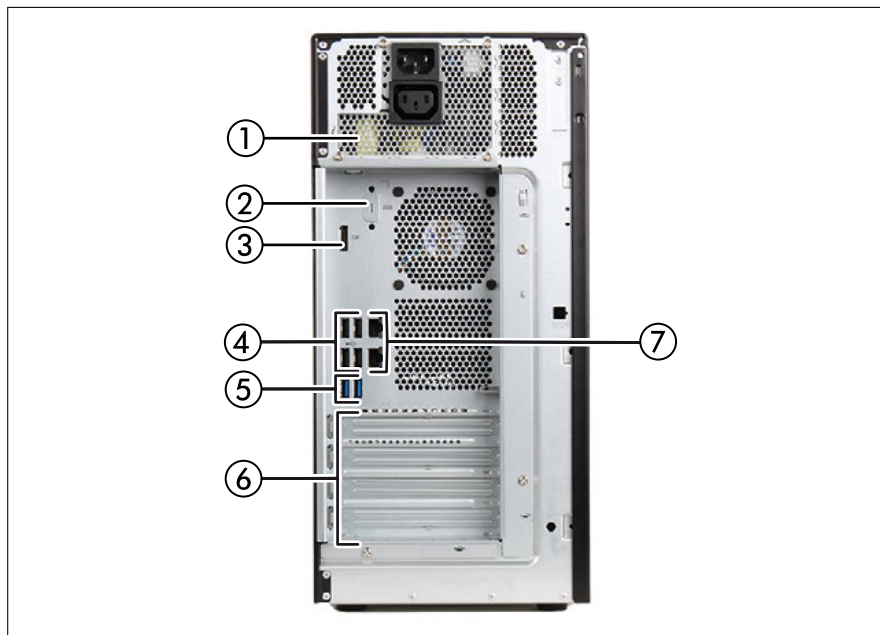


Figure 153: Server rear

- | | | | |
|---|--------------------------------|---|--|
| 1 | Standard PSU | 5 | USB 3.2 Gen2x1 (10 Gbps) connectors (2x) |
| 2 | Serial interface (optional) | 6 | Optional expansion cards (4x) |
| 3 | Video connector (Display port) | 7 | LAN connectors (2x) |
| 4 | USB 2.0 connectors (4x) | | |

17.1.3 Server interior

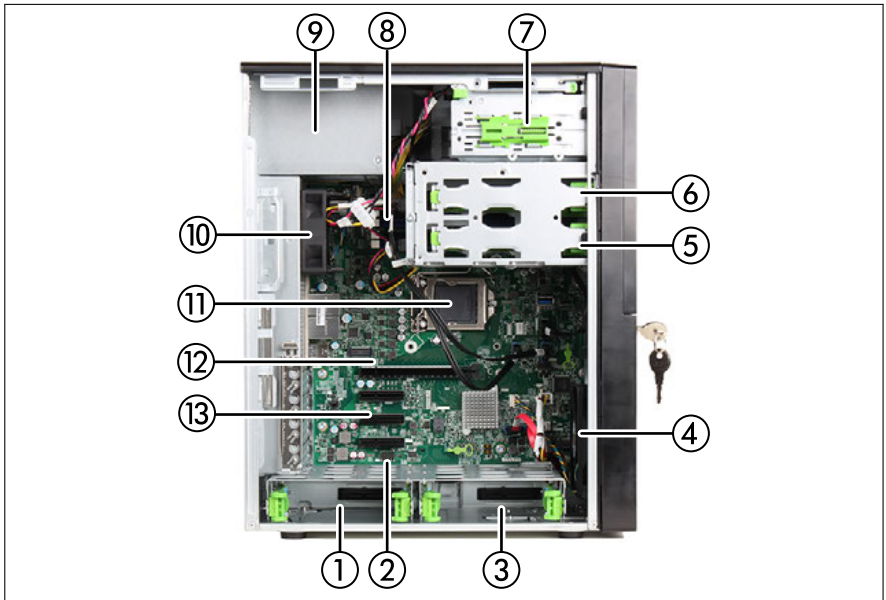


Figure 154: Server interior

- | | | | |
|---|--------------------------|----|-------------------------------|
| 1 | HDD 2 | 8 | Memory modules |
| 2 | TPM board (if installed) | 9 | PSU |
| 3 | HDD 1 | 10 | Fan2 SYS |
| 4 | Fan1 SYS | 11 | CPU / CPU heat sink / CPU fan |
| 5 | HDD 4 | 12 | System board |
| 6 | HDD 3 | 13 | Expansion card slots |
| 7 | Accessible drive bays | | |

17.2 Connectors and indicators

17.2.1 Connectors on the system board

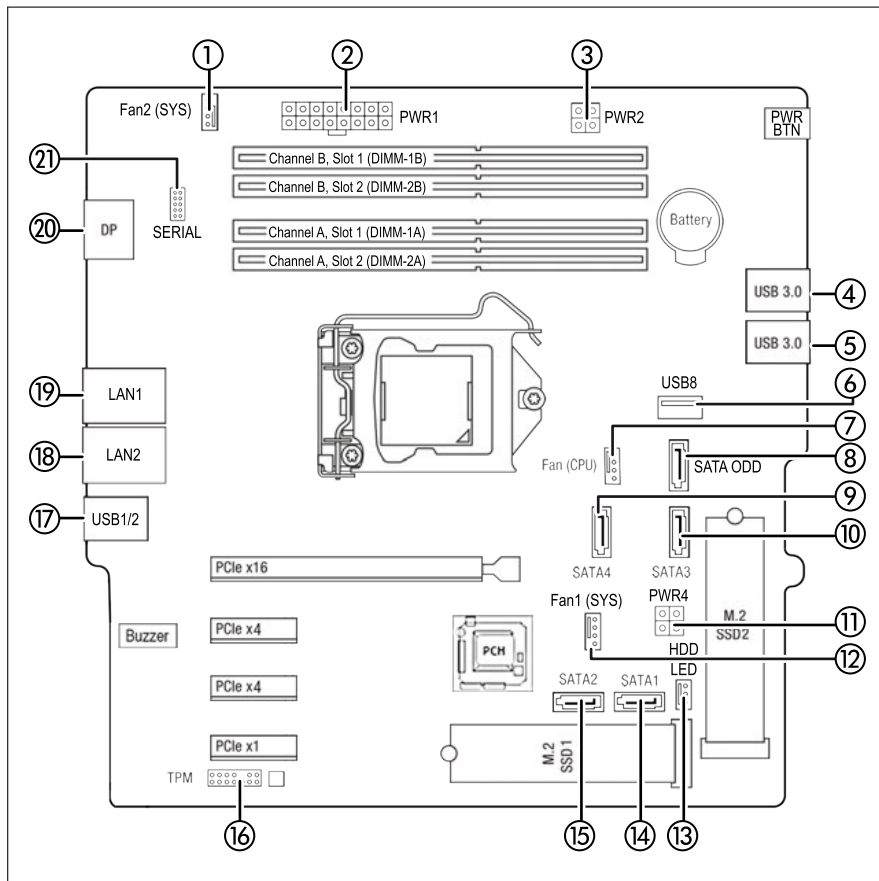


Figure 155: Internal connectors on the system board D3930

Pos.	Print	Description
1	Fan2 (SYS)	Rear fan connector
2	PWR1	PSU Power

Pos.	Print	Description
3	PWR2	Power connector
4	USB 3.0	USB 3.0 connector
5	USB 3.0	USB 3.0 connector
6	USB 8	USB connector for backup drives
7	Fan (CPU)	CPU fan connector
8	SATA ODD	ODD connector for backup drives
9	SATA 4	SATA 4 connector
10	SATA 3	SATA 3 connector
11	PWR4	SATA Power connector
12	Fan1 (SYS)	Front fan connector
13	HDD LED	LED activity connector
14	SATA 1	SATA 1 connector
15	SATA 2	SATA 2 connector
16	TPM	Connector for TPM module
17	USB 1/2	USB 3.2 connector
18	LAN1	LAN connector and USB 2.0 connector
19	LAN2	LAN connector and USB 2.0 connector
20	DP	DisplayPort connector
21	SERIAL	Connector for Serial port (optional)

17.2.2 Server front

17.2.2.1 Connectors on the server front



Figure 156: Connectors on the server front

- 1 USB 3.2 Gen2 (20 Gbps) Type C connector (5V/3A) (1x)
- 2 USB 3.2 Gen1 (5 Gbps) connector (1x)



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

17.2.2.2 Indicators on the front panel

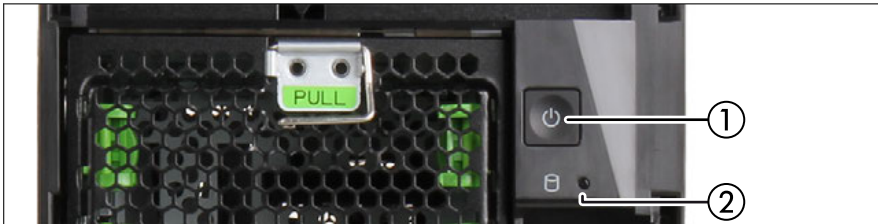


Figure 157: Indicators on the front panel

- 1 Power-on indicator
- 2 HDD/SSD activity indicator

Power-on indicator (1)

Status	Description
off	The server is switched off.
white on	The server is in standby mode.

Appendix A

Status	Description
off	The ODD is inactive.
green on	The storage medium is being accessed.

RDX drive Power-on indicator (2)

Status	Description
off	The drive is not powered on.
green on	The drive is ready and working properly.
green flashing	The drive is ejecting media.
amber on	RDX has detected a drive failure condition. For more information, run a diagnostics application.
green on / amber flashing once eject button is pressed	Host computer is accessing the media and the user has pressed the eject button. The drive will eject the media after host access is complete.

17.2.3 Server rear

17.2.3.1 Connectors on the I/O panel

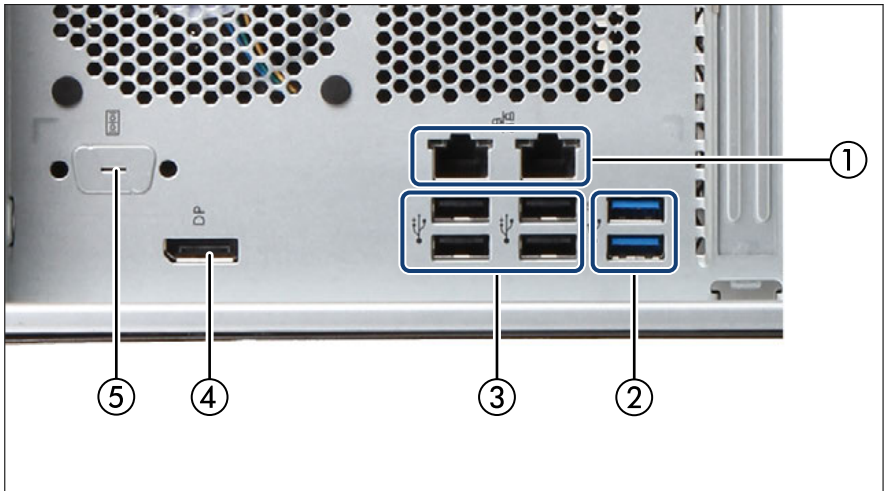


Figure 159: Connectors on the I/O panel

- | | | | |
|---|-------------------------|---|--------------------------------|
| 1 | LAN connectors (2x) | 4 | Video connector (Display Port) |
| 2 | USB 3.2 connectors (2x) | 5 | Serial interface (optional) |
| 3 | USB 2.0 connectors (4x) | | |

i Some of the devices that can be connected may require special drivers (see the documentation for the connected device).

17.2.3.2 Indicators on the I/O panel

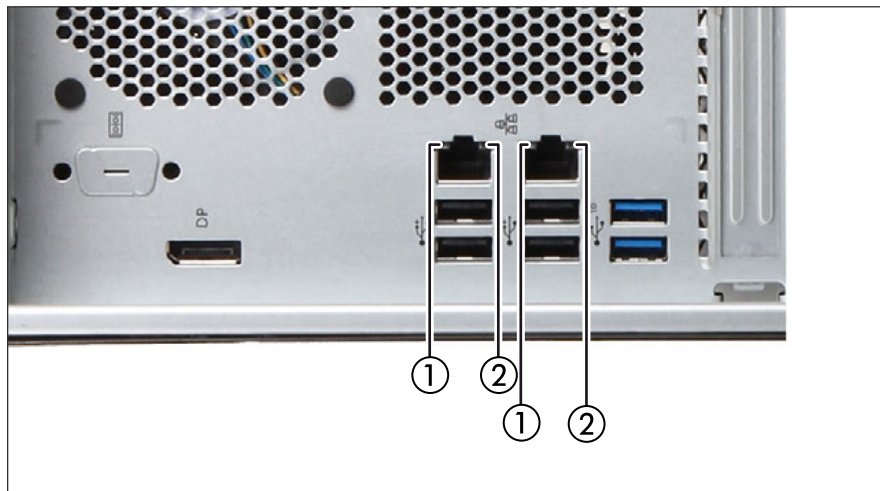


Figure 160: Indicators on the I/O panel

- 1 LAN link/ transfer indicator
- 2 LAN speed indicator

LAN link/ transfer indicator (1)

Status	Description
green on	A LAN connection has been established.
green flashing	LAN data transfer is in progress.
off	LAN is not connected.

LAN speed indicator (2)

Status	Description
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.

17.3 Onboard settings

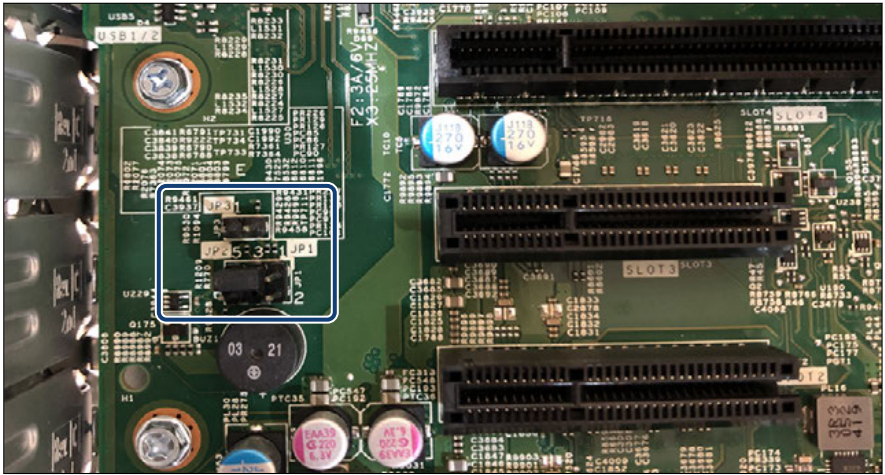


Figure 161: Jumper

Jumper Settings		
	Description	Setting
		<input type="checkbox"/> 1 <input type="checkbox"/> 2 Default
JP1	Password Clear	<input type="checkbox"/> 1 Password Clear <input type="checkbox"/> 2 enabled
JP2	Recovery BIOS	<input type="checkbox"/> 1 Recovery BIOS <input type="checkbox"/> 2 enabled
JP3	BIOS WP	<input type="checkbox"/> 1 Default <input type="checkbox"/> BIOS Flash Write Protect enabled

Figure 162: Jumper settings of system board D 3930

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 or expansion cards installed
1 CPU with heat sink	installed in slot CPU 1
1 memory module	installed in slot DIMM-1A
1 PSU	installed on chassis

Table 8: Minimum startup configuration - components

Cable	Notes
Power cable	

Table 9: Minimum startup configuration - cables

- ▶ ["Unlocking the server" on page 41](#)
- ▶ ["Removing the bay cover" on page 42](#)
- ▶ ["Shutting down the server" on page 43](#)
- ▶ ["Disconnecting the power cord" on page 44.](#)
- ▶ Take the system down to its minimum startup configuration.
- ▶ ["Connecting the power cord" on page 57.](#)
- ▶ Connect a display to the server.
- ▶ ["Switching on the server" on page 58](#)
- ▶ ["Installing the bay cover" on page 59](#)
- ▶ ["Locking the server" on page 60](#)



CAUTION

- ▶ Since the fan module is not included in the minimum startup configuration, the server must be shut down immediately after the diagnostic process is complete (POST phase has been passed).
- ▶ The minimum startup configuration must be used exclusively for diagnostic purposes by maintenance personnel, never in daily operation!

18 Appendix B

18.1 Supplied documents

The following documents are available in this appendix:

- "Cable plan for FUJITSU Server PRIMERGY TX1310 M5 Reference Manual"
- "List of Released Adapters incl. Installation sequence and priority"
- "List of screws used in PRIMERGY Servers - Assembled in Czech and Japan"

Cable plan for FUJITSU Server PRIMERGY TX1310 M5

Reference Manual

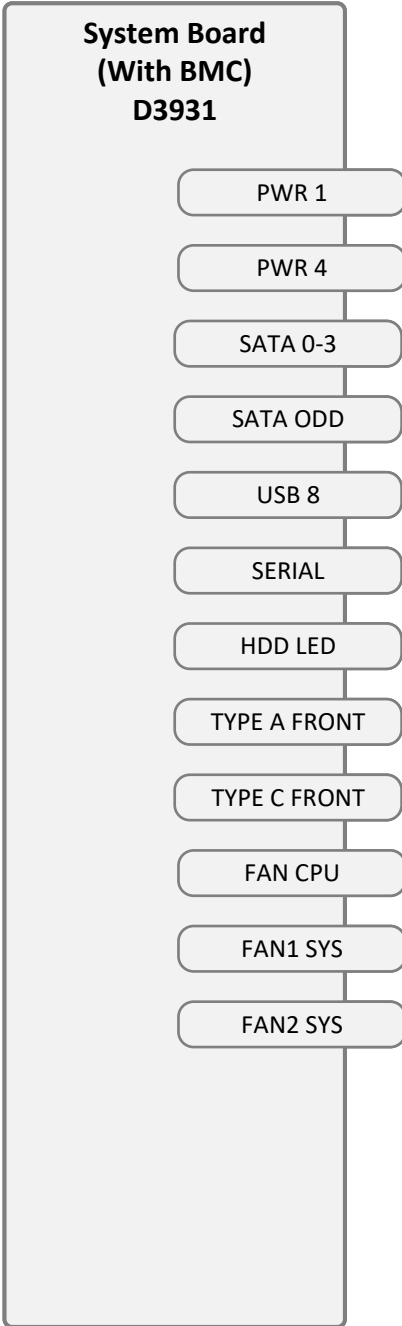
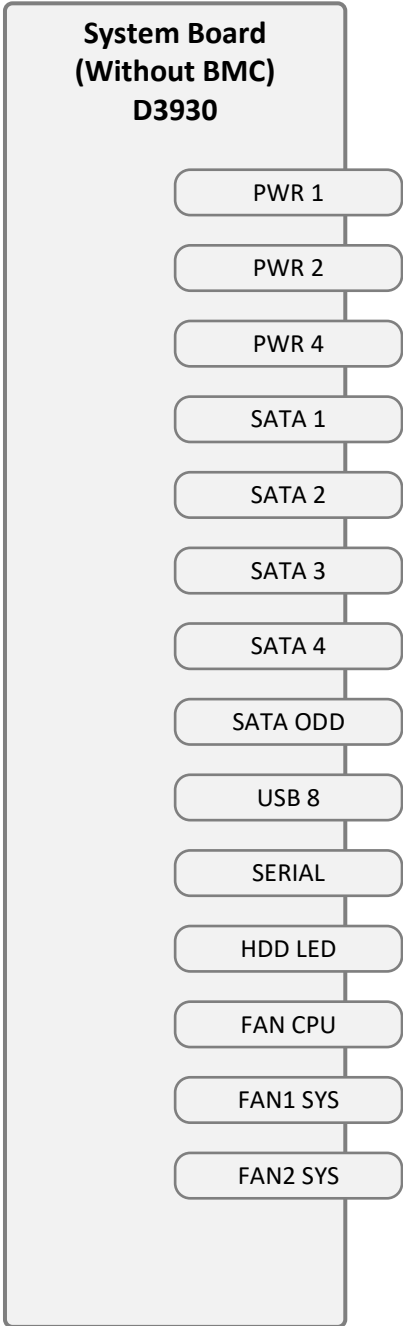
Contents

1	Frontpage
2	Contents
3	List of used cables
4	SysBoardConn
5	CablingBasicPSU
6	CablingFAN
7	DATA HDD w/o BMC
8	PWR HDD w/o BMC
9	DATA HDD w/BMC
10	PWR HDD w/BMC
11	FRONT IO USB w/BMC
12	DATA CP500i w/o BMC
13	DATA CP500i w/BMC
14	DATA CP600i w/o BMC
15	DATA CP600i w/BMC
16	DATA CP2100 w/o BMC
17	DATA CP2100 w/BMC
18	DATA COM port

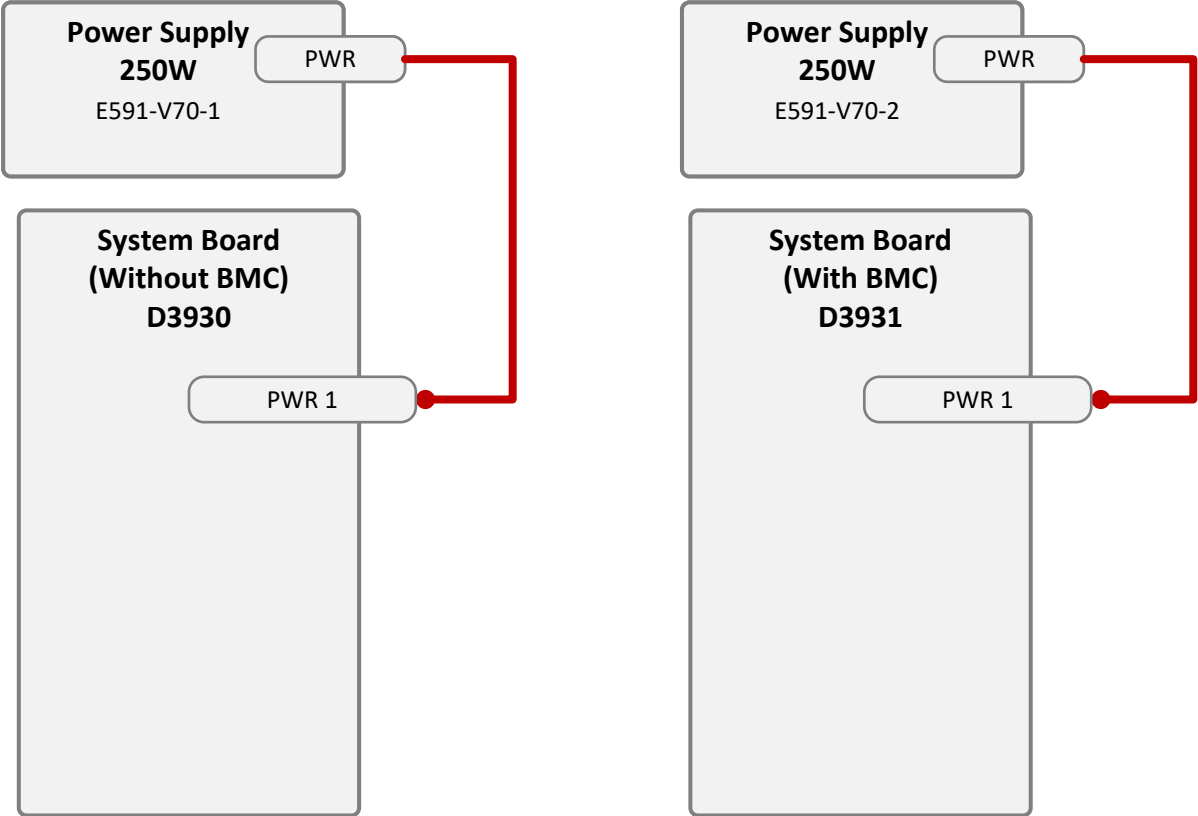
List of used cables

Ref	Fujitsu PN	Naming	Part of
C1	CA05973-7063	TX M5 HDD LED CABLE, 1 to 1	Opt. DATA CP500i w/o BMC DATA CP500i w/BMC DATA CP600i w/o BMC DATA CP600i w/BMC
C2	CA05973-7065	TX M5 RS-232 CABLE	Opt. DATA COM port
C3	CA05973-7066	RDX USB CABLE	Opt. DATA HDD w/o BMC DATA HDD w/BMC
C4	CA05973-7068	FRONT IO USB CABLE	SKD w/BMC FRONT IO USB w/BMC
C5	CA05973-7069	HDD SIGNAL/ODD/RDX PWR CABLE	SKD w/BMC DATA HDD w/BMC PWR HDD w/BMC DATA CP500i w/BMC DATA CP600i w/BMC
C6	CA05973-7070	HDD1/2 SIGNAL/PWR CABLE	SKD w/oBMC DATA HDD w/o BMC PWR HDD w/o BMC DATA CP500i w/o BMC DATA CP600i w/o BMC
C7	CA05973-7071	HDD3/4 SIGNAL/ODD/RDX PWR CABLE	SKD w/oBMC DATA HDD w/o BMC PWR HDD w/o BMC DATA CP500i w/o BMC DATA CP600i w/o BMC
C8	CA05973-8102	TX1310 RAID ADAPTOR CABLE	Opt. w/oBMC DATA CP500i w/o BMC
C9	CA05973-7067	TX1310 RAID ADAPTOR CABLE CP600i	Opt. w/oBMC DATA CP600i w/o BMC
C10	CA05973-7084	TX1310 with iRMC RAID ADAPTOR CABLE CP600i	Opt. w/BMC DATA CP600i w/BMC

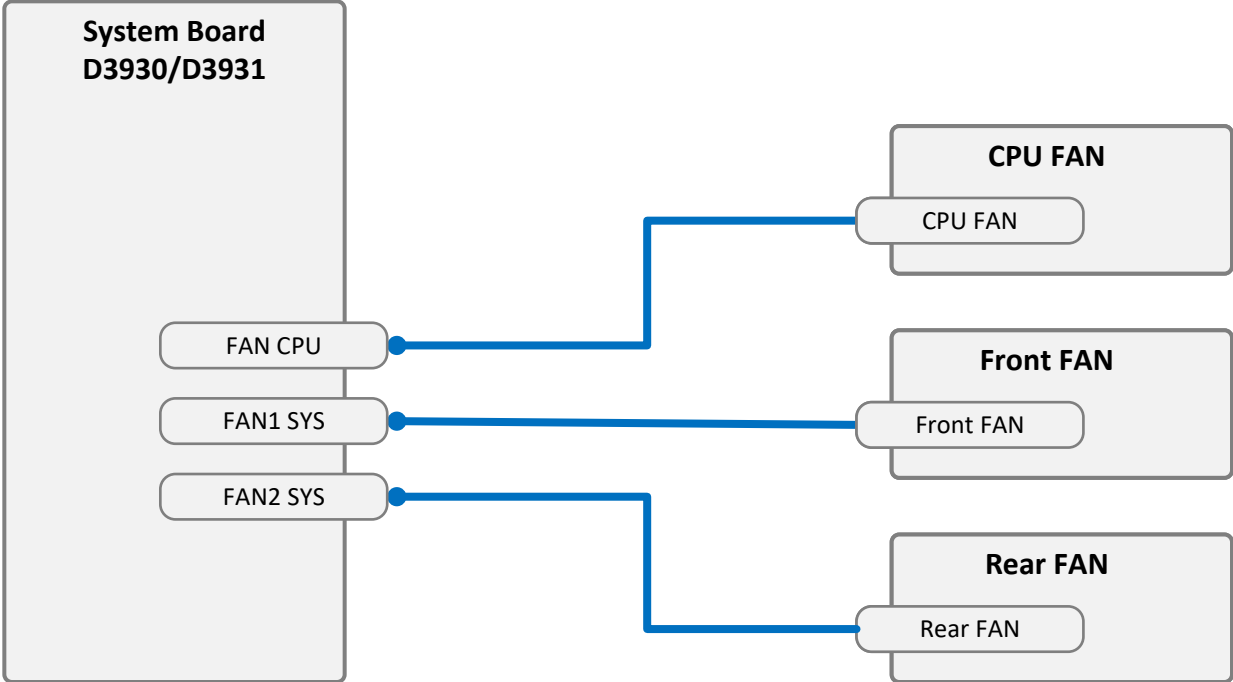
SysBoardConn



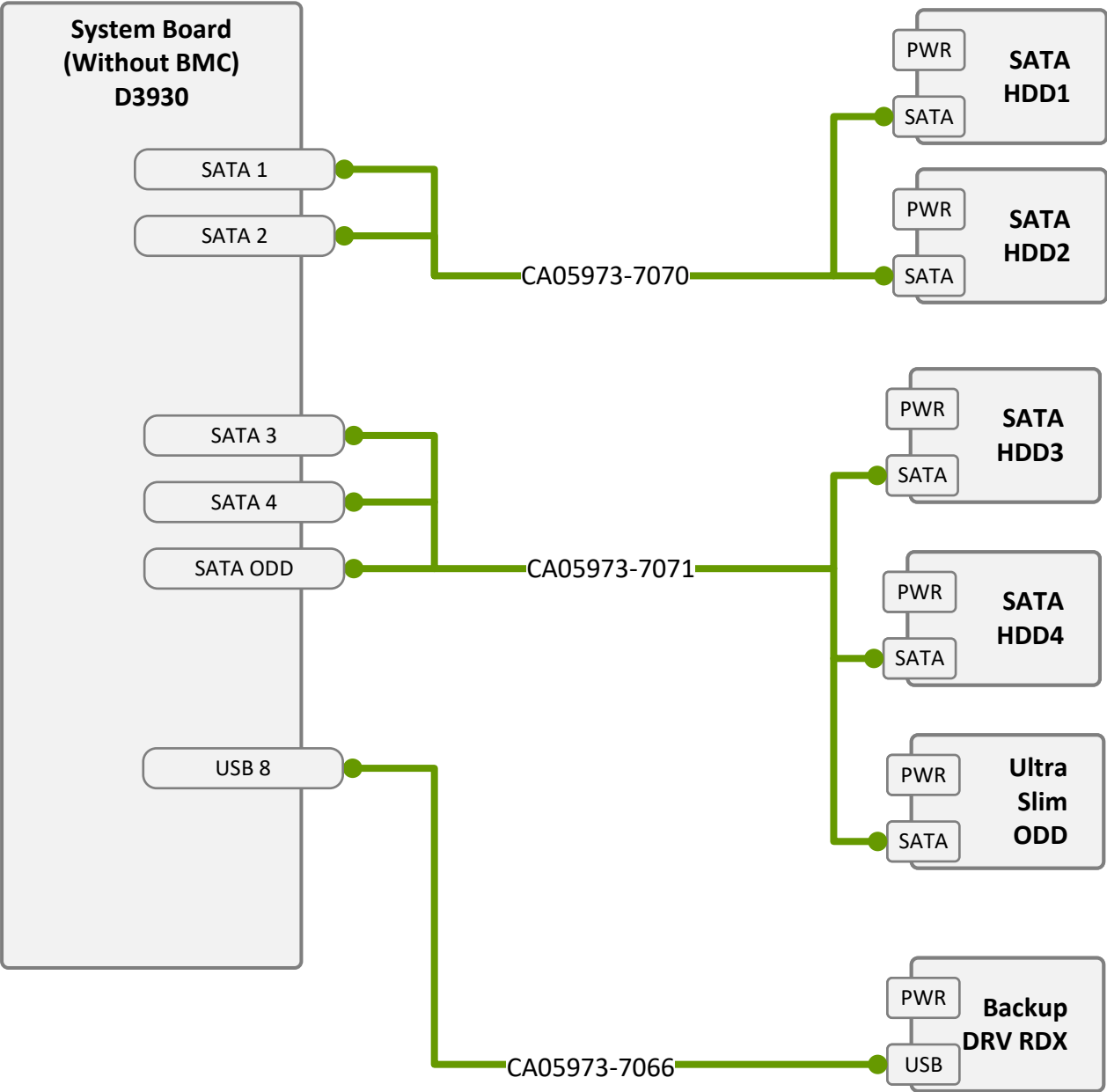
CablingBasicPSU



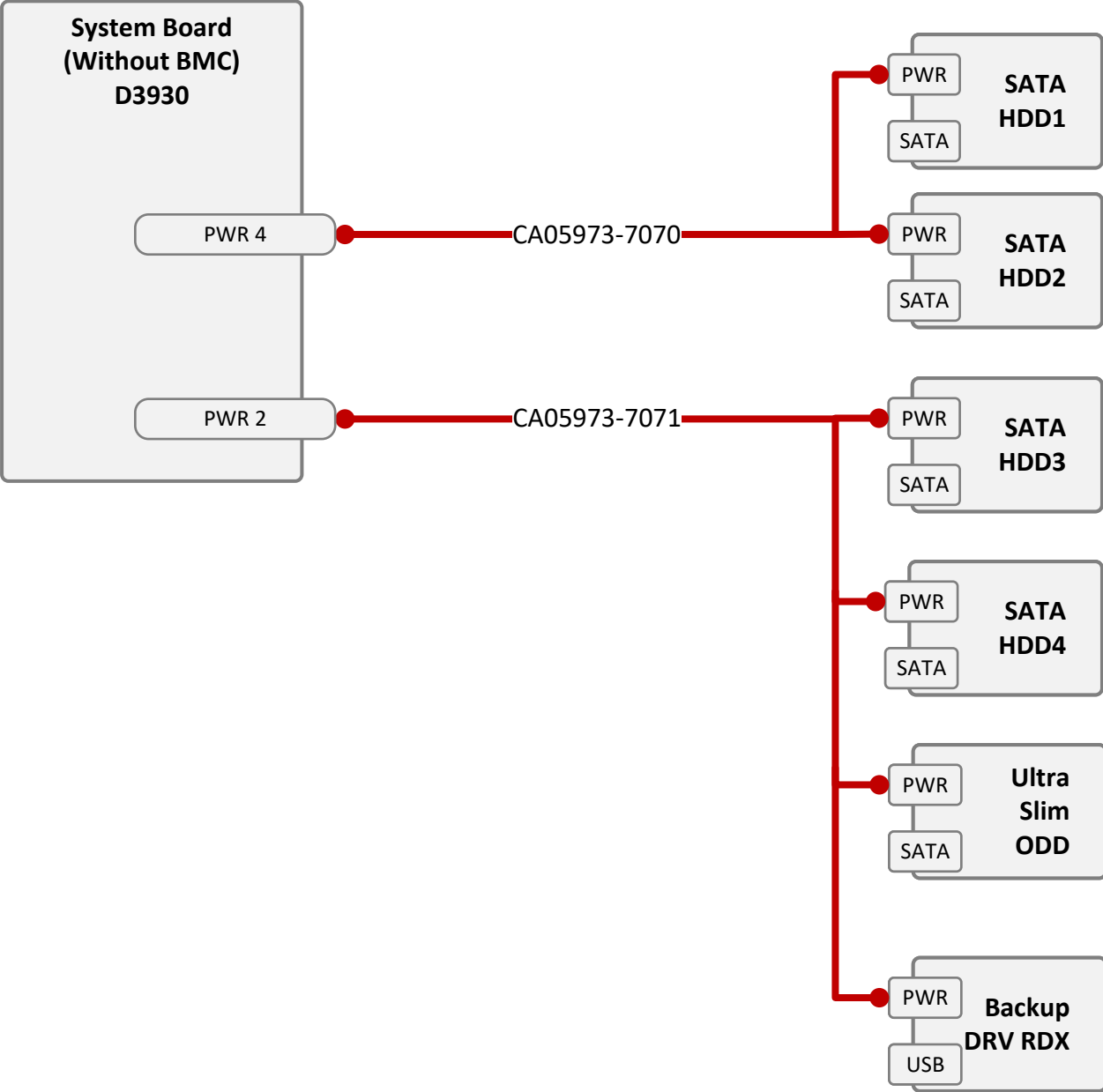
CablingFAN



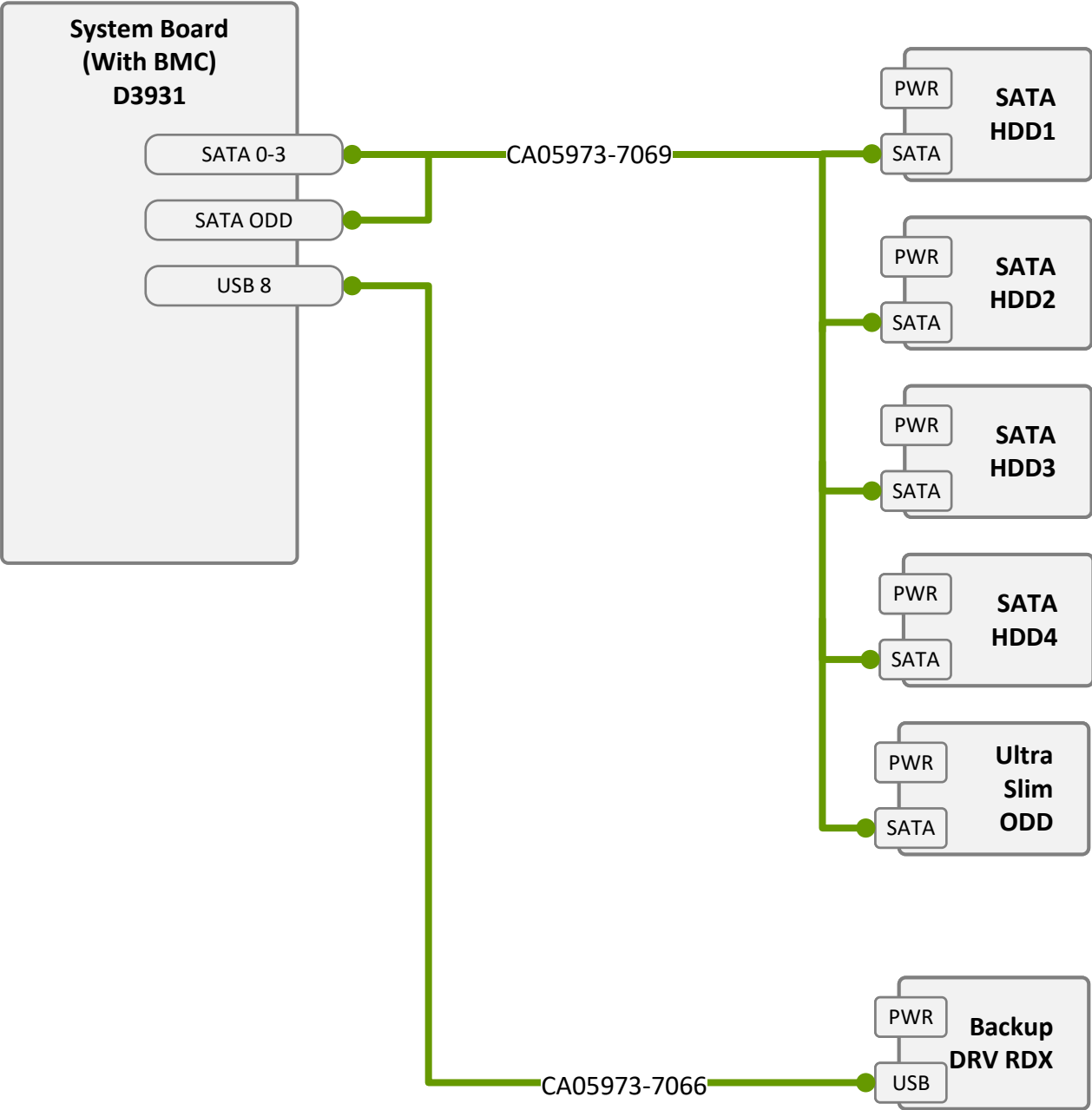
DATA HDD w/o BMC



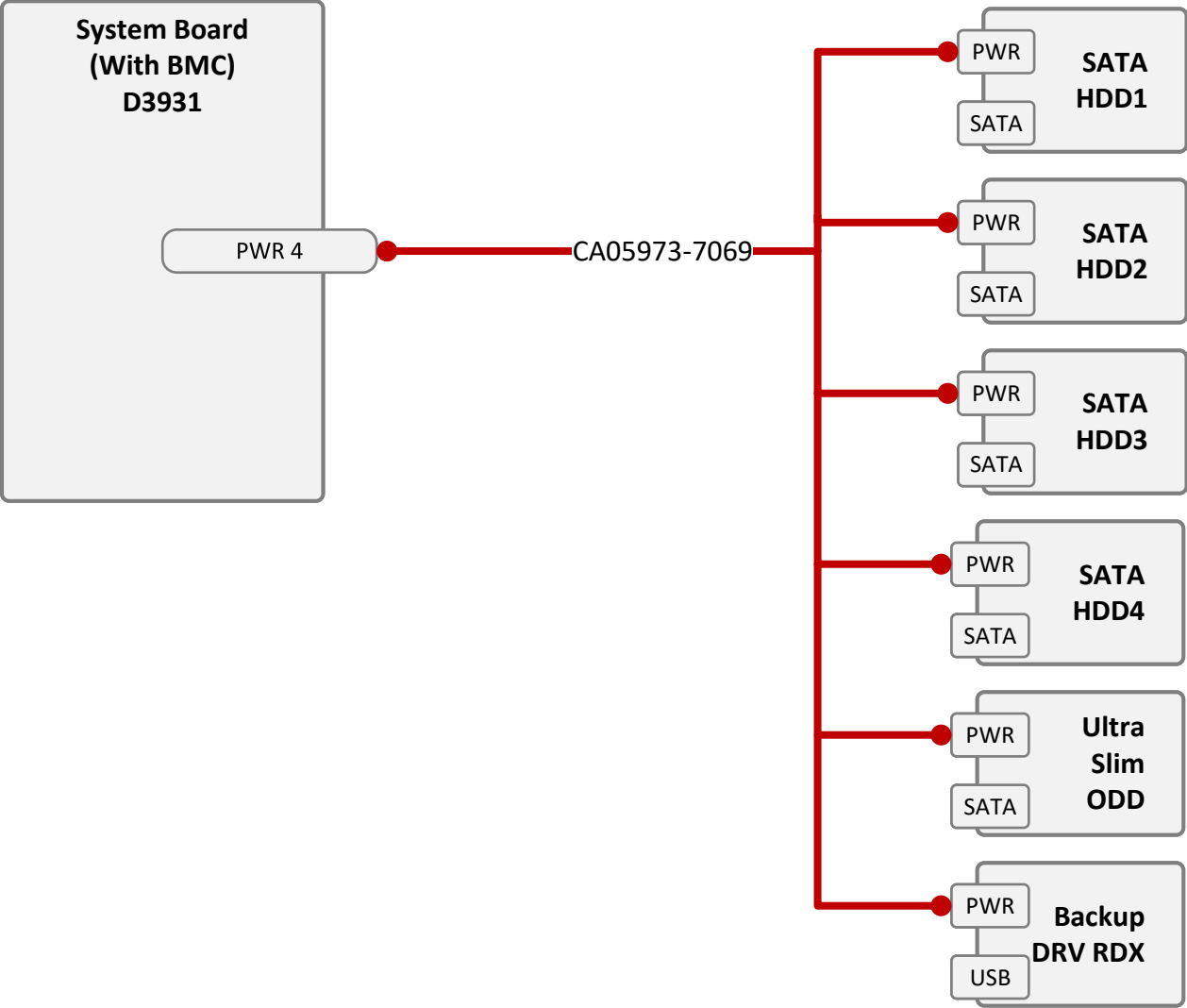
PWR HDD w/o BMC



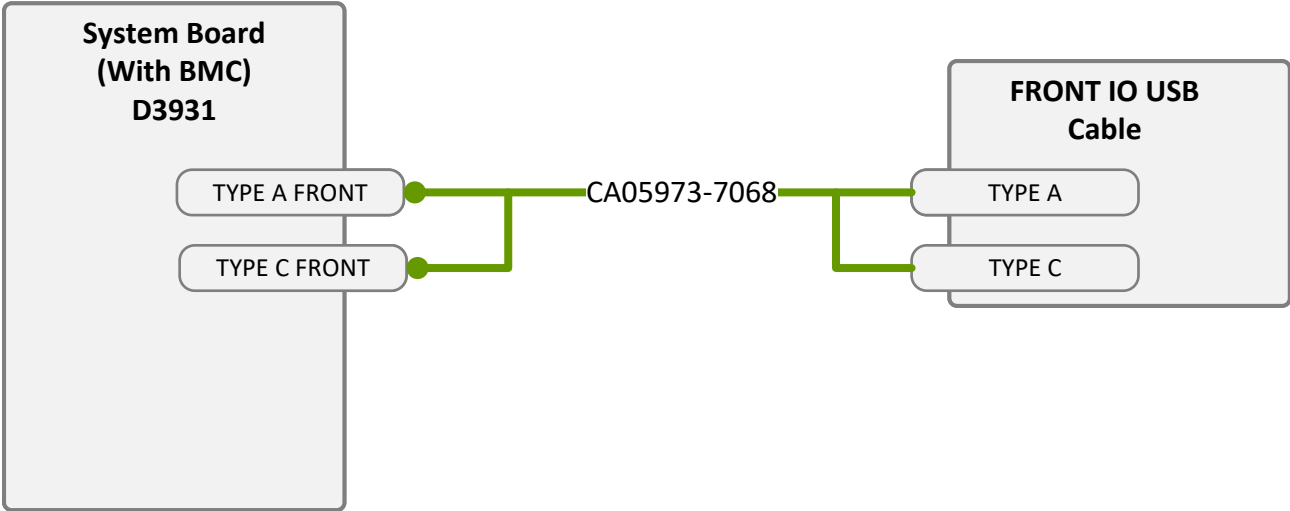
DATA HDD w/BMC



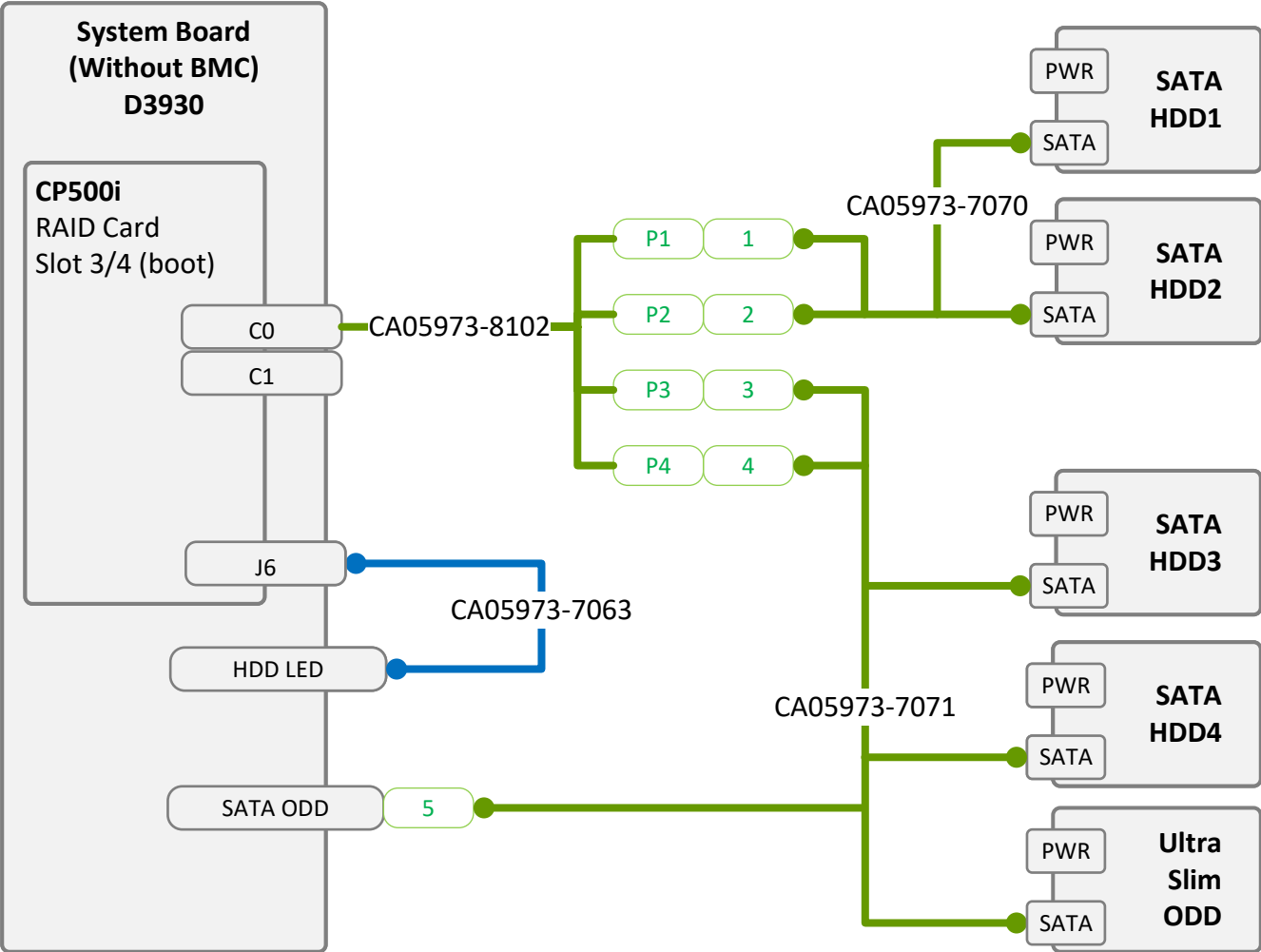
PWR HDD w/BMC



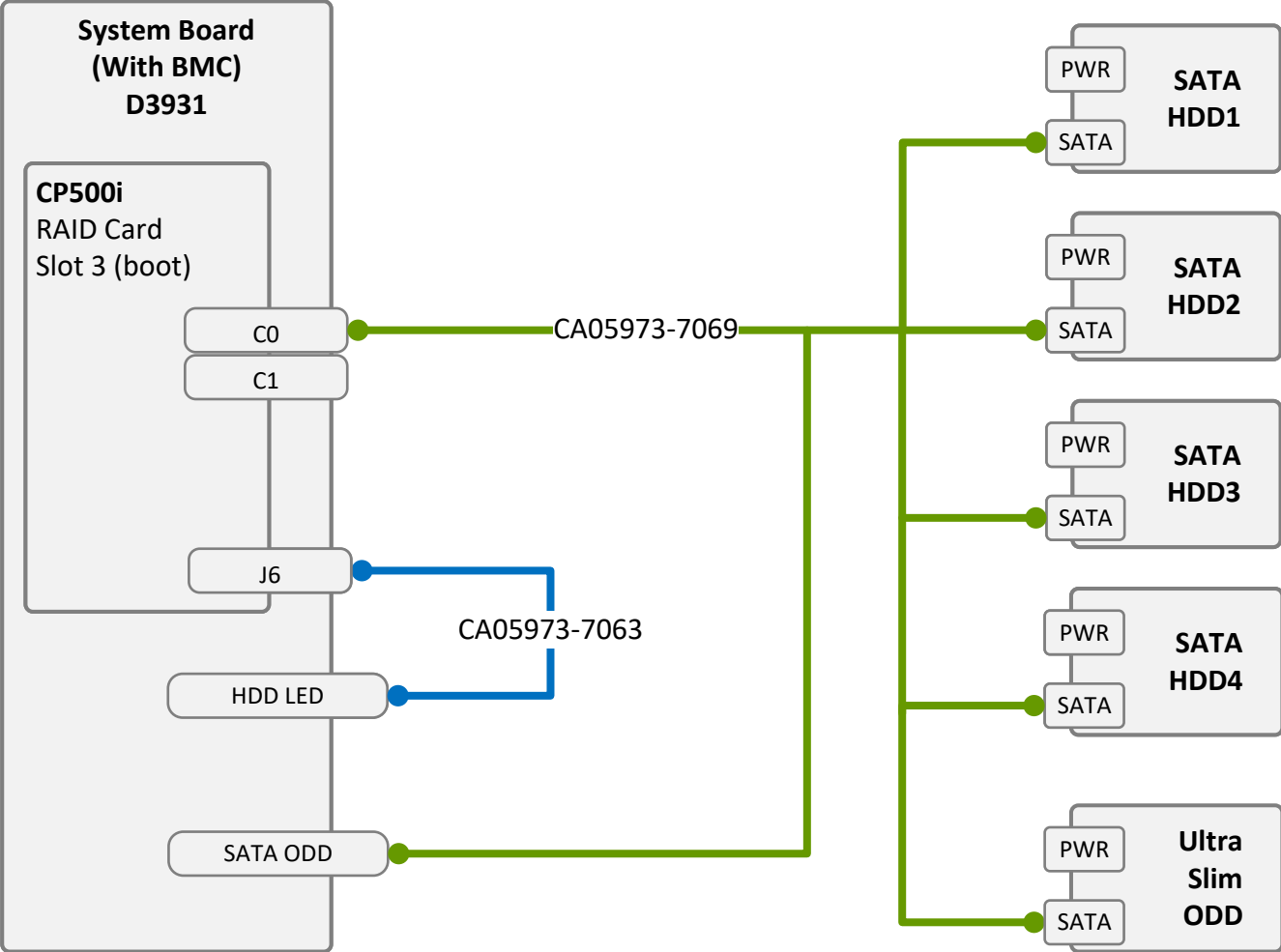
FRONT IO USB w/BMC



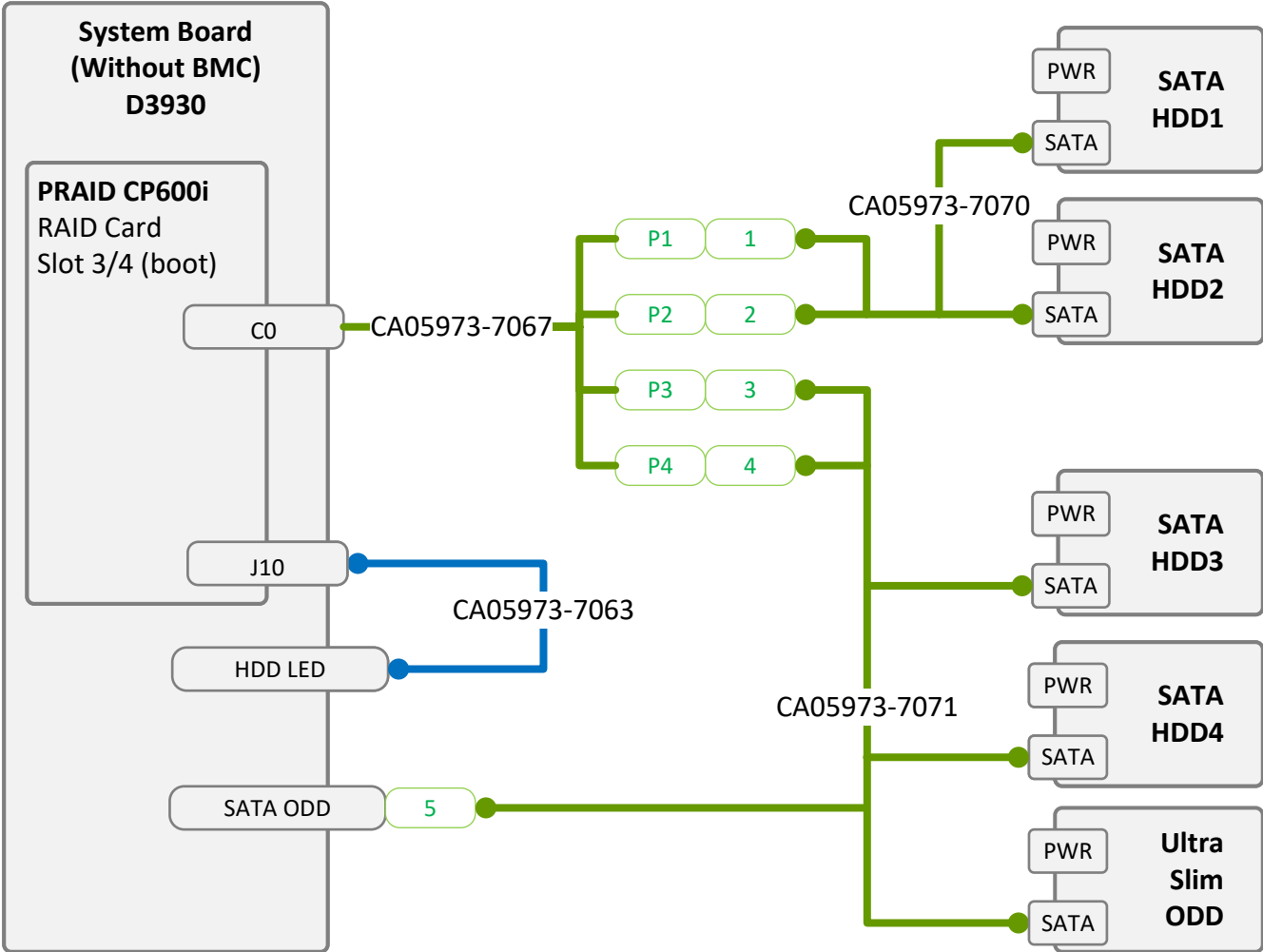
DATA CP500i w/o BMC



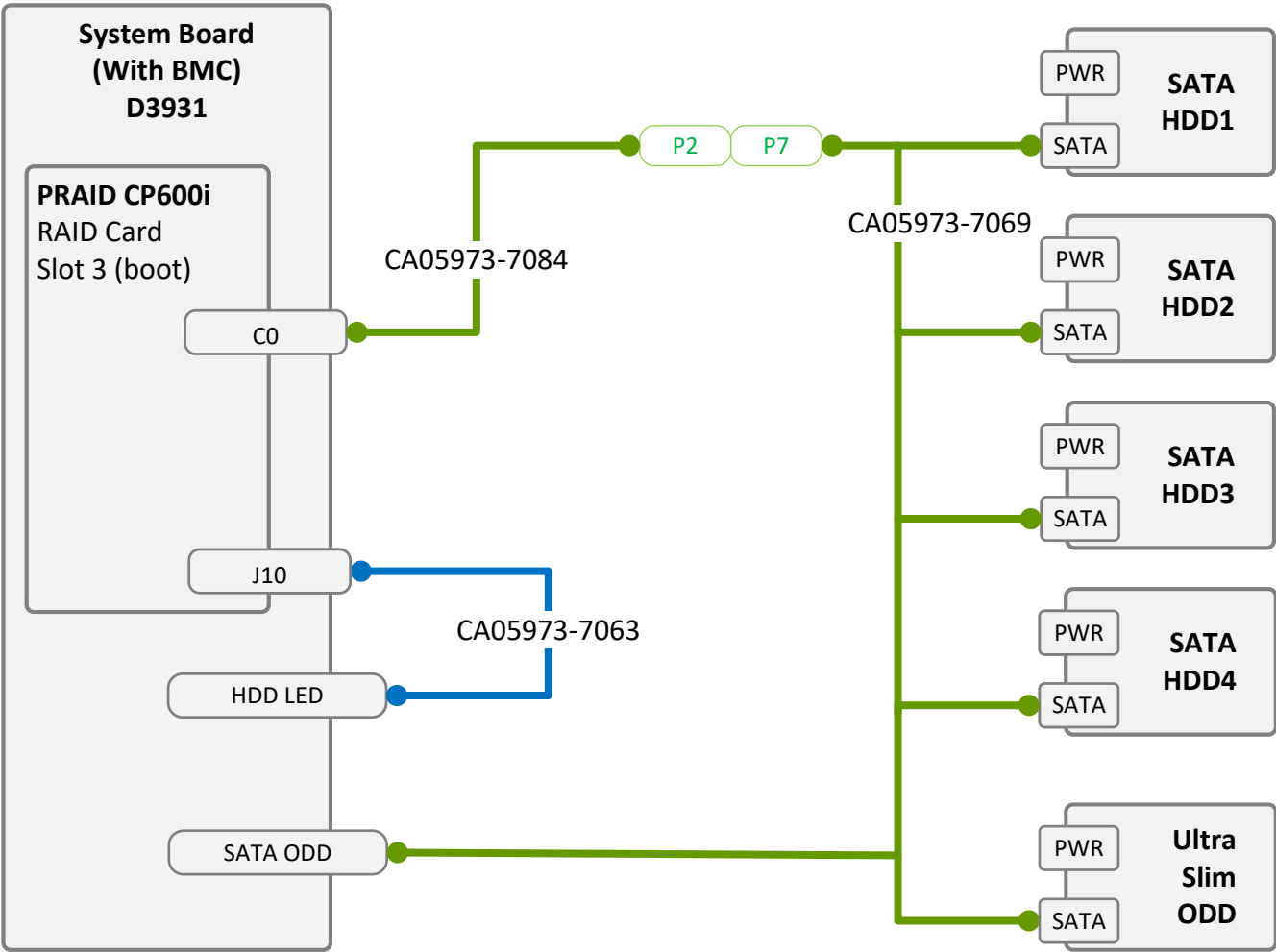
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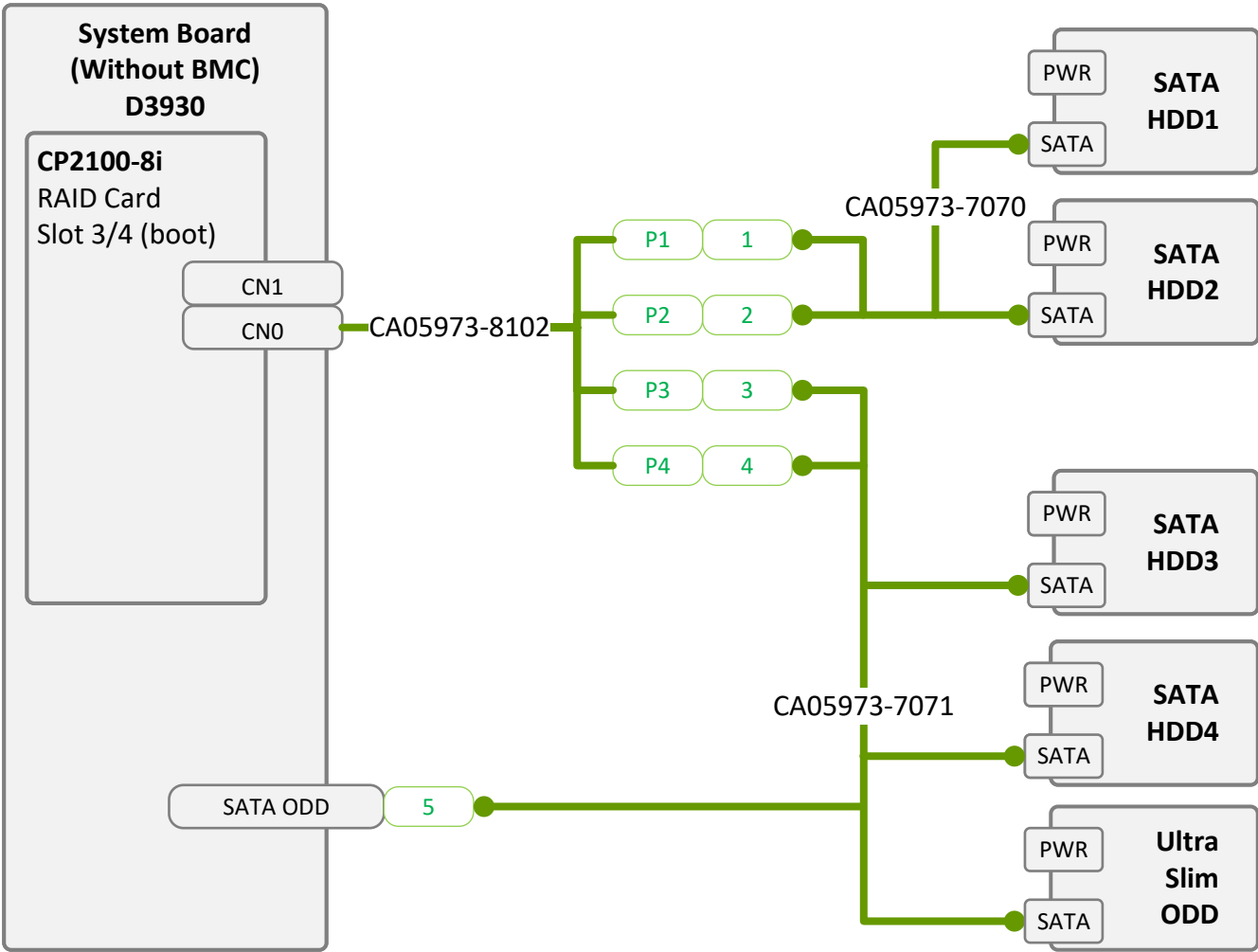
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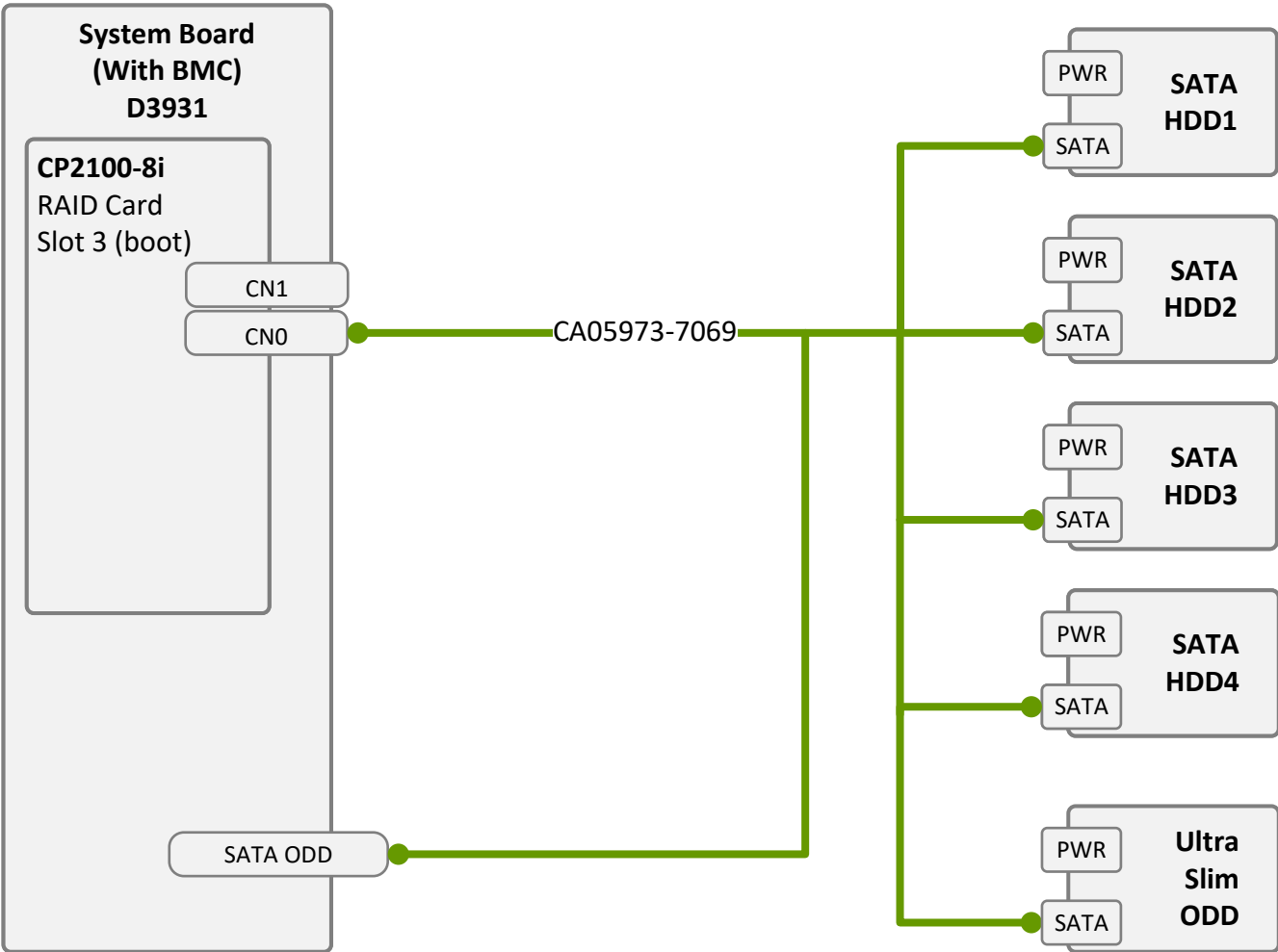
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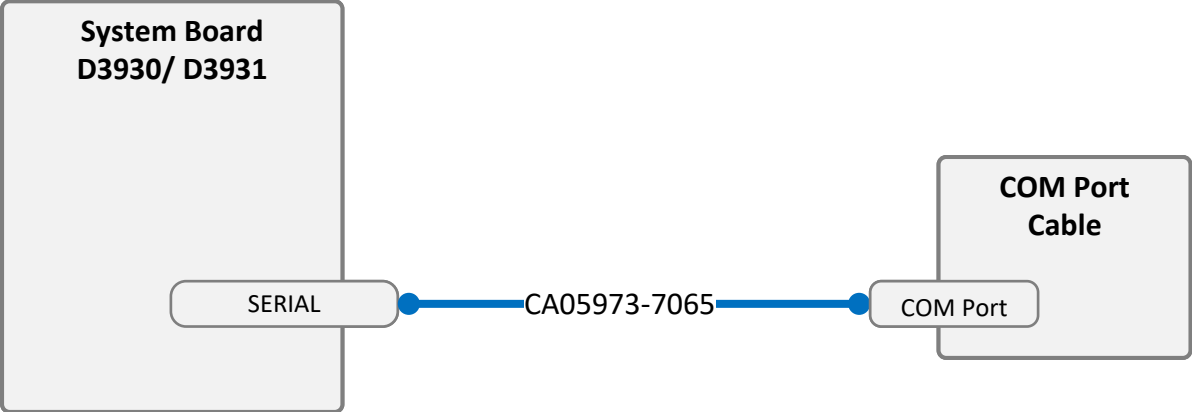
DATA CP2100 w/o BMC



DATA CP2100 w/BMC



DATA COM port



System Name: PRIMERGY TX1310 M5

CPU sockets 1

#PCIe Slots of system 4

Riser Option support n

Overview and properties of System PCI devices and slots

List of Released Adapters incl. Installation sequence and priority

				System PCI Slot #									
				1(D3930)	2 (D3930)	3 (D3930)	4 (D3930)	1 (D3931)	2 (D3931)	3 (D3931)	4 (D3931)	M.2 SSD1	M.2 SSD2
PCI Slot attached CPU #				PCH	PCH	PCH	CPU	PCH	PCH	CPU	CPU	PCH	PCH
Riser Slot y/n				n	n	n	n	n	n	n	n	n	n
Adapter Class Category	Adapter Installation Sequence Order within Adapter Category (Cluster)	Adapter Product Name Description (Softwarepool)	Max # Adapter	1(D3930)	2 (D3930)	3 (D3930)	4 (D3930)	1 (D3931)	2 (D3931)	3 (D3931)	4 (D3931)	M.2 SSD1	M.2 SSD2
Solid-State-Drive													
	1	SSD SATA 6G <Capacity > M.2 N H-P	2	-	-	-	-	-	-	-	-	1	2
	2	SSD SATA 6G <Capacity > M.2 N H-P for VMware	1	-	-	-	-	-	-	-	-	1	2
Controller Card – Graphic													
	1	NVIDIA T400 4GB	1	-	-	-	1	-	-	-	1	-	-
	2	NVIDIA T400 2GB	1	-	-	-	1	-	-	-	1	-	-
	3	NVIDIA A2	1	-	-	-	1	-	-	-	1	-	-
Controller Card - SAS RAID int													
	1	PRAID CP500i	1	-	-	2	1	-	-	1	2	-	-
	2	PRAID CP600i	1	-	-	2	1	-	-	1	2	-	-
Controller Card - LAN													
	1	PLAN CP 2x1Gbit Cu Intel I350-T2	1	-	1	2	3	1	2	3	4	-	-
	2	PLAN AP 1x1Gbit Cu Intel I210-T1	2	1	2	3	-	1	2	-	-	-	-
Controller Card - SAS int													
	1	PSAS CP 2100-8i	1	-	-	2	1	-	-	1	2	-	-

List of screws used in PRIMERGY Servers

Assembled in Czech and Japan

June 2022

List of screws used in PRIMERGY Servers, assembled in WCZ or FIT

screw reference number	WCZ	FIT	code number	type	photo	head tool / insert bit	color	Torque tolerance +10%
S101	x	x	N/A	M1.6 x 4 mm		Phillips PH1	silver	0.2 Nm
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
S205	X	X	N/A	M2.5 x 6.5mm		Phillips PH1	silver	0.3 Nm

screw reference number	WCZ	FIT	code number	type	photo	head tool / insert bit	color	Torque tolerance +-10%
S206	X	X	N/A	M2 x 4.3mm		Phillips PH1	silver	0.2 Nm
S207	X	X	N/A	M2 x 4 mm countersink		Phillips PH1	black	0.09 Nm
S208	X	X	N/A	M2.5 x 8 mm self-tapping		Phillips PH1	black	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
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		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


screw reference number	WCZ	FIT	code number	type	photo	head tool / insert bit	color	Torque tolerance +-10%
S306	X		C26192-Y10-C67	M3 x 4.5 mm		hexagon head 5 mm / cross PZ2	silver	0.6 Nm
		X	F6-SW2N3-05121	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 PH1	silver	0.6 Nm
		X	F6-SSA3-06121	M3 x 6 mm		countersink Phillips PH1	silver	0.6 Nm
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
S311	X	X	C26361-B443- C220	M3 x 3.2 mm		Lens head screw cross PZ2	silver	0.2 Nm
S312	X	X	N/A	M3 x 6.7 mm		Phillips PH2	silver	0.6 Nm
S313	X	X	N/A	M3 Fastener Screw		Phillips PH2	silver	0.6 Nm

screw reference number	WCZ	FIT	code number	type	photo	head tool / insert bit	color	Torque tolerance +-10%
S314	X	X	N/A	M3 Captive Screw		Phillips PH2	silver	0.2 Nm
S315	X	X	N/A	M3 x 3 mm		Phillips PH1	silver	0.6 Nm
S316	X	X	N/A	M3 x 4 mm		Phillips PH2	silver	0.6 Nm
S317	X	X	N/A	M3 x 4.5 mm Ø8.0x16.5		Phillips PH2	silver	0.6 Nm
S318	X	X	N/A	M3 x 4 mm		Phillips PH2	silver	0.6 Nm
S319	X	X	N/A	M3 x 4.5 mm		Phillips PH2	silver	0.6 ~ 0.7 Nm
S320	X	X	N/A	M3 x 5 mm		Phillips PH2	silver	0.7 Nm
S321	X	X	N/A	M3 Captive Screw		Phillips PH2	silver	0.6 Nm

screw reference number	WCZ	FIT	code number	type	photo	head tool / insert bit	color	Torque tolerance +-10%
S322	X	X	CA05973-9652	M3 x 6 mm		Phillips PH2	silver	0.8 Nm
S323	X	X	N/A	M3 x 8 mm		Phillips PH2	silver	0.8 Nm
S324	X	X	N/A	M3 x 9 mm		Phillips PH2	silver	0.8 Nm
S325	X	X	N/A	M3 x 2.2 mm		Phillips PH2	silver	0.6 Nm
S326	X	X	CA05973-9653	M3 x 4 mm		Phillips PH2	silver	0.6 Nm
S327	X	X	N/A	M3 x 5.5 mm		Phillips PH2	silver	0.6 Nm
S328	X	X	N/A	M3 x 4.5 mm		Phillips PH2	silver	0.2 Nm
S329	X	X	N/A	M3 x 5 mm		Phillips PH2	silver	0.6 Nm
S330	X	X	A3C40121520	M3 x 5 mm		Phillips PH1	black	0.6 Nm
S331	X	X	N/A	M3 x 8 mm		Phillips PH2	Silver	0.6 Nm
S332	X	X	CA05973-8491 same as -S304 but color	M3 x 4 mm		countersink Phillips PH1	black	0.4 Nm
S333	X	X		M3 x 4.5 mm Ø7.5x42.5		Phillips PH2	Silver	0.6 Nm

screw reference number	WCZ	FIT	code number	type	photo	head tool / insert bit	color	Torque tolerance +-10%
S401	X	X	N/A	M4 x 6.5 mm		Phillips PH2	silver	0.6 Nm
S402	X	X	CA05973-9654	M4 x 5 mm		Phillips PH2	silver	0.8 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
S507	X	X	A3C40218449	Knurled screw M3 x 15 mm		Phillips PH1	silver	0.2 Nm

screw reference number	WCZ	FIT	code number	type	photo	head tool / insert bit	color	Torque tolerance +-10%
S508	X	X	N/A	M5 x 11 mm		Phillips PH2	black	0.6 Nm
S509	X	X	A3C40237861	SCREW #6-32xL5.0 #2 NYLOK		Phillips PH2	silver	0.6~0.9 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
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 mm bolt: 4.1 mm total: 7.1 mm		hexagon screw driver 5 mm	silver	0.6 Nm
S606	X	X	(for on board M.2 StandOffNut) C26361-B443-C210	standoff M3 x 3 mm bolt: 4.1 mm total: 7.1 mm		hexagon screw driver 5 mm	silver	0.3 Nm
S607	X	X	N/A	UNC standoff 4-40 x 6.5 mm		hexagon screw driver 5 mm	silver	0.2 Nm
S608	X	X	N/A	M3 x 33.6 mm + M4 x 6 mm		hexagon screw driver 7 mm	silver	1 Nm
S609	X	X	N/A	M3 x 37.9 mm + M4 x 7 mm		hexagon screw driver 7 mm	silver	1 Nm
S610	X	X	N/A	M3 x 5 mm		Phillips PH2	silver	0.8 Nm

screw reference number	WCZ	FIT	code number	type	photo	head tool / insert bit	color	Torque tolerance +-10%
S611	X	X	N/A	#2-32 x 12.6 mm		Phillips PH2	silver	0.2 Nm
S612	X	X	N/A	UNC standoff bolt: 5.0 mm 4-40 x 6.25 mm total: 11.25 mm		hexagon screw driver 5 mm	silver	0.6 Nm
S613	X	X	N/A	UNC standoff bolt: 4.8 mm 4-40 x 7.0 mm total: 11.8 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
(screw is part of PDUAL AP200 kit)	X	X	C26361-Y10-C133	M2 x 3.5 mm		Flat head Phillips PH 0	silver	0.2 Nm

Denotation scheme

S1xx : Screws M1x

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
07. November 2018	Screw C26361-Y10-C133 added	Screw delivered with PDUAL AP200 kit
09. November 2018	Bolt C26361-B443-C210 Screw C26361-B443-C220	Bolt and screw for M.2 on board
09. January 2019	C26361-Y10-C133 Flat head	screw is part of PDUAL AP200 kit
19. February 2019	: A3C40218449	Kurled screw RAID controller

		and RX2530 M5
10. May 2021	Adding RX25x0/RX4770 M6 ODM screws	To creat some new S number screws
24. May 2021	Adding TX1330M5 ODM screws and change hexagon head tool to PH2	See yellow color update
02. June 2021	Adding CP100 screw S319 Torque 0.6 ~ 0.7 Nm	See yellow color update
07. June 2021	Update CP100 screw driver as PH2	See yellow color update
24. June 2021	Add RX1330M5 screws	See yellow color update
7. July 2021	Add TX1310M5 screws	See yellow color update
28. Dec 2021	Add RX1330M5 screws(S612/613) Add CX400M6/M7	See yellow color update See green color update
15. Jun. 2022	Correct S308/ S330 from PH2 to PH1 Add TX2550M7 screws (S332/S333) Add GX2550M7 screws (S402) Modify document title/ header line	See yellow color update