PRIMERGY TX150 S4
Server System
Options Guide
Edition February 2006
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**Certified documentation according to DIN EN ISO 9001:2000**

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

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1 Introduction

The PRIMERGY TX150 S4 Server is an Intel-based server for medium-sized networks and large companies. The server is suitable for use as a file server as well as an application, information, or Internet server. It is available as a floor-stand or rack model. The floorstand model can be converted to a rack model using an optional conversion kit.

1.1 Overview of the documentation

PRIMERGY manuals are available in PDF format on the ServerBooks CD which is supplied in the ServerView Suite package for every server system.

These PDF files can also be downloaded free of charge from the Internet: at http://manuals.fujitsu-siemens.com you will find an overview page with the online documentation available on the Internet. You can go to the PRIMERGY Server documentation by clicking on “industry standard servers”.

Concept and target groups

This Options Guide shows you how you can expand and upgrade the server.

The Operating Manual for the server describes how you install/remove the hot-plug components.

The activities described in this manual may only be performed by technicians, service personnel or technical specialists.

Additional documentation about the server

The PRIMERGY TX150 S4 documentation comprises the following additional manuals:

- „Quick Start Hardware - PRIMERGY TX150 S4“ (poster)
- „Quick Start Software - PRIMERGY ServerView Suite“ (poster)
- “Warranty” manual (print version delivered together with the system, PDF file available on the ServerBooks CD delivered with the system)
- “Safety” manual (print version always delivered together with the system, PDF file available on the ServerBooks CD)
Overview of the documentation

Introduction

– “Ergonomics” manual (PDF file available on the ServerBooks CD)
– “Helpdesk” (poster with worldwide helpdesk telephone numbers)
– Technical Manual for the system board D2239 (PDF file available on the ServerBooks CD)
– “BIOS Setup V4.06” manual (PDF file available on the ServerBooks CD)
– “TX150 S4 Server System Operation Guide” (PDF file available on the ServerBooks CD)
– “ServerView Suite” includes the ServerStart CD, the ServerBooks CD and the ServerSupport CDs. The PDF version of the user manual “PRIMERGY - ServerView Suite - ServerStart” is also available on the ServerBooks CD.

You can order a supplementary ServerBooks CD by sending an e-mail to the following address, quoting your server data:

Reklamat-PC-LOG@fujitsu-siemens.com

– “MegaRAID 320 Storage Adapters” (PDF file available on the ServerBooks CD)
– “MegaRAID 320-0X Zero-channel PCI-X RAID Storage Adapter” (PDF file available on the ServerBooks CD)
– “MegaRAID Device Driver Installation” (PDF file available on the ServerBooks CD)
– “MegaRAID Configuration Software” (PDF file available on the ServerBooks CD)
– “Global Array Manager Client Software User’s Guide” (PDF file available on the ServerBooks CD)
– “Global Array Manager Server Software User’s Guide” (PDF file available on the ServerBooks CD)
Further sources of information:

- Technical Manual on the relevant rack
- Manual on the monitor
- Manual on ServerView Server Management
- Manual on the RemoteView Remote Test and Diagnostics System
- Documentation on boards and drives
- Documentation on your operating system
- Information files on your operating system

(see also “Related publications” on page 89)

1.2 Extensions and conversions

Extension of the main memory

The four slots for the main memory are suitable for DDR2 PC 2-4200 (533 MHz) (unbuffered) SDRAM memory modules with ECC. The organization in two memory banks, 1 and 2, permits rapid memory access with two-way interleaving.

If the memory modules are populated in pairs, each pair must consist of identical memory modules (2-way interleaved mode).

Upgrading the processor

The LGA775 processor socket -Prozessorsteckplatz accomodates one Intel Pentium 4 or Pentium D desktop processor with 533/800 MT/s (133/200 MHz) front side and bus clock speeds of up to 3.8 GHz.

Additional accessible drives

Three 5.25-inch bays are available for accessible drives. The top side bay is already occupied by a CD/DVD ROM drive. Additionally, one 3.5" floppy disk drive can be installed.

Hard disks extension box

The two lower 5.25-inch bays for accessible drives can be used to integrate a hard disks extension box.
**Extensions and conversions**

The hard disks extension box enables up to three additional HDD modules to be integrated. Each HDD module can accommodate a SCSI hard disk drive with an SCA (Single Connector Attachment) interface and a height of at most 1 inch. The connection to the SCSI backplane is made without cables via the SCA interface. This makes it simple to plug in or pull out the HDD modules. If the server has a RAID controller and the corresponding RAID configuration, defective HDD modules can also be replaced while the system is operating.

**Additional controllers in the PCI slots**

The system board offers seven PCI slots:

- 2 x PCI-X 1.1 (64 Bit / 66 MHz / 100 MHz, 3.3 V, length: 2 x 340 mm)
- 3 x PCI (32 Bit / 33 MHz, 5 V, length: 1 x 340 mm, 2 x 245 mm)
- 1 x PCI-Express x1 (0.5 GB/s, length: 167 mm)
- 1 x PCI-Express x4 (2.0 GB/s, length: 167 mm)

The PCI slot 2 (blue) is prepared for Zero Channel RAID (ZCR).

**RemoteView Service Board S2 LP**

The RemoteView Service Board S2 LP (RSB S2 LP) is a PCI board with a completely independent system, i.e. it has its own operating system with Web server and SNMP agents and can optionally be equipped with an external power supply. The RSB S2 LP permits remote diagnosis for system analysis, remote system configuration and remote restart even in the event of operating system failure or hardware faults. It has its own LAN connection and its own COM port. All the functions of the RSB S2 LP are thus available either via a LAN or modem.

**External SCSI interface**

If the internal hard disks are connected via a PCI RAID controller, one channel of the on-board controller can also be made available for connecting a peripheral cabinet SX10 via an external SCSI interface.
Conversion standard power supply to hot-plug power supply

The standard power supply can be replaced by a hot-plug power supply. The hot-plug power supply consists of two power supply modules.

If one power supply module fails, the other power supply module guarantees the unrestricted operation and the defective power supply module can be replaced while the system is operating (hot-plug).

Conversion of the floorstand model to a rack model

The floorstand model can optionally be converted so that the server can be integrated into the common rack systems.

1.3 Notational conventions

The following notational conventions are used in this manual:

<table>
<thead>
<tr>
<th>Text in italics</th>
<th>indicates commands, menu items or software programs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>„Quotation marks“</td>
<td>indicate names of chapters and terms that are being emphasized.</td>
</tr>
<tr>
<td>▶</td>
<td>describes activities that must be performed in the order shown.</td>
</tr>
<tr>
<td>CAUTION!</td>
<td>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.</td>
</tr>
<tr>
<td>!</td>
<td>indicates additional information, notes and tips.</td>
</tr>
</tbody>
</table>

Table 1: Notational conventions
2 Procedure

CAUTION!
The actions described in these instructions should only be performed by technical specialists. Equipment repairs should only be performed by authorized, qualified staff. Any unauthorized opening and improper repairs could expose the user to risks (electric shock, energy hazards, fire hazards) and could also damage the equipment. Please note that any unauthorized opening of the device will result in the invalidation of the warranty and exclusion from all liability.

► First of all please familiarize yourself with the safety instructions in the section chapter “Safety notes” on page 13 et seqq..

► Ensure that all required manuals (see “Additional documentation about the server” on page 5) are available, printing out the PDF files if necessary. You will definitely need the Operating Manual for the server and the Technical Manual for the system board.

► Shut down the server correctly, switch it off, pull out the power plug(s), and open the server as described in the chapter “Preparation” on page 19 et seqq..

► Extend or upgrade your server as described in the relevant chapter.

   The Operating Manual for the server describes how you install/remove the hot-plug components.

   Procedures which are identical for the floorstand and rack models are only described for the floorstand model.

► Close the server, connect it to the power outlet, and switch it on as described in the chapter “Completion” on page 67 et seqq..

► Start the operating system and, if necessary, configure it as required (see the Operating Manual).
3 Safety notes

The following safety notes are also provided in the “Safety” manual.

This device complies with the relevant safety regulations for data processing equipment.

If you have any questions about where you can set up the device, contact your sales outlet or our customer service team.

**CAUTION!**

The actions described in these instructions should only be performed by technicians, service personnel or technical specialists. Equipment repairs should only be performed by authorized, qualified staff. Any unauthorized openings and improper repairs could expose the user to risks (electric shock, energy hazards, fire hazards) and could also damage the equipment. Please note that any unauthorized openings of the device will result in the invalidation of the warranty and exclusion from all liability.

**Before operating the device**

**CAUTION!**

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

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

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

- Transport the device only in the original packaging or in packaging that protects it from knocks and jolts.
Safety notes

Installation and operation

**CAUTION!**

- If the rack model is integrated in an installation that receives power from an industrial (public) power supply network with the IEC309 connector, the (public) power supply protection must comply with the requirements for the non-industrial (public) power supply networks for the type A connector.

- The server automatically sets itself to a voltage in the range of 100 V to 240 V. Make sure that your local voltage is within this range.

- This device has a specially approved power cable and must only be connected to a grounded insulated socket.

- Ensure that the power socket on the device or the grounded wall outlet is freely accessible.

- The ON/OFF button does not disconnect the device from the mains voltage. To disconnect the line voltage completely, remove the power plug(s) from the grounded insulated socket(s).

- Always connect the device and the attached peripherals to the same power circuit. Otherwise you run the risk of losing data if, for example, the central processing unit is still running but the peripheral device (e.g. storage subsystem) has failed during a power outage.

- Data cables to peripheral devices must be adequately shielded.

- To the LAN wiring the requirements apply in accordance with the standards EN 50173 and EN 50174-1/2. As minimum requirement the use of a protected LAN line of category 5 for 10/100 MBps Ethernet, and/or of category 5e for Gigabit Ethernet is considered. The requirements of the specification ISO/IEC 11801 are to be considered.

- When you set up the floorstand model with hot-plug power supply units, you should ensure that the supplied anti-tilt bracket is correctly fitted to prevent tilting.

- Route the cables in such a way that they do not form a potential hazard (make sure no-one can trip over them) and that they cannot be damaged. When connecting up a device, refer to the relevant notes in this manual.
Safety notes

CAUTION!

- Never connect or disconnect data transmission lines during a storm (lightning hazard).
- Make sure that no objects (such as bracelets or paper clips) fall into or liquids spill into the device (risk of electric shock or short circuit).
- In emergencies (e.g. damaged casing, controls or cables, penetration of liquids or foreign matter), switch off the device immediately, remove the power plug and contact your sales outlet or customer service team.
- Proper operation of the device (in accordance with IEC 60950/EN 60950) is only ensured if the casing is completely assembled and the rear covers for the installation openings have been put in place (electric shock, cooling, fire protection, interference suppression).
- Install only system expansions that satisfy the requirements and rules governing safety and electromagnetic compatibility and relating to telecommunications terminal equipment. If you install other expansions, you may damage the system or violate the safety regulations and regulations governing RFI suppression. Information on which system expansions are suitable can be obtained from the customer service centre or your sales outlet.
- The components or parts marked with a warning label (e.g. lightning symbol) may only be opened, removed or exchanged by authorized, qualified personnel. The hot-plug power supply units are exceptions to this rule.
- The warranty expires if the device is damaged during the installation or replacement of system expansions.
- You may only set those resolutions and refresh rates specified in the „Technical data“ section of the monitor description. Otherwise, you may damage your monitor. If you are in any doubt, contact your sales outlet or customer service centre.
Safety notes

Batteries

CAUTION!

- Incorrect replacement of batteries may lead to a risk of explosion. The battery may only be replaced with an identical battery or with a type recommended by the manufacturer (see the technical manual for the system board under “Related Publications” on page 91).

- Replace the lithium battery on the system board in accordance with the instructions in the technical manual for the system board (see “Related Publications” on page 91).

Notes on handling CDs and CD-/DVD-ROM drives

CAUTION!

- Use only CDs in proper condition in the CD-/DVD-ROM drive of your server to prevent data loss, damage to the device and injuries.

- Therefore, check each CD for damage, cracks, breakage etc. before inserting it in the drive.

Please note that any additional labels applied may change the mechanical properties of a CD and cause imbalance.

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

Under certain conditions sharp-edged pieces of broken CDs can penetrate the cover of the drive (damage to the device) and be thrown out of the device (danger of injury, particularly on uncovered body parts such as the face or neck).

You protect the CD-/DVD-ROM drive and prevent mechanical damage, as well as premature wearing of the CDs, by observing the following suggestions:

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

Note about the laser

The CD-/DVD-ROM drive is classified for laser class 1 according to IEC 60825-1.

**CAUTION!**

The CD-/DVD-ROM drive contains a laser diode (LED). Sometimes the LED produces a stronger laser beam than laser class 1. Direct view into this laser beam is dangerous.

*Never remove parts of the CD-/DVD-ROM drive assembly!*

Modules with electrostatic-sensitive components:

Systems and components that might be damaged by electrostatic discharge (ESD) are marked with the following label:

![ESD label](image)

Figure 1: ESD label

When you handle components fitted with ESDs, you must observe the following points under all circumstances:

- You must always discharge static build up (e.g. by touching a grounded object) before working.
- Use a grounding cable designed for this purpose to connect yourself to the system unit as you install components.
- The equipment and tools you use must be free of static charge.
- Remove the power plug from the power socket before inserting or removing components containing ESDs.
- Always hold components with ESDs at the edges or at the positions highlighted in green (touch points).
- Do not touch any exposed pins or conductors on a component.
Safety notes

- Place all components on a static-safe base.

  You will find a detailed description for handling ESD components in
  the relevant European or international standards (DIN EN 61340-5-1,
  ANSI/ESD S20.20).
4 Preparation

CAUTION!
Observe the safety instructions in the chapter “Safety notes” on page 13 et seqq.

4.1 Floorstand model

4.1.1 Opening the server

- Terminate all applications and shut down the server correctly.
- If your operating system has not switched off the server, press the on/off switch.
- Pull all power connectors out of the power outlets.
- If required, remove the lock on the side cover.

Figure 2: Loosening the screws

- Unlock the server (1).
- Loosen the two screws at the rear side (2).
- Push back the left-hand side cover approximate 2 cm (3).
- Remove the left-hand side cover (4).
4.1.2 Removing the front cover

Remove the front cover when making the following extensions and upgrades:
- Installing further accessible drives
- Upgrading the floorstand model to a rack model

► Remove the hard disk cover as shown in figure 5 on page 21.

Figure 3: Removing the front cover

► Disengage the three tabs (1) on the left side one after the other and rotate the front cover outward (2) about 2 cm.

Figure 4: Removing the front cover

► Press the two hooks (1) on the right side inward and pull out the front cover frontward (2).
4.1.3 Removing the hard disk cover

The hard disk cover has to be removed before installing further hard disk drives:

- Terminate all applications and shut down the server correctly.
- If your operating system has not switched off the server, press the on/off switch.

![Figure 5: Removing the hard disk cover](image)

- Unlock the server (1) and remove the key.
- Push the drive cover up as far as possible (2).
- Remove the hard disk cover (3 + 4).
4.2 Rack model

- Terminate all applications and shut down the server correctly.
- If your operating system has not switched off the server, press the on/off button.
- Pull all power connectors out of the power outlets.

4.2.1 Opening the server

Figure 6: Loosening the knurled screws

- Loosen the four knurled screws (1) and pull the server as far as possible out of the rack (2).
Disconnect all cables on the rear of the server.

On the telescopic rails remove one screw on either side of the server (1).

Release the locking mechanism (2a + 2b) of both rails and carefully pull the server out of the rack (3) as far as it will go.

Pull the server a little in the direction marked (4a) until the noses (4b) disengage.

**CAUTION!**

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

Lift the server out of the rails (5) and place it on a table, for example.
Figure 8: Loosening the screws

- Unlock the top cover by removing the two screws on the server rear (1).
- Push the top cover approximately 2 cm to the rear (2).
- Remove the top cover (3).
4.2.2 Removing the rack front cover

The rack front cover has to be removed before installing further accessible drives:

Remove two screws on either side (1).
Remove the rack front cover to the front (2).

Disengage the three latches (1) on the top side one after the other and pull out the plastic front cover approximately 2 cm (2).
Press the two hooks (3) on the bottom side, carefully pull out on the plastic front cover and remove it to the front (4).
5 Main memory

CAUTION!

Observe the safety instructions in the chapter “Safety notes” on page 13 et seqq..

The system board supports up to 8Gbytes of main memory. Four slots (2 slots form a memory bank) are provided for the main memory. Each memory bank can be equipped with 512 Mbyte, 1 Gbyte or 2 Gbyte unbuffered DDR 2 memory modules.

5.1 Equipping rules

Figure 11: Structure of the main memory in memory banks and memory modules

- Each memory bank is equipped with two memory modules with the same capacity. Memory access takes place in 2-way interleaved mode.

- The memory module capacity can differ for the various memory banks: e.g. memory bank 2A/2B can be equipped with two 512 Mbyte memory modules, and memory bank 1A/1B with two 1 Gbyte memory modules.
Extending/replacing the main memory

The table below shows the order in which the memory banks must be equipped:

<table>
<thead>
<tr>
<th></th>
<th>DIMM 1A</th>
<th>DIMM 2A</th>
<th>DIMM 1B</th>
<th>DIMM 2B</th>
</tr>
</thead>
<tbody>
<tr>
<td>single channel</td>
<td>equipped</td>
<td>empty</td>
<td>empty</td>
<td>empty</td>
</tr>
<tr>
<td></td>
<td>empty</td>
<td>equipped</td>
<td>empty</td>
<td>empty</td>
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<td></td>
<td>empty</td>
<td>empty</td>
<td>equipped</td>
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<tr>
<td></td>
<td>empty</td>
<td>empty</td>
<td>empty</td>
<td>equipped</td>
</tr>
<tr>
<td>dual channel</td>
<td>equipped</td>
<td>empty</td>
<td>equipped</td>
<td>empty</td>
</tr>
<tr>
<td></td>
<td>empty</td>
<td>equipped</td>
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<tr>
<td></td>
<td>equipped</td>
<td>equipped</td>
<td>equipped</td>
<td>equipped</td>
</tr>
</tbody>
</table>

In case of dual channel configuration 3 all four memory slots must be equipped with identical memory modules.

5.2 Extending/replacing the main memory

- Open the server as described in the chapter “Preparation” on page 19 et seqq..

![Removing a memory module](image)

- Flip outwards the ejector tabs on each side of the desired slot (1).
- If the mounting location has already been equipped: carefully remove the memory module from its mounting location. (2).
Main memory

Extending/replacing the main memory

Figure 13: Inserting a memory module

- Flip outwards the ejector tabs on each side of the desired slot (1).
- Carefully press the memory module into the DIMM slot until the ejector tabs engage on both sides of the memory module (2).
- Close the server, connect it to the power outlet, and switch it on as described in the chapter “Completion” on page 67 et seqq..
6 Accessible drives

CAUTION!
Observe the safety instructions in the chapter “Safety notes” on page 13 et seqq..

Three 5.25-inch bays and one 3.5-inch bay are available for accessible drives. The top side bay is already equipped with a CD/DVD-ROM drive. The two lower bays can also be used to install a hard disks extension box.

6.1 Installing an accessible 5.25-inch drive

The 5.25-inch drives available are magnetic tape drives, CD/DVD-ROM drives and CD/DVD-ROM burners. These drives can be installed in the two free 5.25-inch bays.

- Open the server and remove the front cover or rack front cover as described in the chapter “Preparation” on page 19 et seqq..

i New 5.25-inch drives are supplied without EasyClick rails. Before installing a new drive you must therefore remove the EasyClick rails from the dummy cover and mount the EasyClick rails on the new drive.

![Figure 14: Removing the dummy cover](image)

- Press inward on the two metal tongues of the EasyClick rails (1) until the locking mechanism disengages.
- Remove the dummy cover from the mounting bay (2).
Detach the EasyClick rails from the dummy cover by removing the four screws on each side.

Note that there are two M3 screws and two UNC screws on each side.

**CAUTION!**

Keep the dummy cover for future use. If you remove the accessible drive again and do not replace it with a new one, the dummy cover must be reinstalled to comply with EMC regulations and to satisfy cooling requirements and fire protection measures.

---

**Figure 15: Attaching the EasyClick rails - DVD-ROM burner**

Screw the EasyClick rails onto either side of the new 5.25-inch drive using two M3x4.5mm screws (1). Use the first hole in each upper row of holes as shown in the figure.

Keep the remaining screws for future use. The different drives are fastened using different screws. Starting on the next page, you will find figures which show the attaching of the EasyClick rails for magnetic tape drives.

Push the new drive about halfway into the bay.

Connect the data cable to the accessible drive (see the cabling plans in the Appendix).

Connect the power cable to the accessible drive (see the cabling plans in the Appendix).

Push the drive fully into the bay until the EasyClick rails lock in place.
Attach the front cover or rack front cover, close the server, connect it to the power outlet, and switch it on as described in the chapter “Completion” on page 67 et seqq..

You will find in the following figures which holes and screws should be used for the magnetic tape dives.

Figure 16: Attaching the EasyClick rails - tape drives LTO Ultrium 1HH / 2FH

Figure 17: Attaching the EasyClick rails - tape drives VXA-2 and DDS Gen5
6.2 Installing the hard disks extension box

In the SCSI version the two lower 5.25 inch bays for accessible drives can be used to install a HDD extension box. But it is required that the server is equipped with a 1- or 2-channel RAID controller.

It is not allowed to operate the hard disks of the HDD extension box together with the internal hard disks via one common SCSI line.

If the server has a RAID controller and a corresponding RAID configuration, defective hard disk modules can also be exchanged during operation.

Open the server and remove the front cover or rack front cover as described in the chapter “Preparation” on page 19 et seqq..

The hard disks extension box is supplied without EasyClick rails. You need 8 M3 screws. Before installing a new hard disks extension box you must therefore remove the EasyClick rails from the two dummy covers and mount two of the four EasyClick rails on the hard disks extension box.

Remove the dummy covers from the two lower 5.25-inch bays for accessible drives:

- Press the two metal tongues of the EasyClick rails inward (1) until the locking mechanism is released.
- Remove the dummy cover from the bay.

Remove the EasyClick rails from the two dummy covers by removing the four screws on each side.

Note that there are two M3 screws and two UNC screws on each side.

CAUTION!

Keep the dummy covers for future use. If you remove the hard disks extension box again and do not replace it with new drives, the dummy covers must be reinstalled to comply with EMC regulations and to satisfy cooling requirements and fire protection measures.
Accessible drives

Installing the hard disks extension box

Figure 18: Attaching the EasyClick rails

► Screw the EasyClick rails onto either side of the hard disks extension box using four M3 screws for each rail. Use the holes marked above for this purpose.

► Push the hard disks extension box fully into the bay until the EasyClick rails lock in place.

► Connect the power cable plug P2 to the hard disks extension box.

► Connect the SCSI cable T26139-Y3927-V1 included in the conversion kit to the SCSI connector on the HDD extension box.

► Connect the I²C cable (T26139-Y3718-V601) with the I²C bus connector of the HDD extension box.

► Secure the I²C cable with a green clamp.

► Route the SCSI cable and connect it to the SCSI connector on the 1- or 2-channel RAID controller.

► Attach the front cover or rack front cover, close the server, connect it to the power outlet, and switch it on as described in the chapter “Completion” on page 67 et seqq.
6.3 Installing a 3.5-inch floppy disk drive


- Open the server and remove the front cover or rack front cover as described in the chapter “Preparation” on page 19 et seqq..
- From the inside press out the 3.5-inch dummy cover on the front cover.

**CAUTION!**

Keep the dummy cover for future use. If you remove the accessible drive again and do not replace it with a new one, the dummy cover must be reinstalled to comply with EMC regulations and to satisfy cooling requirements and fire protection measures.

![Figure 19: Removing the floppy disk drive holder](image)

- Remove the two screws (1) that attach the drive holder to the housing front.
- Pull on the drive holder and completely remove it from the server (2).
Installing a 3.5-inch floppy disk drive

Figure 20: Installing the floppy disk drive in the drive holder

- Position the new floppy disk drive in the drive holder (1) and fasten it with two screws on each side (2).

Figure 21: Mounting the floppy disk drive holder

- Push the drive holder and floppy disk drive fully into the mounting bay (1).
- Fasten the drive holder to the housing with two screws.
- Connect the data cable to the floppy disk drive (see the cabling plans in the Appendix).
- Connect the power cable to the floppy disk drive (see the cabling plans in the Appendix).
- Attach the front cover or rack front cover, close the server, connect it to the power outlet, and switch it on as described in the chapter “Completion” on page 67 et seqq.
7 Controllers in the PCI slots

CAUTION!
Observe the safety instructions in the chapter “Safety notes” on page 13 et seqq..

The system board offers seven PCI slots: 2 x PCI-X 1.1 (64 Bit, 66/100 MHz), 3 x PCI (32 Bit, 33 MHz), 1 x PCI-Express x1 and 1 x PCI-Express x4.

The PCI slot 2 is prepared for Zero Channel RAID (ZCR).

Figure 22: Numbering of the PCI slots

<table>
<thead>
<tr>
<th>PCI slot</th>
<th>64 Bit/32 Bit</th>
<th>Frequency in MHz</th>
<th>Voltage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32 Bit</td>
<td>33</td>
<td>5</td>
<td>32-Bit PCI bus slot</td>
</tr>
<tr>
<td>2</td>
<td>64 Bit</td>
<td>66</td>
<td>3,3</td>
<td>64-Bit PCI-X 1.1 bus slot; prepared for ZCR (ZCR only SCSI version)</td>
</tr>
<tr>
<td>3</td>
<td>64 Bit</td>
<td>66</td>
<td>3,3</td>
<td>64-Bit PCI-X 1.1 bus slot</td>
</tr>
<tr>
<td>4</td>
<td>32 Bit</td>
<td>33</td>
<td>5</td>
<td>32-Bit PCI bus slot</td>
</tr>
<tr>
<td>5</td>
<td>32 Bit</td>
<td>33</td>
<td>5</td>
<td>32-Bit PCI bus slot</td>
</tr>
<tr>
<td>6</td>
<td>32 Bit</td>
<td>33</td>
<td>5</td>
<td>PCIe x4 bus slot</td>
</tr>
<tr>
<td>7</td>
<td>32 Bit</td>
<td>33</td>
<td>5</td>
<td>PCIe x1 bus slot</td>
</tr>
</tbody>
</table>

For more information see the Technical Manual of the system board D2239.
7.1 Installing a controller

► Open the server as described in the chapter “Preparation” on page 19 et seqq..

Figure 23: Removing the rear cover

► Swing the locking swivel in the direction of the arrow (1).
► Press onto the clip (2) and remove it.
► Remove the PCI slot cover (3).

CAUTION!
Keep the rear cover of the PCI slot for future use. If you remove the controller again and do not replace it with a new one, the rear cover must be reinstalled to comply with EMC regulations and to satisfy cooling requirements and fire protection measures.
Installing a controller

Install the controller in the PCI slot and press it carefully into the associated plug-in location on the system board (1) until it engages properly.

Place the clip on the slot cover in such a way that the pin (a) fits into the hole of the slot cover (2), and press the clip in the direction of the arrow (3) until it engages.

Swing the locking swivel (4) in its locking position.

If required, connect the cables to the controller and other components.

Close the server, connect it to the power outlet, and switch it on as described in the chapter “Completion” on page 67 et seqq.
7.2 PCI slot assembly

Install first those controllers which request a defined slot. Then install the PCI-X controllers, then the PCI66 and at least the PCI33 controllers.

<table>
<thead>
<tr>
<th>PCI bus type</th>
<th>Quantity</th>
<th>Preferred slot</th>
<th>Forbidden slot</th>
</tr>
</thead>
<tbody>
<tr>
<td>RemoteView Service Board S2 LP</td>
<td>33</td>
<td>1</td>
<td>2, 3, 4, 5</td>
</tr>
<tr>
<td>Intel Pro 1000MT Dual Port</td>
<td>66</td>
<td>2</td>
<td>3, 2, 4, 5</td>
</tr>
<tr>
<td>Intel Pro 1000MT Server</td>
<td>66</td>
<td>4</td>
<td>3, 2, 4, 5</td>
</tr>
<tr>
<td>LSI MegaRaid Zero Channel</td>
<td>66</td>
<td>1</td>
<td>2, 3, 4, 5</td>
</tr>
<tr>
<td>LSI MegaRaid Two Channel</td>
<td>66</td>
<td>1</td>
<td>2, 3, 4, 5</td>
</tr>
<tr>
<td>Adaptec AHA29160</td>
<td>66</td>
<td>2</td>
<td>1, 3, 4, 5</td>
</tr>
<tr>
<td>Intel Pro 1000MT Desktop</td>
<td>33</td>
<td>4</td>
<td>5, 4, 1, 3</td>
</tr>
<tr>
<td>Intel Pro 1000GT Desktop</td>
<td>33</td>
<td>4</td>
<td>5, 4, 1, 3</td>
</tr>
<tr>
<td>0.5 GB/s</td>
<td>1</td>
<td>7</td>
<td>1, 2, 3, 4, 5, 6</td>
</tr>
<tr>
<td>LSI MegaRaid SATA Raid5</td>
<td>2 GB/s</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 2: PCI slot assembly
8 RemoteView components

CAUTION!
Observe the safety instructions in the chapter “Safety notes” on page 13 et seqq..

8.1 RemoteView Service Board S2 LP

How to configure the RSB S2 LP is described in detail in the User Guide “RemoteView”.

The preferred mounting location for the RSB S2 is PCI slot 1.

The RSB S2 LP is connected to the system board via a power and a data cable. The RSB S2 LP kit contains an external power supply.
Open the server as described in the chapter “Preparation” on page 19 et seqq..

> Connect the power cable (1) and the data cable (2) to the RSB S2 LP.
> Install the RSB S2 LP in PCI slot 1 as described in section “Installing a controller” on page 40.

Connect the data cable to the connector IPMB (1) and the power cable to the connector RSB LP Power (2) on the system board.
Connect the external cables and the external power supply as shown in figure 27 on page 45.

Close the server, connect it to the power outlet, and switch it on as described in the chapter “Completion” on page 67 et seqq.
9 External SCSI interface

**CAUTION!**
Observe the safety instructions in the chapter “Safety notes” on page 13 et seqq..

If the internal hard disks are connected via a PCI RAID controller, one channel of the on-board controller can also be made available for connecting a peripheral cabinet SX10 via an external SCSI interface.

9.1 Installing the external SCSI interface

- Open the server as described in the chapter “Preparation” on page 19 et seqq..

![External SCSI interface](image)

Figure 28: External SCSI interface

- Remove the rear cover of PCI slot 7 and insert the slot cover of the external SCSI interface in this slot as described in section “PCI slot assembly” on page 42.

- Attach the external SCSI interface’s connector to the SCSI channel of the onboard SCSI controller on the system board (connector SCSI U320).

- Close the server, connect it to the power outlet, and switch it on as described in the chapter “Completion” on page 67 et seqq..
10 Conversion standard PS to hot-plug PS

**CAUTION!**
Observe the safety instructions in the chapter “Safety notes” on page 13 et seqq..

The standard power supply can be replaced by a hot-plug power supply. The hot-plug power supply consists of up to two power supply modules. The upgrade kit contains only one power supply module (for power supply redundancy the second power supply module must be additionally ordered).

The upgrade kit for the hot-plug power supply consists of the following parts:
- PS cage with Power backplane (incl. power cables)
- locking rail
- one power supply unit
- dummy cover (if only one power supply module is installed, you have to install the dummy cover in the second bay)
- several screws
- anti-tilt bracket

**CAUTION!**
After installing the hot-plug power supply the SDR (sensor data record) data base must be updated. For this sequence you need a BIOS flash diskette. This diskette contains the newest BIOS version, the BMC firmware and the SDR data.

- Write a BIOS flash diskette by down loading the required data from the software pool under http://service.abg.fsc.net/support/softwareAssist.asp.

- Open the server as described in the chapter “Preparation” on page 19 et seqq..

- Disconnect all power cables from the system board and the drives (see the cabling plans in the Appendix).
Conversion standard PS to hot-plug PS

Figure 29: Loosening the screws

- Remove the five screws (1) which attach the adapter plate of the standard power supply to the housing.

Figure 30: Taking out the standard power supply

- Slide the standard power supply somewhat toward the inside (1) to detach it from the brackets in the side cover and take it out toward the side (2).
Figure 31: Installing the Power backplane in the PS cage

- Insert the Power backplane in the PS cage.
- Push the Power backplane in direction of the arrows until the three bolts of the PS cage engage.
- Fasten the Power backplane with one knurled screw (see the circle).
Converting from standard PS to hot-plug PS

Push the PS cage from inside into the bay. In the floorstand model the Power backplane is positioned under the top cover, and in the rack model at the right-hand side cover (seen from front side).

**CAUTION!**

Make sure that the two noses of the PS cage (see the arrows) engage in the housing. Ensure that no damage is caused to the cables.

Figure 32: Installing the PS cage
Fasten the PS cage in the housing with one screw M3x4.5 mm (see the circle).
Conversion standard PS to hot-plug PS

Fix the locking rail with four screws (see the arrows) on the rear side of the server.

Fasten the PS cage with three screws M3x4.5 mm (see the circles) at the rear side.

Connect all power cables to the system board and the drives (see the cabling plans in the Appendix).
Conversion standard PS to hot-plug PS

Figure 35: Inserting the power supply module

- Push the power supply module in the left side (floorstand model) or bottom side (rack model) bay.
- Lift the green handle somewhat upwards so that the forked levers (see the arrows) can fit to the locking rail.
Conversion standard PS to hot-plug PS

Push the green handle downward until the locking slide (see the arrow) engages.

Plug the power cord to the connector of the power supply module.

If you want to install a second power supply module, proceed in the same way.
If you have not ordered a second power supply module, install the dummy cover in the second bay:
Hook the top side of the dummy cover into the chassis, after this swivel the dummy cover down and fasten it with one screw (see the arrow) to the housing.

CAUTION!
For floorstand models with hot-plug power supply the supplied anti-tilt bracket must be fitted at the rear of the server.
Conversion standard PS to hot-plug PS

Mounting the anti-tilt bracket (only floorstand model)

- Attach the left-hand side cover as described in section “Closing the server” on page 69.

![Mounting the anti-tilt bracket](image)

Figure 38: Mounting the anti-tilt bracket

- Position the server on the anti-tilt bracket in the way that the rubber feet of the server fit into the openings of the bracket (1).
Fasten the anti-tilt bracket using the two knurled screws (1).

Close the server, connect it to the power outlet, and switch it on as described in the chapter “Completion” on page 67 et seqq..

**CAUTION!**

After installing the hot-plug power supply the SDR (sensor data record) data base must be updated. For this sequence you need the BIOS flash diskette prepared before. This diskette contains the newest BIOS version, the BMC firmware and the SDR data.

You will find the description of the indicators of the power supply module in the Operating Manual for the PRIMERGY TX150 S4.
11 Converting from the floorstand model to the rack model

**CAUTION!**

Observe the safety instructions in the chapter “Safety notes” on page 13 et seqq..

- Open the server and remove the front cover as described in the chapter “Preparation” on page 19ff.

The front cover is no longer required.

Figure 40: Removing the anti-tilt bracket

- If your server is equipped with an anti-tilt bracket, remove it:
  - Remove the two knurled screws (1) and lift the server out of the anti-tilt bracket.
Converting from the floorstand model to the rack model

The right-hand side cover and the top cover build one part.

Figure 41: Removing the screws

> Remove the two screws at the rear side.

Figure 42: Removing the right-hand side cover

> Lift the hook up slightly using a screwdriver.
> Push the right-hand side cover in the direction of the arrow.
> Lift off the right-hand side cover.

The right-hand side cover is no longer required.
Converting from the floorstand model to the rack model

► Lay the server on its right-hand side.

⚠️ **CAUTION!**

Get a second person to help you do this. The server can weigh up to 40 kg.

![Figure 43: Removing the rubber feet](image)

► Remove the three screws (see the circles) and take out the rail with the two lower rubber feet.

⚠️ The rubber feet and the rail are no longer required.
Converting from the floorstand model to the rack model

The drive cage for the accessible drives is constructed in such a way that the accessible drives and the operating panel module can be taken out simply, turned through 90° to the left, and then be reinstalled.

► Remove the dummy covers from the drive cage (figure 14 on page 31).
► Unplug the cables from the system board or the accessible drives and remove the drives from the drive cage.
► Pull the operating panel module forward out of its mounting location until you can pull the the ribbon cable and the USB cable out of the operating panel module. Remove the two cables.
► Remove the operating panel module.
► Turn the operating panel module through 90° to the left.

![Figure 44: Installing the operating panel module](image)

► Push the operating panel module halfway into the upper bay of the drive cage.
► Connect the ribbon cable and the USB cable to the operating panel module.
► Now push the operating panel module fully into the upper bay of the drive cage.
► Turn the drives removed beforehand through 90° to the left.
► Turn the dummy covers removed beforehand through 90° to the left.
► Install the drives and empty covers in the drive cage.
► Reestablish all connections to the drives.
Converting from the floorstand model to the rack model

- Attach the rack front cover, close the server, connect it to the power outlet, and switch it on as described in the chapter “Completion” on page 67ff.

To enable the rack model to be presented correctly in ServerView, proceed as follows:

- Place the ServerStart CD-ROM in the drive.

- Under the path \Tools\System Configuration start the SCU_Chassis Model Conversion program and change the server type to "PRIMERGY TX150 S4 Rack".
12 Completion

CAUTION!
Observe the safety instructions in the chapter “Safety notes” on page 13 et seqq..

12.1 Floorstand model

12.1.1 Attaching the hard disk cover

After you have installed further hard disk drives, reattach the hard disk cover.

Figure 45: Attaching the hard disk cover

➢ Push the drive cover up as far as possible (1).
➢ Reinsert the hard disk cover (2 + 3).
➢ Insert the key.
➢ Lock the server.
➢ Press the on/off key to start up the server.
12.1.2 Attaching the front cover

After you have installed further accessible drives, reattach the front cover.

Press the two hooks (1) on the right side in the recesses of the housing.

Press the front cover onto the housing (2) until the three tabs on the left side engage (3).

Attach the hard disk cover as shown in figure 45 on page 67.
12.1.3 Closing the server

Position the left-hand side cover in such a way that it protrudes approximate 2 cm at the rear (1). Shut the left-hand side cover.

Push the left-hand side cover all the way forward (2).

Fasten the left-hand side cover with two screws (1).

Insert the key.

Lock the server.

Connect all power plugs to the power outlets.

Press the on/off key to start up the server.
12.2 Rack model

12.2.1 Attaching the rack front cover

Reattach the rack front cover after implementing the following extensions:
– Installation of further accessible drives
– Conversion of the floorstand model to a rack model

Figure 49: Attaching the plastic front cover

► Press the two hooks (1) on the bottom side in the recesses of the housing.
► Press the plastic front cover onto the housing (2) until the three tabs on the top side engage (3).
Figure 50: Attaching the rack front cover

- Attach the rack front cover from the front (1).
- Attach the rack front cover using two screws on each side (2).
12.2.2 Closing the server

Figure 51: Attaching the top cover

- Position the top cover in such a way that it protrudes approximate 2 cm at the rear (1).
- Push the top cover all the way forward (2).
- Fasten the top cover with two screws (3).
If you have not removed the server from the rack cabinet, please skip this page.

**CAUTION!**

At least two people are required to install the server in the rack cabinet. Do not use the handles on the rack front cover to lift the server into the rack.

- Pull the mounted telescopic rails completely out toward the front. They must click into place so that you can no longer push them back.

---

**Figure 52: Installing a server in the rack cabinet**

- Lift the server onto the two projecting telescopic rails (1).

**CAUTION!**

Never lift or transport the server using the handles on the front panel.

- Slide the server a little in the direction marked (2a) until the noses (2b) engage. When doing this, ensure that the telescopic rails are kept in a locked position.

- Secure the server to the telescopic rails using two M3x6 screws for each side one (3).
The following steps can then be carried out by one person only.

- Release the locking mechanism of both rails (4a + 4b) and insert the server completely into the rack (5).

![Figure 53: Fastening the server in the rack cabinet](image)

- Place the cage nuts for fastening the front panel in the corresponding holes of the front support uprights and fasten the server using four knurled screws.

- Route the cables with the inserted server as described in the Technical Manual of the corresponding Rack.

To remove the server, follow the same procedure in the reverse order.
13 Appendix

13.1 Cabling

The Pn numbers of the power cables are identical for the standard and the redundant power supply. You will not find a special drawing for the power supply cabling.

The following cables have been changed by updates:

<table>
<thead>
<tr>
<th>old cable</th>
<th>new cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>T26139-Y3904-V1</td>
<td>T26139-Y3904-V101</td>
</tr>
<tr>
<td>T26139-Y1737-V111</td>
<td>T26139-Y3730-V502</td>
</tr>
<tr>
<td>T26139-Y3785-V301</td>
<td>T26139-Y3785-V208</td>
</tr>
<tr>
<td>T26139-Y2361-V102</td>
<td>deleted</td>
</tr>
</tbody>
</table>

13.1.1 SCSI version

1-channel SCSI version with onboard SCSI controller

In the basic version the tape drives and the four internal hard disk drives are connected to the onboard SCSI controller via one SCSI cable.

1-channel SCSI version with additional SCSI RAID controller

A SCSI RAID controller is installed into a PCI slot and connected with the four internal hard disk drives.

In this case, the connection to the onboard SCSI controller must be changed to the RAID controller. The accessible drives must be unplugged from this SCSI cable.

After this the accessible drives can be connected to the onboard SCSI controller via an additional SCSI cable.

Supplementary channels of the RAID controller are available for external hard disk drive systems.
Figure 54: Cabling 1-channel SCSI version with onboard SCSI controller
Figure 55: Cabling 1-channel SCSI version with additional SCSI RAID controller
Figure 56: Cabling with additional SCSI controller for backup devices
Figure 57: Cabling hard disk extension box
13.1.2 SATA version

SATA version with onboard SATA controller

In the basic version the four internal hard disk drives are connected to the onboard SATA controller via a special SATA cable.

If a tape drive will be installed it is necessary to install a SCSI controller in a PCI slot and to connect the SCSI controller with the tape drive.

SATA version with additional SATA RAID controller

A SATA RAID controller is installed into a PCI slot and connected with the four internal hard disk drives via a SATA cable.

In this case, the SATA connections to the onboard SATA controller must be removed. The SATA LED cable has to be removed from the SATA backplane and the system board and is no longer used.

If a tape drive will be installed it is necessary to install a SCSI controller in a PCI slot and to connect the SCSI controller with the tape drive.
**Figure 58: Cabling SATA version with onboard SATA controller**

Cable prefix: T26139-
Figure 59: Cabling SATA version with additional SATA RAID controller
Abbreviations

AC
Alternating Current

ANSI
American National Standard Institute

ASR&R
Automatic Server Reconfiguration and Restart

BIOS
Basic Input-Output System

BMC
Baseboard Management Controller

CC
Cache Coherency

CD
Compact Disk

CD-ROM
Compact Disk-Read Only Memory

CHS
Cylinder Head Sector

CMOS
Complementary Metal Oxide Semiconductor

COM
Communication

CPU
Central Processing Unit

DC
Direct Current

DIMM
Dual Inline Memory Module
Abbreviations

DIP
Dual Inline Package

DMA
Direct Memory Access

DMI
Desktop Management Interface

ECC
Error Checking and Correcting

ECP
Extended Capabilities Port

EEPROM
Electrically Erasable Programmable Read-Only Memory

EMC
ElectroMagnetic Compatibility

EMP
Emergency Management Port

EPP
Enhanced Parallel Port

ESD
ElectroStatic Discharge

FPC
Front Panel Controller

FRU
Field Replaceable Unit

FSB
Front Side Bus

GAM
Global Array Manager

GUI
Graphical User Interface
Abbreviations

HDD
Hard Disk Drive

HSC
Hot-Swap Controller

I²C
Inter-Integrated Circuit

I/O
Input/Output

ICM
Intelligent Chassis Management

ID
Identification

IDE
Integrated Drive Electronics

IOOP
Intelligent Organization of PCI

IRQ
Interrupt Request Line

LAN
Local Area Network

LBA
Logical Block Address

LCD
Liquid Crystal Display

LUN
Logical Unit Number

LVD
Low-Voltage Differential SCSI

MMF
Multi Mode Fiber
Abbreviations

MRL
Manually Retention Latch

NMI
Non Maskable Interrupt

NVRAM
Non Volatile Random Access Memory

OS
Operating System

PCI
Peripheral Component Interconnect

PDA
Prefailure Detection and Analysing

POST
Power ON Self Test

RAID
Redundant Arrays of Independent Disks

RAM
Random Access Memory

ROM
Read-Only Memory

RSB
Remote Service Board

RTC
Real Time Clock

RTDS
Remote Test- und Diagnose-System

SAF-TE
SCSI Accessed Fault-Tolerance Enclosures

SBE
Single Bit Error
Abbreviations

SCA
Single Connector Attachment

SCSI
Small Computer System Interface

SDDC
Single Device Data Correction

SDR
Sensor Data Record

SDRAM
Synchronous Dynamic Random Access Memory

SEL
System Event Log

SMI
System Management Interrupt

SSU
System Setup Utility

SVGA
Super Video Graphics Adapter

USB
Universal Serial Bus

VGA
Video Graphics Adapter
Related publications

PRIMERGY manuals are available as PDF file on the ServerBooks CD. The ServerBooks CD is part of the ServerView Suite delivered with each server system.

The actual version of the necessary manuals can be downloaded free of charge from the Internet. The overview page showing the online documentation available in the Internet can be found via the URL: http://manuals.fujitsu-siemens.com (choose: industry standard servers / PRIMERGY ServerBooks).

1. Safety
2. Ergonomics
3. Warranty
4. System Board D2239 for TX150 S4
   Technical Manual
5. BIOS-Setup V4.06 / FirstBIOS Desktop Pro 5.0
   Reference Manual
6. PRIMERGY TX150 S4 Server System
   Operating Manual
7. Quick Start Hardware - PRIMERGY TX150 S4
   Poster
8. Quick Start Software - PRIMERGY TX150 S4
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9. PRIMERGY ServerView Suite
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   User Guide
10. MegaRAID 320 Storage Adapters
    User Manual
11. MegaRAID 320-0X Zero-Channel PCI-X RAID Storage Adapter
    User Manual
12. MegaRAID Device Driver Installation
    User Manual
13. MegaRAID Configuration Software
    User Manual
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[14] **Global Array Manager Client Software**
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[15] **Global Array Manager Server Software**
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[17] **PRIMECENTER Rack**
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[18] **DataCenter Rack**
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[19] **19-Zoll-Rack**
Technical Manual

[20] **PRIMERGY ServerView Suite**
*ServerView S2*
Server Management
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[21] **PRIMERGY ServerView Suite**
*ServerView*
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User Guide

[22] **PRIMERGY ServerView Suite**
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[23] **Configurator**
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