

# FUJITSU Server PRIMERGY TX1310 M1

## Upgrade and Maintenance Manual

## **Comments... Suggestions... Corrections...**

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## **Certified documentation according to DIN EN ISO 9001:2008**

To ensure a consistently high quality standard and user-friendliness, this documentation was created to meet the regulations of a quality management system which complies with the requirements of the standard DIN EN ISO 9001:2008.

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## Before reading this manual

### For your safety

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

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

### Radio interference

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

### Aluminum electrolytic capacitors

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

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

### High safety use

This product has been designed and manufactured to be used in commercial and/or industrial areas as a server.

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

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

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

### **Measures against momentary voltage drop**

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

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

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### **Harmonic Current Standards**

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

### **Only for the Japanese market: About SATA hard disk drives**

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

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

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

# Version history

| Issue number    | Reason for update |
|-----------------|-------------------|
| 1.0 / 20.5.2014 | Initial release   |
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# Contents

|            |  |           |
|------------|--|-----------|
| <b>1</b>   | <b>Introduction</b>                            | <b>15</b> |
| <b>1.1</b> | <b>Notational conventions</b>                  | <b>17</b> |
| <b>2</b>   | <b>Before you start</b>                        | <b>19</b> |
| <b>2.1</b> | <b>Classification of procedures</b>            | <b>20</b> |
| 2.1.1      | Customer Replaceable Units (CRU)               | 20        |
| 2.1.2      | Upgrade and Repair Units (URU)                 | 21        |
| 2.1.3      | Field Replaceable Units (FRU)                  | 22        |
| <b>2.2</b> | <b>Average task duration</b>                   | <b>23</b> |
| <b>2.3</b> | <b>Tools you need at hand</b>                  | <b>24</b> |
| <b>2.4</b> | <b>Documents you need at hand</b>              | <b>25</b> |
| <b>3</b>   | <b>Important information</b>                   | <b>27</b> |
| <b>3.1</b> | <b>Safety instructions</b>                     | <b>27</b> |
| <b>3.2</b> | <b>CE conformity</b>                           | <b>34</b> |
| <b>3.3</b> | <b>FCC Class A Compliance Statement</b>        | <b>34</b> |
| <b>3.4</b> | <b>Environmental protection</b>                | <b>35</b> |
| <b>4</b>   | <b>Basic hardware procedures</b>               | <b>39</b> |
| <b>4.1</b> | <b>Using diagnostics information</b>           | <b>39</b> |
| 4.1.1      | Locating the defective component               | 39        |
| <b>4.2</b> | <b>Shutting down the server</b>                | <b>40</b> |
| <b>4.3</b> | <b>Disconnecting the server from the mains</b> | <b>41</b> |
| <b>4.4</b> | <b>Getting access to the component</b>         | <b>42</b> |
| 4.4.1      | Removing the side cover                        | 42        |
| 4.4.2      | Removing accessible drives                     | 43        |
| 4.4.2.1    | Disconnecting the optical disk drive (ODD)     | 43        |
| 4.4.2.2    | Disconnecting the backup drive                 | 44        |

## Contents

---

|            |  |           |
|------------|--|-----------|
| 4.4.3      | Removing the front cover . . . . .                                   | 46        |
| <b>4.5</b> | <b>Reassembling . . . . .</b>  | <b>47</b> |
| 4.5.1      | Installing the front cover . . . . .                                 | 48        |
| 4.5.2      | Installing accessible drives . . . . .                               | 49        |
| 4.5.2.1    | Installing the optical disk drive (ODD) . . . . .                    | 49        |
| 4.5.2.2    | Installing the backup drive . . . . .                                | 51        |
| 4.5.3      | Installing the side cover . . . . .                                  | 53        |
| <b>4.6</b> | <b>Connecting the server to the mains . . . . .</b>                  | <b>54</b> |
| <b>4.7</b> | <b>Switching on the server . . . . .</b>                             | <b>55</b> |
| <b>4.8</b> | <b>Handling the HDD cage with system fan 1 . . . . .</b>             | <b>56</b> |
| 4.8.1      | Removing the HDD cage . . . . .                                      | 56        |
| 4.8.2      | Installing the HDD cage . . . . .                                    | 59        |
| <b>5</b>   | <b>Basic software procedures . . . . .</b>                           | <b>63</b> |
| <b>5.1</b> | <b>Starting the maintenance task . . . . .</b>                       | <b>63</b> |
| 5.1.1      | Disabling BitLocker functionality . . . . .                          | 63        |
| 5.1.2      | Removing backup and optical disk media . . . . .                     | 64        |
| 5.1.3      | Verifying and configuring the backup software solution . . . . .     | 65        |
| 5.1.4      | Note on server maintenance in a Multipath I/O environment . . . . .  | 65        |
| <b>5.2</b> | <b>Completing the maintenance task . . . . .</b>                     | <b>68</b> |
| 5.2.1      | Updating or recovering the system board BIOS . . . . .               | 68        |
| 5.2.1.1    | Updating or recovering the system board BIOS . . . . .               | 68        |
| 5.2.2      | Enabling Option ROM scan . . . . .                                   | 68        |
| 5.2.3      | Verifying and configuring the backup software solution . . . . .     | 69        |
| 5.2.4      | Enabling replaced components in the system BIOS . . . . .            | 70        |
| 5.2.5      | Verifying the system time settings . . . . .                         | 72        |
| 5.2.6      | Viewing the System Event Log (SEL) . . . . .                         | 72        |
| 5.2.6.1    | Viewing the SEL . . . . .  | 72        |
| 5.2.7      | Updating the NIC configuration file in a Linux environment . . . . . | 73        |
| 5.2.8      | Enabling BitLocker functionality . . . . .                           | 74        |
| 5.2.9      | Performing a RAID array rebuild . . . . .                            | 75        |
| 5.2.10     | Looking up changed MAC / WWN addresses . . . . .                     | 76        |
| 5.2.10.1   | Looking up MAC addresses . . . . .                                   | 76        |
| 5.2.11     | Using the Chassis ID Prom Tool . . . . .                             | 76        |
| 5.2.12     | Configuring LAN teaming . . . . .                                    | 77        |
| 5.2.12.1   | After replacing / upgrading LAN controllers . . . . .                | 77        |
| 5.2.12.2   | After replacing the system board . . . . .                           | 78        |



---

|            |  |            |
|------------|--|------------|
| <b>6</b>   | <b>Power supply</b>                        | <b>79</b>  |
| <hr/>      |  |            |
| <b>6.1</b> | <b>Replacing the power supply unit</b>     | <b>80</b>  |
| 6.1.1      | Preliminary steps                          | 80         |
| 6.1.2      | Removing the defective power supply unit   | 80         |
| 6.1.3      | Installing the new power supply unit       | 82         |
| 6.1.4      | Concluding steps                           | 84         |
| <b>7</b>   | <b>Hard disk drives</b>                    | <b>85</b>  |
| <hr/>      |  |            |
| <b>7.1</b> | <b>Basic information</b>                   | <b>86</b>  |
| 7.1.1      | General equipping rules                    | 86         |
| 7.1.2      | Mounting order                             | 86         |
| <b>7.2</b> | <b>Installing 3.5-inch HDDs</b>            | <b>87</b>  |
| 7.2.1      | Preliminary steps                          | 87         |
| 7.2.2      | Removing the Easyclick rail out of the bay | 87         |
| 7.2.3      | Installing a 3.5-inch HDD                  | 88         |
| 7.2.4      | Concluding steps                           | 91         |
| <b>7.3</b> | <b>Removing 3.5-inch HDDs</b>              | <b>92</b>  |
| 7.3.1      | Preliminary steps                          | 92         |
| 7.3.2      | Removing a 3.5-inch HDD                    | 93         |
| 7.3.3      | Inserting the Easyclick rails in the bay   | 96         |
| 7.3.4      | Concluding steps                           | 96         |
| <b>7.4</b> | <b>Replacing a 3.5-inch HDD</b>            | <b>97</b>  |
| 7.4.1      | Preliminary steps                          | 97         |
| 7.4.2      | Removing the defective 3.5-inch HDD        | 97         |
| 7.4.3      | Installing the new 3.5-inch HDD            | 98         |
| 7.4.4      | Concluding steps                           | 98         |
| <b>8</b>   | <b>System fans</b>                         | <b>99</b>  |
| <hr/>      |  |            |
| <b>8.1</b> | <b>Basic information</b>                   | <b>100</b> |
| <b>8.2</b> | <b>Replacing the system fan 2</b>          | <b>102</b> |
| 8.2.1      | Preliminary steps                          | 102        |
| 8.2.2      | Removing the defective system fan 2        | 102        |
| 8.2.3      | Installing the new system fan 2            | 105        |
| 8.2.4      | Concluding steps                           | 108        |
| <b>8.3</b> | <b>Replacing the system fan 1</b>          | <b>109</b> |

## Contents

---

|             |   |            |
|-------------|---|------------|
| 8.3.1       | Preliminary steps . . . . .                       | 109        |
| 8.3.2       | Removing the defective system fan 1 . . . . .     | 109        |
| 8.3.3       | Installing the new system fan 1 . . . . .         | 112        |
| 8.3.4       | Concluding steps . . . . .                        | 114        |
| <b>9</b>    | <b>Expansion cards and backup units . . . . .</b> | <b>115</b> |
| <b>9.1</b>  | <b>Basic information . . . . .</b>                | <b>116</b> |
| 9.1.1       | Equipping the PCIe slots . . . . .                | 117        |
| <b>9.2</b>  | <b>Handling slot brackets . . . . .</b>           | <b>118</b> |
| 9.2.1       | Installing a slot bracket . . . . .               | 118        |
| 9.2.2       | Removing a slot bracket . . . . .                 | 122        |
| <b>9.3</b>  | <b>Expansion cards . . . . .</b>                  | <b>123</b> |
| 9.3.1       | Installing expansion cards . . . . .              | 123        |
| 9.3.1.1     | Preliminary steps . . . . .                       | 123        |
| 9.3.1.2     | Removing the PCI slot bracket . . . . .           | 123        |
| 9.3.1.3     | Installing an expansion card . . . . .            | 125        |
| 9.3.1.4     | Concluding steps . . . . .                        | 126        |
| 9.3.2       | Removing expansion cards . . . . .                | 127        |
| 9.3.2.1     | Preliminary steps . . . . .                       | 127        |
| 9.3.2.2     | Removing an expansion card . . . . .              | 127        |
| 9.3.2.3     | Installing a PCI slot bracket . . . . .           | 128        |
| 9.3.2.4     | Concluding steps . . . . .                        | 129        |
| 9.3.3       | Replacing expansion cards . . . . .               | 130        |
| 9.3.3.1     | Preliminary steps . . . . .                       | 130        |
| 9.3.3.2     | Removing an expansion card . . . . .              | 130        |
| 9.3.3.3     | Installing an expansion card . . . . .            | 130        |
| 9.3.3.4     | Concluding steps . . . . .                        | 131        |
| <b>10</b>   | <b>Main memory . . . . .</b>                      | <b>133</b> |
| <b>10.1</b> | <b>Basic information . . . . .</b>                | <b>134</b> |
| 10.1.1      | Memory sequence . . . . .                         | 134        |
| 10.1.2      | Operation modes . . . . .                         | 135        |
| <b>10.2</b> | <b>Installing memory modules . . . . .</b>        | <b>136</b> |
| 10.2.1      | Preliminary steps . . . . .                       | 136        |
| 10.2.2      | Installing a memory module . . . . .              | 136        |
| 10.2.3      | Concluding steps . . . . .                        | 137        |
| <b>10.3</b> | <b>Removing memory modules . . . . .</b>          | <b>138</b> |

---

|             |  |            |
|-------------|--|------------|
| 10.3.1      | Preliminary steps . . . . .                      | 138        |
| 10.3.2      | Removing a memory module . . . . .               | 138        |
| 10.3.3      | Concluding steps . . . . .                       | 139        |
| <b>10.4</b> | <b>Replacing memory modules . . . . .</b>        | <b>139</b> |
| 10.4.1      | Preliminary steps . . . . .                      | 139        |
| 10.4.2      | Removing the defective memory module . . . . .   | 139        |
| 10.4.3      | Installing the new memory module . . . . .       | 139        |
| 10.4.4      | Concluding steps . . . . .                       | 140        |
| <br>        |  |            |
| <b>11</b>   | <b>Processor . . . . .</b>                       | <b>141</b> |
| <hr/>       |  |            |
| <b>11.1</b> | <b>Basic information . . . . .</b>               | <b>142</b> |
| <b>11.2</b> | <b>Replacing the processor . . . . .</b>         | <b>142</b> |
| 11.2.1      | Preliminary steps . . . . .                      | 142        |
| 11.2.2      | Removing the heat sink . . . . .                 | 143        |
| 11.2.3      | Removing processor . . . . .                     | 145        |
| 11.2.3.1    | Preliminary steps . . . . .                      | 145        |
| 11.2.3.2    | Removing a processor . . . . .                   | 145        |
| 11.2.3.3    | Installing the protective cover . . . . .        | 148        |
| 11.2.4      | Concluding steps . . . . .                       | 149        |
| 11.2.5      | Installing a processor . . . . .                 | 150        |
| 11.2.5.1    | Removing the protective cover . . . . .          | 150        |
| 11.2.5.2    | Installing the new processor . . . . .           | 152        |
| 11.2.6      | Applying thermal paste . . . . .                 | 154        |
| 11.2.7      | Installing the heat sink . . . . .               | 156        |
| 11.2.8      | Concluding steps . . . . .                       | 157        |
| <b>11.3</b> | <b>Replacing the heat sink . . . . .</b>         | <b>158</b> |
| 11.3.1      | Preliminary steps . . . . .                      | 158        |
| 11.3.2      | Removing the heat sink . . . . .                 | 158        |
| 11.3.3      | Installing the new heat sink . . . . .           | 158        |
| 11.3.4      | Concluding steps . . . . .                       | 158        |
| <br>        |  |            |
| <b>12</b>   | <b>Accessible drives . . . . .</b>               | <b>159</b> |
| <hr/>       |  |            |
| <b>12.1</b> | <b>Basic information . . . . .</b>               | <b>160</b> |
| <b>12.2</b> | <b>Installing accessible drives . . . . .</b>    | <b>161</b> |
| 12.2.1      | Preliminary steps . . . . .                      | 161        |
| 12.2.2      | Removing the dummy cover of bay 2 . . . . .      | 162        |
| 12.2.3      | Installing an optical disk drive (ODD) . . . . . | 164        |

## Contents

---

|             |   |            |
|-------------|---|------------|
| 12.2.3.1    | Preparing the optical disk drive . . . . .                      | 164        |
| 12.2.3.2    | Installing the optical disk drive . . . . .                     | 166        |
| 12.2.4      | Installing a slimline optical disk drive (ODD) . . . . .        | 167        |
| 12.2.4.1    | Mounting the slimline drive in the slide-in unit . . . . .      | 167        |
| 12.2.4.2    | Preparing the slide-in unit . . . . .                           | 168        |
| 12.2.4.3    | Installing the slide-in unit . . . . .                          | 169        |
| 12.2.5      | Installing a backup drive . . . . .                             | 170        |
| 12.2.5.1    | Preparing the backup drive . . . . .                            | 171        |
| 12.2.5.2    | Installing the backup drive . . . . .                           | 172        |
| 12.2.6      | Concluding steps . . . . .                                      | 172        |
| <b>12.3</b> | <b>Removing accessible drives . . . . .</b>                     | <b>173</b> |
| 12.3.1      | Preliminary steps . . . . .                                     | 173        |
| 12.3.2      | Removing an optical disk drive (ODD) . . . . .                  | 173        |
| 12.3.3      | Removing a slimline optical disk drive (ODD) . . . . .          | 174        |
| 12.3.4      | Removing a backup drive . . . . .                               | 175        |
| 12.3.5      | Installing the dummy drive . . . . .                            | 176        |
| 12.3.6      | Concluding steps . . . . .                                      | 177        |
| <b>12.4</b> | <b>Replacing accessible drives . . . . .</b>                    | <b>178</b> |
| 12.4.1      | Preliminary steps . . . . .                                     | 178        |
| 12.4.2      | Replacing an optical disk drive (ODD) . . . . .                 | 178        |
| 12.4.3      | Replacing a slimline optical disk drive (ODD) . . . . .         | 179        |
| 12.4.4      | Replacing a backup drive . . . . .                              | 181        |
| 12.4.5      | Concluding steps . . . . .                                      | 182        |
| <b>13</b>   | <b>Front panel and front USB . . . . .</b>                      | <b>183</b> |
| <b>13.1</b> | <b>Replacing the front panel cable . . . . .</b>                | <b>183</b> |
| 13.1.1      | Preliminary steps . . . . .                                     | 183        |
| 13.1.2      | Removing the On/Off button and the HDD activity LED . . . . .   | 184        |
| 13.1.3      | Removing the front panel cable . . . . .                        | 185        |
| 13.1.4      | Installing the front panel cable . . . . .                      | 185        |
| 13.1.5      | Installing the On/Off button and the HDD activity LED . . . . . | 186        |
| 13.1.6      | Concluding steps . . . . .                                      | 186        |
| <b>13.2</b> | <b>Replacing the front USB module . . . . .</b>                 | <b>187</b> |
| 13.2.1      | Preliminary steps . . . . .                                     | 187        |
| 13.2.2      | Removing the defective front USB module . . . . .               | 188        |
| 13.2.3      | Installing the new front USB module . . . . .                   | 190        |
| 13.2.4      | Concluding steps . . . . .                                      | 192        |

---

|             |                                      |            |
|-------------|--------------------------------------|------------|
| <b>14</b>   | <b>System board and components</b>   | <b>193</b> |
| <b>14.1</b> | <b>Basic information</b>             | <b>193</b> |
| <b>14.2</b> | <b>Replacing the CMOS battery</b>    | <b>194</b> |
| 14.2.1      | Preliminary steps                    | 194        |
| 14.2.2      | Replacing the defective CMOS battery | 195        |
| 14.2.3      | Concluding steps                     | 195        |
| <b>14.3</b> | <b>Trusted Platform Module (TPM)</b> | <b>196</b> |
| 14.3.1      | Installing the TPM                   | 196        |
| 14.3.1.1    | Preliminary steps                    | 196        |
| 14.3.1.2    | Installing the TPM                   | 197        |
| 14.3.1.3    | Concluding steps                     | 199        |
| 14.3.2      | Removing the TPM                     | 200        |
| 14.3.2.1    | Preliminary steps                    | 200        |
| 14.3.2.2    | Removing the TPM                     | 202        |
| 14.3.2.3    | Concluding steps                     | 203        |
| 14.3.3      | Replacing the TPM                    | 204        |
| 14.3.3.1    | Preliminary steps                    | 204        |
| 14.3.3.2    | Removing the defective TPM           | 205        |
| 14.3.3.3    | Installing the new TPM               | 205        |
| 14.3.3.4    | Concluding steps                     | 205        |
| <b>14.4</b> | <b>Replacing the system board</b>    | <b>206</b> |
| 14.4.1      | Preliminary steps                    | 207        |
| 14.4.2      | Removing the defective system board  | 208        |
| 14.4.3      | Installing the new system board      | 212        |
| 14.4.3.1    | Mounting the system board            | 212        |
| 14.4.3.2    | Swapping the processor               | 215        |
| 14.4.4      | Concluding steps                     | 215        |
| <b>15</b>   | <b>Cables</b>                        | <b>217</b> |
| <b>15.1</b> | <b>Overview cables</b>               | <b>217</b> |
| <b>15.2</b> | <b>Cabling plans</b>                 | <b>218</b> |
| <b>15.3</b> | <b>Storing not used SATA cables</b>  | <b>219</b> |

# Contents

---

|             |  |            |
|-------------|--|------------|
| <b>16</b>   | <b>Appendix . . . . .</b>                              | <b>221</b> |
| <b>16.1</b> | <b>Mechanical overview . . . . .</b>                   | <b>221</b> |
| 16.1.1      | Server front . . . . .                                 | 221        |
| 16.1.2      | Server rear . . . . .                                  | 222        |
| 16.1.3      | Server interior . . . . .                              | 223        |
| <b>16.2</b> | <b>Connectors and indicators . . . . .</b>             | <b>225</b> |
| 16.2.1      | Connectors on the system board . . . . .               | 225        |
| 16.2.1.1    | Onboard connectors . . . . .                           | 225        |
| 16.2.1.2    | I/O panel connectors . . . . .                         | 227        |
| 16.2.1.3    | I/O panel indicators . . . . .                         | 228        |
| 16.2.2      | Connectors and indicators on the front panel . . . . . | 229        |
| <b>16.3</b> | <b>Onboard settings . . . . .</b>                      | <b>230</b> |
| <b>16.4</b> | <b>Minimum startup configuration . . . . .</b>         | <b>231</b> |

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# 1 Introduction

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

- Upgrading the server configuration by adding optional hardware components
- Upgrading the server configuration by replacing existing hardware components with superior ones.
- Replacing defective hardware components

This manual focuses on on-site maintenance tasks. It is recommended to prepare each service assignment following remote diagnostics procedures, as described in the "ServerView Suite Local Service Concept (LSC)" manual (see section "[Documents you need at hand](#)" on page 25).



## **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 20.

## Introduction

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### Different versions for TX1310 M1








The PRIMERGY TX1310 M1 is available in different versions. Your base unit may not have all functions described in this manual. The following table provides an overview of the different features:

| <b>System board</b> | <b>D3219-Axx</b>   | <b>D3219-Bxx</b>   |
|---------------------|--|--|
| Main Memory         | 4 slots for 1600 MHz memory modules DIMM 1A, 1B, 2A, 2B  | 2 slots for 1600 MHz memory modules DIMM 1A, 1B  |
| PCI slots           | Slot 1: PCIe x1 slot Gen 2 (mechanically x4)<br>Slot 2: PCIe x4 slot Gen 2 (mechanically x8)<br>Slot 3: PCIe x8 slot Gen 3 (mechanically x8, notched)<br>Slot 4: PCIe x8 slot Gen 3 (mechanically x8, notched) | Slot 1: not assembled<br>Slot 2: not assembled<br>Slot 1: PCIe x8 slot Gen 3 (mechanically x8, notched)<br>Slot 2: PCIe x8 slot Gen 3 (mechanically x8, notched) |



## 1.1 Notational conventions

The following notational conventions are used in this manual:

|   |  |
|---|--|
| <i>Text in italics</i>  | indicates commands or menu items   |
| fixed font  | indicates system output  |
| semi-bold fixed font  | indicates text to be entered by the user   |
| "Quotation marks"   | indicate names of chapters and terms that are being emphasized   |
| ▶   | describes activities that must be performed in the order shown   |
|    | indicates keys on the keyboard   |
|  <b>CAUTION!</b>   | 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 <a href="#">"Classification of procedures" on page 20</a>              |
|   | indicates the average task duration, see <a href="#">"Average task duration" on page 23</a>  |



---

## 2 Before you start

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

- ▶ Carefully read the safety instructions in chapter "[Important information](#)" on [page 27](#).
- ▶ Make sure that all necessary manuals are available. Refer to the documentation overview in section "[Documents you need at hand](#)" on [page 25](#). Print the PDF files if required.
- ▶ Make yourself familiar with the procedure categories introduced in section "[Classification of procedures](#)" on [page 20](#).
- ▶ Ensure that all required tools are available according to section "[Tools you need at hand](#)" on [page 24](#).

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

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



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

[http://ts.fujitsu.com/products/standard\\_servers/index.htm](http://ts.fujitsu.com/products/standard_servers/index.htm)

for the Japanese market:

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

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

### Replacing a defective component

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

## 2.1 Classification of procedures

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

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



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

### 2.1.1 Customer Replaceable Units (CRU)



#### Customer Replaceable Units (CRU)

*Customer Replaceable Units* are intended for customer self service.



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

#### Peripherals that are handled as Customer Replaceable Units

- Keyboard
- Mouse

## 2.1.2 Upgrade and Repair Units (URU)



### Upgrade and Repair Units (URU)

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



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

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



### CAUTION!

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

### Components that are handled as Upgrade Units

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

### Components that are handled solely as Repair Units

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

### 2.1.3 Field Replaceable Units (FRU)



#### Field Replaceable Units (FRU)

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



#### CAUTION!

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

#### Components that are handled as Field Replaceable Units

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



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

## 2.2 Average task duration



**Hardware: 10 minutes**

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

Refer to [table 1 on page 23](#) for an overview of steps taken into account for calculating the average task duration:

| Step                   | included   | Explanation  |
|------------------------|------------|--|
| Server shutdown        | no         | Shutdown time depends on hardware and software configuration and may vary significantly.<br>Software tasks necessary before maintenance are described in section <a href="#">"Starting the maintenance task" on page 63</a> ". |
| Disassembly            | <b>yes</b> | Making the server available  |
| Transport              | no         | Transporting the server to the service table (where required) depends on local customer conditions.  |
| Maintenance procedures | <b>yes</b> | Maintenance procedures including preliminary and concluding software tasks   |
| Transport              | no         | Returning the server to its installation site (where required) depends on local customer conditions.   |
| Assembly               | <b>yes</b> | Reassembling the server  |
| Starting up            | no         | Booting time depends on hardware and software configuration and may vary significantly.  |

Table 1: Calculation of the average task duration

## 2.3 Tools you need at hand

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

| Screw driver / Bit insert   | Screw   | Usage                               | Type                                      |
|---|---|-------------------------------------|---|
| Phillips PH2 / (+) No. 2 hexagonal cross SW5 / PZ2  |    | System board, slot bracket, chassis | M3 x 4.5 mm (silver)<br>C26192-Y10-C67    |
| Phillips PH0 / (+) No. 0  |    | Slimline ODD                        | M2 x 2.5 mm (silver)<br>C26192-Y10-C62    |
| TPM bit insert<br>Dedicated TPM screw driver / TPM module fixing tool (for the Japanese market) |    | TPM screw<br>One way head (black)   | REM 3 x 15 mm (black)<br>C26192-Y10-C176  |
| Phillips PH1 / (+) No. 1  |   | TFM                                 | M2.5 x 4 mm (silver)<br>C26192-Y10-C103   |
| Phillips PH2 hexagonal cross SW5  |  | System fans                         | M5.0 x 16 mm (silver)<br>C26361-K1015-C98 |
| Hexagon bolt  |  | Front VGA connector                 | UNC #4-40 (silver)<br>V26827-B408-V989    |

Table 2: List of required tools and used screws



## 2.4 Documents you need at hand

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



- Ensure to store all printed manuals enclosed with your server in a save place for future reference.
- Unless stated otherwise, all manuals are available online at <http://manuals.ts.fujitsu.com> under *x86 Servers*.

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

| Document   | Description   |
|--|---|
| "Quick Start Hardware - FUJITSU Server PRIMERGY TX1310 M1" leaflet                   | Quick installation poster for initial operation, available online   |
| "ServerView Quick Start Guide"<br>" ServerView クイックスタートガイド " for the Japanese market | Information on initial server setup and software configuration, available online  |
| "Safety notes and regulations" manual<br>" 安全上のご注意 " for the Japanese market         | Important safety information, available online, or as a printed copy  |
| "FUJITSU Server PRIMERGY TX1310 M1 Operating Manual"                                 | available online  |
| "D3219 BIOS Setup Utility for FUJITSU Server PRIMERGY TX1310 M1 Reference Manual"    | Information on configurable BIOS options and parameters, available online   |
| Software documentation   | <ul style="list-style-type: none"> <li>– "ServerView Suite Local Service Concept (LSC)" user guide</li> <li>– "ServerView Operations Manager - Server Management" user guide</li> </ul> |

Table 3: Documentation you need at hand

## Before you start

| Document  | Description   |
|---|---|
| Illustrated Spares catalog                                      | Spare parts identification and information system (EMEA market only), available for online use or download (Windows OS) at <a href="http://manuals.ts.fujitsu.com/illustrated_spares">http://manuals.ts.fujitsu.com/illustrated_spares</a> or from the CSS component view of the ServerView Operations Manager.   |
| Glossary  | available online  |
| "Warranty" manual<br>" 保証書 " for the Japanese market            | Important information on warranty regulations, recycling and service, available online, or as a printed copy  |
| "Returning used devices" manual                                 |   |
| "Service Desk" leaflet<br>" サポート&サービス " for the Japanese market | Recycling and contact information, available online, or as a printed copy   |
| Additional documentation  | RAID documentation, available online at <a href="http://manuals.ts.fujitsu.com">http://manuals.ts.fujitsu.com</a> under <i>x86 Servers - Expansion Cards - Storage Adapters</i><br>For the Japanese market please use the following address:<br><a href="http://jp.fujitsu.com/platform/server/primergy/manual/">http://jp.fujitsu.com/platform/server/primergy/manual/</a> |
| Third party documentation                                       | <ul style="list-style-type: none"><li>- Operating system documentation, online help</li><li>- Peripherals documentation</li></ul>   |

Table 3: Documentation you need at hand

---

## 3 Important information



### CAUTION!

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

### 3.1 Safety instructions



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

This device meets the relevant safety regulations for IT equipment. If you have any questions about whether you can install the server in the intended environment, please contact your sales outlet or our customer service team.

- The actions described in this manual shall be performed by technical specialists. A technical specialist is a person who is trained to install the server including hardware and software.
- Repairs to the device that do not relate to CSS failures shall be performed by service personnel. Please note that unauthorized interference with the system will void the warranty and exempt the manufacturer from all liability.
- Any failure to observe the guidelines in this manual, and any improper repairs could expose the user to risks (electric shock, energy hazards, fire hazards) or damage the equipment.
- Before installing/removing internal options to/from the server, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cords from the power outlet. Failure to do so can cause electric shock or damage.

#### Before starting up

- During installation and before operating the device, observe the instructions on environmental conditions for your device.
- If the device is brought in from a cold environment, condensation may form both inside and on the outside of the device.

## Important information

---

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

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

## Installation and operation

- This unit should not be operated in ambient temperatures above 35 °C. For servers with Cool-safe® Advanced Thermal Design the ambient temperature can increase to 40 °C.
- If the unit is integrated into an installation that draws power from an industrial power supply network with an IEC309 connector, the power supply's fuse protection must comply with the requirements for non-industrial power supply networks for type A connectors.
- The unit automatically adjusts itself to a mains voltage in a range of 100 VAC to 240 VAC. Ensure that the local mains voltage lies within these limits.
- This device must only be connected to properly grounded power outlets or connected to the grounded rack internal power distribution system with tested and approved power cords.
- Ensure that the device is connected to a properly grounded power outlet close to the device.
- Ensure that the power sockets on the device and the properly grounded power outlets are easily accessible.
- The On/Off button or the main power switch (if present) does not isolate the device from the mains power supply. In case of repair or servicing disconnect the device completely from the mains power supply, unplug all power plugs from the properly grounded power outlets.
- Always connect the server and the attached peripherals to the same power circuit. Otherwise you run the risk of losing data if, for example, the server is still running but a peripheral device (e.g. memory subsystem) fails during a power outage.
- Data cables must be adequately shielded.

- Ethernet cabling has to comply with EN 50173 and EN 50174-1/2 standards or ISO/IEC 11801 standard respectively. The minimum requirement is a Category 5 shielded cable for 10/100 Ethernet, or a Category 5e cable for Gigabit Ethernet.
- Route the cables in such a way that they do not create a potential hazard (make sure no-one can trip over them) and that they cannot be damaged. When connecting the server, refer to the relevant instructions in this manual.
- Never connect or disconnect data transmission lines during a storm (risk of lightning hazard).
- Make sure that no objects (e.g. jewelry, paperclips etc.) or liquids can get inside the server (risk of electric shock, short circuit).
- In emergencies (e.g. damaged casing, controls or cables, penetration of liquids or foreign bodies), contact the system administrator or your customer service team. Only disconnect the system from the mains power supply if there is no risk of harming yourself.
- Proper operation of the system (in accordance with IEC 60950-1 resp. EN 60950-1) is only ensured if the casing is completely assembled and the rear covers for the installation slots have been fitted (electric shock, cooling, fire protection, interference suppression).
- Only install system expansions that satisfy the requirements and rules governing safety and electromagnetic compatibility and those relating to telecommunication terminals. If you install other expansions, they may damage the system or violate the safety regulations. Information on which system expansions are approved for installation can be obtained from our customer service center or your sales outlet.
- The components marked with a warning notice (e.g. lightning symbol) may only be opened, removed or exchanged by authorized, qualified personnel. Exception: CSS components can be replaced.
- The warranty is void if the server is damaged during installation or replacement of system expansions.
- Only set screen resolutions and refresh rates that are specified in the operating manual for the monitor. Otherwise, you may damage your monitor. If you are in any doubt, contact your sales outlet or customer service center.
- Before installing/removing internal options to/from the server, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cords from the outlet. Failure to do so can cause electric shock.

## Important information

---

- Do not damage or modify internal cables or devices. Doing so may cause a device failure, fire, or electric shock and will void the warranty and exempt the manufacturer from all liability.
- Devices inside the server remain hot after shutdown. Wait for a while after shutdown before installing or removing internal options.
- The circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. To ensure reliable protection, if you are wearing an earthing band on your wrist when working with this type of module, connect it to an unpainted, conducting metal part of the system.
- Do not touch the circuitry on boards or soldered parts. Hold the metallic areas or the edges of the circuit boards.
- Install the screw removed during installation/detaching internal options in former device/position. To use a screw of the different kind can cause a breakdown of equipment.
- The installation indicated on this document is sometimes changed to the kind of possible options without notice.

## Batteries

- Incorrect replacement of batteries may lead to a risk of explosion. The batteries may only be replaced with identical batteries or with a type recommended by the manufacturer.
- Do not throw batteries into the trash can.
- Batteries must be disposed of in accordance with local regulations concerning special waste.
- Make sure that you insert the battery the right way round.
- The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not disassemble, heat about 100 °C (212F), or incinerate the battery.
- All batteries containing pollutants are marked with a symbol (a crossed-out garbage can). In addition, the marking is provided with the chemical symbol of the heavy metal decisive for the classification as a pollutant:

Cd Cadmium

Hg Mercury

Pb Lead

### Working with optical disk drives and media

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



#### CAUTION!

- Only use CDs/DVDs/BDs that are in perfect condition, in order to prevent data loss, equipment damage and injury.
- Check each CD/DVD/BD for damage, cracks, breakages etc. before inserting it in the drive.

Note that any additional labels applied may change the mechanical properties of a CD/DVD/BD and cause imbalance and vibrations.

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

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

- High humidity and airborne dust levels are to be avoided. Electric shocks and/or server failures may be caused by liquids such as water, or metallic items, such as paper clips, entering a drive.
- Shocks and vibrations are also to be avoided.
- Do not insert any objects other than the specified CDs/DVDs/BDs.
- Do not pull on, press hard, or otherwise handle the CD/DVD/BD tray roughly.
- Do not disassemble the optical disk drive.
- Before use, clean the optical disk tray using a soft, dry cloth.
- As a precaution, remove disks from the optical disk drive when the drive is not to be used for a long time. Keep the optical disk tray closed to prevent foreign matter, such as dust, from entering the optical disk drive.
- Hold CDs/DVDs/BDs by their edges to avoid contact with the disk surface.

## Important information

---

- Do not contaminate the CD/DVD/BD surface with fingerprints, oil, dust, etc. If dirty, clean with a soft, dry cloth, wiping from the center to the edge. Do not use benzene, thinners, water, record sprays, antistatic agents, or silicone-impregnated cloth.
- Be careful not to damage the CD/DVD/BD surface.
- Keep the CDs/DVDs/BDs away from heat sources.
- Do not bend or place heavy objects on CDs/DVDs/BDs.
- Do not write with ballpoint pen or pencil on the label (printed) side.
- When a CD/DVD/BD is moved from a cold place to a warm place, moisture condensation on the CD/DVD/BD surface can cause data read errors. In this case, wipe the CD/DVD/BD with a soft, dry cloth then let it air dry. Do not dry the CD/DVD/BD using devices such as a hair dryer.
- To avoid dust, damage, and deformation, keep the CD/DVD/BD in its case whenever it is not in use.
- Do not store CDs/DVDs/BDs at high temperatures. Areas exposed to prolonged direct sunlight or near heating appliances are to be avoided.



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

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

## Laser information

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



### **CAUTION!**

The optical disk drive contains a light-emitting diode (LED), which under certain circumstances produces a laser beam stronger than laser class 1. Looking directly at this beam is dangerous.

**Never remove parts of the optical disk drive casing!**



## Modules with Electrostatic-Sensitive Devices

Modules with electrostatic-sensitive devices are identified by the following sticker:

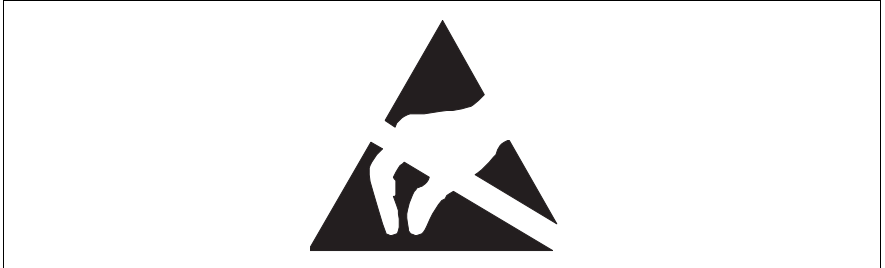


Figure 1: ESD label

When you handle components fitted with ESDs, you must always observe the following points:

- Switch off the system and remove the power plugs from the power outlets before installing or removing components with ESDs.
- The circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. To ensure reliable protection, you must wear an earthing band on your wrist when working with this type of module and connect it to an unpainted, conducting metal part of the system.
- Any devices or tools that are used must be free of electrostatic charge.
- Wear a suitable grounding cable that connects you to the external chassis of the system unit.
- Always hold components with ESDs at the edges or at the points marked green (touch points).
- Do not touch any connectors or conduction paths on an ESD.
- Place all the components on a pad which is free of electrostatic charge.



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

### Transporting the server

- Only transport **the server** in its original packaging or in packaging that protects it from impacts and jolts.  
For the Japanese market, transporting the device in its original packaging does not apply.
- Do not unpack the server until it is at its installation location.

## 3.2 CE conformity



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

## 3.3 FCC Class A Compliance Statement

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

### NOTE:

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

- Reorient or relocate the receiving antenna.
- Increase the separation between equipment and the receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

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

### **WARNING:**

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

## **3.4 Environmental protection**

### **Environmentally-friendly product design and development**

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

This saves resources and thus reduces the harm done to the environment. Further information can be found at:

- [http://ts.fujitsu.com/products/standard\\_servers/index.html](http://ts.fujitsu.com/products/standard_servers/index.html) (for the EMEA market)
- <http://jp.fujitsu.com/platform/server/primergy/concept/> (for the Japanese market)

### **Energy-saving information**

Devices that do not need to be constantly switched on should be switched off until they are needed as well as during long breaks and after completion of work.

## Important information

---

### Packaging information

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

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

### Information on handling consumables

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

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

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

Cd Cadmium

Hg Mercury

Pb Lead

### Labels on plastic casing parts

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

### Returns, recycling and disposal

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



The device must not be disposed of with domestic waste. This device is labeled in compliance with European directive 2002/96/EC on waste electrical and electronic equipment (WEEE).

This directive sets the framework for returning and recycling used equipment and is valid across the EU. When returning your used device, please use the return and collection systems available to you. Further information can be found at

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

Details regarding the return and recycling of devices and consumables within Europe can also be found in the "Returning used devices" manual, via your local Fujitsu branch or from our recycling center in Paderborn:

Fujitsu Technology Solutions  
Recycling Center  
D-33106 Paderborn

Tel. +49 5251 525 1410

Fax +49 5251 525 32 1410



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## 4 Basic hardware procedures

### 4.1 Using diagnostics information

Use the Fujitsu ServerView Suite management software to plan the upgrade or replacement of hardware components. Please refer to the following ServerView Suite topics:

- Operation
- Maintenance

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

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

#### 4.1.1 Locating the defective component

- ▶ Use remote diagnostics procedures to identify the defective component, as described in the "ServerView Suite Local Service Concept (LSC)" manual, see "[Documents you need at hand](#)" on [page 25](#).

## 4.2 Shutting down the server



### CAUTION!

For further safety information, please refer to chapter ["Important information"](#) on page 27.

- ▶ Inform the system administrator that the server will be shut down and put offline.
- ▶ Terminate all applications.



Figure 2: Power button on the front panel

- ▶ Shut down the server.



If the system is running an ACPI-compliant operating system, pressing of the On / Off button will perform a graceful shutdown (1).



## 4.3 Disconnecting the server from the mains



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

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

## 4.4 Getting access to the component



### CAUTION!

- Before removing or installing covers, turn off the server and all peripheral devices. Also unplug all power cables from the outlet. Failure to do so can cause electric shock.
- In order to comply with applicable EMC regulations (regulations on electromagnetic compatibility) and satisfy cooling requirements, the server must not run while the side cover is removed.
- For further safety information, please refer to chapter "[Important information](#)" on page 27.

### 4.4.1 Removing the side cover



Figure 4: Removing the cover

- ▶ Pull up on the locking lever (1).
- ▶ Open the side cover (2).
- ▶ Remove the side cover (3).

## 4.4.2 Removing accessible drives

### 4.4.2.1 Disconnecting the optical disk drive (ODD)



Figure 5: Disconnecting cables from the optical disk drive

► Disconnect all cables from the optical disk drive.

- 1 Power cable connector P8
- 2 SATA cable

### 4.4.2.2 Disconnecting the backup drive



Figure 6: Disconnecting cables from the backup drive

- ▶ Disconnect all cables from the backup drive.
  - 1 Power adapter cable
  - 2 USB cable



Figure 7: Removing the optical disk drive and the backup drive

- ▶ Press the locking latch in the direction of the arrow (1) and press out the optical disk drive from behind (2).
- ▶ Remove the optical disk drive out of its bay.
- ▶ Press the locking latch in the direction of the arrow (3) and press out the backup drive from behind (4).
- ▶ Remove the backup drive out of its bay.

### 4.4.3 Removing the front cover

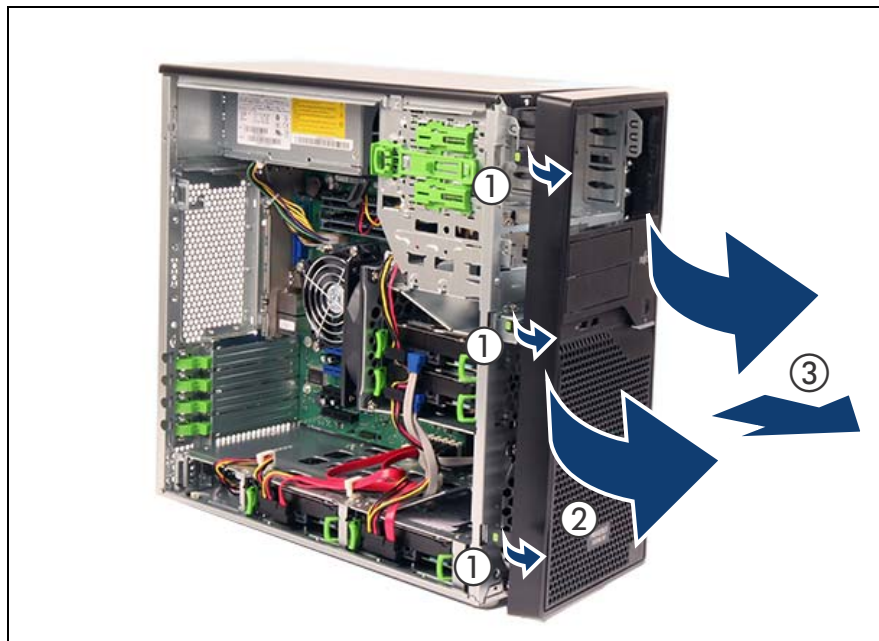


Figure 8: Removing the front cover

- ▶ Disengage the three locking tabs on the front cover by pulling it forwards (1).
- ▶ Carefully rotate open (2) and unhook the front cover (3).

## 4.5 Reassembling



### CAUTION!

- Before attaching the covers, make sure no unnecessary parts or tools are left inside the server.
- In order to comply with applicable EMC regulations (regulations on electromagnetic compatibility) and satisfy cooling requirements, the server must not run while the side cover is removed.
- For further safety information, please refer to chapter ["Important information" on page 27](#).

## 4.5.1 Installing the front cover



Figure 9: Installing the front cover

- ▶ Hook the three tabs on the front bezel into the notches in the chassis (1).
- ▶ Carefully close the front bezel (2). Make sure that all three locking latches properly engage (3).



## 4.5.2 Installing accessible drives

### 4.5.2.1 Installing the optical disk drive (ODD)



Figure 10: Installing the optical disk drive

- ▶ Insert the optical disk drive into its installation bay and carefully push in until it locks in place (1).



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



Figure 11: Connecting cables to the optical disk drive

- ▶ Connect cables to the optical disk drive.

- 1 Power cable connector P8
- 2 SATA cable

#### 4.5.2.2 Installing the backup drive



Figure 12: Installing the backup drive

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



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

If there is a metal plate in the bay refer to chapter "[Installing accessible drives](#)" on page 161 to remove it.



Figure 13: Connecting cables to the backup drive

- ▶ Connect all cables to the backup drive.
  - 1 Power adapter cable (connected to power cable connector P7)
  - 2 USB cable

### 4.5.3 Installing the side cover



Figure 14: 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).

### 4.6 Connecting the server to the mains

The standard power supply unit that automatically adjusts to any mains voltage in the range of 100 VAC to 240 VAC.



#### CAUTION!

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

- ▶ Connect the power cord to the power supply unit.
- ▶ Connect the mains plug to a grounded mains outlet in the in-house power supply network.

#### Securing power cord



Figure 15: Securing the power cord

- ▶ Loop the cable past the cable tie mounting bracket as shown.
- ▶ Close the cable tie around the power cord (1) and pull tight (2) to secure the power cord.

## 4.7 Switching on the server



### CAUTION!

- Before switching on the server, make sure the side cover is closed. In order to comply with applicable EMC regulations (regulations on electromagnetic compatibility) and to satisfy cooling requirements, the server must not run while the side cover is removed
  - Follow the safety instructions in [chapter "Important information" on page 27](#).
- ▶ Connect all peripheral cables to the server.



Figure 16: Power button on the front panel

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



For more information see section ["Front panel and front USB" on page 183](#).

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

## 4.8 Handling the HDD cage with system fan 1

### 4.8.1 Removing the HDD cage

- ▶ Remove the HDDs as described in section ["Removing 3.5-inch HDDs" on page 92](#).



Take care, that you notice all detached cables for future reconnecting.

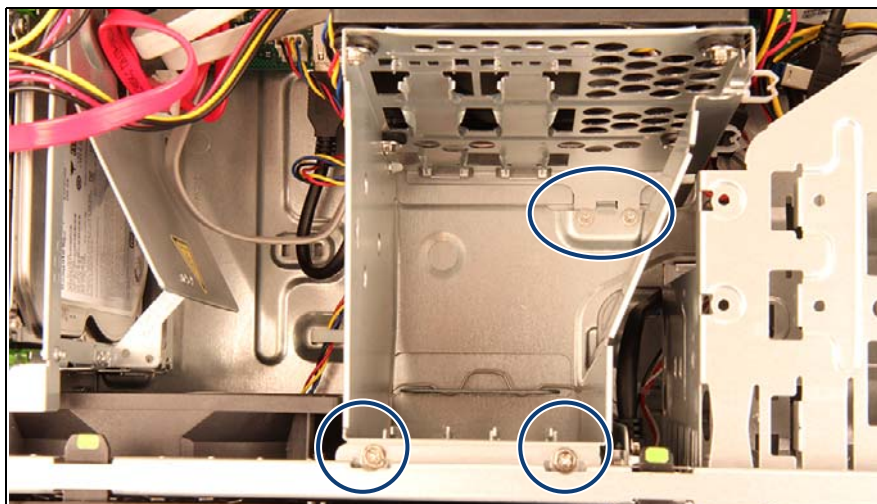


Figure 17: Remove the screws

- ▶ Remove the four screws (see circles).



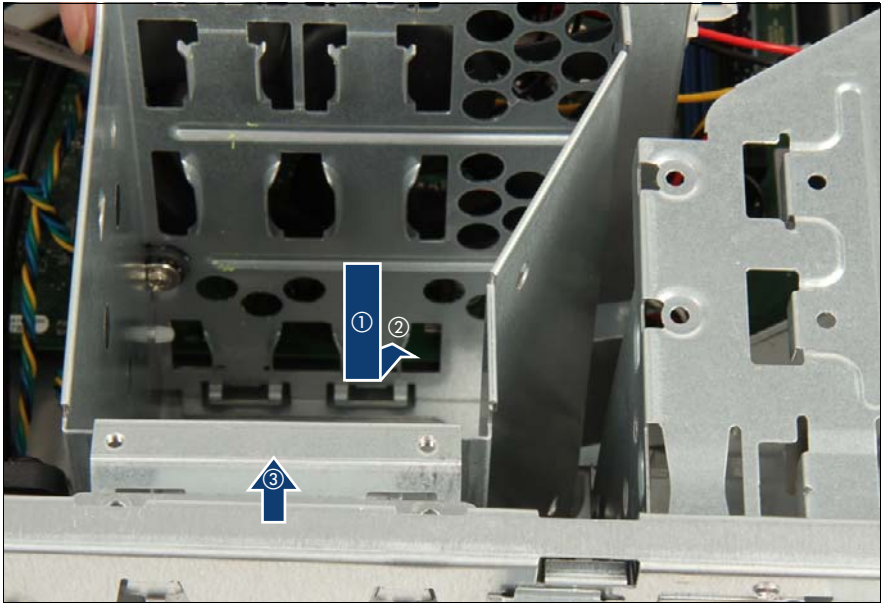


Figure 18: Lifting up the HDD cage

- ▶ Push down the HDD cage to release it (1).
- ▶ Push the HDD cage inwards (2).
- ▶ Carefully lift up the HDD cage (3).

**i** First, disconnect the fan cable which is located under the fan before you lift up the HDD cage out of the chassis.

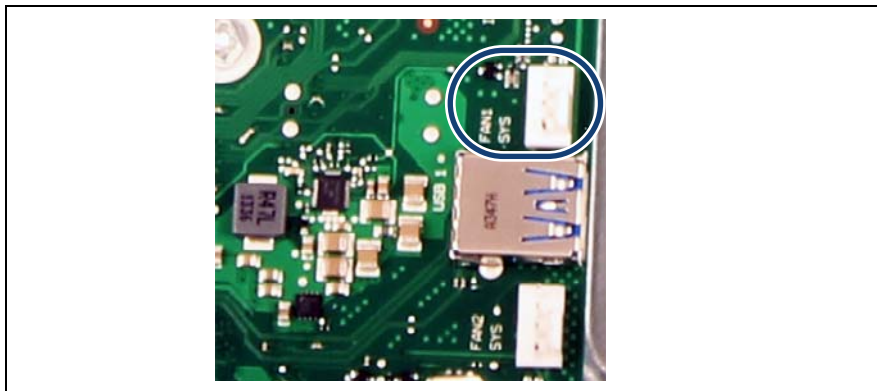


Figure 19: Connector for the fan 1 cable

- ▶ Disconnect the cable from system board connector FAN1 SYS (see circle).

## 4.8.2 Installing the HDD cage

- i** Do not completely place down the HDD cage into the chassis. First, connect the fan cable which is located close to the HDD cage before you place down the HDD cage into the chassis.

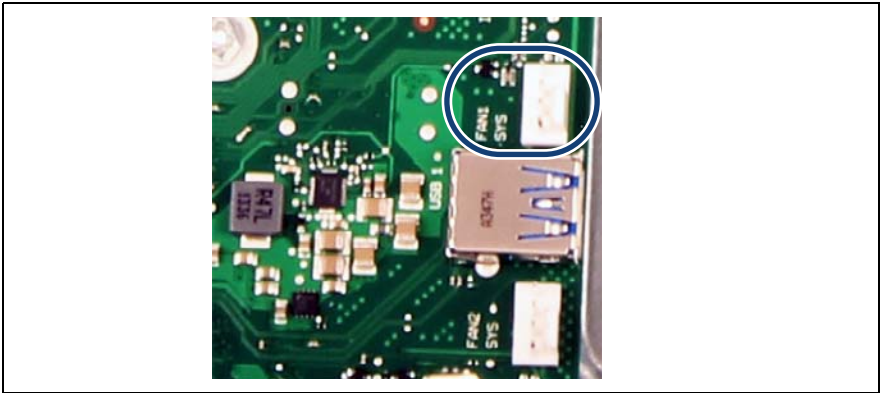


Figure 20: Connector for the fan 1 cable

- ▶ Connect the fan cable of system fan 1 to system board connector FAN1 SYS (see circle).

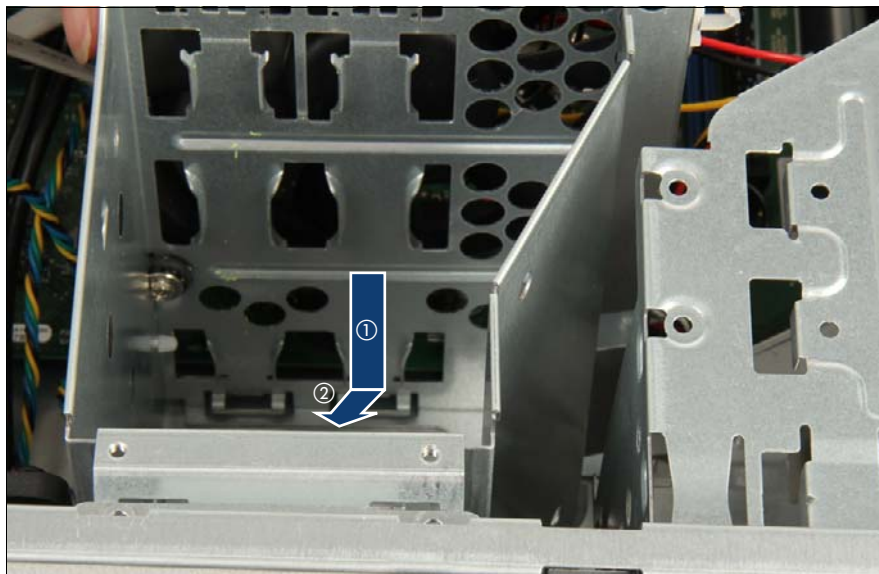


Figure 21: Placing the HDD cage

- ▶ Place down the HDD cage into the chassis (1).
- ▶ Push the HDD cage to the front side of the chassis (2).

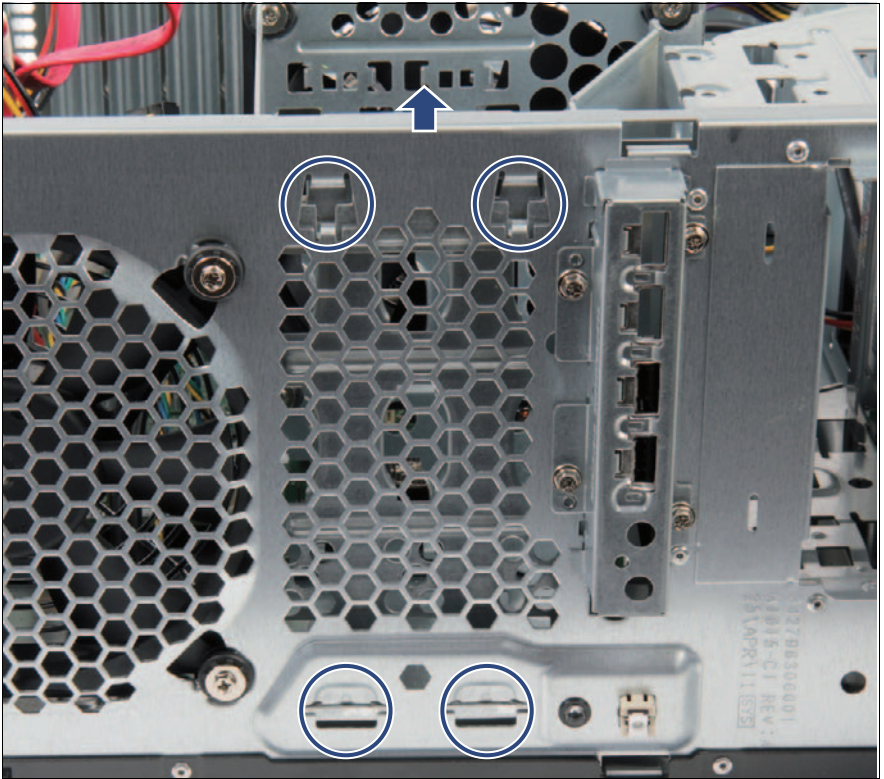


Figure 22: Recesses of the HDD cage

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



This view is only visible, if the front cover is removed.

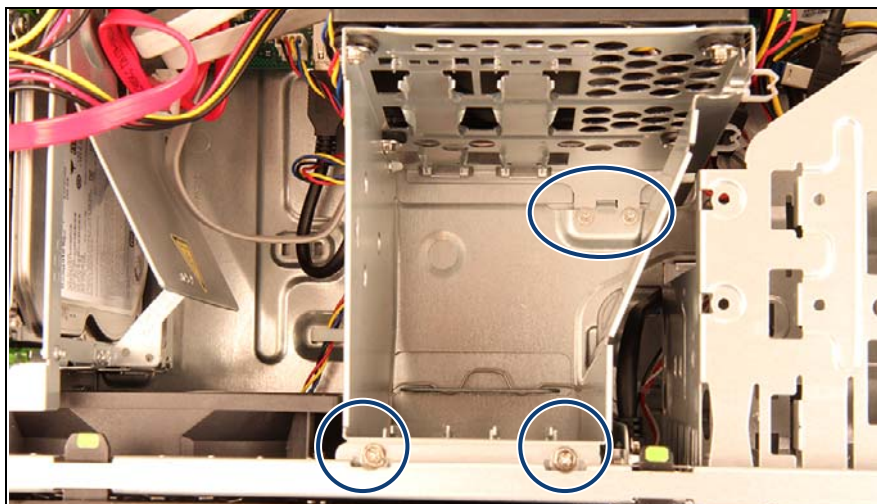


Figure 23: Remove the screws

- ▶ Ensure that the noses engage under the guides (see circles) and all screw holes are matching.
- ▶ Fasten the four screws (see circles) of the HDD cage.
- ▶ Install the HDDs as described in section "[Installing 3.5-inch HDDs](#)" on [page 87](#).

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# 5 Basic software procedures

## 5.1 Starting the maintenance task

### 5.1.1 Disabling BitLocker functionality

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

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



#### CAUTION!

- With BitLocker features enabled, modifying the system configuration (hardware or firmware settings) may render the system inaccessible. The system may enter Recovery Mode and require a 48-digits recovery password to return to normal operation.  
  
Ensure to disable BitLocker drive encryption before maintaining the server.
- When disabled, BitLocker uses a plain text key instead of the Trusted Platform Module (TPM) to read encrypted files. Keep in mind that information on this drive is not secure until BitLocker has been re-enabled.
- ▶ Ask the system administrator to disable BitLocker-protection on the operating system drive, using the BitLocker setup wizard available either from the Control Panel or Windows Explorer:
  - ▶ Open BitLocker Drive Encryption by clicking the *Start* button, clicking *Control Panel*, clicking *Security*, and then clicking *Bitlocker Drive Encryption*.



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

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



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

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

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

### 5.1.2 Removing backup and optical disk media

- ▶ Ask the system administrator to eject all remaining backup or optical media from the backup or optical disk drive before removing it from the server.
- ▶ If the backup media cannot be ejected by conventional means, and it is mandatory that the cartridge be removed prior to returning the drive for repair or disposing it, a manual tape extraction needs to be performed.

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

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

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



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 the Japanese market.

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

This is the case for the following backup software solution:

- BackupExec



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

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

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

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



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

#### Using Update Manager Express

- ▶ If performing an offline BIOS / firmware update, first of all prepare the ServerView Update DVD or USB stick:
  - ▶ Download the latest ServerView Update DVD image from Fujitsu:
    - for the EMEA market  
<ftp://ftp.ts.fujitsu.com/images/serverview>
    - for the Japanese market:  
<http://jp.fujitsu.com/platform/server/primergy/products/note/svsdvd/dvd/>

## Basic software procedures

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- ▶ Burn the image to a DVD.
- ▶ In order to create a bootable USB stick, please proceed as described in the "Local System Update for PRIMERGY Servers" user guide.
- ▶ Before using the ServerView Update DVD or USB stick in an offline environment, properly shut down the server and disconnect all external I/O connections (like LAN or FC cables) from the system. Only keep mouse, keyboard, video cable and AC power cord connected.



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

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

- ▶ Prepare your Update DVD or USB stick as described in the "Local System Update for PRIMERGY Servers" user guide.
- ▶ Boot the server from the prepared Update DVD or USB stick:

**DVD:** ▶ Switch on the server.

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

**USB:** ▶ Connect the USB stick to the server.

- ▶ Switch on the server.

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

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

The server will now boot from the Update DVD or USB stick.

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

The Update Manager Express main window will be displayed.

- ▶ Finish the intended maintenance task.



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

## Using PrimeCollect

To start PrimeCollect, proceed as follows:

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



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

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

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

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

The server will now boot from the ServerView Suite DVD.

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



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

## Concluding the procedure

- ▶ After the update or diagnostic procedure has been completed, shut down the server, reconnect all external I/O connections and bring the system back to normal operation.
- ▶ If necessary, perform this procedure for all remaining servers within the Multipath environment.

## 5.2 Completing the maintenance task

### 5.2.1 Updating or recovering the system board BIOS

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

<http://ts.fujitsu.com/support/> (EMEA market)

<http://jp.fujitsu.com/platform/server/primergy/downloads/> (Japanese market)



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

#### 5.2.1.1 Updating or recovering the system board BIOS

##### BIOS flash procedure



For the Japanese market, follow the instructions provided separately.

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

##### BIOS recovery procedure



For the Japanese market, follow the instructions provided separately.

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

### 5.2.2 Enabling Option ROM scan

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

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

- ▶ Enter the BIOS.
- ▶ From the *Advanced* menu select *Option ROM Configuration*.
- ▶ Identify the desired PCI slot and set its *Launch Slot # OpROM* setting to *Enabled*.
- ▶ Save your changes and exit the BIOS.



Up to two Option ROMs can be activated in the system board BIOS at a time.

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

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

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



The expansion card's option ROM can now be disabled in the system board BIOS.

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

### 5.2.3 Verifying and configuring the backup software solution




This task only applies to the Japanese market.

#### Disabling backup drives

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

This is the case for the following backup software solutions:

- Netvault for Windows
- ARCServe
- BackupExec


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

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

### Re-enabling backup drives

If a backup drive has been disabled or deleted from the backup software drive list as described in section [5.1.3 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.

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

## 5.2.4 Enabling replaced components in the system BIOS

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

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

 This option is only available for multi-processor systems.

- Memory: *Memory Status*
- Expansion cards: *PCI Status*

- ▶ Reset replaced components to *Enable*.
- ▶ Save your changes and exit the BIOS.



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

### 5.2.5 Verifying the system time settings



This task only applies to Linux environments.

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



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

- ▶ Check the system time set in the RTC (Real Clock Time), and if applicable, correct it in the BIOS.
- ▶ Enter the BIOS.
- ▶ Select the *Main* menu.
- ▶ Under *System Time* and *System Date* specify the correct time and date.



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

- ▶ Save your changes and exit the BIOS.



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

### 5.2.6 Viewing the System Event Log (SEL)

#### 5.2.6.1 Viewing the SEL


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

#### Viewing the SEL in ServerView Operations Manager

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




- ▶ Select the message type(s) you want to display:
  - Critical events
  - Major events
  - Minor events
  - Informational events

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

### Viewing the SEL in BIOS

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

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


## 5.2.7 Updating the NIC configuration file in a Linux environment

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

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


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

To update the MAC address, proceed as follows:


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

- ▶ After replacing a network controller or the system board, switch on and boot the server as described in section ["Switching on the server" on page 55](#).

*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.

### 5.2.8 Enabling BitLocker functionality

If BitLocker Drive Encryption has been disabled for maintenance purposes (see section ["Disabling BitLocker functionality" on page 63](#)), it has to be re-enabled to complete the service task.

 If BitLocker Drive Encryption has been disabled prior to replacing components you won't be asked for a recovery key when rebooting the server after the maintenance task. However, if BitLocker functionality has not been disabled, Windows will enter recovery mode and ask you to input recovery key for further booting.

- ▶ In this case, ask the system administrator to enter the recovery key in order to boot the operating system.
- ▶ Ask the system administrator to enable BitLocker-protection on the operating system drive, using the BitLocker setup wizard available either from the Control Panel or Windows Explorer.
  - ▶ Open Bitlocker Drive Encryption by clicking the *Start* button, clicking *Control Panel*, clicking *Security*, and then clicking *Bitlocker Drive Encryption*.
- ▶ To enable a temporarily disabled BitLocker, click *Turn On BitLocker*.
- ▶ Follow the instructions in the BitLocker Setup wizard.



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



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

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

## 5.2.9 Performing a RAID array rebuild

After replacing a hard disk drive that has been combined into a RAID array, RAID rebuild will be performed completely unattended as a background process.

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

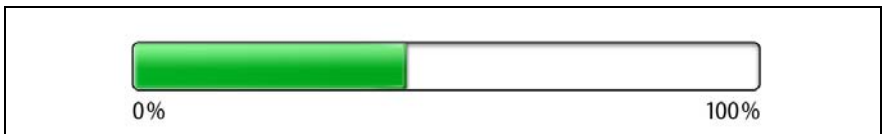


Figure 24: Progress bar (RAID array rebuild)



### CAUTION!

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



You may notice a slight performance impact during rebuild.

## 5.2.10 Looking up changed MAC / WWN addresses


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




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

### 5.2.10.1 Looking up MAC addresses

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

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

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

- ▶ Note down the new 12-digit MAC address.
- ▶ Press  to exit the BIOS.
- ▶ Inform the customer about the changed MAC address.

## 5.2.11 Using the Chassis ID Prom Tool

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

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

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

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



For the Japanese market, follow the instructions provided separately.

## 5.2.12 Configuring LAN teaming

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

- ▶ In ServerView Operations Manager *Single System View* select *System Status* from the *Information / Operation* menu.
- ▶ Under *Network Interfaces* select *LAN Teaming*.
- ▶ The *Network Interfaces (Summary)* overview shows all configured LAN teams and their components. Choose a LAN team to display further details:
  - *LAN Team Properties*: Properties of the selected LAN team
  - *LAN Team Statistics*: Available statistics about the selected LAN team



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

### 5.2.12.1 After replacing / upgrading LAN controllers

Please note when re-using a replaced LAN controller:

- ▶ Confirm with the customer whether the LAN controller you have replaced has been used as part of a LAN teaming configuration.
- ▶ If LAN teaming has been active, you will need to restore the configuration using the LAN driver utility after replacing the LAN controller.

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



For details, refer to the relevant LAN driver manual.

### 5.2.12.2 After replacing the system board

- ▶ Confirm with the customer whether the onboard LAN controller you have replaced has been used as part of a LAN teaming configuration.
- ▶ If LAN teaming has been active, you will need to restore the configuration using the LAN driver utility after replacing the system board.



For details, refer to the relevant LAN driver manual.

---

# 6 Power supply

## Safety notes



### CAUTION!

- Do not disassemble the power supply unit. Doing so may cause electric shock.
- Areas around the power supply unit may remain extremely hot after shutdown. After shutting down the server, wait for hot components to cool down before removing the power supply unit.
- The power supply unit is heavy, so handle it carefully. If you drop it by mistake, injuries may result.
- For further safety information, please refer to chapter "[Important information](#)" on page 27.

# 6.1 Replacing the power supply unit



**Field Replaceable Unit (FRU)**



**Hardware: 10 minutes**

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

## 6.1.1 Preliminary steps

- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)

## 6.1.2 Removing the defective power supply unit



Figure 25: Disconnecting power cable

- ▶ While pressing the release latch on the connector, disconnect the PSU ATX power connector from system board connector "POWER".
- ▶ Remove the screw to loosen the power supply (see circle).





Figure 26: Detaching the PSU

- ▶ Remove the four screws from the PSU (see circles).

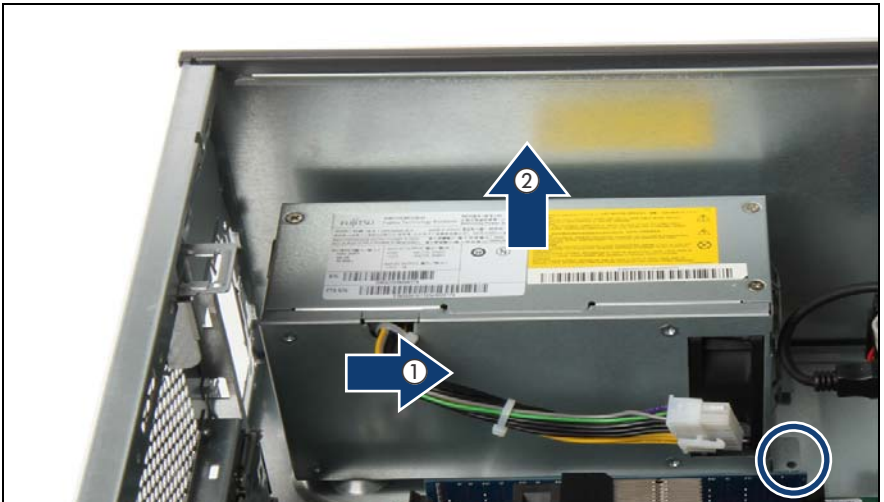


Figure 27: Removing the PSU

- ▶ Remove the fifth screw from the PSU (see circle).
- ▶ Slide the defective PSU inside the chassis by 3 cm (1).
- ▶ Lift the defective PSU out of the chassis (2).

### 6.1.3 Installing the new power supply unit



Figure 28: Hooks for fastening the PSU



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

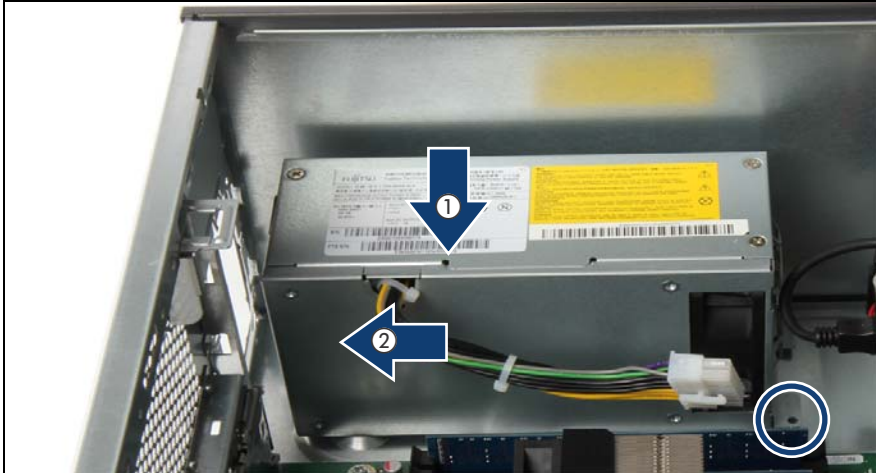


Figure 29: Installing the PSU

- ▶ Insert the new PSU into the chassis (1).
- ▶ Slide the new PSU towards the rear of the chassis (2).
- ▶ Secure the PSU to the chassis with the screw (see circle).



Figure 30: Securing the PSU

- ▶ Secure the PSU to the chassis with four screws (see circles).



Figure 31: Connecting power cable

- ▶ Connect the PSU ATX power connector to system board connector "POWER".

### 6.1.4 Concluding steps

- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)

---

# 7 Hard disk drives

## Safety notes



### CAUTION!

- The hard disk drives must all be marked clearly so that they can be put back in their original places after an upgrade. If this is not done, existing data can be lost.
- Do not touch the circuitry on boards or soldered parts. Hold the metallic areas or the edges of the circuit boards.
- Before removing a hard disk drive, wait for about 30 seconds until the disk has stopped spinning completely.
- When a hard disk drive is starting up, a resonant noise may be audible for a short while. This does not indicate a failure.
- Depending on the OS, you can configure the write cache settings for the hard disk drives. If a power failure should occur while the write cache is enabled, cached data may be lost.
- When disposing of, transferring, or returning a hard disk drive, wipe out the data on the drive for your own security.
- Rough handling of hard disk drives may damage the stored data. To cope with any unexpected problems, always back up important data. When backing up data to another hard disk drive, you should make backups on a file or partition basis.
- Handle the device on a shock and vibration free surface.
- Do not use the device in extremely hot or cold locations, or locations with extreme temperature changes.
- Never attempt to disassemble a hard disk drive.
- For further safety information, please refer to chapter ["Important information" on page 27](#).

# 7.1 Basic information

## 7.1.1 General equipping rules

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

## 7.1.2 Mounting order



Figure 32: 3.5-inch HDD mounting order

### SATA connectivity

| Controller          | Channel | Connection |
|---------------------|---------|------------|
| PCI SATA controller | 1       | Drives 1-4 |

## 7.2 Installing 3.5-inch HDDs



Customer Replaceable Unit  
(CRU)



Hardware: 5 minutes

**Tools:** tool-less

### 7.2.1 Preliminary steps

- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)
- ▶ Locate the correct installation bay as described in section ["Basic information" on page 86](#).

### 7.2.2 Removing the Easyclick rail out of the bay



Figure 33: Removing the Easyclick rails out of the bay

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

### 7.2.3 Installing a 3.5-inch HDD



Figure 34: Aligning the Easyclick rails

- ▶ Align the three pins on the Easyclick rails with the screw holes on the hard disk drive.



Figure 35: Attaching the Easyclick rails

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





Figure 36: Inserting the 3.5-inch HDD

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

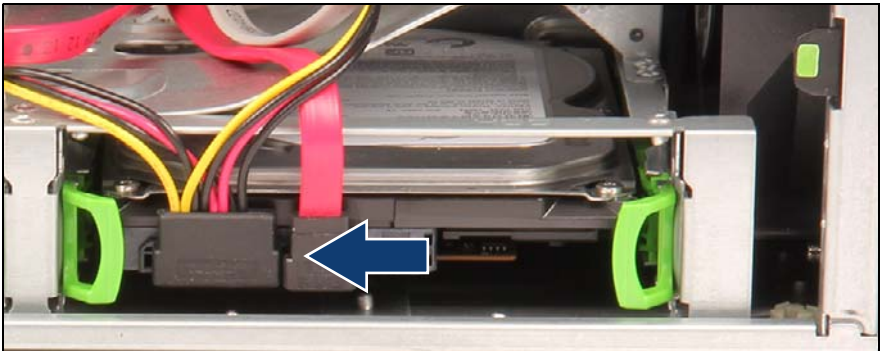


Figure 37: Connecting the power cable (example P4 to HDD1)

- ▶ Connect the SATA power cable to the HDD.



P1 is used for HDD1, P2 is used for HDD2  
 P3 is used for HDD3, P4 is used for HDD4  
 P5 is used for ODD, P6 is not used

For further cabling information, please refer to section "[Cables](#)" on [page 217](#).

## Hard disk drives

- ▶ Connect the SATA cable to the hard disk drive and to the corresponding controller as described in the following examples.

### Example SATA cabling to SATA onboard controller

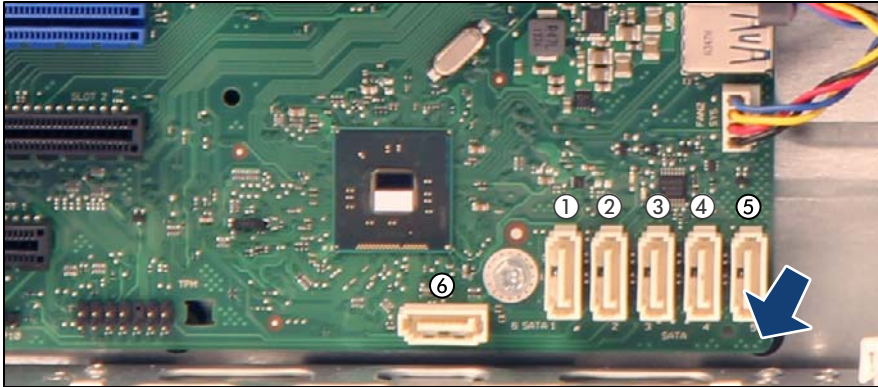


Figure 38: Connecting SATA cables to the system board

- ▶ If applicable, connect the SATA cable to the system board:
  - 1 SATA cable to connector SATA1
  - 2 SATA cable to connector SATA2
  - 3 SATA cable to connector SATA3
  - 4 SATA cable to connector SATA4
  - 5 ODD cable to connector SATA5
  - 6 free



Figure 39: Connecting SATA cables to HDD1 and HDD2

- ▶ Connect the corresponding SATA cable to the hard disk drive:
  - 1 SATA cable connected to SATA1 to HDD1
  - 2 SATA cable connected to SATA2 to HDD2

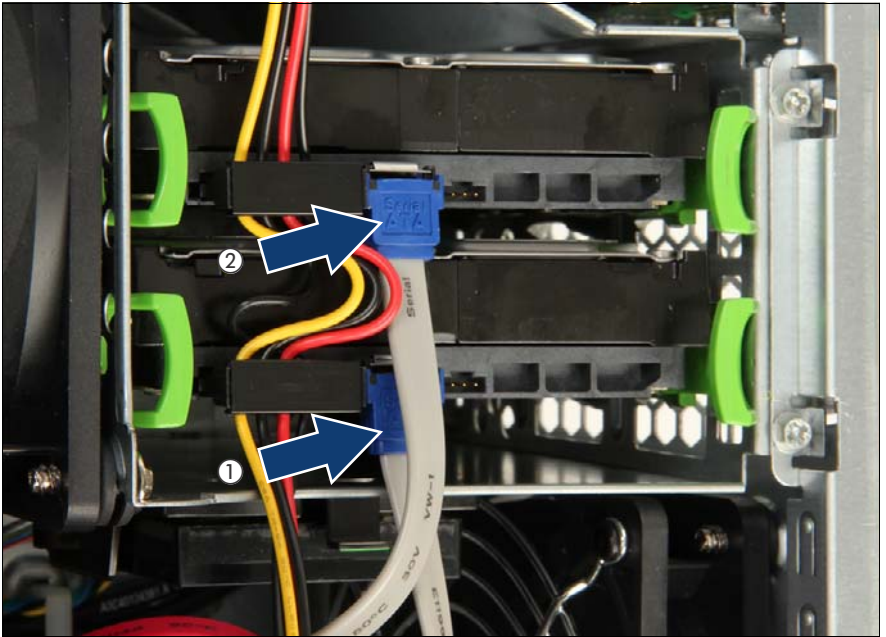


Figure 40: Connecting SATA cables to HDD3 and HDD4

- ▶ Connect the corresponding SATA cable to the hard disk drive:

- 1 SATA cable connected to SATA3 to HDD3
- 2 SATA cable connected to SATA4 to HDD4

For further cabling information, please refer to section ["Cables" on page 217](#).

## 7.2.4 Concluding steps

- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Performing a RAID array rebuild" on page 75](#)

### 7.3 Removing 3.5-inch HDDs



**Customer Replaceable Unit (CRU)**



**Hardware: 5 minutes**

|                         |
|-------------------------|
| <b>Tools:</b> tool-less |
|-------------------------|

#### 7.3.1 Preliminary steps

- ▶ Ensure that the hard disk drive to be removed is not combined into a RAID array. If the drive is part of a RAID array, you first need to delete the array using ServerView RAID Manager or BIOS Setup Utility.



**CAUTION!**

All data on all hard disk drives in the array will be lost! Be sure to back up your data before deleting a RAID array.



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

- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)

### 7.3.2 Removing a 3.5-inch HDD

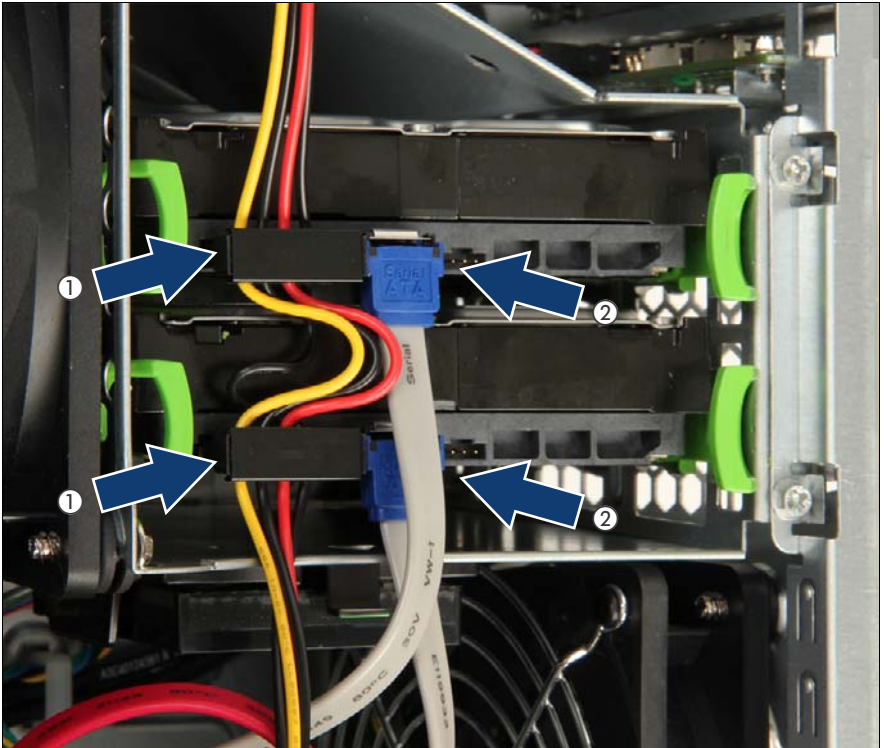


Figure 41: Disconnecting the cables

- ▶ Disconnect the power cable (1) and the SATA cable (2) from the desired hard disk drive.

## Hard disk drives

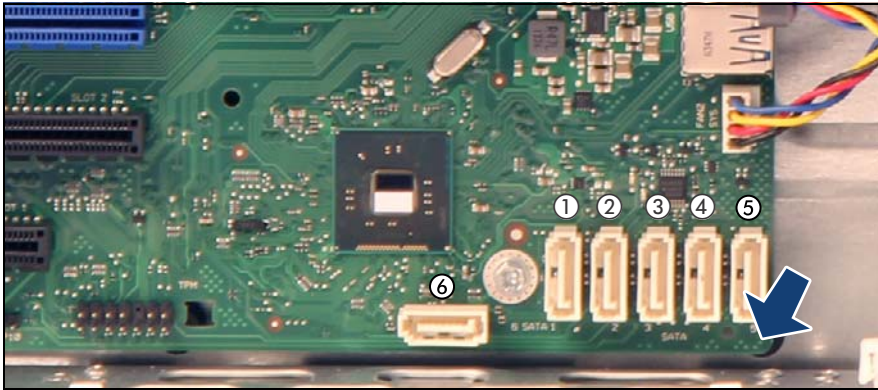


Figure 42: Disconnecting SATA cables from the system board

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

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

- 1 SATA cable to connector SATA1
- 2 SATA cable to connector SATA2
- 3 SATA cable to connector SATA3
- 4 SATA cable to connector SATA4
- 5 ODD cable to connector SATA5
- 6 free

For further cabling information, please refer to section ["Cables"](#) on [page 217](#).



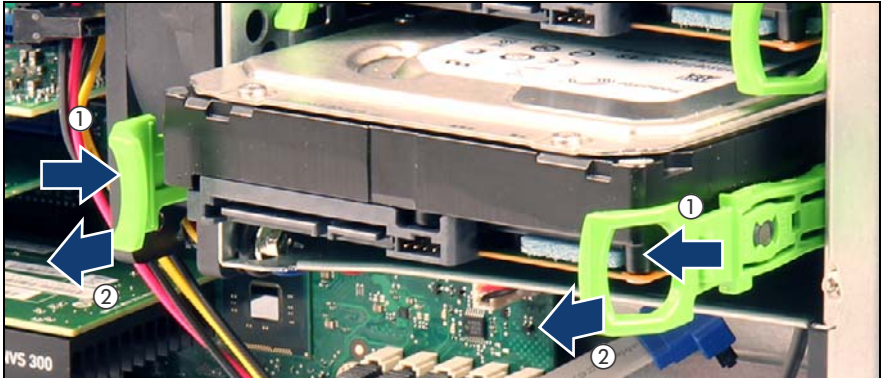


Figure 43: Removing a 3.5-inch HDD

- ▶ Press the green handles of the Easyclick rails inwards (1) to release the locking mechanism and pull the hard disk drive completely out of its bay (2).



Figure 44: Detaching the Easyclick rails

- ▶ Detach the Easyclick rails from the hard disk drive.

### 7.3.3 Inserting the Easyclick rails in the bay

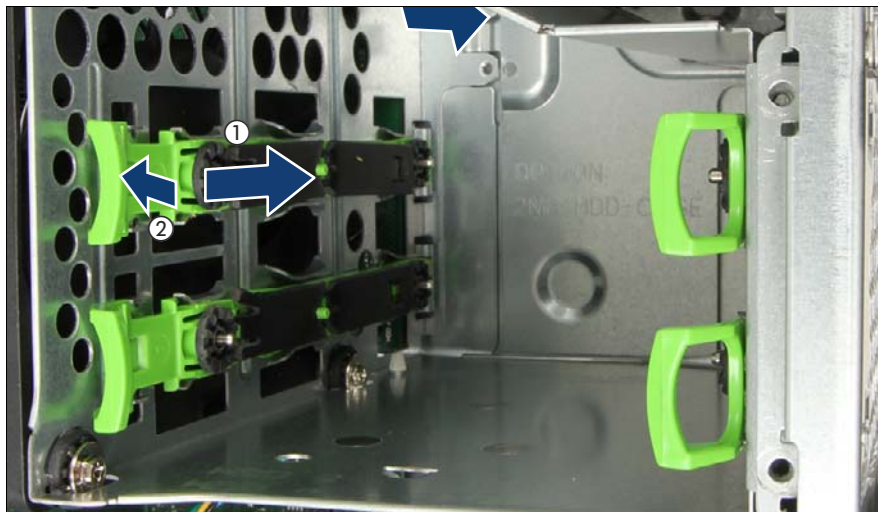


Figure 45: Inserting the Easyclick rails in the bay

- ▶ Push the Easyclick rails completely into the bay (1).
- ▶ Press the green handle outwards until it locks in place (2)

### 7.3.4 Concluding steps

- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)



## 7.4 Replacing a 3.5-inch HDD



**Customer Replaceable Unit (CRU)**



**Hardware: 5 minutes**

**Tools:** tool-less



### **CAUTION!**

All hard disk drives must be uniquely identified so that they can be reinstalled in their original mounting locations later. If this is not done, existing data can be lost.

### 7.4.1 Preliminary steps

- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)
- ▶ ["Locating the defective component" on page 39](#)

#### **Only applicable for removing intact hard disk drives:**

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



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

### 7.4.2 Removing the defective 3.5-inch HDD

- ▶ Remove the hard disk drive as described in section ["Removing a 3.5-inch HDD" on page 93](#).

### 7.4.3 Installing the new 3.5-inch HDD

- ▶ Install the hard disk drive as described in section "[Installing a 3.5-inch HDD](#)" on page 88.

### 7.4.4 Concluding steps

- ▶ "[Installing the side cover](#)" on page 53
- ▶ "[Connecting the server to the mains](#)" on page 54
- ▶ "[Switching on the server](#)" on page 55
- ▶ "[Performing a RAID array rebuild](#)" on page 75

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## 8 System fans

### Safety notes



#### CAUTION!

- Do not damage or modify internal cables or devices. Doing so may cause a device failure, fire, or electric shock.
- Devices and components inside the server remain hot after shutdown. After shutting down the server, wait for hot components to cool down before installing or removing internal options.
- Circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. Always discharge static build-up (e.g. by touching a grounded object) before handling electrostatic-sensitive devices (ESDs).
- Do not touch the circuitry on boards or soldered parts. Hold circuit boards by their metallic areas or edges.
- If devices are installed or disassembled using methods other than those outlined in this chapter, the warranty will be invalidated.
- For further safety information, please refer to chapter ["Important information" on page 27](#).

### 8.1 Basic information



#### CAUTION!

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

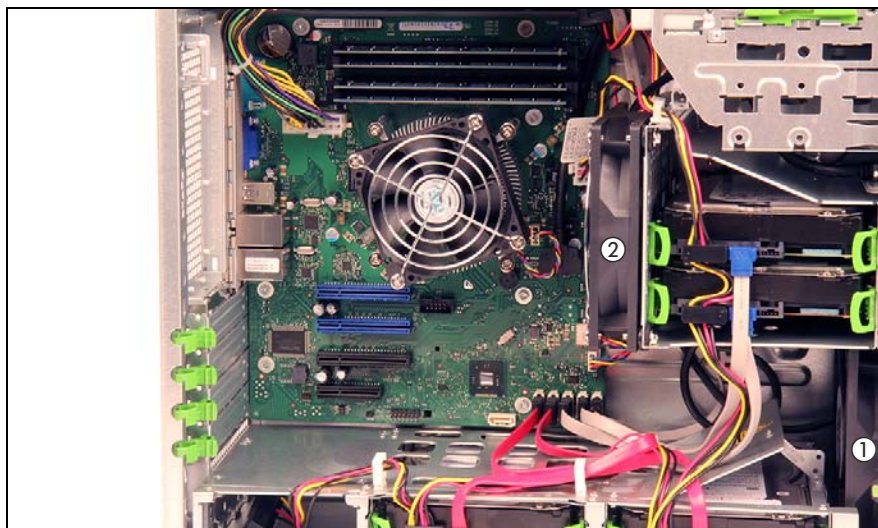


Figure 46: Positions of the system fans

- i** In the latest chassis version the system fan 2 comes without a fan guard. A corresponding warning label is added. (1). The pictures doesn't always show the current version.

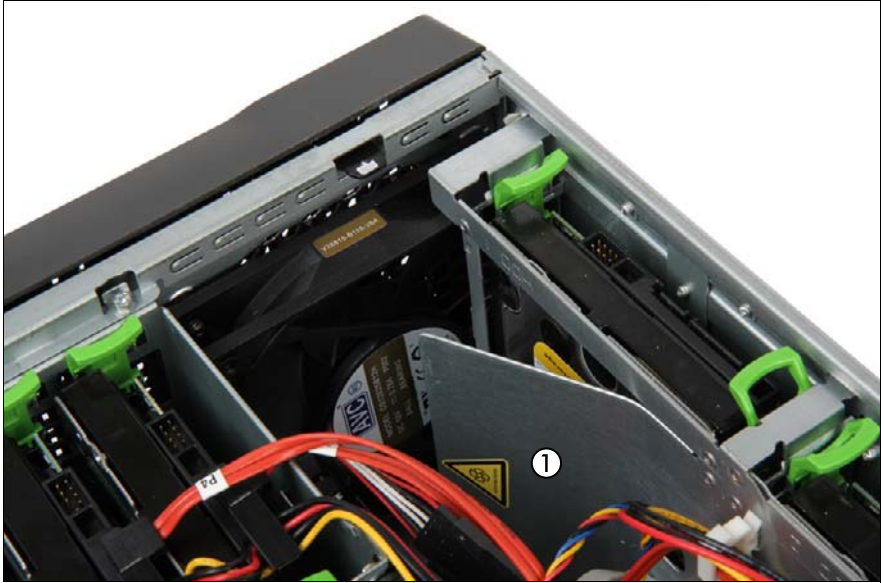


Figure 47: Fan without guard

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

# 8.2 Replacing the system fan 2



Upgrade and Repair Unit  
(URU)



Hardware: 15 minutes

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

## 8.2.1 Preliminary steps

- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Getting access to the component" on page 42](#)
- ▶ ["Removing the HDD cage" on page 56](#)

## 8.2.2 Removing the defective system fan 2



Figure 48: Removing the fan screws

- ▶ Remove the four screws (see circles).

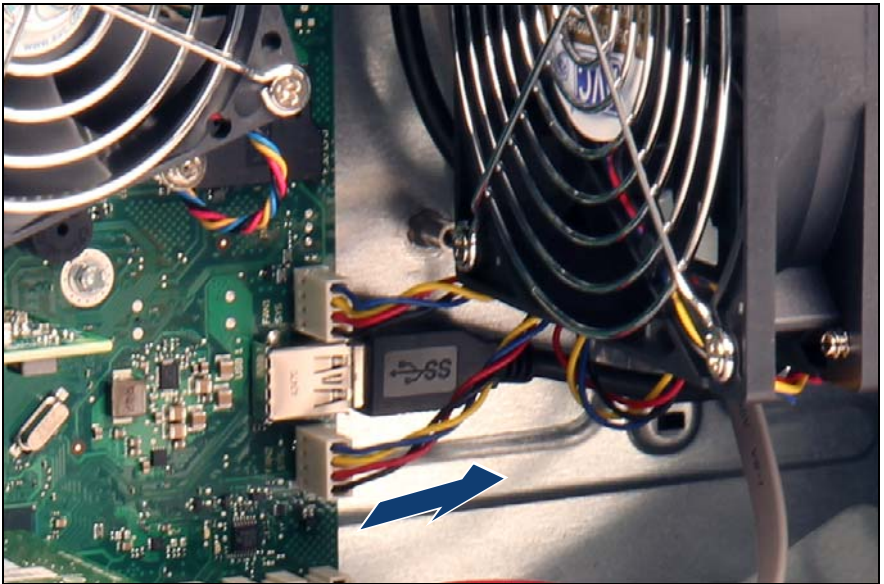


Figure 49: Disconnecting the fan cable

- ▶ Disconnect the fan cable from system board connector "FAN2 SYS".

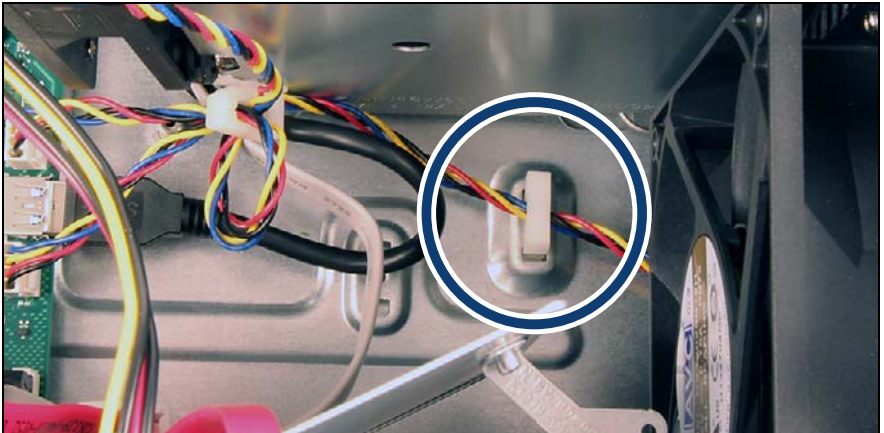


Figure 50: Cable clamp of the fan cable

- ▶ Open the cable clamp and remove the fan cable.



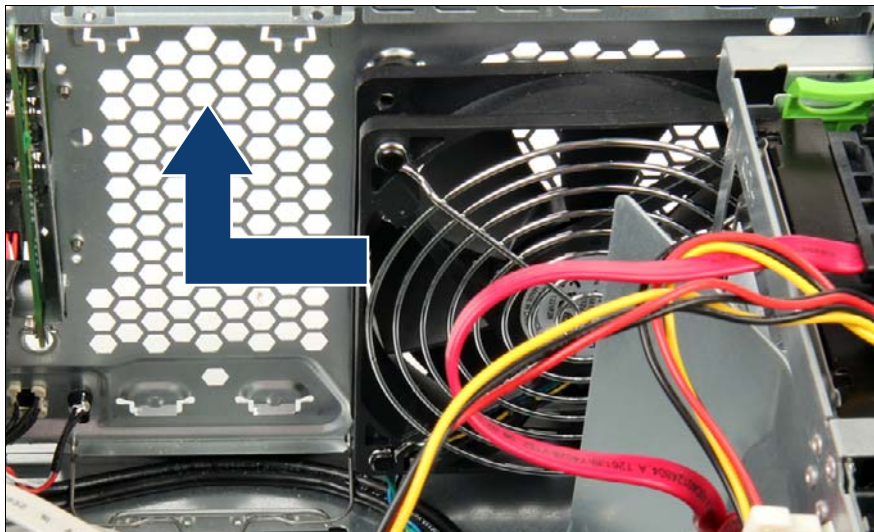


Figure 51: Removing the system fan 2

- ▶ Push the system fan 2 in the direction of arrow.
- ▶ Lift the system fan 2 out of the chassis.



## 8.2.3 Installing the new system fan 2

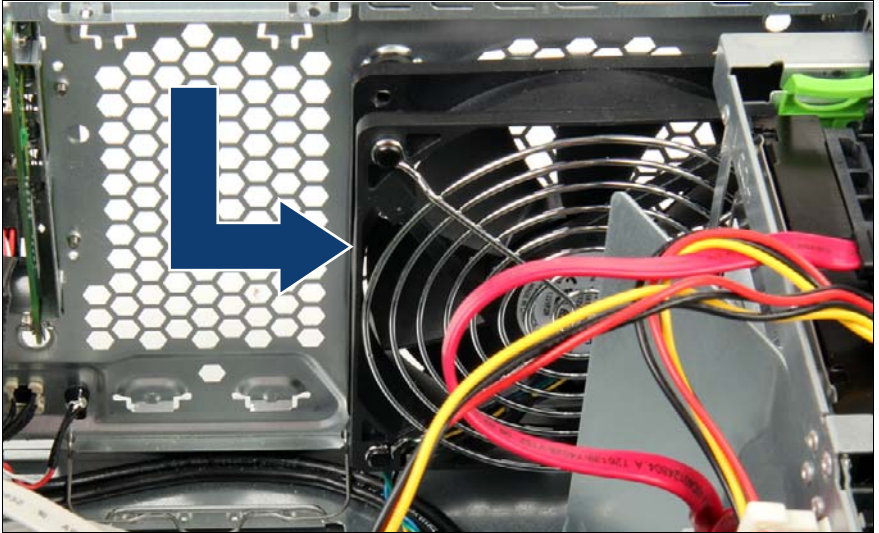


Figure 52: Installing the system fan 2

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

- ▶ Slide the system fan 2 to the right as far as it will go.



Figure 53: Fastening the screws of the system fan 2



The [figure 53](#) shows the correct position of the four fan bushings.

- ▶ Fasten the four screws (see circles).

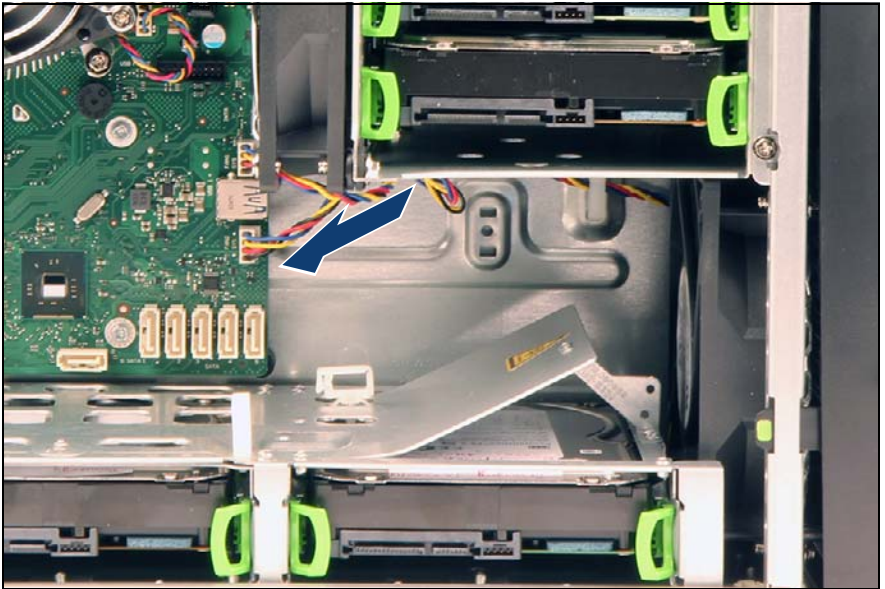


Figure 54: Connecting the fan cable

- ▶ Connect the fan cable to system board connector "FAN2 SYS".

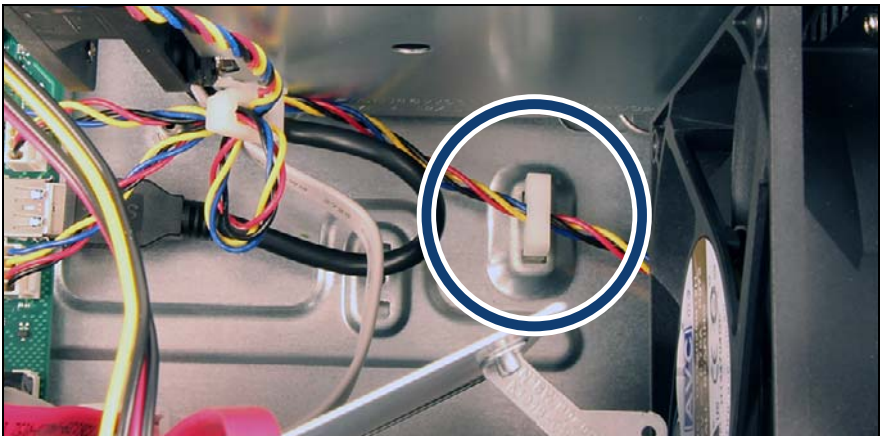


Figure 55: Cable clamp of the fan cable

- ▶ Open the cable clamp and insert the fan cable.

### 8.2.4 Concluding steps

- ▶ ["Installing the HDD cage" on page 59](#)
- ▶ ["Reassembling" on page 47](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)

## 8.3 Replacing the system fan 1



Upgrade and Repair Unit  
(URU)



Hardware: 15 minutes

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

### 8.3.1 Preliminary steps

- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Getting access to the component" on page 42](#)
- ▶ ["Removing the HDD cage" on page 56](#)

### 8.3.2 Removing the defective system fan 1

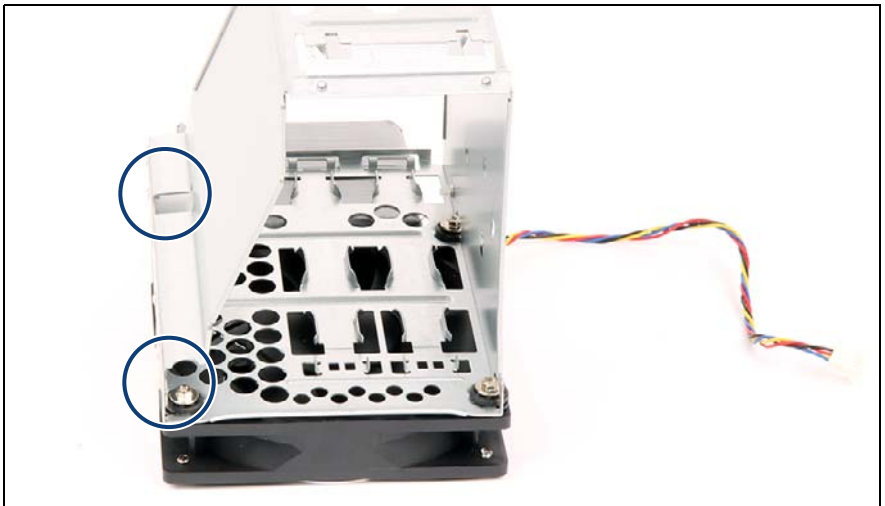


Figure 56: HDD cage with system fan 1

- ▶ Remove the two screws (see circles). The other two screws will be removed later.

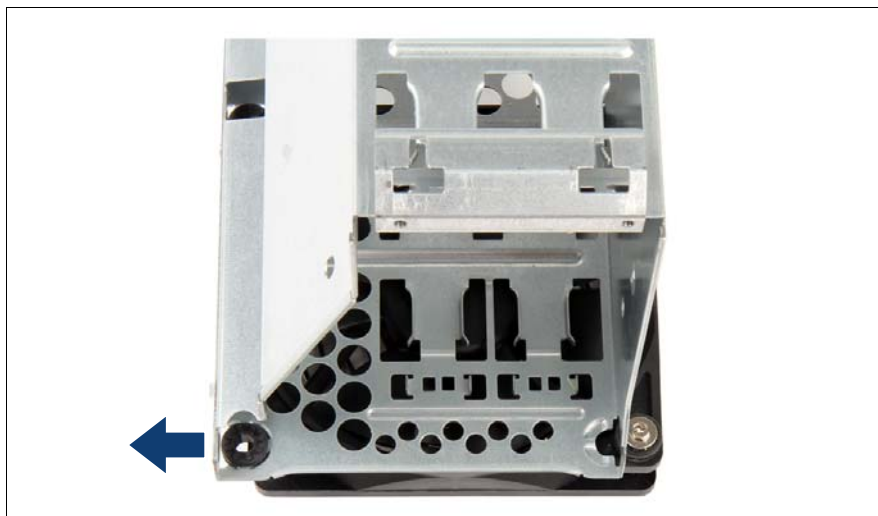


Figure 57: Pushing the HDD cage from the system fan 1

- ▶ Push the HDD cage in the direction of the arrow to loosen the system fan 1.



Figure 58: Position of the bushings

The bushings remain at the HDD cage. It is not necessary to remove them.

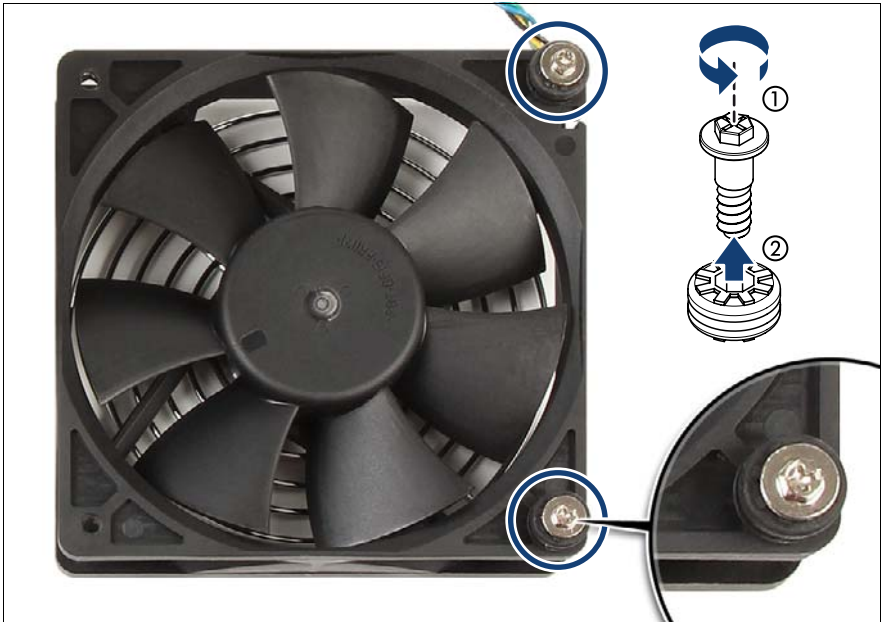


Figure 59: Removing the bushings

- ▶ Remove the two screws from the fan (1, see circles).
- ▶ Remove the two bushings from the fan (2).

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

### 8.3.3 Installing the new system fan 1

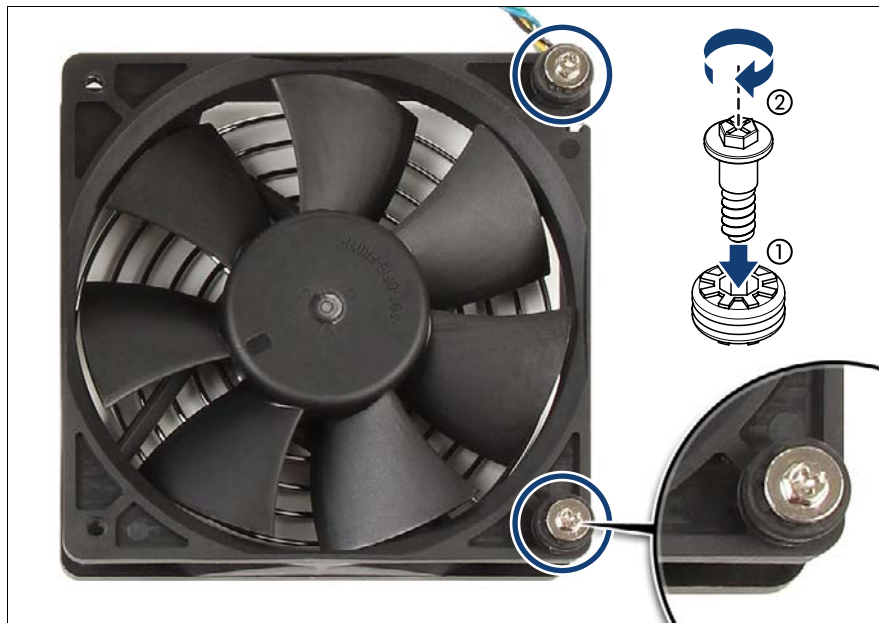


Figure 60: Installing the bushings

- ▶ Place the two bushings on the fan (1, see circles).
- ▶ Secure each bushing on the fan with one fan screw (2).



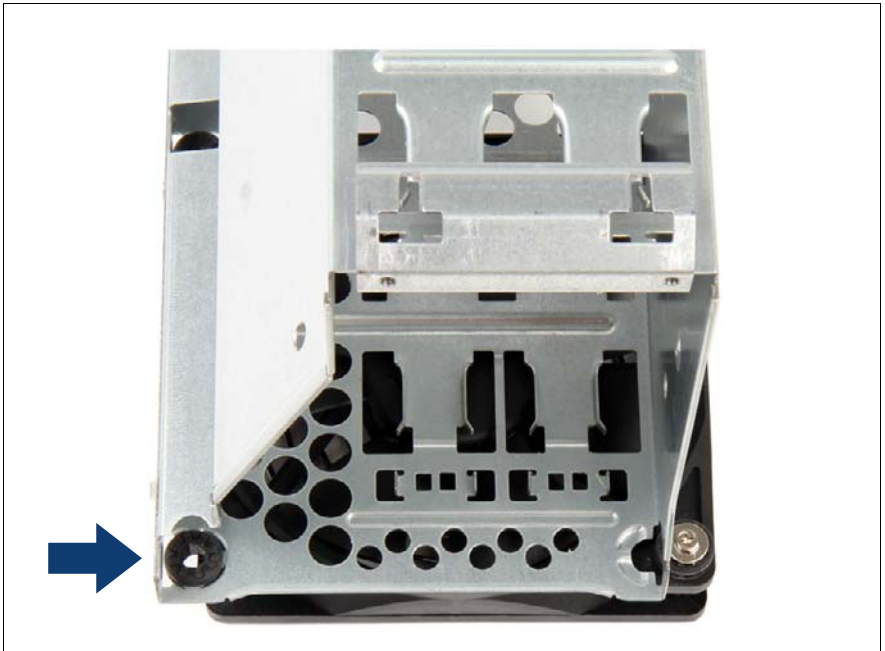


Figure 61: Pushing the HDD cage over the system fan 1

- ▶ Check the correct position of the bushings.
- ▶ Slide the HDD cage in the direction of the arrow as far as it will go. Take care that the bushings are not shifted while the HDD cage is slid.



Figure 62: Installing the system fan 1

- ▶ Fasten the system fan 1 to the HDD cage with two screws (see circles).

### 8.3.4 Concluding steps

- ▶ ["Installing the HDD cage" on page 59](#)
- ▶ ["Reassembling" on page 47](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)

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## 9 Expansion cards and backup units

### Safety notes



#### CAUTION!

- Do not damage or modify internal cables or devices. Doing so may cause a device failure, fire, or electric shock.
- Devices and components inside the server remain hot after shutdown. After shutting down the server, wait for hot components to cool down before installing or removing internal options.
- Circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. Always discharge static build-up (e.g. by touching a grounded object) before handling electrostatic-sensitive devices (ESDs).
- Do not touch the circuitry on boards or soldered parts. Hold circuit boards by their metallic areas or edges.
- If devices are installed or disassembled using methods other than those outlined in this chapter, the warranty will be invalidated.
- For further safety information, please refer to chapter ["Important information" on page 27](#).

## 9.1 Basic information

**i** Configuration options may vary depending on base unit (see ["Different versions for TX1310 M1" on page 16](#)).

The system board is equipped with four expansion card slots:

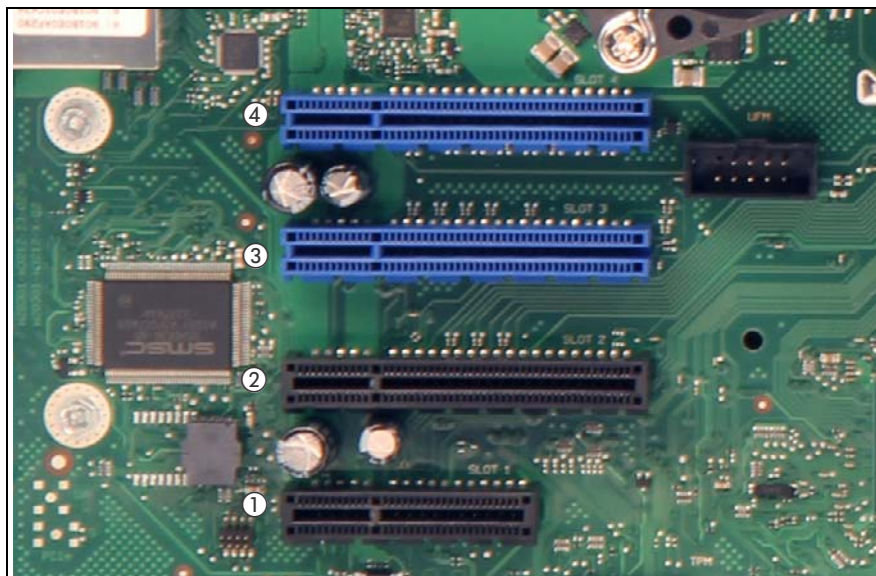


Figure 63: PCI slot overview

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

## 9.1.1 Equipping the PCIe slots

| 1. Graphic controller  | PCI bus type | Max pcs per system | Preferred slot |   |   |
|------------------------|--------------|--------------------|----------------|---|---|
|                        |              |                    | 1              | 2 | 3 |
| Nvidia NVS 300 PCIe x1 | PCIe         | 1                  | 2              | 3 |   |

| 2. PCI-Express controller               | PCI bus type | Max pcs per system | Preferred slot |   |   |   |
|---|--------------|--------------------|----------------|---|---|---|
|   |              |                    | 1              | 2 | 3 | 4 |
| Intel® Ethernet Server Adapter i350-T2  | PCIe         | 1                  | 2              | 3 | 4 | 1 |
| Intel® Gigabit CT Desktop Adapter (LAN) | PCIe         | 2                  | 1              | 2 | 3 | 4 |

**i** For the latest information of the installing order, refer to your server's hardware configurator available online at the following address:

for the EMEA market:

[http://ts.fujitsu.com/products/standard\\_servers/index.html](http://ts.fujitsu.com/products/standard_servers/index.html)

for the Japanese market:

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

## 9.2 Handling slot brackets

### 9.2.1 Installing a slot bracket



**Upgrade and Repair Unit (URU)**



**Hardware: 5 minutes**

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



Figure 64: Non-perforated slot bracket

|   |                                    |
|---|------------------------------------|
| 1 | Full height bracket non-perforated |
|---|------------------------------------|

#### Installing the slot bracket

- ▶ Place the controller on the mounting tabs on the slot bracket.
- ▶ Fasten the slot bracket to the controller with two M3 x 4.5 mm screws.

Example network adapter Ethernet Server Adapter Intel® i350-T2

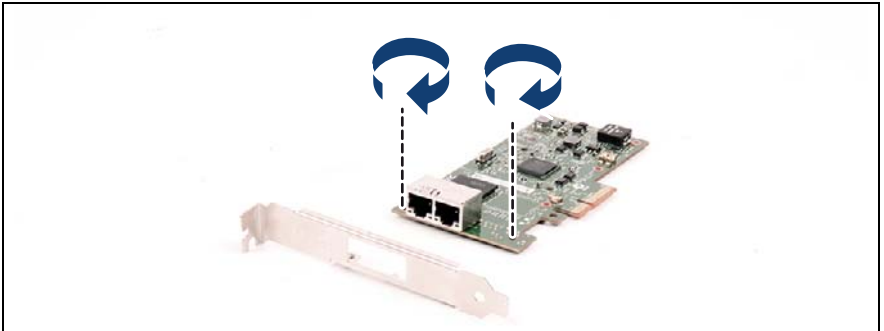


Figure 65: Placing the slot bracket - Intel® i350-T2

- ▶ Carefully shift the slot bracket towards the controller until the plug shells engage with the cut-outs in the slot bracket connector panel.
- ▶ Fasten the slot bracket to the controller with two M3 x 4.5 mm screws.



Figure 66: Securing the slot bracket - Intel® i350-T2

- ▶ Secure the screw of the slot bracket to the chassis.

### Example network adapter Ethernet Adapter Intel® Gbit CT2

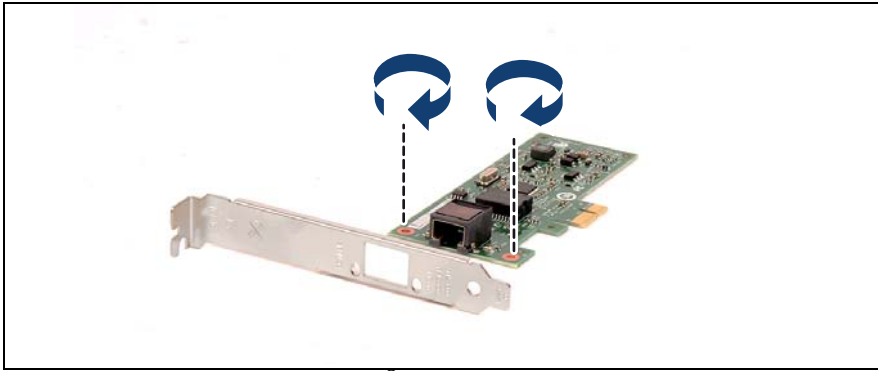


Figure 67: Placing the slot bracket - Intel® Gbit CT2

- ▶ Carefully shift the slot bracket towards the controller until the plug shells engage with the cut-outs in the slot bracket connector panel.
- ▶ Fasten the slot bracket to the controller with two M3 x 4.5 mm screws.

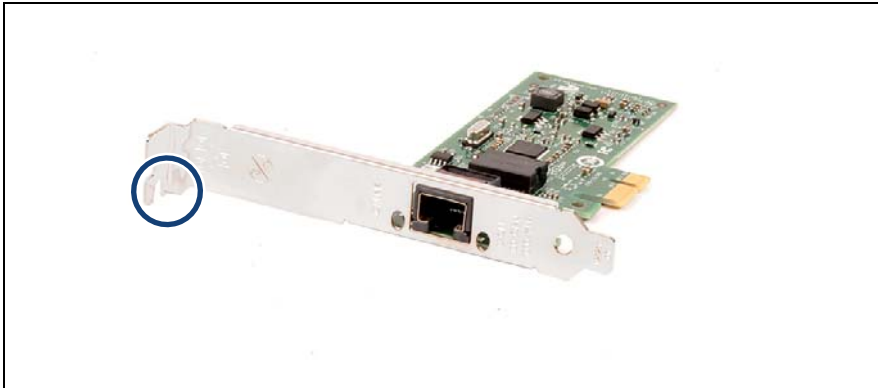


Figure 68: Securing the slot bracket - Intel® Gbit CT2

- ▶ Secure the screw of the slot bracket to the chassis.



**Example network adapter NVIDIA NVS 300**

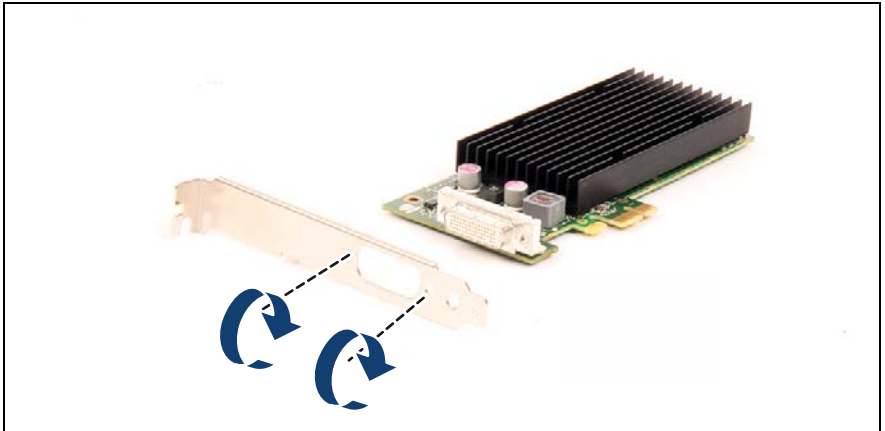


Figure 69: Placing the slot bracket (A) - NVIDIA NVS 300

- ▶ Carefully shift the slot bracket towards the controller until the plug shells engage with the cut-outs in the slot bracket connector panel.
- ▶ Fasten the slot bracket to the controller with two hexagon bolts.

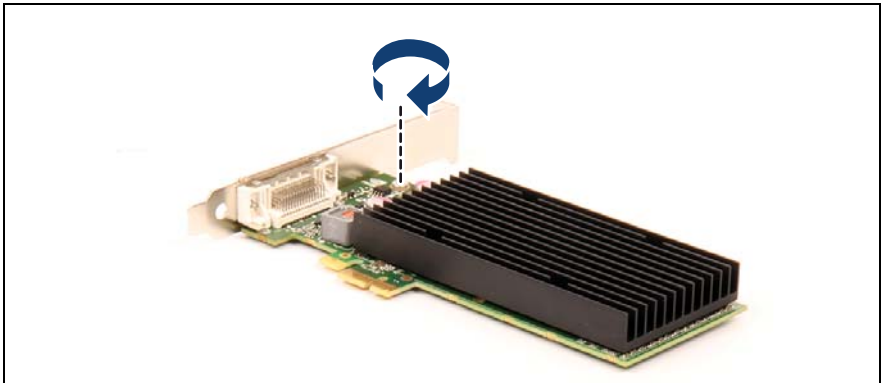


Figure 70: Placing the slot bracket (B) - NVIDIA NVS 300

- ▶ Fasten the slot bracket to the controller with a third M3 x 4.5 mm screw.

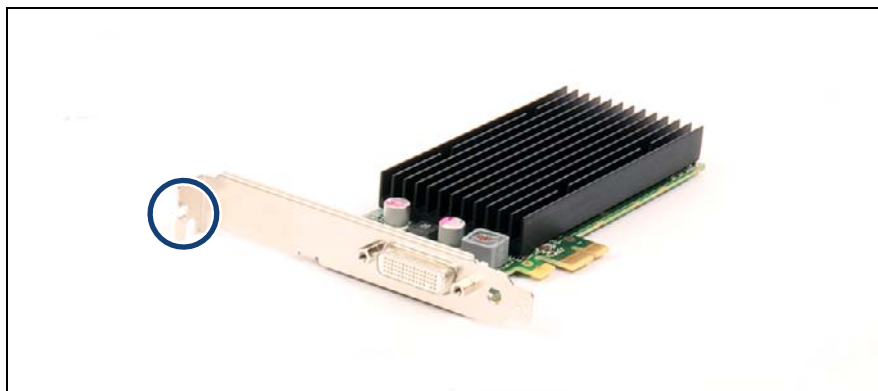


Figure 71: Securing the slot bracket - NVIDIA NVS 300

- ▶ Secure the screw of the slot bracket to the chassis.

### 9.2.2 Removing a slot bracket



**Upgrade and Repair Unit  
(URU)**



**Hardware: 5 minutes**

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

#### Removing the slot bracket

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

## 9.3 Expansion cards

### 9.3.1 Installing expansion cards



**Upgrade and Repair Unit (URU)**



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

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

#### 9.3.1.1 Preliminary steps

- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)

#### 9.3.1.2 Removing the PCI slot bracket

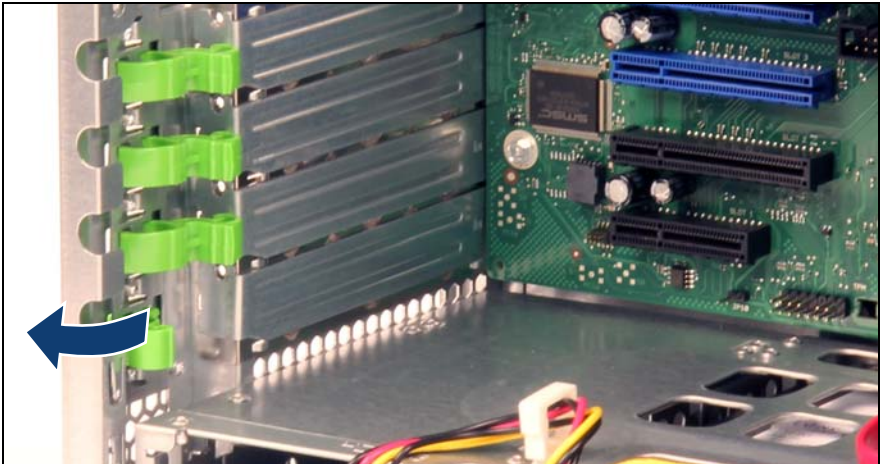


Figure 72: Removing the PCI slot bracket (A)

- ▶ Press slightly on the upper end and swing outwards.

## Expansion cards and backup units

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- ▶ Open the slot bracket clamp and remove it.

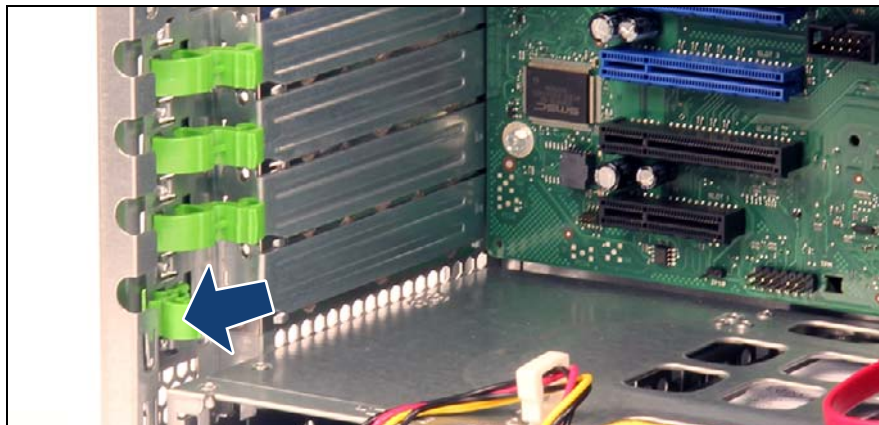


Figure 73: Removing the PCI slot bracket (B)

- ▶ Remove the slot bracket.



### **CAUTION!**

Keep the slot bracket for further use.

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

### 9.3.1.3 Installing an expansion card

- ▶ Remove the expansion card from its protective packaging.



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

- ▶ If applicable, attach the required slot bracket to the expansion card as described in section ["Installing a slot bracket" on page 118](#).

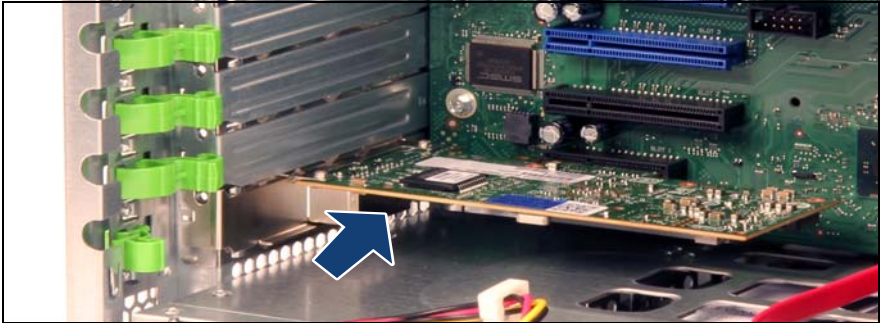


Figure 74: Installing the expansion card (A)

- ▶ Carefully insert the expansion card into the desired PCI slot and press down firmly until it is fully seated in the slot.

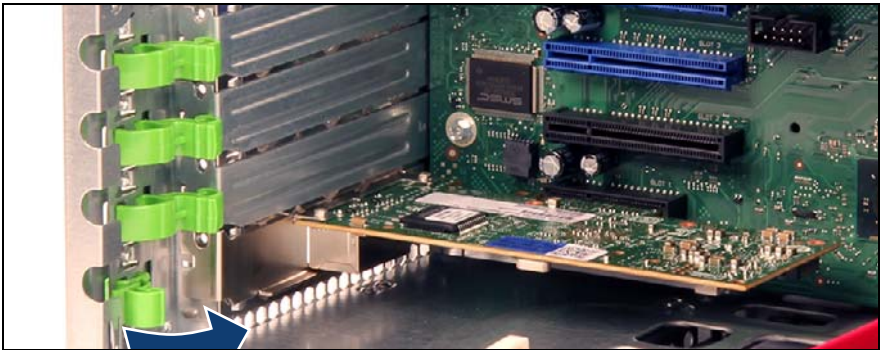


Figure 75: Installing the expansion card (B)

- ▶ Close the slot bracket clamp.
- ▶ If applicable, connect internal cables to the expansion card (see section ["Cabling plans" on page 218](#)).

### 9.3.1.4 Concluding steps

- ▶ ["Installing the side cover" on page 53](#)
- ▶ If applicable, connect external cables to the expansion card.
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ If applicable, ["Enabling Option ROM scan" on page 68](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)
- ▶ If applicable, ["After replacing / upgrading LAN controllers" on page 77](#)

## 9.3.2 Removing expansion cards



**Upgrade and Repair Unit (URU)**



**Hardware: 5 minutes**

**Tools:** tool-less

### 9.3.2.1 Preliminary steps

- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ If applicable, disconnect all external cables from the expansion card to be removed.
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)

### 9.3.2.2 Removing an expansion card

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

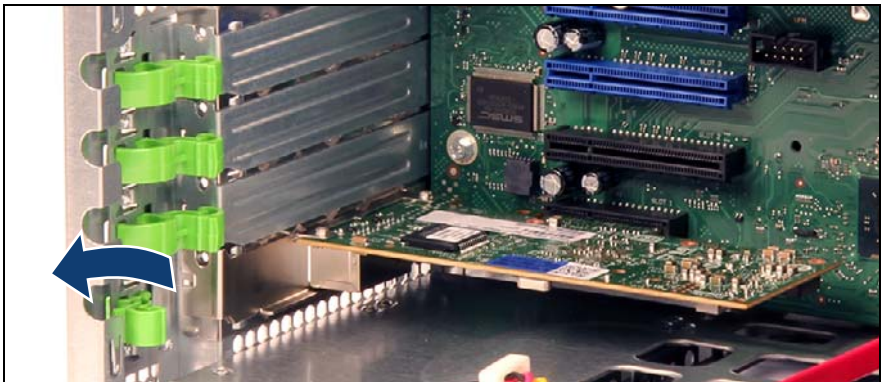


Figure 76: Removing an expansion card (A)

- ▶ Press slightly on the upper end and swing outwards.
- ▶ Open the slot bracket clamp.



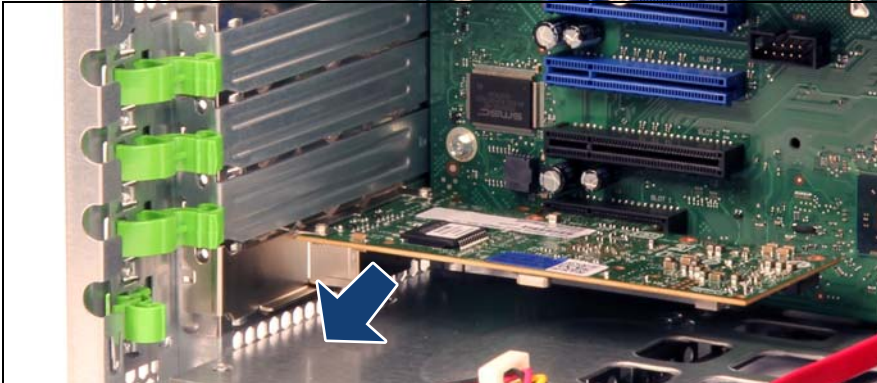


Figure 77: Removing an expansion card (B)

- ▶ Carefully remove the expansion card from its slot.

### 9.3.2.3 Installing a PCI slot bracket



#### **CAUTION!**

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

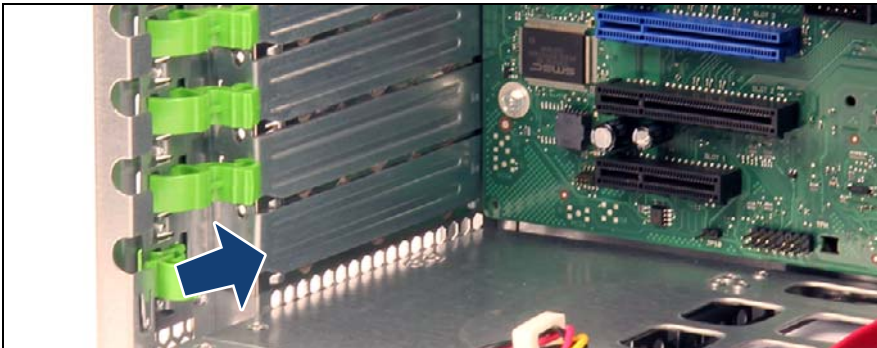


Figure 78: Installing a PCI slot bracket (A)

- ▶ Insert a PCI slot bracket into the unused PCI slot opening.



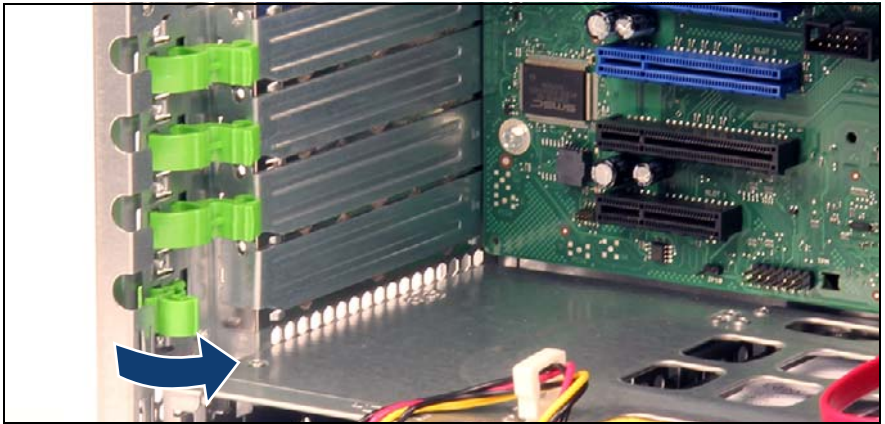


Figure 79: Installing the expansion card (B)

- ▶ Close the slot bracket clamp.

### 9.3.2.4 Concluding steps

- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)

### 9.3.3 Replacing expansion cards



**Upgrade and Repair Unit (URU)**



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

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

#### Note on network settings recovery



When replacing network controllers or the system board, network configuration settings in the operating system will be lost and replaced by default values. This applies to all static IP address and LAN teaming configurations.

Ensure to note down your current network settings before replacing a network controller or the system board.

#### 9.3.3.1 Preliminary steps

- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)

#### 9.3.3.2 Removing an expansion card

- ▶ Remove the defective expansion card as described in section ["Removing expansion cards" on page 127](#).
- ▶ If the slot bracket on the defective expansion card is to be reused, remove it from the expansion card as described in section ["Removing a slot bracket" on page 122](#).

#### 9.3.3.3 Installing an expansion card

- ▶ If applicable, install a slot bracket on the new expansion card as described in section ["Installing a slot bracket" on page 118](#).
- ▶ Install the new expansion card as described in section ["Installing expansion cards" on page 123](#).

### 9.3.3.4 Concluding steps

- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Enabling replaced components in the system BIOS" on page 70](#)
- ▶ ["Looking up changed MAC / WWN addresses" on page 76](#)
- ▶ ["Updating the NIC configuration file in a Linux environment" on page 73](#)
- ▶ If applicable, reconfigure your network settings in the operation system according to the original configuration of the replaced controller (expansion card or onboard).



Configuration of network settings should be performed by the customer.

For further information, please refer to section ["Note on network settings recovery" on page 130](#).

- ▶ ["Enabling BitLocker functionality" on page 74](#)
- ▶ If applicable, ["After replacing / upgrading LAN controllers" on page 77](#)



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# 10 Main memory

## Safety notes



### CAUTION!

- Do not install unsupported third party memory modules. For further information on supported memory modules, refer to section "[Basic information](#)" on page 134. Doing so may cause electric shock, a fire, or failures.
- Memory modules remain hot after shutdown. Wait for components to cool down before installing or removing memory modules to prevent burns.
- Do not insert and remove memory modules repeatedly. Doing so may cause failures.
- Pressing out the securing clips on the memory module connector will eject the installed memory module. To prevent damage and injuries eject memory modules carefully without applying excessive force.
- For further safety information, please refer to chapter "[Important information](#)" on page 27.

## 10.1 Basic information

**i** Configuration options may vary depending on base unit (see ["Different versions for TX1310 M1" on page 16](#)).

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

### 10.1.1 Memory sequence

- Populate memory slot 1 / channel A (DIMM-1A) first.
- Within both channels, memory slot 1 must be populated prior to slot 2.
- If memory modules with different capacities are used:
  - Install modules with higher capacities first.
  - Within a channel, install modules in descending order of capacity.
- If memory modules with different speeds are used, the lowest clock rate applies for all DIMMs.

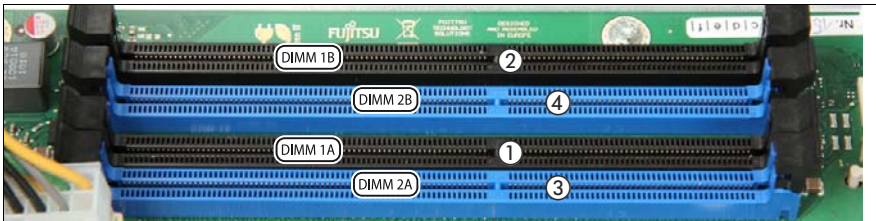


Figure 80: Memory overview

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

Table 4: Mounting order

## 10.1.2 Operation modes

- The maximum performance can be achieved in a symmetric dual-channel configuration. Therefore both channels have to be populated with the same amount of memory. The DRAM device technology (1 Gbit / 2 Gbit / 4 Gbit) may vary from one channel to the other.
- If the amount of memory differs between the two channels, the system board will run in dual-channel asymmetric mode.
- Regardless of the mode, all DIMMs will run at the highest common frequency that is allowed by the SPD Data of the DIMMs and the maximum speed of the selected configuration.
- Single-channel mode is used if one memory module is populated in DIMM 1A.

# 10.2 Installing memory modules



Upgrade and Repair Unit  
(URU)



Hardware: 5 minutes

Tools: tool-less

## 10.2.1 Preliminary steps

- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)

## 10.2.2 Installing a memory module

- ▶ Identify the correct memory slot according to the mounting order described in section ["Memory sequence" on page 134](#).

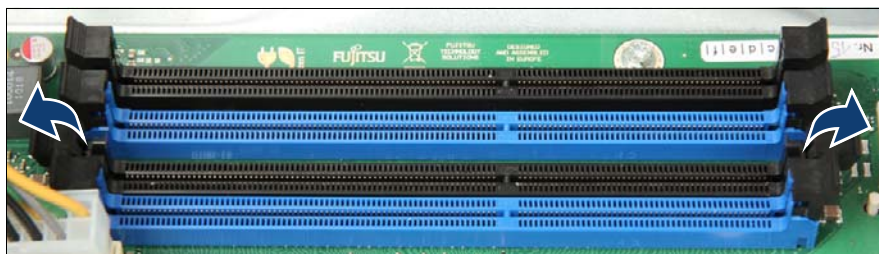


Figure 81: Installing memory modules (A)

- ▶ Press out the securing clip at each end of the memory module connector.



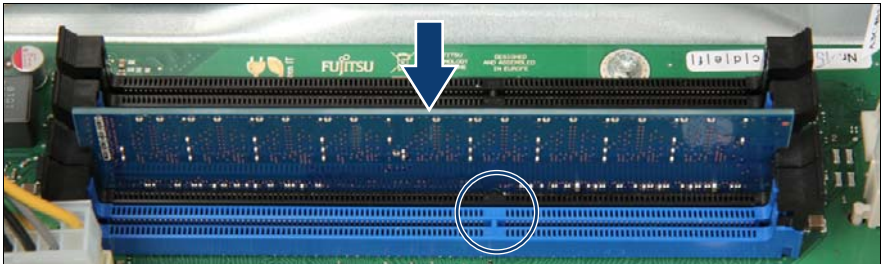


Figure 82: Installing memory modules (B)

- ▶ Align the notch on the bottom of the module with the crossbar in the connector (see circle).

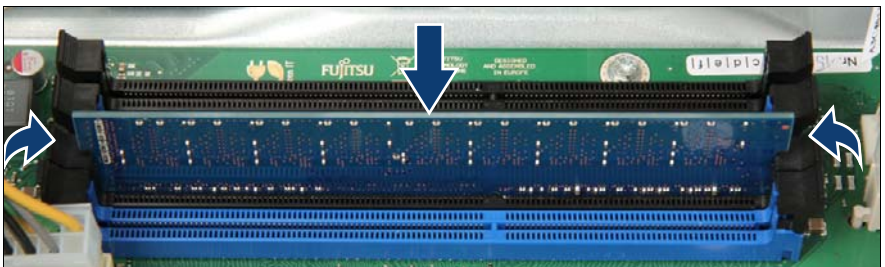


Figure 83: Installing memory modules (C)

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

### 10.2.3 Concluding steps

- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ If applicable, ["Updating or recovering the system board BIOS" on page 68](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)

### 10.3 Removing memory modules



Upgrade and Repair Unit  
(URU)



Hardware: 5 minutes

Tools: tool-less

#### 10.3.1 Preliminary steps

- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)

#### 10.3.2 Removing a memory module

- ▶ Identify the desired memory slot according to the mounting order described in section ["Memory sequence" on page 134](#).



#### CAUTION!

Ensure to maintain an operational configuration when removing memory modules. For additional information, please refer to section ["Operation modes" on page 135](#).

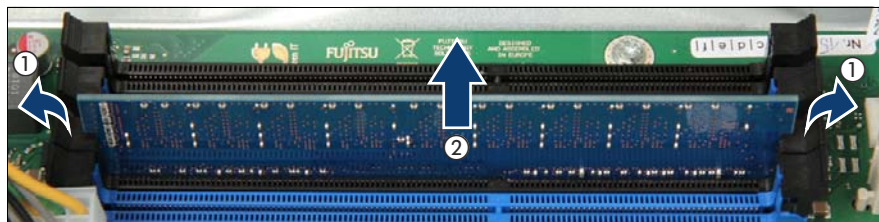


Figure 84: Removing memory modules

- ▶ Eject the desired memory module by pressing out the securing clips at each end of the memory module connector (1).
- ▶ Remove the ejected memory module (2).

### 10.3.3 Concluding steps

- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ If applicable, ["Updating or recovering the system board BIOS" on page 68](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)

## 10.4 Replacing memory modules



**Upgrade and Repair Unit  
(URU)**



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

**Tools:** tool-less

### 10.4.1 Preliminary steps

- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)
- ▶ ["Locating the defective component" on page 39](#)

### 10.4.2 Removing the defective memory module

- ▶ Remove the memory module as described in section ["Removing a memory module" on page 138](#).

### 10.4.3 Installing the new memory module

- ▶ Install the memory module as described in section ["Installing a memory module" on page 136](#).

### 10.4.4 Concluding steps

- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ If applicable, ["Updating or recovering the system board BIOS" on page 68](#)
- ▶ ["Enabling replaced components in the system BIOS" on page 70](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)

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# 11 Processor

## Safety notes



### CAUTION!

- Do not install unsupported processors. For further information on supported processors, refer to section ["Basic information" on page 142](#).
- Circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. Always discharge static build-up (e.g. by touching a grounded object) before handling electrostatic-sensitive devices (ESDs)
- Do not touch the circuitry on boards or soldered parts. Hold circuit boards by their metallic areas or edges.
- When removing or installing the processor, be careful not to touch or bend the spring contacts on the processor socket.
- Never touch the underside of the processor. Even minor soiling such as grease from the skin can impair the processor's operation or destroy the processor.
- For further safety information, please refer to chapter ["Important information" on page 27](#).

### 11.1 Basic information

- The system board supports one processor socket.

### 11.2 Replacing the processor



**Field Replaceable Unit (FRU)**



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

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



#### **CAUTION!**

Processors are extremely sensitive to electrostatic discharge and must be handled with care. After a processor has been removed from its protective sleeve or from its socket, place it upside down on a nonconducting, antistatic surface. Never push a processor over a surface.

#### 11.2.1 Preliminary steps

- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)

## 11.2.2 Removing the heat sink

### Removing the heat sink

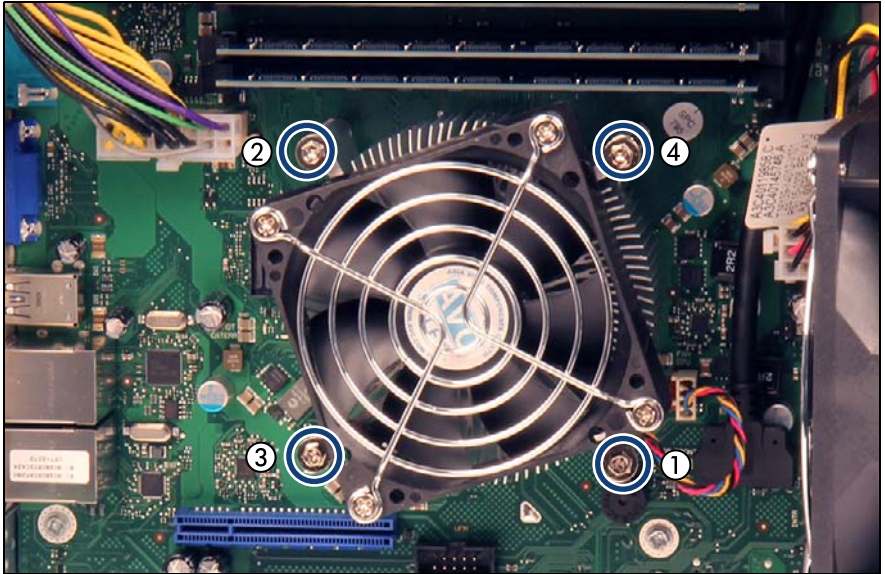


Figure 85: Removing the heat sink (A)

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

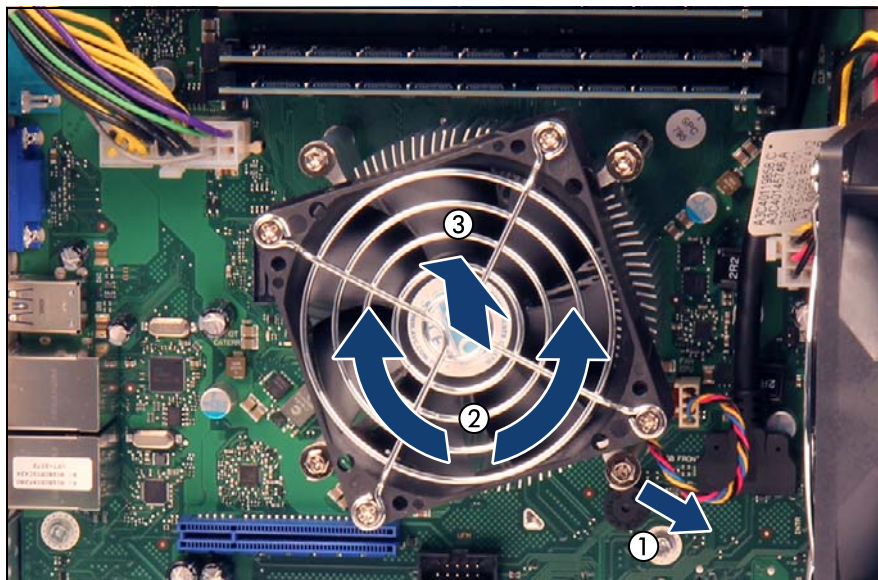


Figure 86: Removing the heat sink (B)

- ▶ Disconnect the heat sink fan connector from the system board connector FAN CPU (1).
- ▶ Carefully turn the heat sink back and forth to detach it from the processor (2).



This may be necessary due to the adhesive quality of the thermal paste located between the heat sink and processor.



### **CAUTION!**

Pay special attention not to damage any system board components surrounding the processor socket.

- ▶ Lift the heat sink out of the chassis (3).
- ▶ Thoroughly clean residual thermal paste from the surface of the heat sink and the processor using a lint-free cloth.



## 11.2.3 Removing processor



**Field Replaceable Unit (FRU)**



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

**Tools:** Tool-less



### **CAUTION!**

Processors are extremely sensitive to electrostatic discharge and must be handled with care. After a processor has been removed from its protective sleeve or from its socket, place it upside down on a nonconducting, antistatic surface. Never push a processor over a surface.

### 11.2.3.1 Preliminary steps

- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Getting access to the component" on page 42](#)
- ▶ ["Removing the heat sink" on page 143](#)

### 11.2.3.2 Removing a processor



This description applies to the following procedures:

- Removing processor from a defective system board (see section ["Replacing the system board" on page 206](#))
- ▶ Remove the desired processor heat sink as described in section ["Removing the heat sink" on page 143](#).

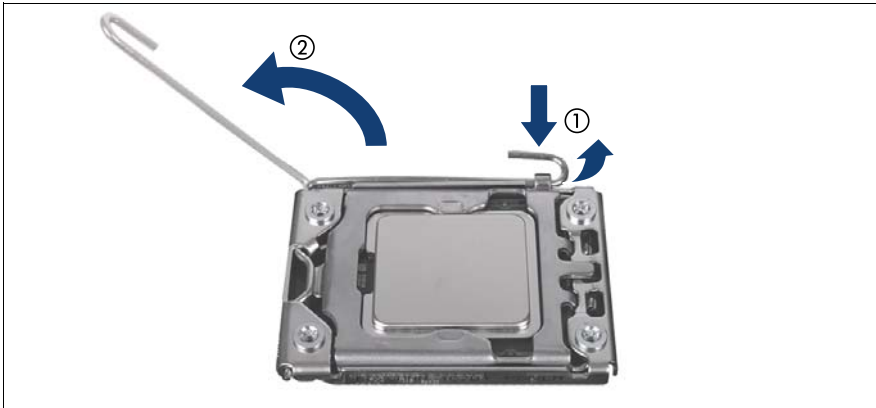


Figure 87: Opening socket release lever

- ▶ Unlatch the socket release lever by pushing it down and away from the socket (1), and then swivel it up (2).

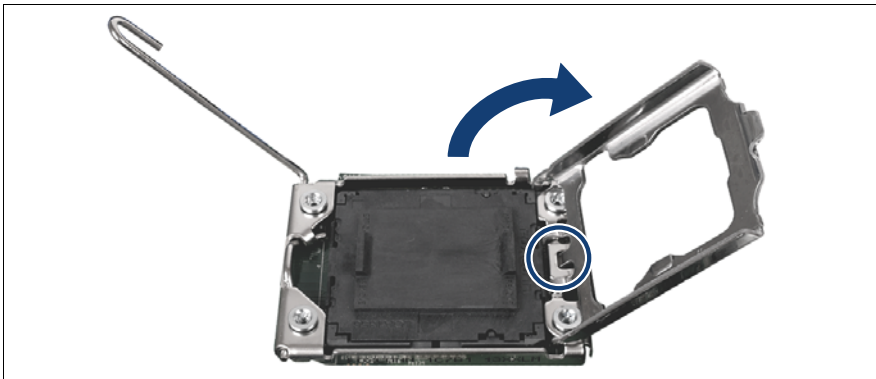


Figure 88: Opening the load plate

- ▶ Open the load plate of the processor socket.



**CAUTION!**

**Handle the locking frame carefully.**

In a vertical position, the small clip (see circle) can scratch the system board.

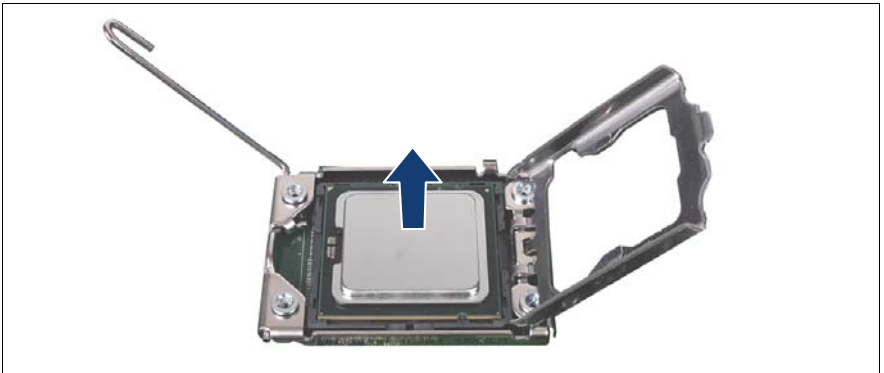


Figure 89: Removing the processor

- ▶ Carefully remove the defective processor from its socket in a vertical motion.



**CAUTION!**

Be careful not to touch or bend the spring contacts on the processor socket.

- ▶ Thoroughly clean residual thermal paste from the processor surface using a lint-free cloth.
- ▶ Store the processor in a safe place for later reuse.



**CAUTION!**

Processors are extremely sensitive to electrostatic discharge and must be handled with care. After a processor has been removed from its protective sleeve or from its socket, place it upside down on a nonconducting, antistatic surface. Never push a processor over a surface.

Be careful not to touch or bend the spring contacts on the processor socket.

### 11.2.3.3 Installing the protective cover

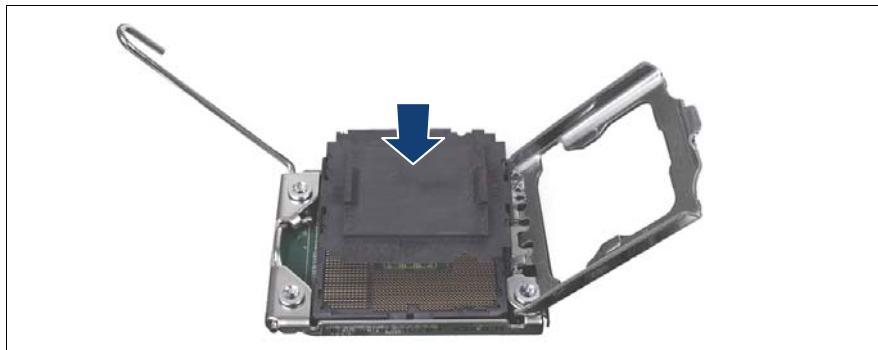


Figure 90: Attaching the protective socket cover

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

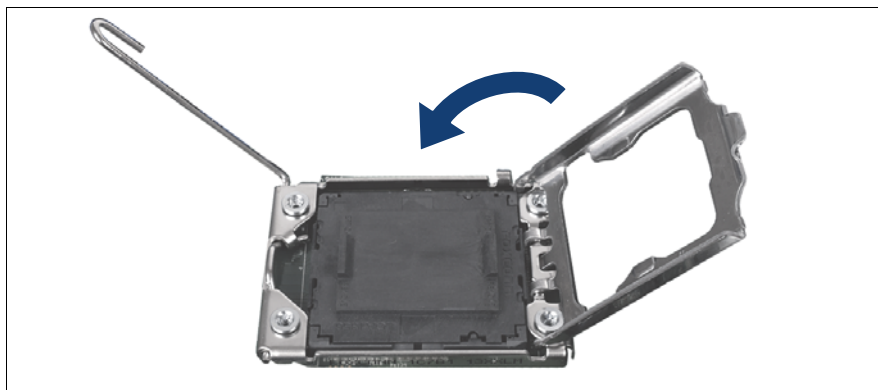


Figure 91: Closing the load plate

- ▶ Close the load plate of the processor.

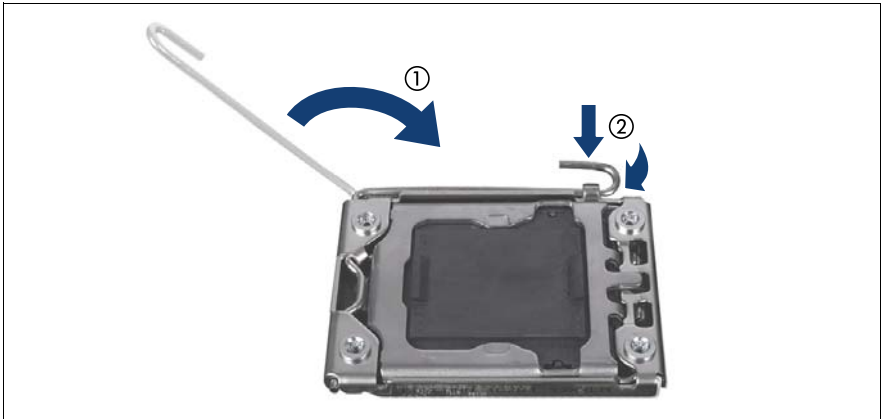


Figure 92: Close the socket release lever

- ▶ Close the socket release lever (1) and latch it under the load plate retention tab to lock down the load plate (2).

## 11.2.4 Concluding steps

- ▶ ["Reassembling" on page 47](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)

## 11.2.5 Installing a processor



This description applies to the following procedures:

- Transferring a processor after replacing the system board (see section ["Replacing the system board" on page 206](#))

### 11.2.5.1 Removing the protective cover

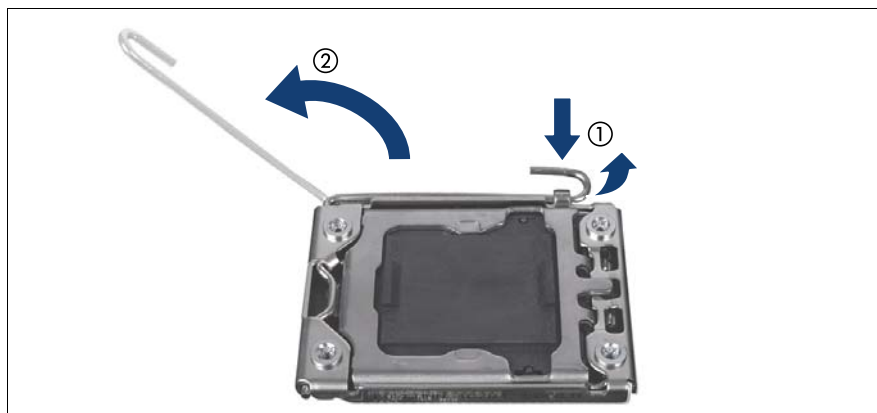


Figure 93: Opening socket release lever

- ▶ Unlatch the socket release lever by pushing it down and away from the socket (1), and then swivel it up (2).

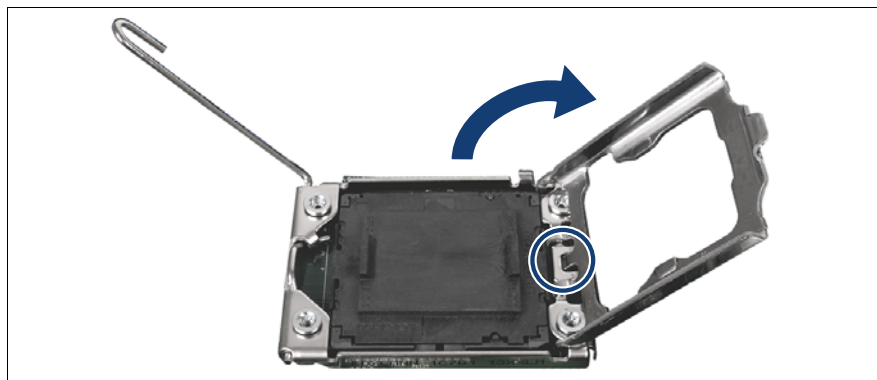


Figure 94: Opening the load plate

- ▶ Open the load plate of the processor socket.



**CAUTION!**

**Handle the locking frame carefully.**

In a vertical position, the small clip (see circle) can scratch the system board.

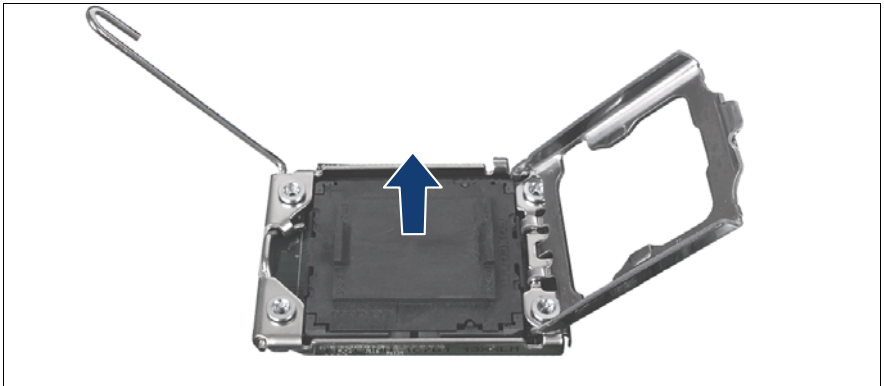


Figure 95: Removing the protective cover

- ▶ Remove the black protective cover from the processor socket.

### 11.2.5.2 Installing the new processor

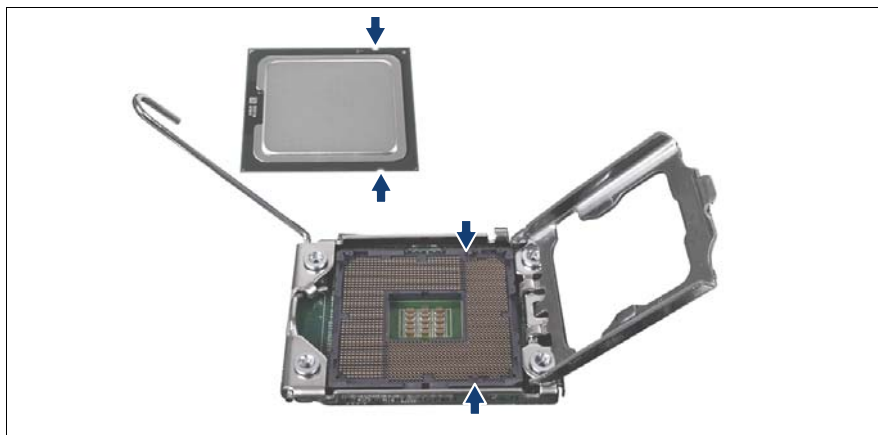


Figure 96: Installing the processor

- ▶ Hold the processor with your thumb and index finger.
- ▶ Place the new processor on the socket.



Make sure that the recesses on the processor are aligned with the corresponding markings on the socket.



#### **CAUTION!**

- Ensure that the processor is level in the socket.
- Be careful not to touch or bend the pins on the processor socket.
- Never touch the underside of the processor. Even minor soiling such as grease from the skin can impair the processor's operation or destroy the processor.
- Ensure not to scrape or dent the processor edges.



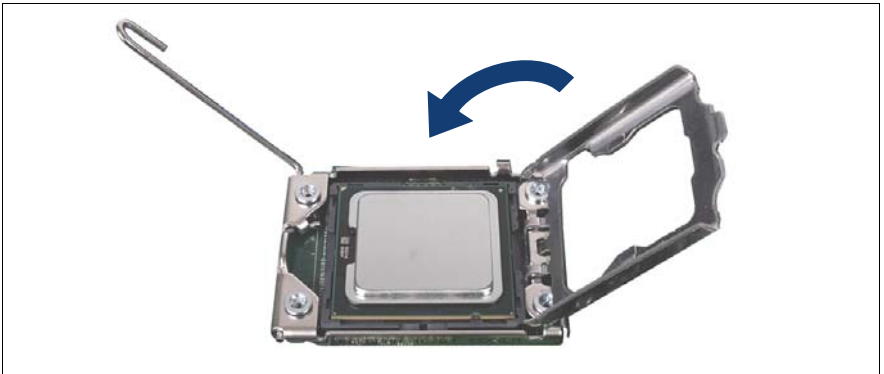


Figure 97: Closing the load plate

- ▶ Close the load plate of the processor.

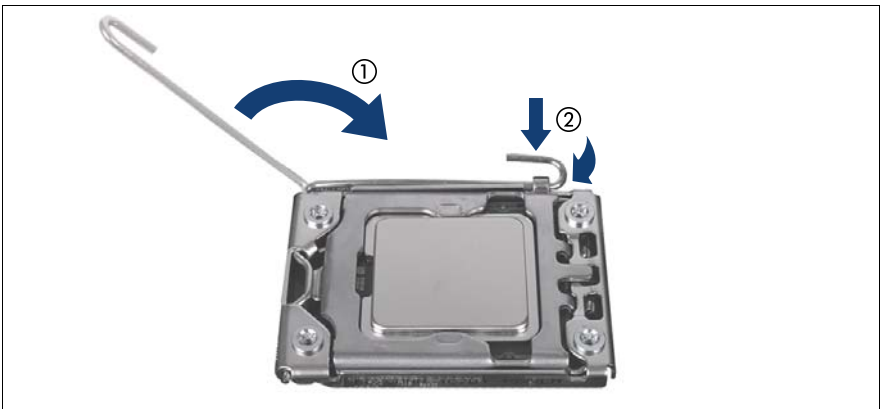




Figure 98: Closing the socket release lever

- ▶ Close the socket release lever (1) and latch it under the load plate retention tab (2) to lock down the load plate.

## 11.2.6 Applying thermal paste

-  For the Japanese market, the service engineer must follow the instruction provided separately.
-  If the processor upgrade or replacement kit contains a new CPU heat sink, a thin layer of thermal compound has already been pre-applied to its lower surface. In this case, please proceed with section "[Installing the heat sink](#)" on page 156.

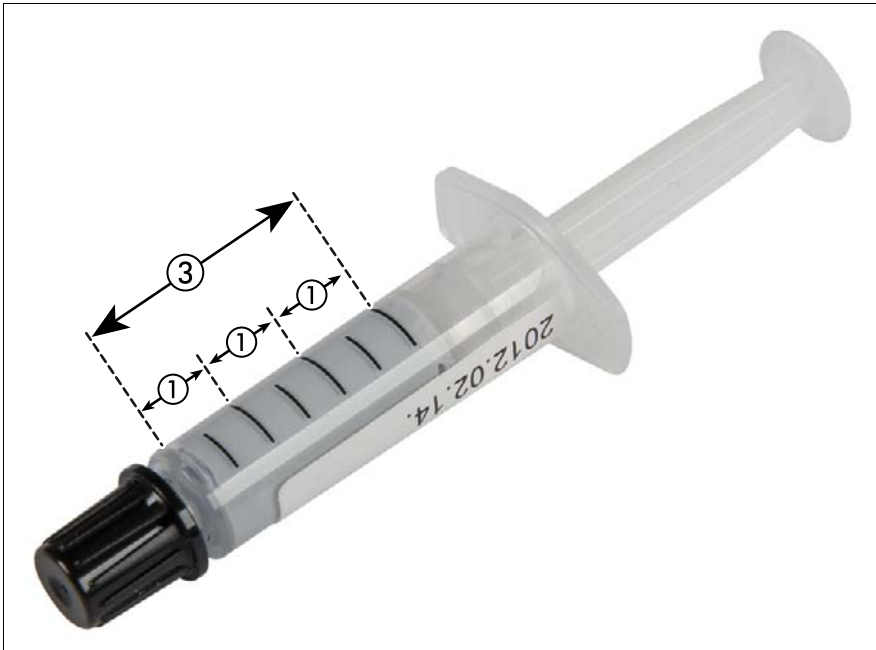


Figure 99: Thermal paste syringe

One thermal compound syringe (FTS-FSP:P304000004) contains thermal paste for three processors.

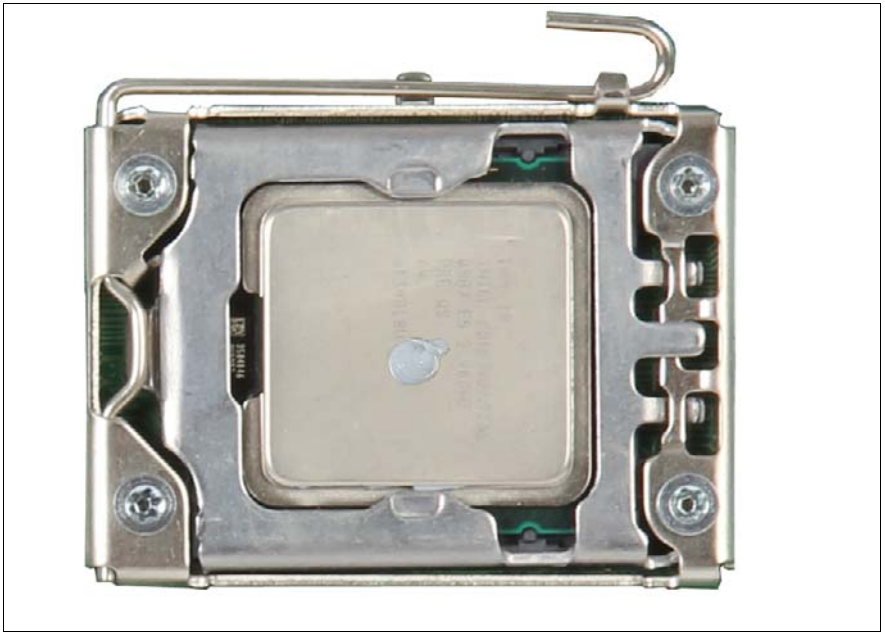


Figure 100: Applying thermal paste

- ▶ Apply a small point-shaped amount of thermal paste (1.0 gram, see description above) to the center of the processor surface as shown.



**CAUTION!**

Do not mix different types of thermal paste.

## 11.2.7 Installing the heat sink

### Installing the heat sink

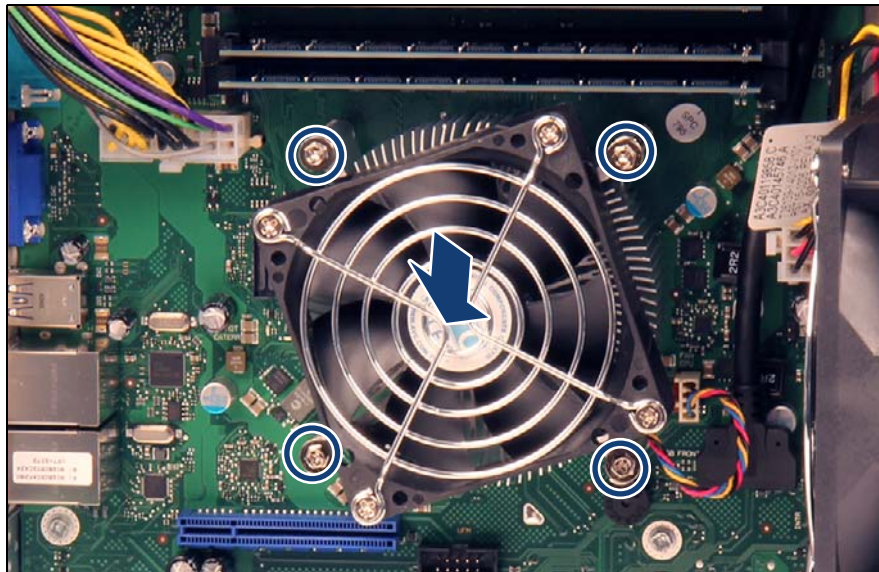


Figure 101: Installing the heat sink (A)

- ▶ Carefully seat the heat sink on the four threaded holes as shown.



#### **CAUTION!**

- Ensure that the screws on the heat sink are properly seated on the threaded holes (see circles).
- Ensure that the heat sink cooling fins match the direction of the airflow!

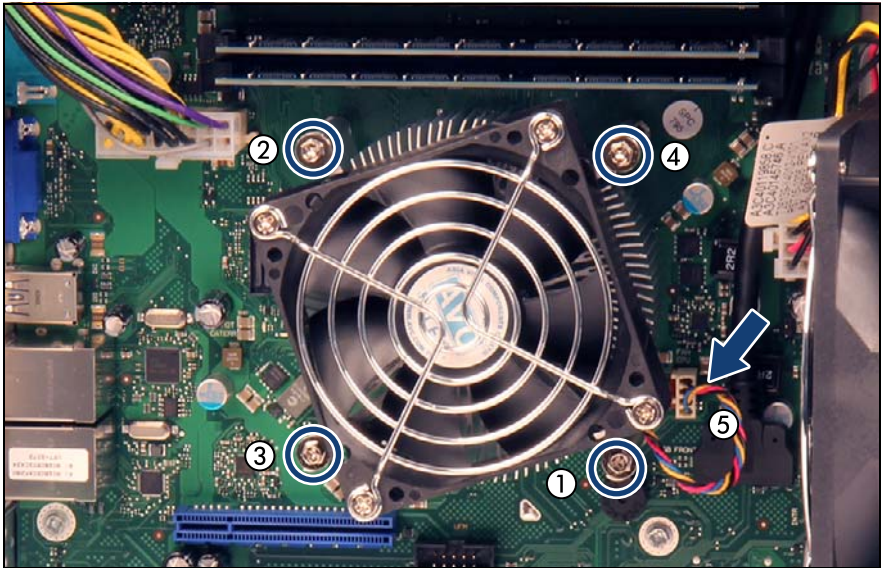


Figure 102: Installing the heat sink (B)

- ▶ Fasten the four captive screws on the heat sink in a crossover pattern (screw torque: 0.6 Nm, not applicable for the Japanese market) (1-4).
- ▶ Connect the heat sink fan connector to system board connector FAN CPU (5).

### 11.2.8 Concluding steps

- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ If applicable, ["Updating or recovering the system board BIOS" on page 68](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)

# 11.3 Replacing the heat sink



**Field Replaceable Unit (FRU)**



**Hardware: 15 minutes**

|   |
|---|
| <b>Tools:</b> Phillips PH2 / (+) No. 2 screw driver |
|---|

## 11.3.1 Preliminary steps

- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)

## 11.3.2 Removing the heat sink

- ▶ Remove the heat sink as described in section ["Removing the heat sink" on page 143](#).
- ▶ Remove the residual thermal paste from the processor surface.
- ▶ Clean the processor surface using a lint-free cloth.

## 11.3.3 Installing the new heat sink

- ▶ Remove the protective cover from the heat sink.
- ▶ Install the heat sink as described in section ["Installing the heat sink" on page 156](#).

## 11.3.4 Concluding steps

- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)

---

## 12 Accessible drives

### Safety notes



#### CAUTION!

- Before installing an internal accessible drive, see the manual for the accessible drive.
- Before installing/removing an accessible drive to/from the server, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet. Failure to do so can cause electric shock.
- When installing an accessible drive, hold it by its sides. Applying force to the top of the casing may cause failures.
- Do not touch the circuitry on boards or soldered parts. Hold circuit boards by their metallic areas or edges.
- Circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. Always discharge static build-up (e.g. by touching a grounded object) before handling electrostatic-sensitive devices (ESDs).
- When inserting an accessible drive into the server, ensure not to pinch or strain any connected cables.
- When disposing of, transferring, or returning a backup drive, ensure that all backup media has been removed from the drive.
- For further safety information, please refer to chapter ["Important information" on page 27](#).

## 12.1 Basic information

### Mounting order for accessible drives

The server offers two 5.25-inch accessible drive bays for optical disk drives and backup drives.



Figure 103: Accessible drive bays

| Sequence | Accessible drive                                     | Bay   | Max. # |
|----------|--|-------|--------|
| 1        | Optical disk drive<br>or slimline optical disk drive | Bay 1 | 1      |
| 2        | RDX backup drive                                     | Bay 2 | 1      |

Table 5: Accessible drive mounting sequence



## 12.2 Installing accessible drives



**Upgrade and Repair Unit (URU)**



**Hardware: 10 minutes**

**Tools:** Phillips PH0 / (+) No. 0 screw driver  
diagonal pliers

### 12.2.1 Preliminary steps

- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)
- ▶ If applicable, ["Disconnecting the optical disk drive \(ODD\)" on page 43](#)

### 12.2.2 Removing the dummy cover of bay 2

If bay 2 will be equipped, it is necessary to break out the dummy cover of bay 2 in the front cover and to remove the EMI spring in bay 2.



Some chassis do not have any more the EMI spring installed in bay 2. The pictures doesn't always show the current version.



Figure 104: Removing the dummy cover of bay 2

- ▶ Pull out the dummy cover of bay 2.

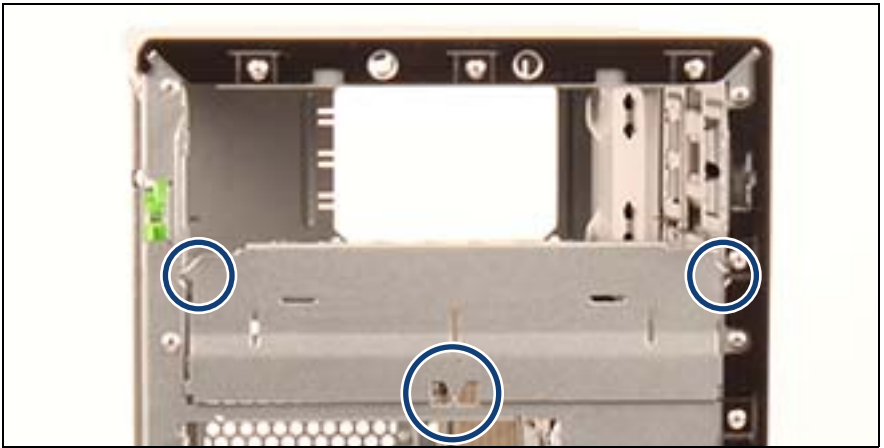


Figure 105: Connected points of the EMI spring of bay 2

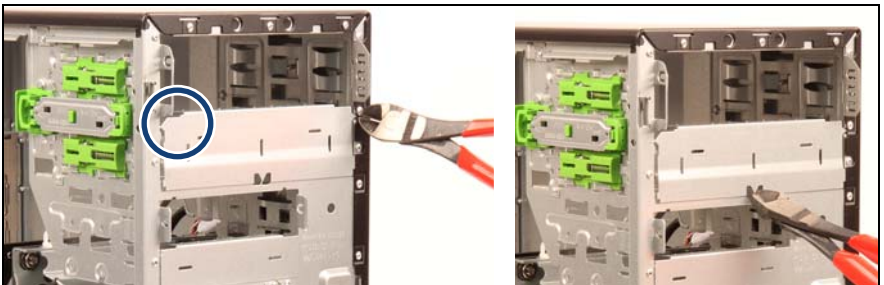


Figure 106: Connected points of the EMI spring of bay 2

- ▶ Cut the three connected points of the EMI spring with a diagonal pliers.
- ▶ Remove the EMI spring.
- ▶ Install the RDX drive.



The RDX drive is a little harder to insert than an ODD and the bezel of the drive is touching the front panel.



**CAUTION!**

You cannot re-install the EMI spring.

If you want to remove the RDX drive, you have to install a dummy drive instead, refer to ["Installing the dummy drive" on page 176](#).

### 12.2.3 Installing an optical disk drive (ODD)

#### 12.2.3.1 Preparing the optical disk drive

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

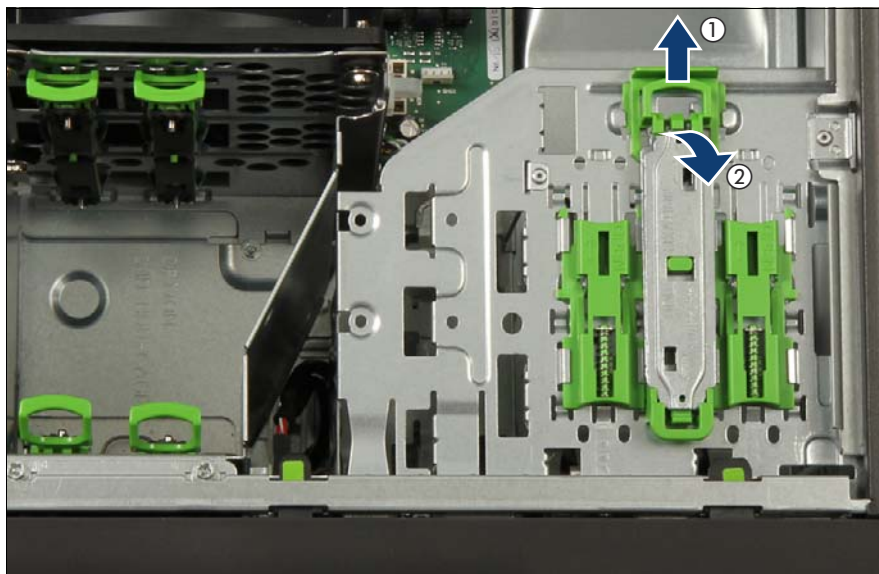


Figure 107: Removing the fixation plate from the chassis

- ▶ Pull the green handle outward (1).
- ▶ Lift up the fixation plate and take it out (2).



Figure 108: Attaching the fixation plate to the optical disk drive (A)

- ▶ Align the four pins of the fixation plate with the screw holes on the optical disk drive.



Figure 109: Attaching the fixation plate to the optical disk drive (B)

- ▶ Attach the fixation plate on the left side of the optical disk drive.

### 12.2.3.2 Installing the optical disk drive

- ▶ Install the optical disk drive as described in section ["Installing the optical disk drive \(ODD\)"](#) on page 49.

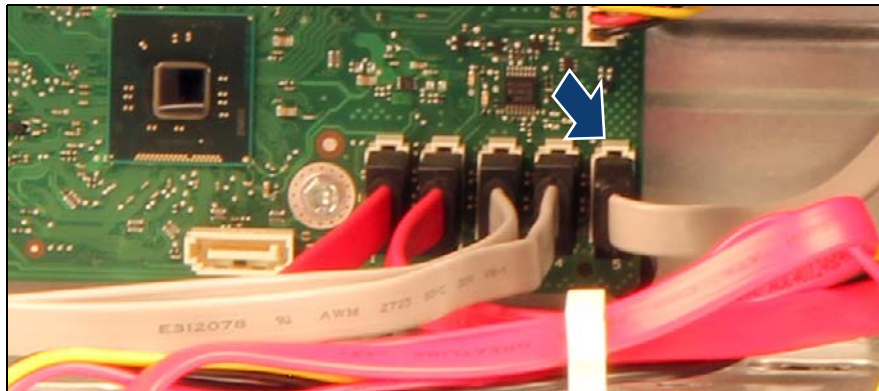


Figure 110: Routing optical disk drive cables

- ▶ Connect the SATA cable to connector "SATA 5" on the system board.
- ▶ Route the SATA cable below system fan 1.

## 12.2.4 Installing a slimline optical disk drive (ODD)

### 12.2.4.1 Mounting the slimline drive in the slide-in unit



Figure 111: Slide-in unit for slimline ODD drive

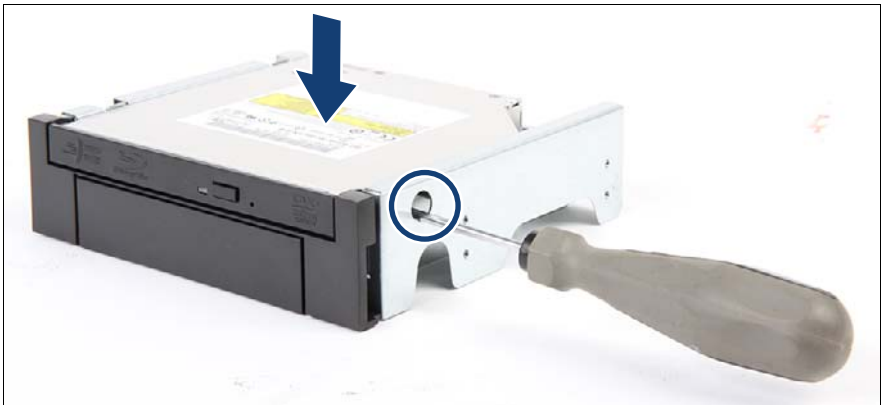


Figure 112: Mounting the slimline ODD in the slide-in unit (A)

- ▶ Insert the slimline ODD on the top.
- ▶ Fasten it with one M2 x 2.5 mm screw to the slide-in unit on the right side.



Figure 113: Mounting the slimline ODD in the slide-in unit (B)

- ▶ Fasten it with two M2 x 2.5 mm screws to the slide-in unit on the left side.

### 12.2.4.2 Preparing the slide-in unit



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

- ▶ Remove the fixation plate from the chassis (see figure 107).



Figure 114: Attaching the fixation plate to the slide-in unit

- ▶ Align the four pins on the fixation plate with the screw holes on the left side of the slide-in unit and attach it.



### 12.2.4.3 Installing the slide-in unit



Figure 115: Installing the slide-in unit

- ▶ Insert the slide-in unit into its installation bay and carefully push in until it locks in place.

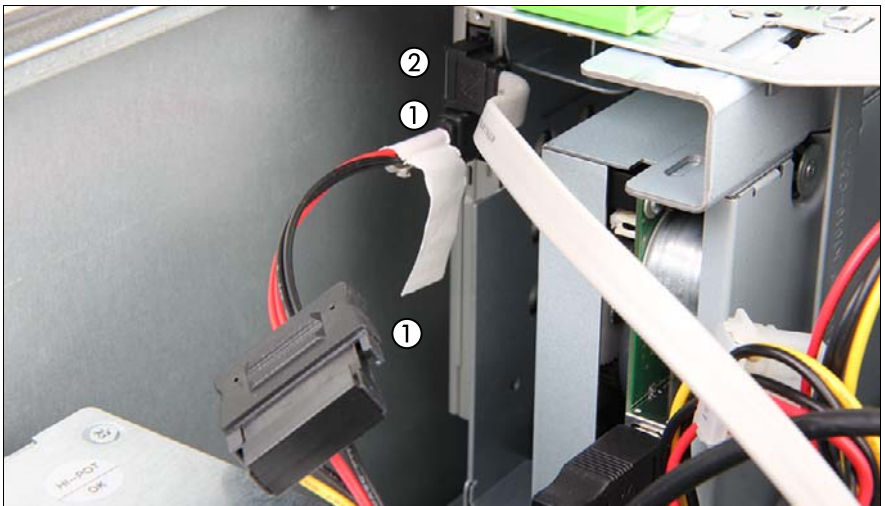


Figure 116: Connecting cables to the slimline optical disk drive

- ▶ Connect cables to the optical disk drive.
  - 1 Power adapter cable to the power cable connector P8 and the slimline drive
  - 2 SATA cable

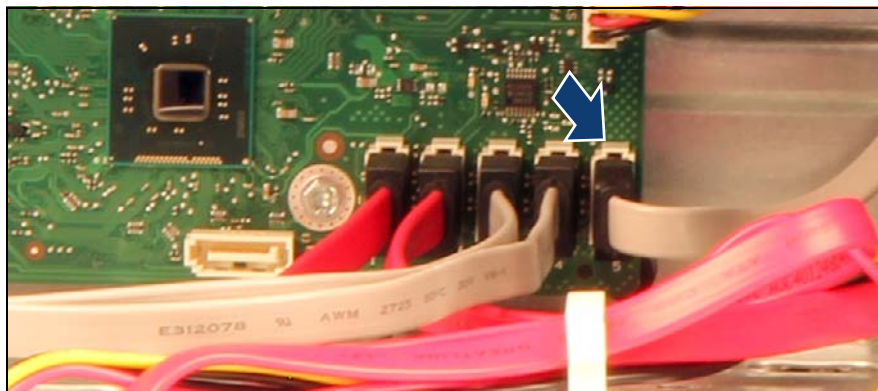


Figure 117: Routing slimline drive cables

- ▶ Connect the SATA cable to connector "SATA 5" on the system board.
- ▶ Route the SATA cable below system fan 1.

### 12.2.5 Installing a backup drive



#### Notes on RDX drive USB cabling:

- A USB 2.0 RDX drive may be replaced by a USB 3.0 RDX drive with previous cabling.
- A USB 3.0 RDX drive may be connected with a USB 2.0 cable to an onboard USB 2.0 connector with limited performance.
- For full performance, connect the USB 3.0 RDX drive to a USB 3.0 interface card by USB 3.0 cable.
- The USB 3.0 cable cannot be connected to a USB 2.0 RDX drive.

### 12.2.5.1 Preparing the backup drive

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

- ▶ Remove the fixation plate from the chassis (see figure 107).



Figure 118: Attaching the fixation plate to the backup drive (A)

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



Figure 119: Attaching the fixation plate to the backup drive (B)

- ▶ Attach the fixation plate on the left side of the backup drive.

### 12.2.5.2 Installing the backup drive

- ▶ Install the backup drive as described in section ["Installing the backup drive" on page 51](#).

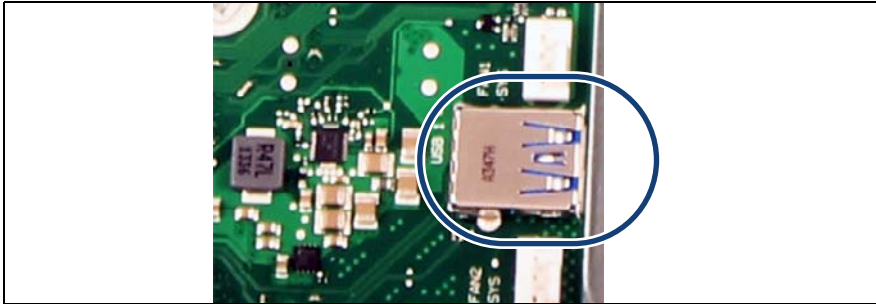


Figure 120: Connecting USB 3.0 cable to system board

- ▶ Connect the USB 3.0 cable to onboard USB3.0 connector "USB 1" on the system board.

### 12.2.6 Concluding steps

- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Verifying and configuring the backup software solution" on page 69](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)

## 12.3 Removing accessible drives



Upgrade and Repair Unit  
(URU)



Hardware: 10 minutes

**Tools:** tool-less

### 12.3.1 Preliminary steps

- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Removing backup and optical disk media" on page 64](#)
- ▶ ["Verifying and configuring the backup software solution" on page 65](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)

### 12.3.2 Removing an optical disk drive (ODD)

- ▶ Remove the optical disk drive as described in section ["Disconnecting the optical disk drive \(ODD\)" on page 43](#).

### 12.3.3 Removing a slimline optical disk drive (ODD)

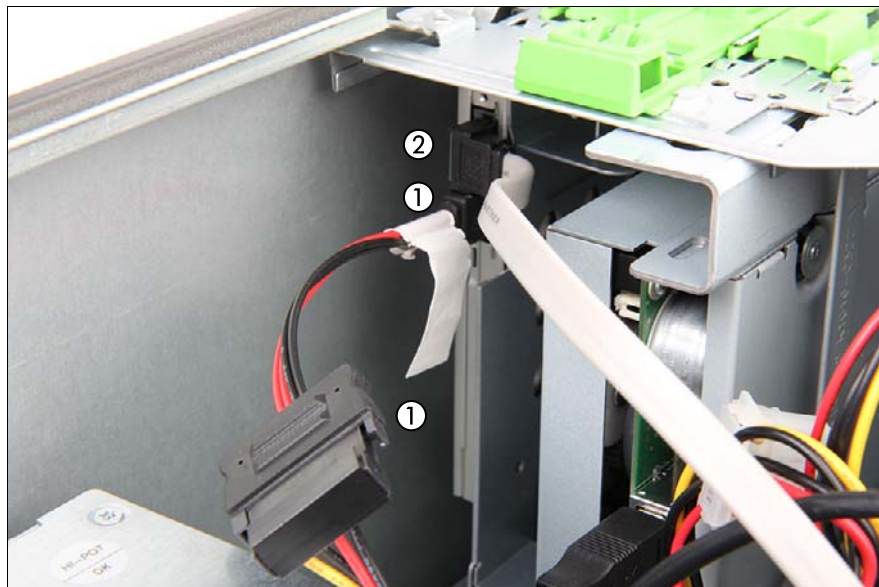


Figure 121: Disconnecting cables to the slimline drive

- ▶ Disconnect all cables from the slimline optical disk drive.
  - 1 Power adapter cable from the power cable connector P8 and the slimline drive.
  - 2 SATA cable



Figure 122: Removing the slide-in unit

- ▶ Press the locking latch in the direction of the arrow (1) and press out the slide-in unit from behind (2).
- ▶ Pull the slide-in unit out of its bay.

### 12.3.4 Removing a backup drive

- ▶ Remove the backup drive as described in section ["Disconnecting the backup drive" on page 44](#).

### 12.3.5 Installing the dummy drive



**CAUTION!**

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



Figure 123: Dummy drive for bay 2



Figure 124: Attaching the fixation plate to the dummy drive for bay 2





Figure 125: Installing the dummy drive in bay 2

- ▶ Insert the dummy drive in bay 2 and carefully push it in until it locks in place.



The dummy drive is a little harder to insert than an ODD and the bezel of the drive is touching the front panel.

### 12.3.6 Concluding steps

- ▶ Remove the fixation plates from the removed accessible drives.
- ▶ Secure the fixation plates on the chassis.
- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Verifying and configuring the backup software solution" on page 69](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)

## 12.4 Replacing accessible drives



Upgrade and Repair Unit  
(URU)



Hardware: 15 minutes

**Tools:** Phillips PH0 / (+) No. 0 screw driver

### 12.4.1 Preliminary steps

- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Removing backup and optical disk media" on page 64](#)
- ▶ ["Verifying and configuring the backup software solution" on page 65](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)

### 12.4.2 Replacing an optical disk drive (ODD)

- ▶ Remove the defective optical disk drive as described in section ["Removing an optical disk drive \(ODD\)" on page 173](#).



Figure 126: Removing the fixation plate

- ▶ Remove the fixation plate from of the left side of the optical disk drive.



Figure 127: Attaching the fixation plate to the optical disk drive

- ▶ Attach the fixation plate on the left side of the new optical disk drive.
- ▶ Install the new optical disk drive as described in section "[Installing an optical disk drive \(ODD\)](#)" on page 164.

### 12.4.3 Replacing a slimline optical disk drive (ODD)

- ▶ Remove the slide-in unit as described in section "[Removing a slimline optical disk drive \(ODD\)](#)" on page 174.

## Accessible drives

---



Figure 128: Removing the fixation plate from the slide-in unit

- ▶ Remove the fixation plate from the left side of the slide-in unit.



Figure 129: Removing the slimline ODD from the slide-in unit (A)

- ▶ Remove the three M2 x 2.5 mm screws from the left side of the slide-in unit.

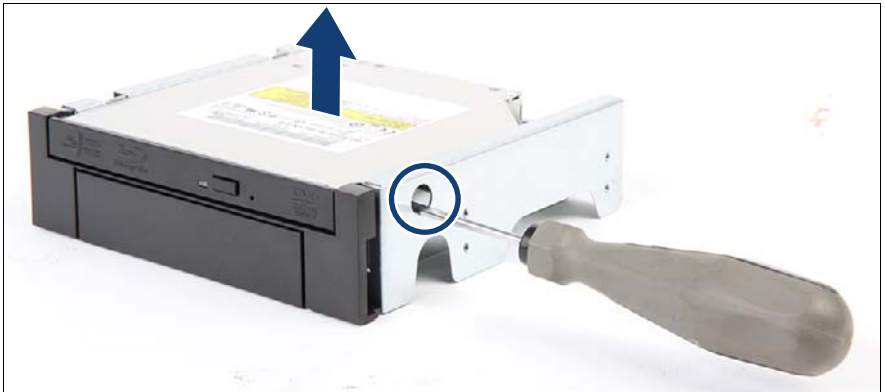


Figure 130: Removing the slimline ODD from the slide-in unit (B)

- ▶ Remove the M2 x 2.5 mm screw from the right side of the slide-in unit.
- ▶ Remove the slimline ODD drive from the slide-in unit.
- ▶ Install the new slimline ODD as described in section ["Installing a slimline optical disk drive \(ODD\)"](#) on page 167.

## 12.4.4 Replacing a backup drive

- ▶ Remove the defective backup drive as described in section ["Removing a backup drive"](#) on page 175.



Figure 131: Removing the fixation plate

- ▶ Remove the fixation plate from the left side of the backup drive.



Figure 132: Attaching the fixation plate to the backup drive

- ▶ Attach the fixation plate on the left side of the new backup drive.
- ▶ Install the new backup drive as described in section ["Installing a backup drive" on page 170](#).

### 12.4.5 Concluding steps

- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Verifying and configuring the backup software solution" on page 69](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)

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# 13 Front panel and front USB

## Safety notes



### CAUTION!

- For further safety information, please refer to chapter ["Important information"](#) on page 27.

## 13.1 Replacing the front panel cable



**Field Replaceable Unit (FRU)**



**Hardware: 15 minutes**

|   |
|---|
| <b>Tools:</b> Phillips PH2 / (+) No. 2 screw driver |
|---|

The On/Off button and the HDD activity LED are part of the front panel cable.

### 13.1.1 Preliminary steps

- ▶ ["Disabling BitLocker functionality"](#) on page 63
- ▶ ["Shutting down the server"](#) on page 40
- ▶ ["Disconnecting the server from the mains"](#) on page 41
- ▶ ["Removing the side cover"](#) on page 42
- ▶ Remove all accessible drives as described in section ["Removing accessible drives"](#) on page 43.
- ▶ ["Removing the front cover"](#) on page 46
- ▶ ["Removing the HDD cage"](#) on page 56

### 13.1.2 Removing the On/Off button and the HDD activity LED

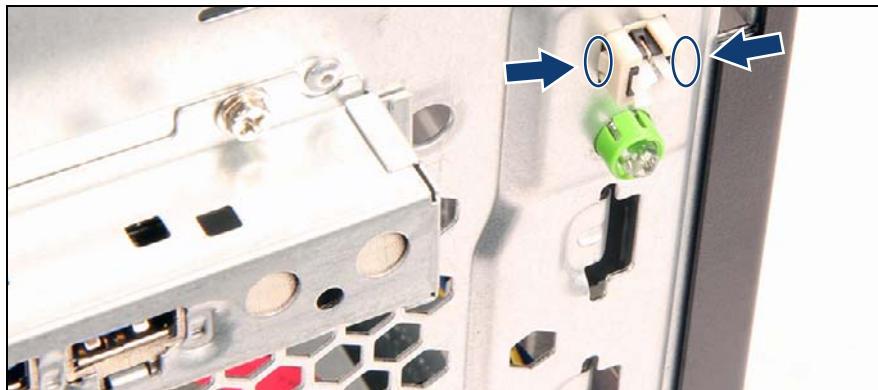


Figure 133: Removing the On/Off button

- ▶ Press the two retaining clips together and push the On/Off button backwards in the chassis.



Note the orientation of the On/Off button. If it is installed in the other direction, it does not work properly.

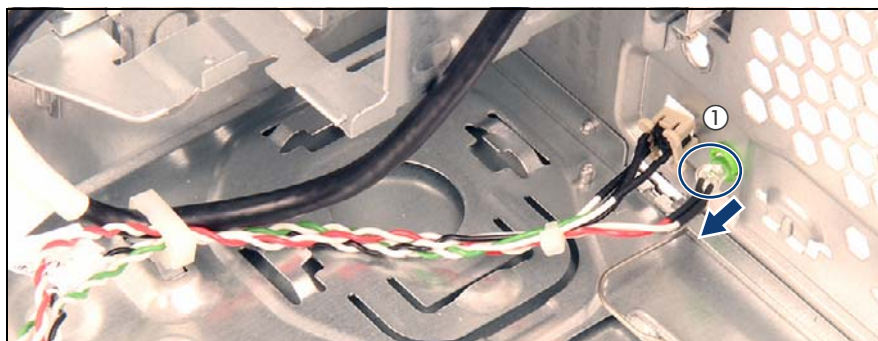


Figure 134: Removing the HDD activity LED

- ▶ Pull the LED inwards the chassis (1).



### 13.1.3 Removing the front panel cable

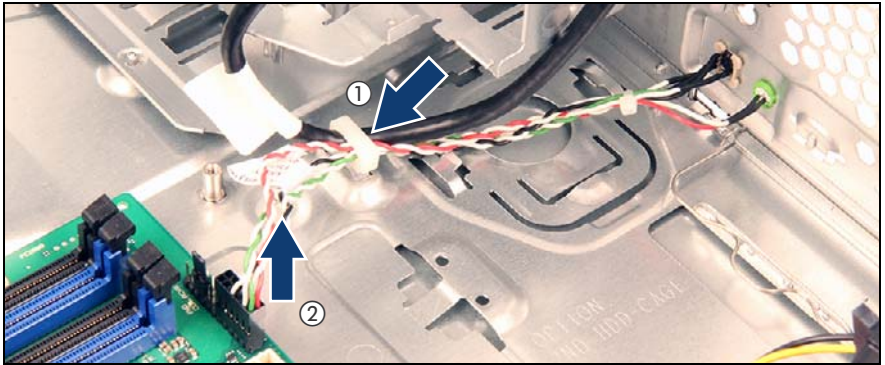


Figure 135: Disconnecting front panel cable

- ▶ Open the cable clamp and remove the front panel cable (1).
- ▶ Disconnect the front panel cable from system board connector "Front panel" (2).

### 13.1.4 Installing the front panel cable

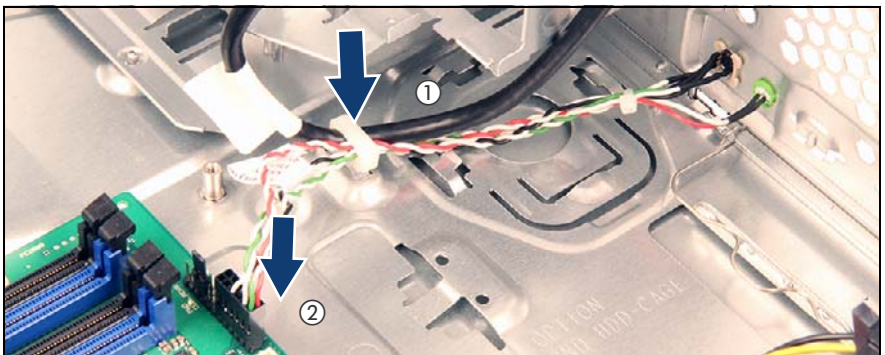


Figure 136: Connecting front panel cable

- ▶ Connect the front panel cable to system board connector "Front panel" (2).
- ▶ Route the cable as shown.
- ▶ Secure the cable with the cable clamp (1).

### 13.1.5 Installing the On/Off button and the HDD activity LED



Figure 137: Installing the On/Off button

- ▶ Insert the On/Off button in the direction shown until it snaps in place (1).  

|          |
|----------|
| <b>i</b> |
|----------|

 Take care of the orientation of the On/Off button. If it is installed in the other direction, it does not work properly.
- ▶ Insert the HDD activity LED in the direction shown until it snaps into place (2).

### 13.1.6 Concluding steps

- ▶ ["Installing the HDD cage" on page 59](#)
- ▶ ["Installing the front cover" on page 48](#)
- ▶ Install all removed accessible drives as described in section ["Installing accessible drives" on page 49](#).
- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)

## 13.2 Replacing the front USB module



**Field Replaceable Unit (FRU)**



**Hardware: 15 minutes**

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

### 13.2.1 Preliminary steps

- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)
- ▶ Remove all accessible drives as described in section ["Removing accessible drives" on page 43](#).
- ▶ ["Removing the front cover" on page 46](#)
- ▶ ["Removing the HDD cage" on page 56](#).

### 13.2.2 Removing the defective front USB module

- ▶ Disconnect the front USB cable from the system board.

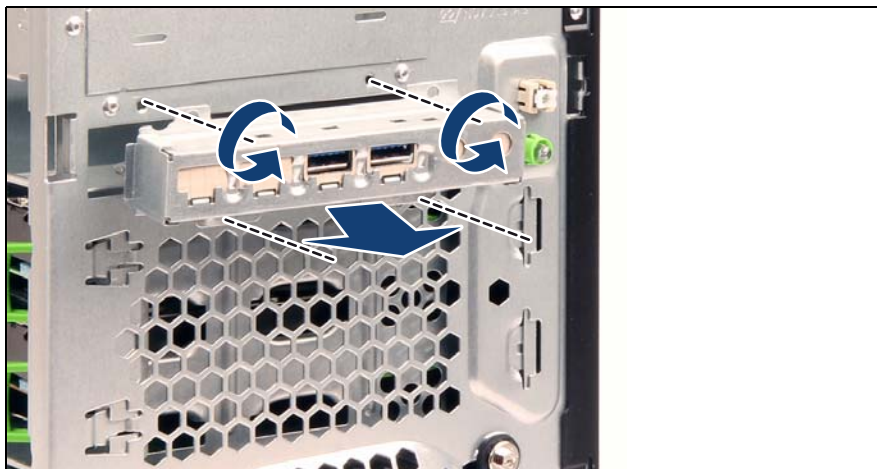


Figure 138: Removing the front USB module

- ▶ Remove the four screws of the front USB module
- ▶ Remove the front USB module.

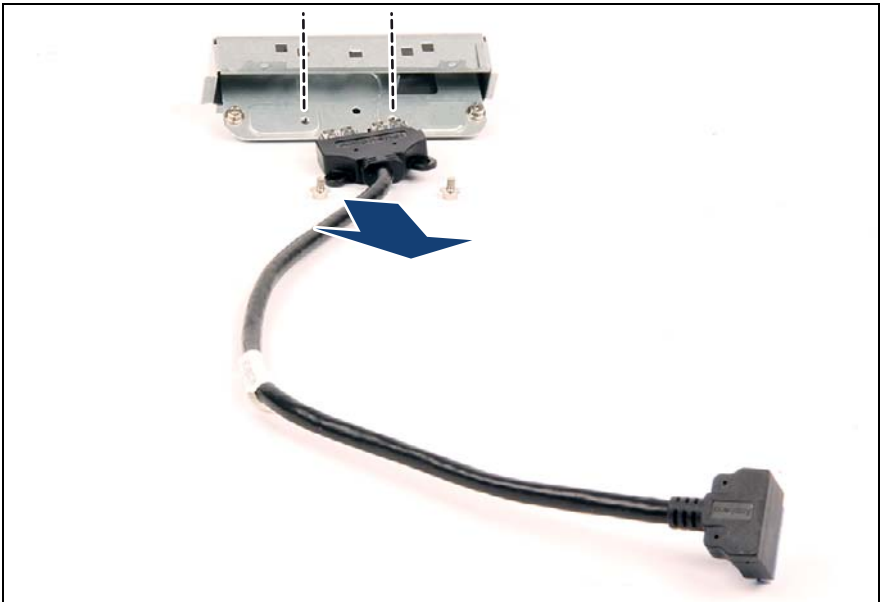


Figure 139: Removing the front USB cable from the carrier (A)

- ▶ Remove the two screws of the USB cable from the carrier.

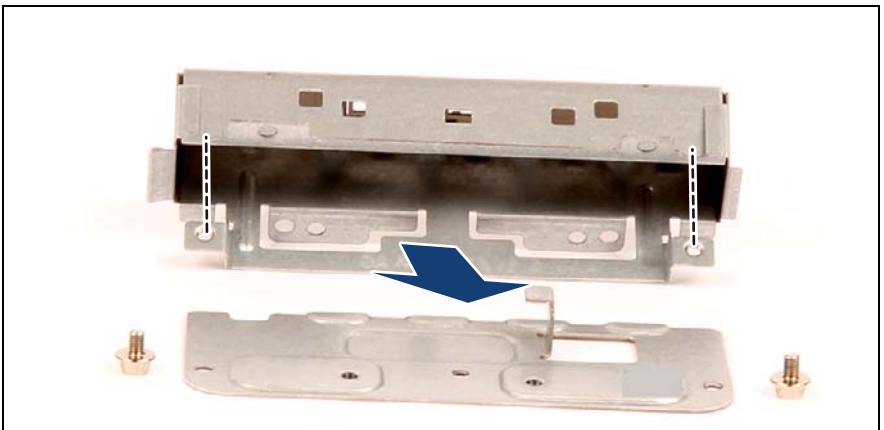


Figure 140: Removing the plate from the carrier (B)

- ▶ Remove the two screws and pull the plate out of the carrier.

### 13.2.3 Installing the new front USB module

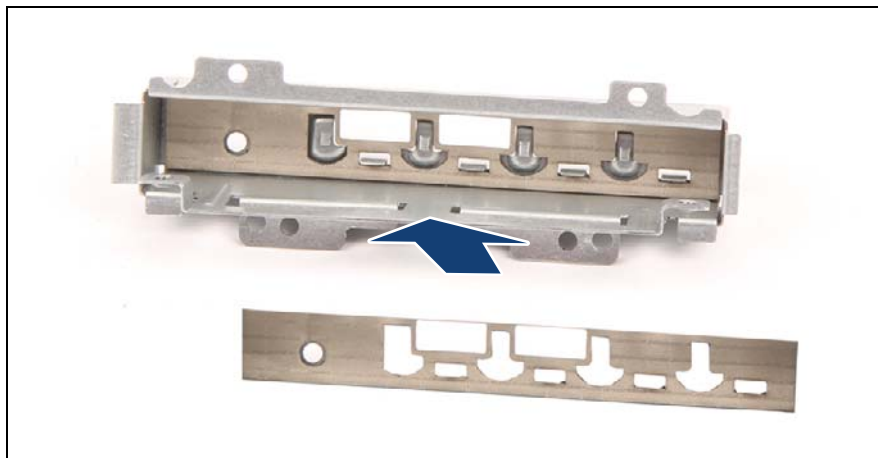


Figure 141: Installing the gasket in the carrier

- ▶ If applicable, insert the gasket in the carrier.



Take care that the gasket fits with the recesses of the carrier.

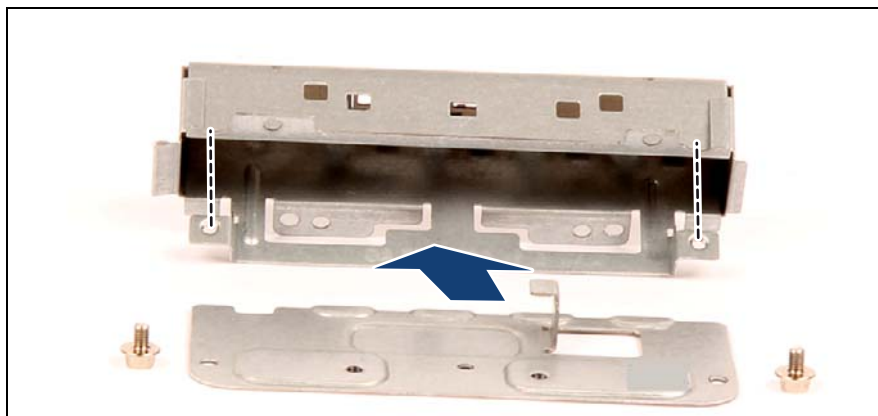


Figure 142: Installing the plate into the carrier (A)

- ▶ Push the plate in the carrier.

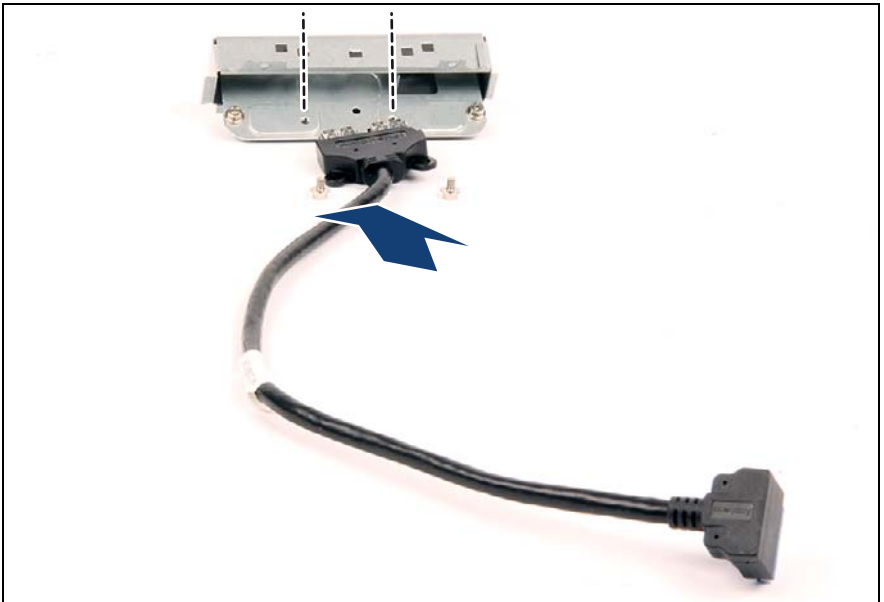


Figure 143: Installing the front USB cable into the carrier (B)

- ▶ Secure the new front USB cable with two screws.

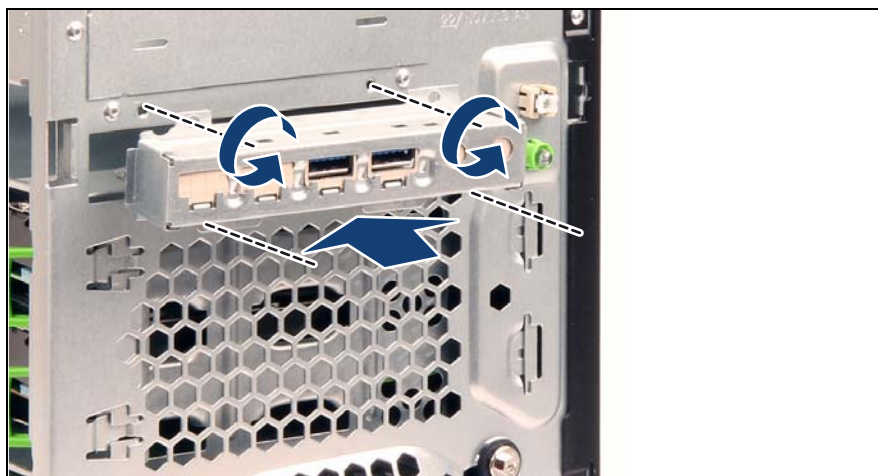


Figure 144: Installing the front USB module

- ▶ Place the new front USB module in the direction shown and secure it with four screws (see circles).
- ▶ Connect the front USB cable to the front USB connector on the system board.

### 13.2.4 Concluding steps

- ▶ ["Installing the HDD cage" on page 59](#)
- ▶ ["Installing the front cover" on page 48](#)
- ▶ Install all removed accessible drives as described in section ["Installing accessible drives" on page 49](#).
- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)



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# 14 System board and components

## Safety notes



### CAUTION!

- Devices and components inside the server remain hot after shutdown. After shutting down the server, wait for hot components to cool down before installing or removing internal options.
- Circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. Always discharge static build-up (e.g. by touching a grounded object) before handling electrostatic-sensitive devices (ESDs).
- Do not touch the circuitry on boards or soldered parts. Hold circuit boards by their metallic areas or edges.
- For further safety information, please refer to chapter ["Important information"](#) on page 27.

## 14.1 Basic information

This section provides instructions for the system board and the following components:

- CMOS memory (volatile BIOS memory) and the real-time clock are powered by a lithium coin cell (CMOS battery). This cell lasts up to ten years, depending on ambient temperature and use.

If the CMOS battery is depleted or falls below minimum voltage levels, it need to be replaced immediately.

- TPM (Trusted Platform Module)

The system board is optionally equipped with a Trusted Platform Module (TPM). This module enables programs from third party manufacturers to store key information, for example drive encryption using Windows Bitlocker Drive Encryption.

# 14.2 Replacing the CMOS battery



Upgrade and Repair Unit  
(URU)



Hardware: 15 minutes

**Tools:** Phillips PH2 / (+) No. 2 screw driver; recommended: tooth pick

### Safety notes



#### CAUTION!

- The CMOS battery must be replaced with an identical battery or with a battery type recommended by the manufacturer.
- Keep lithium batteries away from children.
- Do not throw batteries into the trash can. Lithium batteries must be disposed of in accordance with local regulations concerning special waste.
- For further safety information, please refer to section "Environmental protection" in the corresponding operating manual.
- **Ensure to insert the CMOS battery the with the positive pole facing up!**

### 14.2.1 Preliminary steps

- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)
- ▶ Remove all accessible drives as described in section ["Removing accessible drives" on page 43](#).
- ▶ ["Removing the front cover" on page 46](#)
- ▶ ["Removing the HDD cage" on page 56](#)

## 14.2.2 Replacing the defective CMOS battery

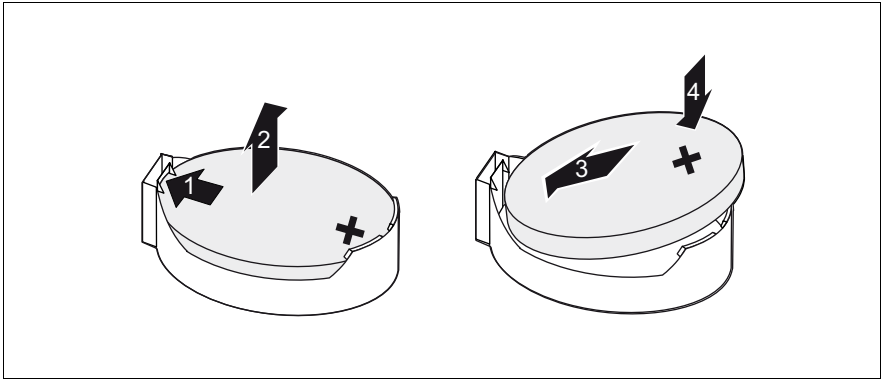


Figure 145: Replacing the CMOS battery

- ▶ Press the locking spring into direction of the arrow (1), so that the CMOS battery jumps out of its socket.
- ▶ Remove the CMOS battery (2).



### CAUTION!

Sharp tools such as screw drivers might damage system board components in case of slipping.

If the CMOS battery cannot be ejected without the help of a tool, it is recommended to use a tooth pick.

- ▶ Insert a new CMOS battery of the same type into the socket (3) and (4).

## 14.2.3 Concluding steps

- ▶ Dispose of the CMOS battery in accordance with local regulations concerning special waste.
- ▶ ["Installing the HDD cage" on page 59](#)
- ▶ ["Installing the front cover" on page 48](#)
- ▶ Install all removed accessible drives as described in section ["Installing accessible drives" on page 49](#).
- ▶ ["Installing the side cover" on page 53](#)

- ▶ ["Connecting the server to the mains"](#) on page 54
- ▶ ["Switching on the server"](#) on page 55
- ▶ ["Verifying the system time settings"](#) on page 72
- ▶ If applicable, restore the BIOS settings manually.

## 14.3 Trusted Platform Module (TPM)

### 14.3.1 Installing the TPM



**Field Replaceable Unit (FRU)**



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

|   |
|---|
| <p><b>Tools:</b></p> <ul style="list-style-type: none"><li>– Bit screw driver</li><li>– TPM bit insert (*)</li></ul> <p>(*) For the Japanese market:</p> <ul style="list-style-type: none"><li>– TPM module fixing tool (S26361-F3552-L909)</li></ul> |
|---|

#### 14.3.1.1 Preliminary steps

- ▶ ["Shutting down the server"](#) on page 40
- ▶ ["Disconnecting the server from the mains"](#) on page 41
- ▶ ["Removing the side cover"](#) on page 42

14.3.1.2 Installing the TPM

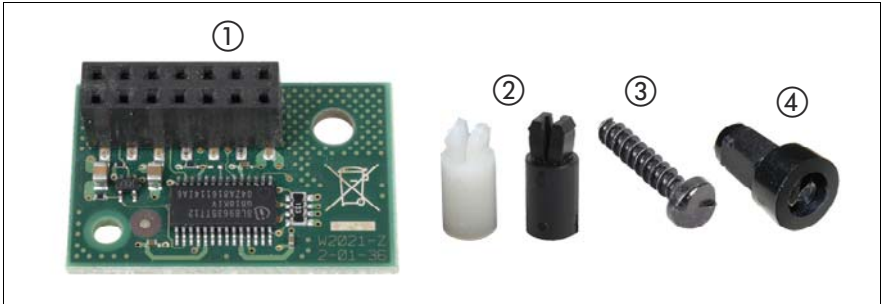


Figure 146: TPM installation kit

|   |   |   |                                      |
|---|---|---|--------------------------------------|
| 1 | TPM (Trusted Platform Module)   | 3 | Special screw for TPM                |
| 2 | TPM spacer<br><div style="border: 1px solid black; padding: 2px; display: inline-block;"> <p><b>i</b> The black TPM spacer is not used in this server.</p> </div> | 4 | TPM bit insert for TPM special screw |

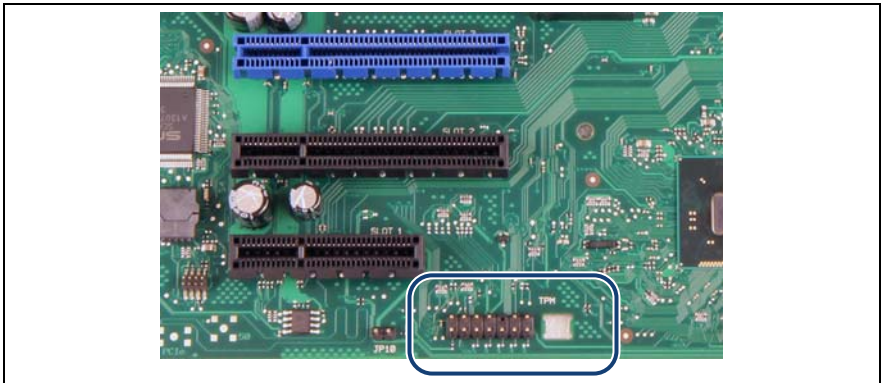


Figure 147: TPM mounting location

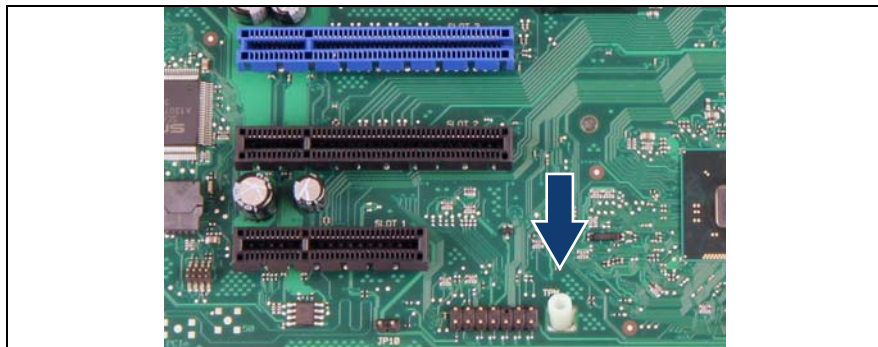


Figure 148: Installing the TPM spacer

- ▶ Snap the TPM spacer into the cut-out in the system board.



Figure 149: TPM bit insert

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

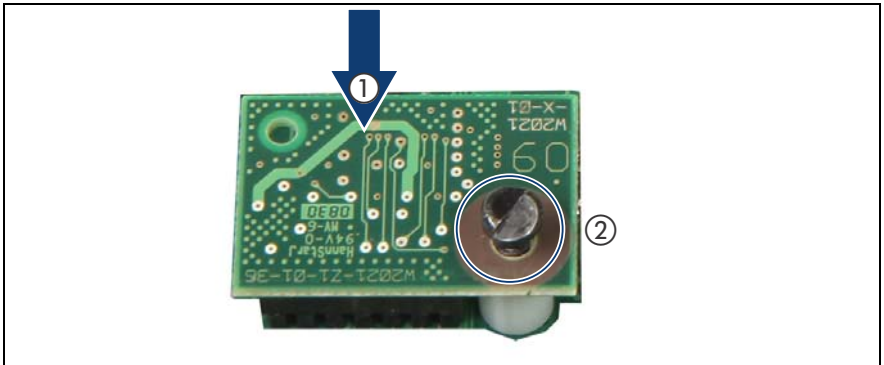


Figure 150: Installing the TPM

- ▶ Connect the TPM to the system board (1).
- ▶ Fasten the TPM with the special screw for the TPM using the TPM bit insert or TPM module fixing tool (Japanese market) (2).



#### CAUTION!

Do not fasten the screw too firmly. Stop it by extent where the head of the screw lightly touches the TPM (torque value of 0.6 Nm).

#### 14.3.1.3 Concluding steps

- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ Enable TPM in the system board BIOS. Proceed as follows:
  - ▶ Switch on or restart your server.
  - ▶ As soon as the startup screen appears, press the **[F2]** function key to enter the BIOS.
  - ▶ Select the *Advanced* menu.
  - ▶ Select the *Trusted Computing* submenu.
  - ▶ Set the *TPM Support* and *TPM State* settings to *Enabled*.
  - ▶ Under *Pending TPM operation*, select the desired TPM operation mode.
  - ▶ Save your changes and exit the BIOS.



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

- ▶ ["Connecting the server to the mains" on page 54](#)

### 14.3.2 Removing the TPM



**Field Replaceable Unit (FRU)**



**Hardware: 30 minutes**

**Tools:** Removing the system board:

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

Removing the TPM:

- Bit screw driver
- Flat nose pliers
- TPM bit insert (\*)

(\*) For the Japanese market:

- TPM module fixing tool (S26361-F3552-L909)



#### **CAUTION!**

Advise your contact persons that they must provide you with TPM backup copies. For security reasons, the TPM must be restored/re-saved by the customer. After installing a new system board, the TPM must be enabled. You may not clear the TPM data.

If the contact persons **DO NOT** have a backup copy available, inform them that replacing the TPM will cause to lose all data.

#### 14.3.2.1 Preliminary steps

- ▶ Before removing the TPM, it is necessary to remove BitLocker-protection from the computer and to decrypt the volume.

Ask the system administrator to turn off BitLocker-protection using the BitLocker setup wizard available either from the Control Panel or Windows Explorer:



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



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

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



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

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

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

- ▶ Disable TPM in the system board BIOS. Proceed as follows:
  - ▶ Switch on or restart your server.
  - ▶ As soon as the startup screen appears, press the **[F2]** function key to enter the BIOS.
  - ▶ Select the *Advanced* menu.
  - ▶ Select the *Trusted Computing* submenu.
  - ▶ Set the *TPM Support* and *TPM State* settings to *Disabled*.
  - ▶ Save your changes and exit the BIOS.



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

- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)
- ▶ Remove all accessible drives as described in section ["Removing accessible drives" on page 43](#).
- ▶ ["Removing the front cover" on page 46](#)
- ▶ ["Removing the HDD cage" on page 56](#)

### 14.3.2.2 Removing the TPM

- ▶ Remove the system board as described in section ["Removing the defective system board" on page 208](#).
- ▶ Lay the system board on a soft, antistatic surface with its component side facing down.

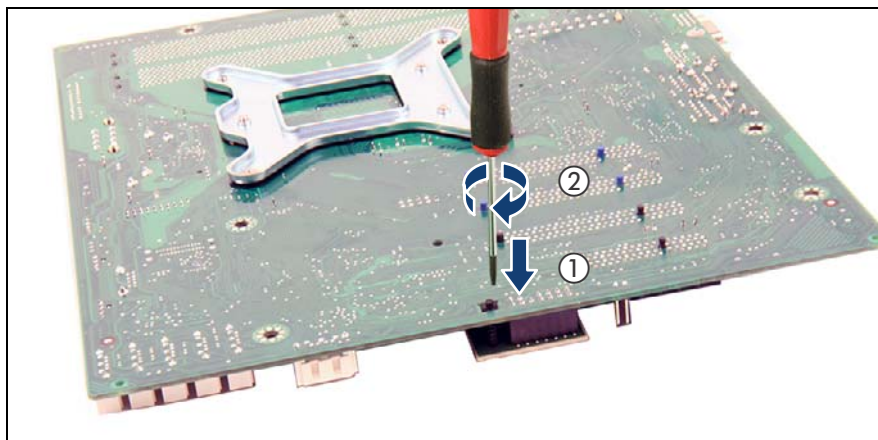


Figure 151: Removing the TPM

- ▶ Locate the slotted lower end of the TPM screw (1).
- ▶ Carefully loosen the TPM screw using a thin slotted screw driver (e.g. watchmaker's screw driver) or the dedicated TPM screw driver (Japanese market) (2).



#### **CAUTION!**

Ensure to turn the screw **clockwise** in order to remove it!

Slowly and carefully increase the pressure on the screw until it begins to turn. The effort when loosening the screw should be as low as possible.

Otherwise the thin metal bar may break, rendering it impossible to loosen the screw.

- ▶ Remove the TPM screw.
- ▶ Remove the defective TPM on the upper side of the system board.

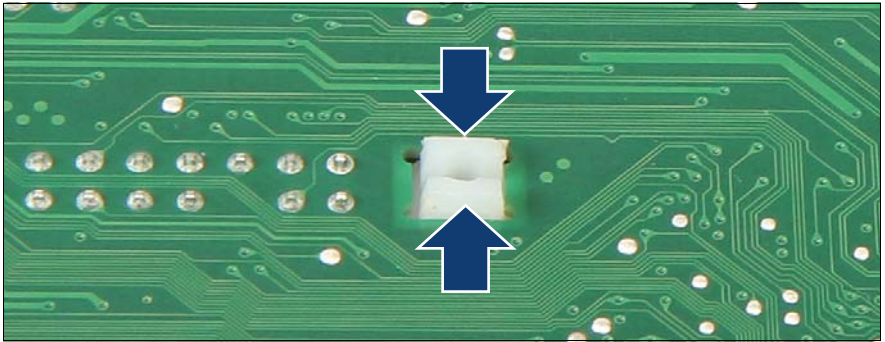


Figure 152: Removing the TPM spacer

- ▶ Using a flat nose pliers, press together the hooks on the TPM spacer and remove it from the system board.



If the TPM is to be replaced, the TPM spacer may remain on the system board.

- ▶ Install the system board as described in section ["Installing the new system board"](#) on page 212.

### 14.3.2.3 Concluding steps

- ▶ ["Installing the HDD cage"](#) on page 59
- ▶ ["Installing the front cover"](#) on page 48
- ▶ Install all removed accessible drives as described in section ["Installing accessible drives"](#) on page 49.
- ▶ ["Installing the side cover"](#) on page 53
- ▶ ["Connecting the server to the mains"](#) on page 54
- ▶ ["Switching on the server"](#) on page 55

### 14.3.3 Replacing the TPM



**Field Replaceable Unit (FRU)**



**Hardware: 40 minutes**

**Tools:** Removing the system board:

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

Replacing the TPM:

- Bit screw driver
- TPM bit insert (\*)
- thin slotted screw driver (2 x 0.4 mm) (\*)

(\*) For the Japanese market:

- Dedicated TPM screw driver (CWZ8291A)
- TPM module fixing tool (S26361-F3552-L909)



#### **CAUTION!**

Advise your contact persons that they must provide you with TPM backup copies. For security reasons, the TPM must be restored/re-saved by the customer. After installing a new system board, the TPM must be enabled. You may not clear the TPM data.

If the contact persons **DO NOT** have a backup copy available, inform them that replacing the TPM will cause to lose all data.

#### **14.3.3.1 Preliminary steps**

- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ ["Removing the side cover" on page 42](#)
- ▶ Remove all accessible drives as described in section ["Removing accessible drives" on page 43](#).
- ▶ ["Removing the front cover" on page 46](#)
- ▶ ["Removing the HDD cage" on page 56](#)

### 14.3.3.2 Removing the defective TPM

- ▶ Remove the TPM as described in section ["Removing the TPM" on page 200](#).
- ▶ Leave the TPM spacer on the system board when removing the defective TPM.

### 14.3.3.3 Installing the new TPM



The TPM spacer is already present on the system board.

- ▶ Install the new TPM as described in section ["Installing the TPM" on page 196](#).

### 14.3.3.4 Concluding steps

- ▶ ["Installing the HDD cage" on page 59](#)
- ▶ ["Installing the front cover" on page 48](#)
- ▶ Install all removed accessible drives as described in section ["Installing accessible drives" on page 49](#).
- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ ["Switching on the server" on page 55](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)

### 14.4 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 processor socket springs (recommended)

Replacing the TPM:

- Bit screw driver
- TPM bit insert (\*)
- Flat nose pliers
- thin slotted screw driver (2 x 0.4 mm) (\*)

(\*) For the Japanese market:

- Dedicated TPM screw driver (CWZ8291A)
- TPM module fixing tool (S26361-F3552-L909)

If an UFM is installed:

- Phillips PH1 / (+) No. 1 screw driver

#### Note on TPM



The system board can be equipped with an optional TPM (Trusted Platform Module). This module enables third party programs to store key information (e. g. drive encryption using Windows Bitlocker Drive Encryption).

If the customer is using TPM functionality, the TPM has to be removed from the defective system board and connected to the new system board. For a detailed description, please refer to section ["Replacing the TPM" on page 204](#).

The TPM is activated in the system BIOS.



### CAUTION!

- Before replacing the system board, ask the customer whether TPM functionality is used.
- If the customer is using TPM functionality, remove the TPM from the old system board and install it on the new system board.

Advise your contact persons that they must provide you with TPM backup copies. For security reasons, the TPM must be restored / re-saved by the customer. After installing a new system board the TPM must be enabled. You may not clear the TPM data.

If the contact persons **DO NOT** have a backup copy available, inform them that replacing the TPM will cause to lose all data.

### Note on network settings recovery



When replacing network controllers or the system board, network configuration settings in the operating system will be lost and replaced by default values. This applies to all static IP address and LAN teaming configurations.

Ensure to note down your current network settings before replacing a network controller or the system board.

## 14.4.1 Preliminary steps

- ▶ If applicable, backup the BIOS settings manually.
- ▶ ["Disabling BitLocker functionality" on page 63](#)
- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ Disconnect all external cables.
- ▶ ["Removing the side cover" on page 42](#)
- ▶ Remove all accessible drives as described in section ["Removing accessible drives" on page 43](#).
- ▶ ["Removing the front cover" on page 46](#)
- ▶ ["Removing the HDD cage" on page 56](#)

- ▶ Remove all memory modules, see section "[Removing memory modules](#)" on [page 138](#).

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

- ▶ Remove the heat sink, see section "[Removing the heat sink](#)" on [page 143](#).

- ▶ Remove all expansion cards, see section "[Removing expansion cards](#)" on [page 127](#).

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

### 14.4.2 Removing the defective system board

- ▶ Disconnect all cables from the system board.

**i** When disconnecting the SATA cables push the edge of the system board with the finger to avoid bending up the system board (see [figure 42 on page 94](#)).



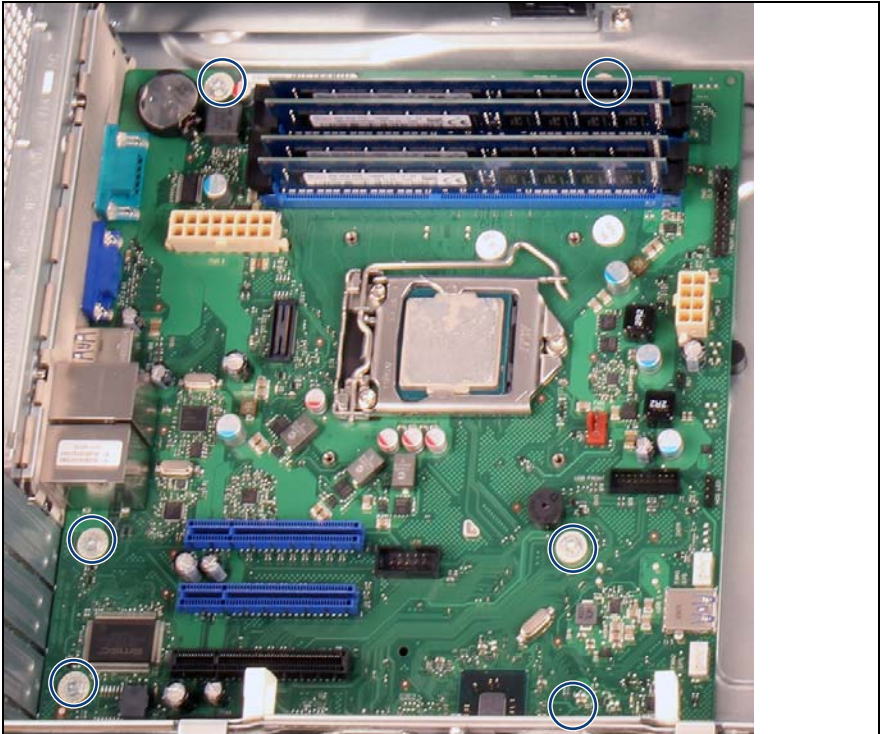


Figure 153: Detaching the system board (A)

- ▶ Remove six screws from the system board (see circles).

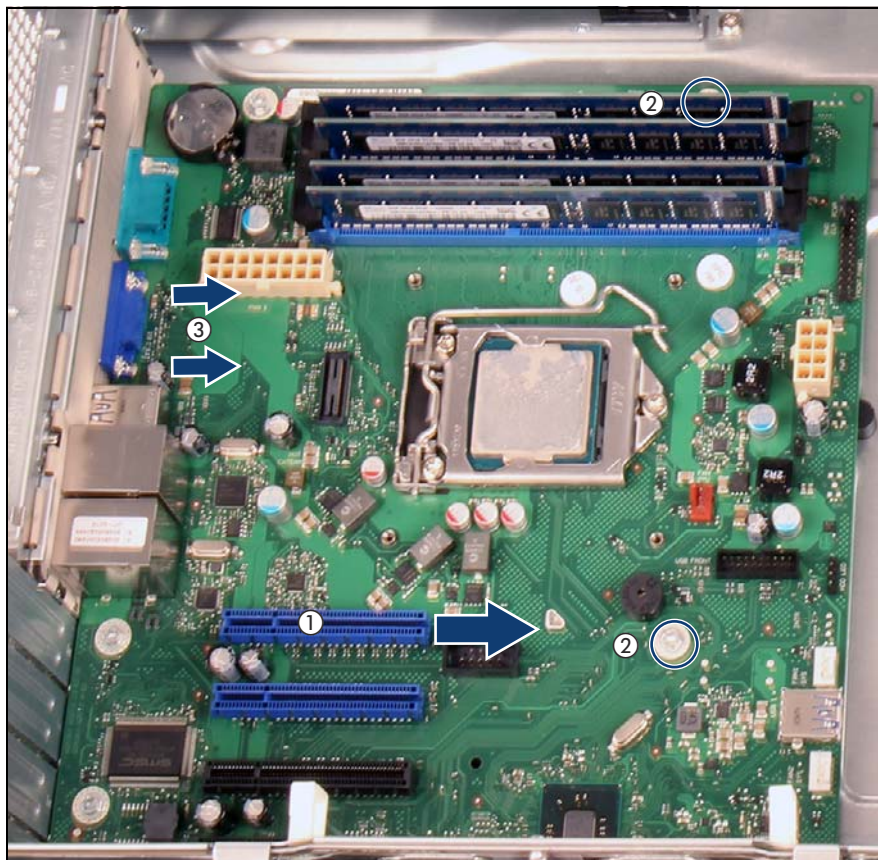


Figure 154: Detaching the system board (B)

- ▶ Slightly lift up the system board by the memory module ejectors and a PCI slot (1) in order to detach it from the centering bolts (2).
- ▶ Carefully shift the system board towards the server front until the plug shells disengage from the cut-outs in the connector panel (3).

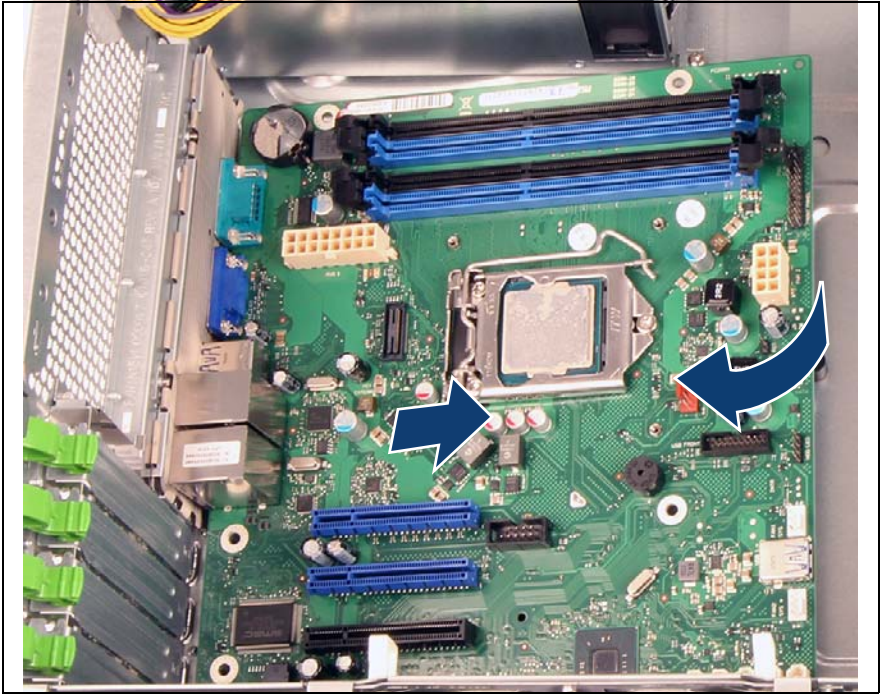


Figure 155: Removing the system board

- ▶ Hold the system board by the memory module ejectors and a PCI slot and at a slight angle lift it out of the chassis.
- ▶ If applicable, remove the TPM as described in section "[Removing the TPM](#)" on page 202.



### 14.4.3 Installing the new system board

#### 14.4.3.1 Mounting the system board

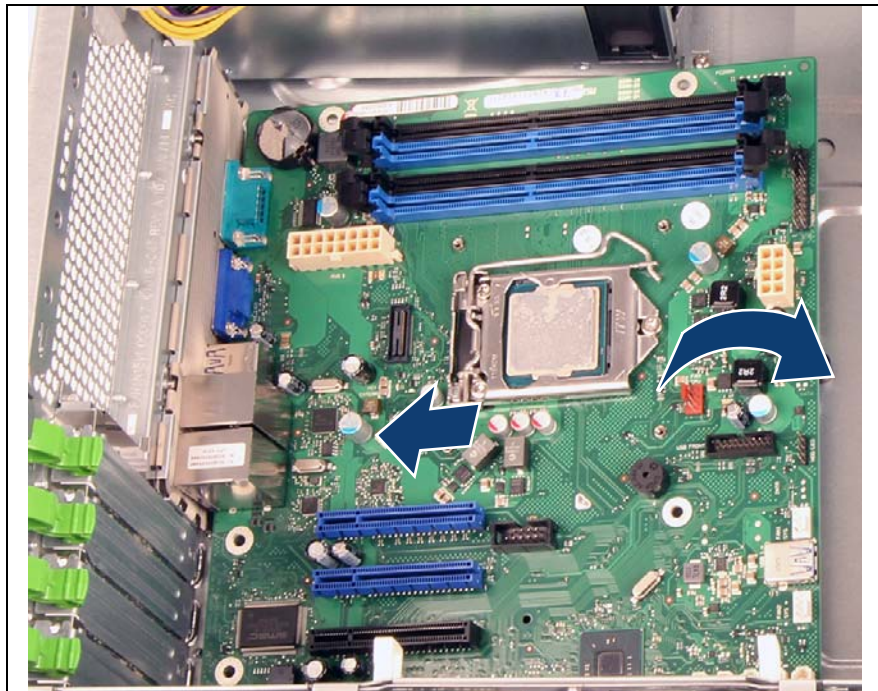


Figure 156: Installing the system board (A)

- ▶ Hold the new system board by the memory module ejectors and a PCI slot.



#### **CAUTION!**

- Do not lift or handle the system board by any of its heat sinks!
  - Ensure not to damage the EMI springs to comply with applicable EMC regulations and satisfy cooling requirements and fire protection measures.
- ▶ At a slight angle, lower the system board into the chassis.

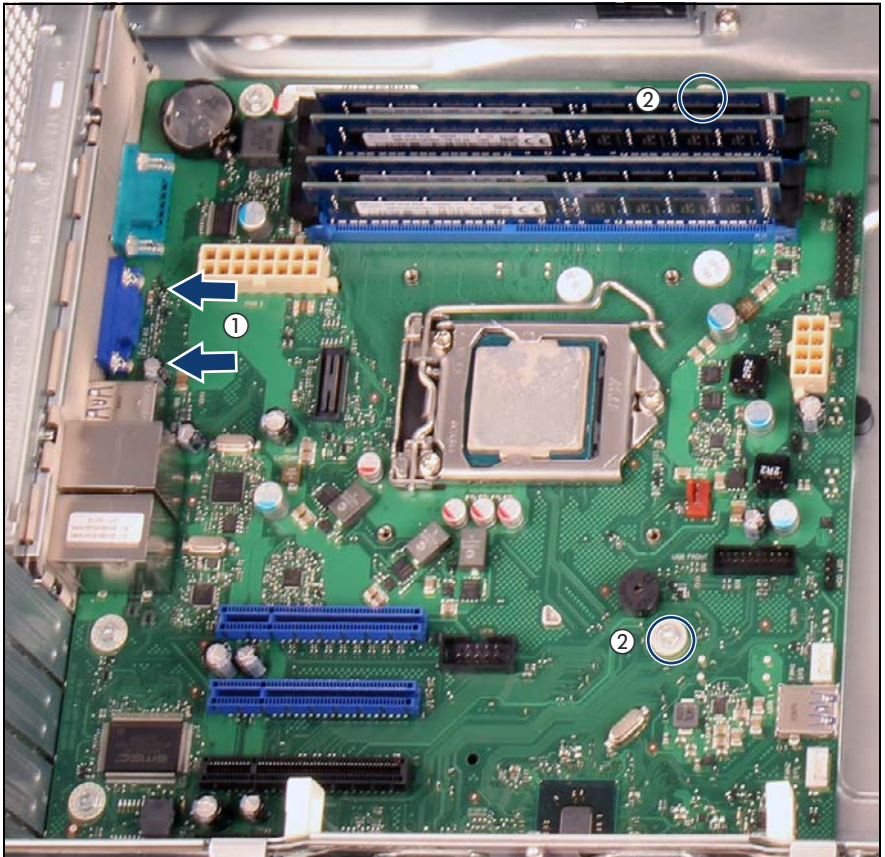


Figure 157: Installing the system board (B)

- ▶ Carefully shift the system board towards the server rear until the plug shells engage with the cut-outs in the connector panel (1).
- ▶ Lower the system board onto the centering bolts (2). Ensure that the system board is properly seated on both centering bolts.

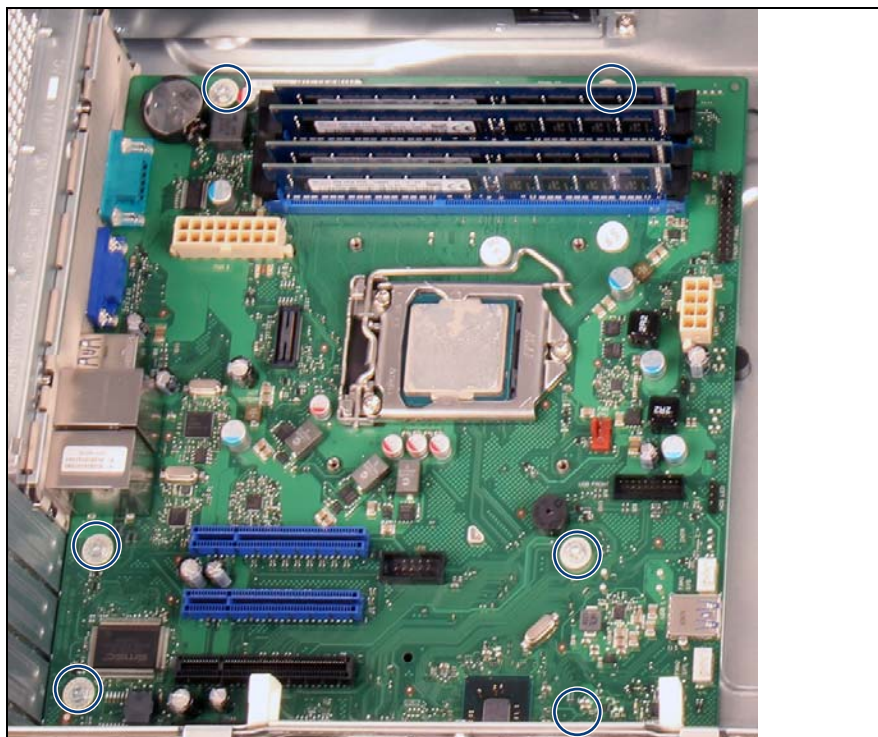


Figure 158: Securing the system board

- ▶ Secure the system board with six screws (see circles).



Screw torque: 0.6 Nm (not applicable for the Japanese market)  
Tighten the screws in a cross diagonal pattern.

### 14.4.3.2 Swapping the processor



#### CAUTION!

Be careful not to touch or bend the pins on the processor socket!



Save the socket cover for future use. Always replace the socket cover if you remove the processor from the socket.

- ▶ Carefully remove the processor from its socket on the defective system board as described in section ["Removing processor" on page 145](#).
- ▶ Install the processor on the new system board as described in section ["Installing a processor" on page 150](#).

### 14.4.4 Concluding steps

- ▶ Reconnect all cables to the system board. For a complete cabling overview, please refer to section ["Cabling plans" on page 218](#).
- ▶ ["Installing the TPM" on page 196](#) (if applicable)
- ▶ Install all memory modules, see section ["Installing a memory module" on page 136](#).



Make sure that you reinstall each memory module in the slot it was located before the replacement.

- ▶ Install the heat sink, see section ["Installing the heat sink" on page 156](#).
- ▶ Install all expansion cards see section ["Expansion cards" on page 123](#).



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

- ▶ ["Installing the HDD cage" on page 59](#)
- ▶ ["Installing the front cover" on page 48](#)
- ▶ Install all removed accessible drives as described in section ["Installing accessible drives" on page 49](#).
- ▶ ["Installing the side cover" on page 53](#)
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ Connect all external cables.
- ▶ ["Updating or recovering the system board BIOS" on page 68](#)

## System board and components

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- ▶ Restore the BIOS settings manually.
- ▶ If applicable, activate TPM functionality in the system BIOS under *Security > TPM (Security Chip) Setting > Security Chip*. For more information, refer to the corresponding BIOS Setup Utility reference manual.
- ▶ ["Verifying the system time settings" on page 72](#)
- ▶ ["Looking up changed MAC / WWN addresses" on page 76](#)
- ▶ ["Updating the NIC configuration file in a Linux environment" on page 73](#)
- ▶ ["Enabling BitLocker functionality" on page 74](#)
- ▶ If applicable, reconfigure your network settings in the operation system according to the original configuration of the replaced controller (expansion card or onboard).



Configuration of network settings should be performed by the customer.

For further information, please refer to section ["Note on network settings recovery" on page 207](#).

- ▶ ["Using the Chassis ID Prom Tool" on page 76](#)
- ▶ If applicable, restore LAN teaming configurations as described in section ["After replacing the system board" on page 78](#).



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# 15 Cables

## 15.1 Overview cables

| No. | Part number       | Description                           | From - to   |
|-----|-------------------|---------------------------------------|---|
| C1  | Component of PSU  | CBL_Power_16                          | from On/Off button and HDD access LED to system board |
| C2  | T26139-Y4012-V101 | SATA power 5HDD cable                 | from all drives to system board                       |
| C3  | T26139-Y3942-V1   | Power adapter SATA to 2x PATA (4pins) | from power cable to backup drive                      |
| C4  | T26139-Y3990-V201 | LTG PWR SATA SL                       | power adapter cable for slimline drive                |
|     |                   |                                       |   |
| C10 | T26139-Y4001-V211 | CBL_Frontpanel_LED                    | from Front panel to LED                               |
|     |                   |                                       |   |
| C12 | T26139-Y3999-V501 | CBL_Front_USB                         | from system board to USB front connectors             |
|     |                   |                                       |   |
| C20 | T26139-Y4028-V101 | SATA data ODD cable                   | from optical disk drive to system board               |
| C21 | T26139-Y4028-V152 | SATA data HDD 3.5-inch cable (red)    | from HDD 1/2 to system board                          |
| C22 | T26139-Y3958-V107 | SATA data HDD 3.5-inch cable (grey)   | from HDD 3/4 to system board                          |
|     |                   |                                       |   |
| C26 | T26139-Y4039-A80  | USB 3.0 cable                         | USB 3.0 to backup drive RDX                           |
|     |                   |                                       |   |

## 15.2 Cabling plans

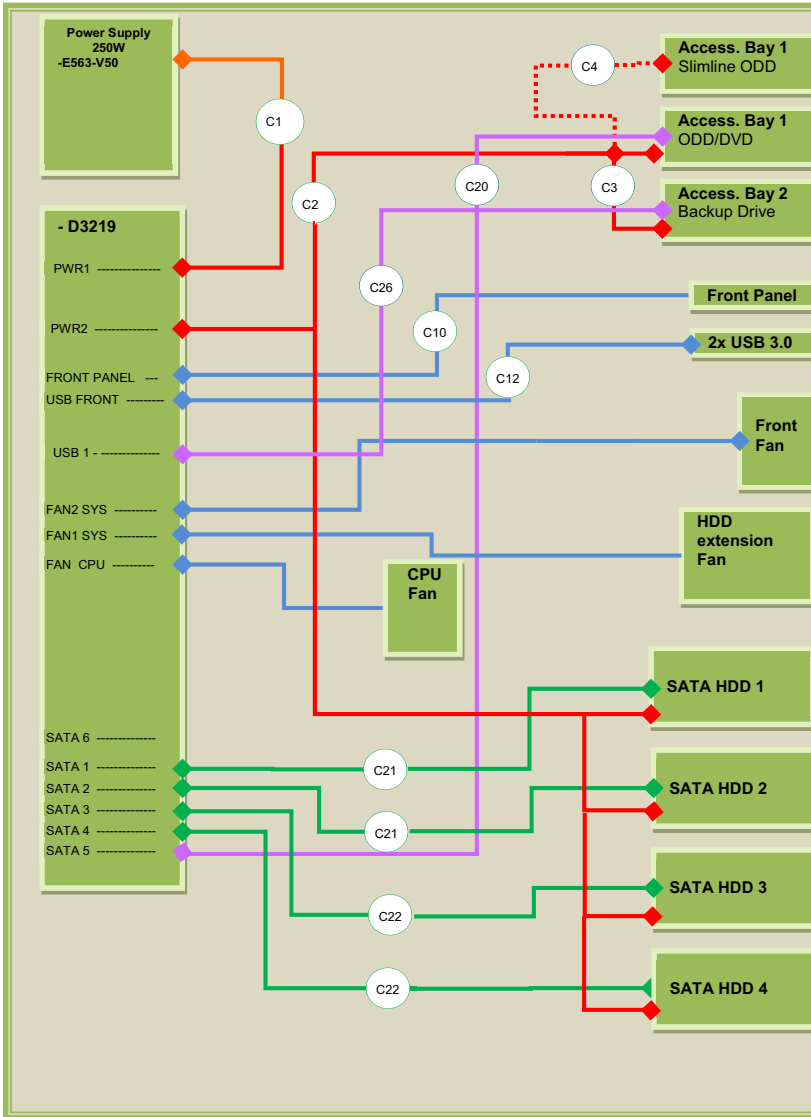


Figure 159: Power distribution for system board

## 15.3 Storing not used SATA cables

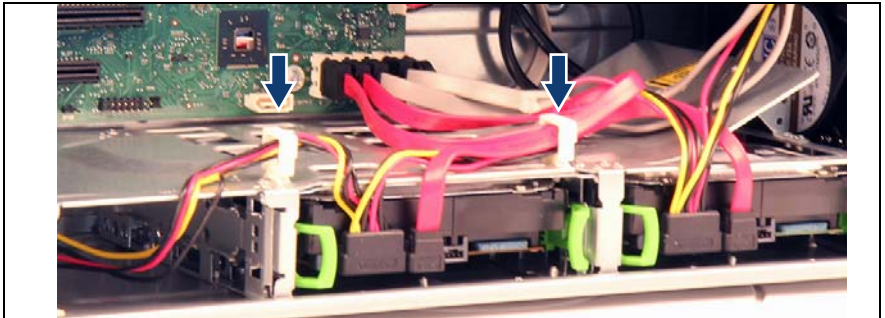


Figure 160: Securing not used SATA cables

**i** If only two hard disk drives are installed, secure the unused SATA cables in the cable clamps as shown in the figure.



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# 16 Appendix

## 16.1 Mechanical overview

### 16.1.1 Server front



Figure 161: Front side

| Pos. | Component             |
|------|-----------------------|
| 1    | Optical disk drive    |
| 2    | Slot for backup drive |
| 3    | On/Off button         |
| 4    | Front USB connectors  |

### 16.1.2 Server rear

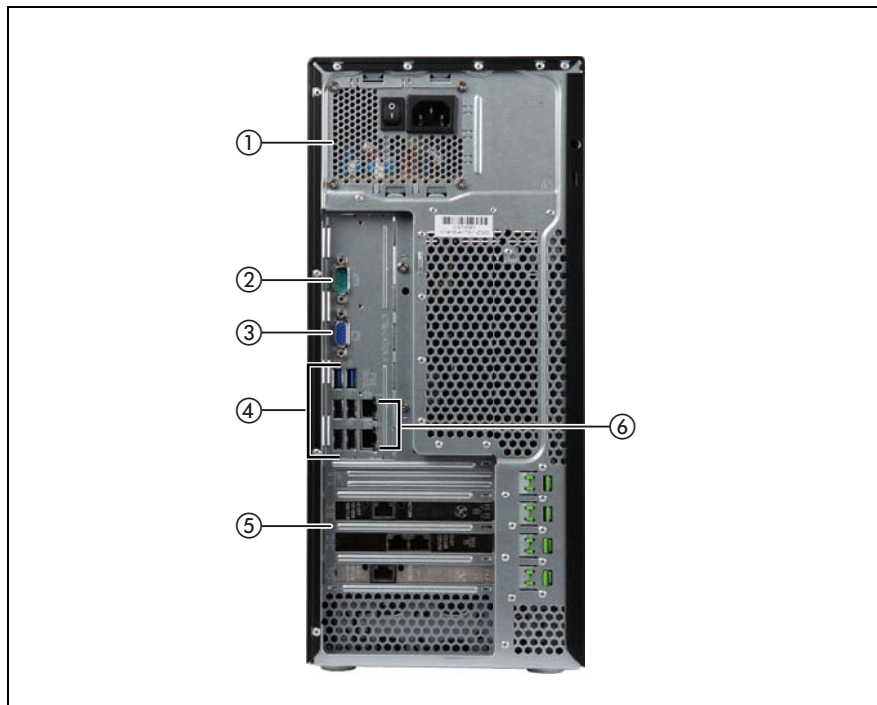


Figure 162: Rear side with power supply unit

| Pos. | Component                  |
|------|----------------------------|
| 1    | Standard power supply unit |
| 2    | Serial connector           |
| 3    | VGA video connector        |
| 4    | USB connectors (x 6)       |
| 5    | Optional expansion cards   |
| 6    | Standard LAN connectors    |

### 16.1.3 Server interior

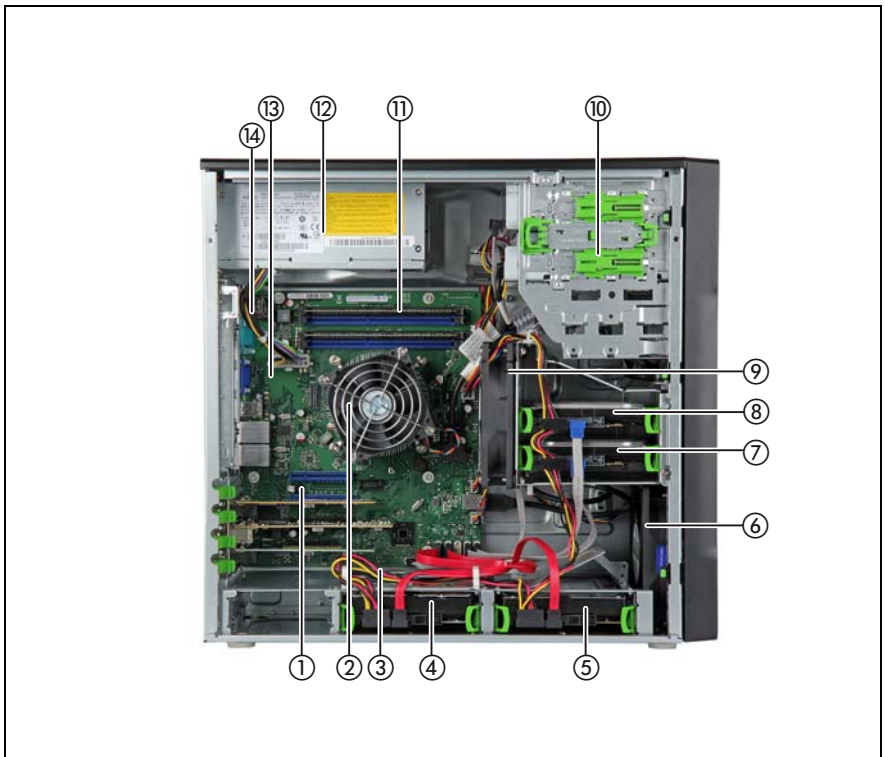


Figure 163: Interior

| Pos. | Component                           |
|------|-------------------------------------|
| 1    | Expansion card slots                |
| 2    | Processor / CPU heat sink / CPU fan |
| 3    | TPM board (if installed)            |
| 4    | HDD 2                               |
| 5    | HDD 1                               |
| 6    | System fan 2 (FAN2 SYS on the SEL)  |
| 7    | HDD 3                               |
| 8    | HDD 4                               |

## Appendix

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| <b>Pos.</b> | <b>Component</b>                   |
|-------------|------------------------------------|
| 9           | System fan 1 (FAN1 SYS on the SEL) |
| 10          | Accessible drive bays              |
| 11          | Memory modules                     |
| 12          | Power supply unit                  |
| 13          | System board                       |
| 14          | CMOS battery                       |



## 16.2 Connectors and indicators

### 16.2.1 Connectors on the system board

#### 16.2.1.1 Onboard connectors

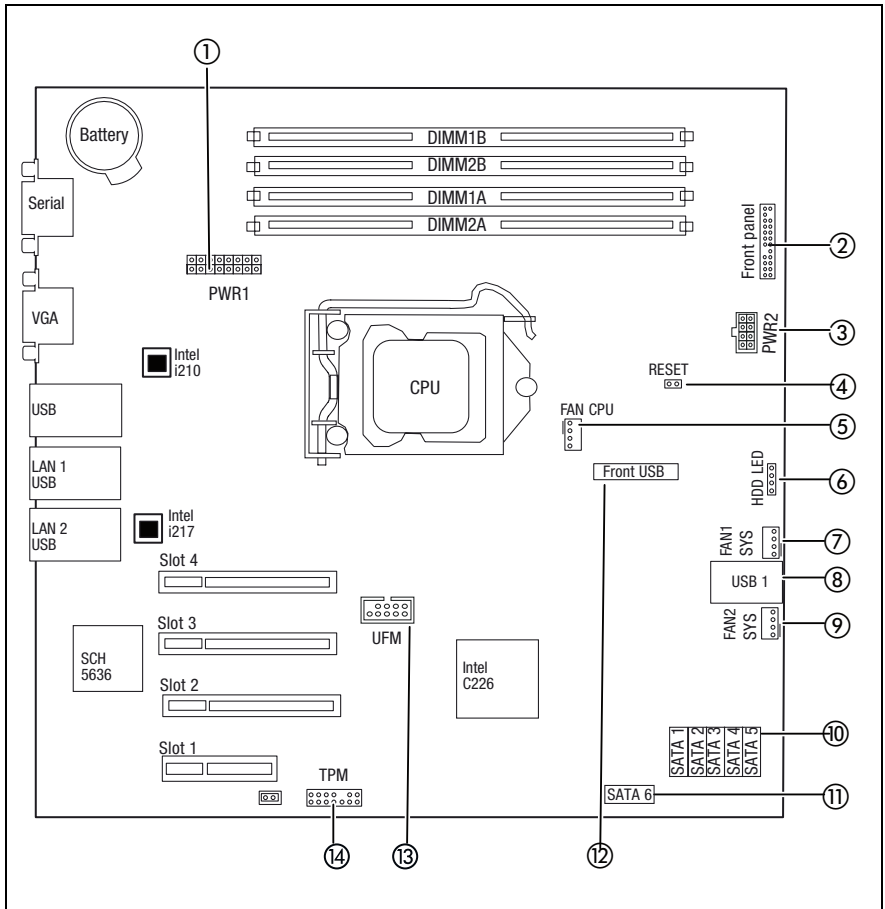


Figure 164: Internal connectors of the system board D3219

## Appendix

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| No. | Print      | Description                |
|-----|------------|----------------------------|
| 1   | PWR1       | Power supply connector     |
| 2   | FRONTPANEL | Front panel connector      |
| 3   | PWR2       | Power supply connector     |
| 4   | RESET      | Reset                      |
| 5   | FAN CPU    | Connector for CPU fan      |
| 6   | HDD LED    | Connector for HDD LED      |
| 7   | FAN1 SYS   | Connector for system fan 1 |
| 8   | USB 1      | Connector for USB 1        |
| 9   | FAN2 SYS   | Connector for system fan 2 |
| 10  | SATA 1-5   | SATA 1-5 connector         |
| 11  | SATA 6     | SATA 6 connector           |
| 12  | FRONT USB  | Connector for USB Front    |
| 13  | UFM        | Connector for UFM          |
| 14  | TPM        | Connector for TPM          |

## 16.2.1.2 I/O panel connectors

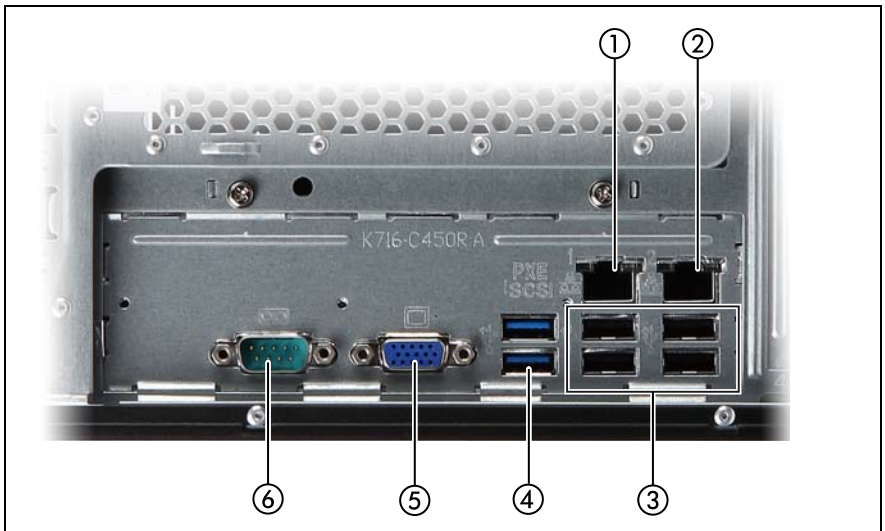


Figure 165: I/O panel connectors

| No. | Description                       |
|-----|-----------------------------------|
| 1   | Standard LAN1 connector           |
| 2   | Standard LAN2 connector           |
| 3   | USB 2.0 connectors (x 4)          |
| 4   | USB 3.0 connectors (x 2)          |
| 5   | Video connector (blue)            |
| 6   | Serial connector COM1 (turquoise) |



The chipset offers two integrated USB 2.0 Rate Matching Hubs (RMHs). That enables lower power requirements and manages the transition of the communication data rate from the high speed of the host controller to the lower speed of USB full speed / low speed devices.

16.2.1.3 I/O panel indicators

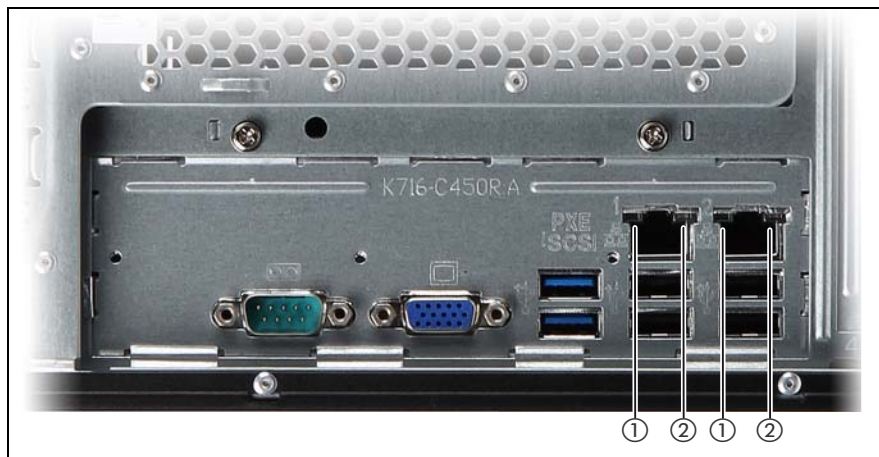


Figure 166: I/O panel indicators

| Indicator | Status            | Description    |                            |
|-----------|-------------------|----------------|----------------------------|
| 1         | LAN link/transfer | green on       | LAN connection established |
|           |                   | off            | no LAN connection          |
|           |                   | green flashing | data transfer in progress  |
| 2         | LAN speed         | yellow on      | transfer rate 1 Gbit/s     |
|           |                   | green on       | transfer rate 100 Mbit/s   |
|           |                   | off            | transfer rate 10 Mbit/s    |



**Note on the onboard LAN controller**

The system board is equipped with Gigabit Ethernet Controllers of the type Intel® 82574L (LAN1) and 82579LM (LAN2). Both LAN controllers support transmission rates of 10 Mbit/s, 100 Mbit/s and 1 Gbit/s.

The LAN controller (LAN1) supports WOL functionality by means of MagicPacket™. The LAN1 controller also supports features like PXE and iSCSI.

The LAN2 controller supports LAN access only.

## 16.2.2 Connectors and indicators on the front panel

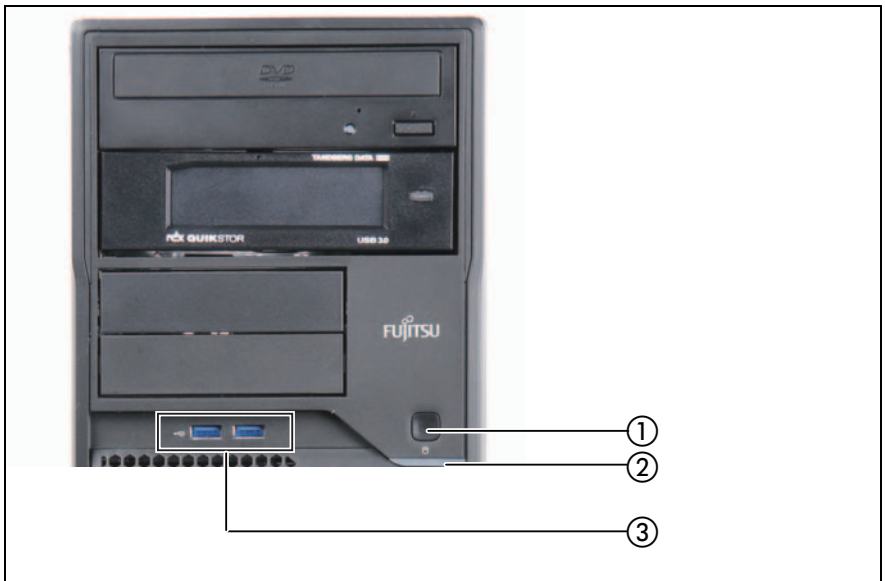


Figure 167: Front panel connectors and indicators

| Pos. | Component                          |
|------|------------------------------------|
| 1    | On/Off button / Power-on indicator |
| 2    | HDD activity indicator             |
| 3    | USB 3.0 connectors (x2)            |



The On/Off button is used to switch the server on or off. If the system is running an ACPI-compliant operating system, pressing the On/Off button will perform a graceful shutdown.

### Status indicators

| Indicator              | Status         | Description             |
|------------------------|----------------|-------------------------|
| HDD activity indicator | green flashing | data access in progress |

| Indicator          | Status   | Description   |
|--------------------|----------|---|
| Power-on indicator | green on | server is switched on and running                                   |
|                    | off      | server is switched off, but mains voltage is present (standby mode) |

## 16.3 Onboard settings

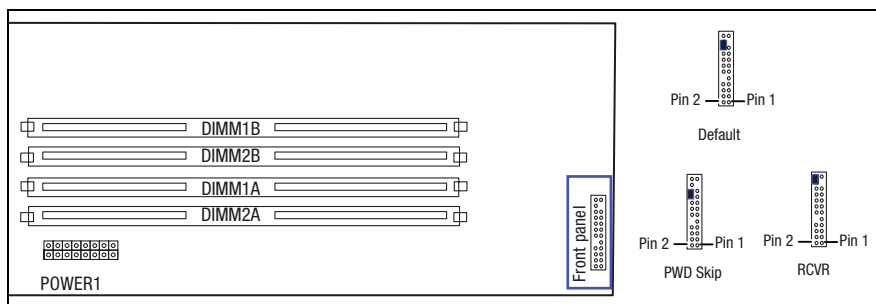


Figure 168: Jumper

| Setting  | Description   |
|----------|---|
| Default  | Password skip disabled and recovery BIOS disabled.  |
| PWD Skip | Password skip enabled.<br>The password is deleted and the default BIOS settings are applied after “PWD Skip” jumper was set once.   |
| RCVR     | Recovery BIOS enabled.<br>Use this function only if the system BIOS is destroyed.<br>After flashing a new Recovery BIOS from a memory stick the password and all configuration settings are set to default. |

When the CMOS battery is removed from a system board, the password set by customers is kept and also other CMOS settings are restored except date/time.

## 16.4 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 |
| CPU with CPU heat sink |                                     |
| CPU fan                |                                     |
| 1 memory module        | installed in DIMM slot 1A           |
| Power supply unit      |                                     |

Table 6: Minimum startup configuration - components

| Cable             | Notes |
|-------------------|-------|
| Front panel cable |       |
| Power cable       |       |

Table 7: Minimum startup configuration - cables

- ▶ ["Shutting down the server" on page 40](#)
- ▶ ["Disconnecting the server from the mains" on page 41](#)
- ▶ Take the system down to its minimum startup configuration.
- ▶ ["Connecting the server to the mains" on page 54](#)
- ▶ Connect a keyboard, mouse and display to the server.
- ▶ ["Switching on the server" on page 55](#)



### **CAUTION!**

Since the system fan 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!