StorTrends® 3400 Hardware Platform Specific User's Guide

MAN-3400-HW
04/22/2011

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Revision History

12/23/2010	Preproduction Release
03/30/2011	Updated Hardware Health information
04/22/2011	Updated term from Canister to Controller

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The buyer agrees that if this product proves to be defective, American Megatrends is only obligated to repair or replace this product at American Megatrends' discretion according to the terms and conditions of the warranty registration card that accompanies this product. American Megatrends shall not be liable in tort or contract for any loss or damage, direct, incidental or consequential resulting from the use of this product. Please see the *Warranty Registration Card* shipped with this product for full warranty details.

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If the American Megatrends StorTrends® 3400 fails to operate as described or you are in doubt about a configuration option, please call technical support at 770-246-8645.

Web Site

We invite you to visit the StorTrends website at:

http://www.stortrends.com/

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Product Compliance Information

The StorTrends 3400 chassis is compliant with the following safety standards/requirements:

Electromagnetic Emissions

- FCC Class A
- EN 55022 Class A
- EN 61000-3-2/-3-3
- CISPR 22 Class A

Electromagnetic

EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety

- CSA/EN/IEC/UL 60950-1 Compliant
- UL or CSA Listed (USA and Canada)
- CE Marking (Europe)

NOTE:

The *Product Compliance Information* listed on this page is based off of the Supermicro *SUPERSERVER 6036ST-6LR User's Manual* on page *B-2* in *Appendix B System Specifications* section.

Chapter 1 Safety Information

STOP!

Only remove the Chassis Cover when instructed to do so by an American Megatrends support technician. Doing so at any other time may VOID your warranty.

Instructions on how to remove the cover are not provided in this user's guide.

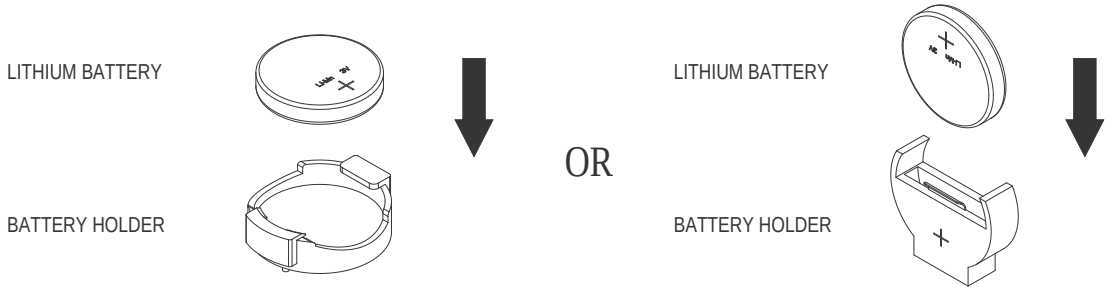
Electrical Safety Precautions

WARNING!

BASIC ELECTRICAL SAFETY PRECAUTIONS SHOULD BE FOLLOWED TO PROTECT YOURSELF FROM HARM AND THE STORTRENDS 3400 FROM DAMAGE:

- **BE AWARE OF THE LOCATIONS OF THE POWER ON/OFF SWITCH ON THE CHASSIS AS WELL AS THE ROOM'S EMERGENCY POWER-OFF SWITCH, DISCONNECTION SWITCH OR ELECTRICAL OUTLET. IF AN ELECTRICAL ACCIDENT OCCURS, YOU CAN THEN QUICKLY REMOVE POWER FROM THE SYSTEM.**
- **DO NOT WORK ALONE WHEN WORKING WITH HIGH VOLTAGE COMPONENTS.**
- **POWER SHOULD ALWAYS BE DISCONNECTED FROM THE SYSTEM WHEN REMOVING OR INSTALLING MAIN SYSTEM COMPONENTS, SUCH AS THE SERVER BOARD, MEMORY MODULES AND THE DVD-ROM (NOT NECESSARY FOR SAS DRIVES). WHEN DISCONNECTING POWER, YOU SHOULD FIRST POWER DOWN THE SYSTEM WITH THE OPERATING SYSTEM AND THEN UNPLUG THE POWER CORDS FROM ALL THE POWER SUPPLY MODULES IN THE SYSTEM.**
- **WHEN WORKING AROUND EXPOSED ELECTRICAL CIRCUITS, ANOTHER PERSON WHO IS FAMILIAR WITH THE POWER-OFF CONTROLS SHOULD BE NEARBY TO SWITCH OFF THE POWER IF NECESSARY.**
- **USE ONLY ONE HAND WHEN WORKING WITH POWERED-ON ELECTRICAL EQUIPMENT. THIS IS TO AVOID MAKING A COMPLETE CIRCUIT, WHICH WILL CAUSE ELECTRICAL SHOCK.**
- **USE EXTREME CAUTION WHEN USING METAL TOOLS, WHICH CAN EASILY DAMAGE ANY ELECTRICAL COMPONENTS OR CIRCUIT BOARDS THEY COME INTO CONTACT WITH.**
- **DO NOT USE MATS DESIGNED TO DECREASE ELECTROSTATIC DISCHARGE AS PROTECTION FROM ELECTRICAL SHOCK. INSTEAD, USE RUBBER MATS THAT HAVE BEEN SPECIFICALLY DESIGNED AS ELECTRICAL INSULATORS.**
- **THE POWER SUPPLY POWER CORD MUST INCLUDE A GROUNDING PLUG AND MUST BE PLUGGED INTO GROUNDED ELECTRICAL OUTLETS.**
- **SERVER BOARD BATTERY: CAUTION – THE ONBOARD BATTERY MUST BE INSTALLED BY A TRAINED TECHNICIAN ONLY. THERE IS A DANGER OF EXPLOSION IF THE ONBOARD BATTERY IS INSTALLED UPSIDE DOWN, WHICH WILL REVERSE ITS POLARITIES. THE SAME RISK APPLIES IF THE INCORRECT BATTERY TYPE IS BEING INSTALLED. THIS BATTERY MUST BE REPLACED ONLY WITH THE SAME OR AN EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISPOSE OF USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.**
- **DVD-ROM LASER: CAUTION - THIS SERVER HAS COME EQUIPPED WITH A DVD-ROM DRIVE. TO PREVENT DIRECT EXPOSURE TO THE LASER BEAM AND HAZARDOUS RADIATION EXPOSURE, DO NOT OPEN THE ENCLOSURE OR USE THE UNIT IN ANY UNCONVENTIONAL WAY.**

Installing the Onboard Battery



General Safety Guidelines

WARNING!

FOLLOW THESE RULES TO ENSURE GENERAL SAFETY:

- **KEEP THE AREA AROUND THE STORTRENDS 3400 CHASSIS CLEAN AND FREE OF CLUTTER.**
- **THE STORTRENDS 3400 WEIGHS IN EXCESS OF 100 LBS WHEN FULLY LOADED. WHEN LIFTING THE SYSTEM, TWO PEOPLE AT EITHER END SHOULD LIFT SLOWLY WITH THEIR FEET SPREAD OUT TO DISTRIBUTE THE WEIGHT. ALWAYS KEEP YOUR BACK STRAIGHT AND LIFT WITH YOUR LEGS.**
- **PLACE THE CHASSIS TOP COVER AND ANY SYSTEM COMPONENTS THAT HAVE BEEN REMOVED AWAY FROM THE SYSTEM OR ON A TABLE SO THAT THEY WON'T ACCIDENTALLY BE STEPPED ON.**
- **WHILE WORKING ON THE SYSTEM, DO NOT WEAR LOOSE CLOTHING SUCH AS NECKTIES AND UNBUTTONED SHIRT SLEEVES, WHICH CAN COME INTO CONTACT WITH ELECTRICAL CIRCUITS OR BE PULLED INTO A COOLING FAN.**
- **REMOVE ANY JEWELRY OR METAL OBJECTS FROM YOUR BODY, WHICH ARE EXCELLENT METAL CONDUCTORS THAT CAN CREATE SHORT CIRCUITS AND HARM YOU IF THEY COME INTO CONTACT WITH PRINTED CIRCUIT BOARDS OR AREAS WHERE POWER IS PRESENT.**
- **AFTER ACCESSING THE INSIDE OF THE SYSTEM, CLOSE THE SYSTEM BACK UP AND SECURE IT TO THE RACK UNIT WITH THE RETENTION SCREWS AFTER ENSURING THAT ALL CONNECTIONS HAVE BEEN MADE.**

ESD Safety Guidelines

CAUTION!

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- *Use a grounded wrist strap designed to prevent static discharge.*
- *Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.*
- *Touch a grounded metal object before removing any board from its antistatic bag.*
- *Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.*
- *Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.*
- *When handling chips or modules, avoid touching their pins.*
- *Put the Server Board and peripherals back into their antistatic bags when not in use.*
- *For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the Server Board.*

Operation Safety Guidelines

WARNING!

FOR PROPER COOLING, MAKE SURE TO INSTALL ALL CHASSIS COVERS BEFORE TURNING ON THE SYSTEM. IF THIS RULE IS NOT STRICTLY FOLLOWED, WARRANTY MAY BECOME VOID. DO NOT OPEN THE CASING OF A POWER SUPPLY. POWER SUPPLIES CAN ONLY BE ACCESSED AND SERVICED BY A QUALIFIED TECHNICIAN OF THE MANUFACTURER.

WARNING!

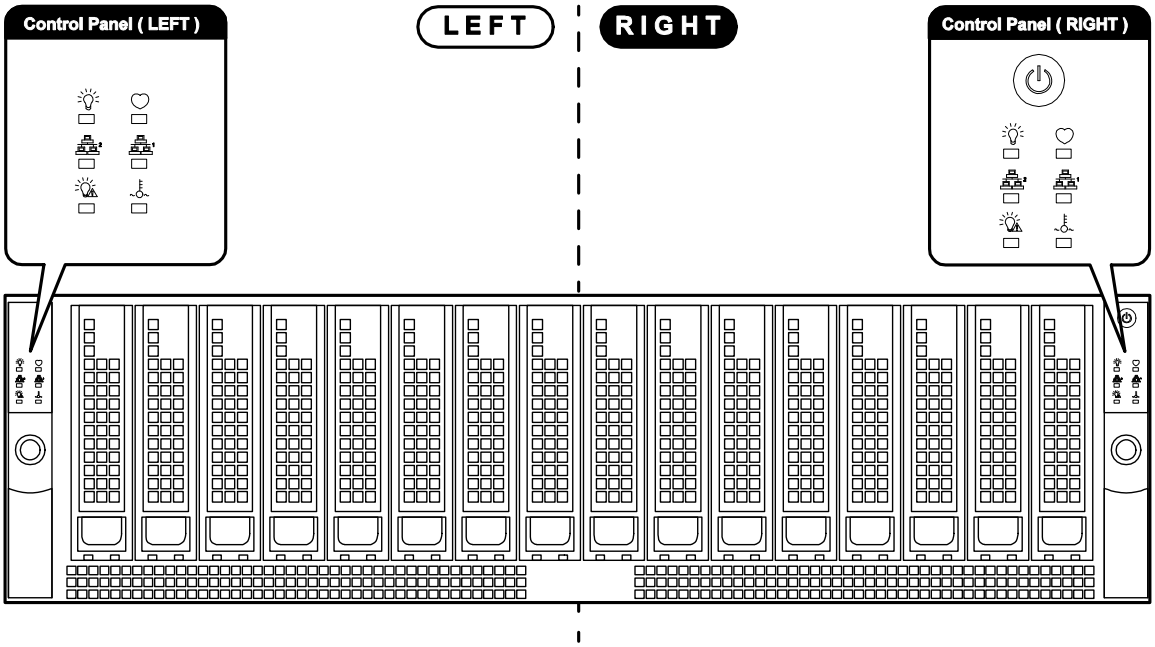
TO AVOID PERSONAL INJURY AND PROPERTY DAMAGE, READ THE FOLLOW SAFETY STEPS LISTED IN THIS SECTION.

Before Installing the Chassis into a Rack

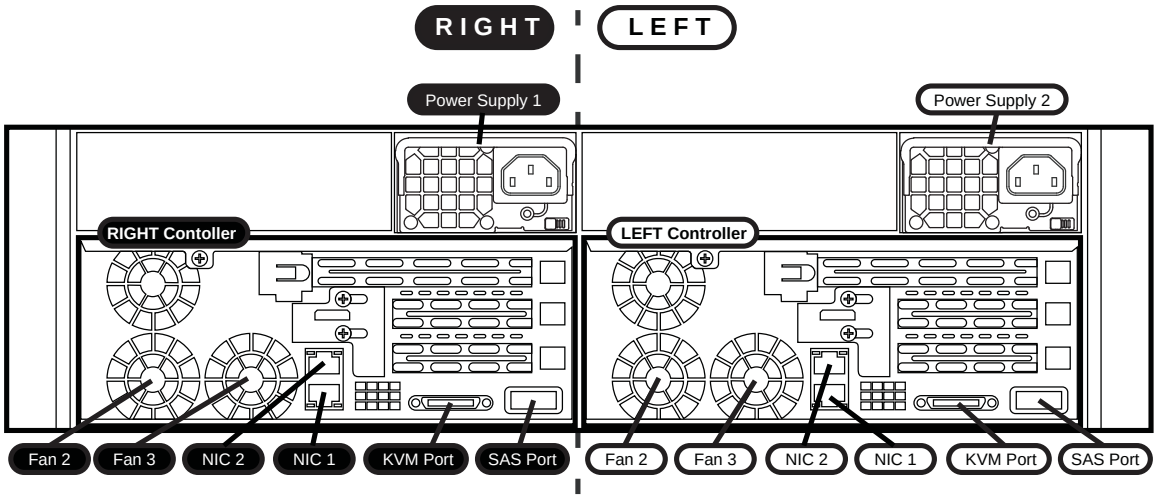
Step	Action
1	Make sure that the rack is securely anchored onto an unmovable surface or structure before installing the chassis into the rack.
2	Unplug the power cord(s) of the rack before installing the chassis into the rack.
3	Make sure that the system is adequately supported. Make sure that all the components are securely fastened to the chassis to prevent components falling off from the chassis.
4	Be sure to install an AC Power Disconnect for the entire rack assembly and this Power Disconnect must be clearly marked.
5	The rack assembly shall be properly grounded to avoid electric shock.
6	The rack assembly must provide sufficient airflow to the chassis for proper cooling.

Chapter 2 Chassis Overview

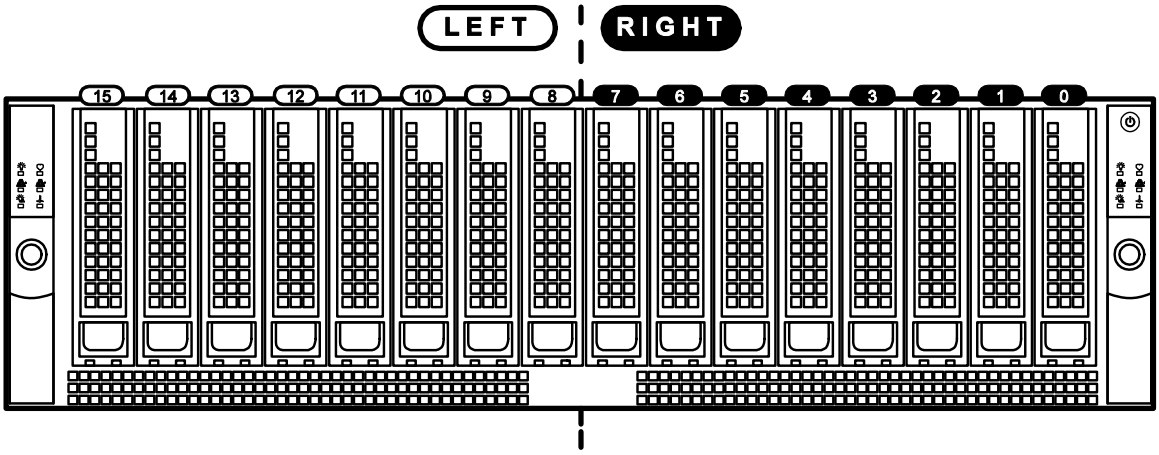
Chassis Front



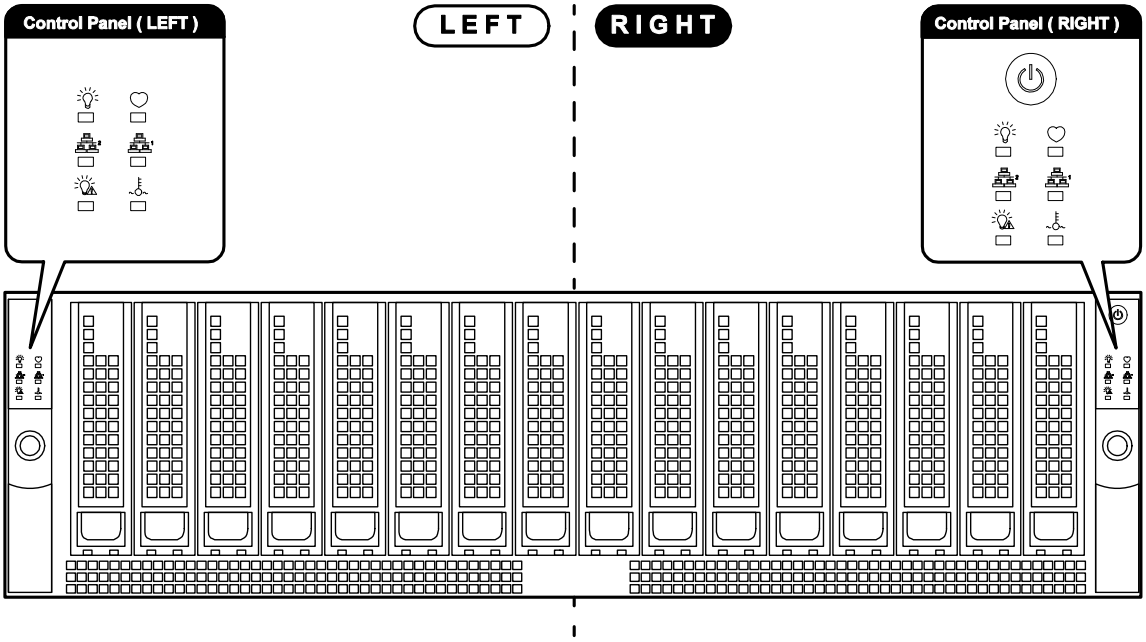
Chassis Rear



Drive Bay Numbering Scheme



System Interface



There are two push-buttons located on the front of the chassis. These are (in order from left to right) a reset button and a power on/off button.

Illustration	Name	Description
	Power Button	The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug system before servicing.

Control Panel LEDs

The control panel located on the front of the StorTrends 3400 chassis has six LEDs per Controller. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

Illustration	Name	Description
	Power Failure LED	When this LED flashes, it indicates a power failure in the power supply.
	Overheat/Fan Fail LED	When this LED flashes it indicates a fan failure. When on continuously (on and not flashing) it indicates an overheat condition. This may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly. This LED will remain flashing or on as long as the overheat condition exists.
	NIC2 LED	Indicates network activity on LAN2 when flashing.
	NIC1 LED	Indicates network activity on LAN1 when flashing.
	Heartbeat LED	Flashing LED means that the system is running normally.
	Power LED	Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

Drive Carrier LEDs

Hard Disk Drives

Each drive carrier has two LEDs:

LED Color	Description
Left LED Red	Steady on, indicates a drive failure. Blinking, indicates rebuilding.
Right LED Green	Steady on, indicates that the drive is ready and idle. Blinking, indicates that there is drive activity.

NOTE:

If you have configured a spare drive:
From looking at the front of the chassis, there is no way for you to tell which drive is configured as a spare. However, if you log into ManageTrends, you can view the location of the spare(s) from the *Hardware Health* page. Any drives that are designated as spare drives will have a flashing yellow icon over it.

StorTrends 3400 Head: RAID Status

Drive Status LED (Left)	Description
no light	• ready (not part of array) • online (part of array) • hot spare
blinking red	• drive is rebuilding • locate drive
solid red	• drive is faulty (failed)

Removing the Controller

STOP!

Only remove the Controller when instructed to do so by an American Megatrends support technician.

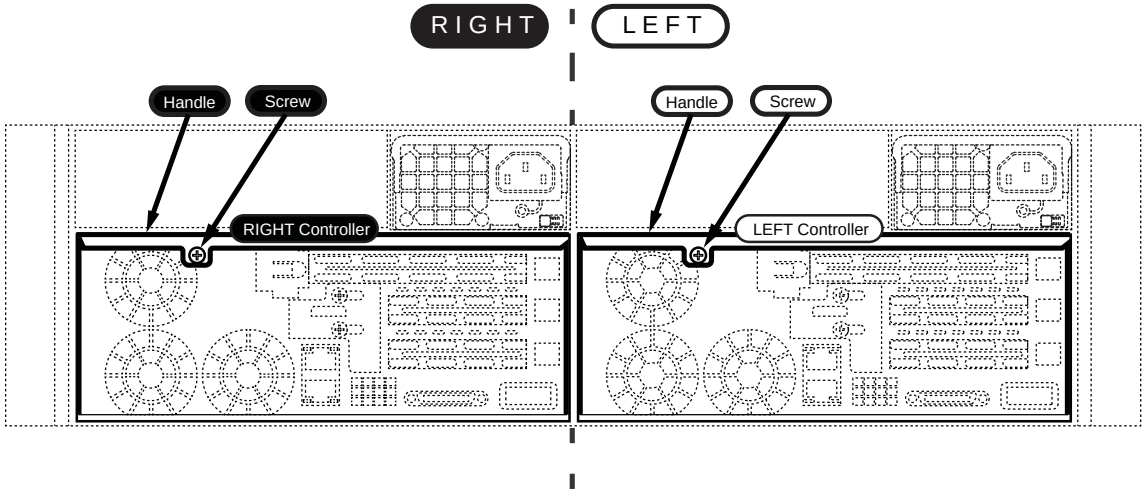
Static-Sensitive Devices

Electric Static Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD discharge.

Precautions

- *Use a grounded wrist strap designed to prevent static discharge.*
- *Touch a grounded metal object before removing any board from its antistatic bag.*
- *Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.*
- *When handling chips or modules, avoid touching their pins.*
- *Put the Server Board, add-on cards and peripherals back into their antistatic bags when not in use.*
- *For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the Server Board.*

Removing Controller



To remove the Controller

Before removing the *Controller*, make sure to unplug the network cable(s). Do not unplug the power supplies.

Step	Action
1	Locate the *Controller* that you want to remove.
2	Unscrew the retention hand screw.
3	Pull the lever down.
4	Pull the *Controller* out.

Reinstalling the Controller

To re-insert a *Controller*, perform the above steps in the reverse order. Make sure that the fans on the *Controller* are seated all the way down before inserting.

WARNING!

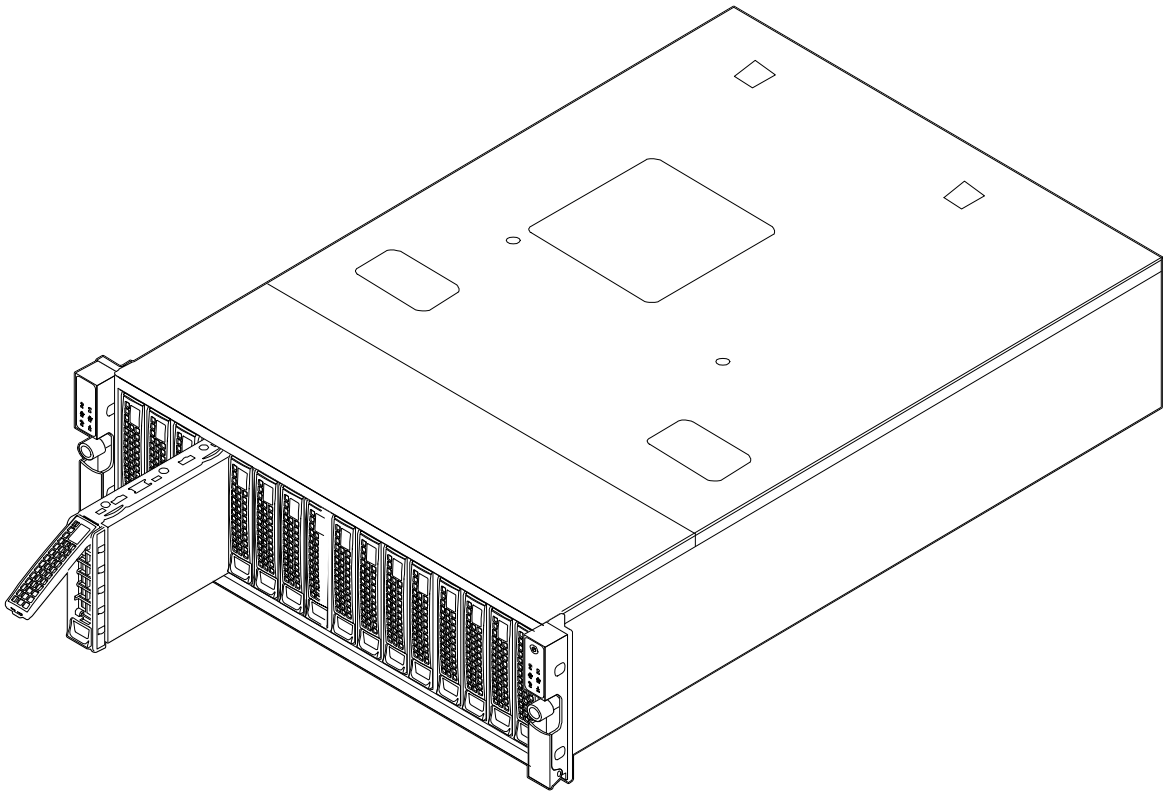
EXCEPT FOR SHORT PERIODS OF TIME, DO NOT OPERATE THE SERVER WITHOUT THE COVER AND BOTH CONTROLLERS IN PLACE. THE CHASSIS COVER AND CONTROLLERS MUST BE IN PLACE TO ALLOW PROPER AIRFLOW AND PREVENT OVERHEATING.

Install Hard Drives

The drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drive bays.

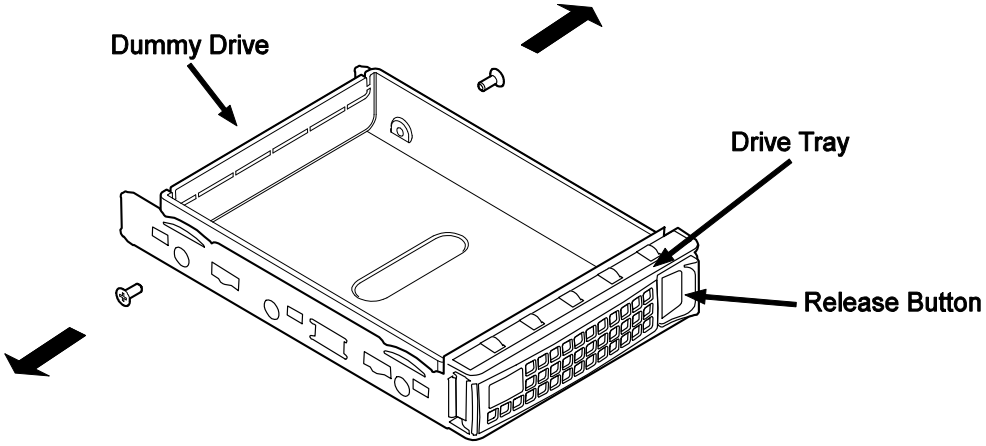
To remove hard drive trays from the chassis

Step	Action
1	Press the release button on the drive tray. This extends the drive bay handle.
2	Use the handle to pull the drive out of the chassis.

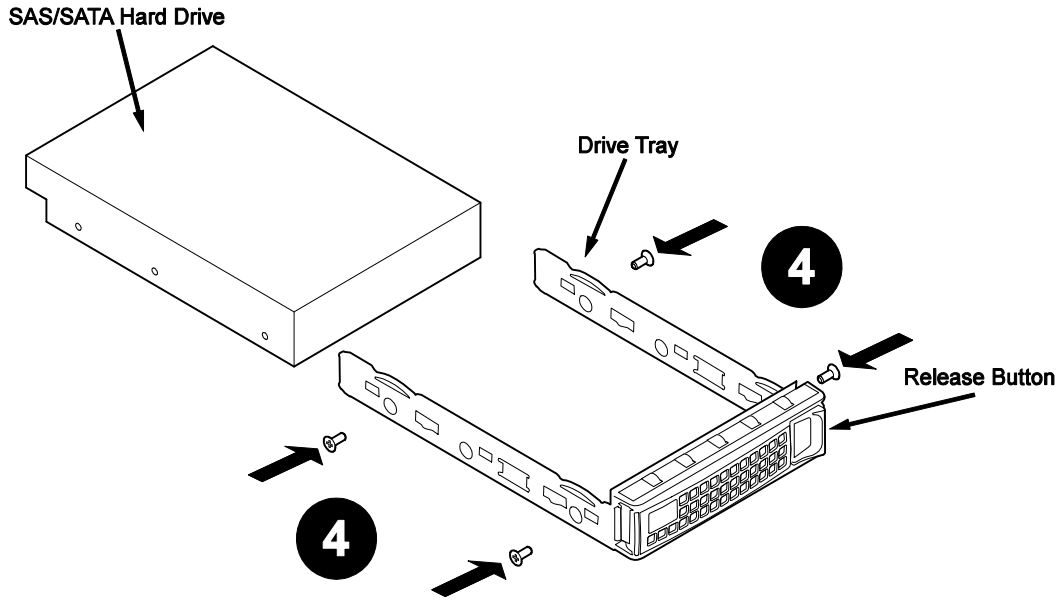


To install a hard drive into the tray

Step	Action
1	Remove the screws (2) holding connecting the drive tray the carrier.
2	Remove the tray from the carrier.



Step	Action
3	Install a new drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.
4	Secure the hard drive by tightening all six (6) screws.
5	Replace the drive tray into the chassis. Make sure to close the drive tray using the drive tray handle.



Power Supplies

The two power supplies in the StorTrends 3400 Chassis are redundant and hot swappable, meaning the power supply can be changed without powering down the system.

Replacing the Power Supply

Step	Action
1	The StorTrends 3400 chassis includes a redundant power supply (two power modules). You can leave the server running if you remove only one power supply at a time.
2	Unplug the power supply that you will replace.
3	Push the release tab (on the back of the power supply).
4	Pull the power supply out using the handle provided.
5	Replace the failed power module with the same model.
6	Push the new power supply module into the power bay until you hear a click.
7	Plug the AC power cord back into the module and power up the server.

WARNING!

DO NOT OPEN THE CASING OF A POWER SUPPLY. POWER SUPPLIES CAN ONLY BE ACCESSED AND SERVICED BY A QUALIFIED TECHNICIAN FROM THE MANUFACTURER.

CAUTION!

Unplug the Power Cord before removing the Power Supply.

Appendix A Hardware Health

NOTE:

All screen captures are for representative purposes only. Your actual screen may look different. You may have a newer version and build of the StorTrends software and/or a different hardware configuration; such as a different StorTrends storage appliance. Most of the screen captures found in this document were taken from the StorTrends 3400i storage appliance. However, the basic usage remains the same.

StorTrends System and Hardware Health Information

On the top bar there are two health links:

- System Health
- Hardware Health

Also, there is a *Status LED* icon associated with each that displays their overall health status. The *Overall Health Status* can be determined by the color of the *Status LED* icon.

Color	Overall Health Status
Green	Normal
Yellow	Warning
Red	Critical

System Hardware Health

Click on the *Hardware Heath* icon to view the *Hardware Health Information* screen. This page displays all information relevant to the hardware health of your StorTrends Dual Controller IP-SAN Storage Appliance. Here you can view the current status information of the cooling fans, temperatures and motherboard voltages. You can also monitor the disk status, spare status, network status and so on.


Hardware Health Management
RIGHT CANISTER
Normal
Name 3400i
LEFT CANISTER
Normal
Disk Status Legend
Not Available
Online
Rebuilding
Failed
Hot Spare
Smart Error
Front View
3400i
Right Canister Sensor Values
SensorName Status Value
CPU1 Temperature Good Good
System Temperature Normal 30 Degrees C
CPU1 Vcore Normal 0.92 Volts
+5 Volts Normal 5.08 Volts
+12 Volts Normal 12.00 Volts
+3.3 Volts Normal 3.29 Volts
System Fan 1 Normal 9384 RPM
System Fan 2 Normal 9384 RPM
Left Canister Sensor Values
SensorName Status Value
CPU1 Temperature Good Good
System Temperature Normal 30 Degrees C
CPU1 Vcore Normal 0.94 Volts
+5 Volts Normal 5.08 Volts
+12 Volts Normal 12.00 Volts
+3.3 Volts Normal 3.26 Volts
System Fan 1 Normal 9384 RPM
System Fan 2 Normal 9384 RPM
Powered by AMI

Term	Definition
Name	This field displays the *Name* of the storage appliance. For example, ***3400i***.
Controller	This field displays *Name* and *Status* of the *Controller*. • **Name** This field displays the name of the *Controller*. For example, *Right Controller* or *Left Controller*. • **Status** This field displays the overall status of the *Controller*. For example, *Normal, Warning, Critical* or *Failed*.
CPU	This field displays the *No.*, *Temperature* and S*tatus* of the *CPU*. • **No.** This displays the number of the *CPU* when multiple processors are present. • **Temperature** This displays the *Temperature* status of the *CPU*. For example, *Good* or *Bad* • **Status** This displays the overall *Status* of the *CPU*. For example, *Good* or *Bad*.
NIC	This field displays the *No.*, *IP Address* and *Link Status* of the network interface card (*NIC*). • **No.** This displays the number of the *NIC* when multiple *NICs* are present. • **IP Address** This displays the physical IP address of the *NIC*. • **Link Status** This displays the status of the link. The *Link Status* can be either *Up* or *Down*.
Disk	This field displays the *Slot Index*, *Capacity*, *Available Space* and *Status* of the *Disk*. • **Slot Index** This displays the *Slot Index* where the *Disk* is physically located. • **Capacity** This displays the *Capacity* of the *Disk* in gigabytes (GB). • **Available Space** This displays the overall *Available Space* in the *Disk* that can be used. • **Status** This displays the running *Status* of the *Disk*, which can be *Ready*, *Offline*, *Online*, *Faulty*, *Missing*, *Rebuilding*, *Transforming* or *Spare*.
Sensors	This field displays the *Name*, *Status* and *Value* of the various sensors. For example, *CPU Temperature*, *System Temperature*, *Voltages*, *System Fans* and *Power Supply* in both *Controllers*. • **Name** This displays the *Name* of the sensor in a specific *Controller*. • **Status** This displays the *Status* of the sensor that can be *Uninitialized*, *Normal*, *Warning*, *Critical*, *Failed*, *Good* or *Bad*. • **Value** This displays the exact *Value* of the sensor in a specific *Controller*.

System Health

Click on the *System Health* link to view the general health of the system. The *System Health Information* page displays all information relevant to the system health of your StorTrends Dual Controller IP-SAN storage appliance. You can view the current status of the partition, storage pools and volumes available (in the Controller you are logged into).

System Health: Partition Information

The *Capacity* and *Usage* of the *OS* (operating system) *Partition*, *Log Partition* and *Temporary File System* are displayed on this section.

Field	Definition
OS Partition	Refers to the root partition of the Controller.
Log Partition	Refers to the log partition of the Controller. `\var\log`
Temp FS	Refers to the shared partition of the Controller. `\dev\shm`

NOTE:

The *Overall Health Status* is *Critical* when the *Usage* of any *Partition* is above 80%. Otherwise it is *Normal*.

System Health: Storage Pools Information

The *Usage* and *Status* information of all *Storage Pools* in your StorTrends Dual Controller IP-SAN storage appliance are displayed on this section.

The *Status* of the *Storage Pool* can be any one of the following:

Operational Status	Description
Failed	Failed state
Container Operational	Active and in working state
Active	Active in the primary side
Passive	Active in the secondary side
Active Failed Over	Storage Pool was started in the primary and is now active in the secondary side

NOTE:

The *Overall Health Status* can be any one of the following:

- Normal
- Critical
- Warning

System Health: Volumes Information

The *Status*, *Dialect* and *Storage Pool* of each volume in your StorTrends Dual Controller IP-SAN storage appliance are displayed on this section. The status of the Volumes depends upon the volume type.

System Health: Volumes Information: Normal

For *Normal* volumes the status can be any one of the following:

Volume Status	Description
Mounted/In Use	This status message is displayed when the volume is mounted and is in use.
Deleting	This status message is displayed when volume deletion is in progress.
Restoring Snapshot	This status message is displayed when snapshot rollback is in progress.
Unmounted/Not-In-Use	This status message is displayed when the volume is not mounted and not in use.

System Health: Volumes Information: Archived

For *Archived* volumes the status can be any one of the following:

Volume Status	Description
Archived	This status message is displayed when the volume is a part of a SAR archival pair.
Restoring Snapshot	This status message is displayed when a snapshot associated with the archival volume is being rolled back.
Pending	This status message is displayed when there is a failure in any of the operations of the archival volume.
Unmounted/Not-In-Use	This status message is displayed when archival volume is not mounted and not in use.

NOTE:

The *Overall Health Status* can be any one of the following:

- Normal
- Critical
- Warning

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