



SGI® Modular InfiniteStorage™ (MIS)
1.5 Platform Installation Guide

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003	May 2013 Added Cable Management Arm length adjustment instructions, System Layout diagrams, added significant images and made major edits.
004	July 2013 Updated safety information, fan replacement, and power supply information (email reporting). Updated Environmental Requirements to include shipping information.

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Introduction

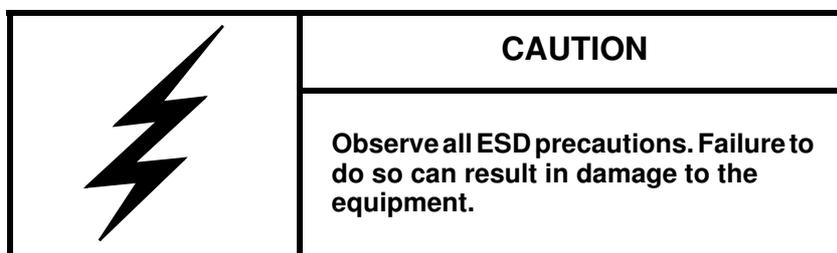
This guide describes setup and installation of the SGI® Modular InfiniteStorage™ (MIS) platform. With two main configurations possible for the enclosure (server & storage, or JBOD—Just a Bunch Of Disks) this guide covers inspecting the shipment, preparing for installation, how to install, and gives examples of some possible external cabling options.

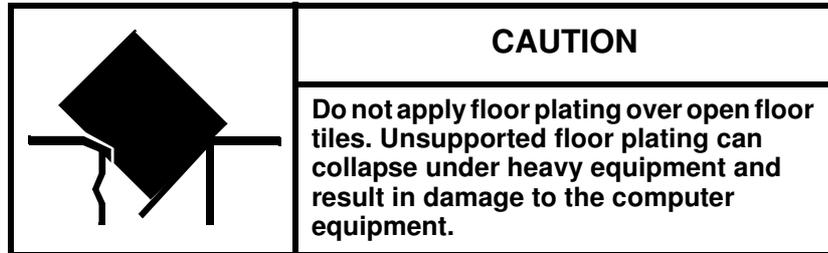
Audience

This guide is written for owners/users of the MIS platform who need to install the unit themselves, rather than relying on SGI installation services. It is written with the assumption that the reader has a good working knowledge of computers, servers, networking, hardware, software and RAID arrays.

Important Information

The following section details several safety precautions that should be observed at all times. First, the MIS requires the proper environment in which to operate. Second, a fully loaded MIS Platform can weigh up to 220lb. Third, electricity is a major concern, especially Electrostatic Discharge (ESD), detailed later in this section. Please read these sections carefully prior to set up.





Environmental Requirements

The following are the environmental requirements for the MIS platforms.

Operating temperature: **41° to 95° F [5° to 35° C] (up to 5,000 ft. [1,500 m])**

- **Derate max temperature (95° F [35° C]) by 1.8° Fahrenheit [1° Celsius] per 1,000 ft. [305 m] of altitude above 5,000 ft. [1525 m]**
- **Temperature rate of change must not exceed 18° F [10° C] per hour**

Operating humidity: **8% to 80% non-condensing**

- **Humidity rate of change must not exceed 10% relative humidity per hour**

Operating altitude: **up to 10,000 ft. [up to 3,050 m]**

Shipping temperature: **-40° to 140° F [-40° to 60° C]**

- **Temperature rate of change must not exceed 36° F [20° C] per hour**

Shipping humidity: **10% to 95% non-condensing**

Shipping altitude: **up to 40,000 ft. (up to 12,200 m)**

Storage temperature: **41° F [5° C] to 113° F [45° C]**

- **Temperature rate of change must not exceed 36° F [20° C] per hour**

Storage humidity: **8% to 80% non-condensing**

Storage altitude: **up to 40,000 ft. [up to 12,200 m]**

Safety Precautions

Do NOT wear loose clothing, such as neckties or unbuttoned shirt sleeves, while working on the unit which can be pulled into a cooling fan or tangled in cabling.

Remove any jewelry any metal objects from your body, which are excellent electrical conductors, and can harm you and/or cause short circuits if they come into contact with printed circuit boards or powered areas.

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 or when moving heavy equipment.

When working around exposed electrical circuits, another person should be nearby, who is familiar with the power-off controls, 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 with which they come into contact.

Do NOT use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as **electrical insulators**.

The power supply power cords **must** include a grounding plug and **must** be plugged into grounded electrical outlets. The maximum over current protection is 50A per power supply. The overcurrent protection **must** be provided by the facility power grid. All national and local electrical codes apply. Check with your local licensed electrician for details.

Power should always be disconnected from the system when removing or installing system components that are **not** hot-swappable, such as server boards and memory modules. When disconnecting power, you should first do a clean shut down through the operating system, which then powers down the system, and then unplug all power cords (the unit has more than one power supply cord). More information on powering off the MIS Platform is available in the section, "Turning the machine off" on page 36.

Do NOT attempt to transport/move a fully loaded MIS system. An MIS system can weigh up to 220lbs. when fully loaded. If the system must be moved, first remove the drives from the

chassis. When lifting the system, two people (one at each end) should lift slowly with feet spread apart to distribute the weight. Always follow safe lifting practices when moving heavy objects. More information on moving large objects, requiring a two-person team, is available in the Centers for Disease Control's, "Ergonomic Guidelines for Manual Material Handling" (<http://www.cdc.gov/niosh/docs/2007-131/pdfs/2007-131.pdf>)

ESD Precautions



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 the board from the 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.

Safety & Emissions

The following is a list of agency approvals for MIS on safety and emissions. It includes information on Electromagnetic Compatibility and Safety Certification.

Electromagnetic Compatibility

Table 0-1 lists the region and compliance reference for EMC (Electromagnetic Compatibility) compliance.

Table 0-1 MIS Server Platform Region and EMC Compliance References

Region	Compliance Reference
Australia/ New Zealand	AS/NZS CISPR 22 (Emissions)
USA/Canada	Industry Canada ICES-003 Issue 4 FCC CFR47, Part 15 Subpart B
CENELEC Europe	EN55022 Emissions EN55024 Immunity
International	CISPR 22/ CISPR 24
Japan	VCCI V-3 Certification
Korea	KCC KN22, KN24 Verification
Taiwan	BSMI CNS 13438 Verification
Russia	EAC

Safety Certification

National Recognized Testing Laboratory (NRTL) provides the safety certification for ITE products. NRTL's offer various product markings depending on the type of products being tested and satisfactory tests results. Underwriters Laboratories (UL) and Canadian Standards Association (CSA) are typical (NRTL's) that provides safety certification services for Information

Technology Equipment (ITE). Table 0-2 lists the region and compliance reference for safety compliance.

Table 0-2 MIS Server Platform Region and Functional Safety Listing Mark

Region	Compliance Reference
USA/Canada	CSA 60950 / UL60950/ 60950-1 cert to CAN/CSA STD C22.2 No. 60950-1
IEC (Europe)	IEC60950-1 – CB Certification, CE Mark
Russia	EAC

Related Publications

The following documents are relevant to the MIS Platform:

- *SGI MIS 1.5 User's Guide*, publication number 007-5916-001
- *Intel Server Boards and Server Platforms Server Management Guide*, publication number 37830-002
- Man pages (<http://www.linuxmanpages.com/>)

Various formats of SGI documentation, release notes, and man pages are available. The SGI Technical Publications Library (<http://docs.sgi.com/>) contains the most recent and most comprehensive set of online books, release notes, man pages, and other information. Refer to the SGI Supportfolio™ web page for documents which access requires a support contract (as do the MegaRAID books cited above). See “Product Support” on page xxi. You can also view man pages by typing `man <title>` on a command line in Linux.

Conventions

The following conventions are used throughout this document:

Convention	Meaning
Command	This fixed-space font denotes literal items such as commands, files, routines, path names, signals, messages, and programming language structures.

<i>variable</i>	The italic typeface denotes variable entries and words or concepts being defined. Italic typeface is also used for book titles.
[]	Brackets enclose optional portions of a command or directive line.
GUI element	This font denotes the names of graphical user interface (GUI) elements such as windows, screens, dialog boxes, menus, toolbars, icons, buttons, boxes, fields, and lists.

Product Support

SGI provides a comprehensive product support and maintenance program for its products, as follows:

- If you are in North America, contact the Technical Assistance Center at +1 800 800 4SGI (4744) or contact your authorized service provider.
- If you are outside North America, contact the SGI subsidiary or authorized distributor in your country. International customers can visit <http://www.sgi.com/support/>. Click on the “Support Centers” link under the “Online Support” heading for information on how to contact your nearest SGI customer support center.

CRU/FRU

Some of the components on the MIS Platform are customer-replaceable units (CRUs), meaning that these modules were designed to be repaired/replaced by you, the customer. These include fan assemblies, power supplies, storage drives, and boot drives, all of which are hot-swappable. However, many of the other components on the MIS Platform should be serviced by SGI field technicians ONLY, so as not to violate the warranty agreement. The components are field-technician replaceable units, or FRUs. It is important to note that our CRUs can be easily installed and replaced by customers, which enables a speedy recovery of proper system operation.

For additional information about CRUs, please see:

- [Customer Replaceable Units \(CRUs\) Installation Policy](#)
- [Customer Replaceable Units \(CRU\) and Customer Obligations](#)

Purchasable Support & Maintenance Programs

SGI provides several comprehensive product support and maintenance programs for its products. SGI also offers services to implement and integrate Linux applications in your environment.

- Refer to <http://www.sgi.com/services/>
- If you are in North America, contact the Technical Assistance Center at +1-800-800-4SGI (4744), or contact your authorized service provider.
- If you are outside North America, contact the SGI subsidiary or authorized distributor in your country. See <http://www.sgi.com/global/index.html> for more information.

Reader Comments

If you have comments about the technical accuracy, content, or organization of this document, please contact SGI. Be sure to include the title and document number of the manual with your comments. (Online, the document number is located in the front matter of the manual. In printed manuals, the document number is located at the bottom of each page.)

You can contact SGI in any of the following ways:

- Send e-mail to the following address: techpubs@sgi.com
- Contact your customer service representative, and ask that an incident be filed in the SGI incident tracking system.
- Send mail to the following address:

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Fremont, CA 94538

SGI values your comments, and will respond to them promptly.

Installation Guide

This is an installation guide for the SGI® Modular InfiniteStorage™ (MIS) Servers and JBODs. This guide is for those customers who require, as a matter of security or otherwise, that *they* perform installation and first-use of the MIS product, rather than SGI installing and performing initial set-up. Please refer to the *SGI® Modular InfiniteStorage™ (MIS) User Guide, version 1.5* for instructions for use past initial installation.

Shipment Overview

To reduce the chassis weight for shipping and installation, the system ships with the drives in drive carriers, removed from the chassis. You will need to install the drives into the locations specified on the attached labels after the chassis is installed in the rack.

The rail kit that ships with the system must be used to support the product. This rail kit enables the system to slide forwards and backwards in the rack for service access.

The procedures required to install a system will depend on which configuration is ordered:

If an SGI D-rack configuration is ordered (Figure 1-1), one or more chassis ship in the rack and the drives ship in separate boxes. The rail kits are already installed in the rack and on each chassis and the chassis are installed in the rack. You must install the drives into the chassis in the locations specified on the attached labels. Refer to “Acclimatization” on page 4 for more details.

If a configuration without a rack is ordered, the chassis and drives ship in separate boxes. You must install the rail kit in the customer’s rack and on each chassis and then two people are required to install each chassis in the rack. You must then install the drives into the locations specified on the attached labels. Refer to “Installing MIS Platforms” on page 5 for more details.

Inspecting a Shipment

It is important that you inspect all equipment received from a shipping carrier before signing for the shipment. Be sure to do the following when you arrive at a site to install equipment and when you receive equipment directly from a shipping carrier:

1. Inspect the shipment.
 - Does the number of pieces received match the bill of lading?
 - Have boxes been opened or is there damage to the packaging?
2. Open the shipment.
 - After removing the packaging, is there any visible damage?
3. Record any issues/problems (if applicable).
 - Use the bill of lading to record any issues discovered during the inspection.
 - Take photos of all visible damage.
 - Sign for the shipment after making notes on the bill of lading.
4. Report the issues to SGI.

Contact the Customer Support Center (CSC) at 1-800-800-4744 (in the United States; refer to <http://www.sgi.com/support/supportcenters.html> for other local numbers) to begin the replacement process.

Take photos of any damage and in your message, please send a brief description of the problem to ships@sgi.com. A coordinator will contact you about the problem.



Figure 1-1 SGI Destination Rack (D-Rack)

Acclimatization

If the equipment has been in transit for more than 24 hours to reach the install site, then a wait is required, especially for HDDs. To acclimatize the shipment, wait **4 to 8 hours** for the equipment to acclimate to the data center environment before proceeding with the installation.

Caution: Failure to let equipment acclimate can cause condensation damage to the equipment.

Preparing to Install

Uncrate the rack and inspect the shipment for any damage. (Refer to “Inspecting a Shipment” on page 2.)

Be aware that the increased weight and size of the tall racks can cause the racks to tip over if the racks are improperly handled. To minimize your own personal risk of injury, use extra care and allow extra time when moving racks.

Be sure to evaluate the path you will be moving a rack along before moving the rack. Plan the move by anticipating any issues and removing any obstacles. Use extra caution during the actual move and roll the rack on to the data center floor.

Required Tools

The following tools are required:

- #1 and #2 Phillips screwdrivers,
- Long #2 Phillips screwdriver,
- Flat-head screwdriver,
- Thin-tipped flat-head screwdriver
- 10mm hexagonal socket wrench,
- A wheeled cart with breaks, sturdy enough to hold the chassis, and on which to work.

Note: Screwdrivers with magnetic tips are recommended.

Installing MIS Platforms

After a shipment has been inspected (page 2) and acclimated (page 4) to the location, there are two scenarios for installing MIS platforms (server and/or JBOD). One way is to install the platforms into a rack that is already on location (D-Rack or other supported rack systems). The next scenario is installing MIS platforms that have been shipped in an SGI D-Rack. In this scenario, the chassis are already installed into the rack, and the drives were shipped separately.

To install an MIS platform into a rack that is already on location:

1. First locate all boxes in the shipment. There should be a single box that holds each chassis and multiple boxes with drives for each chassis (each box holds up to 20 drives).
2. Next, the rolling rails that support the MIS chassis in the rack must be installed, and the chassis placed into the rack, following the rack placement guide provided in the cabling guide (page 22). These procedures requires two people.
3. Once the chassis is installed into the rack, the drives can be installed into their carriers, and the drives with carriers can be installed into the system (page 19).
4. Following this, the chassis can be returned to the rack in the stowed position (page 18). That complete, the system can be cabled and powered on.
5. If there are no faults, the system can then be zoned to its desired configuration.

To install a system that is shipped in a D-Rack:

1. First locate all boxes in the shipment. There should be a single box that holds the D-Rack and multiple boxes with drives for each chassis (each box holds up to 20 drives).
2. Go straight to the instructions for “Sliding the Chassis Forward/Backwards” on page 18, and continue following the instructions from there.

Installing the Front Bezel Grille

The MIS Chassis ships with the front grille unattached. There are two or three cables (one or two for control panel functionality, and one for the S9D network interface) at the the front left corner of the chassis (Figure 1-3). These cables must be attached to their corresponding sockets on the front bezel grille, before attaching the grille to the chassis. To do so, follow these instructions.

1. Orient the front bezel grille so that the left inner edge containing the sockets (Figure 1-2) lines up with the front left edge of the chassis where the cables protrude.
2. Use the two latches on the bezel grille to help attach it to the chassis on the left side, and work from the right side (swinging it open like a door, rather than top or bottom, for ease of cabling).

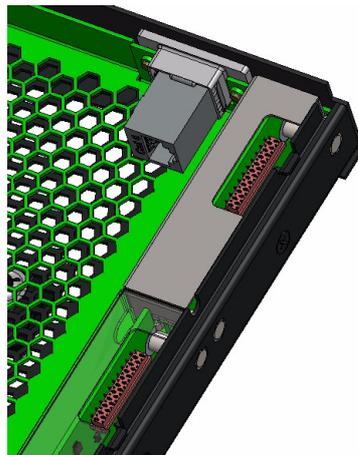


Figure 1-2 Front Bezel Grille Control Panel Sockets and S9D Network Interface



Figure 1-3 Chassis Front Cables

3. Plug the ribbon cable(s) into their corresponding control panel socket (Figure 1-4).



Figure 1-4 Control Panel Ribbon Cables Attached to Front Bezel

4. Plug the network cable into the underside of the S9D network interface (Figure 1-5s).



Figure 1-5 S9D Network Interface Cable

5. Once all the wires have been successfully connected, swing the grille shut such that it can be snapped into place on the front of the chassis using the attached tabs (Figure 1-6). Push firmly but gently to attach the front grille.

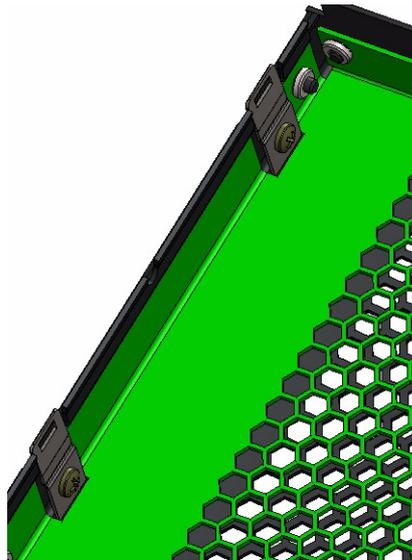


Figure 1-6 Front Bezel Grille Attach Tabs

D-Rack Stiffener*

Note: The following procedure is for installing into a D-Rack *already on location*, where the customer is required install the outer rails into the SGI D-Rack. **These instructions are for SGI D-Racks on location ONLY.** SGI D-Racks shipped with chassis will come pre-installed with rolling rails and D-Rack Stiffener.

If you are installing rails into a SGI D-Rack on location, it will require installation of the D-Rack Stiffener . This item is two brackets: the attachment plate with a wedge-shaped cut-out (Figure 1-7), and the adjustment plate with interlocking tabs (Figure 1-8).

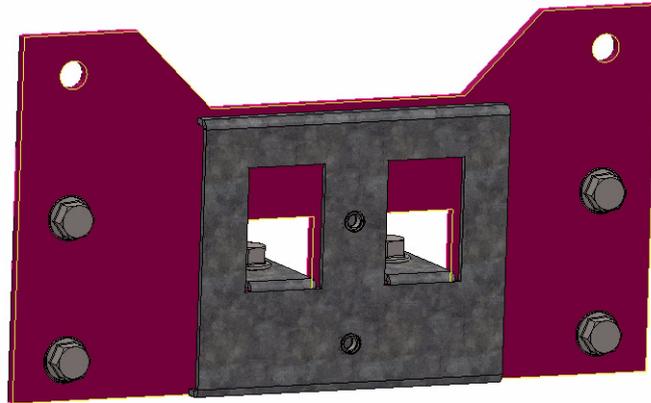


Figure 1-7 D-Rack Stiffener Attachment Plate

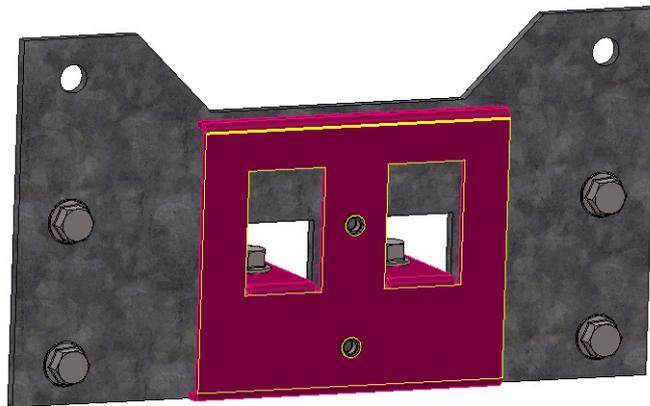


Figure 1-8 D-Rack Stiffener Adjustment Plate

These two pieces come together to form a single unit, held together by two vertical 6x16 metric hex flange bolts (Figure 1-9, in cyan) to make the D-Rack Stiffener, and attached to the D-Rack using four bolts (Figure 1-9, in magenta).

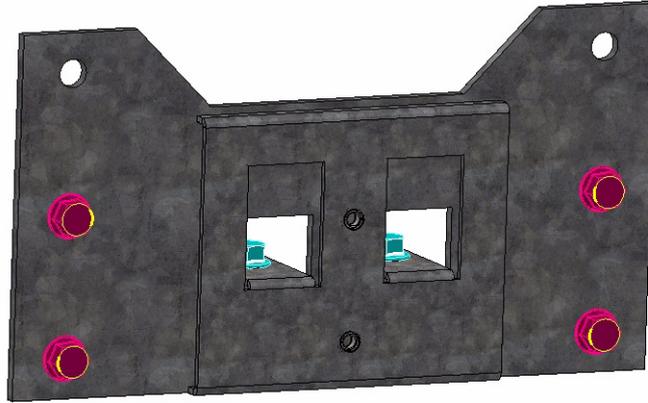


Figure 1-9 D-Rack Stiffener Bolts



Figure 1-10 D-Rack Stiffener

1. Due to their construction, it is easiest to join the brackets together first, and then attach the D-Rack Stiffener to the D-Rack.
2. Attach the inner bracket to the outer bracket using the vertical bolt and socket wrench (Figure 1-9). Do **not** tighten these bolts all the way. They will be used later for altering rail aligning using the alignment tool.

Note: The screws that attach the D-Rack Stiffener to the rack can be tightened all the way.

3. Attach the the D-Rack Stiffener to the D-Rack using the four support screws. There are six holes available for the screws, but two will be blocked. Use the remaining four holes (Figure 1-9).

Note: When installing, leave the vertical bolts of the D-Rack Stiffener loose. The vertical bolts in the D-Rack Stiffener will allow the rails to be adjusted later using the alignment tool.

Installing the Rolling Rails

These instructions are for installing the rolling rails on chassis shipped separately (i.e., not in a rack) The rolling rails are used to support the chassis in the rack and provide ease of movement out the front and back of the rack, for easier and safer serviceability (Figure 1-11).

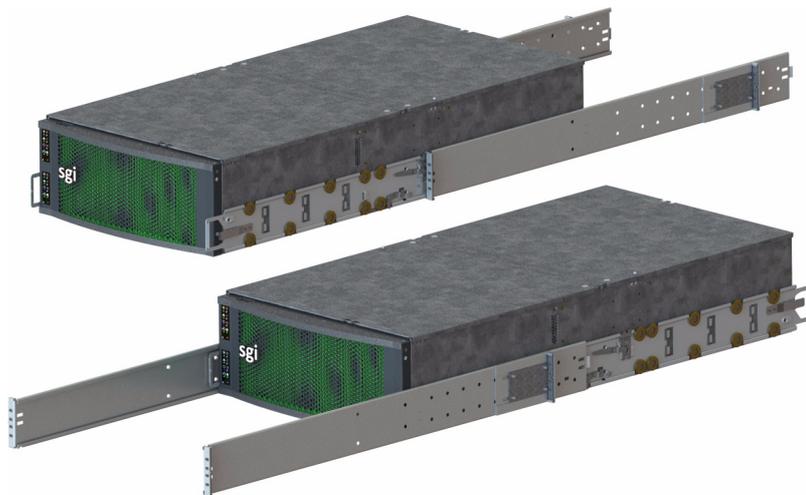


Figure 1-11 Rolling Rails

Shipping Tabs

The MIS rolling rails are shipped with safety shipping tabs to keep the rails from rolling out during shipping. These tabs will need to be removed prior to removing the inner rolling rail from the outer rail.



Figure 1-12 Safety Tab on Rolling Rails

1. Remove the screw holding the safety tab in place using a phillips screwdriver.
2. Remove the shipping tab from the rails.

The rails can now be separated. Keep the tabs and screws in a safe place for possible future use (shipping the unit to another location).

Installing the Outer Rails

1. Hold up the outer rails up to the rack to determine if their depth is correct.
2. If the rail cannot be secured to the rack at the front and rear, perform the following steps.
 - a. Remove the four screws that hold the rear mounting plate to the rail.
 - b. Move the rear mounting plate until the depth of the rail is correct for the depth of the rack.

- c. Secure the screws on the adjustment plate firmly in place.

For these next steps, it is helpful to use two people.

3. Use the long phillips screwdriver to fasten the rear screws of the rail to the rack. Keep these screws loose for later adjustment.
4. Attach the rail to the rack at the front using the screws provided, keeping them loose for later adjustment.

Aligning the Outer Rails



Warning: These steps *must* be taken or the wheels of the inner rail can get bound to the outer rail, causing the chassis to get stuck.

1. Tighten the screws on the left rail *completely*: middle bolts first (for D-racks), then the front screws, and lastly, the rear.
2. Using the included alignment tool (Figure 1-13), insert it into the rails so that it rests on the inner track of the outer rails, just as a chassis would.



Figure 1-13 Alignment with the D-Rack Stiffener Vertical Bolt

3. Adjust the right rail until it is flush with the alignment tool and the left rail. Insure that the tool can be slid smoothly from the front to rear of the rack. (This step is also best accomplished with two people, as shown in Figure 1-14.)



Figure 1-14 Adjustment Using the Alignment Tool

4. Tighten the screws on the right rail in order of front then back, leaving the middle bolts last (for D-racks), so as to keep as straight an alignment as possible.
5. Double-check the alignment by moving the alignment tool through the rack. There should be no play between the alignment tool and the rails. (Figure 1-15)



Figure 1-15 Slide the Alignment Tool from Front to Back

6. When satisfied, remove the alignment tool from the rack.

Installing the Air Ducts

1. Place the left air duct above the left rail.
2. Using its mounting screws, attach the air duct to the rack.

Note: Some air ducts use a Velcro strip in place of a second screw. If this is the case, place the hook side of the Velcro on the air duct tab, and the fuzzy side of the Velcro on the outside of the outer rail.

3. Repeat this for the right side.

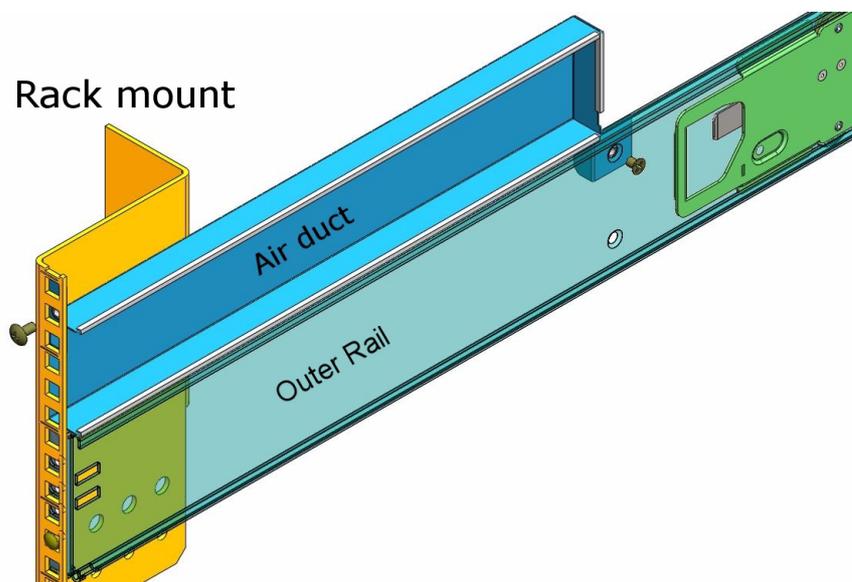


Figure 1-16 Air Duct above Outer Rail

Installing the Inner Rolling Rails

1. Align the rolling rails to the chassis so that the word “**Front**” is at the front of the chassis

Note: The word “**Front**” will be upside-down on one side of the chassis (Figure 1-17).

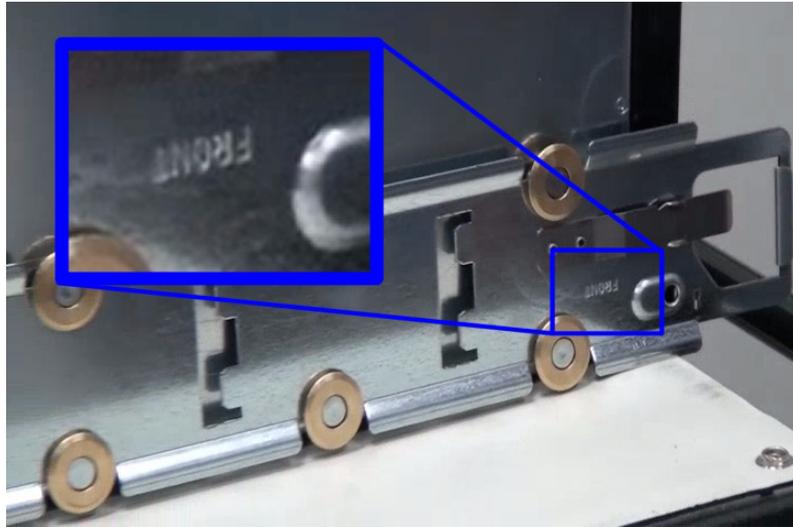


Figure 1-17 Align Rails to **Front**

2. Locate the six support tabs along the side of the chassis (Figure 1-18).



Figure 1-18 Support Tabs

3. Slide the rolling rail beneath the support tabs on the side of the chassis until it locks firmly into place (Figure 1-19).

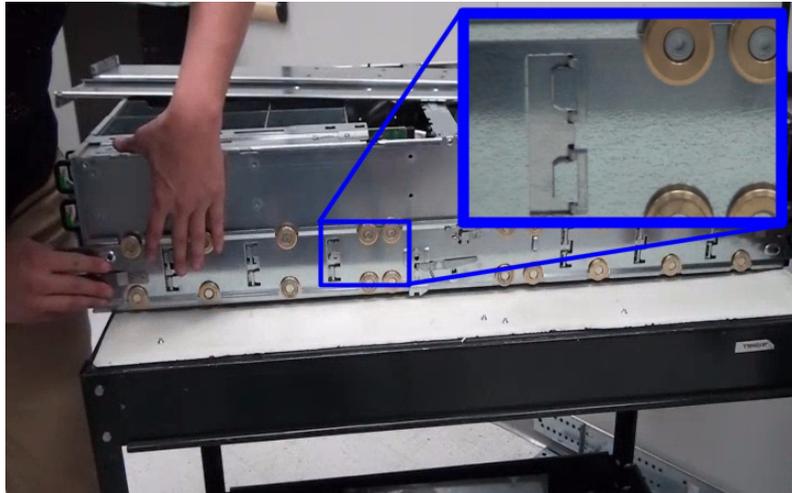


Figure 1-19 Lock on to Support Tabs

4. Using the included screws, attach the rolling rail to the chassis. Make sure the screw heads are counter-sunk, so as not to catch on anything when rolling in the rack.
5. You may have to move aside a safety latch in order to install some rolling rail screws. Be sure to set the safety latches back to their home positions after rolling rail installation (Figure 1-20).



Figure 1-20 Return Latch to Home Position

6. Do this for both sides.

Install the Chassis to the Rack

1. Using two people, line up the inner rails on the chassis with the outer rails in the rack. Slide the chassis into the rack.
2. Motion into the rack will stop, by design, when the first set of safety latches on the inner rails catch in position on the outer rails. Move the safety latches to the unlatched position and continue to place the chassis into the rack.
3. Test the motion of the chassis in the rack by moving it forward and backwards in the rack. This should only require one person to roll the rack forwards and backwards. The chassis should catch and latch at 20" from either side of the rack.

Sliding the Chassis Forward/Backwards

To slide the chassis out in either direction, follow these steps:

1. Push the two release latches in, at the left and right sides and in the center of the rail mounts, towards the center of the chassis.
2. Pull the chassis out using the handles. The chassis will latch at the 20-inch limit.
3. To slide the chassis back in, depress the two release latches near the rail and slide it back in.

Caution: Make sure that only *one* person moves the chassis in the rack at any given time. It is possible to get your fingers caught in the latches on either end if, while you're trying to push the chassis back into a locked position, someone else accidentally *pulls* from the other side. This can trap your finger between the metal edges of the rail mount and the rack (potentially resulting in injury). For more precautions, please see "Safety Precautions" on page xvii.

Removing the Front or Rear Chassis Cover

Important: When a chassis cover is removed while an MIS system is **powered on**, an intrusion sensor monitored by the BMC will detect its removal. If the cover is off for more than 15 minutes or any system temperature sensor exceeds its threshold limit, the server will perform an orderly shutdown and power-off.

As shown in Figure 1-21, the top of the chassis is bifurcated; that is, there is a front and rear chassis cover. Except for power supply maintenance, all service actions require that you remove the front or rear chassis cover, detailed below.

1. Remove the single security screw from the cover.
2. Push the detent, and slide the cover out and up from the chassis.

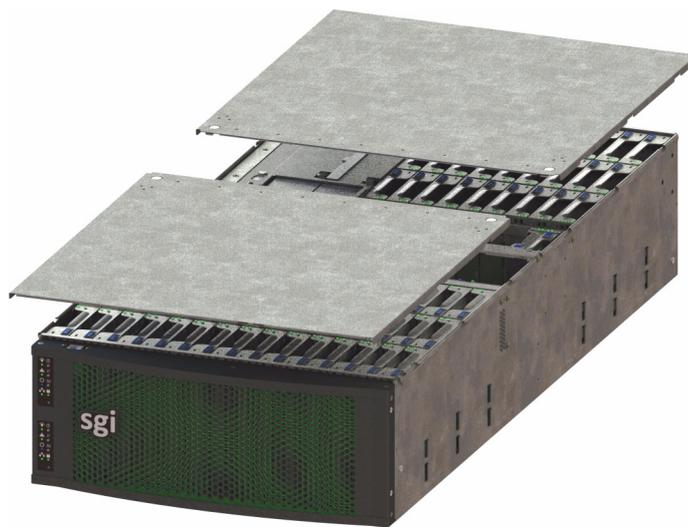


Figure 1-21 Front & Rear Chassis Covers

Installing the Drives

Drives are labeled with chassis, StorBrick, and drive information. To install the drives, first slide the chassis forward out of the rack to access StorBricks 0 through 4. Drives must first be installed

in drive carriers before being installed into the StorBricks. To install a hard drive into the hard drive carrier, perform the following steps.

Important: Due to thermal requirements, **drive slots 0, 1, and 2 must always be populated in every StorBrick**, with **drives all the same model and size form factor**. This sets up proper air flow through the system.

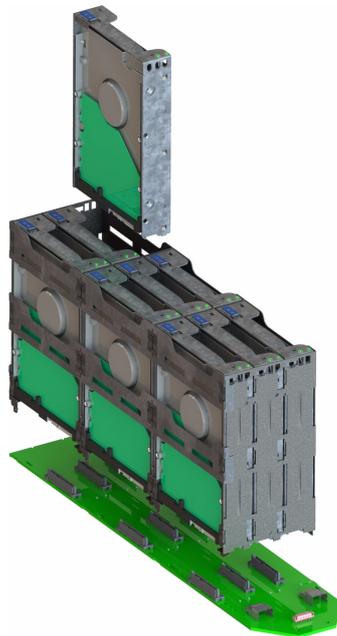


Figure 1-22 StorBrick Module with Drive in Carrier

1. Locate the drives for StorBricks 0-4 and order them on a cart according to the labels on the drive carriers.
2. Pull the chassis from the front of the rack (see “Sliding the Chassis Forward/Backwards” on page 18).



Figure 1-23 System Layout Diagram – Drive & Fan Placement

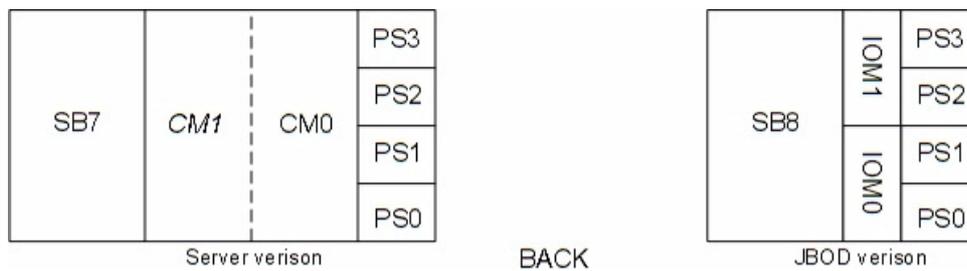


Figure 1-24 System Layout Diagram – Chassis Rear View

3. Remove the front chassis cover by first removing its safety screw , then by pressing the top cover button and lifting the cover from the chassis (see “Removing the Front or Rear Chassis Cover” on page 19).
4. Place the corresponding drive into its drive slot (a system layout diagram, Figure 1-23, is also provided on the inside of one of the top chassis covers). Press the drive firmly into the StorBrick. You will know the drive is in place when the latch on the top of the drive carrier snaps into place.
5. When all drives are in their correct slots, place the top cover on the chassis and secure it with its safety screw .
6. Move the chassis to the stowed position in the rack.
7. From the rear of the rack, move the chassis out backwards and repeat the above steps for the rear of the chassis (StorBricks 5-7 for a server, and 5-8 for a JBOD).

Warning: Boot Drives CM0-0 & CM0-1 are installed in single server ONLY. Be sure to install them into the correct drive slots. Installing the boot drives in the WRONG slot requires a complete reinstall of the operating system once returned to the correct slots. Boot Drives CM0-0, CM0-1, CM1-0, & CM1-1 are all installed in dual sever.

Cable Guide & Chassis Location

For systems that have multiple chassis, determine the proper location for each chassis in the rack: an MIS Server Platform can support up to four MIS JBOD enclosures. The server is always located in the **middle** of the JBOD enclosures, as seen in the layouts in Figure 1-26 through Figure 1-40 (cable colors are for clarity and may not correspond with actual cable colors).

The follow are a few suggestions for cable configurations given a single or dual chassis configuration, and a variety of JBODs. **This is by no means a complete list, nor is it the only way to configure connections.** Using T10-based zoning, there is the option to split the drives across the four HD miniSAS ports (Figure 1-25). Phy-based zoning is used when there is more than one JBOD I/O module present, and drives may be split between the two I/O modules.

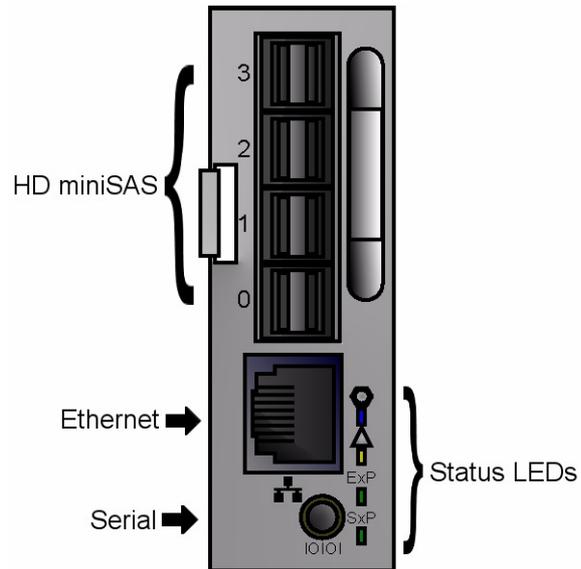


Figure 1-25 JBOD I/O Module Port Diagram

JBODs connect to the MIS Server using an external HBA. JBODs require the presence of an external HBA to connect to the MIS Server. Each HBA can support up to two JBODs, each server can support up to two JBOD HBAs, for a maximum of four JBODs per server.

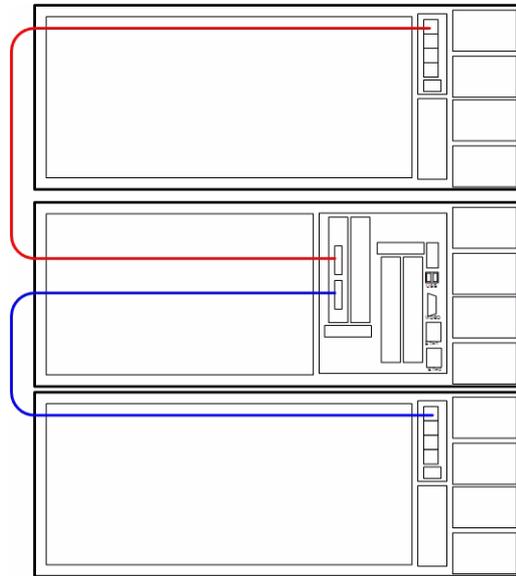


Figure 1-26 Cable Guide – Single Server with two JBODs

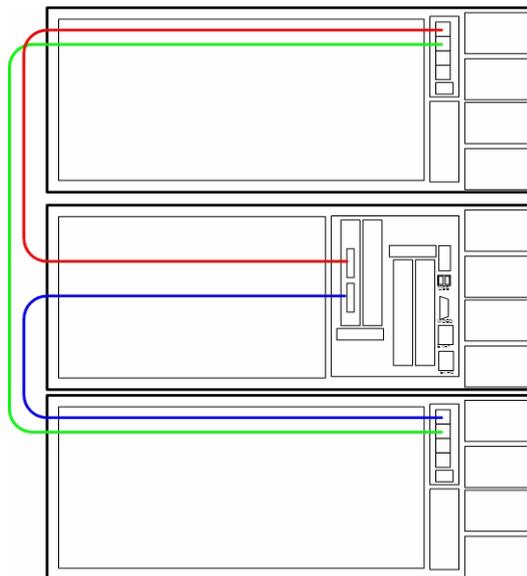


Figure 1-27 Cable Guide – Single Server with two JBODs Shared

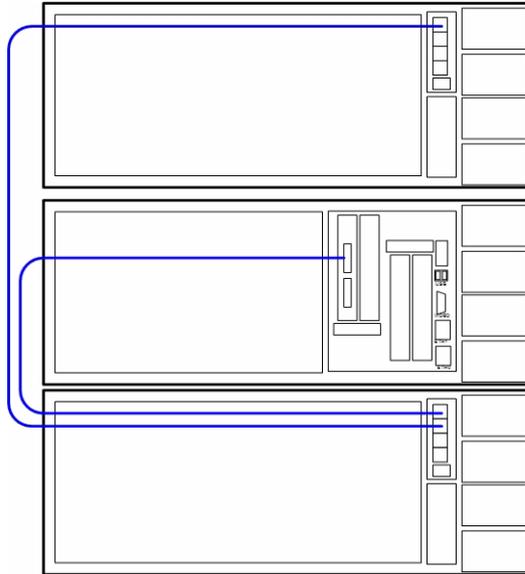


Figure 1-28 Cable Guide – Single Server with two JBODs daisy-chained

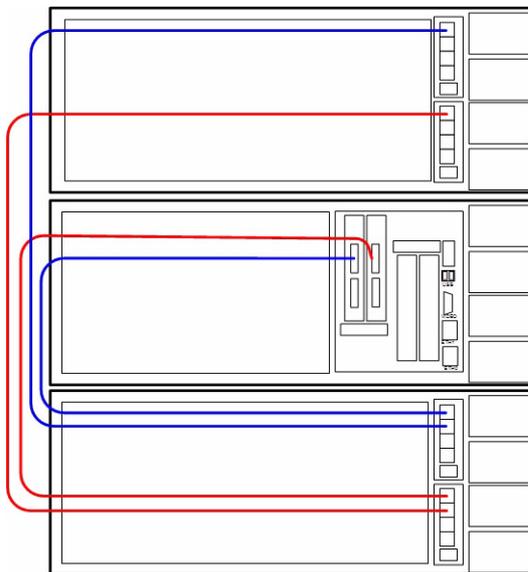


Figure 1-29 Cable Guide – Single Server with two HBAs, 2 JBODs with Dual I/O

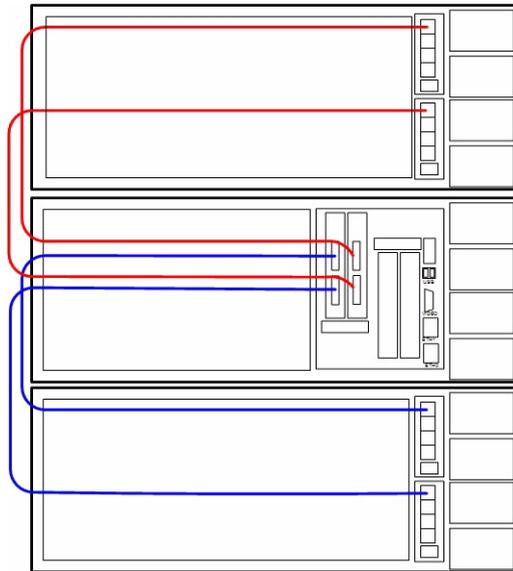


Figure 1-30 Cable Guide – Single Server with 2 HBAs, 2 JBODs with Dual I/O, split

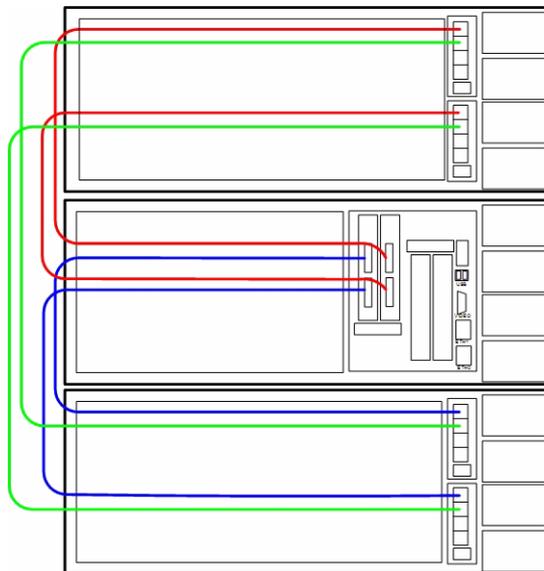


Figure 1-31 Cable Guide – Single Server with 2 HBAs, 2 JBODs with Dual I/O, shared

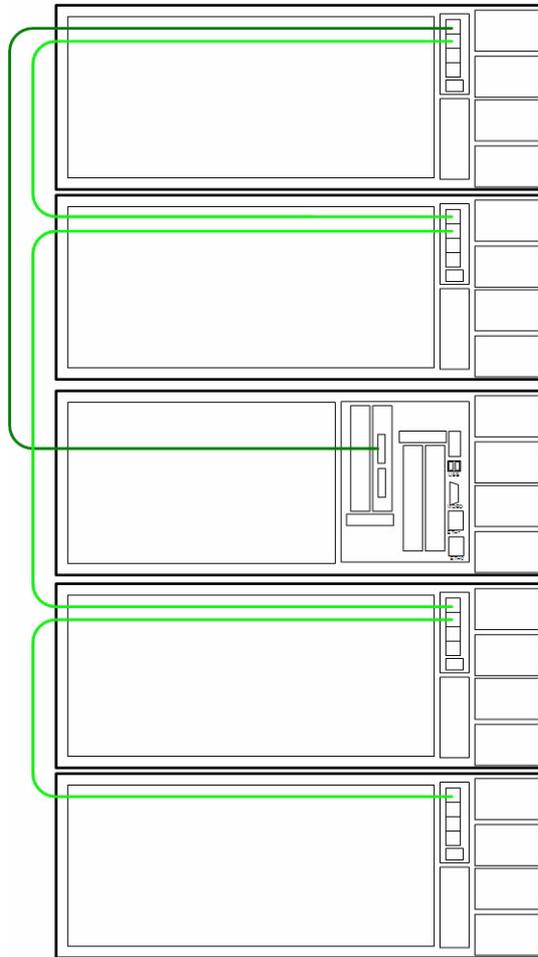


Figure 1-32 Cable Guide – Single Server with four JBODs daisy-chained

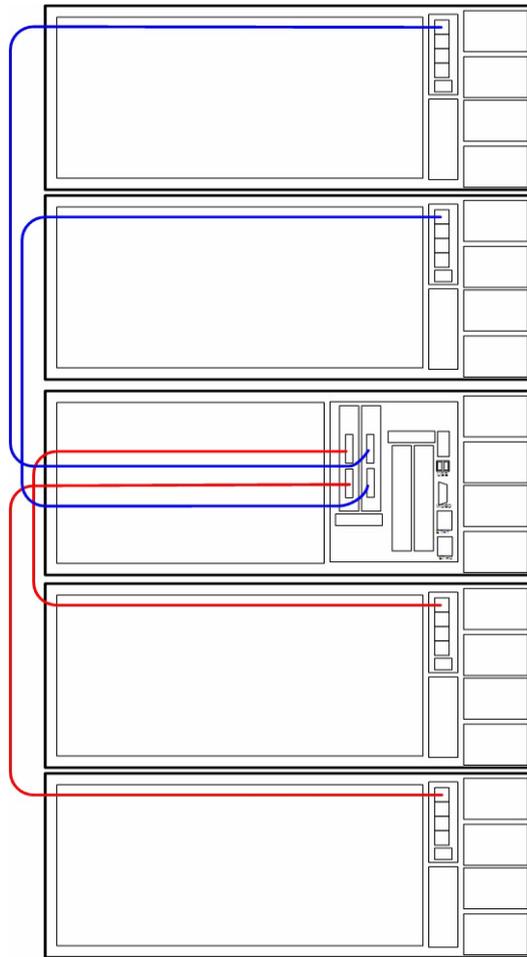


Figure 1-33 Cable Guide – Single Server, Dual HBA, four JBODs

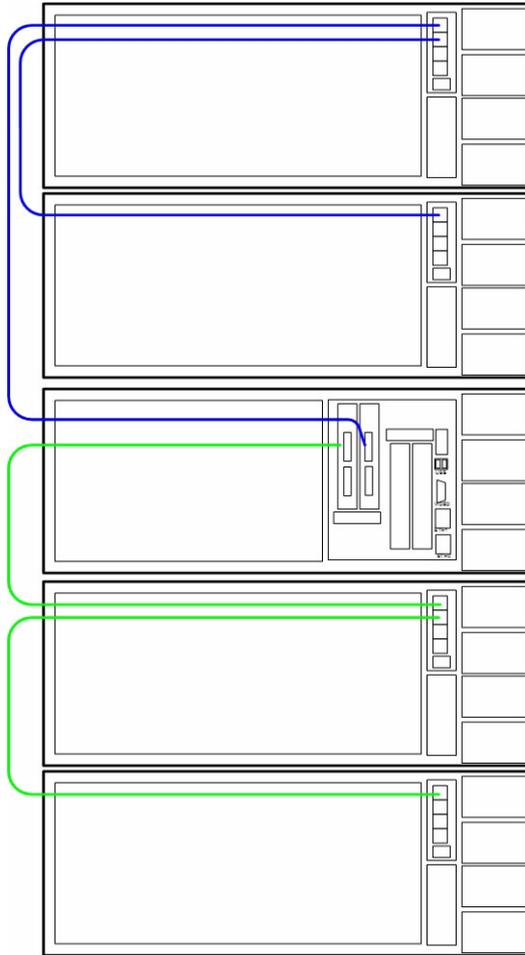


Figure 1-34 Cable Guide – Single Server, Dual HBAs, four JBODs daisy-chained

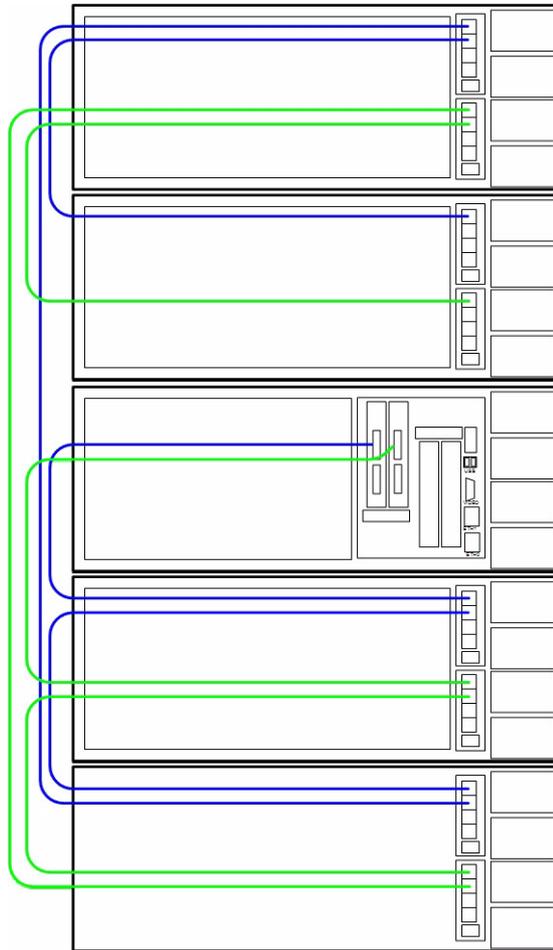


Figure 1-35 Cable Guide – Single Server, Dual HBAs, four JBODs with Dual I/O, split daisy-chain

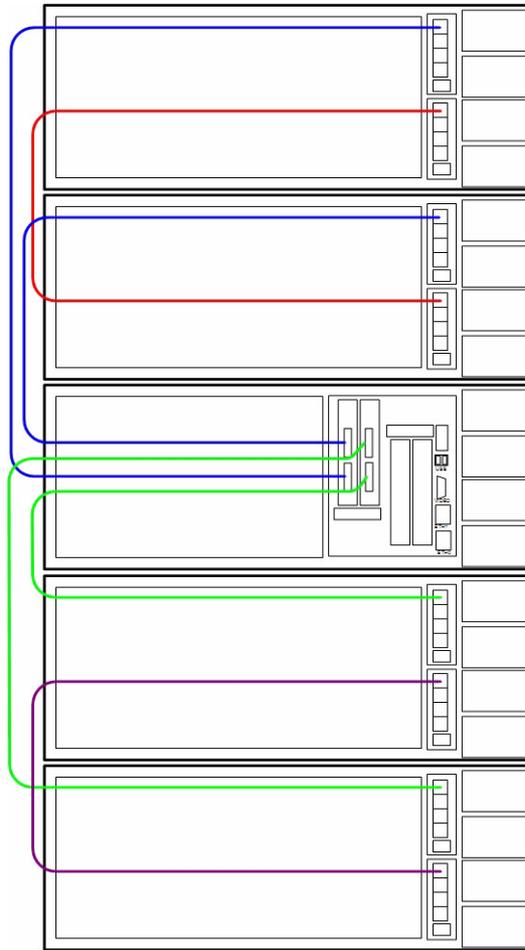


Figure 1-36 Cable Guide – Single Server with Dual HBAs, 4 JBODs with Dual I/O split-share

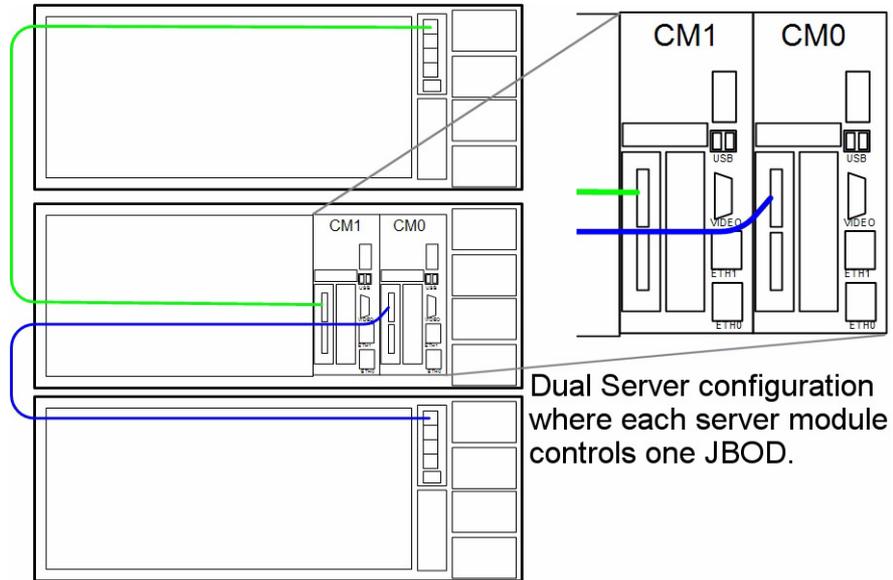


Figure 1-37 Cable Guide – Dual Server with two JBODs

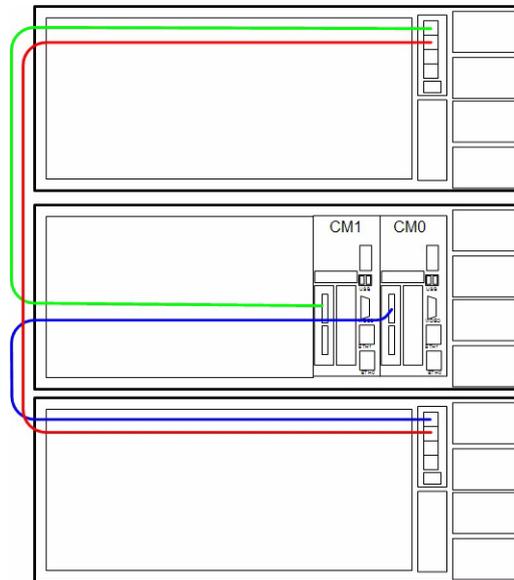


Figure 1-38 Cable Guide – Dual Server with two JBOD shared

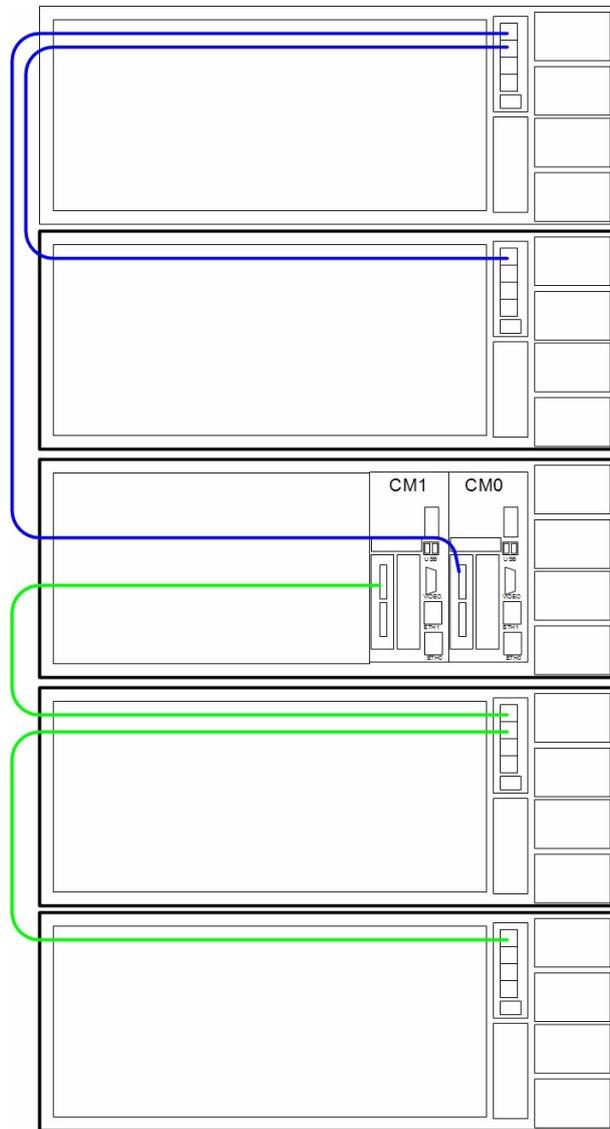


Figure 1-39 Cable Guide — Dual Server with four JBODs

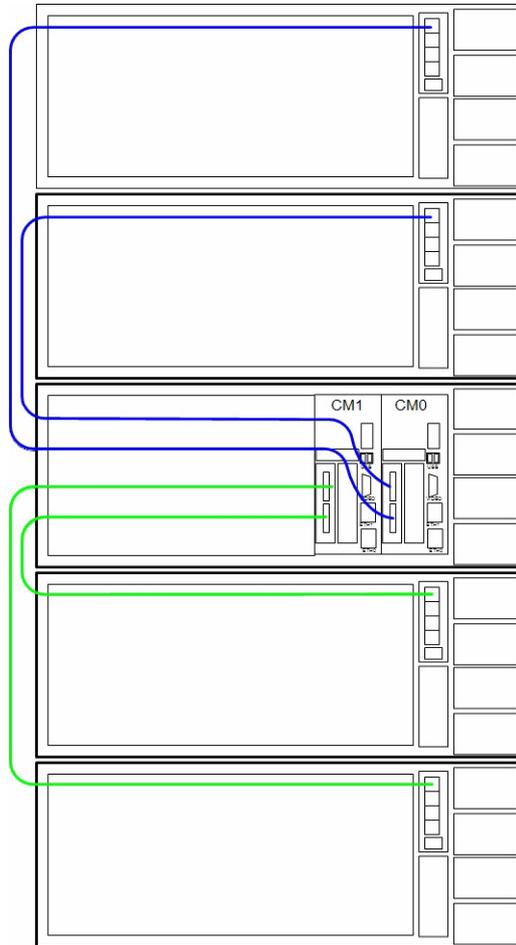


Figure 1-40 Cabling Guide – Dual Server with four JBOD split

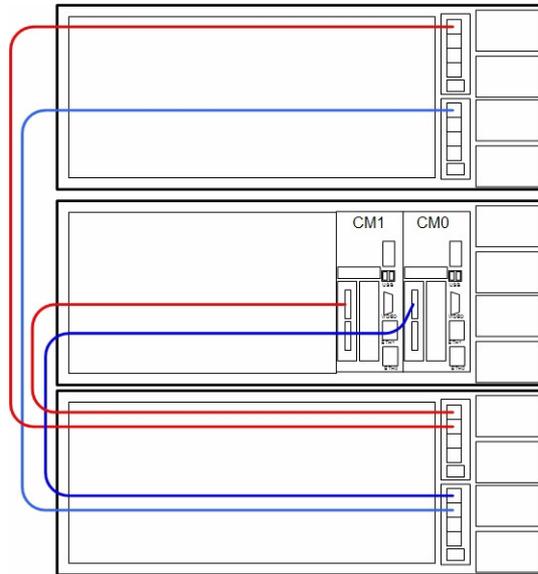


Figure 1-41 Cable Guide – Dual Server with 2 JBODs with Dual I/O

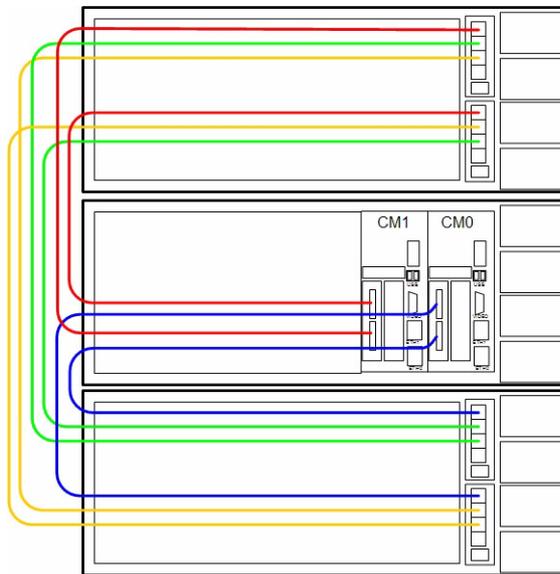


Figure 1-42 Cable Guide – Dual Server with 2 shared JBODs with Dual I/O

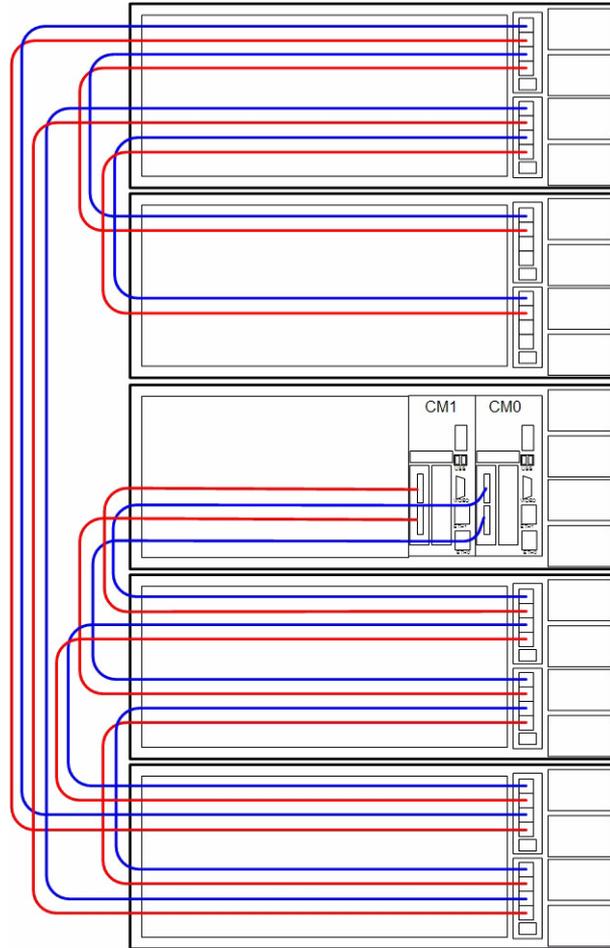


Figure 1-43 Cable Guide – Dual Server with 4 JBODs daisy-chained

Cable Management Arm

The cable management arm is an optional addition to the MIS chassis that helps keep cables organized in the rack. It attaches to a plate on the rear of the MIS chassis and to the rack in which the chassis is mounted. The cable management arm comes in a length designed for 26" deep racks, such as the D-Rack. It can be shortened to accommodate other rack sizes (Figure 1-44).

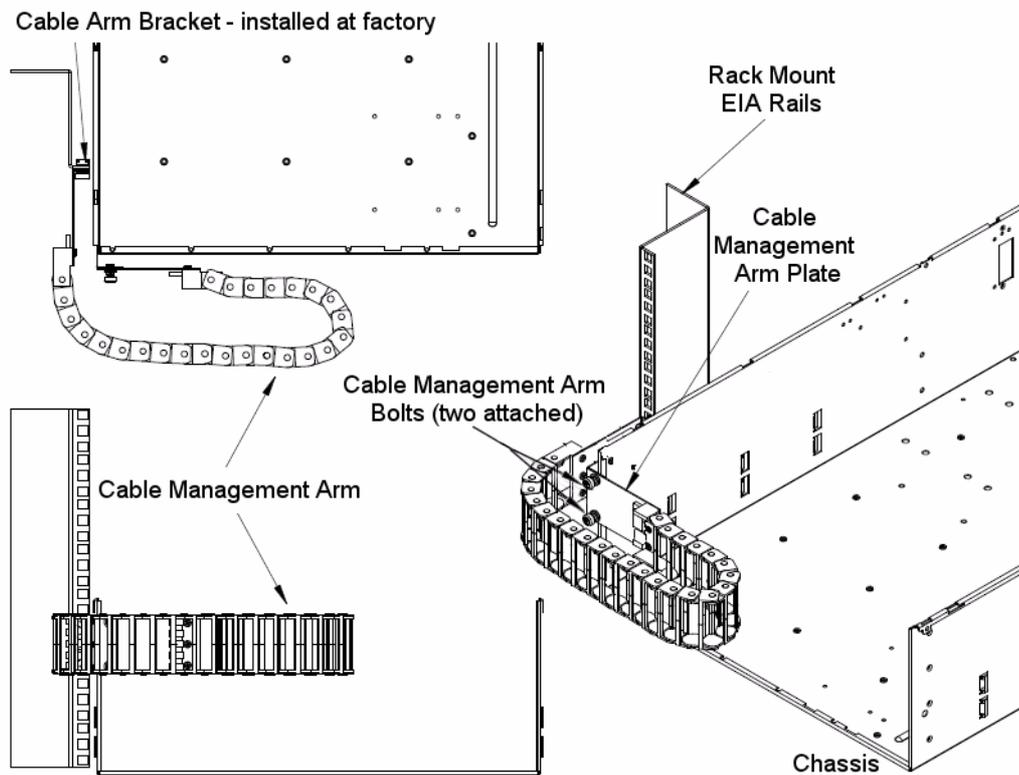


Figure 1-44 Cable Management Arm

Shortening the Cable Management Arm

Removing segments from the cable management arm is done using a thin flat-head screwdriver.

- For a 26" deep rack, do not remove any sections.
- For a 30" deep rack, remove 3 sections of the arm.
- For a 34" deep rack, remove 6 sections of the arm.

There are two ways that segments can be removed: either while the cable management arm is not attached to the chassis or rack, and devoid of cables, or while attached to the rack and chassis, full of cables.

Shortening the Cable Arm While Empty

For the first method, segments are removed from the *end* of the arm. Use the flat-head screwdriver and slip it between the plastic pieces that form the joint of the arm (Figure 1-45).



Figure 1-45 Remove Segments from the End of an Empty Arm

Pry the joint open using the thin blade of the screwdriver by wedging it between the plastic parts that make up the joint and twisting the screwdriver until the outer plastic piece pops off of the inner plastic tab (Figure 1-46).



Figure 1-46 Pry the Joint Apart



Figure 1-47 Pull the Segments from the Arm

The segments are now removed from the end of the arm (Figure 1-47), and the arm can now be attached to the chassis and rack (Figure 1-48).



Figure 1-48 Shortened Arm Ready for Installation

Shortening the Cable Arm While Full

The second way to shorten the cable management arm is while it is already installed on the rack, with cables in it. In this case, the segments are removed from the *middle* of the cable management arm (Figure 1-49).



Figure 1-49 Remove Segments from the Middle of a Full Arm

Pry the joint of a segment open by using the thin blade of a flat-head screwdriver by wedging it between the plastic parts that make up the joint and twist the screwdriver until the outer plastic piece pops off of the inner plastic tab (Figure 1-50).



Figure 1-50 Pry Open the Segment Joint

Repeat for the joint on the other side, then pull the arm apart by sliding it down the cables (Figure 1-51).



Figure 1-51 Pull Apart the Cable Management Arm

Pry apart the segment joint on the other end of the section you wish to remove (Figure 1-52), until the number of unwanted segments have been separated from the rest of the cable arm.



Figure 1-52 Pry Apart the Joint at the Other End

Once complete, separate the section of unwanted segments from the cables by twisting the section off (Figure 1-53).



Figure 1-53 Twisting the Section of Segments from the Cables

Bring the two spliced ends of the cable management arm together, and snap the joint together (Figure 1-54).



Figure 1-54 Join the Spliced Ends of the Cable Management Arm

The cable arm should now be the appropriate length for the depth of the rack.

Installing the Cable Management Arm

To install the cable management arm, first extend the chassis out the rear of the rack (“Sliding the Chassis Forward/Backwards” on page 18). Next, lie the cable management arm on a table with the open side up. Lay the cables to be attached to the chassis on top, and starting at one end, press the cables into the arm until they snap inside. Continue to press the cables down the length of the arm until they are all inside. Once complete, slide the arm down the cables until there is enough length to allow the arm to be bolted into place on the Cable Arm Bracket (Figure 1-44 on page 37) .

Using the attached bolts, fasten the Cable Management Arm Plate to the Cable Arm Bracket. Then, wrap the arm around itself (as in Figure 1-44). Next, slide the chassis out the front of the rack to be able to access the rack mount EIA side rails. Attach the end arm plate to the EIA rail using the provided screws and nuts. Return the chassis to the stored position in the rack.

The cables can now be connected to their corresponding inputs (power, networking). Once cabling is complete, use the provided velcro strips to wrap the cords and hold them tight (Figure 1-55).



Figure 1-55 Included: Velcro Cable Ties

Turning the Power On

To power-on an MIS Server Platform, hold down the power button firmly until the fans spin up and the hardware lights come on. This will initialize the the machine's BIOS and start internal diagnostics, including hardware status, RAID Volume information, missing hardware alerts (e.g., missing batteries), and missing configuration alerts. This process will be repeated for each expander in the machine, and finally (if conditions allow), the machine's operating system will load and welcome/login screen appear.

If the machine is powering on and there is a fault (e.g., the machine was in the middle of a rebuild when the power was cut, a degraded RAID set is in the system, battery is exhausted, etc.), these warnings will appear during start-up.

If the platform is an MIS dual-server and both servers are powered down, performing the above steps powers on the server with which you are working, the drives, and the fans. The second server will remain powered off until it is powered on, then all power will be turned on.

For a JBOD Unit, the power button on the front panel will turn on the power to that I/O module, the fans and the drives. If a second module is installed and powered off, it will remain off until it, too, is powered on.

Troubleshooting

This section describes troubleshooting for the problems listed below, many which customers are able to perform without the assistance of SGI Field Technicians. In SGI's *Modular Infinite Storage (MIS) User Guide* (publication series **007-5818-00x** and **007-5916-00x**), Chapter 2, "System Interfaces," describes use of the control panel to monitor the overall system status and the status of specific components.

- "No Video" on page 46
- "Losing the System's Setup Configuration" on page 46
- "'Missing' Firmware Files" on page 46
- "'Missing' Firmware Files" on page 46
- "Cannot Receive Email Alerts Using BMC" on page 47
- "Intel BIOS POST error messages and handling description" on page 49
- "Beep Codes" on page 53

- “Not all beep codes signal an error” on page 54
- “Fans don’t spin when power button pressed” on page 54
- “Fans spin when power button is pressed, but no video display is seen” on page 55
- “BIOS or board logo appear, but OS load screen never appears” on page 55
- “OS load screen appears, but nothing further” on page 55
- “OS fully loads, but errors are seen” on page 55
- “Cannot boot after new software or drivers were installed” on page 55
- “Cannot boot after settings were changed in BIOS” on page 56
- “System Gets Stuck in a Reboot Cycle” on page 56

Other troubleshooting information is contained in *SIG Modular InfiniteStorage (MIS) User Guide*, “Related Publications” on page xxv (such as, [Intel® Remote Management Module 4 and Integrated BMC Web Console User Guide](#)). For help beyond what is mentioned in this document, see “Product Support” on page xxi.

No Video

If the power is on but there is no video, remove all add-on cables (besides power & video). Use a different monitor to determine if the fault lies with it. Use the speaker to determine if any beep codes exist. Refer to “Beep Codes” on page 53 for details.

Losing the System’s Setup Configuration

Make sure there is no fault with the power supplies. A fault with the power supply may cause the system to lose the CMOS setup information. If this does not fix the Setup Configuration problem, contact SGI for repairs.

“Missing” Firmware Files

There may come a time when you will need to update the zoning tool in order to support the firmware that is present on the StorBricks in a new MIS Server or JBOD machine. If this is the case, you will receive an error message that states either: **Unable to find directory that contains firmware files** or **Unable to find firmware file**, and below that, the version number of the firmware files necessary (example: **01.30.00.00**).

The firmware folders necessary for download will contain the version number in the folder name. So for this example, the desired firmware folders will have a name similar to storbrick-release-01.30.00.00 <date>.

You will need to download the necessary firmware files and place them into the /opt/Zones/Versions folder for Linux and the c:\Program Files (x86)\Zones\Versions folder for Windows.

Cannot Receive Email Alerts Using BMC

In order to receive email alerts, the MIS Server must be networked to a SMTP mail server. Next, using the BMC, go to the **Configuration** page, and click on **Alert Email** (Figure 1-56).

The screenshot shows the Intel Integrated BMC Web Console interface. The top navigation bar includes 'System Information', 'Server Health', 'Configuration', and 'Remote Control'. The 'Configuration' section is active, and the 'Alert Email' sub-section is selected. The 'Alert Email Settings' page contains the following configuration fields:

- LAN Channel:** Baseboard Mgmt (dropdown menu)
- SMTP Server IP:** 137.38.102.29
- Sender Address:** admin@sgi.com
- Local Hostname:** BMC-Web-Console-201

A 'Save' button is located below the configuration fields. On the left side, a vertical menu lists various configuration options: IPv4 Network, IPv6 Network, Users, Login, LDAP, VLAN, SSL, Remote Session, Mouse Mode, Keyboard Macros, Alerts, Alert Email (highlighted), and Node Manager.

Figure 1-56 BMC Alerts Email Settings Page

The **LAN Channel** should be set to **Baseboard Mgmt.** The **SMTP Server IP** should be the IP address of the mail server to which the MIS Platform is connected. **Sender Address** can be any email address configured on the SMTP server. **Local Hostname** can be any name to identify the machine sending the alert (limit of 18 characters). When finished, click the **Save** button at the bottom of the page. A pop-up will let you know that the changes have been saved (Figure 1-57).



Figure 1-57 BMC Alert Configuration Success Pop-up

Next, click on **Alerts** in the left-hand navigation pane (Figure 1-58).

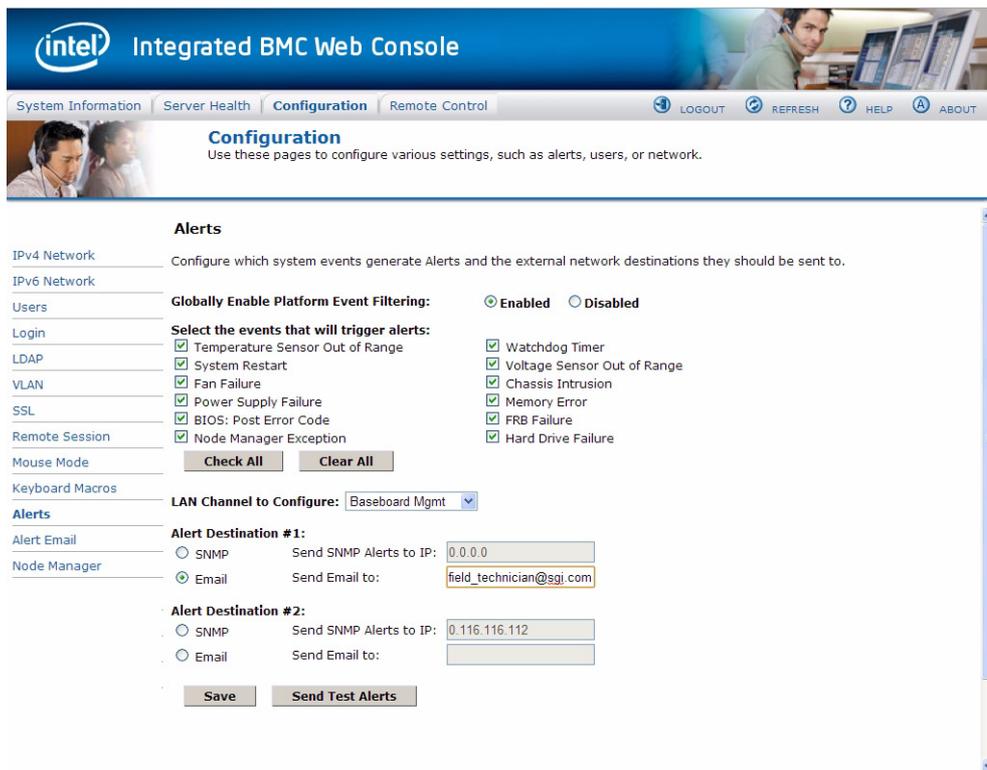


Figure 1-58 BMC Alerts Configuration Page

Make sure all the checkboxes for alerts contain a check for each alert to be sent. The **LAN Channel to Configure** should be set to **Baseboard Mgmt.** **Alert Destination #1** should be set to **Email**, and **Send Email to:** should be the email address of the account to receive the alerts. When finished, click the **Save** button at the bottom of the page. A pop-up will let you know that the changes have been saved. To test your configuration, click the **Send Test Alerts** button. You will receive a pop-up letting you know that the email was sent, and you will receive an email notifying you of a successful test (Figure 1-59).

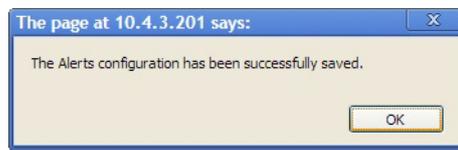


Figure 1-59 BMC Alert Configuration Success Pop-up

Intel BIOS POST error messages and handling description

Refer to this table if you receive a code during the POST of booting my Intel® Server Board. What does it mean?

See table for listing of codes for BIOS events relevant to Intel® Server Boards.

Table 1-1 Intel BIOS POST Error Messages

Error Code	Error Message Response	Event Type
004C	Keyboard / interface error	Major
0012	CMIS date / time not set	Major
0048	Password check failed	Fatal
0141	PCI resource conflict	Major
0146	Insufficient memory to shadow PCI ROM	Major
0192	L# cache size mismatch	Fatal
0194	CPUID processor family are different	Fatal
0195	Front side bus mismatch	Major
5220	Configuration cleared by jumper	Minor

Table 1-1 Intel BIOS POST Error Messages (continued)

Error Code	Error Message Response	Event Type
5221	Passwords cleared by jumper	Major
8110	Processor 01 internal error (IERR) on last boot	Major
8111	Processor 02 internal error (IERR) on last boot	Major
8120	Processor 01 thermal trip error on last boot	Major
8121	Processor 02 thermal trip error on last boot	Major
8130	Processor 01 disabled	Major
8131	Processor 02 disabled	Major
8160	Processor 01 unable to apply BIOS update	Major
8161	Processor 02 unable to apply BIOS update	Major
8190	WatchDog timer failed on last boot	Major
8198	Operating system boot WatchDog timer expired on last boot	Major
8300	Baseboard management controller failed self-test	Major
8305	Hot swap controller failed	Major
84F2	Baseboard Management Controller failed to respond	Major
84F3	Baseboard management controller in update mode	Major
84F4	Sensor data record empty	Major
84FF	System event log full	Minor
8500	Memory component could not be configured in the selected RAS mode	Major
8520	DIMM_A1 failed Self Test (BIST)	Major
8521	DIMM_A2 failed Self Test (BIST)	Major
8522	DIMM_A3 failed Self Test (BIST)	Major
8523	DIMM_A4 failed Self Test (BIST)	Major
8524	DIMM_B1 failed Self Test (BIST)	Major

Table 1-1 Intel BIOS POST Error Messages **(continued)**

Error Code	Error Message Response	Event Type
8525	DIMM_B2 failed Self Test (BIST)	Major
8526	DIMM_B3 failed Self Test (BIST)	Major
8527	DIMM_B4 failed Self Test (BIST)	Major
8528	DIMM_C1 failed Self Test (BIST)	Major
8529	DIMM_C2 failed Self Test (BIST)	Major
852A	DIMM_C3 failed Self Test (BIST)	Major
852B	DIMM_C4 failed Self Test (BIST)	Major
852C	DIMM_D1 failed Self Test (BIST)	Major
852D	DIMM_D2 failed Self Test (BIST)	Major
852E	DIMM_D3 failed Self Test (BIST)	Major
852F	DIMM_D4 failed Self Test (BIST)	Major
8580	DIMM_A1 Correctable ECC error encountered	Minor/Major after 10 events
8581	DIMM_A2 Correctable ECC error encountered	Minor/Major after 10 events
8582	DIMM_A3 Correctable ECC error encountered	Minor/Major after 10 events
8583	DIMM_A4 Correctable ECC error encountered	Minor/Major after 10 events
8584	DIMM_B1 Correctable ECC error encountered	Minor/Major after 10 events
8585	DIMM_B2 Correctable ECC error encountered	Minor/Major after 10 events
8586	DIMM_B3 Correctable ECC error encountered	Minor/Major after 10 events
8587	DIMM_B4 Correctable ECC error encountered	Minor/Major after 10 events

Table 1-1 Intel BIOS POST Error Messages (**continued**)

Error Code	Error Message Response	Event Type
8588	DIMM_C1 Correctable ECC error encountered	Minor/Major after 10 events
8589	DIMM_C2 Correctable ECC error encountered	Minor/Major after 10 events
858A	DIMM_C3 Correctable ECC error encountered	Minor/Major after 10 events
858B	DIMM_C4 Correctable ECC error encountered	Minor/Major after 10 events
858C	DIMM_D1 Correctable ECC error encountered	Minor/Major after 10 events
858D	DIMM_D2 Correctable ECC error encountered	Minor/Major after 10 events
858E	DIMM_D3 Correctable ECC error encountered	Minor/Major after 10 events
858F	DIMM_D4 Correctable ECC error encountered	Minor/Major after 10 events
8601	Override jumper set to force boot from lower alternate BIOS bank of flash ROM	Minor
8602	WarchDog timer expired (secondary BIOS might be bad)	Minor
8603	Secondary BIOS checksum fail	Minor
92A3	Serial port component was not detected	Major
92A9	Serial port component encountered a resource conflict error	Major
0xA000	TMP device not detected	Minor
0xA001	TMP device missing or not responding	Minor
0xA002	TMP device failure	Minor
0xA003	TMP device failed self test	Minor

Beep Codes

The BMC may generate beep codes upon detection of failure conditions. Beep codes are sounded each time the problem is discovered (for example, on each power-up attempt), but are not sounded continuously. Common supported codes are listed in Table 1-2.

In Table 1-2, each digit in the code is represented by a sequence of beeps whose count is equal to the digit.

Table 1-2 BMC Beep Codes

Beep Code	Reason for Beep	Associated Sensors	Supported
1-5-2-1	No CPUs installed or first CPU socket is empty.	CPU Missing sensor	Yes
1-5-2-4	MSID Mismatch.	MSID Mismatch sensor.	Yes
1-5-4-2	Power fault: DC power is unexpectedly lost (power good dropout).	Power unit—power unit failure offset.	Yes
1-5-4-4	Power control fault (power good assertion time-out).	Power unit—soft power control failure offset.	Yes
1-5-1-2	VR WatchDog Timer sensor assertion	VR WatchDog timer	
1-5-1-4	The system does not power on or unexpectedly powers off and a power supply unit (PSU) is present that is an incompatible model with one or more other PSUs in the system.	PSU status	

Another source of beep codes may be the LSI MegaRAID card. Table 1-3 contains a summary of the LSI MegaRAID card beep codes. These beep codes indicate activity and changes from the optimal state of your RAID array.

Table 1-3 Summary of LSI MegaRAID Card Beep Codes

Beep Code	LSI Firmware State	Cause (Depending on RAID Level)
3 seconds on, 1 second off	SPEAKER_OFFLINE_ENTRY	RAID 0: One or more drives offline. RAID 1: Two drives offline. RAID 5: Two or more drives offline. RAID 6: More than two drives offline.
1 second on, 1 second off	SPEAKER_DEGRADED_ENTRY	RAID 1: A mirrored drive failed. RAID 5: One drive failed. RAID 6: One or two drives failed.
1 second on, 3 seconds off	SPEAKER_HOTSPARE_ENTRY	A hot spare drive has completed the rebuild process and has been brought into the array.

Not all beep codes signal an error

Intel boards and systems are designed to indicate USB readiness by a series of beep codes during POST, before video becomes available. These beeps mean USB is powered and initialized.

Device such as a pen drives or USB CD/DVD ROM drives attached to external USB port will generate a beep once the device is recognized, powered and initialized.

These beep codes do not signal any error. They signal USB and external device readiness during POST.

Fans don't spin when power button pressed

Is at least one power supply fan spinning? If it is yes, there is good power to the modules. Verify all required power cables are correctly plugged into the power supply modules.

If it is no, there is potential lack of clean power to the module. Swap power cable. Try different wall circuit or replace a power supply module (see “Replacing a Power Supply” on page 58).

Fans spin when power button is pressed, but no video display is seen

Are there any beeps? If **yes**, beep codes are listed in Table 1-3 on page 54. If the answer is **no**, there may be a memory card error, processor error, or misplacement of the boot drives in the chassis.

Ensure the boot drives are in the correct location (Figure 1-23). ONLY Boot Drives CM0-0 & CM0-1 are installed in single server. Boot Drives CM0-0, CM0-1, CM1-0, & CM1-1 are ALL installed in dual sever.

For memory and processor errors, contact SGI Technical Support (see “Product Support” on page xxi).

BIOS or board logo appear, but OS load screen never appears

This may be a problem with add-in cards in the server system. Contact SGI Technical Support (see “Product Support” on page xxi).

OS load screen appears, but nothing further

This may be a problem with add-in cards in the server system. Contact SGI Technical Support (see “Product Support” on page xxi).

OS fully loads, but errors are seen

Use operating system logging utility such as Windows Event Viewer or Linux dmesg to narrow the source of the error, and contact SGI Technical Support (see “Product Support” on page xxi).

Cannot boot after new software or drivers were installed

If you recently installed new software or new device drivers, try booting into Safe Mode and uninstall the new software or driver. If you can now boot normally, there may be a compatibility

issue between the new software or driver and some component in your system. Contact the software manufacturer for assistance.

Cannot boot after settings were changed in BIOS

Certain changes in BIOS settings (such as chipset timing or latency, memory timing or latency, processor clock frequency, etc.) can cause a system to no longer boot. If you are able to enter the BIOS Setup by pressing F2, reset the BIOS to factory defaults by pressing F9. Save and exit the BIOS Setup. If you cannot enter the BIOS Setup, contact SGI Technical Support (see “Product Support” on page xxi).

System Gets Stuck in a Reboot Cycle

If the platform gets stuck in a cycle where it is continuously rebooting without ever going into full power on, try replacing two of the power supplies, even if they are not reporting faults.

If a power supply has failed and does not correctly issue its fault (i.e., it *falsely* reports that it is still working), it will cause the platform to go into standby power mode, and the platform will try rebooting in order to power up. This can cause the platform to get stuck in a reboot cycle, and never actually successfully powering on. Replacing the faulty power supplies resolves this issue.

System Maintenance

For warranty and safety considerations, SGI designates the following chassis components as customer-replaceable units (CRUs):

- Power supplies
- Fans
- Disk drives

These components are all hot-swappable; that is, you can replace them without powering down the platform. A trained service technician should install and replace all other components. This chapter describes how you replace the CRUs:

- “Detecting Component Failures” on page 57
- “Replacing a Power Supply” on page 58

- “Replacing a Power Supply” on page 58
- “Replacing a Fan Module” on page 59
- “Replacing a Disk Drive” on page 61

A common maintenance “first step” is, “Removing the Front or Rear Chassis Cover” on page 19

The following tools are required for these replacement procedures:

- #1 and #2 Phillips screwdrivers
- Short #2 Phillips screwdriver
- Flat-head screwdriver

Note: Screwdrivers with magnetic tips are recommended.



Warning: Review the warnings and precautions listed in, “Important Information” on page xv, before setting up or servicing this chassis.

Detecting Component Failures

In general, when a system component fails, the BMC sends an alert (when configured to do so; see “Alert Email” on page 51 for more information). Drive failures are recognized and reported through MegaRAID Storage Manager (MSM). Either the BMC or MSM generates an alert to the monitoring application for your storage server. The alerts include the system serial number, the suspect component, and a summary of the fault. Drives, power supplies and fans can be replaced using the following procedures listed in this chapter. For all other components, you should inform SGI service of the fault and forward the information from the alerts.

Some component failures are also registered on the Fan Base Service Page. The Fan Base Service Page can be accessed by connecting through the MIS-S9D Proprietary Ethernet port (Figure 1-60) and pointing a browser to the fan base IP: `10.4.3.196/service.xml` for servers (Figure 1-62) and `10.4.3.214/service.xml` for JBODs. Using the Fan Base Service Page, failed fans can be set in a “Safe to Service” mode, a step necessary before changing out a fan module.



Figure 1-60 MIS-S9D Proprietary Network Interface

Replacing a Power Supply

Power supplies are only hot-swappable if the redundant power option (total of 4 power supplies) is installed. If the platform has only 2 power supplies, the system will need to be powered down before replacing a faulted power supply. To replace a failed power supply, take the following steps:

1. Using the BMC Web Interface, verify the fault (failed unit) and turn on the locator LED (blue) for that chassis.
2. Locate the failed unit in the specified chassis: its amber service LED should be lit, indicating a fault (see Figure 1-61).
3. Unplug the power supply that will be replaced and remove its power cord.
4. Push the release tab on the back of the power supply.
5. Pull the power supply out using the handle.
6. Replace the failed power module with another of the same model.
7. Push the new power supply module into the power bay until it clicks into the locked position.
8. Plug the AC power cord back into the module, and plug the module in.
9. If the power supply is being hot-swapped on a system that is already powered on, the power supply will power up automatically. If the power supply is being installed in a system that is not powered on, the system should be powered on at this time.

10. You will have to wait a few moments for the power supply to respond to AC power, and complete its internal processes, before its status LEDs are illuminated. Once lit, ensure that it is also recognized as **Good** in the BMC.

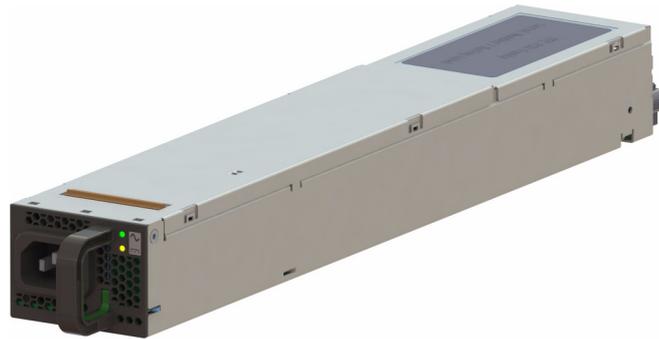


Figure 1-61 Power Supply Module

Replacing a Fan Module

Warning: If the fan is NOT set in a “**Safe to Service**” mode, there are only **10 seconds** available to exchange a fan. Without setting “**Safe to Service**,” the platform will assume a fan has experienced *critical failure*, requiring an emergency shutdown for thermal requirements. Setting “**Safe to Service**” allows more time for replacement procedures (**15 minutes**) before initiating thermal shutdown.

1. Using the BMC Web Interface, verify the fault (failed module) and turn on the locator LED (blue) for that chassis.
2. Locate that chassis and use an Ethernet cable to connect a server/laptop to the MIS-S9D Proprietary Network Interface (Figure 1-60).
3. Access the Fan Base Service Page by pointing a browser to <http://192.168.0.196/service.xml> (for servers) or <http://192.168.0.214/service.xml> (for JBODs) from the connected server/laptop. This will bring up the Fan Base Service Page (Figure 1-62).

MIS Server Chassis											
Cover is on, uptime 16868006(ms mod 2 ³²)				All FANS <input type="button" value="On"/>				<input type="button" value="Shutdown"/>			
D8	D5	D2	StorBrick 5 Good	Boot Drive CM0-1	FAN 5 Good <input type="button" value="On"/> <input type="button" value="Off"/> RPM : 12273 : 11650	StorBrick 4 Good	D0	D3	D6	R E A R	F R O N T
D7	D4	D1		Boot Drive CM0-0			D1	D4	D7		
D6	D3	D0		Boot Drive CM1-1			D2	D5	D8		
D8	D5	D2	StorBrick 6 Good	Boot Drive CM1-0	FAN 4 Good <input type="button" value="On"/> <input type="button" value="Off"/> RPM : 11977 : 10704	StorBrick 3 Good	D0	D3	D6		
D7	D4	D1					D1	D4	D7		
D6	D3	D0					D2	D5	D8		
D8	D5	D2	StorBrick 7 Good		FAN 3 Good <input type="button" value="On"/> <input type="button" value="Off"/> RPM : 10836 : 12334	StorBrick 2 Good	D0	D3	D6		
D7	D4	D1					D1	D4	D7		
D6	D3	D0					D2	D5	D8		
Compute Module 1 -					FAN 2 Good <input type="button" value="On"/> <input type="button" value="Off"/> RPM : 11753 : 11021	StorBrick 1 Good	D0	D3	D6		
Compute Module 0 CM0 P1 59.0°C Ok - CM0 P2 55.0°C Ok								D1	D4	D7	
Power Supply 3 Good								D2	D5	D8	
Power Supply 2 Good					FAN 1 Good <input type="button" value="On"/> <input type="button" value="Off"/> RPM : 11384 : 11014	StorBrick 0 Good	D0	D3	D6		
Power Supply 1 o								D1	D4	D7	
Power Supply 0 o								D2	D5	D8	

Figure 1-62 Fan Base Service Page

- From the Fan Base Service Page, locate the faulted fan, and click the Off button.
- At the prompt, **Are you sure you want to turn OFF FAN #?** (where # is the number of the fan), click **Ok**. This put the fan in a **“Safe to Service”** mode and will illuminate its blue locator LED.
- Remove the front chassis cover (see “Removing the Front or Rear Chassis Cover” on page 19) and locate the fan module with the illuminated blue LED (Figure 1-63).
- Loosen the thumbscrew, pull out the faulted fan by pulling upward on both the front and rear flanges, and replace it.
- Once the fan module is replaced, seat the fan by pushing between the two LEDs until it seats.
- Re-install the chassis cover and security screw.

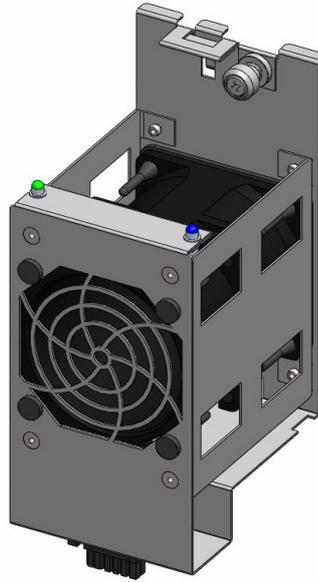


Figure 1-63 Fan Module

10. Using the fan base Service page, return the fan to On/Full Power. At the prompt, **Are you sure you want to turn ON FAN #?** (where # is the number of the fan), click **Ok**. If there are no faults, the fan will power up, report status of **Good**, and its green LED will be lit. This will also turn off the blue locator LED.
11. Unlock the chassis from the extended position and push it back until it locks into the stowed position.
12. Using the BMC, clear the chassis locator LED.

Replacing a Disk Drive



Important: Empty drive carriers cannot be inserted into the StorBricks, so slots without HDDs will not have carriers.

To replace a failed disk drive:

1. Using the MegaRAID Storage Manager for your system, verify the fault (failed unit).
2. Using the MegaRAID Storage Manager, set the system to a service state for the removal of the faulted drive. The MegaRAID Storage Manager will turn off the drive. It will then turn on the fault LED (yellow) for that drive.
3. Remove the chassis cover. (See “Removing the Front or Rear Chassis Cover” on page 19.)
4. Locate the faulted drive with the illuminated blue LED and remove it from its StorBrick (or boot drive bay). (See “Removing the Drive” on page 62.)
5. Replace the faulted drive. (See “Installing the Drives” on page 19.)
6. Once the drive is replaced, re-install the chassis cover and security screw.
7. Unlock the chassis from the extended position and push it back until it locks into the stowed position.
8. Using the MegaRAID Storage Manager, return the system to a normal state. The new drive will be powered on.
9. If there are no faults at this time, the rebuild or mirroring of the data to the new drive will begin.

Removing the Drive

As shown in Figure 1-22, the drives are mounted in drive carriers to simplify their installation and removal from the drive bricks or boot drive bays in the chassis.

To remove the drive, perform the following steps:

1. Ensure that the drive LEDs are off (except the blue locator LED), indicating that the drive is not in use and can be removed.
2. Unlatch the drive carrier by sliding the grey latch toward the drive and pull the drive carrier out of the StorBrick or boot drive bay.
3. Remove the four screws that secure the drive to the drive carrier.
4. Remove the drive from the carrier.

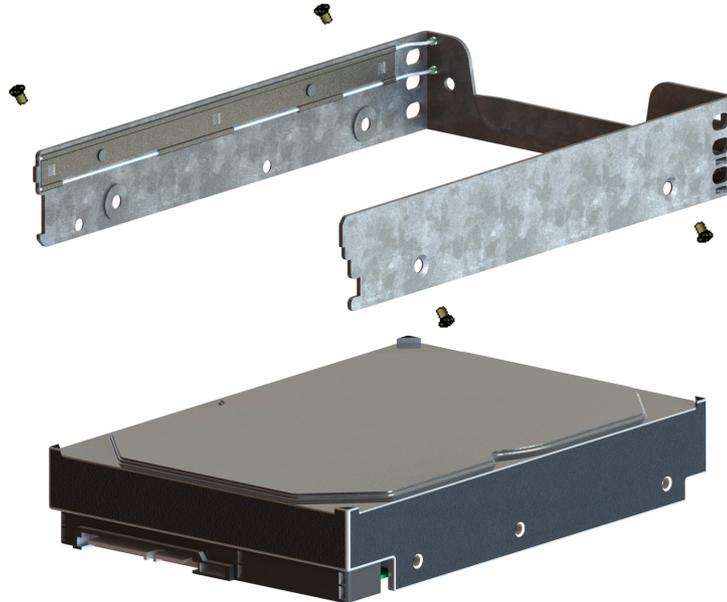


Figure 1-64 Hard Drive and Carrier

Re-installing the Drive

To re-install a hard drive into the hard drive carrier, perform the following steps:

1. Place the hard drive carrier on a flat, stable surface such as a desk, table, or work bench.
2. Slide the hard drive into the carrier with the printed circuit board side facing down.
3. Carefully align the mounting holes in the hard drive and the carrier.
Make sure the bottom of the hard drive and bottom of the hard drive carrier are flush.
4. Secure the hard drive using the four screws (see Figure 1-64).
5. Replace the drive carrier into the chassis.
6. Push the drive carrier down to lock it place.
7. Replace the chassis cover and slide the chassis back into place in the rack.

8. Using the MegaRAID Storage Manager (see *SGI Modular InfiniteStorage (MIS) User Guide*, or *SGI Modular InfiniteStorage (MIS) User Guide, version 1.5*, Chapter 3, “System Software,”), and add the drive to the system zoning configuration. Once properly zoned, the drive will begin the rebuild process.

Safe Power-Off

There are different ways to shut down an MIS machine, each more extreme than the next. The most polite way is to go into the machine’s operating system and select **Shut Down**. This will prompt the user to enter a password before allowing the shut-down process. They include,

- Using the OS GUI power-off button at the console screen, if a keyboard/mouse/video monitor is connected.
- When logged in via an ssh session and executing a “shutdown” or “poweroff” command.
- When logged in to the BMC and using the power control page to power off the sever.
- Using the remote console screen GUI power-off button, if a KVM RMM4Lite session is established through the BMC.
- Connecting to the fan base using the MIS-S9D proprietary network interface and executing a “shutdown” or “poweroff” command.

If the platform is an MIS dual-server and **both** servers are powered up, performing the above steps powers off the server with which you are working. The fans, drives and second server will remain powered on until the second server is powered off, then all power (but standby) will be turned off.

For a JBOD Unit, the power button on the front panel will turn off the power to that I/O module. If a second module is installed and powered on, it, the fans and the drives will remain on until it, too, is powered off.

The next way shut down the platform is to hold down the **Power** button on the front of the unit until the machine powers off. However, this is not a polite way to power off the machine, and will require a recovery process at start-up.

If power is lost from outside the machine (power outage), the machine will recognize the loss of power and execute an emergency shutdown procedure. If there is a battery back-up unit installed, it will protect integrity of cache in the event of power or server failure.