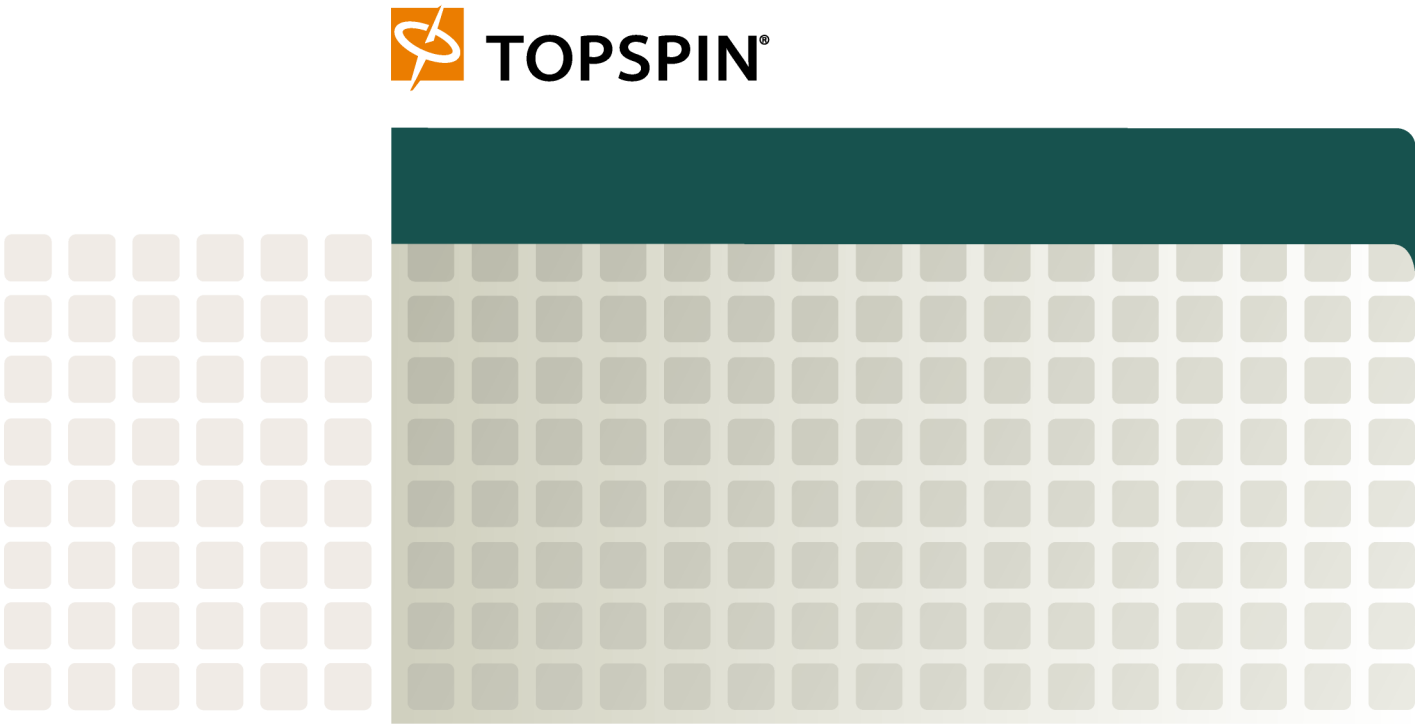

Topspin 120/Cisco SFS 7000 Hardware Guide

Release 2.3.0

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Regulatory Notices

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Safety Information

Electrical Cautions

CAUTION: Use only the power cable provided with your system. Inspect the power cord and determine if it provides the proper plug and is appropriately certified for use with your electrical system. Discard the cord if it is inappropriate for your country's electrical system and obtain the proper cord, as required by your national electrical codes or ordinances.

CAUTION: Grounding is supplied by the ground-prong on the 3-prong power cable. Do not attach a separate ground cable. Do not use adapter plugs. Do not remove the ground prong from the cable. Ensure the ground connection on the power supply is correct and functioning before applying power to the system.

CAUTION: Always ground yourself before touching any internal system component to avoid damage from electrostatic discharge (ESD).

CAUTION: The system has two power cables. The operator must disconnect all power cables before attempting to remove the system from the rack.

CAUTION: Remove power cables by grasping the cable connector and pulling straight out.If the chassis comes equipped with a power-plug retainer, move the bail wire used to retain the plug to the side before attempting to remove the power plug. Replace power-supply cables be grasping the cable connector, align the connector with the power jack, and insert the connector straight into the jack.If the chassis comes equipped with a power-plug retainer, move the bail wire back into place to keep the power plug firmly in place.

CAUTION: The system contains lithium batteries. Do not attempt to replace or discard these batteries. The batteries may only be serviced by service personnel.

CAUTION: Observe and follow service markings. Do not service the system, except as explained in the documentation supplied with your system. Opening the chassis or removing the enclosure cover exposes you to electrical shock and may damage system components.

If one or more of the following situations occurs, remove power to the system chassis, and contact your support representative:

- The power cable or power plug is damaged.
- The system has been exposed to water.
- The system has been dropped or damaged in any way.
- The system does not operate correctly after following the installation instructions.

CAUTION: You must ensure the operating environment has adequate air circulation. Keep the system in a cool, well-ventilated room. Do not block cooling vents. Install filler panels into all unused slots.

CAUTION: Never place your hand inside an empty card or module bay. You should never have cause to place a hand anywhere inside the chassis. Unused card and module bays should always have a cover over the bay to ensure proper safety, ventilation, and cooling.

General Cautions

CAUTION: No user is authorized to remove the system enclosure cover. The internal chassis contains no user-serviceable components. Removing the enclosure cover voids your warranty. See the warranty card for further details regarding the servicing of your chassis.

In general

- Do not spill food or liquids on your system components.
- Protect your system from sudden power-surges and interruptions by using a surge suppressor, line conditioner, or uninterruptable power supply (UPS).
- Place cables appropriately so that they do not obstruct any egress within the data center and they do not block any ventilation inlets or outlets.
- Rack mount the chassis according to the rack manufacturer recommendations.

Contact Information

Table III-1: Customer Contact Information

Address	Topspin Communications, Inc. 515 Ellis St. Mountain View, CA 94043
Telephone, Corporate Headquarters	(866) TOPSPIN or (650) 316-3300
Fax	(650) 316-3269
Telephone, Technical Support	(800) 499-1473
Email, Technical Support	support@topspin.com
Web site, Support	http://support.topspin.com

1

Features Overview

The Topspin 120/Cisco SFS 7000 Server Switch provides data center managers with a high-performance, low-latency interconnect.

Features

This section details the Topspin 120/Cisco SFS 7000 hardware features.

InfiniBand Connectivity

The Topspin 120/Cisco SFS 7000 can be used in a variety of networking environments, including database tiers, application tiers, and Web tiers. The Topspin 120/Cisco SFS 7000 provides 10 Gbps connectivity to servers.

InfiniBand-enabled servers are automatically recognized as they are connected.

Scalability

The Topspin 120/Cisco SFS 7000 can scale to manage up to 256 hosts.

Hi-Availability

Hi-availability runs at the hardware, port, and fabric level.

Hardware

The Topspin 120/Cisco SFS 7000 features hot-swappable redundant power and cooling.

Ports

No failure on any single InfiniBand port will result in interruptions in service for any of the other ports.

Fabric

For redundancy, InfiniBand Host Channel Adapters can be dual-connected to a redundant pair of Topspin 120/Cisco SFS 7000s.

In an InfiniBand fabric that includes more than one Topspin 120/Cisco SFS 7000: if the subnet manager on the Topspin 120/Cisco SFS 7000 that is acting as the master fails, another subnet manager will take over within seconds.

There should be no interruption in traffic on the InfiniBand fabric or on the failed device if the only part that failed was the management board, and all necessary state information is kept in sync.

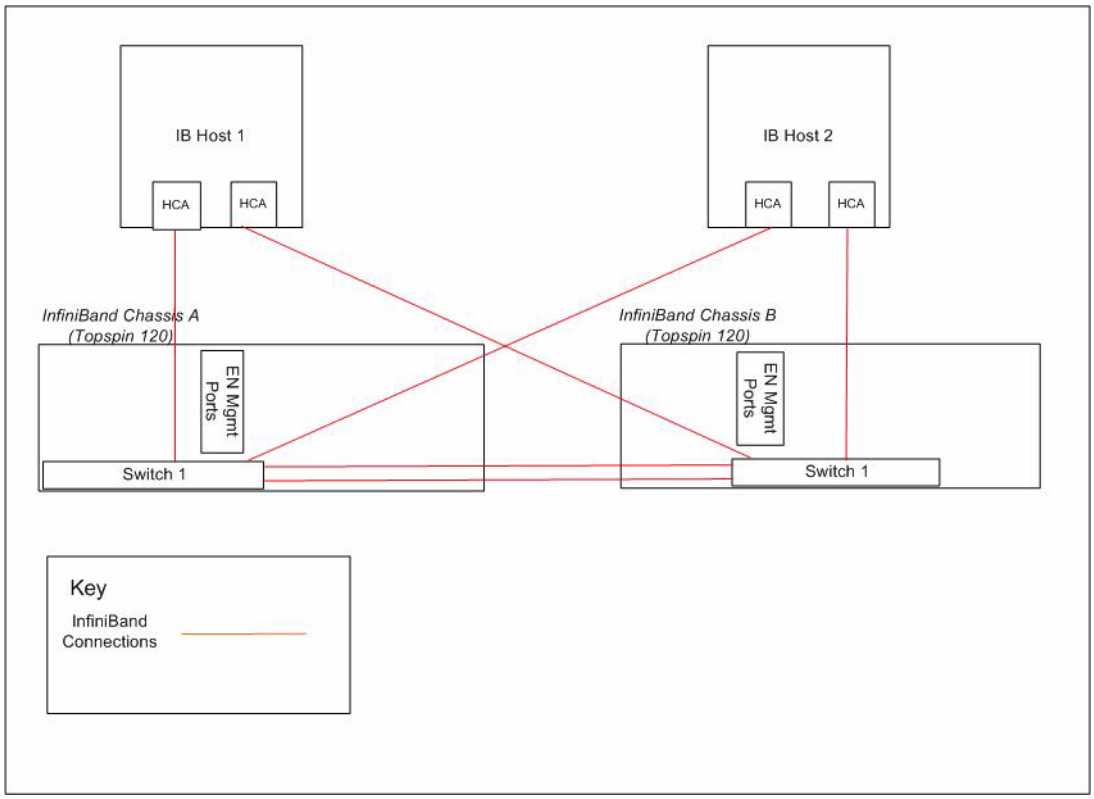


Figure 1-1: Example of Redundant Topspin 120/Cisco SFS 7000 InfiniBand Fabric

Non-Blocking Architecture

The Topspin 120/Cisco SFS 7000 provides non-blocking switch element architecture with full bi-sectional bandwidth for the switch chassis.

Topspin 120/Cisco SFS 7000 Chassis

The Topspin 120/Cisco SFS 7000 includes the following hardware features:

Size

- **Height**: 1U unit.
- **Width**: Standard 19" rack mount width.

- **Weight**: < 22 lbs.

Connections

- 24 ports of 10 Gbps 4X Copper InfiniBand.
- One 10/100 Ethernet RJ-45 Management-Ethernet port for out-of-band management.
- One RJ-45 Console Port used to configure and monitor the Topspin 120/Cisco SFS 7000.

LEDs

Chassis LEDs

The chassis LEDs show overall system status, power status, and fan status. LEDs and their use are described in (see "Chassis Status LEDs" on page 21).

InfiniBand Port LEDs

The InfiniBand port LEDs show link status, diagnostics, and network traffic. LEDs and their use are described in "Using the LEDs" on page 21.

Power Supplies/Fan Units

Refer to "Installing a Power Supply/Fan Unit" on page 18 for more information.

About the Power Supply Bay

The chassis provides dual independent IEC connectors, left and right justified.

About the Power Supplies/Fan Trays

The power supplies are:

- redundant, and hot-swappable

  The replacement of any one power supply/fan tray does not disrupt the operation of the device in anyway, and can be successfully completed without having to remove the device from a rack, or disconnecting any cables.
- auto-ranging 90-264VAC, 47-63Hz.
- Redundant, hot-swappable cooling.

Administrative Features

Real-Time Clock

The Topspin 120/Cisco SFS 7000 maintains correct time regardless of power conditions or connectivity.

Latency

The Topspin 120/Cisco SFS 7000 has port to port latency of less than 200ns.

Non-Volatile Memory

The memory supports up to:

- three stored system images (not including recovery image)
- one week of log files at normal verbosity; and one day of log files at maximum verbosity

Vital Product Data Storage

Vital Product Data is stored in non-volatile memory in the power supply and is available electronically. The following Vital Product Data is accessible by the maintenance processor and made available to the RS-232 and Ethernet ports regardless of power conditions or connectivity.

- Power on hours
- Manufacturing part number
- Serial number
- Final test date
- Card ID
- Failure code
- Failure date
- Operation status
- Failure log
- OEM part number

Diagnostics

Refer to “Hardware Diagnostic Tests” on page 29 for more detailed information.

The following tests are used to run to determine operational status:

- Power On Self Test (POST) is performed on all system components is required during power on to determine operational readiness.
- Redundant components' operational status is ensured periodically during normal operation, including the logic required to perform the transition from faulted/primary to redundant component. Detection of abnormal status is reported.
- Concurrent port loopback tests, including the capability to wrap an external signal from input port to output port, are available.

2

Installing the Topspin 120/Cisco SFS 7000

This chapter describes how to install and manage the Topspin 120/Cisco SFS 7000 system hardware.

Prepare the Site

This section provides information that you need to safely and successfully prepare your environment for your Topspin 120/Cisco SFS 7000. Read this section carefully before you install your device.

Read the Cautionary Statements

Refer to the"FCC Statement" on page v and the "Safety Information" on page v.

Prepare the Physical Environment for the Topspin 120/Cisco SFS 7000 System

- Ground yourself using an approved ground wrist-strap.
- Make sure you have the right cables and sufficient ventilation.
- Unpack the Topspin 120/Cisco SFS 7000 package.
- Prepare a management workstation, such as a PC running a terminal program, and a rollover M/F DB-9 serial cable (included).

Configure Basic Connectivity

Attach a Serial Console Cable to a PC or Terminal

1. Connect the cable from the Topspin 120/Cisco SFS 7000 serial console to your terminal or management workstation; use the straight-through M/F serial cable, which is provided in the Topspin 120/Cisco SFS 7000 package.

   For detailed information on how to connect the serial console cable, please see the documentation included with the serial cable kit.

2. Open a terminal emulation window using a program such as HyperTerminal for Windows. Set your terminal parameters to the following:
   - Baud: **9600 bps**
   - Data Bits: **8**
   - Parity: **None**
   - Stop Bits: **1**
   - Flow control: **None**

For the VFrame Evaluation Test Plan, continue to Step b of "Hardware Configuration Steps" on page 14 in the VFrame Evaluation Test Plan.

Power on the Chassis

Use only the power cable provided with your InfiniBand system.

1. Inspect the power cord and determine if it provides the proper plug and is appropriately certified for use with your electrical system. Discard the cord if it is inappropriate for your national electrical system and obtain the proper cord, as required by your national electrical codes or ordinances.

   Grounding is supplied by the ground-prong on the 3-prong power plug. Do not attach a separate ground cable. Do not use adapter plugs. Do not remove the ground prong from the cable. Ensure the ground connection on the power supply is correct and functioning before applying power to the chassis.

2. Remove the power cords from the shipping package.

   There should be two power cords, UL rated 10 Amps/125 VAC or greater.

3. Insert the power cords to the power jacks on the rear of the chassis. The system will automatically boot up. You can watch the running status via the serial console.

Refer to Figure 2-1 for power jack locations.

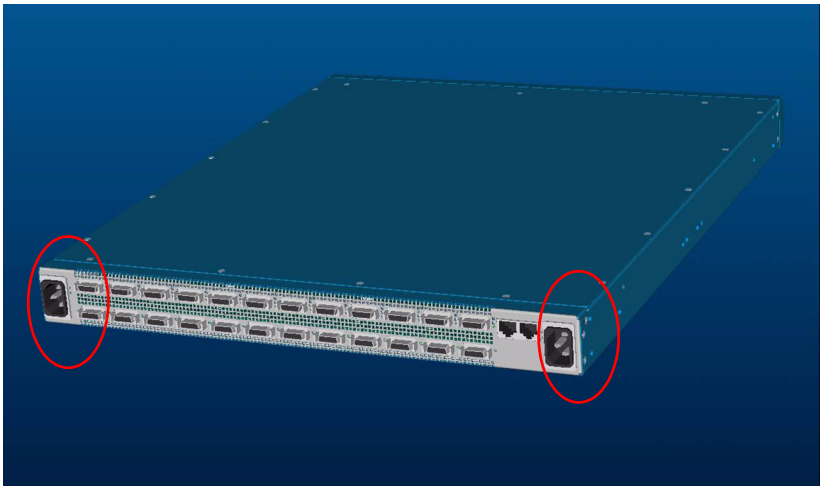


Figure 2-1: Power Jack Locations

4. Plug the other end of each AC power cable into a 90-264VAC power outlet operating at 47-63Hz.

   The chassis automatically starts and boots. Use the correct external power-source. Attach the chassis only to approved power sources, as indicated by the electrical ratings label. If you are unsure of the correct power-source to use, contact your support personnel or your local power company.
5. Check the LEDs on the front of the Topspin 120/Cisco SFS 7000 system. When the system first powers up, it performs a power-on self test (POST). Refer to "Using the LEDs" on page 21.
6. In the terminal emulation window of the system being used to administer the Topspin 120/Cisco SFS 7000, press **Enter** one or more times to display the CLI prompt.

```
Login:
```

Once you see this prompt, you can log in and assign a network address.

The default login is:

- **super**
- **super**

Proceed to the *Command Line Interface Reference Guide* for additional management information.

Mount the Topspin 120/Cisco SFS 7000 Chassis in a Rack

This section describes how to install the Topspin 120/Cisco SFS 7000 chassis in an equipment rack.

Requirements

In addition to the accessories provided with the switch, you should have:

- A #1 Phillips screw driver
- 12 screws and any associated mounting clips to secure the brackets to your rack (2 for each rail of the rack).

  Note: Installing the rack to the system with screws other than the ones provided could be hazardous.

- Two people are recommended to perform install.

  Note: The Topspin 120/Cisco SFS 7000 chassis weighs < 22 lbs.

Rack Mount Installation

To mount the Topspin 120/Cisco SFS 7000 chassis in a rack:

1. Remove the chassis, rack brackets, CD-ROM, parts bag, and documentation from the box.
2. Place the chassis on a secure, clean surface.
3. Open the plastic bag containing mounting parts.
4. Check the slot in the rack for sufficient clearance.
5. Determine the desired method of installation:
   - "Installing the Switch with One Person" on page 8
   - "Installing the Switch with Two People" on page 11

Installing the Switch with One Person

The following method of installation is easier with two people, but can be accomplished with one person. It can be difficult to align the switch correctly along the rack rails with only one person.

1. Take one set of rack brackets and separate them. Each side arrives assembled to its counterpart, but should be separated before attaching to the switch when using this method of installation.

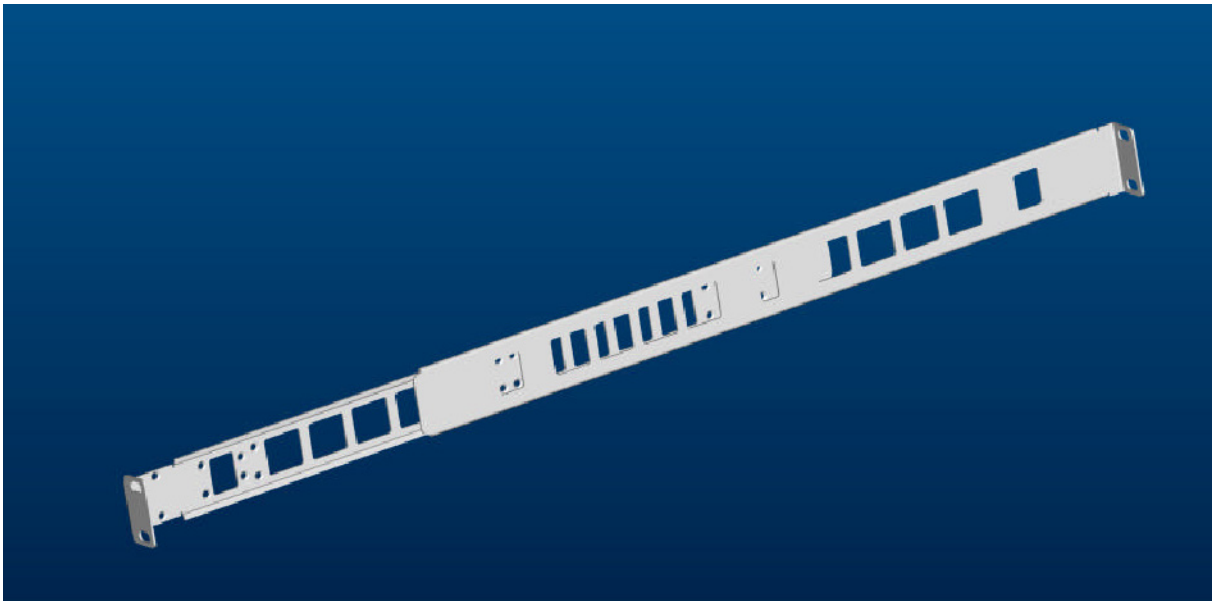


Figure 2-2: Assembled Rail Brackets

2. Attach the bracket that has the screw holes to the side of the chassis with the flange facing away from the switch, as shown in Figure 2-3.

The standard method is to face the flange toward the front of the chassis. However, you can also mount the flange toward the back if you want to mount the switch backward in the chassis (service-side forward).

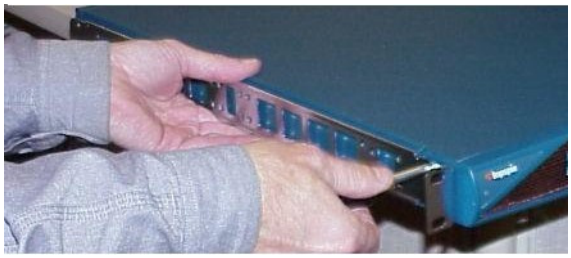


Figure 2-3: Attaching One Rail to Switch Chassis

3. Repeat steps 1 and 2 on the opposite side of the switch chassis.

   The two counterparts to these sliding rack brackets (that do not have screw holes) should still be unattached.

4. Check the rack for clearance for the switch. The switch can be installed either directly on top of another device, or be suspended from the rack posts.

5. Attach the remaining 2 rack brackets to your rack.

   a. Orient a bracket toward the back of the rack with the flange facing away from the rack. The flange should go around the outside of the rack post, as shown in Figure 2-4.

   (Note: If you are mounting the switch backward, the rack bracket should be installed to the front of the rack).

   b. Secure the rack bracket with your screws through the back of the rack, as shown in Figure 2-5.

   c. Repeat on both sides of the rack.

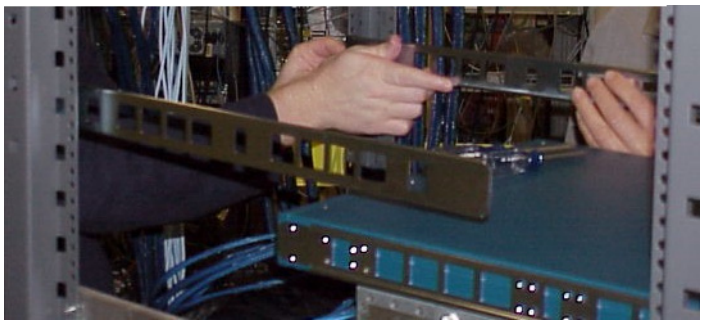


Figure 2-4: Holding Bracket Against Inside of Rack

Figure 2-5: Secure Rail Bracket to Rack with Screws

6. Lift the switch unit and align the brackets on the switch with the brackets in the rack before sliding the brackets together.
7. Carefully push the switch unit into the rack.

   If the brackets do not slide easily, the alignment may be off. Pull the switch back toward you and realign the brackets.

Figure 2-6: Sliding the Switch Into the Rack

8. Maintain at least six inches between the cooling vents and any obstructions.
9. Secure the switch with your screws through the front of the rack, as show in Figure 2-7.

Figure 2-7: Secure switch with screws through the front of the rack

For the VFrame Evaluation Test Plan, continue to Step 4 of "Hardware Installation Steps" on page 13 in the VFrame Evaluation Test Plan.

Installing the Switch with Two People

The following method of installation requires two people to mount the chassis into the rack. One person holds the switch while another person secures it to the rack.

1. Separate the assembled rack brackets.

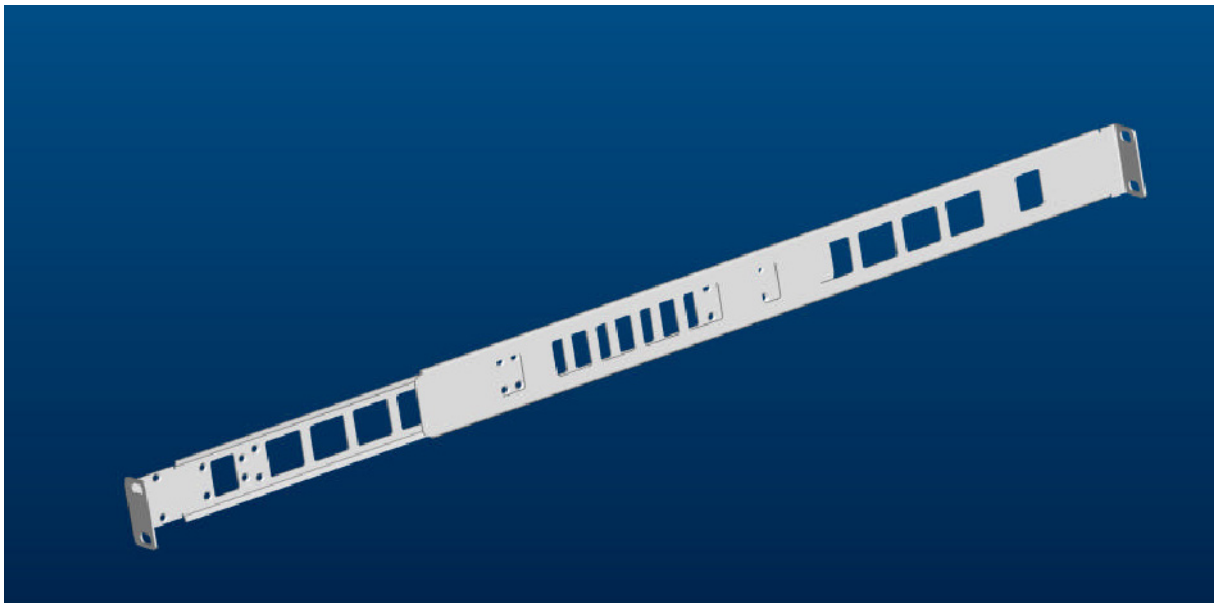


Figure 2-8: Separate Assembled Brackets before Mounting onto Switch

2. Attach the rack bracket that has screw holes to the sides of the switch chassis with the screws provided.

   When attaching the rack bracket, the flanges of the rack bracket should be facing away from the switch chassis, as shown in Figure 2-9.

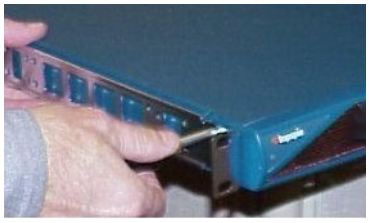


Figure 2-9: Fasten Bracket to Switch Chassis

3. Assemble rack bracket to their counterparts before inserting the switch into the rack.
4. Insert the switch into the rack with the rack bracket attached. You will have to tilt the switch unit to one side to avoid hitting the sides of the rack bracket with the brackets as they pass around the back rails.

   Return the switch unit to a horizontal position once the switch is inside the rack. The rear bracket flanges should wrap around the outside of the back rack post.
5. Have one person hold the switch while another person secures the switch to the rack.
6. Maintain at least six inches between the cooling vents and any obstructions.
7. Attach the rack bracket to the back of the rack posts with screws that fit your rack.

8. Attach the front rails to the front of the rack with screws that fit your rack, as shown in Figure 2-10.

Figure 2-10: Secure the Switch Through the Front Rack Rail

For the VFrame Evaluation Test Plan, continue to Step 4 of "Hardware Installation Steps" on page 13 in the VFrame Evaluation Test Plan.

Connect Network Devices

This section describes how to connect the InfiniBand system to other network devices. InfiniBand devices can be connected to InfiniBand-enabled servers.

About Connectors

The Topspin 120/Cisco SFS 7000 device support the following types of connectors:

- Management ports:
  - Serial console port: male DB-9 connector.
  - Ethernet Management port: RJ-45 jack for unshielded twisted-pair connections.
- Switch card: 4X 10 Gbps InfiniBand connectors.

Connecting InfiniBand Devices

To connect using InfiniBand to other workstations or switches, standard 4X InfiniBand cables are required. InfiniBand cables can be used to connect any two InfiniBand devices, whether switch or host.

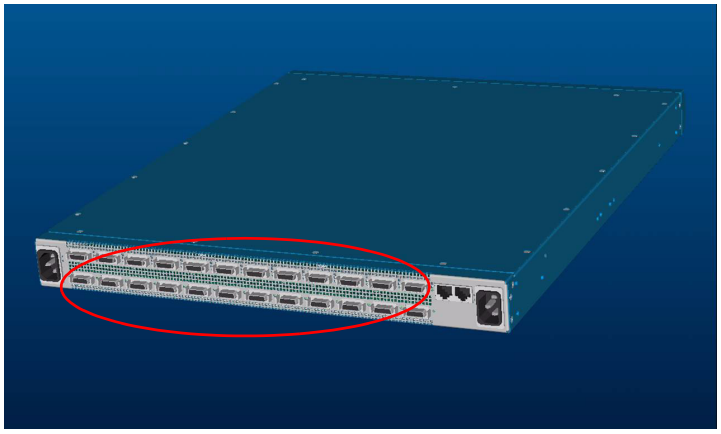


Figure 2-11: InfiniBand Port Connections

1. Plug InfiniBand Cables from the host to the InfiniBand switch.
   a. To plug in an InfiniBand cable, push the connector into the interface until you hear/feel a click.

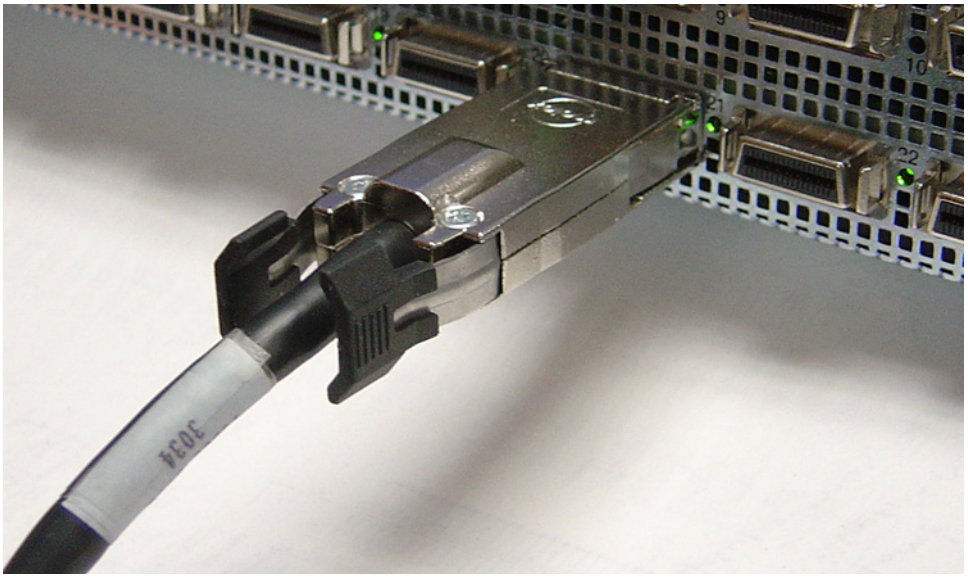


Figure 2-12: Fully Installed IB Cable with Pinch Connector

Figure 2-13: Fully Installed IB Cable with Pull Connector

NOTE: If your host does not provide an ample amount of free space around a given IB port, double-check that your IB cable connector engages fully. Wiggle your connector back and forth to be sure that both sides of the connector have locked firmly into place.

b. To remove a cable with a pinch connector, pinch both sides of the back of the connector and pull the connector away from the port.

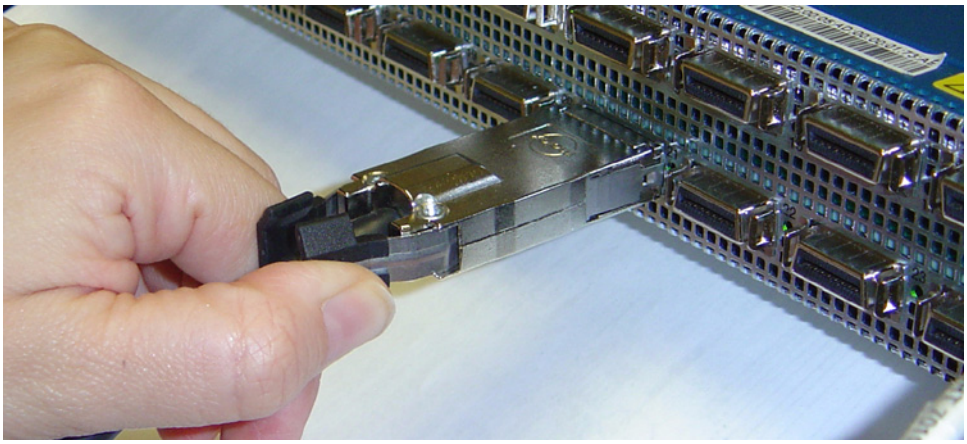


Figure 2-14: Removing a Pinch Connector

c. To remove a cable with a pull connector, grasp the connector with one hand and push it *toward* the port, then pull the latch away from the port with your other hand and gently wiggle the connector away from the port.

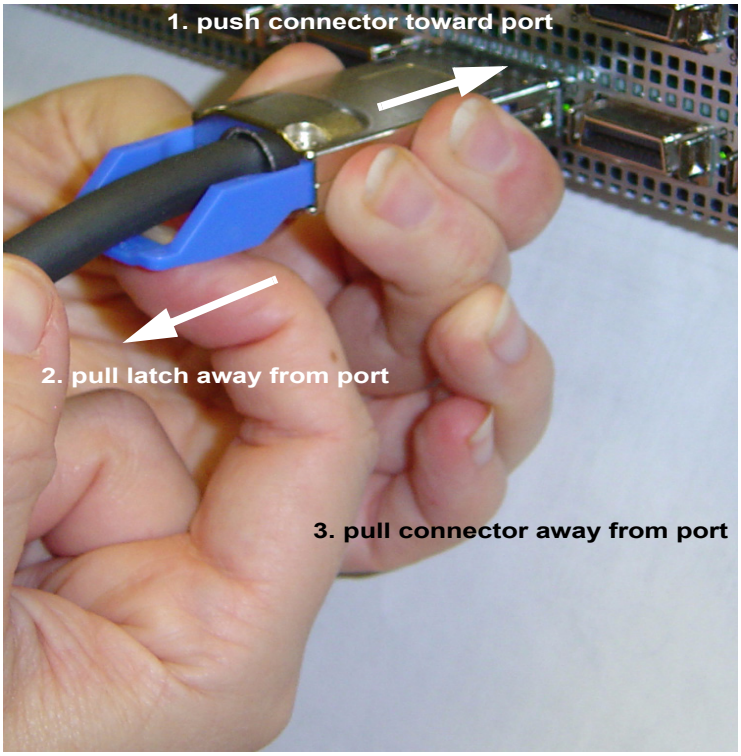


Figure 2-15: Removing a Pull Connector

Connecting Management Devices

To connect the management ports, use either a serial cable or an Ethernet cable.

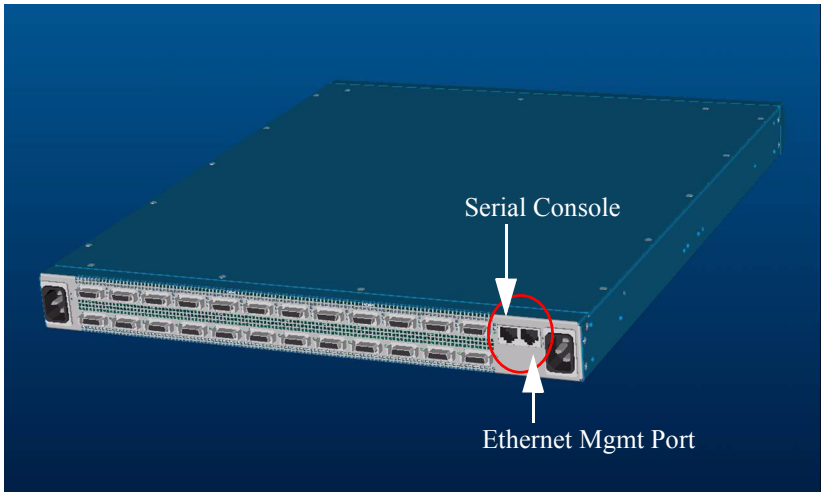


Figure 2-16: Serial and Ethernet Management Ports

Connecting to Ethernet or Fibre Channel Devices

To connect directly to an Ethernet switch/router or a Fibre Channel switch, you must add a Topspin device with the optional Ethernet or Fibre Channel gateway (such as the Topspin 90 or Topspin 360) to your fabric.

Two InfiniBand systems (such as a Topspin 120/Cisco SFS 7000 and a Topspin 90) can be connected by an InfiniBand cable inter-switch link (ISL).

Manage the System

You can manage the InfiniBand server-switch system using the following methods:

- Command Line Interface (CLI) - a text-based interface accessible through a direct serial connection, Telnet over IP, or SSH over IP.
- Chassis Manager (GUI) - A web-based graphic user interface.
- Element Manager (GUI) - A graphic interface installed on a workstation, accessible over IP.

Refer to the *Element Manager User Guide*, the *CLI Reference Guide* or the *Chassis Manager User Guide* for more information about managing the InfiniBand systems.

3

Managing Individual Components

This chapter describes how to install the following Field Replaceable Units (FRUs) in the Topspin 120/Cisco SFS 7000 system.

Power/Fan Modules

The Topspin 120/Cisco SFS 7000 power supplies/fan units are hot-swappable. You can add a second module without powering off the chassis. If you have two power/fan units installed, you can remove one of them without removing power from the chassis.

About a Failed Power/Fan Unit

If you believe a power supply module has failed, check the LEDs (refer to "Power Supply/Fan LEDs" on page 23) and view the status though the Element Manager (refer to page 25).

In most cases, vital information can be retrieved from the console port of Management Ethernet Port. Refer to "Vital Product Data Storage" on page 4.

Locating the Power Supply/Fan Unit

Each power supply and fan unit is a single module. Both power/fan units are located on the front of the chassis. When facing the front of the switch with the bezel cover removed, the power modules are located in the left and right receptacles of the Topspin 120/Cisco SFS 7000 chassis.

Installing a Power Supply/Fan Unit

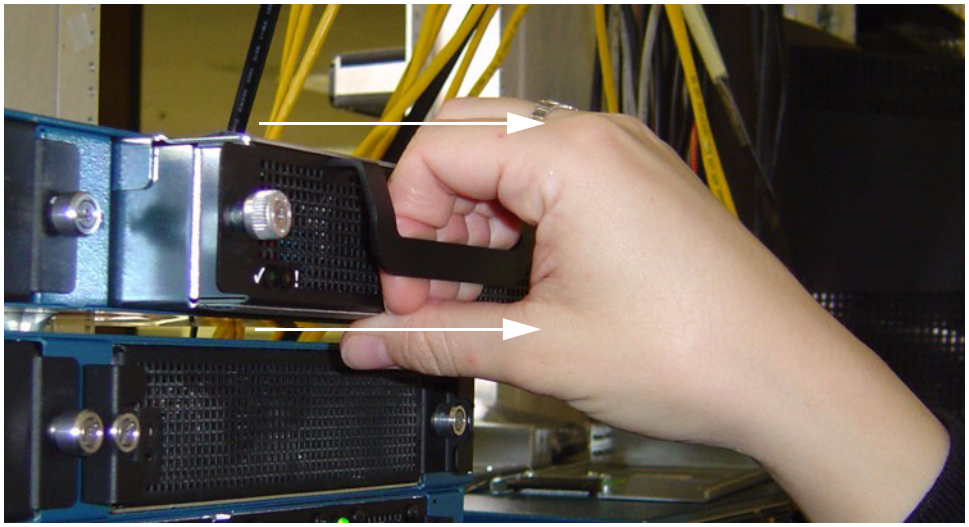
Caution: Never place your hand inside an empty card or module bay. You should never have cause to place a hand anywhere inside the Topspin 120/Cisco SFS 7000 chassis.

Caution: Unused card and module bays should always have a Topspin 120/Cisco SFS 7000 blanking panel over the bay to ensure proper safety, ventilation, and cooling.

To insert a power/fan unit:

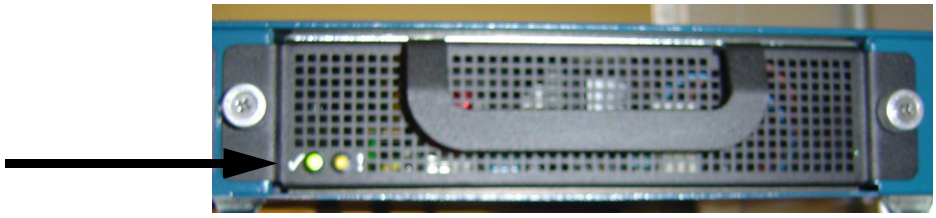
1. Ground yourself appropriately.
2. Remove the bezel cover from the front of the switch.
3. Remove the blanking panel from the power supply bay with a #1 phillips screwdriver, if it is still in place.

4. Remove the power supply/fan unit, if one is in place by pulling on the black handle.



5. Insert the new power supply/fan unit into the open slot until it is fully seated. You may need to push the unit with your thumbs, to get it completely into the bay.
6. Secure fasteners with a #1 phillips screwdriver.

7. Check the LEDs to verify the status of the module. Refer to "Power Supply/Fan LEDs" on page 23.



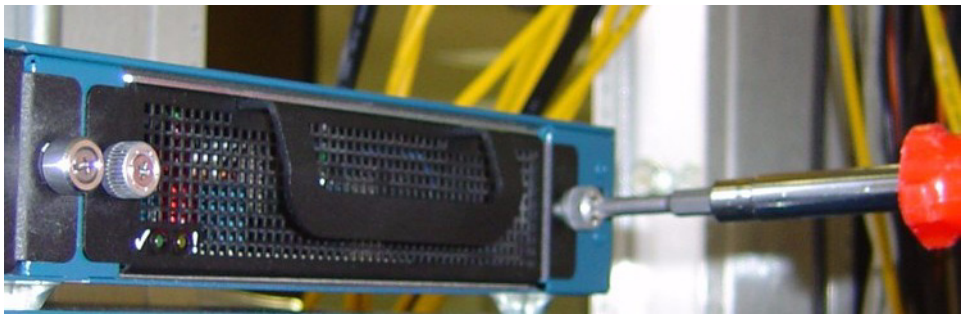
Removing Power Supply/Fan Units

Caution: Do not remove Power Supply/Fan Unit without first removing the screws use of a phillips screw driver.

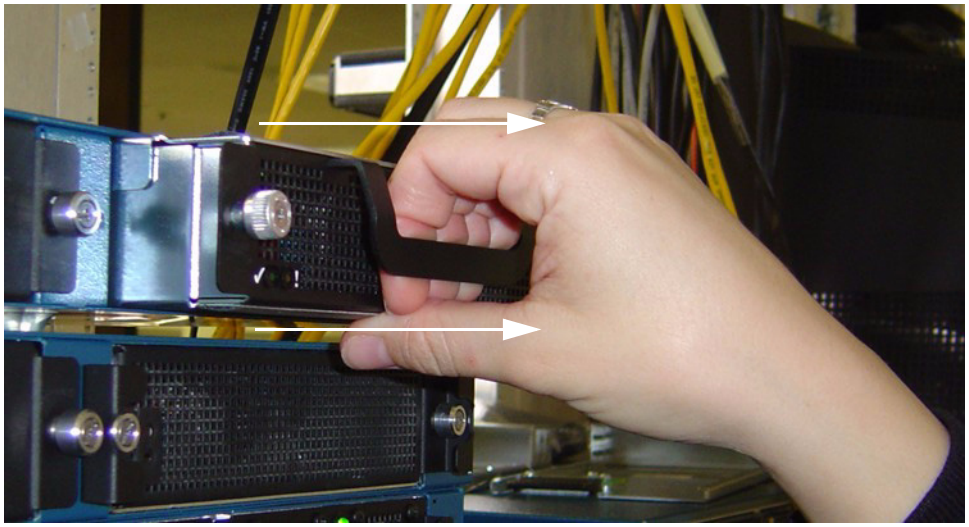
1. Make sure you have a #1 phillips screwdriver to disengage the fasteners.
2. Ground yourself appropriately.

   Never place your hand inside an empty card or module bay. You should never have cause to place a hand anywhere inside the Topspin 120/Cisco SFS 7000 chassis.
3. Remove the bezel cover from the front of the switch.
4. Locate the power/fan unit that you want to remove (page 17).

   If you have two power/fan units installed, you can remove one of them without removing power from the chassis.
5. Unscrew the fasteners that hold the Power Supply/fan unit in place.



6. Pull the unit from the bay.



7. Install the blanking panel in place of the power/fan unit. The device should never be run without a blanking panel or unit in place, as overheating may occur.

or

Install a new Power Supply/Fan unit. Refer to “Installing a Power Supply/Fan Unit” on page 18 if you are installing a new Power Supply/Fan Unit.

4

Monitoring the Topspin 120/Cisco SFS 7000

This chapter describes how to install and manage the Topspin 120/Cisco SFS 7000 system hardware.

Using the LEDs

The Topspin 120/Cisco SFS 7000 has the following types of LED indicators:

Chassis Status LEDs

Location

The front of the chassis has a single bi-color chassis status led, which is located behind the bezel. The rear of the chassis has one green and one yellow system status LED.

Interpreting the Front and Rear Chassis LEDs

Table 4-1: Interpreting the Chassis LED

color	indication
off	No system power or LED failure.

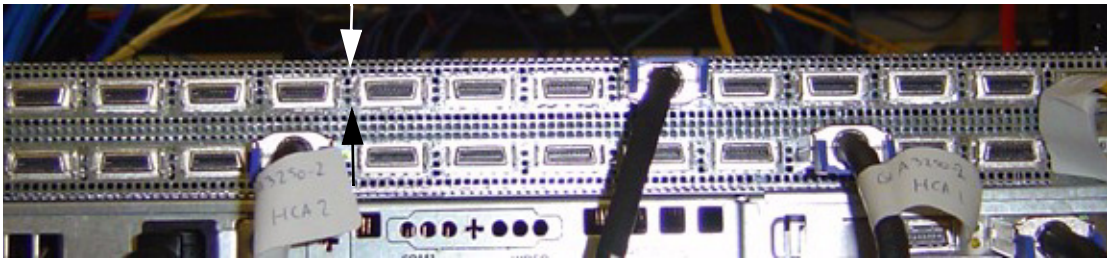
Table 4-1: Interpreting the Chassis LED

color	indication
Yellow (solid)	Operator intervention required. An system error was detected, such as a Fan error, a POST failure, or a power supply failure. The "**!**" label (available on the back of the chassis) indicates a failure.
Yellow (blinking)	The yellow blinking LED is initiated automatically during the LED test that follows the application of power (16 seconds).
Solid Green	Solid green indicates proper operation and no critical errors.

InfiniBand Port LEDs

Location

The InfiniBand port LED is located next to each InfiniBand port. The InfiniBand LED represents the logical link and the logical link activity.



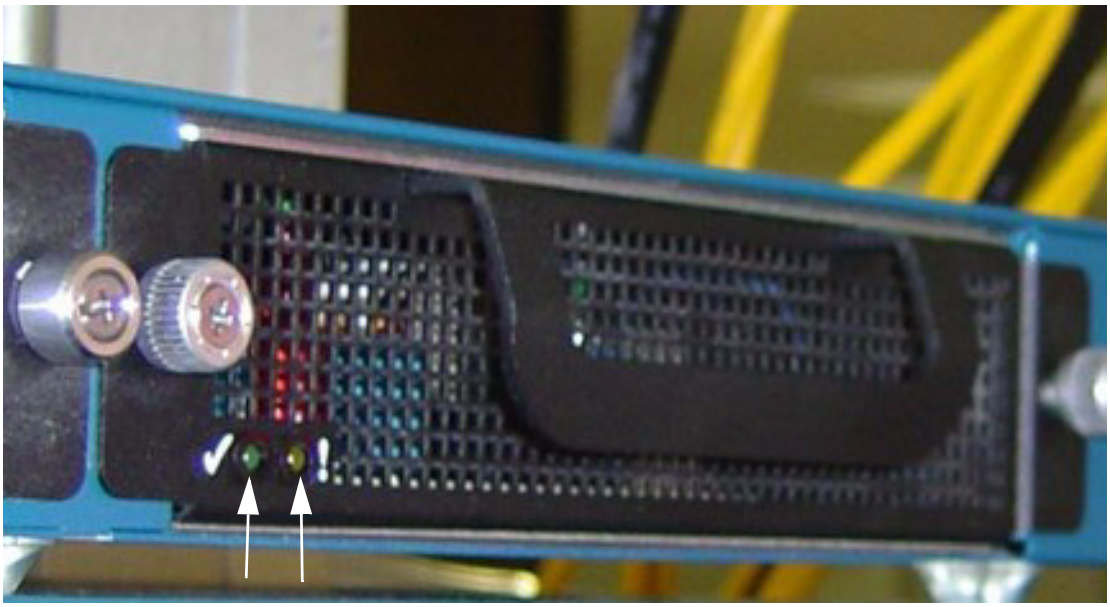
Interpreting the InfiniBand Port LED

Table 4-2: Interpreting the InfiniBand Port LED

color	indication
off	Logical link has not been established.
Solid Green	Logical link established.
Blinking Green	Logical link with activity.

Power Supply/Fan LEDs

Location



The Power Supply/Fan unit LEDs are located on the bottom left corner of each Power Supply/Fan unit.

- the green LED is labelled with check mark.
- the yellow LED is labelled with a “!” symbol

Interpreting the Power Supply/Fan Unit LEDs

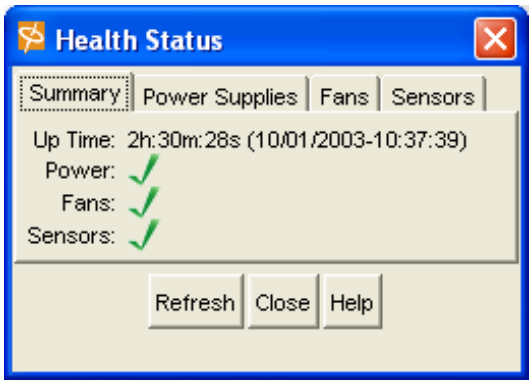
Table 4-3: Interpreting the Power Supply/Fan Unit LEDs

color	indication
off	DC output failure.
Green (solid)	AC connected, DC output OK.
Yellow (off)	No failure on the power supply.
Yellow (solid)	Operator intervention required. Failure detected within the Power Supply.
Yellow (blinking)	Identify. Assists in identifying a particular Field Replaceable Unit on the chassis. Must be initiated by the user. This LED can be initiated manually by using the **diag power-supply** command in the global configuration mode, or is initiated. Refer to the *Command Line Reference Guide* for more information. ***Example:*** To run identity test on Power Supply 1: **config mode** -> **diag power-supply 1** -> **test led** -> -> **start** - start flashing -> **stop** - stop flashing

Monitoring the System with Element Manager

For information regarding installing the Element Manager, refer to the *Element Manager User Guide*.

1. Launch the Element Manager.
2. Select **Health** > **Status**. The Health Status window opens.



Interpreting the Summary Tab

3. Use the **Summary** tab to view the status of the Power, Fans, and Temperature Sensors at once.

   Interpreting the **Power** Field:

   - A green check next to the Power summary indicates that at least one power source is connected and functioning properly.
   - A red check mark indicates that power supply AC is disconnected.

   Interpreting the **Fans** field:

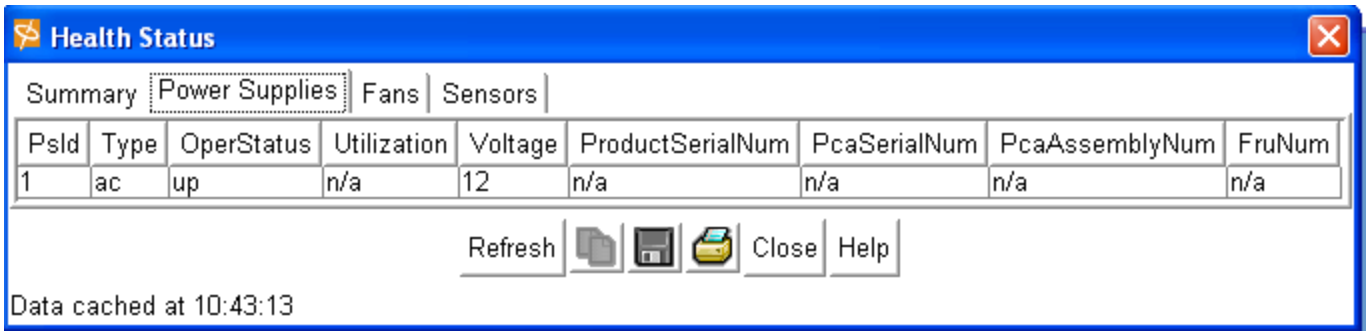
   - A green check next to the Fans summary indicates at least one fan is present, and functioning properly.
   - A red check indicates a fan failure.

   Interpreting the **Sensors** field:

   - A green check next to the Sensors summary indicates that the system temperature is at an acceptable level.
   - A red check for Sensor is a warning of high temperature.

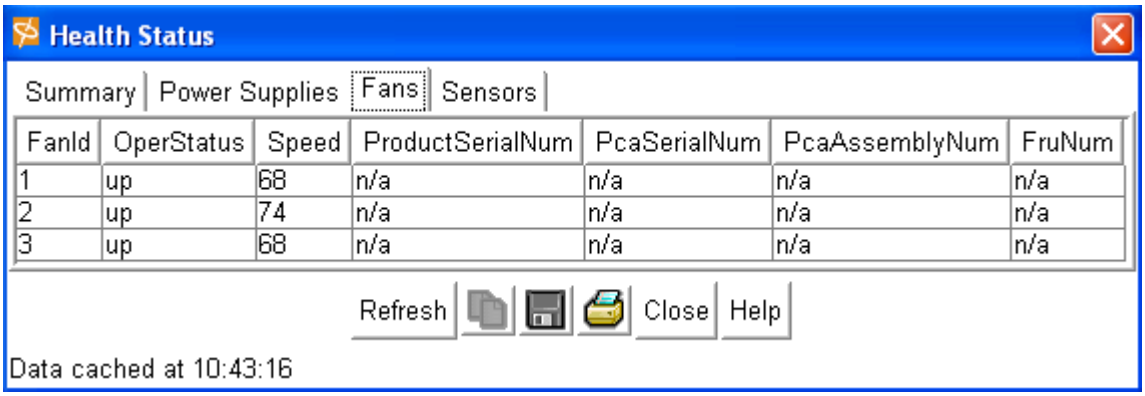
Interpreting the Power Supplies Tab

Use the **Health** > **Status** > **Power Supplies** tab to view the operating status of the power supplies.



Interpreting the Fans Tab

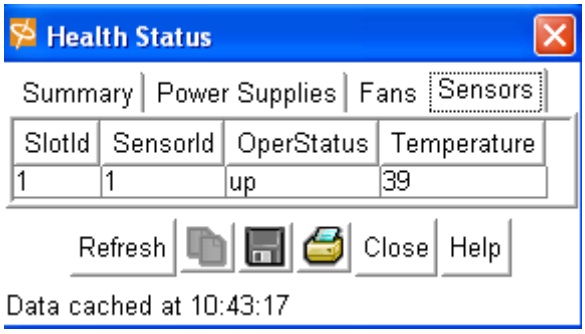
Use the **Health** > **Status** > **Fans** tab to view the operating status of the fans.



4. Note the **OperStatus** field. A status of "up" means that the blower is operating correctly within the power/blower unit.
5. Note the **Speed** field. The integer in this field represents a percentage. The percentage changes based on the ambient temperature of the unit, and will increase as the temperature rises.

Interpreting the Sensors Tab

Use the **Health** > **Status** > **Sensors** tab to view the operating status of the temperature sensor of the system.



6. Note the **OperStatus** field. A status of "up" indicates that the sensor is functioning properly.
7. Note the **Temperature** field. The internal system temperature is displayed in Celsius. The system's maximum external ambient temperature is 30 degrees C (0 – 10,000 ft). Acceptable internal temperature ranges are 30 degrees C above external ambient, plus 1 degree for every 1,000 ft above sea-level. The system reboots at an internal temperature of 75 degrees C.

   A warning will appear if the temperature reaches 65 degrees C (at sea level).

   The system reboots at an internal temperature of 75 degrees C (at sea level).

Monitor the System with the CLI

Use the following CLI commands to monitor the Power Supplies, the fans, and the sensors:

Monitor the Power Supplies

- **show power-supply**

Example

```
SFS-120# show power
============================================================
                    Power-supply Information
============================================================
ps    type    oper-status   utilization   voltage
------------------------------------------------------------------------------
1     AC      up            55            12
2     AC      up            55            12

============================================================
                    Power-supply Seeprom
============================================================
      product            pca                pca                fru
ps    serial-number      serial-number      number             number
------------------------------------------------------------
1     200000             820000              820000            1
2     200000             820000              820000            1
```

Monitor the Fans

- **show fan**

An **oper-status** of “up” means that the blower is operating correctly within the power/blower unit.

Note the **Speed** field. The integer in this field represents a percentage. The percentage changes based on the ambient temperature of the unit, and will increase as the temperature rises.

Example

```
SFS-120# show fan

================================================================================
                                Fan Information
================================================================================
fan   oper-status   speed(%)
--------------------------------------------------------------------------------
1     up            68
2     up            74
3     up            80
4     up            80
```

Monitor the Sensors

- **show sensor**

Example

```
SFS-120# show sensor
================================================================
                              Sensor Information
================================================================================
sensor   oper-status   temperature(c)
----------------------------------------------------------------
1/1      up            42
12/1     up            36
SFS-120#
```

Note the **Temperature** field. The internal system temperature is displayed in Celsius. The system's maximum external ambient temperature is 30 degrees C (0 – 10,000 ft). Acceptable internal temperature ranges are 30 degrees C above external ambient, plus 1 degree for every 1,000 ft above sea-level.

A warning will appear if the temperature reaches 65 degrees C (at sea level).

The system reboots at an internal temperature of 75 degrees C (at sea level).

5

Hardware Diagnostic Tests

This chapter describes how to run diagnostic tests on the Topspin 120/Cisco SFS 7000 system hardware.

Diagnostic Tests

The Topspin 120/Cisco SFS 7000 provides multiple diagnostic tests.

The Self Test

For complete diagnostic command information, refer to the *Command Line Reference Guide*.

The Topspin 120/Cisco SFS 7000 provides the following diagnostic tests:

- Chassis Test
- Card Test
- Interface Test
- Power/Fan

Running a Chassis Standard Test

To run a standard chassis test, perform the following steps:

1. Enter the diag chassis command.

   Example

```
SFS-120> enable
SFS-120# configure terminal
SFS-120(config)# diagnostic chassis
SFS-120(config-diag-chassis)# test standard
SFS-120(config-diag-chassis)# start
SFS-120(config-diag-chassis)# stop
```

2. Exit the test to view the progress of the test. The result appears in line 19 of the example below.

   Example

```
1.    Topspin-120(config-diag-chassis)# exit
2.    Topspin-120(config)# exit
3.    Topspin-120# show diagnostic chassis
4.
5.
6.    ================================================================================
7.
8.                              Diagnostic Tests For Chassis
9.    ================================================================================
10.
11.                 module-type : chassis
12.               module-number : 1
13.                        test : standard
14.                  iterations : 1
15.                      option : none
16.                      action : stop
17.                      result : success
18.         percentage-completed : 100
19.                result-string : Standard System Test Completed, Final report : Passe
20.   d=1, Failed=0, Total=1
```

Running a Card Self-Test

To perform a diagnostic self-test on a card:

1. Enter the **diag card #** command.

   You cannot stop the card test once it has begun.

   Example

```
SFS-120> enable
SFS-120# config
SFS-120(config)# diag card 1
SFS-120(config-diag-card-1)# test self-test
SFS-120(config-diag-card-1)# start
```

2. Exit the test to view the progress of the test.

The test takes approximately 5 - 8 minutes.

Example of test in progress

```
SFS-120(config-diag-card-1)# exit
SFS-120(config)# exit
SFS-120# show diagnostic card 1
================================================================================
                            Diagnostic Tests For Cards
================================================================================
                      test : self-test
                   slot-id : 1
                iterations : 1
                    action : start
                    result : In progress
     percentage-completed : 0
             result-string :
```

Example of completed test

```
SFS-120(config-diag-card-1)# exit
SFS-120(config)# exit
SFS-120# show diagnostic card 1
================================================================================
                            Diagnostic Tests For Cards
================================================================================
                      test : self-test
                   slot-id : 1
                iterations : 1
                    action : start
                    result : success
     percentage-completed : 100
             result-string : Card Test, Final report : PASSED; Please reboot
system
```

3. Use the **more** *file-system*:*file-name* command to display the log file and view the detailed results of the **diag** test.

Example of log results

```
SFS-120# more syslog:hwif_log
Thu Mar  4 10:57:49 2004: POST: SEEPROM: PASSED
Thu Mar  4 10:57:49 2004: POST: FPGA: PASSED
Thu Mar  4 10:57:49 2004: POST: SUMMIT: PASSED
Thu Mar  4 10:57:50 2004: POST: RTC: PASSED
Thu Mar  4 10:57:54 2004: POST: FAN: PASSED
Thu Mar  4 10:57:54 2004: card_startup.x : card is starting up
Thu Mar  4 10:57:54 2004: Anafa2Init: a2update set to IGNORE
Thu Mar  4 10:58:16 2004: Anafa2 POST: firmware check PASSED
Thu Mar  4 19:01:55 2004: POST: SEEPROM: PASSED
Thu Mar  4 19:01:55 2004: POST: FPGA: PASSED
Thu Mar  4 19:01:55 2004: POST: SUMMIT: PASSED
Thu Mar  4 19:01:56 2004: POST: RTC: PASSED
Thu Mar  4 19:02:00 2004: POST: FAN: PASSED
Thu Mar  4 19:02:00 2004: card_startup.x : card is starting up
Thu Mar  4 19:02:00 2004: Anafa2Init: a2update set to IGNORE
Thu Mar  4 19:03:56 2004: POST: SEEPROM: PASSED
Thu Mar  4 19:03:56 2004: POST: FPGA: PASSED
Thu Mar  4 19:03:57 2004: POST: SUMMIT: PASSED
Thu Mar  4 19:03:58 2004: POST: RTC: PASSED
Thu Mar  4 19:04:02 2004: POST: FAN: PASSED
Thu Mar  4 19:04:02 2004: card_startup.x : card is starting up
Thu Mar  4 19:04:02 2004: Anafa2Init: a2update set to IGNORE
Thu Mar  4 19:04:23 2004: Anafa2 POST: firmware check PASSED
Thu Mar  4 19:07:07 2004: POST: SEEPROM: PASSED
Thu Mar  4 19:07:07 2004: POST: FPGA: PASSED
Thu Mar  4 19:07:07 2004: POST: SUMMIT: PASSED
Thu Mar  4 19:07:08 2004: POST: RTC: PASSED
Thu Mar  4 19:07:12 2004: POST: FAN: PASSED
Thu Mar  4 19:07:12 2004: card_startup.x : card is starting up
Thu Mar  4 19:07:12 2004: Anafa2Init: a2update set to IGNORE
Thu Mar  4 19:07:34 2004: Anafa2 POST: firmware check PASSED
Fri Mar  5 16:19:48 2004: POST: SEEPROM: PASSED
Fri Mar  5 16:19:48 2004: POST: FPGA: PASSED
Fri Mar  5 16:19:48 2004: POST: SUMMIT: PASSED
Fri Mar  5 16:19:49 2004: POST: RTC: PASSED
Fri Mar  5 16:19:53 2004: POST: FAN: PASSED
Fri Mar  5 16:19:53 2004: card_startup.x : card is starting up
Fri Mar  5 16:19:53 2004: Anafa2Init: a2update set to IGNORE
Fri Mar  5 16:20:15 2004: Anafa2 POST: firmware check PASSED
Fri Mar  5 16:21:54 2004: POST: SEEPROM: PASSED
Fri Mar  5 16:21:54 2004: POST: FPGA: PASSED
<output truncated>
```

Run a Test on the Power Supply/Fan

The status for a power supply and fan for the Topspin 120/Cisco SFS 7000 are shown together because they are a single unit.

1. Enter the **diag power-supply** command.

Example

```
SFS-120> enable
SFS-120# config
SFS-120(config)# diag power-supply all
```

Run a LED Test on the Power Supply/Fan

Example

```
SFS-120(config)# diag power-supply 1
SFS-120(config-diag-power-supply-1)# test led
SFS-120(config-diag-power-supply-1)# start
SFS-120(config-diag-power-supply-1)# stop
SFS-120(config-diag-power-supply-1)#
```

Displaying Hardware Errors

To display POST results, non-fatal errors that can are recovered, informational logging (such as firmware updates), and hardware errors:

1. Use the **more syslog:hwif_log** command to locate the:
   /topspin/log/hwif_log

Example of output without errors

```
SFS-120> enable
SFS-120# more syslog:hwif_log
Thu Mar  4 10:57:49 2004: POST: SEEPROM: PASSED
Thu Mar  4 10:57:49 2004: POST: FPGA: PASSED
Thu Mar  4 10:57:49 2004: POST: SUMMIT: PASSED
Thu Mar  4 10:57:50 2004: POST: RTC: PASSED
Thu Mar  4 10:57:54 2004: POST: FAN: PASSED
Thu Mar  4 10:57:54 2004: card_startup.x : card is starting up
Thu Mar  4 10:57:54 2004: Anafa2Init: a2update set to IGNORE
Thu Mar  4 10:58:16 2004: Anafa2 POST: firmware check PASSED
Thu Mar  4 19:01:55 2004: POST: SEEPROM: PASSED
Thu Mar  4 19:01:55 2004: POST: FPGA: PASSED
Thu Mar  4 19:01:55 2004: POST: SUMMIT: PASSED
Thu Mar  4 19:01:56 2004: POST: RTC: PASSED
Thu Mar  4 19:02:00 2004: POST: FAN: PASSED
Thu Mar  4 19:02:00 2004: card_startup.x : card is starting up
Thu Mar  4 19:02:00 2004: Anafa2Init: a2update set to IGNORE
<output trucated>
```

In the following example the fan did not pass the POST test.

Example of output with error

```
# ./hw_diag.x post
POST: SEEPROM: PASSED
POST: VPD: PASSED
POST: FPGA Revision = 0xa8
POST: FPGA: PASSED
POST: SUMMIT: PASSED
POST: RTC: PASSED
POST: FAN ctlr2: fan 2 speed 330 is not in range for 100 percent of speed 9500;
system yellow LED on: FAILED
```

In the following example, the Field Programmable Gate Array (FPGA) is not working correctly.

Example of output with error

```
# ./hw_diag.x post
POST: SEEPROM: PASSED
POST: VPD: PASSED
POST: FPGA Revision = 0xa8
POST: FPGA: system yellow LED on: FAILED
POST: SUMMIT: PASSED
POST: RTC: PASSED
POST: FAN ctlr2: PASSED
```

Error Types

The following types of hardware errors are logged for the Topspin 120/Cisco SFS 7000 baseboard:

Table 5-1: Topspin 120/Cisco SFS 7000 Baseboard Errors

Error Number	Description
1	Summit Power Controller Configuration Error
2	I2C Communication Error
3	Serial EEPROM Error
4	DiskOnChip Error
5	Memory Error
6	March SSO Error
7	Realtime Clock Error
8	Fan Error
9	FPGA Error
10	Summit High Temp Error
12	Summit High Current Error
14	Summit Voltage Out of Range Error
16	Firmware Error on the switch chip
17	Bus error on switch chip
18	ID Module Error
19	Management Module Error

The following types of hardware errors are logged for the Topspin 120/Cisco SFS 7000 power supply:

Table 5-2: Topspin 120/Cisco SFS 7000 Power Supply Errors

Error Number	Description
1	Power Supply DC Fail Error
2	Power Supply Fan Fail Error
3	Power Supply I2C Communication Error

6

Specifications and Compliance Certifications

This chapter details the Topspin 120/Cisco SFS 7000 specifications and compliance certifications.

Chassis and Management Interface

Table 6-1: Chassis and Management General Specifications

Environmental Specifications	
Operating Temperature	0 to 45C
Non-Operating Temperature	-40 to 70C
Operating Temperature Gradient	20C max. per 60 minutes
Operating Altitude	0 to 10,000 ft
Non-Operating Altitude	0 to 40,000 ft
Operating Humidity:	8 to 80% non-condensing
Non-Operating Humidity:	5 to 90% RH at 65C for 24 hrs., Non-condensing
Operating Humidity Gradient	10% maximum per 60 min.
Operating Shock	5G max., 11ms half-sine wave., 10G max. 5ms half-sine wave
Non-Operating Shock	10G max., 11ms half-sine wave.
Operating Vibration, Sinusoidal	0.25G max., 3-200Hz 15min.
Non-Operating Vibration, Sinusoidal	0.50G max., 3-200Hz 15min.
Non-Operating Vibration, random	2.09Grms, 3-axis, bottom/top, left/right, front/back
Max. Operating Inclination	15 degrees

Electrical Specifications

Table 6-2: Electrical Specifications

Category	Specification
AC Input	Auto-ranging 90-264VAC, 47-63Hz.
Power consumption	< 65W

EMC/Immunity

Table 6-3: EMC/Immunity

Description
FCC: CFR 47 Part 15, Subpart B Class A
Canada: ICES-003 Issue 2
EN 61000-3-2 (Harmonics), EN 61000-3-3 (Flicker), EN 55022:1998, EN 55024:1998; EN61000-4-1,2,3,4,5,6,8,11
Japan: VCCI-V3/02.04

Safety

Table 6-4: Safety

Country Deployment	Description
USA	UL60950, 3rd ed.
Canada	CSA 22.2 No. 60950:2000
Europe	Europe: IEC60950, EN60950, EN60825-1 and EN60825-2
Japan	Japan: IEC60950

Acoustics

Table 6-5: Acoustics

Country Deployment	Description
Sound Pressure	25dB at 25C ambient ISO 7779 and section 8.5 of ISO 3744:1994(E)
Sound Power	<40dB at 25C ambient ISO 7779, section 8.6 of ISO 3744:1994(E)

Product Markings

- cUL, FCC Statement, VCCI, CE, ICES.

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