



Sun™ Datacenter Switch 3456 Installation Guide

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Preface

This installation guide provides comprehensive instructions for installing the Sun Datacenter Switch 3456 switch.

This document is written for service personnel, and users who have advanced knowledge and experience installing and configuring computing machines. Topics include cautions, preparations, unpacking, and installation tasks.

Using UNIX Commands

This document might not contain information about basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- Solaris™ Operating System documentation, which is at:

<http://docs.sun.com>

Shell Prompts

Shell	Prompt
C shell	<i>machine-name%</i>
C shell superuser	<i>machine-name#</i>
Bourne shell and Korn shell	\$
Bourne shell and Korn shell superuser	#

Typographic Conventions

Typeface*	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output	% su Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be superuser to do this. To delete a file, type <code>rm filename</code> .

* The settings on your browser might differ from these settings.

Related Documentation

The documents listed as online are available at:

<http://docs.sun.com/app/docs/prod/switch.3456>

Application	Title	Part Number	Format	Location
Product Notes	<i>Sun Datacenter Switch 3456 Product Notes</i>	820-4727-10	PDF	Online
Unpacking	<i>Sun Datacenter Switch 3456 Unpacking Guide</i>	820-4736-10	PDF Printed	Shipping crate Online
Site Planning	<i>Sun Datacenter Switch 3456 Site Planning Guide</i>	820-4728-10	PDF	Online
Installation	<i>Sun Datacenter Switch 3456 Installation Guide</i>	820-4730-10	PDF Printed	Shipping kit Online
Administration	<i>Sun Datacenter Switch 3456 Administration Guide</i>	820-4731-10	PDF	Online
Service	<i>Sun Datacenter Switch 3456 Service Manual</i>	820-4733-10	PDF	Online
Reference	<i>Sun Datacenter Switch 3456 Reference Manual</i>	820-4734-10	PDF	Online
Regulatory	<i>Sun Datacenter Switch 3456 Safety and Compliance Guide</i>	820-4735-10	PDF	Online

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Please include the title and part number of your document with your feedback:

Sun Datacenter Switch 3456 Installation Guide, part number 820-4730-11.

Cautions and Considerations

This chapter describes the challenges in preparing the site and installing the Sun Datacenter Switch 3456. This chapter contains the following topics:

- “Chassis Weight” on page 1
- “Chassis Activity Dimensions” on page 3
- “Heat Considerations” on page 3
- “Electrical Considerations” on page 4

Note – A hard copy version of the *Sun Datacenter Switch 3456 Installation Guide* is shipped inside the switch shipping crate. You can also access the guide at this URL: <http://docs.sun.com/app/docs/prod/switch.3456>

Chassis Weight

As shipped, the Sun Datacenter Switch 3456 switch chassis and crate weighs approximately 1800 pounds (820 kg). This section describes the effects and behavior of that much mass.

Moving the Chassis

When moving the chassis from the truck to the unpacking area and to the final location, consider the implications of the chassis weight:

- Traversing any grade will require additional force and personnel to safely move the Sun Datacenter Switch 3456.

- The Sun Datacenter Switch 3456 casters all swivel freely. The chassis responds to the greater of applied forces. This means that a person pushing on one corner to move the chassis will also cause the chassis to rotate. So at least two people should push equally on adjacent corners to move the Sun Datacenter Switch 3456.
- When rolling the Sun Datacenter Switch 3456 off of the shipping pallet and down the shipping ramp, the chassis will catch at the junction of the pallet and ramp, and will have a tendency to rotate. Expect and prepare for this behavior.
- To accelerate the Sun Datacenter Switch 3456 to a walking speed requires effort, time, and distance. To stop the Sun Datacenter Switch 3456 from moving requires the same or more. To accelerate, transport, or stop a Sun Datacenter Switch 3456 requires slow methodical movement, a clear and safe path, and sufficient personnel aware of their actions.



Caution – The Sun Datacenter Switch 3456 chassis cannot be safely moved by one person alone. Never allow any person near the direct path of the Sun Datacenter Switch 3456. Personnel moving the Sun Datacenter Switch 3456 should consciously keep their feet away from the bottom edge of the Sun Datacenter Switch 3456, because this is a pinch point and can cause injury. Personnel moving the Sun Datacenter Switch 3456 should stand to either side of the chassis or behind its direction of motion.

Loading by the Chassis

The Sun Datacenter Switch 3456 can only be located on surfaces that can accommodate its weight. The four casters on the Sun Datacenter Switch 3456 chassis have a total contact area of 8 square inches or a loading of 225 psi. This load should not be of concern, if the surfaces or foundations are concrete or reinforced. Unreinforced wood surfaces cannot support the weight of the Sun Datacenter Switch 3456, and even if only temporary during movement, might flex enough to cause bottoming out.

Carpeted surfaces might not be able to survive the stress of the Sun Datacenter Switch 3456 casters, especially when turning. Additionally, movement over carpet is difficult.

Chassis Activity Dimensions

TABLE 1-1 provides Sun Datacenter Switch 3456 chassis dimensions, and the minimum dimensions needed for unpacking, moving, and the final location.

TABLE 1-1 Approximate Minimum Chassis Activity Dimensions

Item	Length	Width	Height	Comment
Sun Datacenter Switch 3456 chassis	6 ft (1.8 m)	4 ft (1.2 m)	5 ft (1.5 m)	Dimensions of chassis.
Unpacking space	35 ft (10.7 m)	10 ft (3 m)	9 ft (2.7 m)	To accommodate rollout and crate shell movement
Moving perimeter	15 ft (4.6 m)	10 ft (3 m)	6 ft (1.8 m)	For stopping distance and safety margin.
Installation at final location	12 ft (3.7 m)	12 ft (3.7 m)	6 ft (1.8 m)	To accommodate line card and fabric card installation.
Final location	8 ft (2.4 m)	10 ft (3 m)	6 ft (1.8 m)	Dimensions outside of cable guides, access space only.

Heat Considerations

This section describes the heat output of the Sun Datacenter Switch 3456 and its potential safety hazard for personnel. This section also describes keeping an open area at the exhaust side, and considerations for other systems and equipment in the area.

Air Temperature

The calculated approximate air temperature output of the Sun Datacenter Switch 3456 is 36°F (20°C) hotter than the air going in. While this output temperature is not hot enough to burn, this temperature is sufficient to dehydrate and render useless any cooling device in the vicinity.

Surface Temperature

During operations, the exhaust surfaces, such as the fans mounted to the fabric cards, are at a higher temperature than the exhaust air. Bear this situation in mind when replacing a failed fan, because its temperature will be even greater.

Other Objects' Temperatures

No object should be in direct contact with the exhaust air. However, occasional hanging cables or drop lamps might happen to be in the stream. Any objects in the exhaust air stream will be at an elevated temperature because of this exposure.

Hot and Cold Aisles

The heat output of a fully configured Sun Datacenter Switch 3456 is approximately 40 KW. The Sun Datacenter Switch 3456s's air mass flow is calculated to approximately 3400 cfm (1.6 m³/s), which means that the air exhausted from the switch is 36°F (20°C) degrees hotter than the air going in. As such, the hot aisle for the Sun Datacenter Switch 3456 should be configured to accommodate this heat output and in no way compromise the cooling of other equipment. Do not store any objects in the switch hot aisle. Such objects would interfere with proper air circulation, and might become a safety hazard.

Electrical Considerations

This section describes the voltages present and the exposure to active lines during component installation.

Main Power



Caution – The 16 Sun Datacenter Switch 3456 power supplies require 200 -240 VAC. Take all precautions normally associated with these voltages.

Bus Power



Caution – When servicing the Sun Datacenter Switch 3456, bus power is active. Bus power is a low voltage, but very high current. Even the smallest form of short circuit can cause physical injury and severe damage to the Sun Datacenter Switch 3456.

Pin Power



Caution – When servicing the Sun Datacenter Switch 3456, pin power and signals are active. While not a shock or burn threat, there is the possibility of damage to the pin, midplane, fabric card, and line card, should a short or grounding take place. Use all precautions associated with working with active signal conductors when servicing the Sun Datacenter Switch 3456.

Partial Configuration

This chapter describes configuring the Sun Datacenter Switch 3456 with less than a complete configuration. Topics include:

- [“Complete and Base Configurations” on page 7](#)
- [“Configuration Considerations” on page 8](#)
- [“Component Distribution” on page 9](#)

Complete and Base Configurations

For maximum functionality, the Sun Datacenter Switch 3456 is designed to be operated in a fully configured state:

- 24 line cards
- 18 fabric cards
- 16 power supplies
- 2 CMCs

If necessary, fewer components can be installed. For example, the base configuration of the switch is:

- 1 line card
- 18 fabric cards
- 6 power supplies
- 2 CMCs

For the base configuration or a partial configuration, filler panels must be installed where there are empty line card and power supply slots.



Caution – Do not configure the Sun Datacenter Switch 3456 with fewer than 18 fabric cards installed. Thermal requirements will not be satisfied.

Configuration Considerations

Filler Panels

To maintain proper airflow for adequate cooling, filler panels must be installed in vacant line card and power supply slots. Besides directing airflow, the filler panels close openings to the Sun Datacenter Switch 3456 chassis, preventing intrusion of objects and contaminants to the chassis interior.

Line Card Distribution

Line cards are installed from the center out, across the available slots. The vacant slots must have filler panels installed. For example, if only 12 line cards are to be installed, they would occupy slots 6 through 17. Filler panels are installed in the vacant slots (0 through 5 and 18 through 23).

Power Supplies

Power supplies are configured in a need+1 redundancy. A fully configured Sun Datacenter Switch 3456 with 24 line cards and 18 fabric cards needs 14 power supplies. Two power supplies act as redundant, one for each power bus. The power supply slots are hard-wired to two power buses. Power supplies installed in the lower row (PS0, PS1, and so on to PS7), provide power to line card slots 0 to 11 and fabric card slots 9 to 17. Power supplies installed in the upper row (PS8, PS9, and so on to PS15), provide power to line card slots 12 to 23 and fabric card slots 0 to 8.

TABLE 2-1 lists the maximum number of line cards that are supported for a given number of power supplies.

TABLE 2-1 Maximum Quantity of Line Cards for Quantity of Power Supplies

Quantity of Power Supplies	Maximum Supported Line Cards
6	2
8	6
10	10
12	16
14	20
16	24

Component Distribution

If you are configuring less than a complete Sun Datacenter Switch 3456, you can incrementally add and distribute line cards and power supplies to the empty slots in the left-to-right order described by TABLE 2-2:

TABLE 2-2 Incremental Configuration

	Quantity of Line Cards																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Line Card Slot	11	12	10	13	9	14	8	15	7	16	6	17	5	18	4	19	3	20	2	21	1	22	0	23
Power Supply Slots	2, 4, 6, 9, 11, 13		0, 15				7, 8				3, 12					1, 14				5, 10				

For example, if you were to configure the switch with only one line card, you would install the line card into slot 11. You would also install power supplies into slots 2, 4, 6, 9, 11, and 13, in that order.

If you were to configure the switch with ten line cards, you would install the line cards into slots 11, 12, 10, 13, 9, 14, 8, 15, 7, and 16, in that order. You would also install power supplies into slots 2, 4, 6, 9, 11, 13, 0, 15, 7, and 8, in that order.

TABLE 2-3 provides suggested configurations, based upon a fraction of the complete configuration.

TABLE 2-3 Suggested Configurations

Configuration	Quantity of Line Cards	Line Card Slots	Power Supply Slots
Base	1	11	2, 4, 6, 9, 11, 13
1/8	3	11, 12, 10	2, 4, 6, 9, 11, 13, 0, 15
1/4	6	11, 12, 10, 13, 9, 14	2, 4, 6, 9, 11, 13, 0, 15
3/8	9	11, 12, 10, 13, 9, 14, 8, 15, 7	2, 4, 6, 9, 11, 13, 0, 15, 7, 8
1/2	12	11, 12, 10, 13, 9, 14, 8, 15, 7, 16, 6, 17	2, 4, 6, 9, 11, 13, 0, 15, 7, 8, 3, 12
5/8	15	11, 12, 10, 13, 9, 14, 8, 15, 7, 16, 6, 17, 5, 18, 4	2, 4, 6, 9, 11, 13, 0, 15, 7, 8, 3, 12
3/4	18	11, 12, 10, 13, 9, 14, 8, 15, 7, 16, 6, 17, 5, 18, 4, 19, 3, 20	2, 4, 6, 9, 11, 13, 0, 15, 7, 8, 3, 12, 1, 14
7/8	21	11, 12, 10, 13, 9, 14, 8, 15, 7, 16, 6, 17, 5, 18, 4, 19, 3, 20, 2, 21, 1	2, 4, 6, 9, 11, 13, 0, 15, 7, 8, 3, 12, 1, 14, 5, 10

Because the line cards are equally distributed across the available slots, cabling rules and lengths still apply. See [“Cabling the Switch” on page 98](#) and the *Sun Datacenter Switch 3456 Site Planning Guide*.

Preparing for Installation

This chapter describes tasks to be accomplished before actually installing the Sun Datacenter Switch 3456. Topics include:

- “Final Location Checklists” on page 11
- “Path to Final Location” on page 15
- “Receiving Area” on page 18
- “Personnel” on page 18
- “Installation and Maintenance Tools” on page 21

Final Location Checklists

This section includes a checklist that the installers can use to ensure that they are ready for installation. This checklist covers power, air conditioning, network cabling, spacing, loading, and other topics.

Power Checklist

- ____ Are correct power cables used?
- ____ Is power routed through circuit breakers to code?
- ____ Is power conditioned before the chassis?
- ____ Is the power turned off?
- ____ Has a backup solution been implemented?

Network Checklist

- ____ Has the network topology been determined?
- ____ Has the blueprint been determined?
- ____ Has the IB support network been configured?

Cabling Checklists

Power Cabling Checklist

- ____ Have the cables been routed from facility power to backup, through conduits to breakers to conditioner to switch?
- ____ Have the cables been labeled for their respective connections?
- ____ Have the cables been properly bundled?
- ____ Have the cables been given enough slack for installation?
- ____ Have appropriate connectors been fitted?

Network Cabling Checklist

- ____ Have the cables been routed between IB switches and the Sun Datacenter Switch 3456?
- ____ Have the cables been labeled for their respective ports?
- ____ Have the cables been properly bundled?
- ____ Have the cables been given enough slack for installation?

Spacing Checklist

- ____ Has enough work area been cleared for receiving the chassis and components?
- ____ Is this area clean?
- ____ Has enough space been allocated for the path to the final location?
- ____ Are doors set open?
- ____ Are doors, hallways, and elevators large enough to accommodate the Sun Datacenter Switch 3456?
- ____ Are carpets covered with hard surfaces?
- ____ Are gaps and thresholds appropriately prepared?

- ____ Is there sufficient spacing at the final location for installation activities?
- ____ Is there sufficient spacing at the final location for operation and air flow management?

Loading Checklist

- ____ Can the final location accommodate the weight of the fully configured chassis?
- ____ Can the path to the final location accommodate the weight of the chassis?
- ____ Have reinforcements to the flooring been installed?
- ____ Can the elevator accommodate the weight of the chassis?

Environmental Checklist

- ____ Can the environmental control system support the thermal demands of the switch?
- ____ Have additional cooling systems been installed and tested operational?
- ____ Have the air flow characteristics of the final location been analyzed?
- ____ Has the air flow management been configured for the Sun Datacenter Switch 3456's additional heat load?

Personnel Checklist

- ____ Have the appropriate personnel for installation, administration, and maintenance been determined?
- ____ Do the personnel understand their responsibilities?
- ____ Have the personnel read and understood the Sun Datacenter Switch 3456 documentation respective to their activities?
- ____ Are the personnel properly equipped for their tasks?
- ____ Are the personnel available to perform their tasks?

Tools Checklists

Are the tools readily available for installation, administration, and maintenance?

Installation Tools Checklist

- ____ Socket extension
- ____ Socket
- ____ Ratchet
- ____ Small needlenose pliers
- ____ Phillips screwdrivers
- ____ Adjustable wrenches
- ____ Wire strippers
- ____ Molex pin repair kit
- ____ Flashlights
- ____ Gloves
- ____ Digital multimeter
- ____ Beam level
- ____ Scissors
- ____ Pocket knife or box cutter

Administration Tools Checklist

- ____ InfiniBand network subnet manager software stack
- ____ Host server for software stack
- ____ Server for CMC interface
- ____ Serial terminal for CMC interface

Maintenance Tools Checklist

- ____ Socket extension
- ____ Socket
- ____ Ratchet
- ____ Molex pin repair kit
- ____ Flashlights
- ____ Gloves
- ____ Digital multimeter

Path to Final Location

This section address obstructions or hindrances along the route from the unpacking site to the final location.

Security Systems

The path to the final location might need the Sun Datacenter Switch 3456 to move through a secure area. Sensors for intrusion, movement, doors opening, and so on, must be disabled, or else a false alarm might sound.

Consider the impact of the path to the final location on the security of the building. Are the personnel entering or passing through an area that they are not authorized to do so?

Consult with the security services before moving the Sun Datacenter Switch 3456. This way, security is not surprised if intrusion and door alarms are activated. Additionally, security might be able to provide an alternative route that has less impact to building security.

Signage

If the path to the final location has high foot traffic, consider posting signs and providing email informing personnel of the move. This action alerts uninvolved personnel to avoid the path, which eases the movement of the Sun Datacenter Switch 3456 and reduces the possibility of complications or injuries.

Carpets

The Sun Datacenter Switch 3456 chassis will not roll on carpet without great effort. Plan a path to the final location that avoids carpeted areas. If carpeting cannot be avoided, place sheet metal or masonite panels over the carpeting to make the chassis roll more easily.

You do not need to place panels on the entire carpeted path. Use enough to support the chassis and provide the chassis a surface to roll on. For example, if you use 3 ft x 5 ft (0.91 m x 1.52 m) masonite panels, three panels will support the chassis, while a

fourth panel can be laid in front of the chassis in the direction of travel. Once the chassis has rolled off the rear-most panel, lift that panel and move it to the front. Repeat this process down the path over carpeting.

Grades

The Sun Datacenter Switch 3456 chassis weighs 1433 pounds (650 kg) as shipped. Any grade along the path requires additional effort to move the chassis, or prevent the chassis from moving. Do not attempt to move the chassis up or down a grade greater than 3%.

Additionally, the Sun Datacenter Switch 3456 chassis is equipped with antitilt bars that are mounted at the centerline. The presence of the bars limits the clearance movement to 0.5 inch (12 mm). When a chassis peaks a grade of 3% or greater, the antitilt bars bottom out.

Elevators

If the path to the final location requires use of an elevator, ensure that the elevator can safely accommodate the weight of the Sun Datacenter Switch 3456 chassis and the personnel moving it.

The elevator doors must be wide enough to allow the Sun Datacenter Switch 3456 to pass, ideally with personnel alongside. The doors might need to be held open, either physically, or by pressing the door open button within the elevator.

Verify that the threshold at the elevator doors permits the chassis to enter and exit the elevator. The gap between the floor and elevator should not be too large, nor should there be any height difference. Check this gap at both the entering and exiting floors. If there are any minor discrepancies, a metal sheet or masonite panel can be used to compensate.

Doors

Doors must open wide enough to accommodate the Sun Datacenter Switch 3456 chassis and personnel alongside. Additional personnel can hold doors open, or the doors can be securely propped open using wedges or catches. Do not hold doors open with chairs or other easily available objects. Such objects do not guarantee a secure door and can diminish the space for moving the chassis.

Thresholds and Gaps

The path to the final location might have building expansion joint gaps, carpet runners, door thresholds, or other inconsistencies in an otherwise smooth surface. When these obstructions cannot be avoided, use metal plates or masonite panels to compensate for the irregularities. If a gap is too great, or a threshold too high, the panel might break. In this situation, an alternative path to the final location must be found.

Path

Surface

The path, regardless of surface, should be clean and free of any obstructions. Obstructions include trash, cables, fasteners (screws, nuts, paper clips, thumbtacks, tie wraps, and so on), any scrap (pencils, pens, papers, and so on), or small object that might hinder movement. A quick sweeping of the path to the final location before moving the Sun Datacenter Switch 3456 can remove most objects that might later prove troublesome.

Turns

Ensure that any turns in the path to the final location allow unhindered movement of the chassis. Avoid narrow hallways and tight turns, because they create opportunities for injury.

Check the path before moving the Sun Datacenter Switch 3456. If you are in doubt of the chassis' ability to navigate a certain section of a building, a make-shift framework, constructed of duct-taped sticks for example, can give an idea of the path's viability. Walk the framework through the path to the final location. If there is any situation where the framework binds, then the chassis will also.

If a tight turn cannot be avoided, consider adding protection to the walls of the inside corners of the turn. Additionally, consider adding protection to the corners of the Sun Datacenter Switch 3456 chassis.

Receiving Area

This section lists the equipment used in the receiving area or loading dock and the condition and state of the area.

Equipment

To receive and unpack the Sun Datacenter Switch 3456, the following equipment is required.

- Forklift or pallet jack rated for at least 2000 lbs
- Large flat-blade screwdrivers (one for each person unpacking)
- Claw hammer (one for each person unpacking)
- Adjustable wrench (two for each person unpacking)
- Scissors
- Gloves (for each person unpacking)
- Bin for parts collection

Cleanliness

The unpacking area must be clean and uncluttered. Personnel will be working closely and activity. The personnel must be free to move about without distraction or the possibility of tripping or slipping.

The task of unpacking produces packing material waste and wood shavings. This debris should be removed and swept away before the chassis is rolled out.

After rollout, the crate can be reassembled and stored. The unpacking area should be swept again.

Personnel

This section describes the personnel needed for the installation, what their tasks are, and their mindset.

Number of People

The minimum number of people involved with the installation of the Sun Datacenter Switch 3456 is two. Many tasks involve two people to maintain safety. While some tasks only require one person, three people is ideal as it provides redundancy in some situations and makes many tasks easier. Four people can make a couple of tasks very easy. Yet in most situations, four or more people are detrimental, as they might end up interfering with each other's work.

Tasks and Roles

TABLE 3-1 describes the tasks involved with installing the Sun Datacenter Switch 3456, the ideal number of people, and their roles for that task.

TABLE 3-1 Tasks and Roles

Task	No. of People	Roles for Task
Unloading crate from truck	1	Only one person can operate a forklift or pallet jack.
Moving crate to unpacking area	2	The operator of the forklift or pallet jack, and another person to offer guidance and feedback when moving the crate.
Unpacking Sun Datacenter Switch 3456	4	Two people can do this task, however, more people can speed up the tasks. Additionally, tasks can happen at the four corners of the chassis in parallel.
Moving Sun Datacenter Switch 3456 to final location	3	At least two people, one to push, the other to steer. With three people, one pushes, the other two push and steer. With four, all push and steer. Additionally, a non-pushing person can handle situations that might need correction, such as a propped door coming loose or caterpillaring the panels over carpet.
Inspecting chassis	4	One person can accomplish this task, but a person at each corner can speed things up greatly.
Inspecting pins	2	One person can accomplish this task, but a person on each side can speed things up greatly.
Cabling chassis management controller (CMC)	1	A simple cable connection requires only one person.
Cabling power supplies	2	One person can accomplish this task. Two people, working from the outer sides to the center, can speed up the task.
Installing fabric cards	2	The synchronized procedures of installing the fabric cards requires two people for lifting the cards into place. Insertion is better handled by two people, though one person can accomplish the task.

TABLE 3-1 Tasks and Roles *(Continued) (Continued)*

Task	No. of People	Roles for Task
Installing line cards	2	The synchronized procedures of installing the line cards requires two people for lifting the cards into place. Insertion is better handled by two people, though one person can accomplish the task.
Running diagnostics	1	Only one person is needed.
Cabling line cards	4	One person can achieve this task, though it can be greatly accelerated if two teams work on opposite ends of the chassis, working towards each other. One team member can route the IB cables through the guides, while the other person secures the connectors.
Administration	1	Only one person is needed.
Servicing fans, power supplies, and CMCs	1	The components can be easily replaced by one person.
Servicing fabric and line cards	2	The synchronized procedures of removing and installing the cards requires two people for lifting the cards into place. Insertion and ejection are better handled by two people, though one person can accomplish the task.
Maintenance	1	A service or maintenance person performs tasks that only need one person.

Mindset

Because of the cost and importance of the Sun Datacenter Switch 3456, the personnel installing the switch must have a certain mindset.

Safety

The Sun Datacenter Switch 3456 is heavy. Moving it might cause injury and damage to property. The personnel must be attentive to their own and others' actions. The personnel must be focused. The personnel must understand the purpose of their task and responsibility that goes with it.

Methodical Approach

The Sun Datacenter Switch 3456 is complex and delicate. Processes described in this documentation have been developed from actual installation experiences. There are no shortcuts or optional tasks. Procedures are to be done exactly as described. The personnel should realize the time for procedures and be willing to commit that time.

Any situation that doesn't look right, operation that doesn't function smoothly, or behavior that is not as expected, must be investigated immediately.

Check and recheck your work. Unknowingly making a mistake yet correcting it is permissible and good practice. Covering up a known uncertainty can cause serious damage.

Diligent Attitude

Many of the procedures for installation might require repeated efforts. There might be situations that mean undoing tasks that were accomplished hours ago. The personnel installing the Sun Datacenter Switch 3456 must realize the importance of correctly installing the switch.

Installation and Maintenance Tools

This section lists the tools to be used for the installation.

Standard Tools

TABLE 3-2 describes the tools required for the installation and maintenance of the Sun Datacenter Switch 3456.

TABLE 3-2 Standard Tools for Installation

Tool	Purpose
Socket extension	Extends reach of socket to the line and fabric cards, especially when the Sun Datacenter Switch 3456 is fully configured.
Socket	Inserts and ejects line and fabric cards from the chassis.
Ratchet	Drives the socket and extension.
Claw hammer	For uncrating the chassis.
Small needle nose pliers	For straightening bent pins and handling small items.
Phillips screwdrivers	To tighten and loosen Phillips screws.
Flat-blade screwdrivers	To pry klimp fasteners and for basic utility.

TABLE 3-2 Standard Tools for Installation *(Continued) (Continued)*

Tool	Purpose
Adjustable wrenches	Removing nuts, bolts, and other packing hardware.
Molex pin repair kit	To repair or replace broken, bent, or damaged midplane pins.
Flashlights	For inspecting pins, connectors, and chassis fittings.
Gloves	To protect hands during unpacking and moving.
DMM	To check continuity and leakage during installation.
Beam level	To level the Sun Datacenter Switch 3456 chassis.

Installation Sequence

This chapter outlines the sequence of events that occur to receive the Sun Datacenter Switch 3456, uncrate it, transport it to the final location, inspect the chassis, install components, attach power, cable it, and begin administration.

- “Installation Sequence” on page 23

Installation Sequence

TABLE 4-1 describes the installation task sequence and provides cross-references to those procedures.

TABLE 4-1 Sun Datacenter Switch 3456 Installation Sequence

Step	Task	Cross-Reference
1	Remove the Sun Datacenter Switch 3456 from its crate.	“Unpacking the Chassis” on page 25
2	Remove the fabric cards, line cards, and cabling hardware from their boxes.	
3	Transport the Sun Datacenter Switch 3456 to the final location.	“To Move to the Final Location” on page 35
4	Level the chassis.	“To Level the Chassis” on page 36
5	Secure the chassis.	“To Secure the Chassis” on page 39
6	Remove the filler panels (if installed).	“To Remove the Power Supply Filler Panels” on page 39 “To Remove the Line Card Filler Panels” on page 40
7	Inspect the chassis.	“Inspecting the Chassis” on page 43

TABLE 4-1 Sun Datacenter Switch 3456 Installation Sequence (*Continued*)

Step	Task	Cross-Reference
8	Inspect midplane back pins. Repair or replace them if necessary.	“Inspecting Pins” on page 48 “Repairing and Replacing Pins” on page 54
9	Install midplane stiffener.	“To Install the Midplane Stiffener” on page 63
10	Install fabric cards.	Chapter 8
11	Remove midplane stiffener.	“To Remove the Midplane Stiffener” on page 66
12	Inspect midplane front pins. Repair or replace them if necessary.	“Inspecting Pins” on page 48 “Repairing and Replacing Pins” on page 54
13	Install line cards.	Chapter 9
14	Install filler panels in any vacant slots.	“To Install the Line Card Filler Panels” on page 41
15	Install cable trees and cable plates.	“Installing Cable Guides” on page 93
16	Install additional power supplies.	“To Install Power Supplies” on page 83
17	Attach power cables.	“Preparing Power Supplies” on page 85
18	Configure the CMC.	“Working With CMCs” on page 87
19	Power up the power supplies.	“Powering On the Sun Datacenter Switch 3456” on page 91
20	Power on the fabric cards and line cards.	
21	Verify component status.	
22	Bring cables to the switch.	
23	Install the first line card cable tray in the lowest slot.	“To Install Cable Trays” on page 97
24	Cable first line card.	“Cabling the Switch” on page 98
25	Repeat Step23 for remaining line cards, working your way up.	
26	Check link status.	“To Check Link Status” on page 103

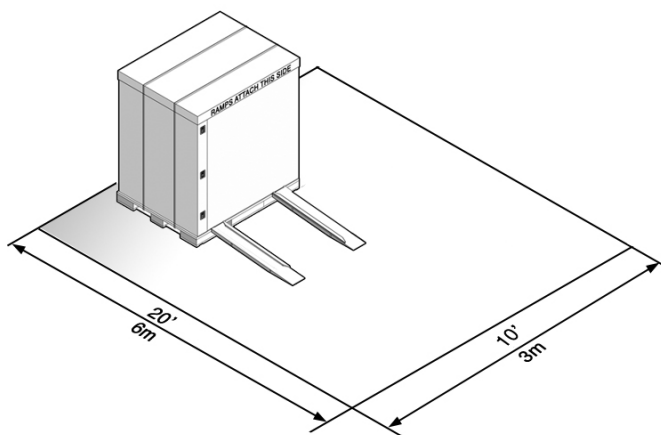
Unpacking the Chassis

This chapter describes unpacking the Sun Datacenter Switch 3456 chassis.

Unpacking the Chassis

The chassis unpacks from the shipping crate perpendicular to the long edge of the shipping crate. A rectangular area, approximately 10 by 20 feet (3 by 6 meters) is needed for unpacking the chassis. [FIGURE 5-1](#) shows where and how the shipping crate should be oriented to the area for unpacking.

FIGURE 5-1 Shipping Crate in Unpacking Area

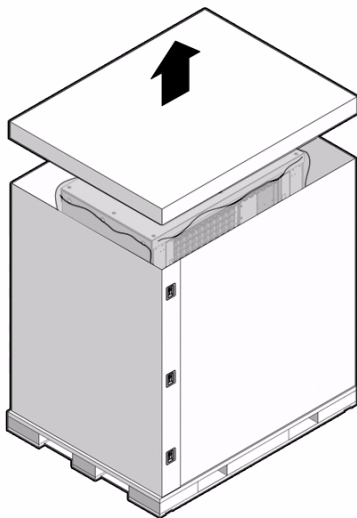


▼ To Remove Shipping Crate Components

The shipping crate separates into seven pieces; two shells, two ramps, a cap, a sub-cap, and a pallet.

1. Using the scissors or knife, cut the straps that secure the cap and shells to the pallet.
2. Lift the cap from the shells.
See [FIGURE 5-2](#).

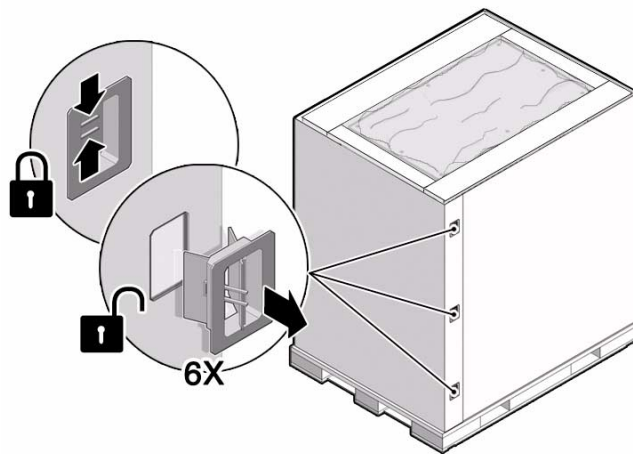
FIGURE 5-2 Lifting the Cap From the Shells



Note – The sub-cap is flush with the shells and is removed with the shells, not the cap.

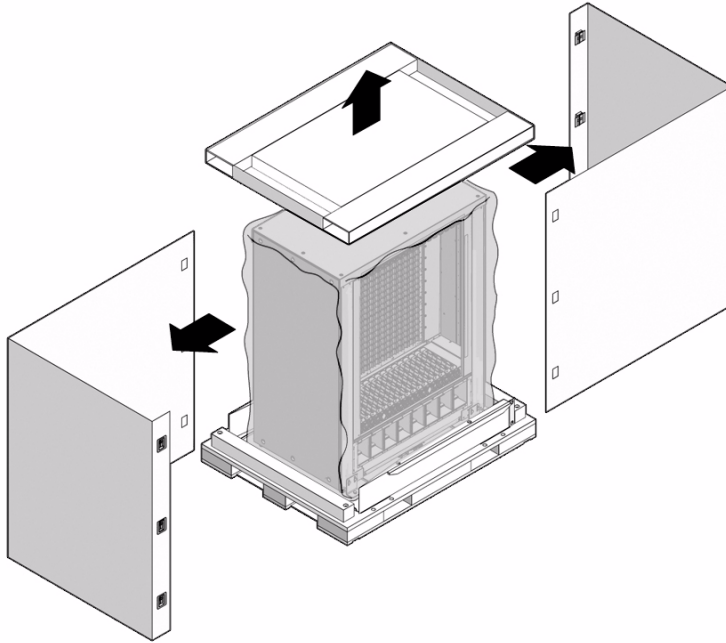
3. Release the shells from each other
See [FIGURE 5-3](#).

FIGURE 5-3 Releasing the Shells From Eachother



4. Separate the shells and the sub-cap from the pallet.
See [FIGURE 5-4](#).

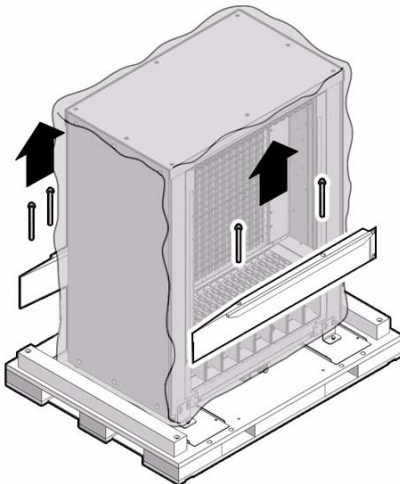
FIGURE 5-4 Separating the Shells and Sub-Cap From the Pallet



5. Remove the two bolts securing the each ramp to the pallet, then set the ramps and bolts aside.

See [FIGURE 5-5](#).

FIGURE 5-5 Removing the Ramps



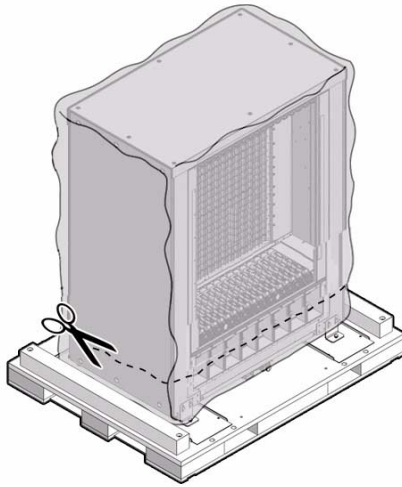
6. Remove the documentation and shipping kit from the pallet.

▼ To Remove the Plastic Envelope

- Using the scissors, carefully cut the plastic envelope around the perimeter of the chassis at the base.

See [FIGURE 5-6](#).

FIGURE 5-6 Cutting the Plastic Envelope



Note – Pull out on the envelope as you cut, so that you do not damage the chassis surface.

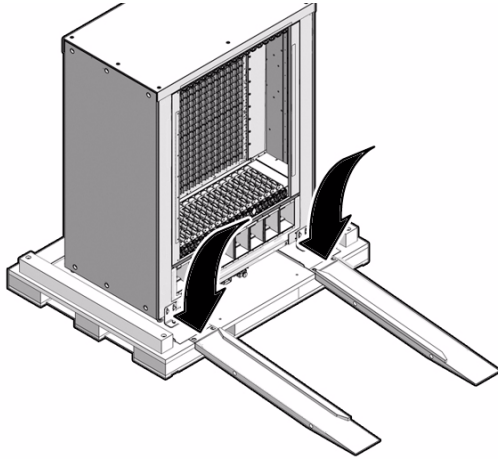
▼ To Fit the Ramp

- Attach the ramps to the side of the pallet

See [FIGURE 5-7](#).

Note – Ensure that the guides on the ramps are towards the center.

FIGURE 5-7 Fitting the Ramp to the Pallet

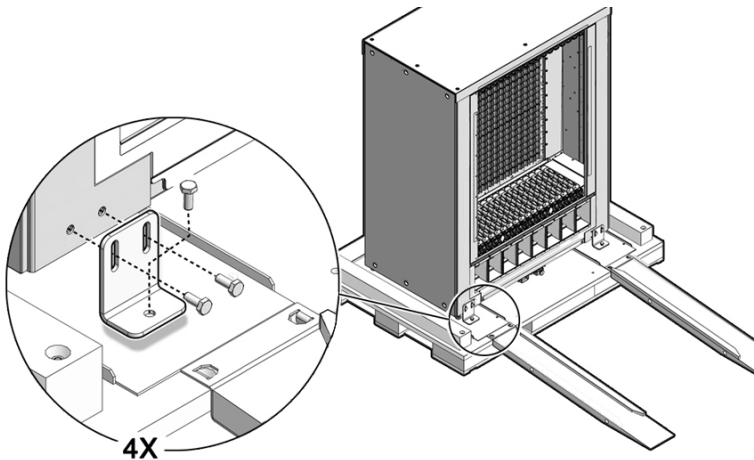


▼ To Unsecure the Chassis

1. Use the adjustable wrenches to remove the bolts securing the corner brackets to the pallet.

See [FIGURE 5-8](#).

FIGURE 5-8 Removing the Bracket Securing Bolts



2. Prepare the corner brackets for transport.

- a. Loosen the screws that secure the brackets to the chassis.

See [FIGURE 5-8](#).

- b. Raise the brackets all the way.

- c. Tighten the screws to secure the brackets to the chassis.

▼ To Roll Out the Chassis

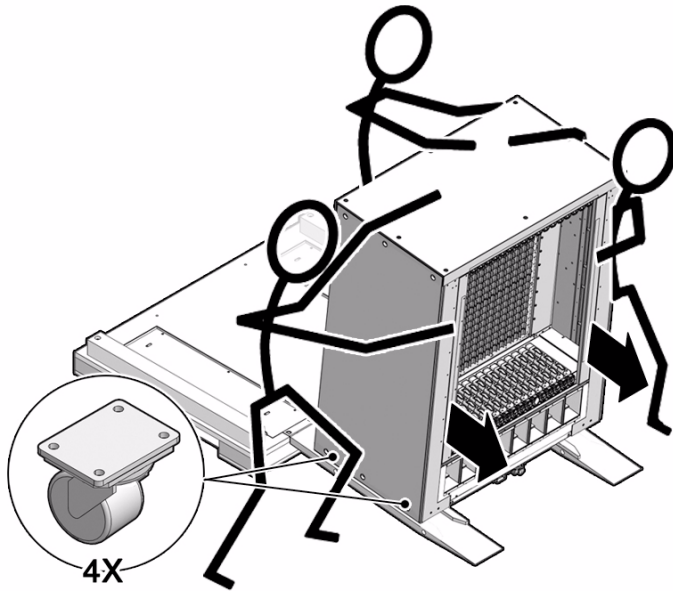
1. Ensure that the floor space up to 5 feet (1.5 m) from the end of the ramp is clear.

2. Prepare the personnel.

- One person (pusher) will push the chassis off the pallet from the end opposite the ramps.
- One person (guider) at the left of the chassis (left side of ramps) will guide the chassis off the pallet and brake its roll down the ramps.
- One person (guider) at the right of the chassis (right side of ramps) will guide the chassis off the pallet and brake its roll down the ramps.

See [FIGURE 5-9](#).

FIGURE 5-9 Rolling Out the Chassis



3. The pusher begins the rollout as the guiders steer the chassis.

Halfway off the pallet, the chassis might bottom out on the pallet edge because of the antitilt bar. In this situation:

- a. The pusher continues to push, flexing the pallet load surface with the pusher's weight.
- b. The guiders move the chassis side-to-side in a concerted fashion.

Once the antitilt bar has cleared the pallet edge, the chassis will begin rolling down the ramps under its own weight.

4. The pusher stops pushing and moves to the end of the ramps to assist the guiders.
5. The guiders control the descent of the chassis down the ramps and onto the floor.

Note – Though not recommended, rollout is possible with just two people. At [Step b](#), the guider must repeatedly switch sides until the chassis moves free. Additionally, the pusher will take the side opposite the guider in [Step 4](#).

6. (Optional) Reassemble the crate.

- a. Remove the ramps from the side of the pallet.

- b. Lay the ramps and their bolts onto the pallet.**
- c. Return the shells to the pallet and secure them together.**
- d. Set the sub-cap into the shells.**
- e. Set the cap onto the shells.**

Installing the Chassis

This chapter describes procedures for installing and inspecting the Sun Datacenter Switch 3456 chassis. Topics include:

- “Installing the Chassis” on page 35
- “Inspecting the Chassis” on page 43

Installing the Chassis

This section describes getting the chassis to the final location.

▼ To Move to the Final Location

This procedure assumes that you have the final location ready for receiving the Sun Datacenter Switch 3456 chassis, and that the chassis has been unpacked from the shipping crate.

1. Walk the path to the final location.

- Prop open any doors that must be passed.
- Take preparatory steps if security must be overridden.
- Post signs for directions and information for others not involved with the movement.
- Sweep the path and check the floor surfaces for objects that might hinder movement, and remove those objects.
- Check for folds or loose ends of carpeting (if traveling over carpeting).
- Have metal sheets or masonite panels ready for thresholds, gaps, or carpeting.
- Remove any obstructions from the path.

- Check the elevators in path, if any.
2. **Verify that the leveling feet are in the fully raised position.**
 3. **With one person as the pusher and at least one other person as a guider, begin moving the chassis on the path.**



Caution – The guider can cross to either side of the chassis, but should never remain in the path of motion.

4. **Move the chassis as slow as reasonably possible.**

Note – When approaching intersections, doorways, or places where interaction with others or collision might occur, announce your presence.

5. **When you arrive at the final location, position the chassis for leveling and securing.**

▼ To Level the Chassis

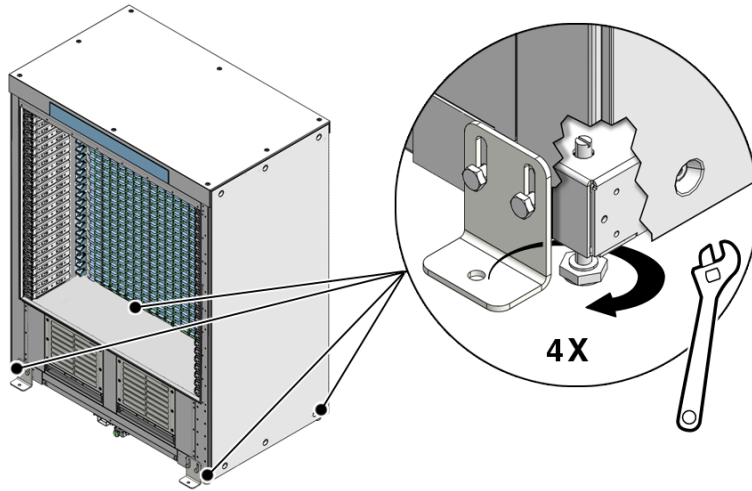
Once the chassis is at the final location, you must level the chassis. The chassis does not need to be perfectly level. However, the load borne by the casters should now be distributed between the casters and the leveling feet.

Note – The directions indicated in this procedure are referenced from the front or line card side of the chassis.

1. **Position the Sun Datacenter Switch 3456 in the final location.**
2. **Using the adjustable wrench, lower the first leveling foot so that it contacts the floor and you begin to feel resistance.**

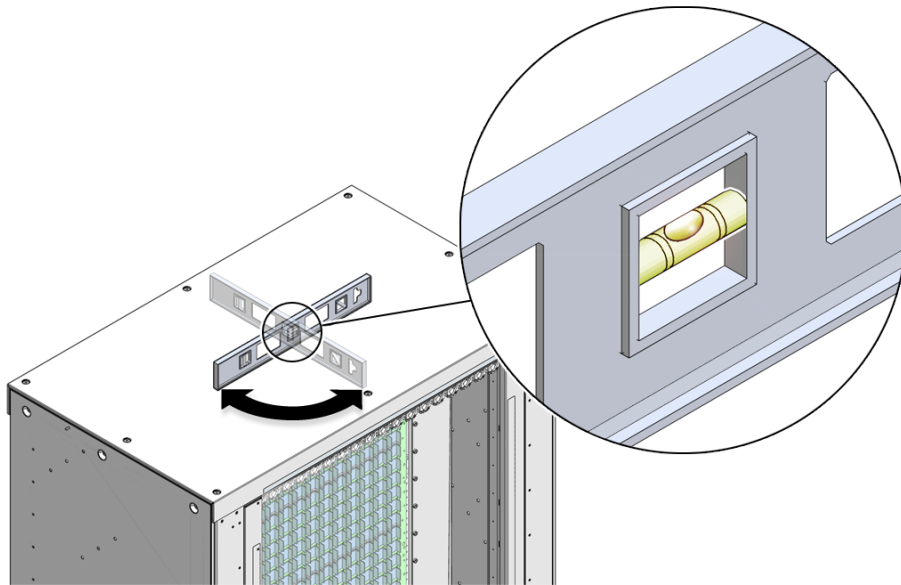
See [FIGURE 6-1](#).

FIGURE 6-1 Lowering the Feet



3. Repeat [Step 2](#) for each leveling foot.
4. Lower each foot two additional turns.
5. Place a beam level at the center of the chassis, running right to left.
See [FIGURE 6-2](#).

FIGURE 6-2 Setting the Level



6. Note the position of the bubble.
7. Rotate the beam level 90 degrees, now running front to rear.
See [FIGURE 6-2](#).
8. Note the position of the bubble.
9. Consider your next step:
 - If the bubble favored the right and the front, raise the right front foot or lower the left rear foot.
 - If the bubble favored the right and the rear, raise the right rear foot or lower the left front foot.
 - If the bubble favored the left and the front, raise the left front foot or lower the right rear foot.
 - If the bubble favored the left and the rear, raise the left rear foot or lower the right front foot.
10. Adjust the appropriate leveling foot.
11. Repeat [Step 5](#) to [Step 10](#) until the chassis is level.
 - If the adjustment causes a caster to lift from the floor, go to [Step 12](#).
 - If the adjustment causes a foot to lift from the floor, go to .
 - Otherwise, go to [Step 19](#).

12. Raise all feet equally by one quarter turn.
13. Repeat [Step 12](#) until the caster seats.
14. If completing [Step 13](#) makes the chassis unlevel, stop.
15. Go to [Step 19](#).
16. Lower all feet equally by one quarter turn.
17. Repeat [Step 16](#) until the foot seats.
18. If completing [Step 17](#) makes the chassis unlevel, stop.
19. The present state is sufficient.

▼ To Secure the Chassis

Some building codes might require securing the Sun Datacenter Switch 3456 to its final location. You can use the brackets removed when unpacking to help secure the Sun Datacenter Switch 3456 to the floor.

1. Using an adjustable wrench, loosen the screws securing the corner brackets to the chassis.
2. Using the brackets as a template, mark the floor for fastener locations.
3. Remove the corner brackets.
4. Prepare the floor as appropriate for building codes.
5. Reattach the corner brackets to the chassis.
6. Secure the brackets to the floor, using washers or shims where appropriate.

▼ To Remove the Power Supply Filler Panels

The Sun Datacenter Switch 3456 ships with power supply filler panels installed. If power supplies are to be installed, the filler panels should be removed first.

1. Swing the release lever of the power supply filler panel out and to the right.
2. Pull the handle of the filler panel to remove it from the chassis.
3. Set the filler panel aside.
4. Repeat from [Step 1](#) for all remaining filler panels.

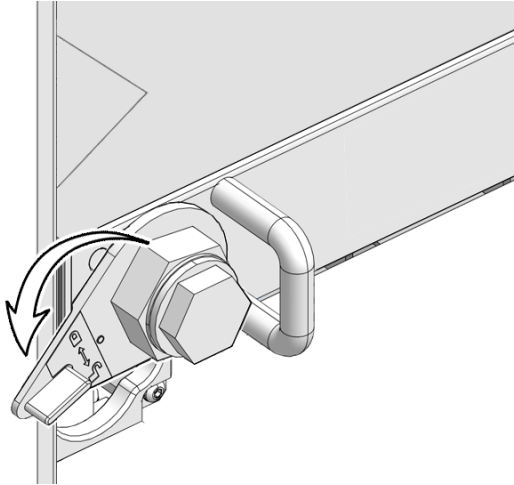
▼ To Remove the Line Card Filler Panels

Your Sun Datacenter Switch 3456 might ship with line card filler panels installed. You must remove the filler panel where a line card will install.

1. **Grasp the locking levers at each end of the filler panel.**

See [FIGURE 6-3](#).

FIGURE 6-3 Turning Filler Panel Lock Levers



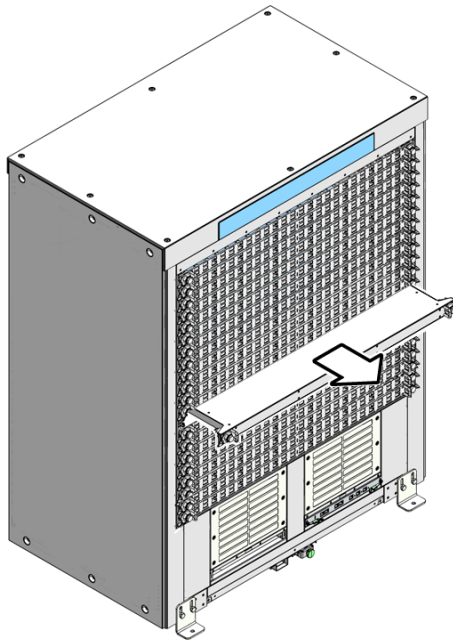
2. **Turn the levers counter-clockwise to the unlocked position.**

See [FIGURE 6-3](#).

3. **Pull the filler panel away from the chassis by the handles.**

See [FIGURE 6-4](#).

FIGURE 6-4 Removing the Filler Panel



4. Repeat from [Step 1](#) for any other filler panels to be removed.

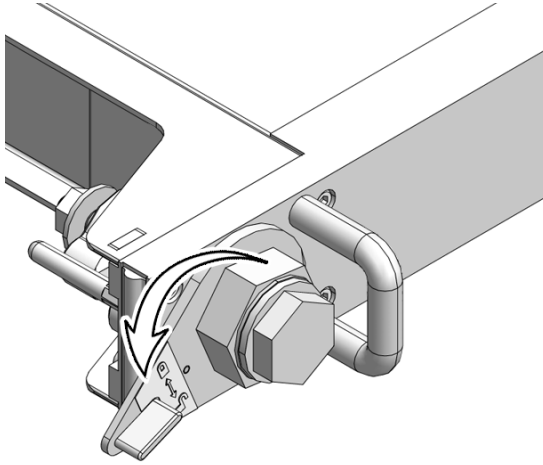
▼ To Install the Line Card Filler Panels

If the Sun Datacenter Switch 3456 is to be configured with less than 24 line cards, the vacant slots must have filler panels installed to maintain proper airflow and thermal management.

1. Grasp the handles at each end of the filler panel and lift the panel to the vacant slot.
2. Slide the filler panel half-way into the chassis.
3. Turn the levers counter-clockwise to the unlocked position.

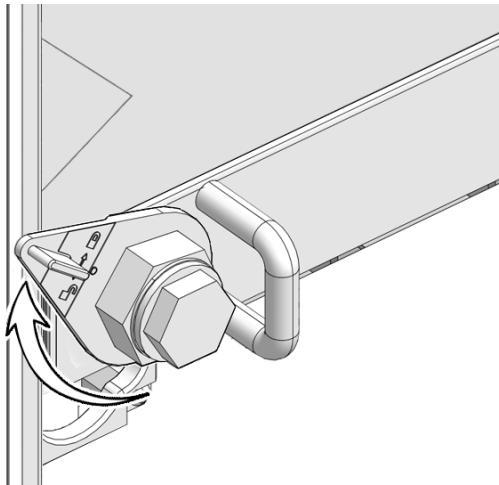
See [FIGURE 6-5](#).

FIGURE 6-5 Turning Filler Panel Lock Levers Counter-Clockwise



4. Slide the filler panel into the chassis until it stops.
5. Turn the levers clockwise to the locked position.
See [FIGURE 6-6](#).

FIGURE 6-6 Turning Filler Panel Lock Levers Clockwise



6. Repeat from [Step 1](#) for any remaining vacant slots.

Inspecting the Chassis

The weight of the Sun Datacenter Switch 3456 promotes a susceptibility to vibration and movement. It is good practice to inspect the chassis as an early part of the installation process.

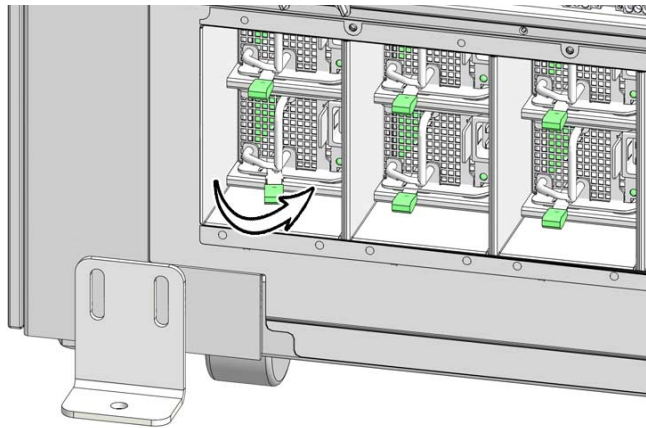
▼ To Verify Electrical Leakage

Use a DMM for this verification test.

1. Grasp the release lever of power supply 0 and pull to release the power supply.

See [FIGURE 6-7](#).

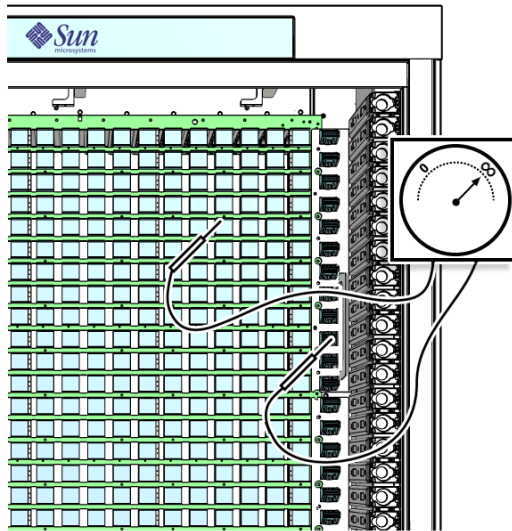
FIGURE 6-7 Releasing the Power Supply



2. Continue to pull the power supply halfway out, but do not remove it.
3. Repeat from [Step 1](#) for all power supplies.
4. Set the DMM for ohms.
If the DMM is not autoranging, set it for the highest resistance.
5. Touch the black probe of the DMM to the chassis ground.

See [FIGURE 6-8](#).

FIGURE 6-8 Verifying Electrical Leakage



6. Touch the red probe to each one of the line card power connectors on the right side.

The resistance should be no less than 1 megohm.

7. Move the black probe to a screw on the midplane stiffener.

See [FIGURE 6-8](#).

8. Repeat [Step 6](#).

9. Move the black probe to a bus bar screw that is floating in the bus bar.

See [FIGURE 6-8](#).

10. Repeat [Step 6](#).

11. Move the black probe to a line card power connector on the left side.

See [FIGURE 6-8](#).

12. Repeat [Step 6](#).

13. If you read less than 1 megohm on any of these tests, investigate why.

14. Continue to [“To Verify Electrical Continuity” on page 45](#).

▼ To Verify Electrical Continuity

Use a DMM for this verification test.

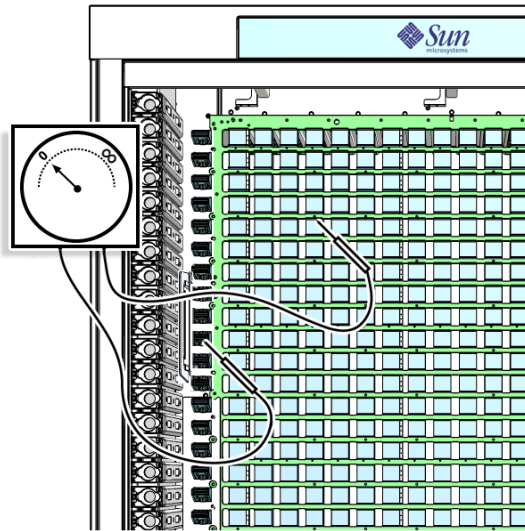
1. Set the DMM for ohms.

If the DMM is not autoranging, set it for the lowest resistance.

2. Touch the black probe of the DMM to the chassis ground.

See [FIGURE 6-9](#).

FIGURE 6-9 Verifying Electrical Continuity



3. Touch the red probe to each one of the line card power connectors on the left side.

The resistance should be no greater than 50 ohm.

4. Move the black probe to a screw on the midplane stiffener.

See [FIGURE 6-9](#).

5. Repeat [Step 3](#).

6. Move the black probe to a bus bar screw that is floating in the bus bar.

See [FIGURE 6-9](#).

7. Repeat [Step 3](#).

8. Move the black probe to a line card power connector on the left side.

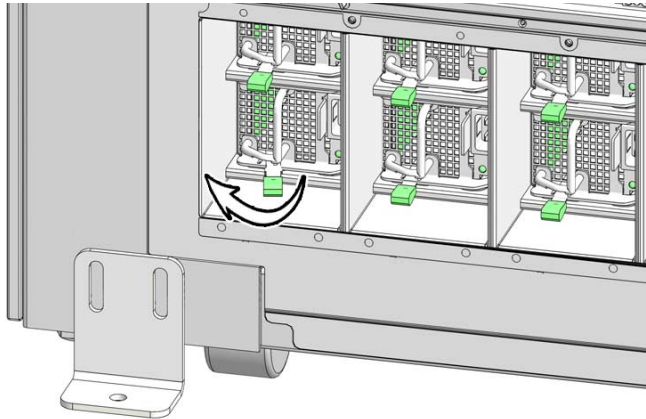
See [FIGURE 6-9](#).

9. Repeat [Step 3](#).

10. If you read more than 50 ohm on any of these tests, investigate why.

11. Slide power supply 0 back in its slot until the release lever begins to move.
See [FIGURE 6-10](#).

FIGURE 6-10 Securing the Power Supply



12. Swing the power supply release lever to the left to secure the power supply.
13. Repeat [Step 11](#) for all power supplies.

Inspecting and Repairing Pins

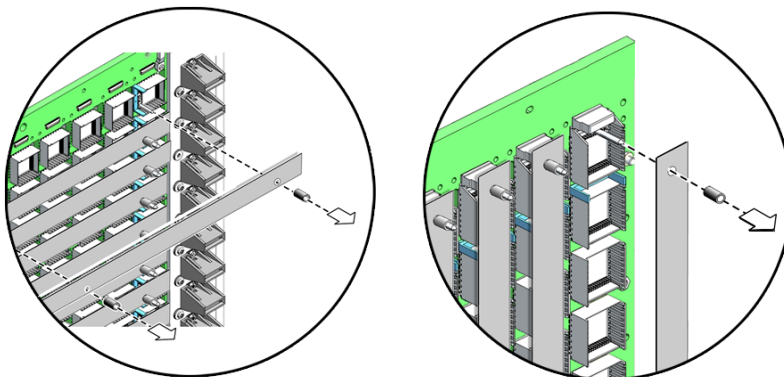
This chapter describes procedures to inspect and repair the midplane pins. Topics include:

- “Midplane Filler Strips” on page 47
- “Inspecting Pins” on page 48
- “Repairing and Replacing Pins” on page 54

Midplane Filler Strips

The Sun Datacenter Switch 3456 ships with plastic filler strips affixed to the midplane. These strips protect the pins of the midplane connectors during the installation process. The filler strips are secured in place by short pieces of rubber tubing, which are inserted over the midplane alignment pins. See [FIGURE 7-1](#).

FIGURE 7-1 Midplane Filler Strips



Inspecting Pins

Before installing the fabric cards and line cards, you must inspect the pins of the midplane connectors. Inspection is a meticulous process, and cannot be hurried. Expect about 30 minutes for each side of the midplane. To shorten this time, one person might inspect the pins on the fabric card side (rear) of the midplane, while another inspects the pins on the line card side (front) of the midplane.

Tools

For inspection, you need the following tools:

- Pin gauge block
- Bright flashlight
- Magnifying glass or loupe
- Notepad and pen

▼ To Inspect the Pins on the Rear Side of the Midplane

The primary tool used to check the midplane pins is the pin gauge block. This tool effortlessly slides over the straight pins of an iTRAC connector that is in good condition. If there is any resistance, a pin is bent and requires further examination.

1. Remove the rubber tubes that secure the filler strip for fabric card slot 0.

Set the tubes aside.

2. Remove the filler strip for slot 0.

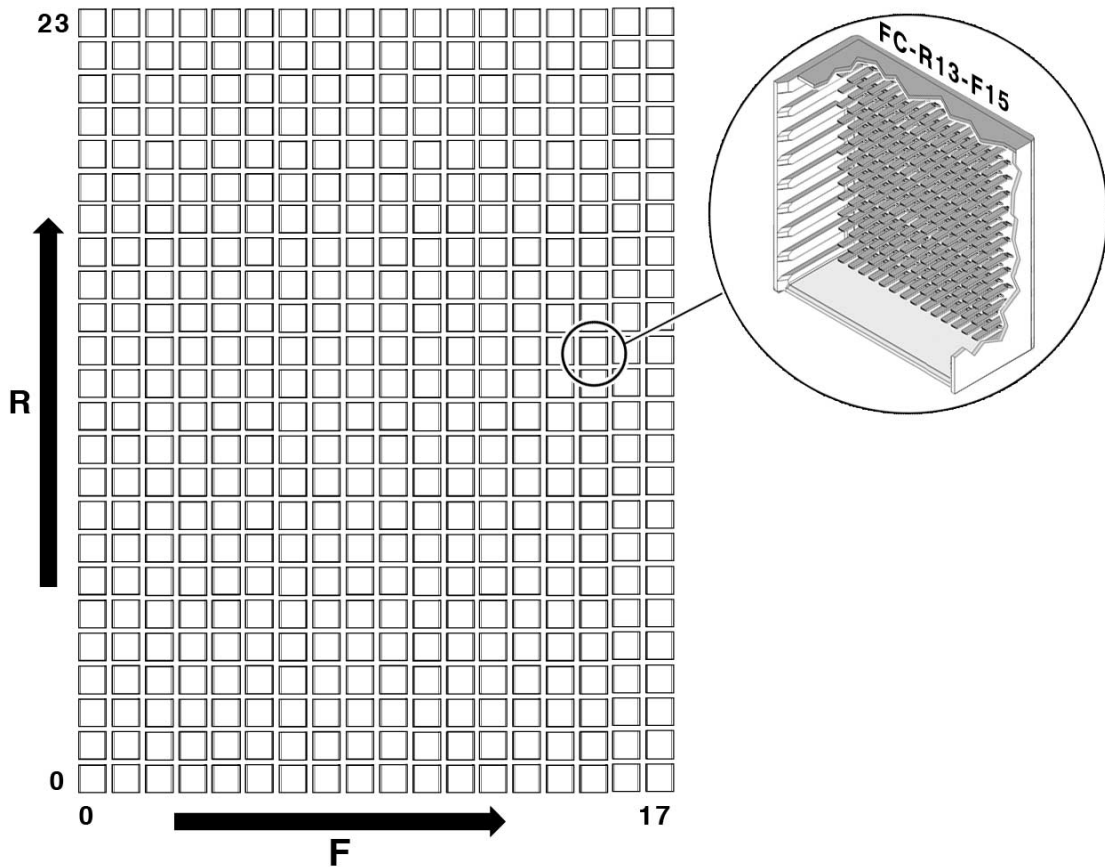
Set the filler strip aside.

3. Using the pin gauge block, gently insert it into the iTRAC connector at the top.

4. If you feel any resistance to insertion, note the connector number on the notepad.

See [FIGURE 7-2](#).

FIGURE 7-2 Fabric Card Connector Nomenclature



The connector number is located above each connector and is unique. For example, the upper-left connector number is FC-R23-F0. The lower-right connector number is FC-R0-F17. The connector number is decoded as follows:

- FC – Fabric card.
- Ra – Row *a*, where *a* is 0 through 23.
- Fb – Frame *b*, where *b* is 0 through 17.

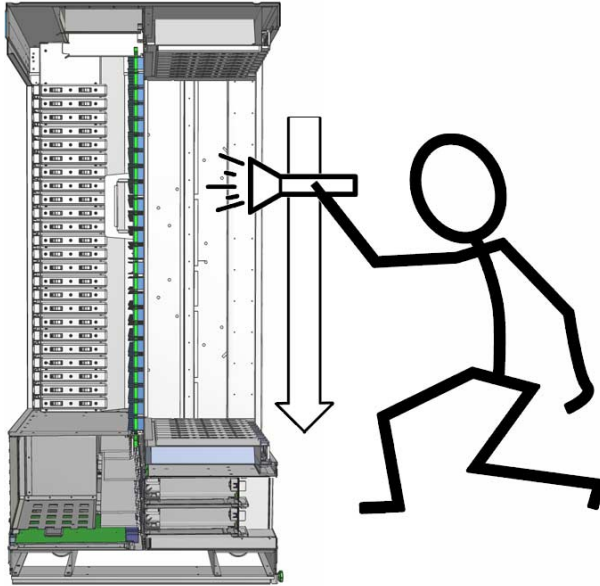
The origin of this coordinate system is the lower-left corner, FC-R0-F0. In [FIGURE 7-2](#), the connector identified is FC-R13-F15.

5. Continue down to the next connector and repeat from [Step 3](#).
6. After you have checked the bottom connector, visually inspect any connectors you noted previously.

7. Using the magnifying glass and the flashlight positioned above you, look at the pins of the connector.

Look at the pins straight on. See [FIGURE 7-3](#).

FIGURE 7-3 Inspecting the Pins (Fabric Card)



8. Look for any light reflection inconsistencies.

A bent pin reflects light differently, either brighter or darker than the surrounding pins.

Note – Do not look at the individual pins, rather look at all of the connector's pins as a whole. A bent pin will be apparent.

9. Identify the pin that needs repair or replacement and note this.
10. Look for any contaminants that might be present.

These contaminants might appear as light dots near the pins.
11. Move your head to the next suspect connector and inspect its pins, repeating [Step 7](#) through [Step 10](#).
12. Continue in this manner for all suspect connectors.
13. Repeat [Step 1](#) to [Step 12](#) for fabric card slot 1 to fabric card slot 17.

14. If a pin needs repair or replacement, see [“Repairing and Replacing Pins” on page 54.](#)

▼ To Inspect the Pins on the Front Side of the Midplane

The primary tool used to check the midplane pins is the pin gauge block. This tool effortlessly slides over the straight pins of an iTRAC connector that is in good condition. If there is any resistance, a pin is bent and requires further examination.

1. **Remove the rubber tubes that secure the filler strip for line card slot 0.**

Set the tubes aside.

2. **Remove the filler strip for slot 0.**

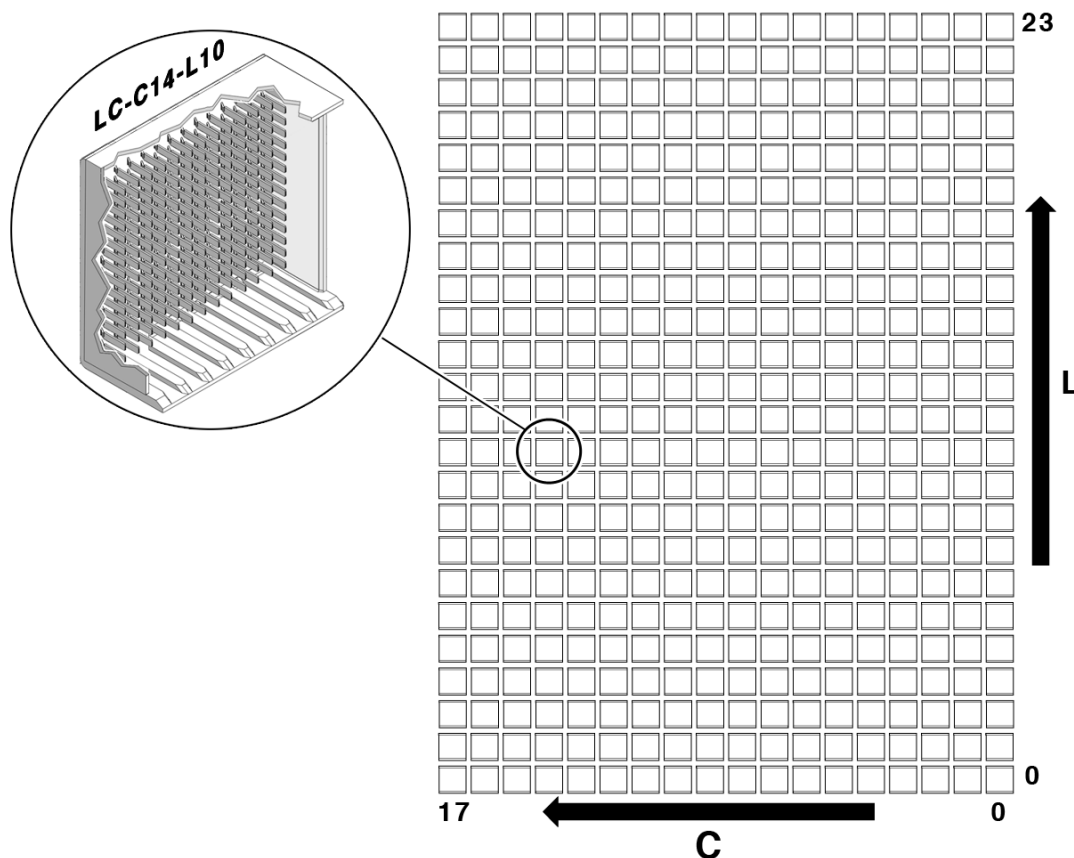
Set the filler strip aside.

3. **Using the pin gauge block, gently insert it into the iTRAC connector on the left side.**

4. **If you feel any resistance to insertion, note the connector number on the notepad.**

See [FIGURE 7-4.](#)

FIGURE 7-4 Line Card Connector Nomenclature



The connector number is located above each connector and is unique. For example, the lower-left connector number is LC-C17-L0. The upper-right connector number is LC-C0-L23. The connector number is decoded as follows:

- LC – Line card.
- Cc – Column *c*, where *c* is 0 through 17.
- Ld – Level *d*, where *d* is 0 through 23.

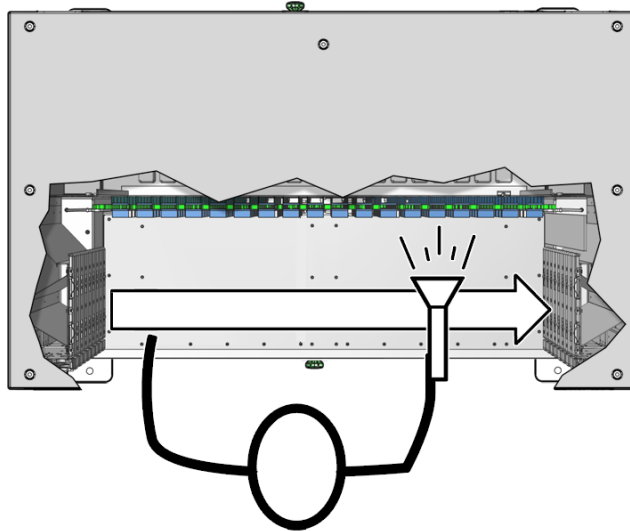
The origin of this coordinate system is the lower right corner, LC-C0-L0. In [FIGURE 7-4](#), the connector identified is LC-C14-L10.

5. Continue right to the next connector and repeat from [Step 3](#).
6. After you have checked the far right connector, visually inspect any connectors you noted previously.

7. Using the magnifying glass and the flashlight positioned above you, look at the pins of the connector.

Look at the pins as straight on. See [FIGURE 7-5](#).

FIGURE 7-5 Inspecting the Pins (Line Card)



8. Look for any light reflection inconsistencies.

A bent pin reflects light differently, either brighter or darker than the surrounding pins.

Note – Do not look at the individual pins, rather look at all of the connector’s pins as a whole. A bent pin will be apparent.

9. Identify the pin that needs repair or replacement and note this.
10. Look for any contaminants that might be present.

These contaminants might appear as light dots near the pins.
11. Move your head to the next suspect connector and inspect its pins, repeating [Step 7](#) through [Step 10](#).
12. Continue in this manner for all suspect connectors.
13. Repeat [Step 1](#) to [Step 12](#) for line card slot 1 to line card slot 23.
14. If a pin needs repair or replacement, see [“Repairing and Replacing Pins”](#) on [page 54](#).

Repairing and Replacing Pins

If you find a bent pin, it might be possible to straighten it. If the bend is too severe, the pin must be replaced.

Tools

To repair or replace a pin, you need the following tools:

- Molex pin replacement tool
- Replacement pins (extracted from a spare iTRAC connector)
- Head-mounted magnifier
- Flashlight

Another person to assist you can make the task much easier.

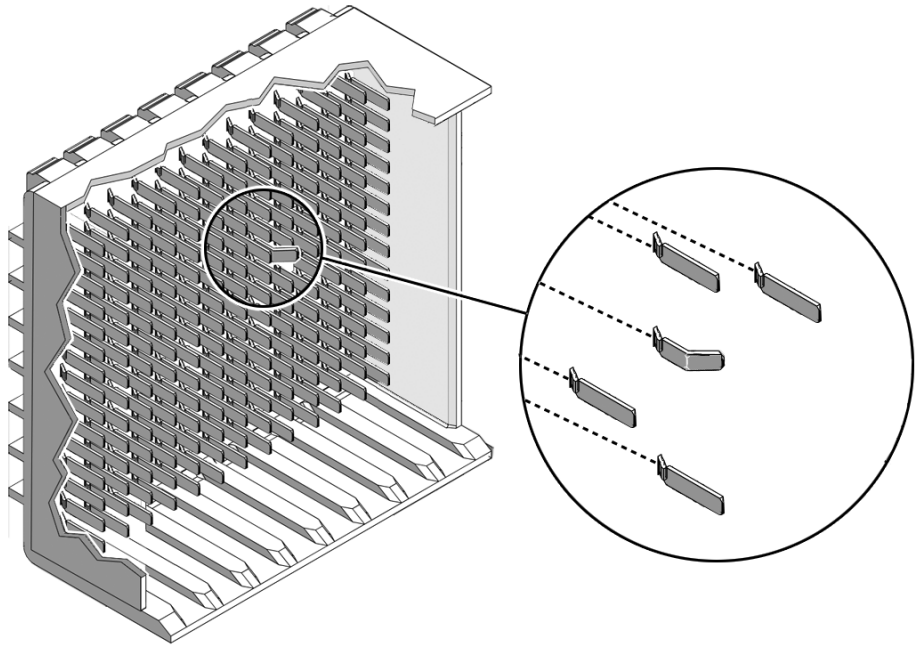
▼ To Remove Pins

Before you can attempt to straighten a bent pin, you must remove the pins surrounding the bent pin. See [FIGURE 7-6](#).

1. Locate the bent pin.

See [FIGURE 7-6](#).

FIGURE 7-6 Locating the Bent Pin and Surrounding Pins



2. Use the Molex tool to remove the pin (if any) above the bent pin.
 - a. Slide the Molex tool completely over the pin.
 - b. Activate the lock to grasp the pin.
 - c. Press the trigger to pull the pin out.
 - d. Push the ejector back in to release the pin and reset the tool.
3. Set the pin aside.
4. Use the Molex tool repeating [Step 2](#) to remove the pin (if any) below the bent pin.
5. Set the pin aside.
6. Repeat [Step 2](#) to remove the pins to the left and right sides of the bent pin (if any).
7. Set these pins aside.

The bent pin is now exposed.

8. Flip the Molex tool over and use the tube in attempt to straighten the pin.
If the pin cannot be straightened satisfactorily, or might break if straightened, replace it.
9. Remove the pin following [Step 2](#).
10. If the pin is too bent for the Molex tool, see [“To Remove a Pin With Needle-Nose Pliers”](#) on page 56.

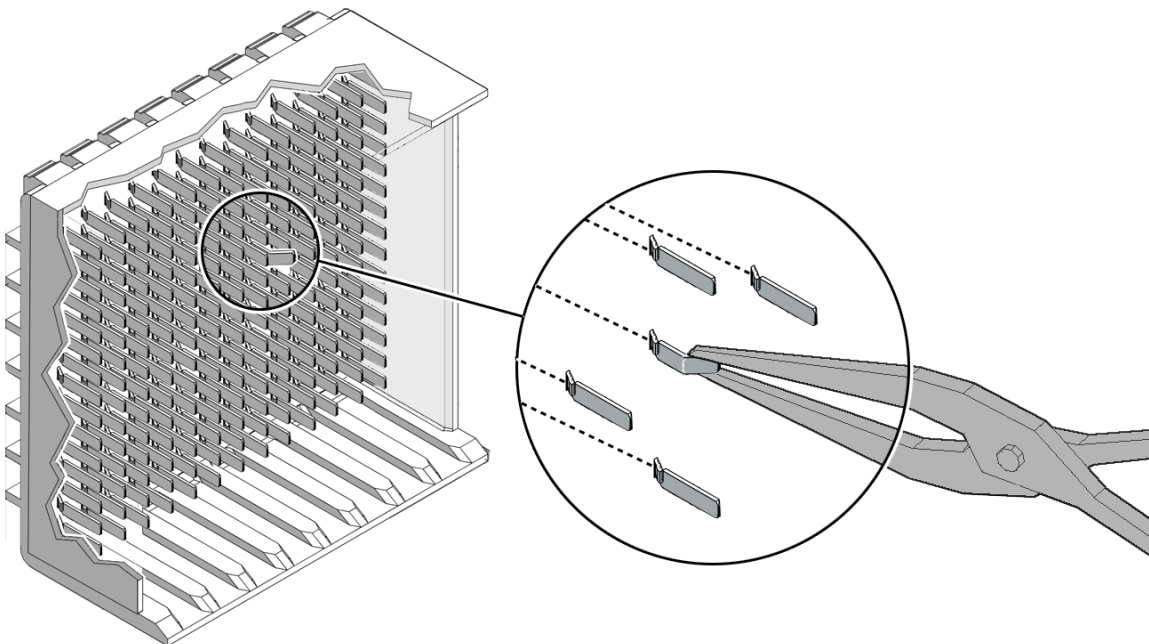
▼ To Remove a Pin With Needle-Nose Pliers

Perform this procedure only when the Molex tool is incapable of removing the pin. You need micro-tipped needle-nose pliers.

1. With one hand, grasp the pin with the very tip of the needle-nose pliers.
2. Squeeze the pliers sufficiently to grip the pin for extraction.
3. With the other hand, steady the pliers in a position for perpendicular extraction.

See [FIGURE 7-7](#).

FIGURE 7-7 Using Pliers to Pull a Pin



4. In one motion, use both hands to pull the pin out of the connector.
5. Dispose of the pin.

▼ To Insert Pins

When inserting pins, work from the top down. Repeat [Step 1](#) through [Step 5](#) for each pin that needs to be inserted.

1. Ready the Molex tool for a pin insertion.
 - a. Press the trigger on the Molex tool to release the ejector.
 - b. Slide a pin into the opening.

A portion of the pin protrudes.
 - c. Activate the lock to grasp the pin.
2. Position the Molex tool over the hole in the connector where you want to insert the pin.
3. Holding the Molex tool perpendicular to the plane of the connector, insert the pin into the connector.
4. Slowly press the ejector in until it stops.

The pin is inserted.
5. Carefully deactivate the lock and withdraw the Molex tool from the connector.

Installing Fabric Cards

This chapter describes inspection and installation procedures, and administrative commands for fabric cards. Topics include:

- “Inspecting Fabric Cards” on page 60
- “Installing Fabric Cards Into the Chassis” on page 63
- “Fabric Card Administrative Commands” on page 68

Fabric Card Considerations



Caution – The thermal management of the switch chassis is compromised when a fabric card slot is vacant. You must install a filler panel or replacement fabric card immediately after removing one.

Though the fabric cards are not heavy, they should be installed by two people. This method ensures that proper alignment can be achieved before the fabric card retainers are locked. Improper alignment can bend midplane connector pins.

Fabric cards use high-density iTRAC connectors that interface with the midplane pins. If these connectors are damaged, the pins of the midplane connector can also be damaged upon fabric card insertion.

You must inspect the fabric card connectors, fans, and retainers before installing the fabric card into the switch chassis.

Inspecting Fabric Cards

Inspect the fabric cards to see if they are ready for installation.

▼ To Inspect the Fabric Card iTRAC Connectors

The iTRAC connectors on fabric cards are the receptacles for the midplane connector pins. These connectors are checked just as meticulously as the midplane connector pins. However, you must verify that no connectors are damaged and no holes are blocked.

You need the following tools:

- Bright flashlight
- Magnifying glass or loupe
- Dental type metal pick

1. **Unwrap the fabric card from its antistatic packaging.**
2. **Place the fabric card on a work surface with the iTRAC connectors facing you.**
3. **Using the flashlight positioned to the side and above you, look at the holes of the left-end connector.**

Look at the holes straight on. See [FIGURE 8-1](#).

FIGURE 8-1 Inspecting Fabric Card Connectors



Note – Do not look at the individual holes, rather look at all of the connector’s holes as a group. A damaged or contaminated hole will be apparent.

4. Look for any closed over or contaminated holes.

A closed-over or contaminated hole appears brighter than the surrounding holes.

If you see any closed-over or contaminated holes, use the magnifying glass and pick to remove the contamination or open the closed-over hole.

Verify that the contamination has been removed from the connector and the connector surface is clean. Use a spare midplane connector pin to verify the resistance to insertion.

- If there is great resistance, but the pin does enter the hole properly, investigate why.
- If the pin does not enter the hole at all, reject the fabric card. Contact your SunServiceSM representative.

5. Look for any enlarged or cracked holes.

An enlarged or cracked hole appears darker than the surrounding holes.

If you see any enlarged or cracked holes, use a spare midplane connector pin to verify the resistance to insertion.

- If the insertion gives a little resistance and the pin does not wobble in the hole, the connector is still acceptable.
- If there is no resistance to insertion and the pin can wobble in the hole, reject the fabric card. Contact your SunService representative.

6. Move your head slightly right to the next connector, and inspect its pins, repeating [Step 4](#) and [Step 5](#).

7. Continue in this manner for each connector until you reach the right side of the fabric card.

▼ To Inspect the Fans

The fans of the fabric card are FRU components. The fans secure in position with two thumbscrews.

- 1. Ensure that each fan is seated properly in the fabric card.**
- 2. Ensure that both thumbscrews are tight on each fan.**

▼ To Inspect the Retainers

The two retainers on the fabric card serve three purposes:

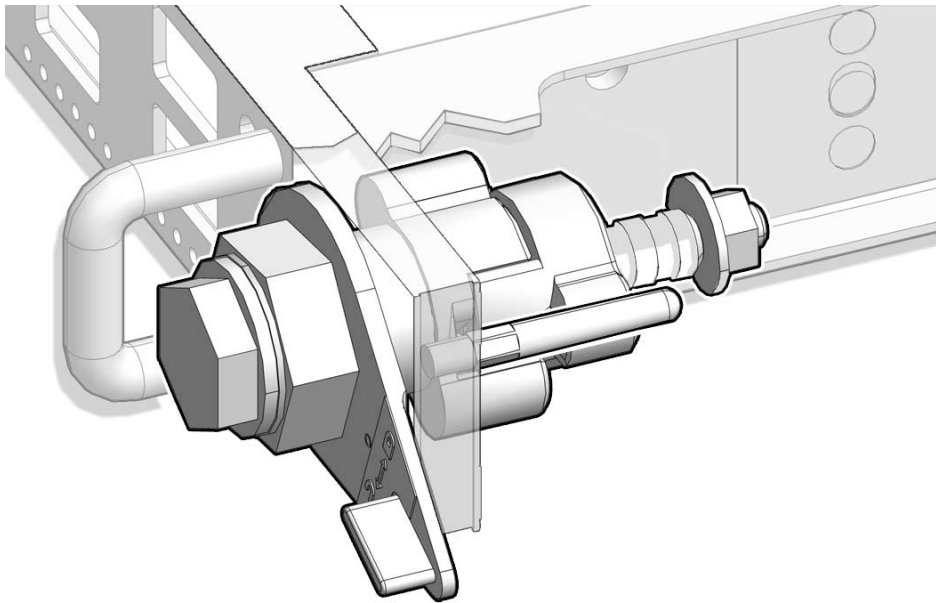
- Align the fabric card for proper insertion into the chassis.
- Allow final insertion of the fabric card into the chassis and simplify the physical connection of the fabric card connectors to the midplane connectors.
- Allow extraction of the fabric card from the chassis and simplify the physical disconnection of the fabric card connectors from the midplane connectors.

The retainer's design is shown in [FIGURE 8-2](#).

- **Ensure that the pieces of the retainer look finished, move smoothly, do not bind, or do not feel loose or sloppy in any way.**

See [FIGURE 8-2](#).

FIGURE 8-2 Retainer Design



Installing Fabric Cards Into the Chassis

▼ To Install the Midplane Stiffener

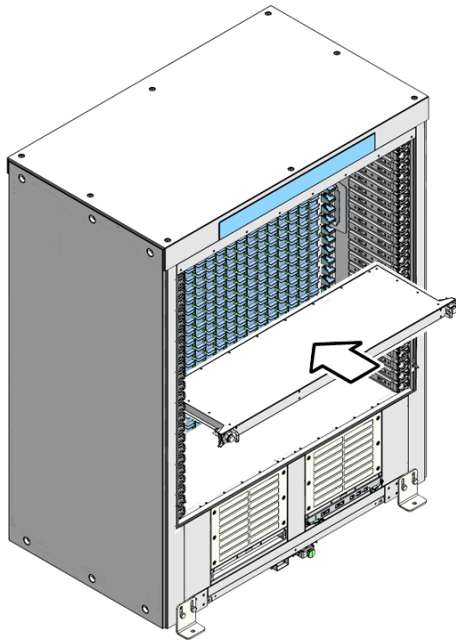
Note – The midplane stiffener must be installed before the fabric cards are installed.

Installing the midplane stiffener is a two-person task, as both people must work in a synchronized manner. To prevent damage to the pins of the midplane connector, the two installers must carefully align the stiffener with the midplane crossbar.

1. Place the stiffener on a work surface, with the retainers facing the two installers.
2. Using a 17 mm socket and ratchet, turn each retainer drive screw fully counter-clockwise until resistance is felt.
3. Rotate both the retainer drive screws clockwise, 1/4 turn.
4. Lift the midplane stiffener from the work surface and insert the stiffener into the chassis at slot 11.

Ensure that the stiffener is perpendicular to the surface of the midplane. See [FIGURE 8-3](#).

FIGURE 8-3 Installing Midplane Stiffener



5. Continue to slide the midplane stiffener in, maintaining a perpendicular orientation.

When the midplane stiffener has almost seated, stop.

6. Rotate both retainer levers to the unlocked position.
7. Verify that the end of the midplane stiffener properly contacts the midplane crossbar.
8. Have your assistant press the midplane stiffener into position.
9. Rotate both retainer levers to the locked position.
10. Slowly rotate each retainer drive screw clockwise, until resistance is felt, then stop.
11. Simultaneously rotate the retainer drive screws clockwise, stopping at each half turn, to maintain synchronization.

During this time, the levers might have moved from the locked position. Move the levers back to the locked position and continue.
12. Continue synchronized rotation until great resistance is felt, then stop.
13. Verify that the midplane stiffener is properly seated against the midplane crossbar.

▼ To Install the Fabric Cards

Installing the fabric card is a two-person task, as both people must work in a synchronized manner. To prevent damage to the fabric cards or the pins of the midplane connector, the two installers perform identical tasks simultaneously.

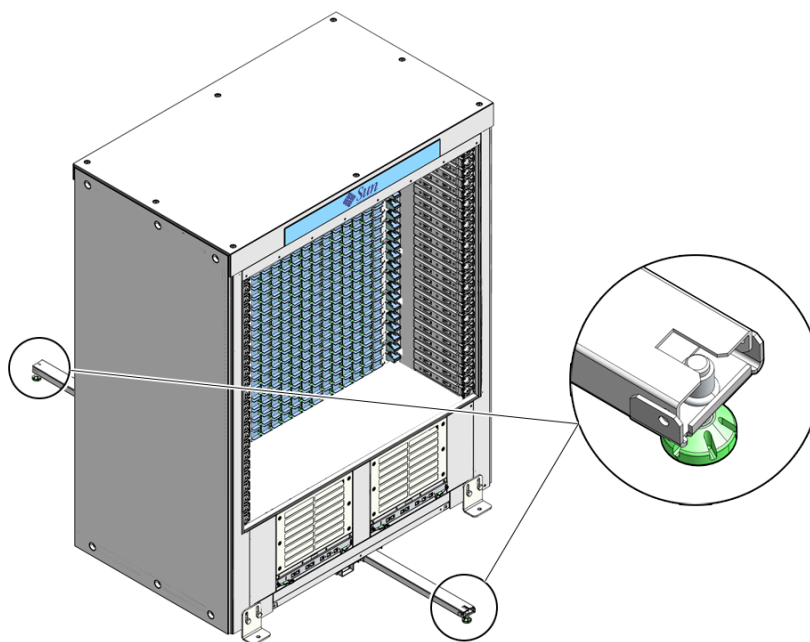
1. Install the midplane stiffener.

See [“To Install the Midplane Stiffener”](#) on page 63.

2. Extend the antitilt bar from the bottom of the switch chassis.

See [FIGURE 8-4](#).

FIGURE 8-4 Extending the Antitilt Bars



3. Place a fabric card on a work surface, with the retainers facing the two installers.

4. Using a 17 mm socket and ratchet, turn each retainer drive screw fully counter-clockwise until resistance is felt.

5. Rotate both the retainer drive screws clockwise, 1/4 turn.

6. Lift the fabric card from the work surface and orient it vertically, with the status LEDs at the bottom.

7. Insert the fabric card into the chassis at slot 7.

Ensure that the fabric card is vertical.

Note – Once the fabric card is about halfway into the slot, the installers no longer have to bear the weight of the fabric card.

8. Continue to slide the fabric card in, maintaining a vertical orientation.

When you feel resistance, stop.

9. Rotate both retainer levers to the unlocked position.

10. Slide the fabric card for another 1.75 in (4 cm) until it stops.

11. Rotate both retainer levers to the locked position.

12. Slowly rotate each retainer drive screw clockwise, until resistance is felt, then stop.

13. Simultaneously rotate the retainer drive screws clockwise, stopping at each half turn, to maintain synchronization.

During this time, the levers might have moved from the locked position. Move the levers back to the locked position and continue.

14. Continue synchronized rotation until great resistance is felt, then stop.

15. Verify that the fabric card is properly seated in the slot.

16. Give each retainer drive screw a final turn to torque.

17. Repeat [Step 3](#) through [Step 16](#) for each fabric card, installing the cards into the following slots in the given sequence:

10, 4, 13, 1, 16, 8, 11, 5, 14, 2, 17, 6, 9, 3, 12, 0, 15

18. Retract and secure the antitilt bar.

19. Remove the midplane stiffener.

See [“To Remove the Midplane Stiffener”](#) on page 66.

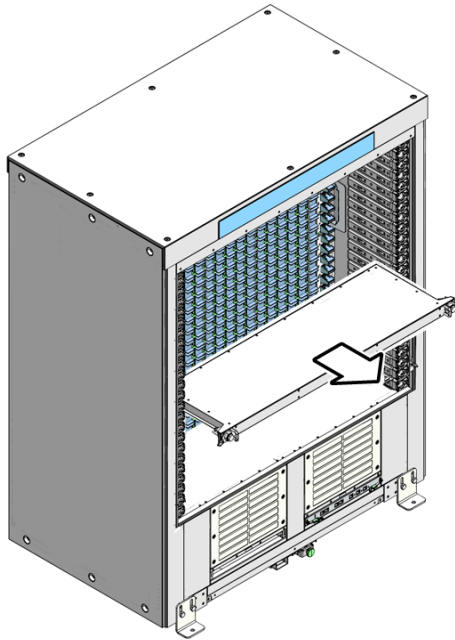
▼ To Remove the Midplane Stiffener

The midplane stiffener must be removed before installing the line cards.

- 1. Using a 17 mm socket and ratchet, turn each retainer drive screw counter-clockwise until no resistance is felt.**

2. Slowly rotate each retainer drive screw counter-clockwise, until resistance is felt, then stop.
 3. Simultaneously rotate the retainer drive screws clockwise, stopping at each half turn, to maintain synchronization.
 4. Continue synchronized rotation until greater resistance is felt, then stop.
 5. Rotate both retainer levers to the unlocked position.
 6. Grasp the handles at both ends of the midplane stiffener and slowly pull it from the chassis.
- See [FIGURE 8-5](#).

FIGURE 8-5 Removing the Midplane Stiffener



7. Set the midplane stiffener aside.

Fabric Card Administrative Commands

This section provides basic commands to administrate fabric cards when they are first installed. Some commands require you to reference [TABLE 8-1](#).

TABLE 8-1 Fabric Card Slot Mapping

Fabric card	FC 0	FC 1	FC 2	FC 3	FC 4	FC 5	FC 6	FC 7	FC 8	FC 9	FC 10	FC 11	FC 12	FC 13	FC 14	FC 15	FC 16	FC 17
Slot number	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
IPMB address	b2	b4	b6	b8	ba	bc	be	c0	c2	c4	c6	c8	ca	cc	ce	d0	d2	d4

▼ To Enable Fabric Cards

- To enable standby power and the IPMB buses for a fabric card, type this command:

```
# enableboard fc slot
```

where *slot* is the slot number of the fabric card from [TABLE 8-1](#).

When a fabric card is enabled, the Standby LED on that fabric card flashes.

▼ To Disable Fabric Cards

- To disable standby power and IPMB buses for a fabric card, type this command:

```
# disableboard fc slot
```

where *slot* is the slot number of the fabric card from [TABLE 8-1](#).

When a fabric card is disabled, the Standby LED on that fabric card goes out.

▼ To Enable Fabric Card IPMB Buses

- To enable an IPMB bus on a fabric card, type this command:

```
# enableipmb fc slot bus
```

where:

- *slot* is the slot number of the fabric card from [TABLE 8-1](#)
- *bus* is either a or b

▼ To Disable Fabric Card IPMB Buses

- To disable an IPMB bus on a fabric card, type this command:

```
# disableipmb fc slot bus
```

where:

- *slot* is the slot number of the fabric card from [TABLE 8-1](#)
- *bus* is either a or b

▼ To Enable Fabric Card Standby Power

- To enable standby power on a fabric card, type this command:

```
# enablestby fc slot
```

where *slot* is the slot number of the fabric card from [TABLE 8-1](#).

▼ To Disable Fabric Card Standby Power

- To disable standby power on a fabric card, type this command:

```
# disablestby fc slot
```

where *slot* is the slot number of the fabric card from [TABLE 8-1](#).

▼ To Fully Power On Fabric Cards

- To bring a fabric card to full power, type this command:

```
# activate fc slot
```

where *slot* is the slot number of the fabric card from [TABLE 8-1](#).

When a fabric card is activated, the OK LED is illuminated and the fabric card goes to full power.

▼ To Power Down Fabric Cards to a Standby State

- To power down a fabric card to a standby state, type this command:

```
# deactivate fc slot
```

where *slot* is the slot number of the fabric card from [TABLE 8-1](#).

When a fabric card is deactivated, the OK LED turns off, but the Standby LED remains flashing.

▼ To Read Fabric Card FRUID Information

- To read the FRUID information of a fabric card, type this command:

```
# clia fruinfo ipmb-address 0
```

where *ipmb-address* is the IPMB address of the fabric card from [TABLE 8-1](#).

The following sample is a portion of the output for fabric card 3:

```
# clia fruinfo b8 0
Pigeon Point Shelf Manager Command Line Interpreter
b8: FRU # 0, FRU Info
Common Header:      Format Version = 1
Board Info Area:
  Version           = 1
  Language Code      = 25
  Mfg Date/Time      = May 28 15:08:00 2008 (6525548 minutes since 1996)
  Board Manufacturer = Sun Microsystems, Inc.
  Board Product Name  = DCS 3456 - Fabric Card
  Board Serial Number = 37535620821BT00030
  Board Part Number   = 375-3562-02
```

```
FRU Programmer File ID   = Fruid_FC.txt
```

Product Info Area:

```
Version      = 1
Language Code      = 25
Manufacturer Name  = Sun Microsystems, Inc.
Product Name      = DCS 3456 - Fabric Card
Product Part / Model# = 375-3562-02
Product Version    = Rev 3.4
Product Serial Number = 37535620821BT00030
Asset Tag
FRU Programmer File ID   = Fruid_FC.txt
```


Installing Line Cards

This chapter describes inspection and installation procedures, and administrative commands for line cards. Topics include:

- “Inspecting Line Cards” on page 74
- “Installing Line Cards Into the Chassis” on page 77
- “Line Card Administrative Commands” on page 78

Line Card Considerations



Caution – The thermal management of the switch chassis is compromised when a line card slot is vacant. You must install a filler panel or replacement line card immediately after removing one.

Line cards are heavy and must be installed by two people. This method ensures that proper alignment can be achieved before the line card retainers are locked. Improper alignment can bend midplane connector pins.

Line cards use high-density iTRAC connectors that interface with the midplane pins. If these connectors are damaged, the pins of the midplane connector can also be damaged upon line card insertion.

Equally important, the line cards have iPASS connectors for attaching IB cables. If one of these connectors is damaged, then 3 nodes of the line card cannot be used.

You must inspect the front and back line card connectors, and retainers before installing the line card into the switch chassis.

Inspecting Line Cards

Inspect the line cards that they are ready for installation.

▼ To Inspect the Line Card iTRAC Connectors

The large iTRAC connectors on line cards are the receptacles for the midplane connector pins. These connectors are checked just as meticulously as the midplane connector pins. However, you must verify that no connectors are damaged and no holes are blocked.

You need the following tools:

- Bright flashlight
- Magnifying glass or loupe
- Dental type metal pick

1. **Unwrap the line card from its antistatic packaging.**
2. **Place the line card on a work surface with the iTRAC connectors facing you.**
3. **Using the flashlight positioned to the side and above you, look at the holes of the left-end connector.**

Look at the holes straight on. See [FIGURE 9-1](#).

FIGURE 9-1 Inspecting Line Card Connectors



Note – Do not look at the individual holes, rather look at all of the connector’s holes as a group. A damaged or contaminated hole will be apparent.

4. Look for any closed over or contaminated holes.

A closed-over or contaminated hole appears brighter than the surrounding holes.

If you see any closed-over or contaminated holes, use the magnifying glass and pick to remove the contamination or open the closed-over hole.

Verify that the contamination has been removed from the connector and the connector surface is clean. Use a spare midplane connector pin to verify the resistance to insertion.

- If there is great resistance, but the pin does enter the hole properly, investigate why.
- If the pin does not enter the hole at all, reject the line card. Contact your SunServiceSM representative.

5. Look for any enlarged or cracked holes.

An enlarged or cracked hole appears darker than the surrounding holes.

If you see any enlarged or cracked holes, use a spare midplane connector pin to verify the resistance to insertion.

- If the insertion gives a little resistance and the pin does not wobble in the hole, the connector is still acceptable.
- If there is no resistance to insertion and the pin can wobble in the hole, reject the fabric card. Contact your SunService representative.

6. Move your head slightly right to the next connector, and inspect its pins, repeating [Step 4](#) and [Step 5](#).

7. Continue in this manner for each connector until you reach the right side of the line card.

▼ To Inspect the iPASS Connectors

The small iPASS connectors on the line card are for the InfiniBand cables. The design of these connectors is much simpler and more robust, so inspection is much easier.

● **Check the small connectors for any debris, or cracked or bent fittings.**

Most debris can be blown out. If you find a cracked or bent connector, contact your Sun Service representative.

▼ To Inspect the Retainers

The two retainers on the line card serve three purposes:

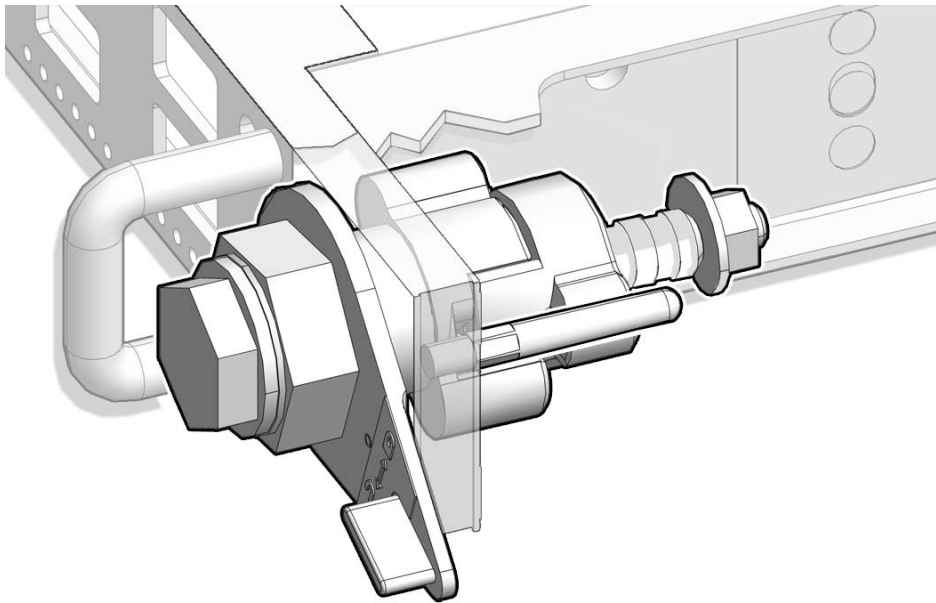
- Align the line card for proper insertion into the chassis.
- Allow final insertion of the line card into the chassis and simplify the physical connection of the line card connectors to the midplane connectors.
- Allow extraction of the line card from the chassis and simplify the physical disconnection of the line card connectors from the midplane connectors.

The retainer's design is shown in [FIGURE 9-2](#).

- **Ensure that the pieces of the retainer look finished, move smoothly, do not bind, or do not feel loose or sloppy in any way.**

See [FIGURE 9-2](#).

FIGURE 9-2 Retainer Design



Installing Line Cards Into the Chassis

▼ To Install the Line Cards

Installing the line card is a two-person task, as both people must work in a synchronized manner. To prevent damage to the line cards or the pins of the midplane connector, the two installers perform identical tasks simultaneously.

1. **Extend the antitilt bar from the bottom of the switch chassis.**
2. **Place a line card on a work surface, with the retainers facing the two installers.**
3. **Using a 17 mm socket and ratchet, turn each retainer drive screw fully counter-clockwise until resistance is felt.**
4. **Rotate both the retainer drive screws clockwise, 1/4 turn.**
5. **Lift the line card from the work surface and orient it horizontally, with the link status LEDs across the bottom.**
6. **Insert the line card into the chassis at slot 11.**
Ensure that the line card is perpendicular to the surface of the midplane.

Note – Once the line card is about halfway into the slot, the installers no longer have to bear the weight of the line card.

7. **Continue to slide the line card in, maintaining a perpendicular orientation.**
When you feel resistance, stop.
8. **Rotate both retainer levers to the unlocked position.**
9. **Slide the line card for another 1.75 in (4 cm) until it stops.**
10. **Rotate both retainer levers to the locked position.**
11. **Slowly rotate each retainer drive screw clockwise, until resistance is felt, then stop.**
12. **Simultaneously rotate the retainer drive screws clockwise, stopping at each half turn, to maintain synchronization.**
During this time, the levers might have moved from the locked position. Move the levers back to the locked position and continue.

13. Continue synchronized rotation until great resistance is felt, then stop.
14. Verify that the line card is properly seated in the slot.
15. Give each retainer drive screw a final turn to torque.
16. Repeat [Step 2](#) through [Step 15](#) for each line card, installing the cards into slots 12, 10, 13, and so on as described in “[Component Distribution](#)” on page 9.
17. Retract and secure the antitilt bar.

Line Card Administrative Commands

This section provides basic commands to administrate line cards when they are first installed. Some commands require you to reference [TABLE 9-1](#).

TABLE 9-1 Line Card Slot Mapping

Line card	Slot number	IPMB Address	Line card	Slot Number	IPMB Address	Line card	Slot number	IPMB Address	Line card	Slot number	IPMB Address
LC5	5	8c	LC11	11	98	LC17	17	a4	LC23	23	b0
LC4	4	8a	LC10	10	96	LC16	16	a2	LC22	22	ae
LC3	3	88	LC9	9	94	LC15	15	a0	LC21	21	ac
LC2	2	86	LC8	8	92	LC14	14	9e	LC20	20	aa
LC1	1	84	LC7	7	90	LC13	13	9c	LC19	19	a8
LC0	0	82	LC6	6	8e	LC12	12	9a	LC18	18	a6

▼ To Enable Line Cards

- To enable standby power and the IPMB buses for a line card, type this command:

```
# enableboard lc slot
```

where *slot* is the slot number of the line card from [TABLE 9-1](#).

When a line card is enabled, the Standby LED on that line card flashes.

▼ To Disable Line Cards

- To disable standby power and IPMB buses for a line card, type this command:

```
# disableboard lc slot
```

where *slot* is the slot number of the line card from [TABLE 9-1](#).

When a line card is disabled, the Standby LED on that line card goes out.

▼ To Enable Line Card IPMB Buses

- To enable an IPMB bus on a line card, type this command:

```
# enableipmb lc slot bus
```

where:

- *slot* is the slot number of the line card from [TABLE 9-1](#)
- *bus* is either a or b

▼ To Disable Line Card IPMB Buses

- To disable an IPMB bus on a line card, type this command:

```
# disableipmb lc slot bus
```

where:

- *slot* is the slot number of the line card from [TABLE 9-1](#)
- *bus* is either a or b

▼ To Enable Line Card Standby Power

- To enable standby power on a line card, type this command:

```
# enablestby lc slot
```

where *slot* is the slot number of the line card from [TABLE 9-1](#).

▼ To Disable Line Card Standby Power

- To disable standby power on a line card, type this command:

```
# disablestby lc slot
```

where *slot* is the slot number of the line card from [TABLE 9-1](#).

▼ To Fully Power On Line Cards

- To bring a line card to full power, type this command:

```
# activate lc slot
```

where *slot* is the slot number of the line card from [TABLE 9-1](#).

When a line card is activated, the Active LED is illuminated and the line card goes to full power.

▼ To Power Down Line Cards to a Standby State

- To power down a line card to a standby state, type this command:

```
# deactivate lc slot
```

where *slot* is the slot number of the line card from [TABLE 9-1](#).

When a line card is deactivated, the Active LED turns off, but the Standby LED remains flashing.

▼ To Read Line Card FRUID Information

- To read the FRUID information of a line card, type this command:

```
# clia fruinfo ipmb-address 0
```

where *ipmb-address* is the IPMB address of the line card from [TABLE 9-1](#).

The following sample is a portion of the output for line card 20.

```
# clia fruinfo aa 0
Pigeon Point Shelf Manager Command Line Interpreter
aa: FRU # 0, FRU Info
Common Header:      Format Version = 1
Board Info Area:
  Version           = 1
  Language Code      = 25
  Mfg Date/Time      = May 28 15:08:00 2008 (6525548 minutes since 1996)
  Board Manufacturer = Sun Microsystems, Inc.
  Board Product Name = DCS 3456 - Line Card
  Board Serial Number = 37535610821BT00030
  Board Part Number  = 375-3561-02
  FRU Programmer File ID = Fruid_LC.txt

Product Info Area:
  Version           = 1
  Language Code      = 25
  Manufacturer Name  = Sun Microsystems, Inc.
  Product Name       = DCS 3456 - Line Card
  Product Part / Model# = 375-3561-02
  Product Version    = Rev 3.4
  Product Serial Number = 37535610821BT00030
  Asset Tag
  FRU Programmer File ID = Fruid_LC.txt
```


Powering On

This chapter describes procedures for power cabling, interfacing with the CMCs, and powering on the Sun Datacenter Switch 3456. Topics include:

- “Preparing Power Supplies” on page 85
- “Power Supply Administrative Commands” on page 86
- “Working With CMCs” on page 87
- “Powering On the Sun Datacenter Switch 3456” on page 91

Installing Power Supplies

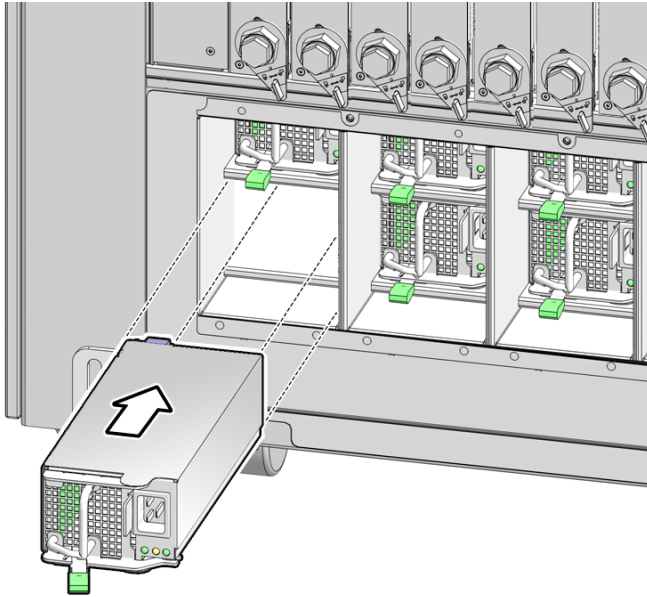
The Sun Datacenter Switch 3456 ships with 6 power supplies installed. Depending upon your configuration more power supplies might be needed. It is good practice to install as many power supplies as reasonably possible, as it promotes future expansion and extended service life.

▼ To Install Power Supplies

1. Unwrap the power supply from its antistatic packaging.
2. Swing open the release lever.
3. Orient the power supply with the handle on the left and the receptacle on the right.
4. Slide the power supply into the open slot, pushing it in until the release lever moves.

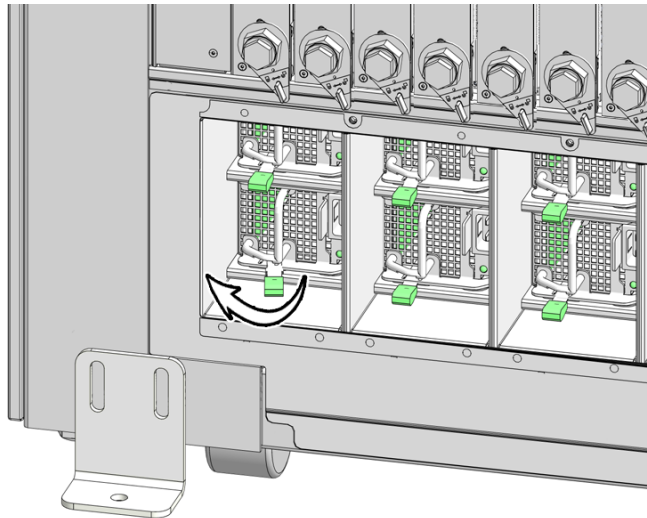
See [FIGURE 10-1](#).

FIGURE 10-1 Installing the Power Supply



5. Swing the release lever to the left to secure the power supply into the chassis.
See [FIGURE 10-2](#).

FIGURE 10-2 Securing the Power Supply



6. Repeat from [Step 1](#) for any additional power supplies.

Preparing Power Supplies

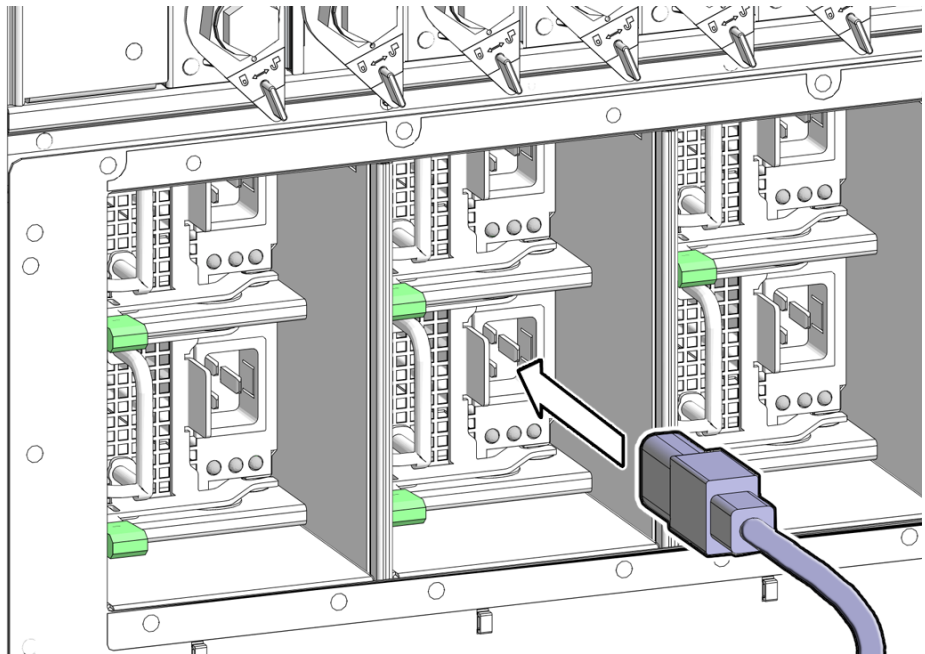
▼ To Attach Power Cables

The power cables for the Sun Datacenter Switch 3456 ship separately and are specific to the country of installation. The facility power receptacles for the power cables should be located such that the power cables are routed out of the way, either to the sides of the chassis or under the floor.

1. Ensure that the circuit breakers for the power supplies are switched off.
2. Plug a power cable into each power supply.

See [FIGURE 10-3](#).

FIGURE 10-3 Plugging In the Power Cables



3. Route each power cable to its respective facility power receptacle.
4. Plug each power cable into the receptacle.
5. Energize the circuit breakers so that the power receptacles are live.

6. Verify that the green Connected LED is lit for each power supply.

If one or more LEDs are not lit, for the respective power supply, determine whether the power supply or the power cable is faulty. For each power supply with an unlit LED, use a different power cable.

- If that same LED is still not lit, replace the power supply.
- If that same LED is now lit, replace the power cable.

Note – At this time, power is being supplied to the CMCs. The CMCs are effectively on.

Power Supply Administrative Commands

This section provides basic commands to administrate power supplies when they are first installed. Some commands require you to reference [TABLE 10-1](#).

TABLE 10-1 Power Supply Slot Mapping

Power supply	PS8	PS9	PS10	PS11	PS12	PS13	PS14	PS15
Slot	8	9	10	11	12	13	14	15
Power supply	PS0	PS1	PS2	PS3	PS4	PS5	PS6	PS7
Slot	0	1	2	3	4	5	6	7

▼ To Power On Power Supplies

When the power is applied to the power supplies, a standby voltage is present. The CMC can instruct the power supply to turn on to full power.

- To power on a power supply, type this command:

```
# enablepsu slot
```

where *slot* is the number of the power supply from [TABLE 10-1](#).

When a power supply is enabled, the Active LED is illuminated and the power supply goes to full power.

▼ To Power Down Power Supplies

- To power down a power supply, type this command:

```
# disablepsu slot
```

where *slot* is the number of the power supply from [TABLE 10-1](#).

When a power supply is disabled, the Active LED turns off, but the Connected LED remains lit.

▼ To Verify Power Supply Status

- To check the status of a power supply, type this command:

```
# psustatus slot
```

where *slot* is the number of the power supply from [TABLE 10-1](#).

For example, to check the status of power supply 0:

```
# psustatus 0
Using psu i2caddr 0x5d
PSU 0, 12 V on
#
```

Working With CMCs

The chassis management controllers (CMCs) are redundant. You only need to connect to one CMC for administration. More information about the commands you use to interface with the CMCs is provided in the *Sun Datacenter Switch 3456 Administration Guide* and *Sun Datacenter Switch 3456 Reference Manual*.

Powering On the CMCs

When standby power is applied to the chassis, the CMCs are powered on. In the presence of standby power, the CMCs cannot be powered off. However, you can enable and disable the management capabilities of the CMCs.

▼ To Cable CMCs to the Management Console

A serial connection enables you to interact with the CMC. The SER MGT connector is a standard RS-232 port, with communication parameters 115200,8,N,1.

- Use a serial terminal, a TIP connection, or a terminal server as a means of communicating with the CMC. See [FIGURE 10-4](#).

FIGURE 10-4 CMC External Features

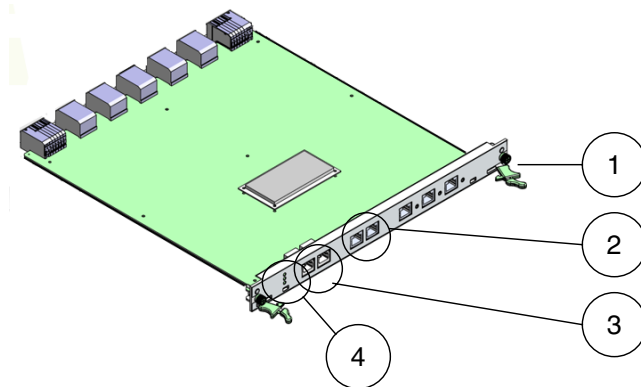


Figure Legend

1	Release levers
2	Serial management ports
3	Network management ports
4	Status LEDs

▼ To Access the CMC From the Serial Management Port

1. If you have not already done so, connect a serial terminal, terminal server, or workstation with a TIP connection to the serial management port of the CMC. Configure the terminal or terminal emulator with these settings:
 - 115200 baud

- 8 bits
- No parity
- 1 Stop bit
- No handshaking

2. Press the Return or Enter key several times to synchronize the connection.

You might see text similar to the following:

```
shmm1500 login:
```

If you do not see the text, still progress to [Step 3](#).

3. Type root for the login name followed by the root password.

```
shmm1500 login: root
Password: password
#
```

The # prompt is displayed.

Note – As shipped, the root password is not set and therefore not required. Press the Enter key when prompted for the password. Refer to the *Sun Datacenter Switch 3456 Administration Guide* for instructions on how to set the root password.

▼ To Access the CMC From the Network Management Port

To access the CMC using the network for the first time, you must first configure the network management port through the serial management port. See [“To Access the CMC From the Serial Management Port”](#) on page 88.

You can set network parameters according to the specific details of your network configuration using the `setlanconfig` option of the `clia` command.

Note – The following procedure makes changes that do not require a reset or reboot.

1. Set the IP address for the CMC.

```
# clia setlanconfig 1 3 xxx.yyy.zzz.www
```

where `xxx.yyy.zzz.www` is the IP address.

2. Set the netmask for the CMC.

```
# clia setlanconfig 1 6 aaa.bbb.ccc.ddd
```

where *aaa.bbb.ccc.ddd* is the netmask. Typically, the netmask is 255.255.255.0. However, your network environment subnet might require a different netmask. Use a netmask number most appropriate to your environment.

3. Set the IP address for the CMC gateway.

```
# clia setlanconfig 1 12 eee.fff.ggg.hhh
```

where *eee.fff.ggg.hhh* is the IP address of the gateway.

4. Open a Telnet session and connect to the CMC by specifying the CMC's network address.

For example:

```
% telnet 329.259.145.166
Trying 329.259.145.166...
Connected to 329.259.145.166.
Escape character is '^]'.

shmm1500 login:
```

5. Login as root using the root password.

```
shmm1500 login: root
Password: password
#
```

The # prompt is displayed.

Note – As shipped, the root password is not set and therefore not required. Press the Enter key when prompted for the password. Refer to the *Sun Datacenter Switch 3456 Administration Guide* for instructions on how to set the root password.

▼ To Verify CMC Status

You can use the `shmstatus` command from the `clia` prompt to check the status of the CMCs.

- To check the status of the CMCs, type this command:

```
# clia shmstatus
```

For example:

```
# clia shmstatus -v
Pigeon Point Shelf Manager Command Line Interpreter
Host: "Active"
Ready For Operation: Yes
Detailed State Flags: "Shelf FRU Found" "Backup Healthy" "Initial
Update Sent" "RMCP Up"
#
```

Powering On the Sun Datacenter Switch 3456

Powering on the Sun Datacenter Switch 3456 is a sequential process.

▼ To Power On the Sun Datacenter Switch 3456

1. Verify that all installed power supplies have a green Connected LED lit.

If the Connect LED is not lit, or the amber Attention LED is lit, investigate why.

2. Establish a connection to the CMCs.

See [“Working With CMCs”](#) on page 87.

3. Verify all installed components are recognized as installed, type:

```
# showpresent
```

If an installed component is not recognized, investigate why. See the *Sun Datacenter Switch 3456 Administration Guide* and *Sun Datacenter Switch 3456 Service Manual* for further assistance.

4. Power on each power supply, type:

```
# enablepsu slot
```

where *slot* is 0 to 15.

5. Enable both IPMB buses for all fabric cards and line cards, type:

```
# enableAllIPMB
```

The enableAllIPMB script runs the enableipmb command for both the A and B buses for each fabric card and line card.

6. Enable standby power for all fabric cards and line cards, type:

```
# enableAllStby
```

The enableAllStby script runs the enablestby command for each fabric card and line card.

7. Bring each fabric card to full power, type:

```
# activate fc slot
```

where *slot* is 0 to 17.

8. Check fan operation, type:

```
# checkfans
```

If a fan's speed is too low or the fan has stopped, investigate why. See the *Sun Datacenter Switch 3456 Service Manual* for further assistance.

9. Bring each line card to full power, type:

```
# activate lc slot
```

where *slot* is 0 to 23.

10. Again verify all installed components are recognized as installed, type:

```
# showpresent
```

If an installed component is not recognized, investigate why. See the *Sun Datacenter Switch 3456 Administration Guide* and *Sun Datacenter Switch 3456 Service Manual* for further assistance.

The Sun Datacenter Switch 3456 is now operational.

See the *Sun Datacenter Switch 3456 Administration Guide* for information about administrative commands.

Cabling the Switch

This chapter describes tasks for cabling the Sun Datacenter Switch 3456. Topics include:

- “Installing Cable Guides” on page 93
- “Cabling the Switch” on page 98

Installing Cable Guides

This section describes mounting the cable management hardware for the Sun Datacenter Switch 3456.

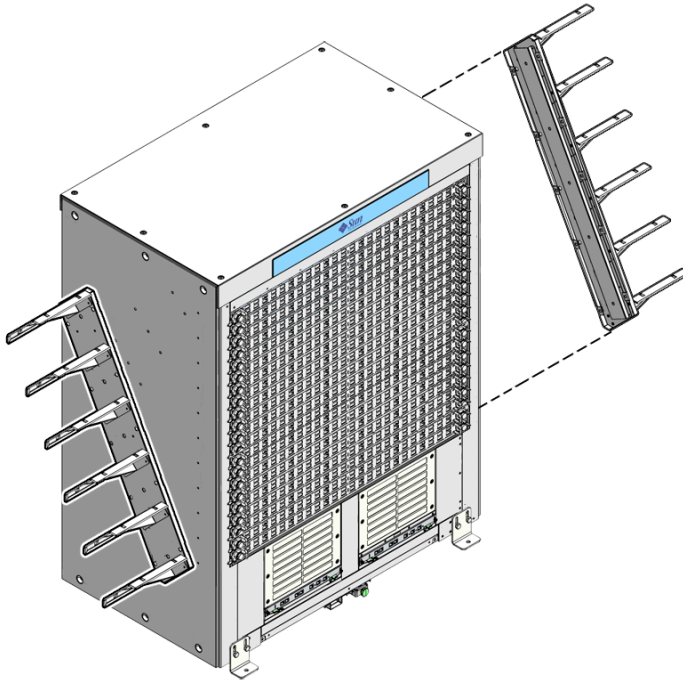
▼ To Install Cable Plates

Note – If you are delivering network cabling from overhead, there is no need to install the cable plates. The plates offer no advantage in this situation.

1. **Starting on the right side of the Sun Datacenter Switch 3456 chassis, install the cable plates.**
 - a. **Using an Allen wrench, attach the lowest plate with four M5x1.5 screws.**

The support rib for the plate is on the underside. See [FIGURE 11-1](#).

FIGURE 11-1 Cable Plate Locations



Note – The support rib for the plate is on the underside and visible from the front of the switch chassis. From the back of the switch, the plates appear smooth.

- b. Tighten the screws securely.
 - c. Repeat from [Step a](#) for the next higher cable plate and continue until all six cable plates are installed.
2. Repeat [Step 1](#) for the left side of the switch.

▼ To Remove Cable Plates

1. Starting on the right side of the Sun Datacenter Switch 3456 chassis, remove the cable plates.
 - a. Using an Allen wrench, remove the four M5 x 1.5 screws that secure the upper cable plate.
 - b. Remove the cable plate from the chassis.

- c. Repeat from [Step a](#) for the next lower cable plate and continue until all six cable plates are removed.
2. Repeat [Step 1](#) for the left side of the switch.

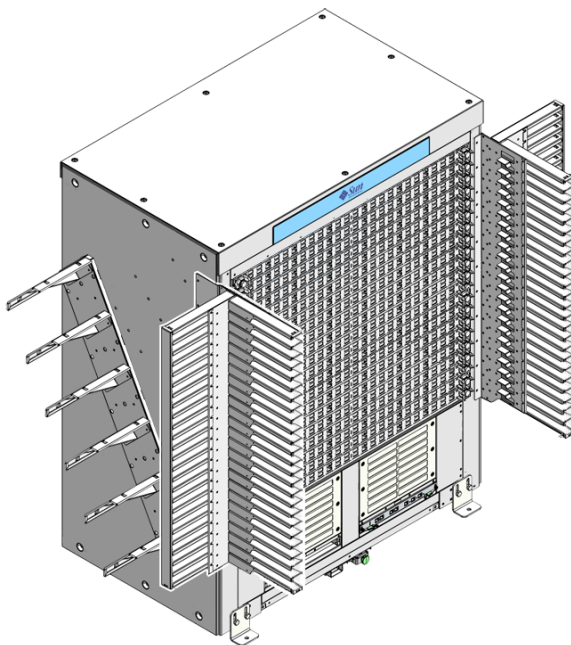
▼ To Install Cable Trees

Note – Two people are required to install the cable trees. One person must hold the weight of the tree for an extended time.

1. Identify the cable trees.

The cable trees are symmetrical and their orientation for installation can be difficult to determine. When properly installed, the fluted branches of the tree point forward, with the fluting on the underside of the branches. The top surface of all branches is smooth. See [FIGURE 11-2](#).

FIGURE 11-2 Cable Tree Placement



2. Set the cable trees upright at their respective corners of the switch chassis.

3. **Starting on the front right corner of the chassis, lift the cable tree into position.**
Have a helper assist in aligning the cable tree mounting screw holes with the holes in the chassis.
4. **While holding the cable tree in position, have a helper install the mounting screws.**
 - a. **Using an Allen wrench, install the first M5x1.5 screw into the top hole on the right side of the chassis.**
Finger tighten the screw only.
 - b. **Install the second screw into the next lower hole.**
Finger tighten the screw only.
 - c. **Repeat from [Step a](#) until all 11 screws are installed on the right side.**
5. **Repeat [Step 4](#) for the 11 screws on the front of the right cable tree.**
6. **Press the cable tree into the switch chassis and firmly tighten all 22 screws from top to bottom.**
7. **Repeat from [Step 3](#) for the other cable tree at the front left corner of the chassis.**

▼ To Remove Cable Trees

Note – Two people are required to remove the cable trees. One person must hold the weight of the tree for an extended time.

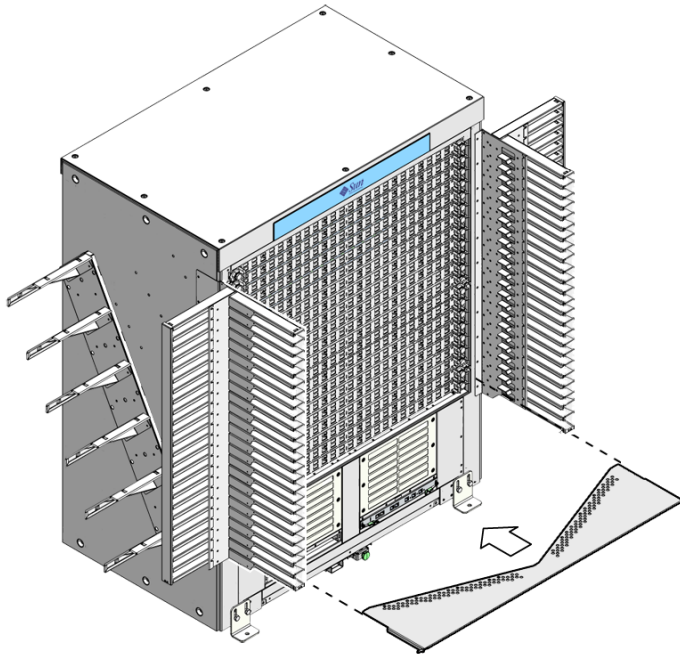
1. **Start on the front right corner of the Sun Datacenter Switch 3456 chassis.**
 - a. **Remove all screws from the front of the cable tree.**
 - b. **Remove all but the upper two screws from the right side of the cable tree.**
 - c. **While a helper lifts the weight of the cable tree, remove the two remaining screws from the right of the cable tree.**
 - d. **Lift the cable tree away from the chassis.**
2. **Repeat [Step 1](#) for the cable tree on the front left corner of the switch chassis.**

▼ To Install Cable Trays

1. Lift the cable tray into a horizontal orientation, with the rolled edge towards you and the lip on the underside.
2. Locate where you want the cable tray to install.
3. Move the cable tray between and just above the branches of the cable tree for the slot where you want to install the tray.
Slide the far end of the tray into the guides.
4. Continue to press the tray into the guides until the tray stops, then lower the front of the tray onto the flanges.

See [FIGURE 11-3](#).

FIGURE 11-3 Installing Cable Trays



Note – Install cable trays only as they are needed. If all cable trays are installed before the switch is cabled, the trays' presence makes cabling extremely difficult.

▼ To Remove Cable Trays

1. Remove the cables from the line card where the cable tray is to be removed.
See [“To Remove Cables From the Sun Datacenter Switch 3456” on page 102.](#)
2. Lift on the front of the cable tray and begin to pull the tray out.

Note – Once the tray is free of the guides at the back end, the tray no longer has support and will fall. Anticipate this behavior.

3. Support the back end of the cable tray and continue to pull the tray out and away from the cable trees.

Cabling the Switch

A fully configured Sun Datacenter Switch 3456 has 1152 cables extending from the line cards. Keeping these cables organized for identification and routing can be a challenge. By following a cabling methodology of outside-in bottom-up and using the cable guides, cabling can be made an easier task. Cabling starts at the bottom row, A, of line card 0, at connector 23A (right) or 0A (left). Cabling then works its way to the center connectors, 12A (right) or 11A (left). After row A is finished, you populate row B in a similar manner. After line card 0 is finished, use the same method for line card 1 and so on up to line card 23.

One person can cable the Sun Datacenter Switch 3456, but two two-person teams can speed up the task more than four-fold. Because the cabling is symmetrical, one cabling team can work on the left side of the Sun Datacenter Switch 3456, while the other team works on the right side. Within each team, one person inserts the IB cable connectors into the line card. The other person routes the IB cables through the cable guides.

The IB cables are of a finite length, not exceeding 16 meters. When you consider that constraint and the number of cables routing from the Sun Datacenter Switch 3456 to other switches and systems, it becomes apparent that cable routing must be thoroughly planned before being implemented. For the instructions provided here, it is assumed that the cables will route from the Sun Datacenter Switch 3456. The other ends of the cables are not discussed.

Cable Cautions



Caution – Do not allow any IB cable to bend through a less than 5 inch (127 mm) radius. Tight bends can break the cable internally.



Caution – Do not use zip ties to bundle or support IB cables. The sharp edges of the ties can break the cables internally.



Caution – Do not allow any IB cable to experience extreme tension. Do not pull on an IB cable or allow it to drag. Unroll an IB cable for its length. Pulling on an IB cable can break the cables internally.



Caution – Do not twist an IB cable more than 1 revolution for its entire length. Twisting an IB cable can break the cable internally.



Caution – Do not route IB cables where they might be stepped upon or experience rolling loads. Such a crushing effect can break the cable internally.

▼ To Attach Cables to the Sun Datacenter Switch 3456

1. Bring the cables to the Sun Datacenter Switch 3456.

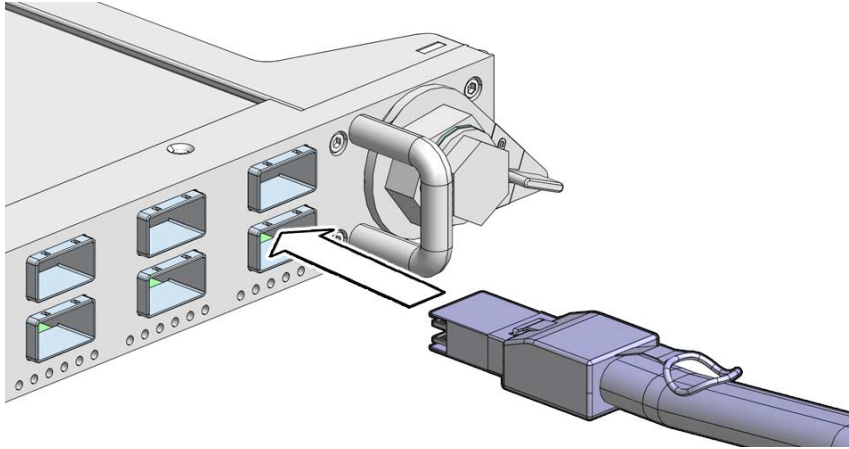
2. Install a cable tray into the slot below line card 0.

See [“To Install Cable Trays”](#) on page 97.

3. Plug the first cable into the iPASS connector at 23A.

See [FIGURE 11-4](#).

FIGURE 11-4 Plugging in a IB Cable



- a. Visually inspect the cable connector to see whether the shell is not bent and is parallel to the inner boards.**

If the shell is bent or damaged, get a different cable.

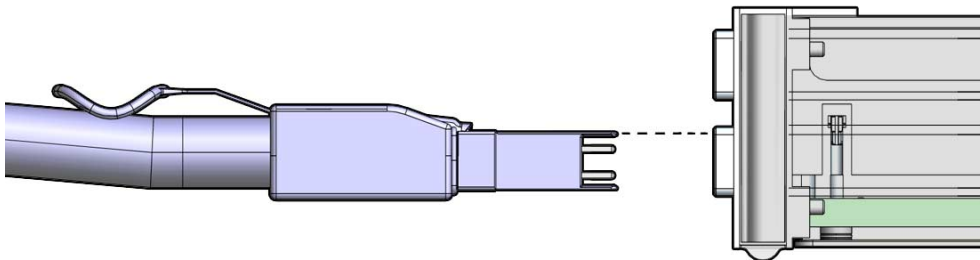
- b. Ensure that the retraction strap is forward.**

- c. Orient the cable connector to the line card iPASS connector squarely and horizontally.**

Ensure that the upper shell just touches the underside of the top of the connector on the line card.

See [FIGURE 11-5](#).

FIGURE 11-5 Checking the IB Cable Connector

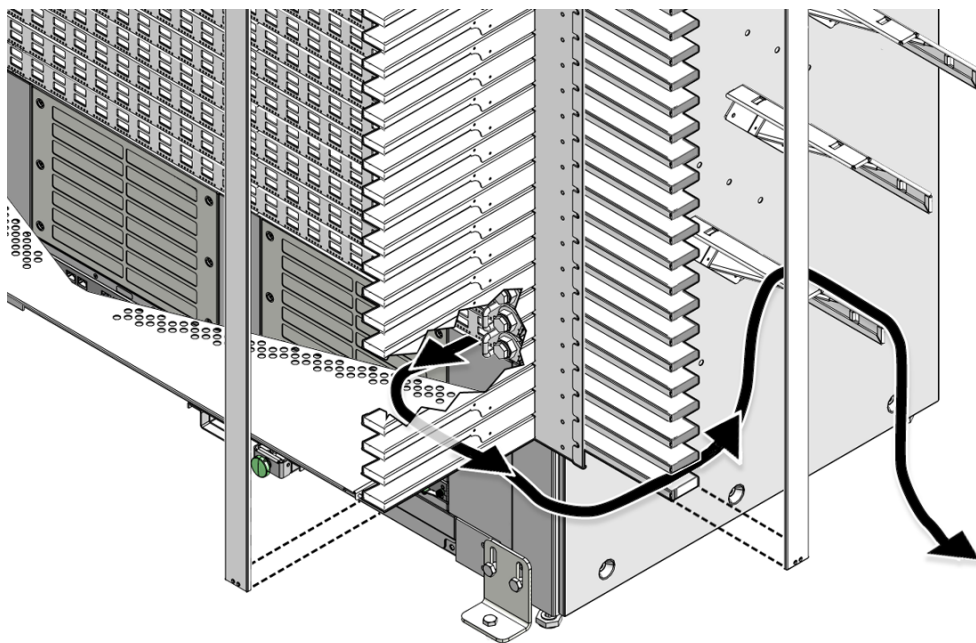


- d. Slowly move the connector in.**

As you slide the connector in, the top of the shell should scrape against the underside of the top of the iPASS connector on the line card.

- If the cable stops or binds after about 1/4 in (5 mm) travel, back out and repeat from [Step c](#).
 - If the connector stops or binds with about 1/8 in (2 mm) still to go, back out and repeat from [Step c](#).
- e. Continue to push the connector in until the hooks catch onto the top of the connector on the line card.
4. Curve the cable to the right through the branches of the cable tree.
- See [FIGURE 11-6](#).

FIGURE 11-6 Threading the Cable Through the Cable Tree



Caution – Do not force a bend radius of less than 5 inches (127 mm). Any bend tighter than this damages the inner fibers of the cable, rendering it useless.

5. Place the cable over the cable plate and move the cable against the chassis.
- See [FIGURE 11-6](#).
6. Repeat [Step 3](#) for the second cable at iPASS connector 0A.
7. Curve the cable to the left through the branches of the cable tree.



Caution – Do not force a bend radius of less than 5 inches (127 mm). Any bend tighter than this damages the inner fibers of the cable, rendering it useless.

8. Place the cable over the cable plate and move the cable against the chassis.
9. Repeat [Step 3](#) for the third cable at iPASS connector 22A.
10. Curve the cable to the right through the branches of the cable tree, next to the cable already there.
11. Place the cable over the cable plate and move the cable against the cable already there.
12. Repeat [Step 3](#) for the fourth cable at iPASS connector 1A.
13. Curve the cable to the left through the branches of the cable tree, next to the cable already there.
14. Place the cable over the cable plate and move the cable against the cable already there.
15. Repeat [Step 3](#) for cables connecting to iPASS connectors 21A, 2A, and so on, up to and including 12A and 11A.
Place the cables next to the cables that are already there.
16. Repeat [Step 3](#) for cables connecting to iPASS connectors 23B, 0B, 22B, 1B, and so on, up to and including 12B and 11B.
Place the cables on top of the cables that are already there.
17. When you have finished for line card 0, repeat from [Step 2](#) through [Step 16](#) for line card 1, 2, and so on, to line card 23.

Note – There are six cable plates on each side of the Sun Datacenter Switch 3456. The cables from line cards 0 through 3 route over the lowest cable plate. The cables from line cards 4 through 7 route over the next cable plate up, and so on.

▼ To Remove Cables From the Sun Datacenter Switch 3456

Note – This procedure describes how to remove the cables from one line card. If you are removing cables for several line cards or all line cards, work from the upper line card down. This way, you have more working space as your task progresses.

1. Locate the cable connector at iPASS connector 12B.

This cable is the upper cable.

2. Grasp the cable connector to support its weight and apply the removal force.

3. Pull on the loop of the retractor strap while simultaneously pulling on the cable connector.

The cable connector comes free.

4. Carefully move the cable out of the front branch of the cable tree.

5. Gently lower the cable so that it is hanging from the side branch.



Caution – Do not allow the cable to drop or strike the floor. Jerking, bending, pulling on, or dropping the cable will damage the cable. See [“Cable Cautions” on page 99](#).

6. Repeat from [Step 1](#) for the cable at iPASS connector 12A.

This cable is the lower cable.

7. Repeat from [Step 1](#) moving to the right for cables at iPASS connectors 13B, 13A, 14B, and so on to 23A.

8. Repeat from [Step 1](#) moving to the left for cables at iPASS connectors 11B, 11A, 10B, and so on to 0A.

▼ To Check Link Status

1. Access the CMC as described in [“Working With CMCs” on page 87](#).

2. Check the link status, type:

```
# checklinks
```

For example:

```
# checklinks
LC 0 Active, checking links.....OK
LC 1 Active, checking links.....OK
LC 2 Active, checking links.....OK
LC 3 Active, checking links.....OK
LC 4 Active, checking links.....OK
LC 5 Active, checking links.....OK
.
.
.
```

See the *Sun Datacenter Switch 3456 Administration Guide* and *Sun Datacenter Switch 3456 Reference Manual* for more information on how to administer your switch.

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