



Installation and Setup guide

ATCA SC6300 Series Chassis

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Preface

Target Audience

The target audience for this guide is the user who has taken delivery of a packaged Clavister SC6300 Series Chassis and going through the installation phase. The guide takes the user from unpacking and installation to power-up and initial network connection.

Notes to the Main Text

Special sections of text which the reader should pay special attention to are indicated by icons on the left hand side of the page followed by a short paragraph in italicized text. There are the following types of such sections:



Note

This indicates some piece of information that is an addition to the preceding text. It may concern something that is being emphasised or something that is not obvious or explicitly stated in the preceding text.



Tip

This indicates a piece of non-critical information that is useful to know in certain situations but is not essential reading.



Caution

This indicates where the reader should be careful with their actions as an undesirable situation may result if care is not exercised.



Important

This is an essential point that the reader should read and understand.



Warning

This is essential reading for the user as they should be aware that a serious situation may result if certain actions are taken or not taken.

Chapter 1: Installation Overview

The ATCA SC6300 Series Chassis is a high performing, modular, chassis based computing platform designed for the unique requirements of performance critical environments such as the telecom industry, service providers, the financial sector and data centers. This manual discusses chassis installation as well as installation of the SF6090 Switch Fabric Blade. Depending on the application, different computational blades can be inserted into the chassis and these are covered in separate product manuals.



Figure 1.1. The ATCA SC6300 Series Chassis

Planning for Cabling

The implementation of the cable routing that connects the system to other equipment and power sources should be planned in advance.

The cables do not need to be available when you first install the product, but you should know how the cables will be routed and whether they will be connected to the front or the rear of the chassis. The choice of modules determines where connectors are located.

Follow Electrostatic Discharge (ESD) Precautions

Components can be damaged by electrostatic discharge (ESD). When an installation step instructs you to protect any replaceable component from ESD, follow the precautions described

below:

- Products contains static-sensitive components and should be handled with care. Failure to employ adequate anti-static measures can cause irreparable damage to components.
- Handle the product only when wearing a grounded wrist strap at a grounded work area.
- Don't remove blades from the chassis or from their electrostatic discharge (ESD) shielding bags until a step instructs you to do so. Failure to follow ESD precautions may damage components.

Chapter 2: Unpacking

The following steps should be followed to unpack the SC6300 Series Chassis:

1. Use either an ESD wrist strap, or ESD heel straps on a conductive floor surface, as you open the packaging.
2. Remove the SC6300 Series Chassis from its packaging and place it so the slots are oriented horizontally and right side up.

The chassis houses the blades that make up the total system. The chassis also provides power and thermal management to the blades and supports the product's chassis management architecture.

3. Verify that you have the following components, either shipped with the chassis or delivered separately
 - **1 x Air filter.**
 - **2 x Fan Trays.**
 - **2 x Power Entry Modules (PEMs).**
 - **1 x ESD wrist strap.**
 - **1 x Front cable guide (option).**

The power-feed and ground cables are required, but not supplied, since they are specific to the site or to the configuration.

4. Verify any additional ordered components are in the shipment. These can include:
 - Standard configurations include one or two SF6090 Switch Fabric Blades (SFBs). The SFBs should already be installed in the chassis.
 - Rear slots will be completely populated with filler panels, except for those slots where the included front blades have companion rear transition modules installed.
 - System configurations that do not have all the front slots populated must have active blades or air management filler panels installed in them to maintain system airflow. Additional air management filler panels can be ordered separately.
5. Perform a thorough inspection of the entire system to confirm components are properly installed, seated, and not loose. Pins, shrouds, mounting screws, and other items can become loose or damaged during the course of handling, shipping, and assembly. Operating a damaged system can harm the chassis and the devices that interface to it.



Warning

Operating damaged equipment can harm the chassis and the devices that interface with it.

Chapter 3: Site Preparation

It should be verified that the installation site meets the following requirements:

1. Access to the installation site and the equipment should be restricted to authorized personnel only.
2. A readily accessible disconnect device must be incorporated into the building's wiring between the chassis Power Entry Module (PEM) input terminals and the power source.
3. The required rating of the disconnect device is determined by the nominal input voltage. See the table below for a list of permitted nominal inputs and the corresponding disconnect device ratings.

Nominal Input	Disconnect Device Ratings
-48 V	60 VDC @ 40 A
-60 V	80 VDC @ 40 A

4. The SC6300 Series Chassis requires at least 5 centimetres (2 inches) of unobstructed clearance at the side air inlets and outlets to ensure sufficient airflow for the individual blades.
5. The installation site must be compatible with the recommended temperatures:
 - The SC6300 Series Chassis has a maximum recommended continuous operating temperature of 40°C.
 - The chassis is rated to operate during transient conditions from -5° to 55°C for a maximum of 96 consecutive hours.
 - In closed or multi-rack assembly environments, the local ambient temperature may be greater than the room ambient.

Chapter 4: Rack Mounting

The SC6300 Series Chassis can be placed on a flat surface, such as a table, or mounted in a rack. For mounting in a rack, there are two stages:

- A. Rack preparation.
- B. Chassis installation.

A. Rack Preparation

The rack needs to be checked for the following:

1. Verify that the rack environment in which the equipment is to be installed is compatible with the maximum transient operating temperature (55°C).
2. Confirm the rack is stable and will not tip over when the chassis is being loaded in it.
3. Verify that the rack has support rails installed. Refer to the rack's documentation for information on installing the rack and the required rails .



Warning

Do not attempt to install the chassis if rails are absent or if the rack's ears are the only support for the chassis weight. THE CHASSIS FRONT MOUNTING BRACKETS ARE NOT INTENDED TO SUPPORT THE WEIGHT OF THE CHASSIS AND ITS BLADES.

B. Install the Chassis

To install the chassis in the rack, the steps are as follows:

1. If the chassis is to be lifted by hand into the rack, it is recommended that all the blades from the front of the chassis are removed to reduce weight.

If you are using equipment to lift the chassis into the rack then the removal of blades can you should go directly to step 2.

- Loosen the thumb screws on each blade and lift the ejector latches to the open position.

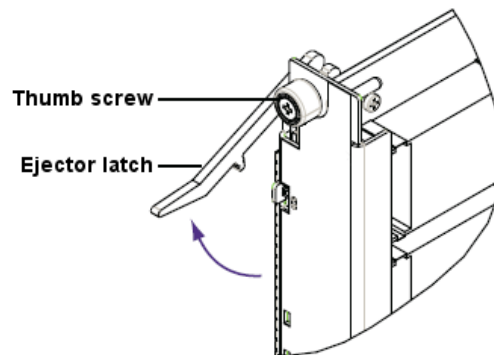


Figure 4.1. Blade Ejector Latch Open Position

- Remove and place each blade in a separate anti-static bag or on a grounded surface. Do not stack the blades on top of each other. When handling the blades, follow the ESD precautions described above.

Employ at least two people and use safe lifting precautions to lift the chassis into the rack and slide it onto the support rails.

2. Secure the chassis to the rack by its mounting brackets. Refer to the rack's documentation for information on the appropriate hardware to use.
3. Verify that the chassis is level and not twisted in the rack. Uneven mounting may cause difficulties with blade installation and alignment of chassis features.

Chapter 5: Front Blade Installation

This section discusses the general installation steps for the front blades in the SC6300 Series Chassis. A detailed description for the installation of SFBs can be found in Chapter 6, *SF6090 Switch Fabric Blade Installation*. A detailed description for how to install different processor blades can be found in the separate manuals for each blade type.

Modules should be inserted into the SC6300 chassis in the following order:

1. The first SFB should be first fitted into slot 2 using the steps described below.
2. A second SFB goes into slot 1. If there is only one SFB, install an air management filler panel into slot 1.
3. Install the processing blades and any other front-slot blades, one at a time, using the same steps described below. Follow any specific slot-assignment instructions, otherwise, use the slots closest to the SFBs.

The general steps for installing any blade into the chassis are as follows:

1. Attach your ESD wrist strap to one of the front ESD friction-lock connectors, which are located in the top corners of the chassis. Protect the blades from ESD damage as described previously.
2. Slide the blade half way into the physical slot.

If correctly aligned, the right and the left edges of the blade will fit within the narrow channels of the chassis.

3. To fully seat a blade into the chassis:
 - Lift the ejector latches outward to the open position, and insert the blade all the way into the chassis.
 - Close both ejector latches simultaneously. This will seat the blade's connectors into the backplane.

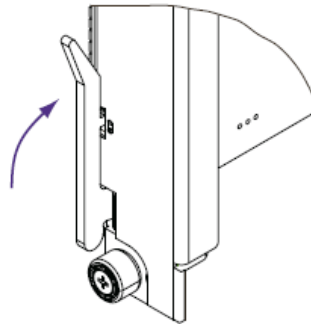


Figure 5.1. Blade Ejector Latch Closed Position

4. If a blade mates with a rear transition module, confirm that the rear transition module's zone 3 connection is located at the rear of the slot before installing the blade.
5. Install front and rear air management filler panels into any empty slots:
 - Do NOT use blank faceplates in place of filler panels. To ensure proper thermal and emission profiles, use flow blocking filler panels.
 - Load the node slots with active blades sequentially from bottom to top and install flow blocking filler panels in all unpopulated slots.

Chapter 6: SF6090 Switch Fabric Blade Installation

Prerequisites

This section describes the specific installation of the SF6090 Switch Fabric Blade (SFB) into the SC6300 Series Chassis. Correct installation will require the following:

- **A 9-pin D-shell to RJ-45 serial port cable** (shipped with the SFB).
- **A standard Ethernet crossover cable.**
- **Adequate ventilation for all hardware.**



Figure 6.1. The SF6090 Switch Fabric Blade

Important ESD Precautions

Electrostatic discharge can cause permanent damage to static-sensitive components in this product. Important ESD procedures include:

- Keep the product in its ESD shielding bag until a step tells you to remove it.
- Put on a grounded wrist strap before you move near or touch the product.
- Install the product only in a grounded work area.

Installing SFPs or XFPs

The SFB comes with sockets for small form-factor pluggable (SFP) and 10 Gigabit small form-factor pluggable (XFP) transceiver modules. If SFPs and XFPs are installed, they can provide external connections to the Ethernet interfaces. The sockets are accessed from the faceplate of the SFB.

Configuration recommendations

Standard SFB configurations come without SFP or XFP transceivers installed. To protect the internal components of the SFB, transceivers or filler plugs must be installed in all empty sockets:

- The Base Ethernet configuration supports up to four SFP transceivers and one XFP transceiver, with filler plugs installed in unused sockets.
- The Fabric Ethernet configuration supports up to four XFP transceivers, with filler plugs installed in unused sockets.

A list of tested and qualified transceivers and filler plugs can be supplied by Clavister

Transceiver Installation

SFP and XFP transceivers can be installed on the SFB at any time, but Clavister recommends performing the installation before the SFB is installed in the chassis.

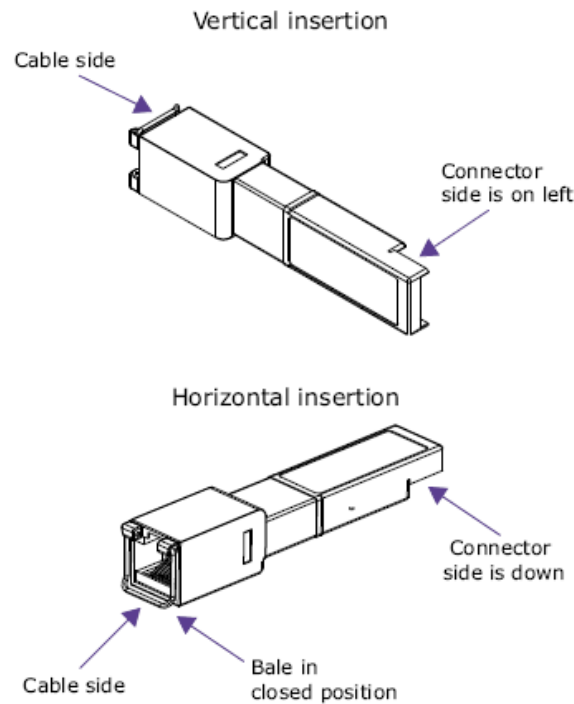


Figure 6.2. Correct Transceiver Insertion

The illustration above shows the correct orientation for inserting SFP transceivers. The SFP you use may vary in appearance depending on manufacturer, but the same insertion guidelines, listed below, should be followed. Use the same guidelines when inserting XFP transceivers as well.

1. Follow ESD precautions and make sure you are adequately grounded.
2. Remove the transceivers and the SFB from their antistatic bags.
3. On the SFB's faceplate, remove the filler plugs from the sockets in which you are installing the SFP or the XFP transceivers. For sockets not being used, keep the filler plugs in place to protect the internal components of the board.
4. Make sure the transceiver's bale (the latch on the cable side of the transceiver) is in the closed position. This will ensure the transceiver snaps into position when inserted into the socket.
5. How you insert the transceiver into the socket depends on the SFB's orientation:
 - If the SFB is oriented vertically, insert the transceiver so the connector side is on the left.
 - If the SFB is oriented horizontally, insert the transceiver so the connector side is down.
6. Once inserted into the socket, carefully slide the transceiver until its connector is fully seated and snaps into position.
7. Repeat the above steps for each transceiver being installed.
8. For transceivers with cable plugs installed on their cable side, keep the plugs in place until you are ready to plug cables into the transceivers. The cable plugs protect the internal components of the transceivers.

Filler Plug Installation

If XFP or SFP transceivers are removed, install either replacement transceivers or filler plugs in the sockets to protect the internal components of the SFB.

Additional filler plugs can be ordered from the applicable manufacturer. For a list of tested and qualified transceivers and filler plugs, contact Clavister.

Install fillers plugs using the insertion guidelines described below:

A. XFP Filler Plug Installation

- If the SFB is oriented vertically, insert the filler plug so the recessed side is on the left and the flat, smooth side is on the right.
- If the SFB is oriented horizontally, insert the filler plug so the recessed side is on the bottom and the flat, smooth side is on the top.

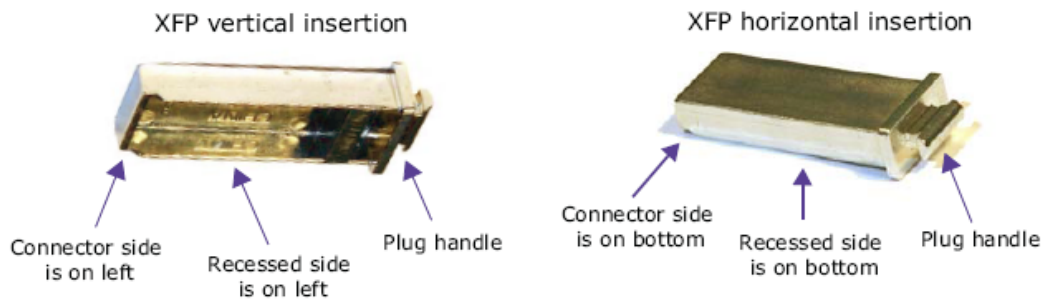


Figure 6.3. Correct XFP Insertion

B. SFP Filler Plug Installation

- If the SFB is oriented vertically, insert the filler plug so the connector side and retaining clip are on the left.
- If the SFB is oriented horizontally, insert the filler plug so the connector side and retaining clip are on the bottom.

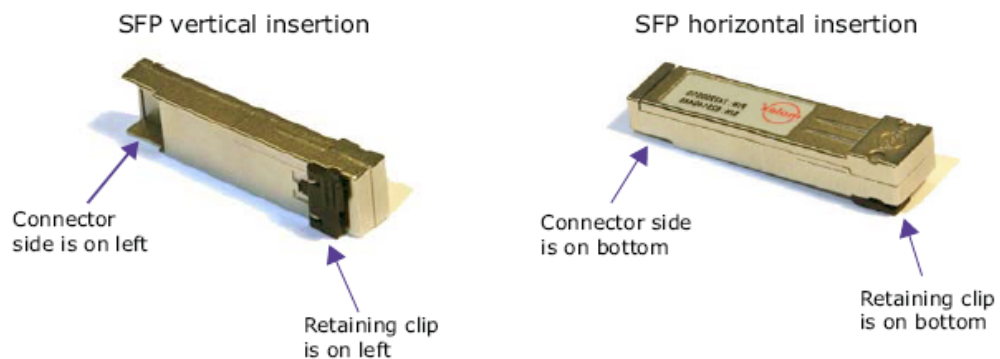


Figure 6.4. Correct SFP Insertion

Chassis Installation

This section assumes that you are installing the SFB in a Clavister chassis and the chassis power is on. The Clavister chassis architecture allows insertion and removal of blades without powering down the system. The SFB powers up all other blades within the chassis.

The steps for installation are:

1. Follow ESD precautions and make sure you are adequately grounded before handling the transceivers and the SFB.
2. Remove the SFB from its antistatic bag.
3. Open both ejector latches outward.

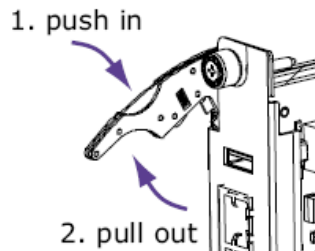


Figure 6.5. SFB Latch Open Position

4. Slide the SFB into one of the hub slots on the chassis. The hub slots for the SC6300 Series Chassis are numbers 1 and 2.

If correctly aligned, the edges of the SFB will fit within the narrow guide rails of the chassis.



Warning

Do not force the SFB into the slot:

- a. *To avoid damage to connectors, make sure the rear slot is either empty or contains a module that is compatible with the SFB.*
- b. *If the SFB does not slide in easily, make sure that it is being inserted into the correct slot and that it is aligned properly.*

5. Once the SFB is inserted all the way into the chassis, simultaneously close both ejector latches inward. This will seat the SFBs connectors into the chassis backplane.

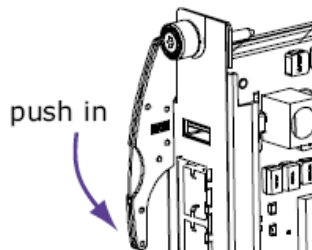


Figure 6.6. SFB Latch Closed Position

The hot-swap (H/S) LED light flashes until the SFB is fully powered up. Once powered up, the LED light will turn off.

If the LED remains solid blue or keeps flashing after the SFB is inserted, it indicates the

installation has failed.

6. Secure the SFB in its slot by hand tightening the two fastening screws on each end of the blade's front panel.
7. Repeat these steps if you are installing a second SFB in the remaining hub slot. Installing two SFBs on the chassis allows for redundancy which is a means of providing continuous system functionality even if a failure occurs on one of the SFBs.

Connecting to an External Computer and Network

The SFB can be accessed by an external computer through the serial and the Ethernet maintenance ports. Use the serial port to perform diagnostic and verification procedures. Use the Ethernet maintenance port to connect the SFB to the network and to perform configuration procedures.



Note

If two SFBs are installed, connect to each one separately.

Connecting to the Serial Port

1. Connect the included serial port cable by plugging one end into the RJ-45 serial port labeled **LMP SER** on the SFB (see illustration Figure 6.7, "SFB Serial and Ethernet Ports" below).
2. Connect the cable's other end to the COM1 or the COM2 serial port of an external computer, such as a laptop.
3. Start a terminal-emulator application, such as Procomm Plus® or minicom, on your computer or laptop. The connection parameters are:
 - Speed 115200 baud.
 - 8 data bits
 - No parity
 - One stop bit
 - No hardware or software flow control.
4. Press the *Enter* key and verify you get a login prompt.
5. Enter the command:

```
admin
```

6. Verify that you receive a welcome message and the prompt:

```
ATCA-2210#
```

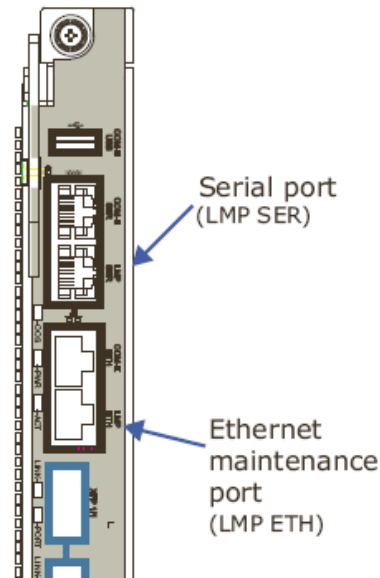


Figure 6.7. SFB Serial and Ethernet Ports

Connecting to the Ethernet Maintenance Port

1. Connect a crossover Ethernet cable between the SFB's Ethernet maintenance port, which is labeled **LMP ETH** (see illustration above) and a Linux host computer that is connected to your network.
2. Configure the computer to a subnet IP address (10.0.0.x) and set the netmask to 255.255.255.0.
3. On the computer, verify Telnet access to IP address 10.0.0.1 (port 23).
4. At the login prompt, enter the **admin** command and verify you receive the ATCA-2210# prompt. To log off the SFB at any time, enter the **exit** command.



Note

To connect to the Linux shell on the SFB, use either a serial port or Telnet connection. After connecting, log in as root and enter **ifconfig** to view eth0 configuration settings.

Verify Switch Operation Use the following steps to view port status and to enable ports on the *Base Ethernet* and the *Fabric Ethernet* switches.

View Port Status

1. Verify you are at the prompt:

```
ATCA-2210#
```

If you are not at the appropriate prompt, see *Connecting to an External Computer and Network* above on how to get there.

2. Enter the applicable command for the switch you are verifying.

Switch	Command to enter	Resulting prompt
Base ethernet	base-ethernet	ATCA-2210-Base#
Fabric ethernet	fabric-ethernet	ATCA-2210-Fabric#

- Enter this command to show the status of the ports.

```
show port all
```

View the status information of the ports to see which ports are enabled. If needed, press the space bar to view more of the list.

- Proceed to the applicable section or step:
 - To enable all ports, see *Enable all ports* below.
 - To enable only specific ports, see *Enable specific ports* below.
 - To leave all ports disabled, continue to the next step.
- To return to the ATCA-2210# prompt, enter the command:

```
exit
```

If you are asked to save changes, enter **y** for yes or **n** for no. If you choose yes, this configuration will be saved as the startup configuration.

- To log off from the SFB, enter the command:

```
exit
```

- If you have two SFBs installed, repeat these steps for the other SFB.

Enable All Ports

- Verify you are at the applicable switch prompt.

Switch	Prompt
Base ethernet	ATCA-2210-Base#
Fabric ethernet	ATCA-2210-Fabric#

If you are not at the appropriate prompt, see *View port status* above for instructions on how to get there.

- Enter this series of commands to enable all ports:

```
configure
no shutdown all
spanning-tree port mode all
spanning-tree
exit
telnetcon timeout 60
copy system:running-config nvram:startup-config
```

This operation may take a few minutes. Management interfaces will not be available during this time. When you are asked to save changes, enter **y** for yes or **n** for no. If you choose yes, this configuration will be saved as the startup configuration.

3. To return to the ATCA-2210# prompt, enter the command:

```
exit
```

4. To log off from the SFB, enter the command:

```
exit
```

5. If you have two SFBs installed, repeat these steps on the other SFB.

Enable Specific Ports

1. Verify you are at the applicable switch prompt.

Switch	Prompt
Base ethernet	ATCA-2210-Base#
Fabric ethernet	ATCA-2210-Fabric#

If you are not at the appropriate prompt, see *View port status* above for instructions on how to get there.

2. Follow these steps to enable specific ports:

- A. Enter the command:

```
configure
```

- B. Enter the specific port (interface) number to enable with the command:

```
interface <m/n>
```

Where *m* and *n* have the following values:

Base Ethernet switch

6300 backplane slots	m=0	n=3-6
Front panel optical	m=1	n=5-9
Internal ports	m=2	n=1-4
RTM	m=3	n=5-8



Note

Internal port 2/1 on the Base Ethernet switch is the link between SFBs when two SFBs are installed. The port is enabled as a factory default.

Fabric Ethernet switch

6300 backplane slots	m=0	n=3-6
Front panel optical	m=1	n=1-4
Internal ports	m=2	n=3
RTM	m=3	n=1-4

- C. Enable the port with the command:

```
no shutdown
```

If you are disabling the interface, enter the command:

```
shutdown
```

- D. To enable another port, enter the command:

```
exit
```

and perform the procedures described in Steps B and C.

If finished enabling ports, enter this series commands to return to the ATCA-2210# prompt:

```
exit  
exit  
exit
```

If you are asked to save changes, enter **y** for yes or **n** for no. If you choose yes, this configuration will be saved as the startup configuration.

3. To log off from the SFB, enter the command:

```
exit
```

4. If you have two SFBs installed, repeat these steps on the other SFB.

Verify Shelf Manager Operation

These steps confirm that *Shelf Manager* software application is operating when the SFB is installed in the SC6300 Series Chassis.

1. Verify that you are at the prompt:

```
ATCA-2210#
```

If you are not at the appropriate prompt, see *Connecting to an External Computer and Network* above on how to get there.

2. To get to the *Platform Management Command Line Interface* (CLI), enter the command:

```
platform-mgmt
```

3. To verify that the *Shelf Manager* is started, enter the command:

```
shelf-mgmt show all
```

If *Status* is *Unknown* instead of *Active* or *Standby*, the Shelf Manager is not operational and troubleshooting is required.

4. To exit the CLI, enter the command:


```
exit
```

5. If you have two SFBs installed, repeat these steps on the other SFB.

Chapter 7: Connecting Power

Precautions

Please read and take note of the following:

- If you are installing an AC to DC power supply for the system, install it before connecting the power-feed cables. Installation for the optional Clavister AC to DC power component is described in Chapter 8, *The Power Enclosure*.
- Do not touch a power cable when power is supplied.
- Do not place wires, screwdrivers, meter probes, oscilloscope probes, or other electrically conducting material into contact with a live power cable or anything connected to a live power cable.
- Do not wear any watches, bracelets, and rings when working with a live power cable or anything connected to a live power cable.
- Disconnect power from both PEMs before servicing.



Warning

Failure to follow the recommendations above may cause personal injury or damage electronic equipment. An electrical voltage of up to 75 VDC may be present at any power connection.

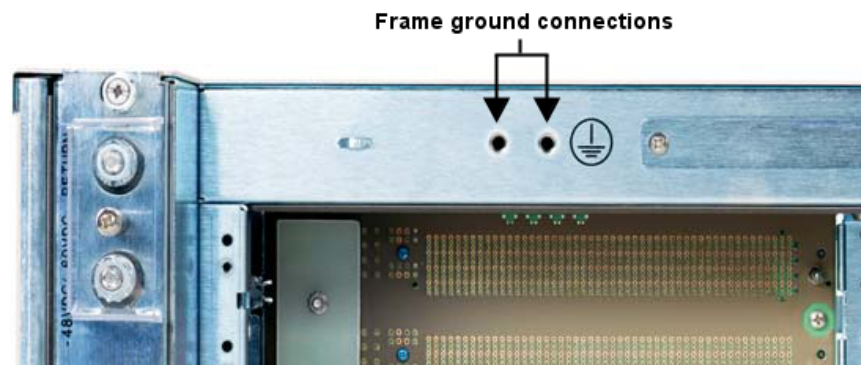
Connecting Frame-ground and Power-feed Cables

These steps cover connecting the frame-ground cables and connecting the power-feed cables to the power entry modules (PEMs) located on the back of the chassis.

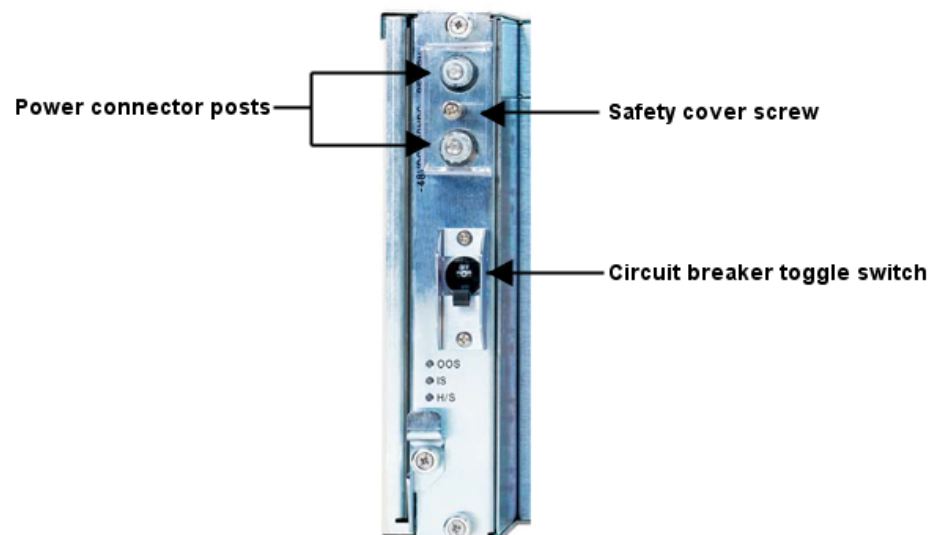
1. If you are wearing an ESD wrist strap take it off. For maximum safety, keep one hand behind your back and use tools with properly insulated handles.
2. Verify that the system's connection to the supply circuit will not overload the circuit's overcurrent and supply wiring. The supply should be capable of delivering the equipment nameplate ratings of -48V@ 40A or -60V @ 40A.
3. Connect a frame-ground cable (with Panduit connector P/N LCD8-10A-L or equivalent) to the frame-ground connections at the rear of the chassis:

- Use a high-quality return and safety ground cable, no smaller than #8 AWG stranded for -48 V.
 - Use two 10-32 x 3/8" pan head screws. The torque should be between 2.8 and 3.4 Nm (25 and 30 lbf-in).
4. Connect the other end of the frame-ground cable to a high-quality facility ground connection. Do not use a power strip, connect directly to the power source.

Failure to connect to a high-quality ground connection may reduce the performance and availability of the chassis and the equipment that connects to it. Improper grounding may increase electrical noise in the chassis, causing data loss and other performance degradation.



5. Verify power distribution to power-feed cables is disconnected.
6. Switch the toggle switch circuit breakers on the right PEM (PEM R) and the left PEM (PEM L) to the OFF position.



7. Route two power-feed cables to the area behind the chassis, but do not yet attach them to a power connection.
8. Use a Phillips screwdriver to remove the #6 screw on the PEM's safety cover. Set the screw aside. Remove the safety cover to expose the power connectors.
9. Use a 7/16" wrench to remove the 1/4-20" top nuts and star washers from each of the power

connector posts on the PEM. Set the nuts and washers aside.

10. Connect the power-feed cables (with Panduit connector P/N LCAX8-14-L or equivalent) to the appropriate connectors. Check the labels next to the connectors for polarity.
11. Reattach the removed nuts and washers. Torque the nuts to 6.95 Nm (61.5 lbf-in).
12. Reattach the safety cover. Torque the safety cover screw to 0.90 Nm (8 lbf-in).
13. Turn on the power distribution to the power-feed cables.

Turning On Power

In the following steps, a loud alarm may sound if an alarm condition occurs and the chassis has the alarm panel installed. Be prepared to insert the end of a pen or a paperclip into the pinhole labeled with the "alarm off" graphic (a bell with line through it) on the front panel to press the button. This acknowledges and silences the alarm.

To power up the chassis:

1. One at a time, switch the PEM circuit breakers to the ON position.
2. Verify the power LEDs on the PEMs, the SFBs, and the other modules are all lit solid green.
3. Wait for any automatic boot-up actions to occur. In particular, verify the hot-swap LEDs on all the modules stop blinking. If any hot-swap LED continues to blink for more than two minutes, verify the module is properly latched.

Chapter 8: The Power Enclosure

The SC6300 Series Chassis 1U Power Enclosure is an optional unit for providing DC power to the SC6300 Series Chassis. This chapter describes how to install the 1U power enclosure and the AC power supplies for the chassis.



Figure 8.1. The SC6300 Series Chassis 1U Power Enclosure

Safety Precautions

The following safety precautions should be observed during installation:

- Do NOT wear an electrostatic discharge (ESD) wrist strap when working with frame-ground and power-feed connections.
- Keep one hand behind your back and use tools with properly insulated handles for maximum safety.
- Do not touch a power cable when power is supplied.
- Do not place wires, screwdrivers, meter probes, oscilloscope probes, or other electrically conducting material into contact with a live power cable or anything connected to a live power cable.
- Do not wear any watches, bracelets, and rings when working with a live power cable or anything connected to a live power cable.
- Disconnect power from the power enclosure and the Power Entry Modules (PEMs) before servicing.



Warning

Failure to follow recommendations below may cause personal injury or damage electronic equipment. An electrical voltage of up to 75 VDC may be present at any power connection.

Unpacking

The 1U power enclosure and the DC cables are shipped together in in the same box. The power supplies and the AC power cords may be packed separately.

1. Remove the 1U power enclosure and the four DC power-feed cables from their packaging. All these cables have:
 - 1" stripped off on one end.
 - Insulated terminal lug on the other end.

The cables have the following characteristics:

Color	Length	Voltage	Gauge
Red	27"	+48V	8 AWG
Red	17"	+48V	8 AWG
Black	27"	-48V	8 AWG
Black	17"	-48V	8 AWG

2. Remove the power supplies and the AC power cords from their packaging. Each power supply has two AC power cords provided; a U.S. version (125 VAC) and a European version (250 VAC). Use the AC power cord applicable to your installation site.

Installation Site Preparation

Verify that the installation site meets the following requirements:

- Access to the installation site and the equipment must be restricted to qualified personnel.
- Determine how the cables will be routed between the power enclosure and the main power source, and between the power enclosure and the chassis Power Entry Modules (PEMs).
- Each power supply is capable of drawing 15A @120 VAC (7.5A @ 240VAC). Each AC power cord must be connected to a separate circuit. Do not attempt to operated multiple power supplies from a single power source.

Connecting Frame-grounded Cables

Connect frame-ground cables to the chassis before proceeding to connect DC cables to the power enclosure and the chassis.

Connecting DC Cables to the Power Enclosure

Use a DC multi-meter (DMM) if you are unsure of the polarity and the voltage output of the connections on the power enclosure when performing these procedures.

1. Loosen the screws on the DC cable connector on the back of the power enclosure. This opens the slots where the cables will be inserted.
2. Insert the stripped end of the cables into the slots that match their polarity. The red cables typically go into the top slot and the black cables typically go into the bottom slot.
3. Tighten the screws on the DC cable connector.

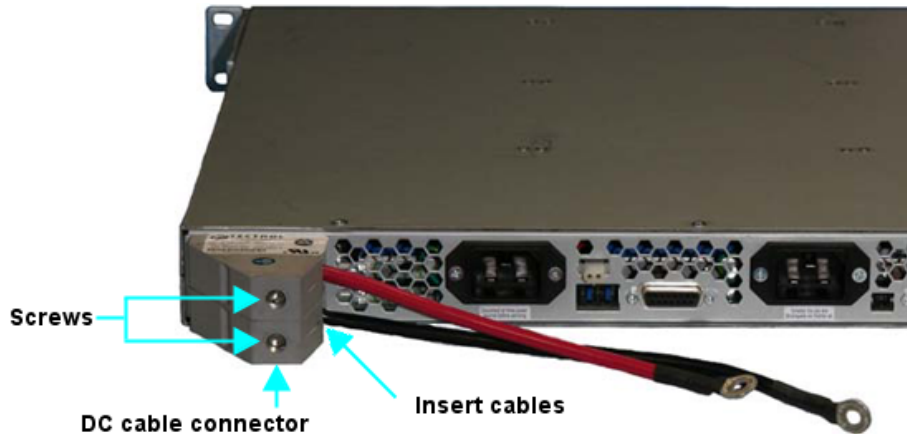


Figure 8.2. Power Rack Rear View - DC Cable Connector Detail

Connect DC cables to the Chassis

These following steps cover connecting the DC cables to the Power Entry Modules (PEMs) located on the back of the chassis:

1. Follow the safety precautions described previously.
2. Verify the chassis connection to the supply circuit will not overload the circuit's overcurrent and supply wiring. The supply should be capable of delivering the equipment nameplate ratings of -48V@ 40A or -60V @ 40A.
3. Switch the toggle switch circuit breakers on PEM Right (R) and PEM Left (L) to the OFF position.
4. Route the DC cables from the power enclosure to the area behind the chassis, but do not yet attach them to a power connection.

The shorter length cables will route to PEM R and the longer length cables will route to PEM L.

5. Use a Phillips screwdriver to remove the #6 screw on the PEM's safety cover. Set the screw aside. Remove the safety cover to expose the power connectors.
6. Use a 7/16" wrench to remove the 1/4"-20 top nuts and washers from each of the power connector posts on the PEM. Verify the bottom nut is still secure on the connector post. Set the top nuts and washers aside.
7. Connect the power-feed cables (with Panduit connector P/N LCAX8-14-L or equivalent) to the appropriate connectors. Check the labels next to the connectors for polarity.

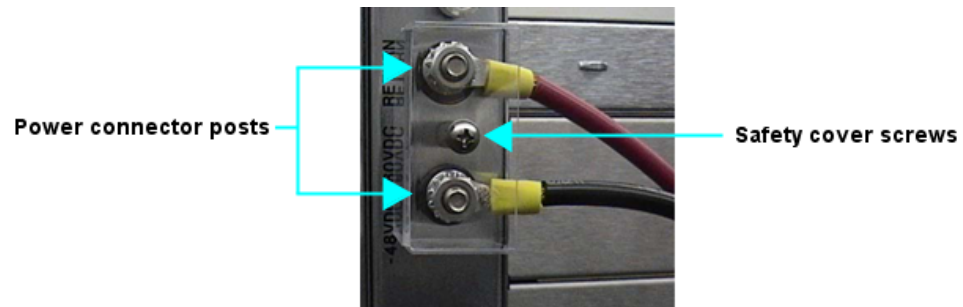


Figure 8.3. DC Cables to PEM Connection

8. Reattach the removed nuts and washers. Torque the nuts to 6.95 Nm (61.5 lbf-in).
9. Reattach the safety cover. Torque the safety cover screw to 0.90 Nm (8 lbf-in).

Installing Power Supplies

Only one -48V power supply is necessary to provide full power to the chassis. Installing two power supplies will provide redundancy and fault tolerance.

1. Follow the safety precautions described previously.
2. Stand facing the front of the power enclosure.
3. Insert a power supply into the empty slot on the left side of the enclosure. Slide the supply in until it is fully seated. Push the spring-loaded screws in and tighten with a Phillips screwdriver.
4. Install the second power supply into the middle slot of the enclosure. Slide the supply in until it is fully seated. Push the spring-loaded screws in and tighten with a Phillips screwdriver.
5. Leave the right slot empty. No power supply will be installed in this slot.

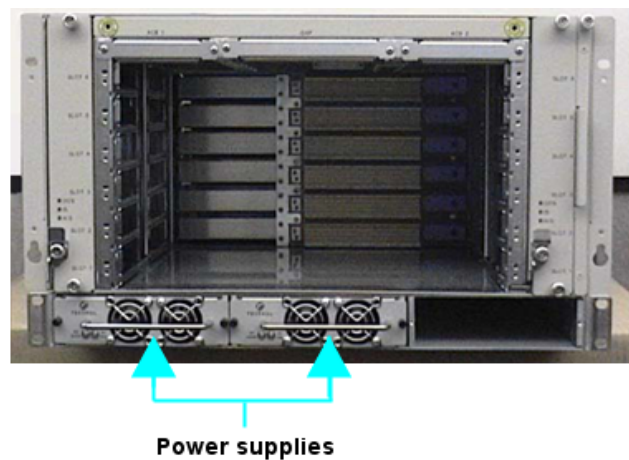


Figure 8.4. Chassis on Power Rack - Front View

Connect AC Power Cords

To connect the AC power cords, the steps are:

- Follow the safety precautions described previously.
- Stand facing the rear of the power enclosure.
- Plug the C21 connector end of one of the AC power cords into the C22 connector on the far right of the power enclosure. This is the connector for the power supply that was installed in the front left slot of the enclosure (see *Installing Power Supplies* above for more information).
- Plug the second AC power cord into the C22 connector on the mid-right of the power enclosure. This is the connector for the power supply that was installed in the front middle slot of the enclosure.
- Plug the wall connector ends of the AC power cords into the AC outlets on the wall. Power is immediately provided to the power enclosure.

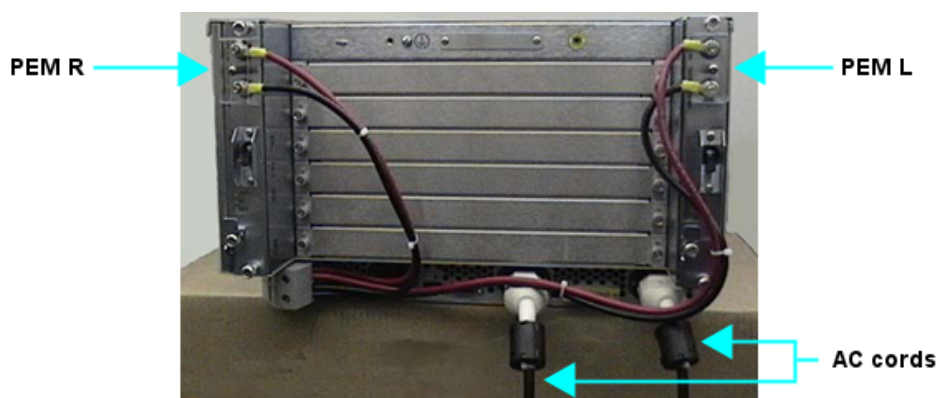


Figure 8.5. Chassis on Power Rack - Rear View

Powering Up

In the following steps, a loud alarm may sound if an alarm condition occurs and the chassis has the alarm panel installed. Be prepared to insert the end of a pen or a paperclip into the pinhole labeled with the "alarm off" graphic (a bell with line through it) on the front panel to press the button. This acknowledges and silences the alarm.

To power up the chassis:

- Switch the PEM circuit breakers to the ON position, one at a time.
- Verify the power LEDs on the PEMs and any installed front blades are all lit solid green.
- Allow any automatic boot-up actions to occur on the chassis and then verify the hot-swap LEDs stop blinking on all blades. If any hot-swap LED continues to blink for more than two minutes, verify the blade is properly latched.

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