

Installation

How to Use This Chapter

This chapter describes how to install the AC30SP in a 19-inch single rack. The chassis, Ethernet switch, storage unit, and modem are packed individually and must be installed by a qualified installer. All of the chassis boards are pre-installed. The rack is customer supplied.

The first part of this chapter explains how to begin preparing the site for installing the AC30SP. Then, the order in which the components should be installed is given. The remainder of the chapter provides specific procedures for installing each component.

Getting Started

Before you start installing the AC30SP, make sure that you have completed the following tasks.

1. Request that the site project manager be available during the installation process.
2. Make sure that the site is ready and the equipment racks are properly grounded according to NEBS, if applicable, and any local building and safety codes.
3. Plan the location of the chassis in a single post 19-inch rack. Allow at least three feet at the front and rear for access to service the equipment.
4. Collect the tools and materials that you need for the installation.
5. Include a table that provides at least 30 in. x 42 in. (76 cm x 107 cm) of work space.
6. Receive the AC30SP equipment, inspect for any damage that may have occurred during shipment, and inventory the contents.
7. Check that all components in the chassis are correctly seated; flush with the face of the chassis. This includes the following components:
 - fan tray
 - power supplies
 - front access cards and rear I/O cards
8. Check that all components in the storage unit are correctly securely installed.
 - fans
 - power supplies
 - all drive shuttles are properly seated and locked

To ensure a drive shuttle is properly locked in place, press the shuttle firmly into the chassis, then turn the shuttle bay key clockwise to its vertical position.

Cooling Requirements

Cooling requirements for an AC30SP will vary according to the number of boards installed in the chassis. The amount of heat generated by a fully configured chassis (four boards) is approximately 550 BTUs.

AC and DC Power Requirements

Table 2-1 shows the power usage and protections required for the AC30SP major hardware components. Refer to the last column labeled “Suggested Wall Circuit Breaker or Fuse” for the rating required for each component.

Table 2-1 AC30SP AC and DC Power Specifications

Equipment	Max. Steady State Power	Equipment Circuit Protection	Suggested Wall Circuit Breaker or Fuse
115 V AC			
Chassis	2A	4A	10A
Storage unit (NF800)	2A	4A	10A
Ethernet switch	2A	3A	10A
-48 V DC			
Chassis	4A	7.5A	10A
Storage unit (NF800)	4A	5A	10A
Ethernet switch	4A	6A	10A

Removing or Replacing a Fuse Cartridge

The fuse cartridge position determines the voltage input. The fuse can adapt to either 110-120V or 220-240V (European standard) simply by reversing the fuse cartridge.

Refer to the figures below, and follow this procedure, to remove or replace a fuse cartridge in the AC30SP chassis.

1. Insert a small screw driver in the top of the fuse cartridge, as shown in [Figure 2-1](#).



Figure 2-1 Removing a Fuse Cartridge

2. Press down and out to remove the cartridge.

- 3. Refer to [Figure 2-2](#) for the fuse cartridge position for 110V - 120V.



Figure 2-2 Fuse Cartridge Position for 110V - 120V

4. Refer to [Figure 2-3](#) for the fuse cartridge position for 220V - 240V.



Figure 2-3 Fuse Cartridge Position for 220V - 240V

Order of Installing in a Rack

Install the components into a 19-inch single rack from the bottom up, in the following order.

- Storage unit rack mounting brackets (refer to the section on [Installing the Storage Unit in a Rack](#))
- Storage unit (all NAS units)

- First chassis, # 1 (install just above the storage unit)
- Additional chassis (if it is a multi-chassis AC30SP)
- Ethernet switch (or switches)
- Modem (for remote service only)

Installing the Storage Unit in a Rack

Because of its weight, the storage unit should be installed at the bottom of the 19-inch rack.

Before you begin rack-mounting the storage unit:

- Check that the maximum ambient operating temperature in the rack does not exceed 95°F (35°C).
- Pick a location that allows unrestricted air flow for the cooling fans.
- Make sure mounting the unit into the rack will not tip the rack over, even when the storage is fully extended from the rack.
- Make sure that a power cord will be long enough to fit into the cabinet properly and supply power to the storage unit
- Make sure the power cable is properly grounded.

Refer to the procedure below and accompanying figures to install the storage unit in the rack.

1. Install the left rack mounting bracket, shown in [Figure 2-4](#), using two screws to attach the unit into the left side of the rack. Do not tighten the screws completely.



Figure 2-4 NAS Mounting Bracket, Left Side

2. Install the right rack mounting bracket, shown in [Figure 2-5](#), using two screws to attach the unit into right side the rack. The right bracket has several holes in it to allow proper air flow through the storage unit.

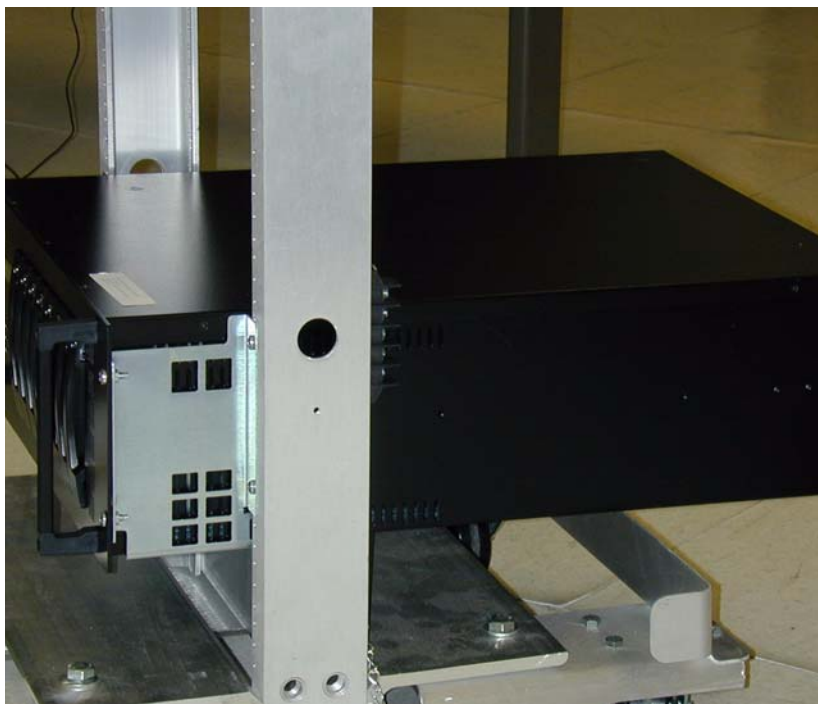


Figure 2-5 NAS Mounting Bracket, Right Side

3. Tighten the screws for both the right rack mounting bracket and the left rack mounting bracket.
4. Place the storage unit onto the supporting brackets shelf support, and line up the front of the unit so that its mounting brackets line up with the holes in the rack mounting brackets.
5. Insert the two screws in the storage unit holes on both sides of the unit and through the mounting bracket holes and tighten them.

Installation of the storage unit in the 19-inch rack is complete.

Installing a Chassis in a Rack

Determining the Position of a Chassis in the Rack

One chassis requires a space of 6U. If you have more than one chassis, install the first chassis, which is the chassis with the OMAP processor card and CD-RW drive in it, just above the storage unit.

Note: SS8 Networks recommends leaving a 1/2 U, or one screw hole gap, between an additional chassis in the rack.

Placing a Chassis into the Rack

Refer to [Figure 2-6](#) and follow the procedure below to install the chassis in the rack.



Figure 2-6 AC30SP Chassis Mounting Brackets

1. Lift the chassis into the rack and match it up to the rack holes.
2. Insert two screws into the mounting brackets on both sides (total of four screws) of the chassis and through the rack holes and tighten them.
3. If you have more than one chassis to install, make sure to install the additional chassis above the first, leaving a 1/2 U space (one screw hole) between units.

Installation of the chassis in the rack is complete.

Installing an Ethernet Switch in a Rack

The Ethernet switch is the last component to install in the rack.

Determining the Position of a Ethernet Switch in a Rack

Install the Ethernet switch or switches directly above the last chassis at the top of the rack. The Ethernet switch requires 1 1/2 U of space. There should be a gap of 1U between the last chassis and the first Ethernet switch.

Placing an Ethernet Switch in a Rack

Refer to [Figure 2-7](#) and the procedure below to install the Ethernet Switch in the rack.

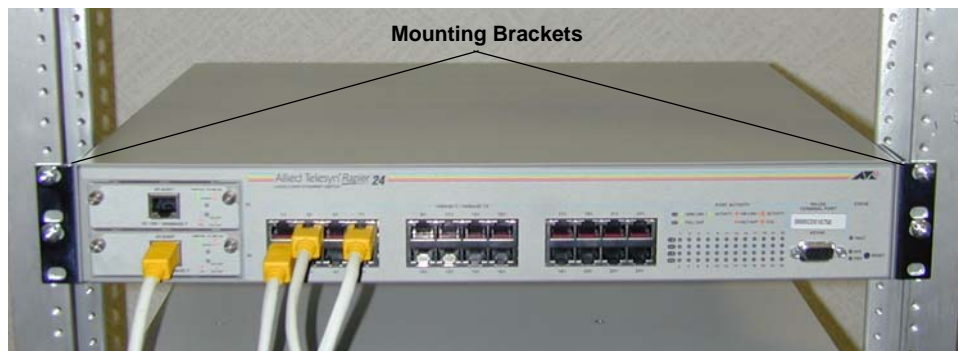


Figure 2-7 Ethernet Switch Mounting Brackets

1. Lift the Ethernet switch into the rack and match it up to the rack holes. It should be at least 1U above the last chassis you installed.
2. Insert a screw through the Ethernet switch chassis mounting brackets and through the rack holes.
3. Tighten the two screws.
4. If you have a second Ethernet switch, install it directly above the first one.

Installation of the Ethernet switch in the rack is complete.

Installing the Modem

Place the modem, shown in [Figure 2-8](#), used for remote access by SS8 Networks TAC on top of the Ethernet switch or the chassis in the rack. Refer to the [Connecting the Modem](#) section for the procedure to make the proper modem connections.

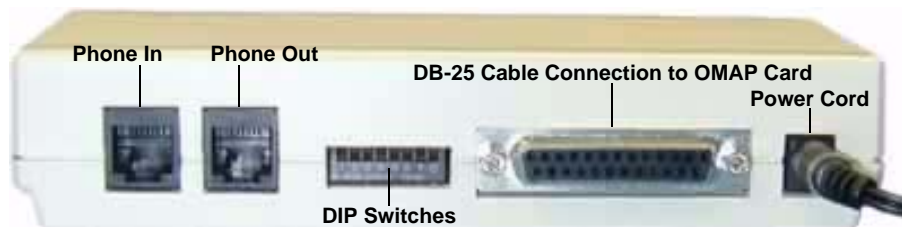


Figure 2-8 Remote Access Modem, Rear View

Cabling the System

After you have installed cards in the chassis, all chassis components, and all AC30SP components in the rack, the next procedures are to connect all hardware to power sources and to ground, where applicable, and make all connections between components.

Power and Ground

Use the procedures below to connect the following items to power and ground in this order:

- Connect the 6U chassis ground (and logic ground if isolated ground) cable and then its power cables.
- Connect the storage unit chassis ground and then its power cables.
- Connect the Ethernet switch(es) chassis ground (for -48 V DC installations only) and then its power cables.

AC Powered Chassis Equipment

Materials needed for connecting components to AC power for the AC30SP chassis are listed below.

- Braided chassis ground cable with ring lugs attached
- 3/8-inch nut driver

Follow this procedure for connecting each component to AC power.

1. Make sure that all equipment power switches are turned off.
2. Connect the chassis power cable from the power supplies to the power source.
3. Connect the braided chassis ground cable to the left-most grounding post marked CG (chassis ground) and to the rack.
4. Connect the two storage unit power cables from the power supplies to the power source.
5. Connect the Ethernet switch power cable from the power supply to the power source.
6. Connect the modem's power adapter to the power source.

Connecting the components to AC power for the AC30SP is complete.

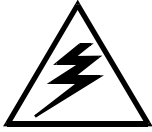
DC Powered Chassis Equipment

The procedure for connecting each component to DC power is given below.

AC30SP Chassis to DC Power

Materials needed for connecting the DC powered AC30SP are listed below.

- DC supply cables for -48 V and for RTN, 14 AWG (or larger) gauge wire, with locking spade lugs or ring lugs attached
- Braided chassis ground cable with ring lugs attached
- Phillips screw driver
- 3/8-inch nut driver

**DANGER!**

Incorrect cabling of the DC-powered AC30SP may result in internal damage to the unit or a blown fuse on the fuse panel. Take precaution when connecting the power.

Refer to [Figure 2-9](#), showing the rear panel of a DC-powered AC30SP, and to the procedure below to connect a chassis to DC power.

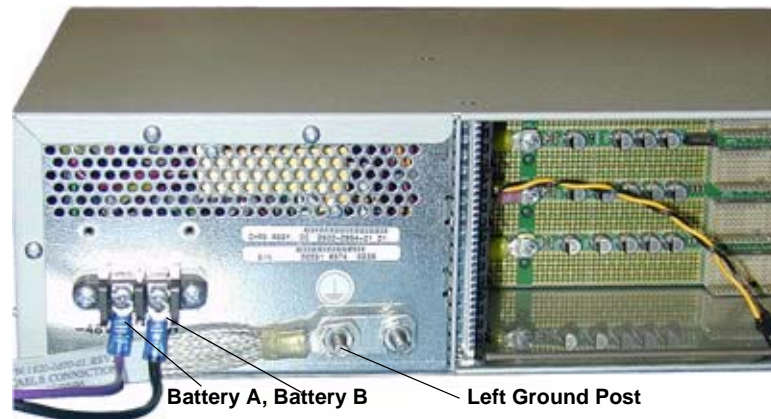


Figure 2-9 DC Power Supply, Rear Panel

1. Make sure equipment power and circuit breaker switches (one per chassis) are turned off.
2. Attach both power wires from battery A and battery B to the chassis power connector.
3. Attach the braided chassis ground cable with ring lugs attached to the left ground post.

Storage Unit to DC Power

To connect the storage unit to DC power, simply attach the wiring to the +48VDV (return) terminal and to the -48VDC terminal.

Ethernet Switch to DC Power

Make sure the Ethernet switch is not Ethernet cabled to any other equipment before proceeding.

For installation of a DC version of the switch, you must provide the following materials.

- -48 V DC wire
- RTN wire
- green and yellow safety ground wire
- wire strippers
- torque screw driver



DANGER!

Incorrect cabling of the DC-powered Ethernet switch will result in internal damage to the unit or a blown fuse on the fuse panel. Take precaution when connecting the power.

The panel of a DC-powered Ethernet switch is shown in [Figure 2-10](#).

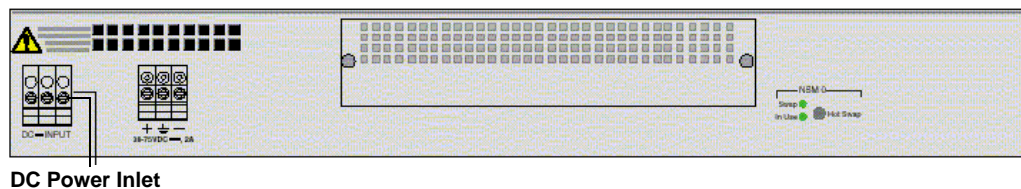


Figure 2-10 Ethernet Switch Rear Panel, DC Version

1. Strip the -48 V DC, the RTN, and the safety ground wires to create a 5/16-inch gap.
2. Fully loosen screws and insert the appropriate stripped wires into the matching holes at the bottom of the connector terminal according to the silk screen legend on the back panel of the unit, shown in [Figure 2-11](#).

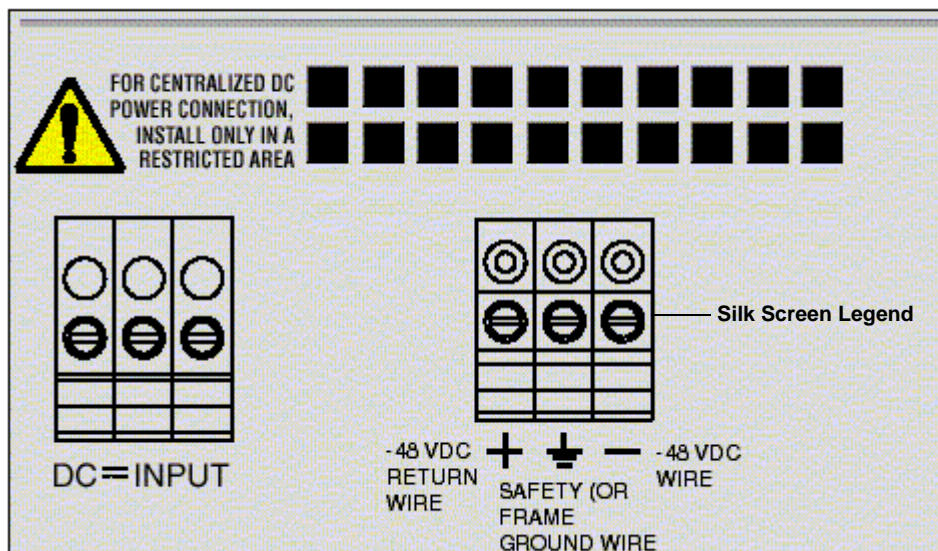


Figure 2-11 Ethernet Switch Rear Panel, DC Version

3. Tighten each wire from 5.30 inch/pounds to 7.00 inch/pounds.

Power and ground cabling for the Ethernet switch is complete.

Ethernet and Telephone Switch

After you have connected all components in the rack to power and ground, cable the AC30SP components to each other and to your network. Except for telephone connections, connections for this system use Ethernet connectors. Ports 1 through 20 on the Ethernet switch are used for internal communication of the AC30SP. Ports 21 through 24 are used to connect to your network. Uplink port 25 is used to connect to the storage unit.

OMAP Processor Card

1. Using two CAT5E straight through cables (p/n 1911-0024-02), plug one end of each cable into the Ethernet ports labeled ENET1 and ENET2 on the OMAP processor card's rear I/O card and the other end according to the connection shown in either the [Figure 1-2 Cabling Diagram](#) or the [Figure 1-3 Cabling Diagram](#).

If you have more than one Ethernet switch, connect ENET1 to the first Ethernet switch and ENET2 to the second Ethernet switch.

- Using the supplied RJ-11 to DB-9 cable (six-conductor straight through wired cable, p/n 1810-0739-01), connect the RJ-11 end into COM1 in the front of the OMAP processor card, and connect the other end to the system console. You can use any serial port computer used for local console connections that has a 9600 baud rate, n-8-1, and VT100 emulation.

Note: SS8 Networks recommends that you keep your AC30SP connected to the supplied modem.

- Cable the supplied modem using the supplied RJ-11 to DB-25 cable, p/n 1810-0738-01. Connect the RJ-11 end into COM1/3 located in the rear I/O card and the other end of the cable into the supplied modem.

Connecting an SS7 Processor Card

Note: This procedure is optional, as the SS7 card is an optional card depending on the integration you use.

- Using two CAT5E straight through Ethernet cables, plug one end of each cable into the Ethernet ports labeled ENET1 and ENET2 on the SS7 processor card's rear I/O card and the other end according to the connection shown in either the [Figure 1-2 Cabling Diagram](#) or the [Figure 1-3 Cabling Diagram](#).

If you have more than one Ethernet switch, connect ENET1 to the first Ethernet switch and ENET2 to the second Ethernet switch.

- If you are using SS7 protocol with your system, you must also connect the two T1/E1 ports (labeled Line1 and Line2) that are located in the front of the SS7 processor card. Using SS7 link cables, plug one end of each cable into a T1/E1 port and the other end into the associated SS7 switch port.

Connecting an Application Processor Card

- Using two CAT5E straight through cables, plug one end of each cable into the Ethernet ports labeled ENET1 and ENET2 on application processor card's rear I/O card and the other end according to the connection shown in either the [Figure 1-2 Cabling Diagram](#) or the [Figure 1-3 Cabling Diagram](#).
- If you have more than one Ethernet switch, connect ENET1 to Ethernet switch #1 and ENET2 to Ethernet switch #2.

Connecting a Line Card to the Telephone Switch

1. Using four T1/E1 span cables, plug one end of each cable into the four T1/E1 ports on the line card's rear I/O card and the other end to the associated T1/E1 switch ports.

Note: Perform the following step only if you are using SIP integration.

2. Using two CAT5E straight through Ethernet cables, plug one end of each cable into the Ethernet ports labeled Ethernet 1 or 2 on the line card's rear I/O card and the other end to the Ethernet switch into ports 3 to 20.
3. If you have two Ethernet switches, cable port Ethernet 1 to the first Ethernet switch and port Ethernet 2 to the second Ethernet switch.

Connecting the Storage Unit

If you have two Ethernet switches and two AC30SP chassis, use two CAT5E straight through Ethernet cables.

1. Plug one end of each cable into the Ethernet connectors NIC1 and NIC2 on the storage unit.
2. Plug the other end of each cable into port 25 of each Ethernet switch. Refer to either the [Figure 1-2 Cabling Diagram](#) or the [Figure 1-3 Cabling Diagram](#).

If you are using only one AC30SP and one Ethernet switch, still use two CAT5E straight through Ethernet cables.

1. Plug one end of a cable into the storage unit's NIC1 and the other end into port 25 of the Ethernet switch.
2. Plug one end of the second cable into the storage unit's NIC2 port and the other end into port 26 of the Ethernet switch. Refer to either the [Figure 1-2 Cabling Diagram](#) or the [Figure 1-3 Cabling Diagram](#).

Connecting the Ethernet Switch

1. Using cross-over Ethernet cables, p/n 1911-0020-01, plug one end of each cable into ports 21 to 24 on the Ethernet switch and the other end to your network.
2. If you have two Ethernet switches, connect at least one port of each Ethernet switch to your network.

Connecting the Modem

To provide SS8 Networks with remote access to your system, SS8 Networks recommends that you connect the supplied modem to the Ethernet switch and leave it connected.

Note: If you will use a modem, then you must unplug the cable to your console from COM3 in the OMAP rear I/O card and plug it into the modem, as explained in step 2, below.

1. Before connecting the modem, verify that the jumper settings are correctly set, as shown in [Figure 2-12](#). The jumper settings are: 1, 4, and 7 ON (down position), and 2, 3, 5, 6, and 8 OFF (up position).

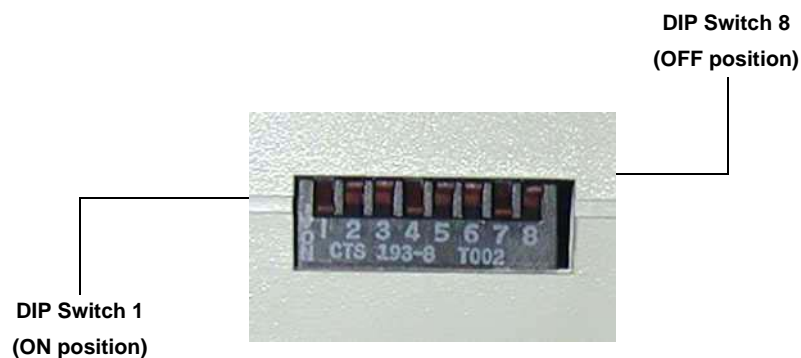


Figure 2-12 Jumper Settings for Modem

2. If you have not already done this, using the supplied RJ-11 to DB-25 cable, p/n 1810-0738-01, connect the RJ-11 end into COM1/3 located in the OMAP rear I/O card and the other end of the cable into the supplied modem (refer to [Figure 2-8](#)).

3. Plug in the telephone cables to the telephone in and telephone out receptacles (refer to [Figure 2-8](#)).
4. Ensure the power cord is securely fastened (refer to [Figure 2-8](#)).

Powering on the AC30SP

If, for some reason, you are not able to power up the components one right after the other, SS8 Networks recommends the following sequence.

- Storage unit
- Ethernet switch(es)
- Chassis



CAUTION!

Do not power on the AC30SP until after you have connected it to the network.

Powering on the DC Storage Unit

Aside from turning on power from your power source first, there is no specific powering up sequence for DC or AC powered AC30SPs. However, each component of the AC30SP should be powered up within 30 seconds of each other, with no long delays in between.

Note: The storage unit must be up and running before the CPUs, otherwise, NFS mounts will not be available.

After verifying your network connections, use the following procedure to power on the DC storage unit.

1. Connect the power source to the DC unit.
2. Turn on the switch.

The unit is immediately powered on.

Powering on the AC Storage Unit

CAUTION!

Do not power on the storage unit until after you have connected to the network.

The network connections are located on the rear of the storage unit.

Connecting to Gigabit Copper Ethernet Networks

Connect an enhanced CAT-5 cable from the network to the 10/100/1000 Ethernet connector on the rear of the storage unit.

Connecting to Fast Ethernet Networks

Connect an RJ-45 unshielded twisted-pair cable from the network to the Fast Ethernet connector on the rear of the storage unit.

Connecting to Multi-Port Fast Ethernet Networks

Connect an RJ-45 unshielded twisted-pair cable from the network to each of the Fast Ethernet connectors on the rear of the storage unit.

Connecting to Gigabit Fibre Ethernet Networks

Connect a SC cable from the network to the Gigabit Ethernet connector on the rear of the storage unit.

After verifying your network connections, use the following procedure to power on the AC storage unit.

1. Check that the two storage unit power cables from the power supplies are connected to their power source.

Note: Both power cables must be connected before turning on the power switch. If one of the power cables is not connected or does not supply power to the storage unit, the alarm will sound.

2. Check each drive shuttle on the storage unit to make sure it is properly seated and locked in place.

To check the drives, press the drive shuttle into the storage unit chassis, then turn the shuttle lock key clockwise to its vertical position as shown. An improperly locked or unlocked drive shuttle may damage a drive when the system is turned on.

3. On the rear panel, turn on the first power switch (at the top). You will see the green Power On LED light up, indicating the power supply is in normal operation. If the LED does not light up, the power supply has failed; contact the SS8 Networks Technical Assistance Center (TAC).

Note: Wait for the audible beep (approximately 20 seconds) before turning on second power supply.

4. After the top power supply green LED lights up, turn on the second power switch (below the first one).

When the power supply is on, the green LED on the power supply lights up, indicating that the power supply is in normal operation. If the LED does not light up, the power supply has failed; contact the SS8 Networks Technical Assistance Center (TAC).

Shutting down the AC Storage Unit

You can shut down the storage unit via the LCD on the front panel using the procedure below.

CAUTION!

Always use the proper shut down procedure to avoid any possibility of corrupting data. Never shutdown the storage unit by turning off the power switches or pulling the power cords.

1. Press the **Select** button on the storage unit LCD interface to access menus.
2. When the display options **A** and **B** are shown on the LCD, press the **Down** arrow to select option **B, Shutdown Server** and press the **Select** button.
3. Press **Select** to select option **A, Power Off**.
4. Press the **Down** arrow to change **No** to **Yes**.
5. Press the **Select** button to confirm and begin shutting down.

Powering on the Ethernet Switch

Follow this procedure for an AC or DC powered Ethernet switch.

1. Check that the Ethernet cables are connected to the Ethernet switch from the chassis and the storage unit.
2. Check that the power cable for AC or DC power are connected to the Ethernet switch and its power source.
3. Turn on the power.

Powering on the Chassis

Follow this procedure for powering on an AC powered chassis.

1. Check that the Ethernet cables are connected from the chassis to the Ethernet switch.
2. Check that the telephony cables are connected from the Line card in the the chassis to the Service Provider.
3. Check that the system is grounded and that the power cord is plugged into the chassis power supply and the power source.
4. Turn on power at the power source.
5. Switch the circuit breaker switch at the back of the chassis to the ON position.

Shutting Down the Software

If you need to replace a processor card in the chassis, you may have to shut down the software running on that processor card. There are two kinds of software running on the processor cards – the application software and the operating system software. Both must be shut down.

Refer to the appropriate component chapter in the [Controller Software Installation Manual](#) for procedures for shutting down software.