hp StorageWorks

director 2/140 rack mount kit installation instructions

Part Number: AA-RTDDB-TE/958-000280-001

Second Edition (January 2003)

These installation instructions provide the procedures used for installing an HP StorageWorks Director 2/140 in an appropriate rack.

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About this Guide

These installation instructions provide information to help you:

- Install the HP StorageWorks™ Director 2/140 in an appropriate rack.
- Perform the power-on self test.
- Contact technical support for additional assistance.

Intended Audience

This book is intended for use by technicians who are experienced with:

- Setting up SAN equipment.
- Fibre Channel technology.

Related Documentation

For a list of corresponding documentation included with this product, see the Related Documents section of the HP StorageWorks Director Release Notes.

For the latest information, documentation, and firmware releases, please visit the HP StorageWorks website:

http://h18006.www1.hp.com/storage/saninfrastructure.html

For information about Fibre Channel standards, visit the Fibre Channel Industry Association website, located at http://www.fibrechannel.org.

Document Conventions

The conventions included in Table 1 apply.

Table 1: Document Conventions

Element	Convention
Cross-reference links	Blue text: Figure 1
Key names, menu items, buttons, and dialog box titles	**Bold**
File names, application names, and text emphasis	*Italics*
User input, command names, system responses (output and messages)	`Monospace font` `COMMAND NAMES` are uppercase unless they are case sensitive
Variables	*`Monospace, italic font`*
Website addresses	Sans serif font (http://thenew.hp.com)

Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.

WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or data.

IMPORTANT: Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Symbols on Equipment

Any enclosed surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.

WARNING: To reduce the risk of injury from electrical shock hazards, do not open this enclosure.

Any RJ-45 receptacle marked with these symbols indicates a network interface connection.

WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. Contact with this surface could result in injury.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.

Power supplies or systems marked with these symbols indicate the presence of multiple sources of power.

WARNING: To reduce the risk of injury from electrical shock, remove all power cords to completely disconnect power from the power supplies and systems.

Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manually handling material.

Rack Stability

WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- **The leveling jacks are extended to the floor.**
- **The full weight of the rack rests on the leveling jacks.**
- **In single rack installations, the stabilizing feet are attached to the rack.**
- **In multiple rack installations, the racks are coupled.**
- **Only one rack component is extended at any time. A rack may become unstable if more than one rack component is extended for any reason.**

Getting Help

If you still have a question after reading this guide, contact an HP authorized service provider or access our website: http://thenew.hp.com.

HP Technical Support

In North America, call technical support at 1-800-652-6672, available 24 hours a day, 7 days a week.

NOTE: For continuous quality improvement, calls may be recorded or monitored.

Outside North America, call technical support at the nearest location. Telephone numbers for worldwide technical support are listed on the HP website under support: http://thenew.hp.com/country/us/eng/support.html.

Be sure to have the following information available before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

HP Website

The HP website has the latest information on this product, as well as the latest drivers. Access storage at: http://thenew.hp.com/country/us/eng/prodserv/storage.html. From this website, select the appropriate product or solution.

HP Authorized Reseller

For the name of your nearest HP Authorized Reseller:

- In the United States, call 1-800-345-1518
- In Canada, call 1-800-263-5868
- Elsewhere, see the HP website for locations and telephone numbers: http://thenew.hp.com.

Installation Instructions

This section describes the procedures used for installing a StorageWorks Director 2/140 in an appropriate HP, or comparable, 19-inch Electronic Industries Association (EIA) rack:

- HP 9000 series, 10000 series and 11000 series racks
- HP rack system/e or 19-inch EIA rack

Rack Mount Kit Checklist

This section describes the contents of the rack mount kit as well as tools or equipment required to complete the installation.

Mounting Hardware

- Twenty-six (26) Phillips panhead screws (10-32 x 1/2) with split lock and flat washers (only 20 required)
- Twelve (12) Phillips flathead countersunk screws (10-32 x 3/8).
- Twelve (12) cage nuts
- Eight (8) self-tapping sheet metal screws (10-32 x 1/2).

Brackets

Brackets and rails included in the kit are shown in Figure 1:

❶ Two (2) rear mounting brackets

❷ Four (4) angle mounting brackets (small)

❸ Two (2) shelf brackets

❹ Two (2) rear mounting plates

❺ Two (2) front mounting brackets

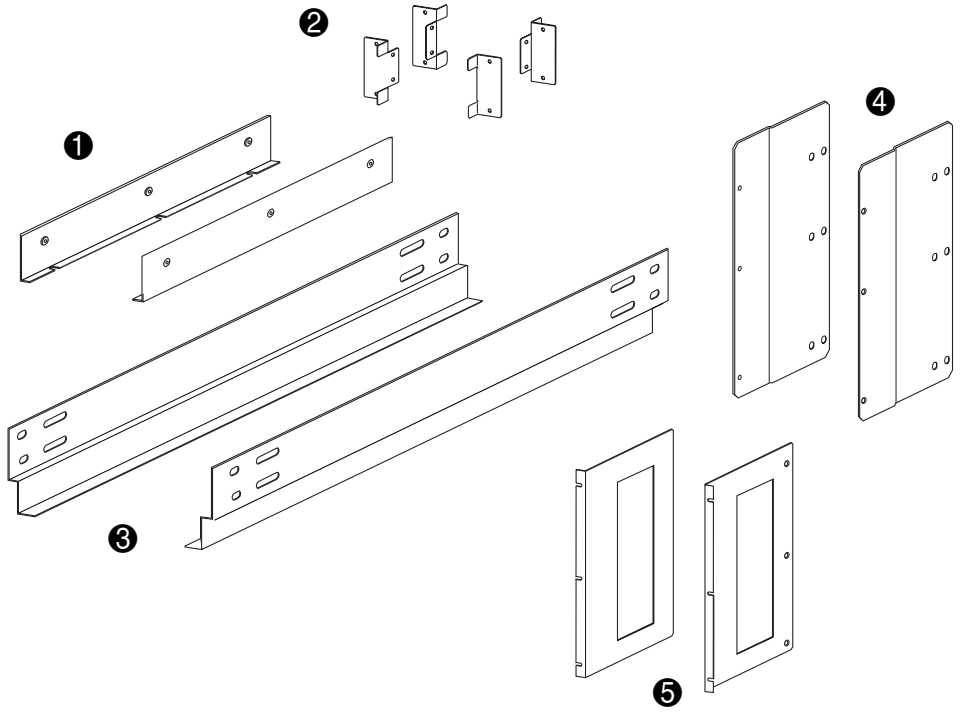

Figure 1: Brackets included in kit

Required Items

Check that the following items are available before beginning the installation.

- #2 Phillips screwdriver
- Lift device (recommended)

Rack Mounting Guidelines

This section describes guidelines for installing more than one Director and positioning the Director 2/140 on the lift device.

Tips for Installing More than One Switch

Review the following tips:

- Install the first Director in the lowest position of the rack, allocated for switches.
- Consider leaving a space of 1U open at the top and bottom of the rack, to allow easier cabling access.
- If installing more than one Director 2/140 in a single rack, consider leaving a space of 1U open above and below each Director to allow easier cabling access.
- If installing more than one switch, HP recommends installing an optional Power Distribution Unit (PDU) in the bottom of the rack. HP ships two PDU power cords with the Director 2/140.
- Make sure to connect power cables as you install each individual switch.

Moving the Director 2/140

Use these steps to position the Director 2/140 next to the rack.

WARNING: Two people will need to work together to transfer the Director 2/140 to the lift. Make sure the wheels of the lift cannot roll as you transfer the Director 2/140 to the lift. Move the Director 2/140 slowly and carefully onto the lift to prevent back and hand injury. Dropping the Director 2/140 could injure personnel or damage the equipment.

1. Position the lift device next to the Director 2/140.
2. Using a pallet jack, raise the pallet on which the Director 2/140 is mounted to the same height as the top surface of the lift device.
3. Slide the Director 2/140 across from the pallet to the lift device.
4. Determine the appropriate rack-mount position. Remember that the Director 2/140 is 20 inches or 12 U high.

Installing the Shelf Brackets in the Rack

The procedure for installing shelf brackets varies depending on the type of rack. Select the appropriate procedure for your rack type:

- "Installing the Shelf Brackets in HP 9000, 10000 and 11000 Series Racks" on page 4.
- "Installing Shelf Brackets in an HP Rack System/e or 19-inch EIA Rack" on page 7.

Installing the Shelf Brackets in HP 9000, 10000 and 11000 Series Racks

Use these steps to install the two shelf brackets in an HP 9000, 10000 or 11000 series rack.

1. Determine the appropriate placement for the Director inside the rack.

NOTE: HP strongly recommends installing the Director 2/140 in the lowest position in the rack.

2. Along an exterior vertical rail of the rack cabinet, determine the position of the bottom of the shelf bracket and count 1 U up from this location.

3. Use a straight edge to locate the corresponding rack hole along the interior vertical rails of the rack cabinet. Mark this location on each interior vertical rail.
4. Position a small angle bracket along the interior vertical rail as shown in Figure 2. Align the angle bracket so that the two threaded holes on the small tab align with the 1U location marked in step 3.
5. Secure the angle bracket to the rail using two self-tapping sheet metal screws.
6. Repeat step 2 through step 5 to mount a small angle bracket on each interior vertical rail of the cabinet.

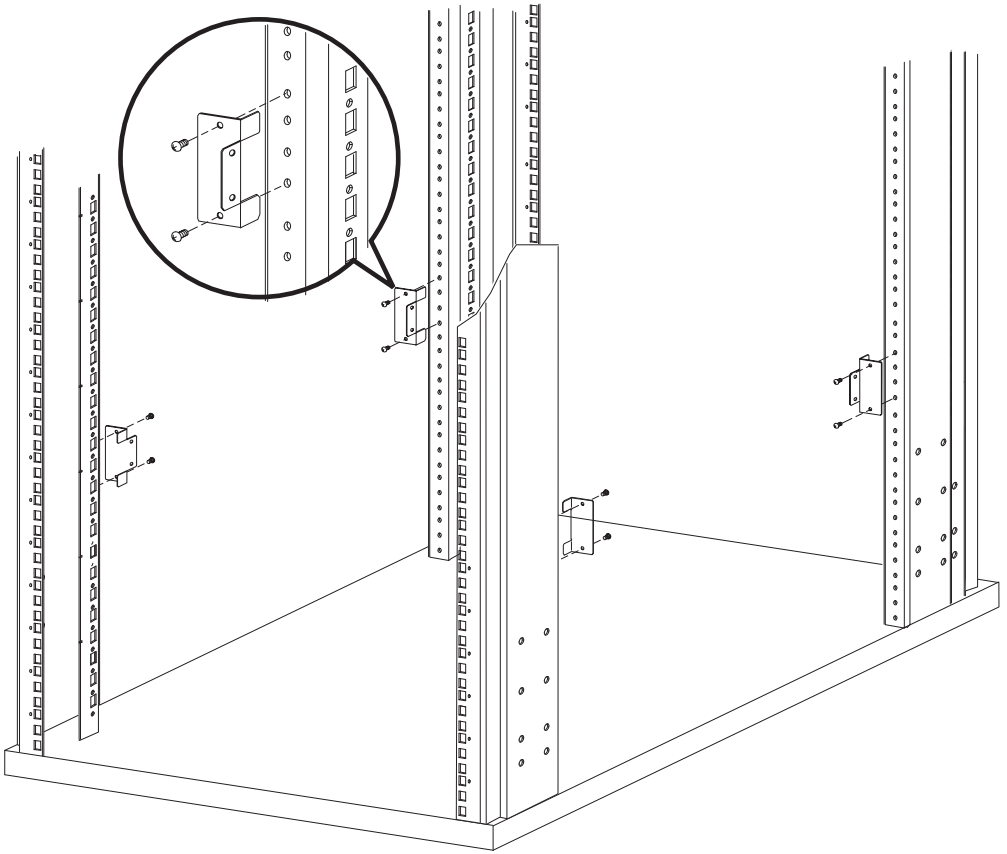

Figure 2: Angle brackets mounted on vertical cabinet rails in HP 9000, 10000 and 11000 series rack

7. Attach two shelf brackets to the angle brackets on each side of the cabinet using eight pan head screws and a #2 Phillips head screwdriver as shown in Figure 3.

NOTE: Center each shelf bracket between the interior vertical rails of the rack cabinet.

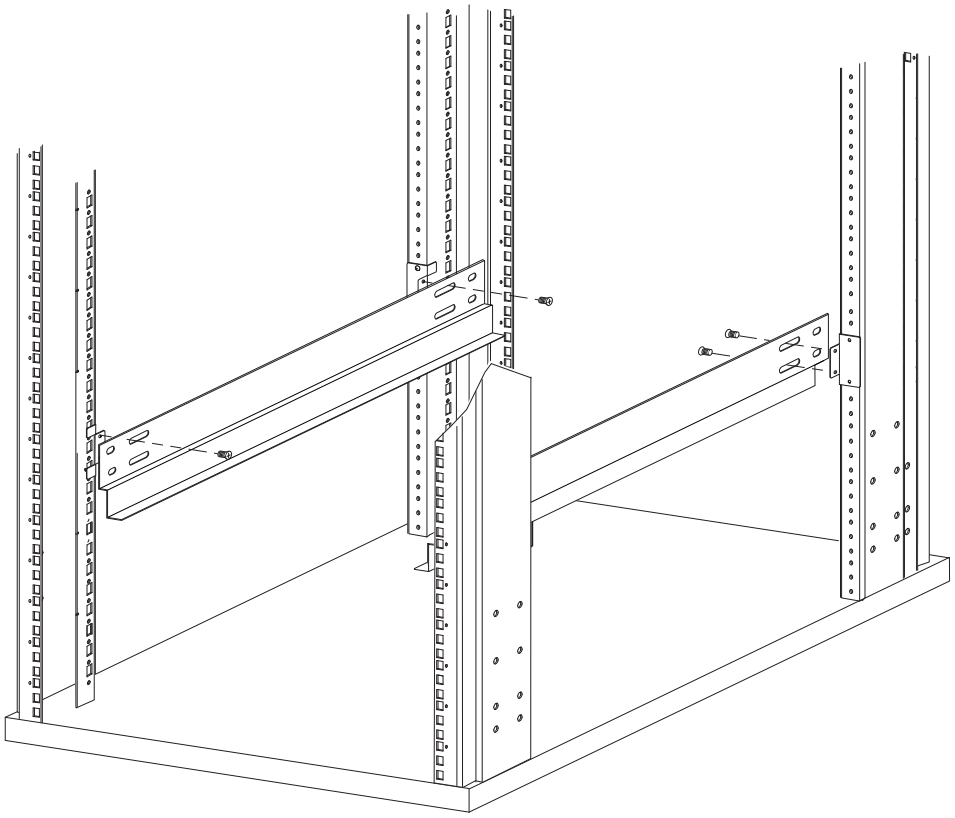

Figure 3: Shelf brackets mounted in HP 9000, 10000 and 11000 series rack

8. Continue to "Attaching the Mounting Hardware to the Director 2/140" on page 8.

Installing Shelf Brackets in an HP Rack System/e or 19-inch EIA Rack

The shelf brackets mount directly to the interior vertical rails of the HP rack system/e or 19-inch EIA rack using cage nuts and Phillips panhead screws.

Use these steps to install the two shelf brackets in an HP rack system/e or 19-inch EIA rack.

1. Determine the appropriate placement for the Director inside the rack.

NOTE: HP strongly recommends installing the Director 2/140 in the lowest position in the rack.

2. Along an exterior vertical rail of the rack cabinet, determine the position of the bottom of the shelf bracket and count 1 U up from this location.
3. Use a straight edge to locate the corresponding rack holes along the interior vertical rails of the rack cabinet. Mark this location on each interior vertical rail.
4. Install two cage nuts along one interior vertical rail as marked in step 3, leaving one empty rack hole between the cage nuts.
5. Repeat step 4 for each of the three remaining interior vertical rails.
6. Secure a shelf bracket to the interior vertical rails using four (4) Phillips panhead screws with split lock and flat washers.
7. Repeat step 6 to secure the second shelf bracket on the opposite side of the rack.
8. Continue to “Attaching the Mounting Hardware to the Director 2/140” on page 8.

Attaching the Mounting Hardware to the Director 2/140

Use these steps to secure the mounting hardware to the Director 2/140.

NOTE: All mounting brackets are attached to the Director 2/140 using 10/32 x 3/8-inch flathead countersunk Phillips screws.

1. Locate the two front mounting brackets in the shipping carton.
2. Secure the front mounting brackets on either side of the Director, as shown in Figure 4. For each front mounting bracket, use three screws.

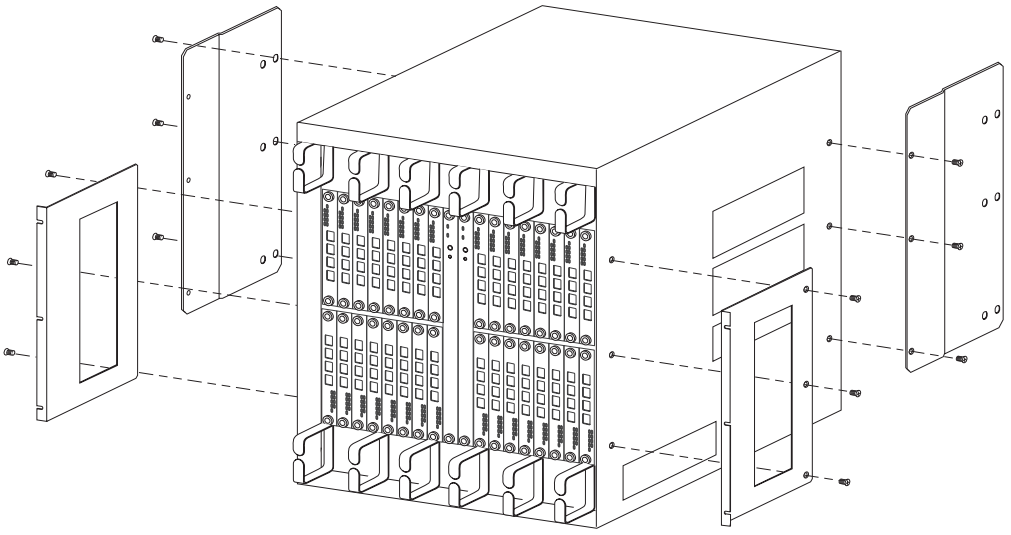

Figure 4: .Securing the front mounting brackets to the Director 2/140

3. Locate the two rear mounting plates in the shipping carton.
4. Secure the two rear mounting plates to each side of the Director, as shown in Figure 4. For each plate, use three screws.

Inserting Cage Nuts in the Rack

Before placing the Director into the rack, insert the cage nuts into the appropriate locations along the exterior vertical rack rails. Read the following sections for instructions on inserting front and rear cage nuts in the rack.

Inserting the Front Cage Nuts in the Rack

Use these steps to insert the six supplied cage nuts in the rack's front rails.

1. Select one of the exterior vertical rails at the front of the cabinet. From the bottom of the shelf bracket, count up 3 U (9 holes) and insert the first of three cage nuts.
2. Count up 3 U (9 holes) from the cage nut you just installed and insert the next cage nut.
3. Count up 3 U (9 holes) from the second cage nut and insert the third cage nut.
4. To install cage nuts in the other front rail, repeat step 1 through step 3.

Inserting the Rear Cage Nuts in the Rack

Use these steps to insert the six supplied cage nuts in the rack's rear rails.

1. Select one of the exterior vertical rails at the rear of the cabinet. From the bottom of the shelf bracket, count up 3 U (9 holes) and insert the first of three cage nuts.
2. Count up 4 U (12 holes) from the cage nut you just installed, and insert the next cage nut.
3. Count up 4 U (12 holes) from the second cage nut and insert the third cage nut.
4. To install cage nuts in the other rear rail, repeat step 1 through step 3.

Finalizing the Rack Mounting Procedure

Read the following sections to complete the installation procedure.

After completing the steps outlined in the previous section, prepare to orient the Director 2/140 in the rack as follows. The procedure requires two technicians.

CAUTION: The Director 2/140 weighs approximately 167 lbs. Do not attempt to lift or carry the Director 2/140 with fewer than two people. Failure to observe this CAUTION may result in injury to personnel or damage to the Director 2/140.

Installing the Director 2/140 in the Rack

Use these steps to maneuver the Director 2/140 into the rack:

1. Using a lift device, position the Director 2/140 at the front of the cabinet.
2. If necessary, adjust the lift height so that the bottom of the Director 2/140 is parallel with the shelf mounts in the rack.
3. Slide the Director along the shelf mounts and into the cabinet until the front mounting brackets on the Director 2/140 contact the front cabinet rails.

Securing the Front Mounting Brackets to the Rack

Follow this procedure to secure the front mounting brackets attached to the Director 2/140 to the rack:

1. Secure one of the front mounting brackets to a cabinet rail by attaching three Phillips panhead screws to the cage nuts you installed earlier.
2. Repeat step 1 to secure the other front mounting bracket to the remaining cabinet rail.

Securing the Rear Mounting Brackets to the Rack

Follow this procedure to attach the Director 2/140 rear mounting plates to the rack using the rear mounting bracket:

1. Align a rear mounting bracket with the cage nuts you installed earlier, and the screw holes in the rear mounting plate attached to the Director 2/140.
2. Attach a rear mounting bracket to a rear mounting plate by installing three Phillips panhead screws in the mounting plate holes. Do not tighten.
3. Adjust the position of the rear bracket so that the holes align with the cage nuts installed in the cabinet rail.
4. Attach the rear mounting bracket to the cage nuts installed in the cabinet rail using three Phillips panhead screws. Tighten securely.
5. Tighten the screws attached to the rear mounting plate.
6. Repeat step 1 through step 5 to attach a rear mounting bracket to the remaining rear rail.

Connecting the Director 2/140 to a Power Source

The Director 2/140 includes two power supplies (labeled PS0 and PS1 on the rear of the unit) for redundancy. Each power supply must be connected to an appropriate power source that provides 220-volt AC power.

The Director 2/140 is shipped with the following power cords:

- Two (2) PDU (power distribution unit) power cords
- Two (2) 110-volt AC power cords (for Director 2/64 only)

IMPORTANT: The 110-volt AC power cords provided in the kit are not for use with the Director 2/140. For more information, see the *hp StorageWorks director power cord advisory instruction*.

WARNING: To prevent electric shock, use only the supplied PDU power cord(s). Also, verify that the facility power receptacle is the correct type, supplies the required voltage, and is properly grounded.

Connect each Director 2/140 power supply to a power distribution unit receptacle using a PDU power cord as shown in Figure 5.

NOTE: To ensure redundancy, install an second optional PDU and connect each PDU power cord to a separate PDU. Also note that the Director 2/140 does not have a power switch. Therefore, the Director 2/140 powers on when its power cords are connected to facility power.

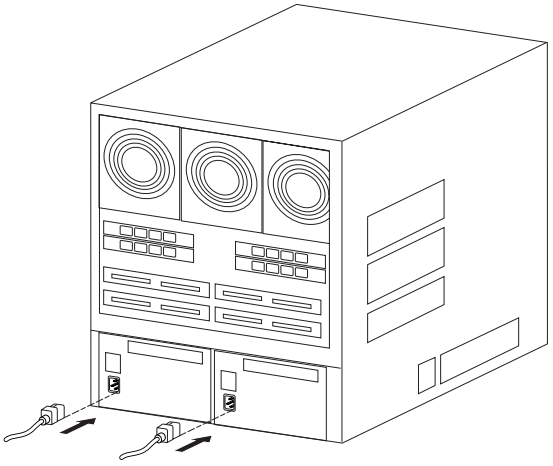

Figure 5: AC power connections

Power-On Self Test

Once the Director 2/140 is connected to a power source, a Power-On Self Test (POST) is initiated. The following sequence of events occur during the POST:

1. Amber LEDs on both CTP cards and all FPM cards illuminate momentarily.
2. The green LED on each CTP card (active and backup) lights as the card is tested and FPM cards are tested.
3. Green LEDs associated with Fibre Channel ports sequentially illuminate as the ports are tested.

After successful POST completion, the green power LED on the front bezel, green LED on the active CTP card, and green PWR OK LEDs on both power supplies remain illuminated.

If a POST error or other malfunction occurs, refer to the “Maintenance Analysis Procedures” section in the *hp StorageWorks director 2/140 service manual*.

Further Setup

For additional information on installing and configuring the Director 2/140, please see the *hp StorageWorks director 2/140 installation guide*.