StorageWorks™ Solutions

Enterprise Storage Arrays Installation Guide

This guide describes the site preparation, installation, inspection, power, and access procedures for the Enterprise Storage Arrays (ESA) SW800-series cabinets. For detailed information about a specific ESA system refer to the user's guide.

The ESA Site

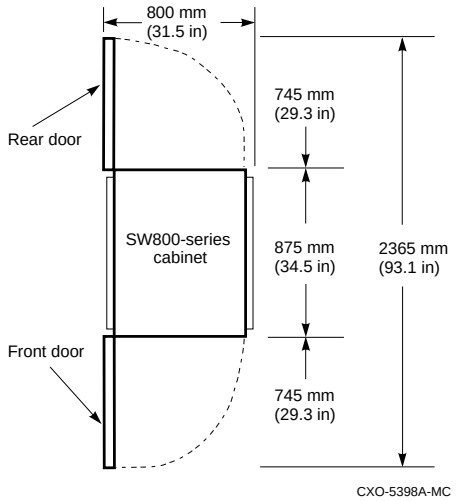
To ensure the proper operation of an ESA system your site must meet the minimum requirements described in the is section.

Installation Area

You can install these CE-Mark Class A certified systems in an office or commercial environment providing all the environmental and electrical specifications are met. Installation in a computer room is recommended.

Items to consider when selecting an installation area include the following:

- The floor can bear the cabinet weight of approximately 535 kg (1180 lb) concentrated on the small area of the four leveler feet.
- Each cabinet is located within 20 m (66 ft) of the host system.
- Cabinets positioned adjacent to other enclosures require cable service loops to permit you to move the cabinet for service.
- Although the "footprint" of the cabinet is 800 mm (31.5 in) wide by 875 mm (34.4 in) deep, an additional 745 mm (29.3 in) is required in *both* the front and rear for opening and closing the doors.



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Site Preparation (Continued)

Power Requirements

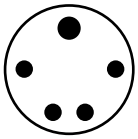
The power requirements for each ESA system is either:

- 120/208 V ac, 60 Hz, 3 phase, Y (Wye), 24 A per phase

or

- 220–240/380–415 V ac, 50 Hz, 3 phase, Y (Wye), 16 A per phase.

Each cabinet cable distribution unit (CDU) has a 4.4 m (14.5 ft) power cable with one of the following plugs:

60 Hz Systems	50 Hz Systems
NEMA (National Electronics Manufacturers Association) L21-30P plug  NEMA L21-30P 5-wire	IEC (International Electrotechnical Commission) 309 plug  IEC 309 5-wire, 4-pole,

Equipment Grounding

These cabinets are connected to other cabinets by one or more interface bus cables. To ensure proper operation it is mandatory that the all interconnected devices share a common ground. This grounding is provided by ac power receptacles that meet the following conditions:

- All power outlets have ground connections.
- The power outlet ground connection is isolated from the neutral connection.
- All power outlet grounds are connected to the same power distribution panel.
- All devices connected to the power distribution system are either UL (Underwriters Laboratories) or IEC approved.

Configuring the ESA System

All ESA systems are physically configured prior to shipment with all the controllers, storage devices, power units, and cables installed. For detailed information about controller and SBB shelf locations, cabling, and similar information refer to your system user's guide.

CAUTION

Your ESA system is not operational until you connect each SCSI array controller set to a host SCSI adapter and configure the RAID (redundant array of independent disks) sets using the StorageWorks Command Console (SWCC) program.

Product Specifications

The physical, electrical, and environmental specifications for these systems are provided for reference.

Physical Specifications			
Characteristic	**Specification**		
Dimensions	**Height** 1700 mm (67 in)	**Width** 800 mm (31.5 in)	**Depth** 875 mm (34.4 in)
Weight	**Empty** 265 kg (585 lb)	**Fully Configured** 535 kg (1180 lb)	

Electrical Specifications		
Agency Compliance	CE-Mark, FCC, UL, IEC, CSA, TÜV, and VDE	
ac Input Power Requirements	**60 HZ** 120/208 V, 3 Phase Y 24 A per phase	**50 HZ** 380–415 V, 3 phase Y, 16 A per phase

Optimum Operating Environment (Recommended to ensure optimum operation.)	
Temperature	+18°C to +24°C (+64°F to +75°F) with: • An AVERAGE rate of change of 3°C/hour maximum. • A STEP change of 3°C or less.
Relative humidity	40% to 60% (noncondensing) with a STEP change of 10% or less (noncondensing)
Altitude	Up to 2400 m (8000 ft)
Air quality	Not to exceed a maximum of 500,000 particles, 0.5 micron or larger, per cubic foot of air.
Nominal airflow	600 cubic ft/minute

Minimum Operating Environment (Proper operation is not assured unless these limits are maintained.)	
Temperature	+10°C to +40°C (+50°F to +104°F) Reduce rating by 1.8°C for each 1000 m altitude (1.0°F for each 1000 ft altitude)
Humidity	10% to 85% at maximum wet bulb temperature of +32°C (+90°F) and a minimum dew point of +2°C (+36°F)
Altitude	Up to 2400 m (8000 ft)
Air quality	Not to exceed a maximum of 500,000 particles, 0.5 micron or larger, per cubic foot of air.
Nominal airflow	600 cubic ft/minute

Nonoperating Environment (Shipping or Short Term Storage)	
Temperature	–40°C to +66°C (–40°F to +151°F)
Relative humidity	10% to 80% noncondensing
Altitude	4900 m (16,000 ft)

Thermal Stabilization

To ensure the proper operation of a Digital storage system, it recommended that ambient temperature be in the range of +18°C to +29°C (+65°F to +85°F). If the system has been exposed to ambient temperatures outside of this range it is recommended that you thermally stabilize the system.

CAUTION

Always stabilize storage systems in the operating environment prior to operation. Otherwise, the media or associated electronics may be damaged when you apply power.

When This Condition Exists …	You Must …
Condensation is visible on the outside of the storage unit.	Stabilize the storage system in the operating environment for 6 hours or until the condensation is no longer visible, whichever is longer. Do not operate the system until it is fully stabilized.
Condensation is not visible on the outside of the storage unit but it has been exposed for an extended period of time to an ambient temperature that is either: • *Less than* +18°C (+64°F) or • *Greater than* +24°C (+75°F).	Thermally stabilize the system for the time listed in the following table.

Storage Temperature Range		Minimum
°C	°F	Stabilization Time
60 to 66	140 to 151	3 hours
50 to 59	122 to 138	2 hours
40 to 49	104 to 120	1 hour
30 to 39	86 to 102	30 minutes
18 to 29	64 to 84	None
10 to 17	50 to 63	30 minutes
0 to 9	32 to 48	1 hour
-10 to -1	14 to 30	2 hours
-20 to -11	-4 to 12	3 hours
-30 to -21	-22 to -6	4 hours
-40 to -31	-40 to -24	5 hours

Moving the Cabinet

With the leveler legs retracted *two or more* people can roll the cabinet to its final installation position.

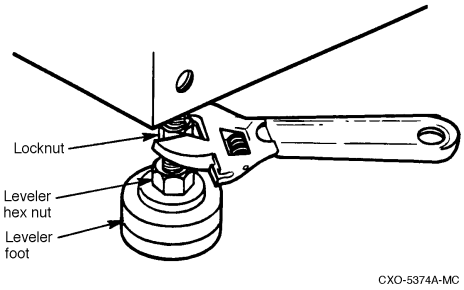
WARNING

To prevent the cabinet from tipping over and injuring personnel you must use extreme caution. Be sure that all the leveler feet are fully raised. Do not roll the cabinet across a carpeted floor.

Leveling the Cabinet

After you have moved the cabinet to the installation area, you must level it.

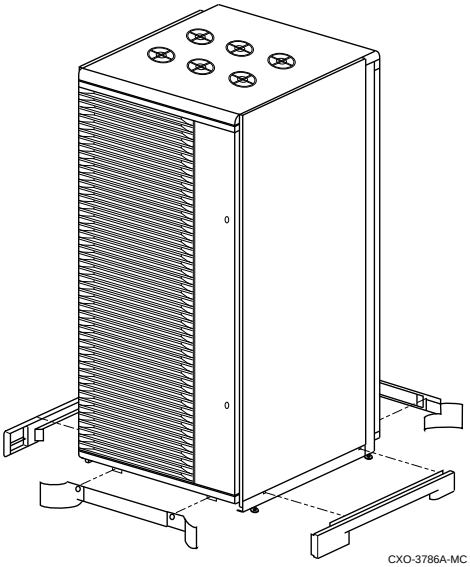
1. Loosen the locknut on each leveler footer by turning them clockwise.



2. Remove the weight on the casters by turning the leveler hex nut on each leveler foot clockwise until the casters spin freely.
3. Level the cabinet by adjusting the leveler feet with the leveler hex nut.
4. Turn the leveler feet locknuts counter-clockwise until tight.

Installing the Skirt Kit

You can install the optional skirt kit using the following procedure.



1. Identify the left, right, front, and rear skirts and place them next to the cabinet.
2. Position a skirt against the cabinet and align the fasteners with mounting holes in the cabinet base.
3. Press in on each fastener to mount the skirt.
4. Repeat Steps 2 and 3 for the remaining skirts.

The small of amount of up-and-down play allows you to align the skirts.

To remove a skirt use a screwdriver to turn the fasteners one-quarter turn clockwise.

Inspecting the Cabinet

Before you start the system, open the front and rear doors and inspect the system to ensure the following conditions are met.

1. All hardware is fastened securely and there are no loose pieces in the cabinet.
2. The cabinet fans in the top and the rear-mounted fan tray turn freely.
3. The site power is compatible with the cabinet power requirements listed on the cabinet identification label (located in the rear of the cabinet).
4. All the CDU ac power cords are firmly seated.
5. All the controller and SBB shelf power supply power cords are firmly seated.
6. All the *internal* controller-to-SBB shelf SCSI bus cables are firmly seated.
7. The cache module-external cache battery (ECB) power cables are firmly seated.
8. The cabinet is located close enough to the ac power receptacles to connect the CDU primary and auxiliary ac power cables.
9. The cabinet is located close enough to the host or other cabinets to connect the *external* SCSI bus cable.

Note

It is recommended, but not mandatory, that each external cable have at least a 1 m (3.3 ft) service loop to permit moving the cabinet for servicing without disconnecting the power or data cables.

Starting the System

After you inspect the cabinet and are positive that everything is correctly installed, you may apply power to the cabinet and check the storage system for proper operation.

Complete the following procedure to ensure that the storage array is operational.

1. Place the circuit breakers on each CDU (cable distribution unit) to OFF position.
2. Ensure that the host computer data is inactive.
3. Connect the power cable from the primary CDU to the primary power source.
4. Connect the power cable from the auxiliary CDU to the auxiliary power source.

CAUTION

Connecting a SCSI cable to a controller or an adapter during a data transfer or when power is applied can corrupt data or cause a loss of data. To avoid these conditions do not connect SCSI cables when power is applied.

5. Connect the HSZ50-series controller SCSI bus cables to the host adapters.

CAUTION

The ESA system HSZ50-series controllers are qualified for use only with KZPAA-series, KZPSA-series, and KZTIA-series host SCSI bus adapters.

6. Apply power to the host SCSI adapter.
7. Place the circuit breakers on each ESA system CDU to the ON position.
8. Verify that the cabinet fans in the top and those in the rear-mounted fan tray are operating.
9. Verify that both green status LEDs on all the shelf power supply SBBs are ON.
10. Ensure that the controller is operational.
11. With power applied to the ESA system you can now configure the RAID sets as described in the ESA system user's guide.

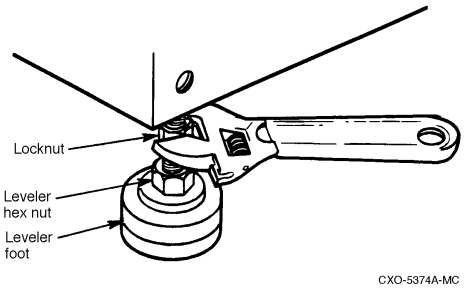
Removing the Cabinet Side Panels

When the front and rear doors do not provide enough access for service you may have to remove the side panels. This section describes the procedures for removing the cabinet side panels.

Moving the Cabinet

When cabinets are installed side-by-side it necessary to move the cabinet to have access to the side panels. To do this you must complete the following procedure:

1. Quiesce all the buses and place the CDU circuit breakers to the OFF position.
2. Remove the front and rear skirts.
3. Loosen the locknut on each leveler footer by turning them clockwise.



4. Transfer the weight from the leveler feet to the casters by turning the leveler hex nut until the leveler feet clear the floor.
5. Turn the leveler feet locknuts counter-clockwise until tight.

Removing the Cabinet Side Panels (Continued)

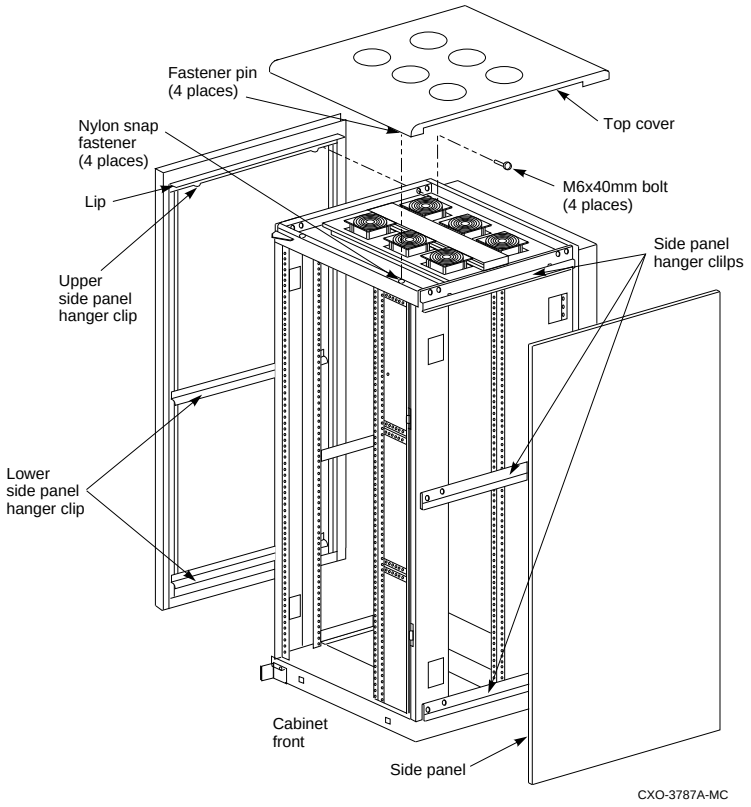
How to Remove the Side Panels

Complete the following procedure after you have positioned the cabinet so you have access to the side panels.

WARNING

The cabinet top cover is too heavy for one person to lift. To prevent personal injury always use at least two people to remove this cover.

1. With the cabinet located for easy access to the side panels, push up on the front and rear edges of the top cover until it is free of the cabinet. Remove the cover.



2. Remove the 4 bolts attaching the 2 side panels to the top cabinet side rails.
3. Grasp the panel by the front and rear edges and lift up until all three side panel hanger clips are free of the cabinet hanger clips.
4. Lift the side panel away from the cabinet.
5. Repeat steps 3 and 4 for the other panel.

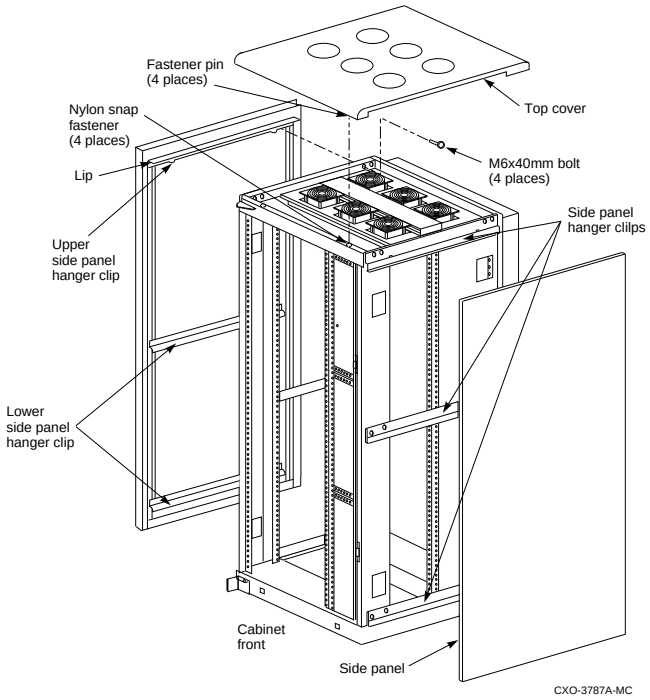
Replacing the Side Panels

The procedure for replacing the side panels is basically the inverse of removal procedure.

How to Replace the Side Panels

Complete the following procedure to replace the side panels.

1. Position a side panel against the cabinet.



2. Grasp a side panel by the front and rear edges and lift it up so that side panel lip is above cabinet upper side panel hanger clip.
3. With the entire side panel surface resting firmly against the cabinet, lower the side panel so that all three side panel hanger clips engage the cabinet side panel hanger clips.
4. Install the side panel bolts through the cabinet side rails into the side panel.
5. Repeat steps 1 through 4 for the other side panel.

WARNING

The cabinet top cover is too heavy for one person to lift. To prevent personal injury always use at least two people to install this cover.

6. Locate the four inset nylon snap fasteners in the top cabinet rails.
7. Orient the top cover so that shortest overhang is at the front of the cabinet.
8. Align the four top cover pins with the four inset nylon snap fasteners.

WARNING

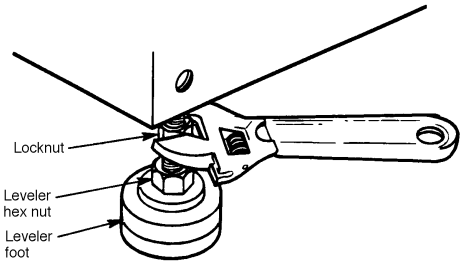
To avoid personal injury be careful that your fingers are not between the top cover and the cabinet when snapping it into place.

9. Lower the cover onto the cabinet and press down on it until it snaps into place.

Replacing the Side Panels (Continued)

Moving the Cabinet

1. Move the cabinet in its original position.
2. Turn the leveler foot locknuts clockwise to loosen them.



3. Transfer the weight from the casters to the leveler feet by turning the leveler hex nuts clockwise until the casters spin freely.
4. Level the cabinet by adjusting the leveler feet with the leveler hex nut.
5. Turn the leveler feet locknuts counter-clockwise until tight.
6. Install the front and rear cabinet skirts.
7. Connect all cables and apply power using the procedures in “Starting the System.”