System Cabinets

42U System Cabinet, Deep Guide
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System Cabinet Overview

You should be familiar with the system cabinet features, system cabinet dimensions and specifications, and Power Distribution Unit (PDU) specifications. This helps you use the system cabinet safely and effectively.

System cabinet features

The system cabinet consists of side panels, front and rear doors, an optional bolt-down kit, an interconnect kit, and PDUs for your equipment. The system cabinet also has an integrated cable management system for efficient cable routing. You can install and use your system cabinet more effectively when you know its features and how to use them.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side panels</td>
<td>System cabinets have lockable, removable, and interchangeable side panels.</td>
</tr>
<tr>
<td>Perforated front and rear doors</td>
<td>System cabinets have removable front and rear doors with a quick release mechanism. Front door is reversible and rear doors are split. Both doors are perforated for cooling.</td>
</tr>
<tr>
<td>Common key</td>
<td>This key unlocks the front doors, rear doors, and side panels.</td>
</tr>
<tr>
<td>Spares kit</td>
<td>This kit includes extra clip nuts, screws, a clip nut insertion tool, two Allen hinge screws, a roll of velcro cable management strapping, and cabinet keys.</td>
</tr>
<tr>
<td>Cable access</td>
<td>Cable pass-throughs are built into the top and bottom of the cabinet, as well as between the bottom of the rear door and the frame.</td>
</tr>
<tr>
<td>Cable management</td>
<td>Your system cabinet has a floating ring cable management with Velcro that you can attach to the system cabinet rear frame or use as a floating cable tie for your equipment cables.</td>
</tr>
<tr>
<td>Support rails</td>
<td>The number of support rails you receive depends on your configuration. The empty system cabinet is shipped with no support rails installed.</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Blanking panels</td>
<td>The number and size of blanking panels you receive depends on your configuration. The empty system cabinet is shipped with no blanking panels installed.</td>
</tr>
<tr>
<td>Bolt-down kit</td>
<td>This optional kit allows you to secure the system cabinet to the data center floor.</td>
</tr>
<tr>
<td>Interconnect kit</td>
<td>This optional kit allows you to connect multiple system cabinets to each other.</td>
</tr>
<tr>
<td>Support rail kit</td>
<td>This optional kit allows for additional rails to be installed to support additional equipment. The number of rail kits you receive depends on the amount and type of equipment you ordered or are installing in the empty system cabinet.</td>
</tr>
</tbody>
</table>

### System cabinet dimensions and specifications

The system cabinet dimensions and specifications are mentioned in two types of units of measurements: U.S and Metric. You can choose the appropriate unit of measurement depending on what is followed in your geographic region.

### General system cabinet characteristics

The following table lists the system cabinet key characteristics:

<table>
<thead>
<tr>
<th>Dimension</th>
<th>U.S.</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>78.8 in.</td>
<td>200.1 cm</td>
</tr>
<tr>
<td>Height in shipping crate</td>
<td>85.8 in.</td>
<td>218 cm</td>
</tr>
<tr>
<td>Depth</td>
<td>43.3 in</td>
<td>109.9 cm</td>
</tr>
<tr>
<td>Depth in shipping crate</td>
<td>56 in.</td>
<td>142.2 cm</td>
</tr>
<tr>
<td>Floor to bottom of cabinet clearance</td>
<td>1.5 in.</td>
<td>3.9 cm</td>
</tr>
<tr>
<td>Width</td>
<td>23.7 in.</td>
<td>60.3 cm</td>
</tr>
<tr>
<td>Width in shipping crate</td>
<td>31 in.</td>
<td>78.4 cm</td>
</tr>
<tr>
<td>Total rack space, 42U</td>
<td>73.5 in.</td>
<td>186.7 cm</td>
</tr>
<tr>
<td>Rail load capacity</td>
<td>125 lbs</td>
<td>56.7 kg</td>
</tr>
<tr>
<td>Dimension</td>
<td>U.S.</td>
<td>Metric</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>Empty weight</td>
<td>307 lbs</td>
<td>138 kg</td>
</tr>
<tr>
<td>Fully loaded ship weight</td>
<td>Up to 1,807 lbs</td>
<td>Up to 820 kg</td>
</tr>
<tr>
<td>Fully loaded static weight</td>
<td>Up to 2,307 lbs</td>
<td>Up to 1,046 kg</td>
</tr>
<tr>
<td>Front service clearance</td>
<td>30 in.</td>
<td>76.3 cm</td>
</tr>
<tr>
<td>Rear service clearance</td>
<td>30 in.</td>
<td>76.3 cm</td>
</tr>
<tr>
<td><strong>Note:</strong> The rear door is split. Actual minimum rear clearance is approximately 1/2 the recommendation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum side clearance for panel removal</td>
<td>24 in.</td>
<td>61 cm</td>
</tr>
<tr>
<td>Minimum top clearance</td>
<td>12 in.</td>
<td>30 cm</td>
</tr>
</tbody>
</table>

**System cabinet external features and cable routing access points**

The following illustration shows the front, rear, and side views of the system cabinet and also shows the clearance distance between the floor and the bottom of the system cabinet.
The following illustration shows where you can run cable bundles from the floor of your data center to the bottom of the system cabinet for connection to your equipment in the system cabinet:

**Warning:** To prevent your system cabinet from falling through the data center floor, do not attempt to roll the system cabinet over a floor opening that is wider than the cable access opening at the bottom of the system cabinet.

The following illustration identifies the point where the component cables can be routed through the top of the system cabinet to meet your overhead cabling needs:

**Supported PDU types and specifications**

The system cabinet supports different Power Distribution Unit (PDU) types. The PDUs are compliant with NEMA and IEC.

The following table lists the supported PDU types that can be used in the system cabinet. It lists the power, cooling, and other characteristics of the supported PDU types for the system cabinet:
<table>
<thead>
<tr>
<th>PDU description</th>
<th>NetApp part #</th>
<th>Packing list description</th>
<th>PDU current capacity in amps—per side (redundant power capacity)</th>
<th>Approx. max. available power per cabinet (current limit x line voltage)</th>
<th>BTU/hr. (worst-case)</th>
<th>Per system cabinet side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-phase 20A with NEMA power cords</td>
<td>X8711-R6</td>
<td>PDU, 1-Phase, 8 Outlet, 20A, Universal, R6</td>
<td>32</td>
<td>6.7 kW @ 208V</td>
<td>22,717</td>
<td>16</td>
</tr>
<tr>
<td>Single-phase 20A with IEC or Australia power cords</td>
<td>X8712-R6</td>
<td>PDU, 1-Phase, 16 Outlet, 30A, NEMA, R6</td>
<td>24</td>
<td>5 kW @ 208V</td>
<td>17,038</td>
<td>16</td>
</tr>
<tr>
<td>Single-phase 30A NEMA</td>
<td>X8712B-R6</td>
<td>PDU, 1-Phase, 8 Outlet, 30A, NEMA, R6</td>
<td>48</td>
<td>10 kW @ 208V</td>
<td>34,075</td>
<td>16</td>
</tr>
<tr>
<td>Single-phase 30A NEMA</td>
<td>X8712C-R6</td>
<td>PDU, 1-Phase, 12 Outlet, 30A, NEMA, R6</td>
<td>48</td>
<td>10 kW @ 208V</td>
<td>34,075</td>
<td>24</td>
</tr>
<tr>
<td>PDU description</td>
<td>NetApp part #</td>
<td>Packing list description</td>
<td>PDU current capacity in amps—per side (redundant power capacity)</td>
<td>Approx. max. available power per cabinet (current limit x line voltage)</td>
<td>BTU/hr. (worst-case)</td>
<td>Per system cabinet side</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------</td>
<td>--------------------------</td>
<td>---------------------------------------------------------------</td>
<td>------------------------------------------------------------------</td>
<td>----------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Single-phase 32A IEC</td>
<td>X8713-R6</td>
<td>PDU, 1-Phase, 16 Outlet, 30A, IEC, R6</td>
<td>30</td>
<td>6.9 kW @ 230V</td>
<td>23,550</td>
<td># of outlets —C13: 16; # of power cords: 1 per side; tethered; limited to 30A by 2x 15A breakers</td>
</tr>
<tr>
<td>Single-phase 32A IEC</td>
<td>X8713B-R6</td>
<td>PDU, 1-Phase, 8 Outlet, 30A, IEC, R6</td>
<td>48</td>
<td>11.0 kW @ 230V</td>
<td>37,680</td>
<td># of outlets —C13: 16; # of power cords: 2 per side; 4 plugs per cabinet; limited to 24A input/PDU</td>
</tr>
<tr>
<td>Single-phase 32A IEC</td>
<td>X8713C-R6</td>
<td>PDU, 1-Phase, 12 Outlet, 30A, IEC, R6</td>
<td>64</td>
<td>14.7 kW @ 230V</td>
<td>50,239</td>
<td># of outlets —C13: 24; # of power cords: 2 per side</td>
</tr>
<tr>
<td>3-phase 30A Delta</td>
<td>X8719A-R6, X8720A-R6</td>
<td>PDU, 3-phase, 24-Outlet, 30A, NEMA, 4-Pin, R6</td>
<td>41.5</td>
<td>8.6 kW @ 208V</td>
<td>29,461</td>
<td># of outlets —C13: 24; # of power cords: 1 per side (L15-30 or L21-30)</td>
</tr>
<tr>
<td>3-phase 32A Wye</td>
<td>X8718A-R6</td>
<td>PDU, 3-phase, 24-Outlet, 32A, IEC, R6</td>
<td>96</td>
<td>22.1 kW @ 230V</td>
<td>75,359</td>
<td># of outlets —C13: 24; # of power cords: 1 per side</td>
</tr>
</tbody>
</table>
PDU current overload limit calculation

You can calculate the Power Distribution Unit (PDU) current overload limit and determine if the system cabinet has the capability to support the equipment you have. The PDU current overload limit calculates how much current, in amps, your equipment requires and subtracts it from the system cabinet current capacity.

If the value generated by PDU current overload limit calculation is greater than zero, your system cabinet PDUs have the capability (enough electrical current) to support the equipment you want to install in the system cabinet. If the calculation is less than zero, your system cabinet PDUs do not have the capacity to support your equipment and you must remove one or more components from the system cabinet configuration.

The formula is as follows:

\[
PDU\ current\ overload\ limit = PDU\ current\ capacity - (\text{Equipment}\ A\ worst-case\ current\ at\ 200V\ \times\ \text{quantity})\ - (\text{Equipment}\ B\ worst-case\ current\ at\ 200V\ \times\ \text{quantity})\ ...\ - (\text{Equipment}\ X\ worst-case\ current\ at\ 200V\ \times\ \text{quantity})
\]

Example

Your FAS3170 system has the following characteristics:

- Two FAS3170 storage controllers with two controller modules at 4.69A each, or 9.38A required by the storage controllers
- Five DS4243 disk shelves with 300-GB SAS disks at 2.8A
- 30A, single-phase NEMA (X8712-R6) PDU at 24A capacity
- No switches are installed

Calculation for the FAS3170:

\[
24-(4.69 + 4.69)-(2.8\times5) = 0.62
\]

In the example, the value of the calculation is positive, indicating that your system cabinet can accommodate the electrical current requirements of your equipment.
Preparing for installation of system cabinets

You must prepare your site to meet the electrical and floor space requirements prior to unpacking and installing the system cabinet. To prevent any damage to the system cabinet or to the floor, you can follow guidelines while moving the system cabinet around the site.

Steps

1. Ensure that your site meets the system cabinet electrical requirements.
2. Ensure that your site meets the system cabinet space requirements.
3. Gather the required tools and equipment.

   You must gather the following tools and equipment:
   • The appropriate hardware guide for your disk shelves
   • The appropriate *Installation and Setup Instructions* for your system
   • #1 and #2 Phillips screwdrivers
   • Allen wrench for the system cabinet hinges
   • Leveling tool for leveling the system cabinet
4. Verify that the system cabinet components are packaged with an empty system cabinet.

   You should find the following system cabinet contents packaged with an empty system cabinet:
   • One spares kit
   • The appropriate number of blank panels and support rails for your configuration, if you are installing an empty system cabinet
   • Power cords appropriate for your location
5. Verify that you have the spares kit contents are shipped with the system cabinet.

   You should find the following components in the spares kit:
   • Four 10-32 x 0.75 inch Phillips pilot point screws
   • Two Allen hinge screws
   • Four 10-32 clip nuts
   • One clip nut insertion tool
   • Two master key copies
   • One roll of velcro cable management strapping
6. Verify that you have the universal bolt-down kit components if you have ordered this kit through your NetApp sales representative.

   The universal bolt-down kit is an optional kit that provides additional stability to the system cabinet. You should find the following components in the universal bolt-down kit:
   • Two left side bolt-down shoes
• Two right side bolt-down shoes
• Four pads

7. Verify that you have the cabinet interconnect kit components if you have ordered this kit through your NetApp sales representative.

You can use the cabinet interconnect kit that is an optional kit to connect two or more system cabinets together. You should find the following components in the cabinet interconnect kit:
• Four interconnect brackets
• Eight B5.5 x 13 Phillips head mounting screws

8. Verify that you have the support rail kit components if you have ordered this kit through your NetApp sales representative.

You can use the support rail kit that is an optional kit to add additional support rails to the system cabinet. You should find the following components in the support rail kit:
• One left and one right support rail
• Two threaded roll-forming screws

**Caution:** The rails and rail kit are designed to fit only the NetApp 42U system cabinet. Do not use the rails or rail kit from other system cabinets because they are not designed to support NetApp equipment.

### Rules for moving the system cabinet

To reduce the possibility of injury or damage to your equipment, you must follow specific rules whenever you move the system cabinet.

**Always**
• Remove the side panels from the system cabinet before moving it.
• Close or remove the system cabinet doors when moving the system cabinet to prevent any damage to the doors.
• Push or pull the system cabinet by the frame at the middle of the system cabinet or lower. Do not push or pull the system cabinet from the top one-third of the system cabinet frame.
• Use three people to move the system cabinet:
  ◦ Unpacking: Two people must be at the rear of the system cabinet to guide it down the ramp; the third person must push the system cabinet from the front.
  ◦ Moving: Two people must be at the front of the system cabinet to push it; the third person must guide the system cabinet from the rear.
• When practical, use particle board or other protective material over the flooring on which you are moving the system cabinet to protect the flooring and to give the system cabinet a smooth surface to roll on.
• When practical, roll the system cabinet over floor transitions one caster at a time with the system cabinet skewed so one leading caster meets the transition before the other. This prevents a potential tipping hazard.
• Move the system cabinet slowly to prevent tipping.

Never
• Use the perforated portion of the doors to push the system cabinet.
• Use an open door to move the system cabinet.
• Push the system cabinet from the top-half of the system cabinet.

Floor space requirements for unpacking a system cabinet

Before unpacking a system cabinet from a shipping crate, you need to gather specific information about the floor space required for unpacking the system cabinet from the shipping crate.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>U.S.</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping crate ramp length</td>
<td>80 in.</td>
<td>203.2 cm</td>
</tr>
<tr>
<td>Clearance beyond the ramp for cabinet mobility</td>
<td>72 in.</td>
<td>182.9 cm</td>
</tr>
<tr>
<td>Rear clearance to remove the crate shell</td>
<td>75 in.</td>
<td>190.5 cm</td>
</tr>
<tr>
<td>Shipping crate height</td>
<td>80 in.</td>
<td>203.2 cm</td>
</tr>
<tr>
<td>Shipping crate width</td>
<td>31 in.</td>
<td>78.4 cm</td>
</tr>
<tr>
<td>Shipping crate depth</td>
<td>56 in.</td>
<td>142.2 cm</td>
</tr>
<tr>
<td>Shipping crate pallet depth</td>
<td>51 in.</td>
<td>129.5 cm</td>
</tr>
<tr>
<td>Shipping pallet width</td>
<td>42 in.</td>
<td>106.6 cm</td>
</tr>
<tr>
<td>Shipping pallet and crate height</td>
<td>86 in.</td>
<td>218.4 cm</td>
</tr>
</tbody>
</table>
System cabinet unpacking instructions

To remove the system cabinet from the packing crate, you must perform a specific sequence of steps.

1. Remove external bag and cut straps (x3).
2. Cut straps (x2)
3. Cut straps (x2)
4. Attach ramp to pallet on side labeled UNLOAD: align ramp end bolts with the holes on the pallet and lower it into place.
5. Remove side panels
6. Remove cabinet
7. Move to setup location

Prepared for installation of system cabinets | 15
Setting up a preinstalled system cabinet

You can order a system cabinet with preinstalled storage controllers and disk shelves. Several system cabinets can be connected together by using the optional interconnect kit, and they can be anchored to the data center floor by using the optional bolt-down kit.

Connecting system cabinets together

You can connect system cabinets together by using the optional cabinet interconnect kit. It is recommended that you install the kit to prevent the cabinets from pulling apart and damaging system cables.

Steps

1. Place the system cabinets close together.

   The cabinets should be arranged similarly to the following illustration, with the cabinet with the nodes in the middle, and the cabinets with the disk shelves on either side. The sides of the cabinets should be close, but do not need to touch each other.
2. Unlock the adjacent side panels of the system cabinets, and then lift each side panel until it clears the frame and set it aside.

3. Remove the front and rear doors whose hinges are on the edge where the cabinets meet. Make sure that you set the removed doors in a safe place so that they are not accidentally damaged.

4. Move the system cabinets completely together, and then align and level them by adjusting the four leveling feet at the bottom of the system cabinets.

5. Install the interconnect brackets.

The cabinet interconnect kit includes four interconnect brackets and B5.5 x 13 Phillips screws per bracket. You use two interconnect brackets in the front of the cabinet, one near the top and one
near the bottom, and two interconnect brackets at the back of the cabinets, one near the front and one near the back.

a. Align the front top interconnect bracket with the screw holes in the system cabinet frame uprights.

b. Secure the bracket to the system cabinet frame by using the two bracket screws that came with the bracket.

Do not tighten the screws completely. This enables you to move the system cabinet as needed.

c. Align the front bottom interconnect bracket with the screw holes in the system cabinet frame uprights and secure the bracket to the system cabinet frame.

d. Repeat these steps for the rear two interconnect brackets.

6. Repeat the process for any remaining system cabinets.

7. Tighten all interconnect bracket screws.

8. Reinstall the front and rear doors.

**Installing the universal bolt-down kit**

You can secure the system cabinet to the floor by installing the optional universal bolt-down kit. Installing the kit prevents the system cabinets from being rolled out of position.

**About this task**

Use the following illustration for reference when installing the universal bolt-down kit:
Steps

1. Mark the area on your floor where the system cabinet will be installed, and then roll the cabinet into place.

2. Install a shoe pad on each rear bolt-down shoe, and then slide the rear bolt-down shoes onto the bottom of the system cabinet near the leveling feet.

3. Mark the anchoring points where the rear bolt-down shoes will be anchored to the floor, and then loosely anchor them to the floor.

   Be sure to use the appropriate bolt sizes and types for your floor.

4. Install a shoe pad on each front bolt-down shoe, and then slide the front bolt-down shoes onto the bottom of the system cabinet near the leveling feet.

5. Mark the anchoring points where the front bolt-down shoes will be anchored to the floor, and then tightly anchor them to the floor.

6. Tighten the rear bolt-down shoes to the floor.

**Powering on the system cabinet**

To power on the system cabinet, you must perform a specific sequence of steps.

**About this task**

The following illustration shows the rear of the system cabinet and the power cable routing slot below the rear door:
Right and left rear doors
The left rear door has a cable routing gap at the bottom of the door.

Steps

1. Ensure that all equipment is plugged into a cabinet PDU.
2. Feed the PDU power cables through an opening in the system cabinet.
   Use one of the following openings in the system cabinet to feed the PDU power cables:
   • The top of the system cabinet
   • Between the rear door bottom and frame of the system cabinet
   • Through the floor opening and under the system cabinet
3. Turn off the power switches on the PDUs.
4. Plug each PDU power cable into individual AC power sources that are on separate AC circuits.
5. Turn on the power switches to the PDUs.
6. Turn on the power to your components and boot the system.
Installing the system cabinet doors

After you install the equipment in the system cabinet, you must reinstall the front and rear doors. To install the front and rear doors, you must perform a specific sequence of steps.

About this task

The following illustration shows how to install the front and rear doors of the system cabinet:

<table>
<thead>
<tr>
<th></th>
<th>Grounding wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Upper hinge block</td>
</tr>
<tr>
<td>3</td>
<td>Hinge pin</td>
</tr>
</tbody>
</table>

Steps

1. Align the bottom corner of the front door with the pin on the lower front hinge.
2. Lift the door over the bottom retaining pin and lower it into place.

3. Lift the locking latch at the top of the door. Tilt the door to align the hinge pin with the hinge knuckle, releasing the locking latch when the hinge pin is aligned with the hinge knuckle.

4. Reconnect the grounding cable to the top inside of the door.

5. Repeat Steps 1 through 4 for the rear doors.
Setting up an empty system cabinet

You can order an empty system cabinet if you already have the storage system components. To set up an empty system cabinet, you must remove the system cabinet doors and panels, install the existing storage equipment within the system cabinet, cable the storage system components to the PDU, install the system cabinet doors, and power on the system cabinet.

Removing the system cabinet side panels

You can remove the system cabinet side panels to gain easy access to the interior of the system cabinet and components.

About this task

To remove the system cabinet side panels, you must perform a specific sequence of steps. The following illustration shows how to remove system cabinet side panels.
Steps

1. Unlock the side panel, tilt the panel about 15 degrees away from the bottom of the system cabinet, and then lift it until it clears the frame and set the panel aside.

2. Repeat Step 1 for the other side panel, if needed.
Removing the system cabinet doors

You can remove the system cabinet doors to gain easy access to the posts (EIA rails) inside the system cabinet.

About this task

To remove a system cabinet door, you must perform a specific sequence of steps. The following illustration shows how to remove a system cabinet door:

<table>
<thead>
<tr>
<th></th>
<th>Grounding wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Upper hinge block</td>
</tr>
<tr>
<td>2</td>
<td>Hinge pin</td>
</tr>
</tbody>
</table>
Steps

1. Unlock and open the system cabinet front door.
2. Disconnect the grounding wire from the inside top corner of the door.
3. Lift the hinge pin on the top hinge of the door so that it clears the bottom of the hinge block.
4. Tilt the top of the door slightly so that it clears the hinge block, then lift the door off the bottom hinge pin and set it aside.

Determining equipment space requirements

Before installing the storage system and disk shelves, you must calculate the total space required for the storage system components. Depending on the size of the storage controller and number of disk shelves to be installed, you might need to move, remove, or add support rails before installing your equipment.

About this task

The uprights of the system cabinet are marked in Us, starting from the bottom of the system cabinet. To calculate the total space required for the storage system components, you must perform a specific sequence of steps.

Steps

1. Determine the U height of your storage controller by dividing the height in inches by 1.75 and rounding up to the next closest U.

   Example
   Equipment height of 5 inches/1.75 = 2.85, rounded to 3U.

2. Determine the U height of each disk shelf to be installed, then multiply it by the number of disk shelves.

   Example
   10 DS14 disk shelves of 5.25 inches/1.75 = 3U * 10 disk shelves = 30U required.

3. Add the U space required by both the storage system and disk shelves to get the total required U space.

   Example
   Example: 3U (storage controller) + 30U (disk shelves) = 33U required space.
Removing or installing support rails

To remove or install the support rails, you must perform a specific sequence of steps.

About this task

The following illustration shows how to remove or install the support rails.

Steps

1. Unlock and open the system cabinet rear door.
2. Perform the following steps to remove or install the support rail.

Note: In empty system cabinets, clip nuts are preinstalled in the square holes in 17U to 22U positions on the system cabinet uprights. Move or remove the clip nuts as needed.

<table>
<thead>
<tr>
<th>If you are...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removing the support rail</td>
<td>a. Remove the #2 Phillips screw from the rear inside of the support rail and set the screw aside.</td>
</tr>
<tr>
<td></td>
<td>b. Lift up on the rail to release it from the system cabinet upright, remove it from the system cabinet, and set it aside.</td>
</tr>
<tr>
<td></td>
<td>c. Repeat Steps 1 and 2 for the other support rail.</td>
</tr>
<tr>
<td>If you are...</td>
<td>Then...</td>
</tr>
<tr>
<td>--------------</td>
<td>---------</td>
</tr>
<tr>
<td>Installing the support rail</td>
<td>a. Identify the location for the support rail and note the U number on the front of the upright.</td>
</tr>
<tr>
<td></td>
<td>b. Install clip nuts in the target locations on the system cabinet uprights.</td>
</tr>
<tr>
<td></td>
<td>c. Install the support rail to the target, making sure that the front and rear of the support rail are in the same U location on the front and rear system cabinet upright.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The rail must engage the slots in the system cabinet frame.</td>
</tr>
<tr>
<td></td>
<td>d. Secure the support rail to the upright with the screws that were removed.</td>
</tr>
<tr>
<td></td>
<td>e. Repeat Steps 1 through 4 for the other support rail, making sure that the support rails are anchored in the same locations on each upright.</td>
</tr>
</tbody>
</table>

**Installing the storage controller**

To install the storage controller, you must perform a specific sequence of steps.

**About this task**

The following illustration shows how to install the storage controller:
**Steps**

1. Unlock and open the system cabinet front and rear doors.

2. Calculate the space you need in the system cabinet and arrange the support rails per these requirements.

3. Slide the storage controller on to the appropriate rail in the system cabinet, then secure it to the upright with the mounting screws that come with the storage controller.

   Typically, you install the controllers into the middle of the system cabinet and install the disk shelves above and below the controllers.

   **Note:** You need not ground NetApp equipment to the system cabinet. The equipment is self-grounding.

4. Plug the storage controller power cords into the storage controller power supplies. Ensure that you use the cable management straps and retaining clips on the power cords.

5. Connect the storage controller to the network as described in the appropriate hardware guide.
Installing the disk shelves and switches

To install the disk shelves and switches, you must perform a specific sequence of steps.

About this task

The order in which you install disk shelves into the system cabinet depends on your configuration.

Note: You need not ground NetApp equipment to the system cabinet. The equipment is self-grounding.

Steps

1. Rearrange or install support rails as necessary.
2. Install the disk shelves into the system cabinet.

<table>
<thead>
<tr>
<th>If your configuration has...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>One stack of disk shelves</td>
<td>Install the disk shelves below the controller by completing the following substeps:</td>
</tr>
<tr>
<td></td>
<td>a. Slide the first disk shelf onto the support rail directly below the controller and secure it to the upright with the mounting screws that come with the disk shelf.</td>
</tr>
<tr>
<td></td>
<td>b. Repeat Step 1 for the remaining disk shelves in the stack.</td>
</tr>
<tr>
<td>Two stacks of disk shelves</td>
<td>Install the disk shelves by completing the following substeps:</td>
</tr>
<tr>
<td></td>
<td>a. Install the first disk shelf in stack 1 below the controller by sliding the first disk shelf onto the support rail directly below the controller and secure it to the upright with the mounting screws that come with the disk shelf. Repeat this step for the remaining disk shelves in the stack.</td>
</tr>
<tr>
<td></td>
<td>b. Install the first disk shelf in stack 2 above the controller by sliding the first disk shelf onto the support rail directly above the controller and secure it to the upright with the mounting screws that come with the disk shelf. Repeat this step for the remaining disk shelves in the stack.</td>
</tr>
<tr>
<td>More than two stacks of disk shelves in the system cabinet</td>
<td>Install the disk shelves in the odd-numbered stacks below the controller and the even numbered stacks above the controller.</td>
</tr>
</tbody>
</table>

3. Install the switches at the top of the system cabinet, if present.

4. Plug the disk shelf power cords into the disk shelf power supplies. Ensure that you use the cable management straps and retaining clips on the power cords.
5. Cable disk shelves to the storage controller and to each other, as described in the appropriate disk shelf guide.

6. Cable the switches, if applicable, to the controller.

**Installing the universal bolt-down kit**

You can secure the system cabinet to the floor by installing the optional universal bolt-down kit. Installing the kit prevents the system cabinets from being rolled out of position.

**About this task**

Use the following illustration for reference when installing the universal bolt-down kit:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
</table>
| 1 | Rear bolt-down shoes  
There is one rear bolt-down shoe for the left side and one for the right side.  
Mounting slots in each shoe are 50 mm apart and accept mounting bolts of 14.5 mm in diameter and 24.5 mm in length. The mounting bolts are not included in the kit. |
| 2 | Front bolt-down shoes  
There is one front bolt-down shoe for the left side and one for the right side. |
| 3 | Shoe pad  
Each of the four shoe pads provides a cushion between the system cabinet frame and the bolt-down shoe. |
Steps

1. Mark the area on your floor where the system cabinet will be installed, and then roll the cabinet into place.

2. Install a shoe pad on each rear bolt-down shoe, and then slide the rear bolt-down shoes onto the bottom of the system cabinet near the leveling feet.

3. Mark the anchoring points where the rear bolt-down shoes will be anchored to the floor, and then loosely anchor them to the floor.
   
   Be sure to use the appropriate bolt sizes and types for your floor.

4. Install a shoe pad on each front bolt-down shoe, and then slide the front bolt-down shoes onto the bottom of the system cabinet near the leveling feet.

5. Mark the anchoring points where the front bolt-down shoes will be anchored to the floor, and then tightly anchor them to the floor.

6. Tighten the rear bolt-down shoes to the floor.

Installing the side panels

To install the side panels, you must perform a specific sequence of steps.

About this task

You must perform the following steps in sequence to install the side panels.

Steps

1. Install the interconnect kit and the universal bolt-down kit if required. These kits are optional.

2. Lift the side panel, tilting it about 15 degrees away from the system cabinet bottom and hang it over the lip at the top of the system cabinet frame.

3. Gently push the side panel and lock it in place with the key.

4. Repeat Steps 1 through 2 for the other panel, if appropriate.

5. Connect the storage system components to the Power Distribution Units (PDUs) and boot the system.
Installing a blanking panel in the system cabinet

When you remove a piece of equipment from the system cabinet or you have empty space after installing your equipment into the system cabinet, you must install the equivalent U space in blanking panels to maintain air flow integrity inside the system cabinet.

Steps

1. Unlock and open the system cabinet doors so that you can access the equipment cables in the rear of the system cabinet and the front of the equipment in the front of the system cabinet.

2. Shut down the target piece of equipment, turn off the power to the component, and unplug it from the system cabinet PDUs.

   See the hardware documentation for the component on the NetApp Support Site at mysupport.netapp.com for shutdown information.

3. Remove the component from the system cabinet, as described in the appropriate hardware documentation on the NetApp Support Site at mysupport.netapp.com

4. Determine how much U space you need to cover with blanking panels.

   The blanking panels are either 1U or 2U. You need to cover the empty space with a combination of these blanking panels.

5. Using the clip nut tool or a flathead screwdriver, remove the unused clip nuts from the system cabinet uprights.

6. Starting from the bottom of the open space in the system cabinet, install the blanking panels by completing the following substeps:
a. Align the blanking panel with the empty holes in the system cabinet uprights. Make sure that the top of the blanking panel is on the same U marking on both the left and right system cabinet uprights.
b. Squeeze the side tabs on the blanking panel and push it onto the system cabinet uprights and then release the side tabs when the blanking panel is flush with the system cabinet uprights.
c. Repeat the substeps for any remaining blanking panels.

7. Close and lock the system cabinet front door.

Powering on the system cabinet

To power on the system cabinet, you must perform a specific sequence of steps.

About this task

The following illustration shows the rear of the system cabinet and the power cable routing slot below the rear door:
Steps

1. Ensure that all equipment is plugged into a cabinet PDU.
2. Feed the PDU power cables through an opening in the system cabinet.
   Use one of the following openings in the system cabinet to feed the PDU power cables:
   - The top of the system cabinet
   - Between the rear door bottom and frame of the system cabinet
   - Through the floor opening and under the system cabinet
3. Turn off the power switches on the PDUs.
4. Plug each PDU power cable into individual AC power sources that are on separate AC circuits.
5. Turn on the power switches to the PDUs.
6. Turn on the power to your components and boot the system.
Installing the system cabinet doors

After you install the equipment in the system cabinet, you must reinstall the front and rear doors. To install the front and rear doors, you must perform a specific sequence of steps.

About this task

The following illustration shows how to install the front and rear doors of the system cabinet:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Grounding wire</td>
</tr>
<tr>
<td>2</td>
<td>Upper hinge block</td>
</tr>
<tr>
<td>3</td>
<td>Hinge pin</td>
</tr>
</tbody>
</table>

Steps

1. Align the bottom corner of the front door with the pin on the lower front hinge.
2. Lift the door over the bottom retaining pin and lower it into place.

3. Lift the locking latch at the top of the door. Tilt the door to align the hinge pin with the hinge knuckle, releasing the locking latch when the hinge pin is aligned with the hinge knuckle.

4. Reconnect the grounding cable to the top inside of the door.

5. Repeat Steps 1 through 4 for the rear doors.
Replacing PDUs

You can replace a single-phase or a 3-phase 30A Power Distribution Unit (PDU) either during a PDU failure or to achieve higher power capacity. You can replace a PDU while the system cabinet is receiving power, without interrupting service to the components in the system cabinet.

Removing a single-phase PDU

To remove a single-phase Power Distribution Unit (PDU), you must perform a specific sequence of steps.

**Steps**

1. Ground yourself to the system cabinet, make sure the target PDU is off, and then unplug the target PDU from the AC wall power source.
2. Remove the side panel.
3. Disconnect the PDU power cable from the power source.
4. Flip the PDU power cord retainer clip off the shank of the component power plug, and then remove the power cord from the PDU.
5. Repeat Step 4 for the remaining component power cords plugged into the target PDU.
6. Remove the bottom screw or screws from the PDU frame with a #3 Phillips screwdriver, then remove the top screw or screws. Save these screws for the replacement PDU.

Installing a single-phase PDU

To install a single-phase Power Distribution Unit (PDU), you must perform a specific sequence of steps.

**Steps**

1. Check the replacement PDU, making sure that the power switch is off.
2. Ground yourself to the system cabinet, then align the PDU screw holes with the holes in the system cabinet frame.
3. Insert a screw or screws in the top hole or holes of the PDU and tighten them enough to support the PDU.
4. Align the screw holes for the bottom PDU, insert the screw or screws, and then tighten all screws.
5. Install the side panel.
6. Plug the system components into the new PDU and ensure that you lock the plugs in place with the retainer clips, if applicable.

7. Plug the PDU into an easily accessible AC outlet, then turn on the PDU.

8. Close and lock the back of the system cabinet.

Removing a 3-phase 30A PDU

To remove a 3-phase 30A Power Distribution Unit (PDU), you must perform a specific sequence of steps.

About this task

The following illustration shows how to turn off the circuit breakers while removing a 3-phase 30A PDU:

1. Circuit breaker switches
Steps

1. Remove the side panel.
2. Turn off the circuit breakers on the old PDU, and then unplug the old PDU from the AC power source.
3. Ground yourself to the system cabinet, and then unplug the power cords from each of the system components and from the PDU.
4. Remove the screws from the PDU frame, bottom screw first, with a Phillips screwdriver.
   **Note:** Ensure that you support the PDU with one hand while you remove the last screw from the PDU. This prevents the PDU from dropping or falling toward you after the screw is removed.
5. Remove the old PDU from the system cabinet and set it aside.
6. Install a 3-phase 30A PDU.

**Installing a 3-phase 30A PDU**

To install a 3-phase 30A Power Distribution Unit (PDU), you must perform a specific sequence of steps.

**About this task**

The following illustration shows how to mount the brackets on a PDU while installing a 3-phase 30A PDU:

**Attention:** You cannot install 3-phase 30A PDUs in the older 42U system cabinets that have crossbar supports on the sides of the system cabinet.
Steps

1. Attach the top and bottom mounting brackets to the back of the PDU, using the four M4 x 6 mm screws, two screws per mounting bracket.
   You can rest the PDU on the lower horizontal cross brace while you are installing the PDU mounting screws through the bracket.

2. While supporting the replacement PDU, align the slot on the mounting bracket of the PDU with the top holes of the frame on the inside of the system cabinet, and then secure the PDU to the system cabinet frame with two M5.5 x 13 mm screws.

3. Secure the bottom of the PDU to the system cabinet frame with two M5.5 x 13 mm screws.

4. Ensure that all the circuit breakers are in the Off position.
   If the circuit breakers are not in the Off position, push a small screwdriver or straightened paper clip into the slot to the right of the Off label to trip the circuit breaker and turn off the circuit.

5. Plug the system power cords into the PDU, plugging each component into the PDU outlet directly across from the component.
Tip: A best practice is to distribute the total load across the PDU branches, making each branch load as equal as possible. Use the Site Requirements Guide and the 42U System Cabinet Guide for more information about system current draw and capacities.

6. Lock each component power cable plug in place with the cable retainer clip above it by sliding the curved edge of the cable retainer clip over the plug shoulder.

7. Plug the PDU power cord into the AC power source.

8. Push the On buttons to turn each PDU circuits.
   The button is on when it is flush with the PDU frame.

9. Replace the side panel, close the cabinet door, and lock the system cabinet.
Reversing the system cabinet front door with the standard NetApp badge

The system cabinet is designed to allow you to change the direction the front door opens by removing the door, top hinge, and related hardware, and then installing them on the opposite side of the front of the system cabinet frame.

Before you begin

You need the following tools and equipment to complete the door reversal for system cabinets with the standard NetApp badge:

- A Phillips screwdriver
- A 4-mm Allen wrench; a magnetic Allen wrench is recommended
- Needle-nose pliers
- A step ladder so that you can easily access the Allen bolts in the top hinge

Removing the system cabinet front door

To reverse the system cabinet door, you must first remove it from the system cabinet.

Steps

1. Unlock and open the system cabinet front door.

2. Perform the appropriate action, depending on whether your cabinets are connected together with the interconnect kit.

<table>
<thead>
<tr>
<th>If your system cabinet is...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not connected to another system cabinet</td>
<td>Go to the next step.</td>
</tr>
<tr>
<td>Connected to another system cabinet with an interconnect kit</td>
<td>Remove all four interconnect kit brackets and set the brackets and screws in a safe place.</td>
</tr>
</tbody>
</table>

3. Unlock and remove both side panels, as required, and set them aside.

4. Disconnect the grounding wire from the grounding spade located at the top of the door.

5. Unscrew the grounding lug and wire assembly from the system cabinet frame and set it aside.

6. Unscrew the grounding lug assembly from the system cabinet door and set it aside.

7. Loosen and remove the thumbscrew on the back of the NetApp ID badge on the front of the door, and then lift the badge off the door and set the pieces aside.

8. Lift the top hinge pin until it clears the bottom of the hinge.
9. Gently tip the top of the door away from the system cabinet frame, and then release the hinge pin.

10. Lift the door off the bottom hinge, and set the door aside.

Reversing the door hinge and lock catch

When reversing the system cabinet door, you must move the system cabinet door hinge and lock catch to the opposite front-side system cabinet upright.

Before you begin

You need the following tools:

- Phillips screwdriver
- 5 mm Allen wrench; magnetic Allen wrench is recommended
- Needle-nose pliers
- Step ladder so that you can easily access the Allen screws in the top hinge

Steps

1. Remove the screws securing the top hinge from the system cabinet frame, and set the screws and hinge aside.

   **Attention:** Be careful when removing the Allen screws to avoid dropping them into the cabinet frame. Spare Allen screws are provided in the spares kit that shipped with your system cabinet.

2. Remove the screws securing the bottom hinge from the system cabinet frame, and set the screws and hinge aside.
3. Reverse the hinge pin from the top hinge:
   a. Lift the hinge pin and expose the retaining clip on the hinge pin shaft.
   b. Using the needle-nose pliers, gently remove the retaining clip from the hinge pin shaft and set it aside.
c. Slide the hinge pin and spring out of the hinge body.
d. Rotate the hinge so that the thread holes are facing the opposite side of the hinge, and then install the hinge pin and spring back into the hinge.
e. Install the hinge retaining clip onto the hinge pin.

Make sure that you push the retaining clip completely onto the hinge pin.

4. Reinstall the hinges:
   a. Insert the top Allen screw through the system cabinet upright, aligning it with the top threaded hole on the top hinge, and then partially tighten the Allen screw.
      
      Do not completely tighten the screw until after the second Allen screw is installed.
   b. Insert the bottom Allen screw through the system cabinet upright, aligning it with the bottom threaded hole on the top hinge, and then partially tighten the Allen screw.
   c. Tighten the top and bottom Allen screws.
   d. Repeat these steps for the bottom hinge.

5. Remove the screws from the lock catch, and then move the lock catch to the opposite front-side system cabinet upright.

6. Rotate the catch 180 degrees, and then secure it to the system cabinet upright.

---

### Reinstalling the ID badge, grounding wire and lug assembly, and system cabinet front door

After you have reversed the door hinge and door catch, you must reinstall the ID badge, grounding wire and lug assembly and wire, and the system cabinet front door to complete the door reversal.

**Steps**

1. Rotate the door 180 degrees.

2. Align the bottom of the door with the bottom hinge post, and then seat the door bottom on the hinge post.

3. Lift the top hinge pin so that it clears the hinge housing.

4. Tip the top of the door into the hinge housing so that the hinge pin and door hinge are aligned, and then release the hinge pin.
   
   Make sure that the hinge pin is seated completely through the door hinge and the bottom of the door hinge housing.

5. Reinstall the NetApp ID badge on the front of the system cabinet door, and then secure it to the door with the name badge thumbscrew.

6. Reattach the grounding lug and wire assembly to the system cabinet frame on the same side of the newly reversed front door and reinstall the grounding lug with spade on the top of the system cabinet door.
7. Reattach the grounding wire to the spade on the grounding lug assembly on the system cabinet door.

8. The next step depends on if your cabinets were connected together with the interconnect kit.

<table>
<thead>
<tr>
<th>If your system cabinet is...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not connected to another system cabinet</td>
<td>Reinstall the side panels.</td>
</tr>
<tr>
<td>Connected to another system cabinet with an interconnect kit</td>
<td>Reinstall the interconnect brackets.</td>
</tr>
</tbody>
</table>

9. Close and lock the system cabinet door.
Reversing the system cabinet front door with the illuminated badge

The system cabinet is designed to allow you to change the direction the front door opens by removing the illuminated badge, door, top hinge, and related hardware, and then installing them on the opposite side of the front of the system cabinet frame.

Before you begin

You need the following tools and equipment to complete the door reversal for system cabinets with illuminated badges:

- A Phillips screwdriver
- A 5-mm Allen wrench; magnetic Allen wrench is recommended
- Needle-nose pliers
- A step ladder so that you can easily access the Allen bolts in the top hinge
Removing the illuminated badge

Removing the illuminated badge requires that you open the system cabinet front door, unplug the power cord from the back of the badge, and then remove the badge components from the system cabinet door.

About this task

Use the following illustration along with the following steps:

Steps

1. Unlock and open the system cabinet front door.

2. Loosen the captive screws on the badge back panel on the inside of the door, and then gently pull the back panel away from the door mesh.

3. Unplug the power cord from the back panel by pressing the locking clip on the plug, unplugging the cord from the socket, and removing the cable from the back panel.

   Set the back panel aside.
4. Carefully remove the screws from the back of the badge.
   
   **Note:** The stems on the thumbscrews are very short. Place your free hand under the screw to catch the thumbscrew if you drop it.

5. Remove the badge from the front of the door and set it aside.

### Removing the system cabinet door - illuminated bezel

You must remove the system cabinet door and side panels to move the illuminated badge and components, and to reverse the door.

#### Steps

1. Open the system cabinet door if it is not already open.

2. Perform the appropriate action depending on whether your cabinets are connected with the interconnect kit.

<table>
<thead>
<tr>
<th>If your system cabinet is...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not connected to another system cabinet</td>
<td>Go to the next step.</td>
</tr>
<tr>
<td>Connected to another system cabinet with an interconnect kit</td>
<td>Remove all four interconnect kit brackets and set the brackets and screws in a safe place.</td>
</tr>
</tbody>
</table>

3. Unlock both side panels, disconnect the grounding wires from the side panels, and then remove them and set them aside.

4. Disconnect the grounding wire from the grounding spade located at the top of the door.

5. Unscrew the grounding lug and wire assembly from the system cabinet frame and set it aside.

6. Unscrew the grounding lug assembly from the system cabinet door and set it aside.

7. Lift the top hinge pin until it clears the bottom of the hinge.

8. Gently tip the top of the door away from the system cabinet frame, and then release the hinge pin.

9. Lift the door off the bottom hinge, and set the door aside.

### Moving the badge power supply and cabling

You must move the power supply and illuminated badge cabling to the opposite side of the system cabinet frame before you reverse the door and reinstall the illuminated badge.

#### Before you begin

You must have removed the system cabinet door and side panels before beginning this procedure.
About this task
You must move the illuminated badge power supply and cabling to the opposite side of the system cabinet when you reverse the system cabinet door. The assembly is designed so that the cable to the badge is on the side of the cabinet where the door hinge is installed.

Steps
1. Open the power cable retaining clip and then disconnect the power cable from the power supply.
2. Remove the power supply housing and power supply by completing the following substeps, using the illustration for reference:
   a. Lift the retaining pin on the power supply housing and remove the housing cover by rotating it downward and lifting it off the rear power supply housing.
Note: The power supply is attached to the power supply housing with a hook and loop patch.

b. Disconnect the power supply from the illuminated badge cable and set the power supply and power supply cover to the side.

c. Remove the screws from the top and bottom of the power supply housing that is attached to the system cabinet frame and then remove the power supply housing.

3. Install the power supply and power supply housing on the opposite side of the system cabinet by completing the following substeps:

   a. Look for two screw holes next to each other on the cabinet frame, and attach the top of the power supply housing to the bottom-most hole of the pair of holes.

      Note: You may need to remove the bottom cable retention strap, if present.

   b. Secure the bottom of the power supply housing to the system cabinet frame.

   c. Install the power supply cover and power supply by aligning the cover hooks with the power supply back; pull the plunger up on the cover, rotate it closed, and then release the plunger.

4. Move the cable conduit from one side of the system cabinet to the other by completing the following steps, using the illustration for reference:
a. Remove the 10 conduit screws from the conduit.

**Note:** There are four screws on the upright, four screws along the bottom, and two screws in the rear by the power supply.

b. Remove the cable conduit from the system cabinet frame.

5. Move the badge power cable from the system cabinet frame by completing the following substeps, using the illustration for reference:
a. Rotate the rubber cable retainer on the cabinet upright 180° to the right, remove it from the system cabinet frame, and then gently pull the cable out of the system cabinet.

b. Move the cable to the other side of the cabinet and thread it completely through the hole near the top of the cabinet upright.

c. Align the rubber cable retainer with the hole in the frame and push it in as far as it will go. Secure it by rotating the cable retainer 180° to the right.

d. Run the cable along the frame to the back of the cabinet.

6. Reinstall the cable conduit by aligning the tabs on the cabinet upright and secure it with the 10 screws.

Plug the badge cable back into the power supply, but do not reconnect the power supply to the power source.

7. Go to Reversing the door hinge and lock on page 44.
Reversing the door hinge and lock catch

When reversing the system cabinet door, you must move the system cabinet door hinge and lock catch to the opposite front-side system cabinet upright.

Before you begin

You need the following tools:
- Phillips screwdriver
- 5 mm Allen wrench; magnetic Allen wrench is recommended
- Needle-nose pliers
- Step ladder so that you can easily access the Allen screws in the top hinge

Steps

1. Remove the screws securing the top hinge from the system cabinet frame, and set the screws and hinge aside.
   
   **Attention:** Be careful when removing the Allen screws to avoid dropping them into the cabinet frame. Spare Allen screws are provided in the spares kit that shipped with your system cabinet.

2. Remove the screws securing the bottom hinge from the system cabinet frame, and set the screws and hinge aside.
3. Reverse the hinge pin from the top hinge:
   a. Lift the hinge pin and expose the retaining clip on the hinge pin shaft.
   b. Using the needle-nose pliers, gently remove the retaining clip from the hinge pin shaft and set it aside.
   c. Slide the hinge pin and spring out of the hinge body.
   d. Rotate the hinge so that the thread holes are facing the opposite side of the hinge, and then install the hinge pin and spring back into the hinge.
   e. Install the hinge retaining clip onto the hinge pin.

   Make sure that you push the retaining clip completely onto the hinge pin.

4. Reinstall the hinges:
   a. Insert the top Allen screw through the system cabinet upright, aligning it with the top threaded hole on the top hinge, and then partially tighten the Allen screw.

   Do not completely tighten the screw until after the second Allen screw is installed.
   b. Insert the bottom Allen screw through the system cabinet upright, aligning it with the bottom threaded hole on the top hinge, and then partially tighten the Allen screw.
   c. Tighten the top and bottom Allen screws.
   d. Repeat these steps for the bottom hinge.

5. Remove the screws from the lock catch, and then move the lock catch to the opposite front-side system cabinet upright.

6. Rotate the catch 180 degrees, and then secure it to the system cabinet upright.
Reinstalling the door and illuminated badge

After you have moved the power supply and components to the other side of the system cabinet and have moved the hinges and lock catch, you must reinstall the system cabinet door and the illuminated badge and then reconnect it to the power source.

Reinstalling the system cabinet door

After you have reversed the door hinge and door catch, you must reinstall the grounding wire and lug assembly and wire, and the system cabinet front door prior to reinstalling the illuminated badge.

Steps

1. Rotate the door 180 degrees.
2. Align the bottom of the door with the bottom hinge post, and then seat the door bottom on the hinge post.
3. Lift the top hinge pin so that it clears the hinge housing.
4. Tip the top of the door into the hinge housing so that the hinge pin and door hinge are aligned, and then release the hinge pin.

   Make sure that the hinge pin is seated completely through the door hinge and the bottom of the door hinge housing.
5. Reattach the grounding lug and wire assembly to the system cabinet frame on the same side of the newly reversed front door and reinstall the grounding lug with spade on the top of the system cabinet door.
6. Reattach the grounding wire to the spade on the grounding lug assembly on the system cabinet door.
7. The next step depends on if your cabinets were connected together with the interconnect kit.

<table>
<thead>
<tr>
<th>If your system cabinet is...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not connected to another system cabinet</td>
<td>Reinstall the side panels.</td>
</tr>
<tr>
<td>Connected to another system cabinet with an interconnect kit</td>
<td>Reinstall the interconnect brackets.</td>
</tr>
</tbody>
</table>
Reinstalling the illuminated badge

Once the system cabinet door is installed, you need to install the illuminated badge to complete the door reversal process.

About this task

Use the following illustration in conjunction with the following steps.

Steps

1. Align the badge with the rectangular hole on the door mesh, and gently push it flush with the door mesh.
2. Gently push the front badge to engage the snap pins to the door mesh and then secure the badge with the three thumbscrews.
3. Plug the power cord into the back panel.
4. Align the back panel top edge to the top edge of the badge, push it onto the ball stud to seat it, and then tighten the captive screws.
5. Go to the rear of the system cabinet and reconnect the power supply to the power source.
6. Return to the front of the system cabinet and check that the badge is illuminated.

<table>
<thead>
<tr>
<th>If the badge is...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illuminated</td>
<td>Close and lock the front and rear doors.</td>
</tr>
<tr>
<td>Not illuminated</td>
<td>Complete the following substeps:</td>
</tr>
<tr>
<td></td>
<td>a. Remove the back badge panel and check that the power cable is connected completely.</td>
</tr>
<tr>
<td></td>
<td>b. Reinstall the back panel, and push it into place. The badge should be illuminated if the back panel is in full contact with the ball studs. If it is illuminated, close and lock the front and rear system cabinet doors.</td>
</tr>
<tr>
<td></td>
<td>c. If the problem is not corrected, you might have a damaged badge power cable. See the NetApp Support Site at mysupport.netapp.com for further assistance.</td>
</tr>
</tbody>
</table>

7. Close and lock the system cabinet door.
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