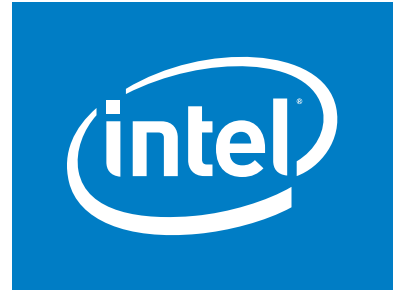


**Intel[®] Storage System
SSR212PP**

Based on EMC AX150[®] Technology



Spares Installation Guide

Intel Order Number D59965-001

Revision 1.0

Intel Storage Group

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Safety Information

Important Safety Instructions

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Wichtige Sicherheitshinweise

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Consignes de sécurité

Lisez attention toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction. Consultez Intel Server Boards and Server Chassis Safety Information sur le *Intel[®] Server Deployment Toolkit CD* ou bien rendez-vous sur le site <http://support.intel.com/support/motherboards/server/sb/cs-010770.htm>.

Instrucciones de seguridad importantes

Lea todas las declaraciones de seguridad y precaución de este documento antes de realizar cualquiera de las instrucciones. Vea Intel Server Boards and Server Chassis Safety Information en el *Intel[®] Server Deployment Toolkit CD* y/o en <http://support.intel.com/support/motherboards/server/sb/cs-010770.htm>.

重要安全指导

在执行任何指令之前, 请阅读本文档中的所有注意事项及安全声明。和/或 <http://support.intel.com/support/motherboards/server/sb/cs-010770.htm> 上的 Intel Server Boards and Server Chassis Safety Information (《Intel 服务器主板与服务器机箱安全信息》)。

Warnings

Heed safety instructions: Before working with your server product, whether you are using this guide or any other resource as a reference, pay close attention to the safety instructions. You must adhere to the assembly instructions in this guide to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this guide. Use of other products / components will void the UL listing and other regulatory approvals of the product and will most likely result in noncompliance with product regulations in the region(s) in which the product is sold.

System power on/off: The power button DOES NOT turn off the system AC power. To remove power from system, you must unplug the AC power cord from the wall outlet. Make sure the AC power cord is unplugged before you open the chassis, add, or remove any components.

Hazardous conditions, devices and cables: Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the server and disconnect the power cord, telecommunications systems, networks, and modems attached to the server before opening it. Otherwise, personal injury or equipment damage can result.

Electrostatic discharge (ESD) and ESD protection: ESD can damage disk drives, boards, and other parts. It is recommended that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground any unpainted metal surface on your server when handling parts.

ESD and handling boards: Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges. After removing a board from its protective wrapper or from the server, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

Installing or removing jumpers: A jumper is a small plastic encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that you can grip with your fingertips or with a pair of fine needle nosed pliers. If your jumpers do not have such a tab, take care when using needle nosed pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can damage the contacts inside the jumper, causing intermittent problems with the function controlled by that jumper. Take care to grip with, but not squeeze, the pliers or other tool you use to remove a jumper, or you may bend or break the pins on the board.

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Preface

About this Manual

Thank you for purchasing and using the Intel[®] Storage System SSR212PP .

This manual is written for system technicians who are responsible for troubleshooting, upgrading, and repairing this storage system. This document provides a brief overview of the features of the product, a list of accessories or other components you may need, troubleshooting information, and instructions on how to add and replace components on the Storage System SSR212PP . For the latest version of this manual, see <http://support.intel.com/support/motherboards/server/SSR212PP>.

For information about which accessories, memory, processors, and third-party hardware have been tested and can be used with your storage system, and for ordering information for Intel products, see <http://support.intel.com/support/motherboards/server/SSR212PPcompat.htm>.

Additional Information and Software

If you need more information about this product or information about the accessories that can be used with this storage system, use the following resources. These files are available at <http://support.intel.com/support/motherboards/server/SSR212PP>. Unless otherwise indicated in the following table, once on this Web page, type the document or software name in the search field at the left side of the screen and select the option to search "This Product."

For this information or software	Use this Document or Software
For in-depth technical information about this product	Intel [®] Storage System SSR212PP <i>Technical Product Specification</i>
If you just received this product and need to install it	Intel [®] Storage System SSR212PP <i>Quick Start User's Guide</i> in the product box
For virtual system tours and interactive repair information	A link to the SMaRT Tool is available under "Other Resources" at the right side of the screen at http://support.intel.com/support/motherboards/server/SSR212PP
Accessories and spares	<i>Intel[®] Storage System SSR212PP Spares Installation Guide</i>
Hardware (peripheral boards, adapter cards) and operating systems that have been tested with this product	Tested Hardware Operating Systems List (THOL)

Handling Field-Replaceable Units (FRU)

1

This section describes the precautions that you must take and the general procedures you must follow when removing, installing, and storing disk modules, fans, memory cards, battery-backed cache cards, the storage processor assembly, or any other field replaceable unit (FRU).

Power issues and FRUs

SSR212PP-Series storage systems are designed to be powered up continually. Disks and power supplies are hot repairable; that is, you can replace faulty units while the system is running. Front bezels should always be attached and each compartment should contain a FRU or filler panel to ensure EMI compliance and proper air flow over the FRUs.

You should not remove a faulty FRU until you have a replacement available.

When you replace or install FRUs, you can inadvertently damage the sensitive electronic circuits in the equipment by simply touching them. Electrostatic charge that has accumulated on your body discharges through the circuits. If the air in the work area is very dry, running a humidifier in the work area will help decrease the risk of ESD damage. Follow the procedures below to prevent damage to the equipment.

Read and understand the following instructions:

- Provide enough room to work on the equipment. Clear the work site of any unnecessary materials or materials that naturally build up electrostatic charge, such as foam packaging, foam cups, cellophane wrappers, and similar items.
- Do not remove replacement or upgrade FRUs from their antistatic packaging until you are ready to install them.
- Before you service a storage system, gather together the ESD kit and all other materials you will need. Once servicing begins, avoid moving away from the work site; otherwise, you may build up an electrostatic charge.
- An ESD wristband is supplied with your storage system. To use it, attach the clip of the ESD wristband (strap) to any bare (unpainted) metal on the storage system; then put the wristband around your wrist with the metal button against your skin.
- Use the ESD kit when handling any FRU. If an ESD kit is not available, follow the procedures in the "[Without an ESD Kit](#)" section.

Without an ESD Kit

When an ESD kit is not available, use the following procedures to reduce the possibility of an electrostatic discharge by ensuring that your body and the subassembly are at the same electrostatic potential.

These procedures are not a substitute for the use of an ESD kit. Follow them only when an ESD kit is not available.

- Before touching any FRU, touch a bare (unpainted) metal surface of the cabinet or storage system.
- Before removing any FRU from its antistatic bag, place one hand firmly on a bare metal surface of the storage system, and at the same time, pick up the FRU while it is still sealed in the antistatic bag. Once you have done this, do not move around the room or touch other furnishings, personnel, or surfaces until you have installed the FRU.
- When you remove a FRU from the antistatic bag, avoid touching any electronic components and circuits on it.
- If you must move around the room or touch other surfaces before installing a FRU, first place the FRU back in the antistatic bag. When you are ready again to install the FRU, repeat these procedures.

Accessing the Storage Processor Assembly

2

Removing the storage processor (SP) assembly from the storage-system chassis provides access to internal parts that you can replace, including memory cards, system and CPU fans, and, on SSR212PPf or SSR212PPi models, a battery-backed cache card.

To Remove the SP Assembly

- STEP 1.** Push the On/Off button to turn off power, and wait a full minute for the storage system to power down.
- STEP 2.** When the storage system is powered down, release the retention bails and unplug the ac power cords (Figure 1).

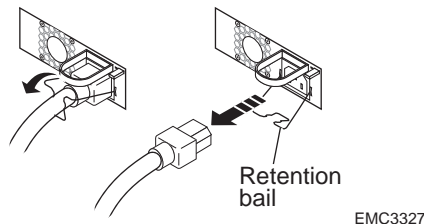


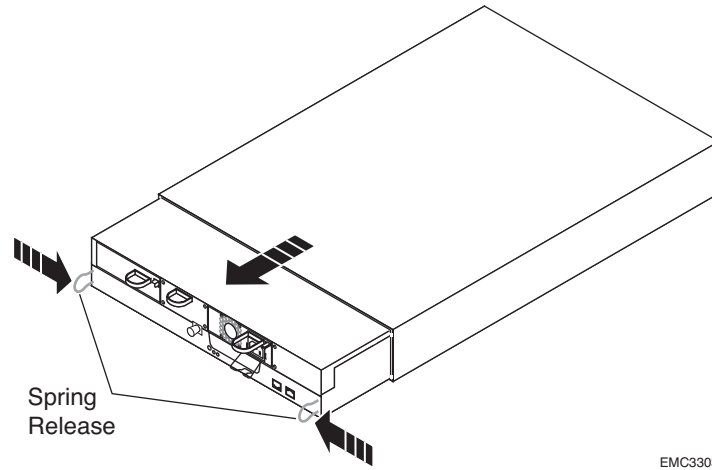
FIGURE 1. Unplugging the AC Power Cord from the SP System

- STEP 3.** Unplug the Fibre Channel (FE), iSCSI, LAN, and serial cables from the back of the storage system, and label each connection for easy reference when you replace the connections.
- STEP 4.** Push the latches inward to release the SP assembly as you carefully pull the assembly straight out (Figure 2).



CAUTION

The SP assembly weighs approximately twenty pounds (9 kg) and comes completely out of the storage-system chassis; be prepared to support the assembly to avoid dropping it.



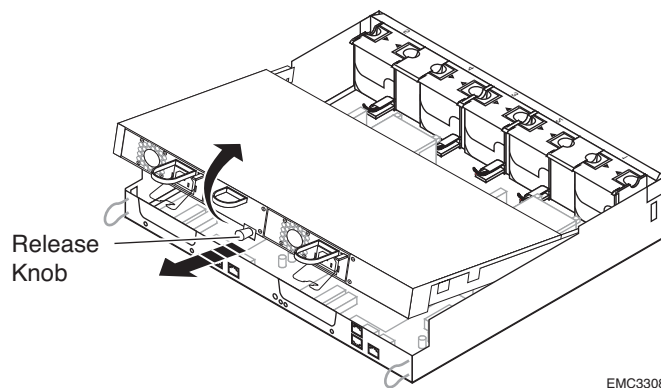
EMC3303

FIGURE 2. Removing the SP Assembly from an SSR212PP-Series Chassis

STEP 5. Place the assembly on a clean, anti-static surface.

To Raise the Cover on the SP Assembly

Pull the release knob, and lift the cover up and back until it clicks into place (Figure 3).



EMC3308

FIGURE 3. Raising the Cover on the SP Assembly

To Lower the Cover on an SP Assembly

Release the spring lock on the cover, and lower the cover into place (Figure 4).

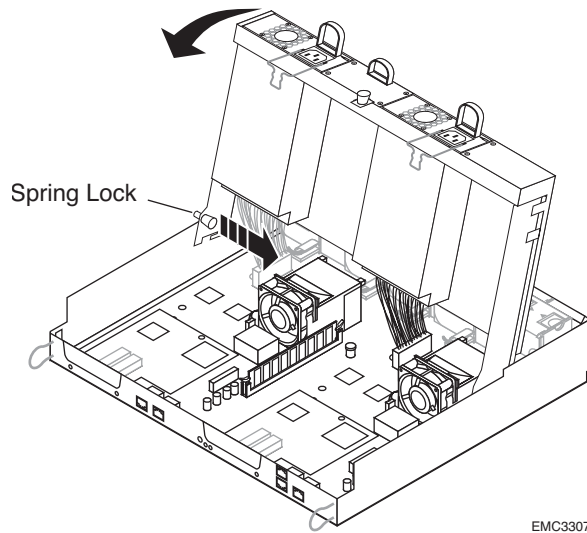


FIGURE 4. Lowering the SP Assembly Cover

To Install the Storage Processor Assembly in the Chassis

STEP 1. Slide the SP assembly into the storage-system chassis (Figure 5).

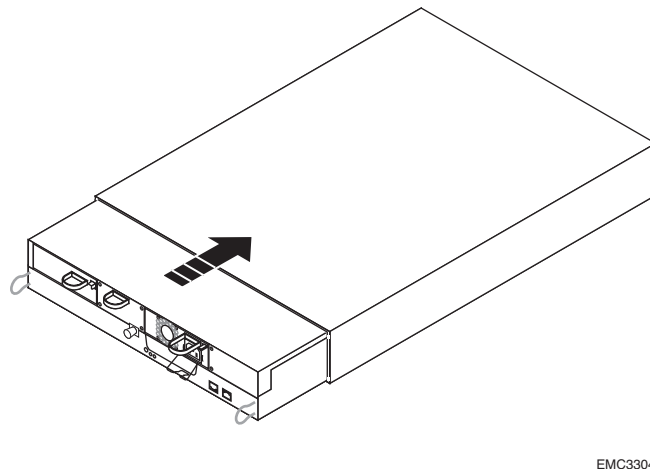


FIGURE 5. Installing the SSR212PP-Series SP Assembly in the Chassis

STEP 2. Connect the iSCSI or Fibre Channel (FE), LAN, serial cables, and power cords.

Accessing the Battery-Backed Cache Card

3

To Remove the Cache Card



CAUTION

The connector pins are delicate; do not rock the cache card as you remove it from the connector.

If your card does not have a metal knob attached to the spring latch, pull the assembly directly out of the connector and away from the motherboard (Figure 6).

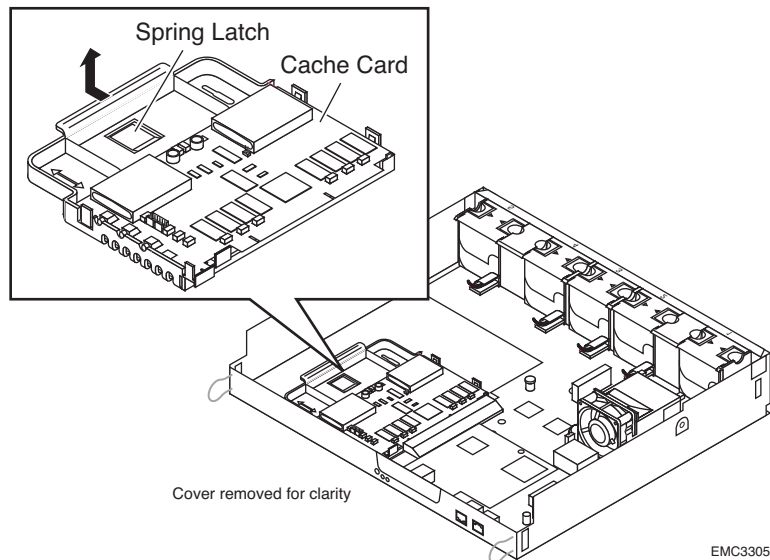
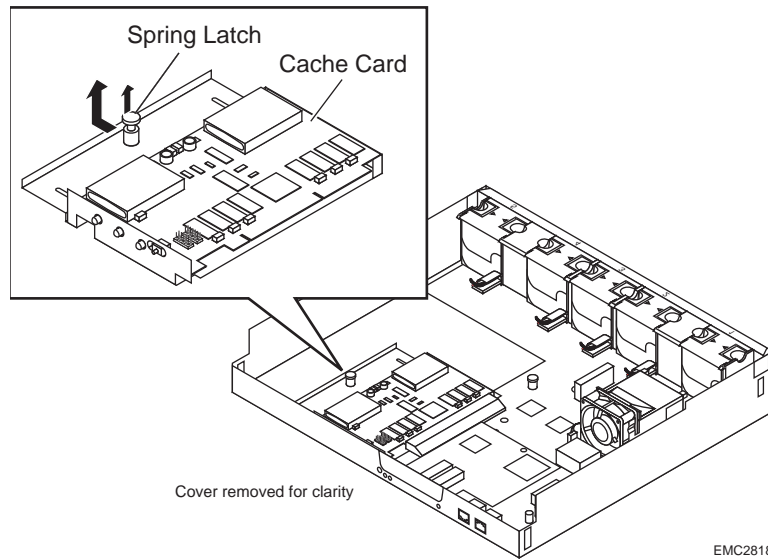


FIGURE 6. Removing the Cache Card from the Motherboard

If your cache card assembly includes a metal spring latch knob, pull it up as you pull the assembly directly out of the connector and away from the motherboard (Figure 7).

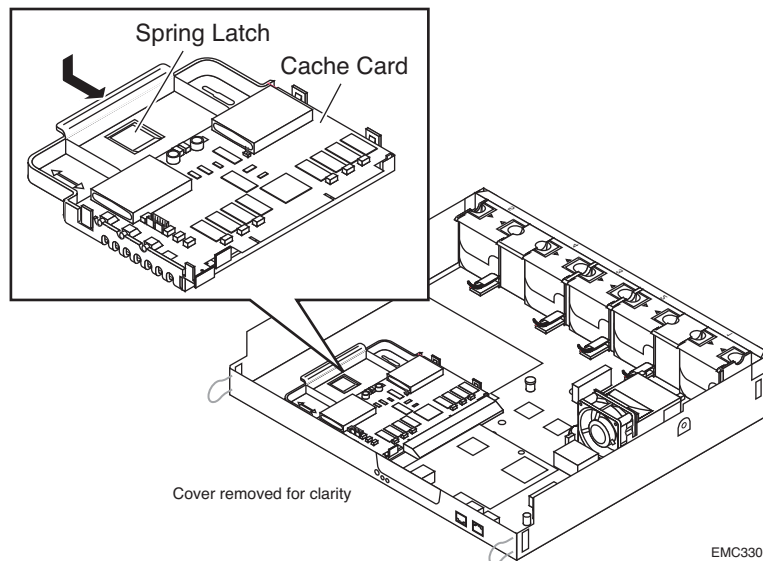


EMC2818

FIGURE 7. Removing the Cache Card from the Motherboard (knob latch)

To Install the Cache Card

- STEP 1.** Align the cache card with the motherboard connector and the securing tabs on the chassis base.
- STEP 2.** If your card does not include a metal knob attached to the spring latch, carefully push the cache card directly into the connector until the spring latch clicks into place (Figure 8).



EMC3306

FIGURE 8. Connecting the Cache Card to the Motherboard

STEP 3. If your cache card assembly includes a metal spring latch knob, pull it up as you carefully push the cache card down and into the connector; then release the latch to secure the card in position, as shown in [Figure 9](#).

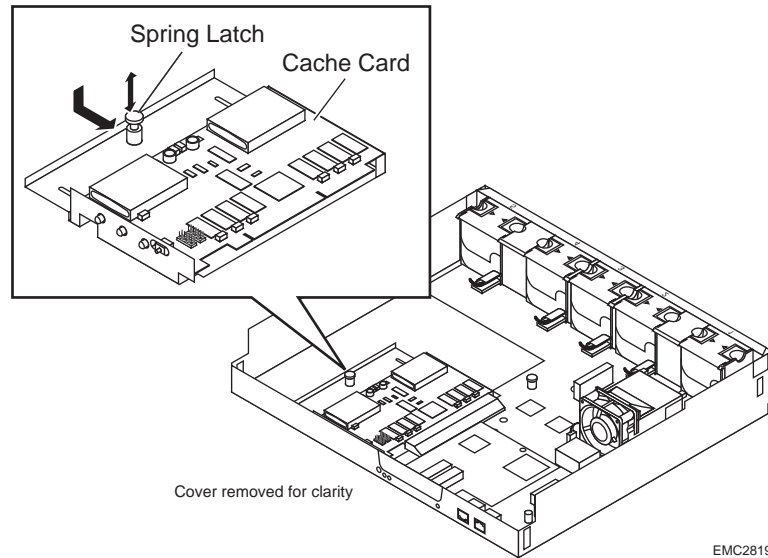


FIGURE 9. Connecting the Cache Card to the Motherboard (knob latch)

Replacing a Storage Processor Assembly

4

This document describes how to replace the SSR212PP-Series storage processor assembly (SP assembly). The SP assembly includes the motherboard with CPUs, CPU fans, memory cards, and, in SSR212PPf and SSR212PPi storage systems, the battery-backed cache card.

For greater clarity, the illustrations in this note show the storage-system chassis independent of a cabinet or desktside mounting hardware.

- STEP 1.** Read "Handling Field-Replaceable Units (FRU)" on page 1.
- STEP 2.** Remove the current SP assembly from the chassis. See Procedure 2, "Accessing the Storage Processor Assembly," on page 3.
- STEP 3.** The replacement SP assembly does not include power supplies. You must remove the supplies from the original SP assembly to reuse them in the new assembly.
 - a.** For each power supply, push the slide latch to the left as you pull the power supply straight out of the chassis (Figure 10).

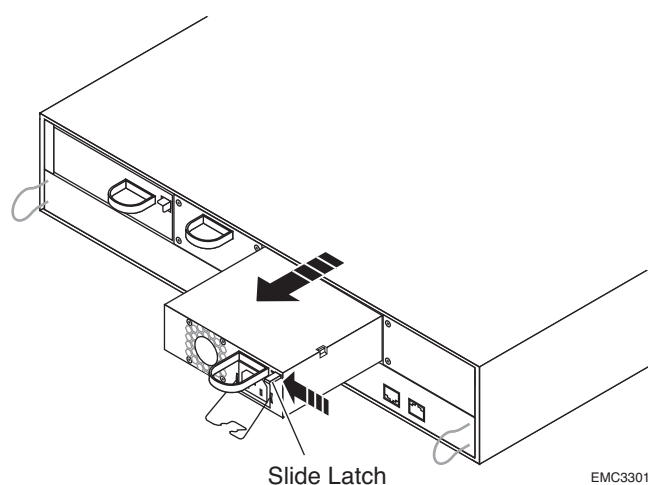


FIGURE 10. Removing an SSR212PP-Series Power Supply

- b.** Place each power supply on a clean, antistatic surface.
- STEP 4.** If you are replacing a dual-processor SP assembly (SSR212PP2f or SSR212PP2i) with another dual-processor assembly, or a single-processor SP assembly (SSR212PPf or SSR212PPi) with a dual-processor SP assembly (SSR212PP2f or SSR212PP2i), skip to step **STEP 5**.

- a. Raise the cover on both SP assemblies. See ["To Raise the Cover on the SP Assembly" on page 4](#).
 - b. Remove the cache card from the SP assembly you removed. See Procedure 3, ["Accessing the Battery-Backed Cache Card," on page 7](#).
 - c. Install the cache card in the new SP assembly. See Procedure 3, ["Accessing the Battery-Backed Cache Card," on page 7](#).
 - d. Lower the cover on both SP assemblies. See ["To Lower the Cover on an SP Assembly" on page 5](#).
- STEP 5.** Install the replacement SP assembly and connect the FE, LAN, serial, and power cables. See Procedure 2, ["Accessing the Storage Processor Assembly," on page 3](#).
- STEP 6.** Install the power supplies you removed in **STEP 3**. *Gently* insert each power supply straight into the new SP assembly enclosure, being sure to completely seat each supply (Figure 11).

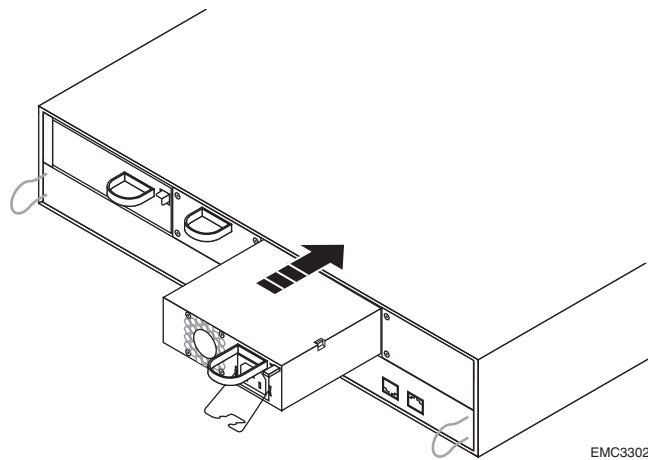


FIGURE 11. Installing an SSR212PP-Series Power Supply

- STEP 7.** Power up the storage system.
- STEP 8.** If applicable, apply iSCSI data port addresses to the new SP assembly. See Procedure 31, ["Applying iSCSI Data Port Addresses to the SP Assembly," on page 167](#) in the Intel[®] Storage System SSR212PP *User Guide*.
- STEP 9.** Verify that the replacement SP assembly is functioning correctly. See Procedure 11, ["Verifying the Operation of a New or Replaced Component," on page 33](#).

Replacing a Power Supply

5

This procedure describes how to replace the power supply in an SSR212PP-Series storage system.

You may receive a replacement power supply that looks slightly different from the original, and/or different from the illustrations in this note. The two versions are functionally the same.

For greater clarity, the illustrations in this note show the storage-system chassis independent of a cabinet or deskside mounting hardware.



CAUTION

Handle a power supply gently and use an ESD wristband. If you are replacing a power supply, do not remove the supply until you have a replacement available.

- STEP 1.** If the storage system has only one power supply, push the storage-system power button to turn off power, and wait a full minute for the storage system to power down.
- STEP 2.** Release the wire retention bail on the power supply you are replacing, and unplug its ac power cord (Figure 12).

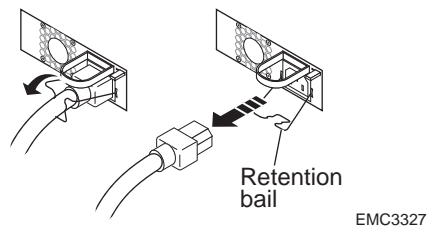


FIGURE 12. Unplugging the AC Power Cord

- STEP 3.** Push the securing latch lever to the left as you pull the power supply straight out of the chassis (Figure 13).

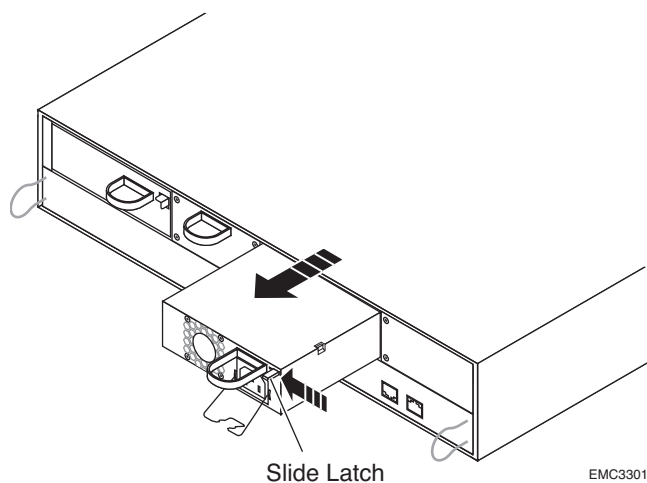


FIGURE 13. Removing an SSR212PP-Series Power Supply

- STEP 4.** Gently insert the new power supply straight into the storage system, being sure to completely seat the supply (Figure 14).

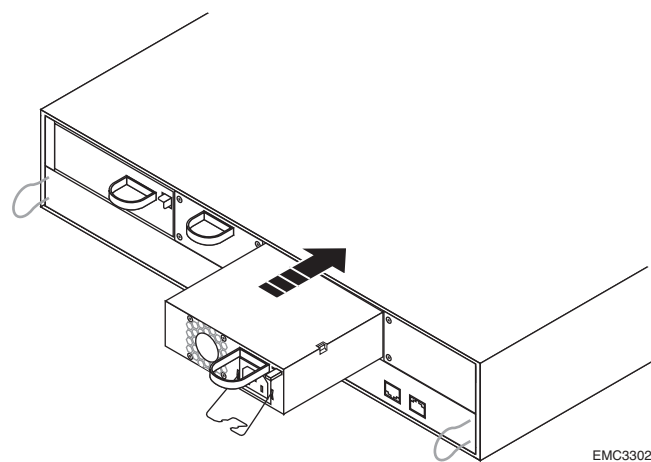


FIGURE 14. Installing an SSR212PP-Series Power Supply

- STEP 5.** Pull the wire retention bail into place, and then plug the ac power cord into the new supply. Attach the retention bail for strain relief (Figure 15).

The storage system experiences a brief power reset whenever you plug in the power cord. The reset is sometimes audible.

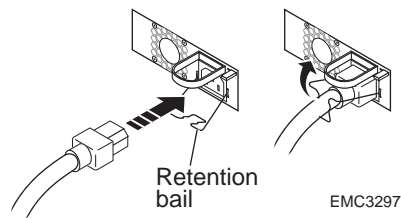


FIGURE 15. Plugging the Power Cord into an SSR212PP-Series Power Supply

STEP 6. If power is not on, press the power button to begin powerup, and verify that the power supply fault indicator light does not go on (Figure 16).

If the fault indicator does go on, remove the power supply and reseat it in the enclosure before referring to the "Troubleshoot" section of the SSR212PP support website or the *SSR212PP-Series Documentation CD*.

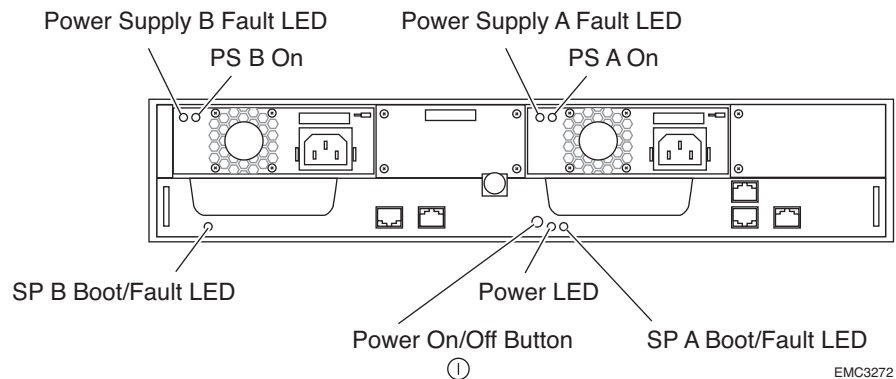


FIGURE 16. Power Button and Indicators (SSR212PP2f shown)

STEP 7. Verify that the replacement SP assembly is functioning correctly. See Procedure 11, "Verifying the Operation of a New or Replaced Component," on page 33.

Replacing an Uninterruptible Power Supply (UPS)

6

This procedure describes how to replace an uninterruptible power supply (UPS) that is connected to an SSR212PP2f or SSR212PP2i (dual-SP) storage system.

STEP 1. Unpack the replacement UPS kit. Save the packaging.

As you follow the steps below, refer to [Figure 17](#) and to the documentation that shipped with the replacement UPS.

STEP 2. Disconnect the faulty UPS.

- a. Unplug the UPS serial cable from the serial ports on SP A and on the UPS and discard it ([Figure 17](#)).
- b. Unplug the storage-system power cord from the UPS ([Figure 17](#)).
- c. Unplug the UPS from the ac power source ([Figure 17](#)).

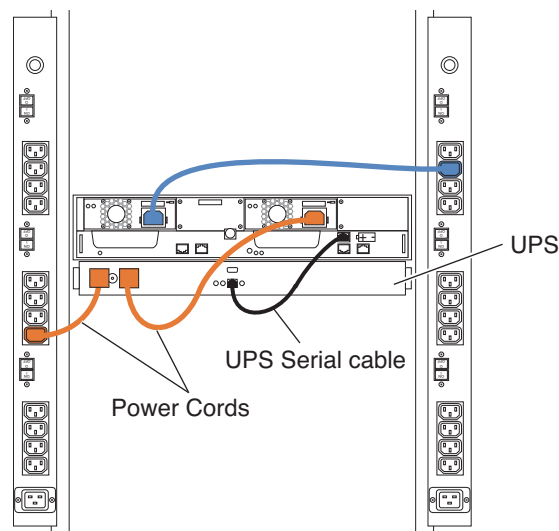


FIGURE 17. SSR212PP2f or SSR212PP2i UPS Serial Cable and Power Connections

STEP 3. Remove the defective UPS from the cabinet (refer to the documentation that shipped with the replacement UPS).

STEP 4. Install the replacement UPS in the cabinet according to the documentation that accompanied the unit, being sure to connect the batteries as instructed.

STEP 5. Connect the replacement UPS.

- a. Connect the UPS serial cable that came with the replacement unit to UPS serial ports on SP A and the UPS (Figure 17).
- b. Plug the storage-system power cord connected to power supply A into the power outlet on the UPS (Figure 17).
- c. For a 120V UPS, plug the attached UPS power cord into an ac power source (Figure 17).
- d. For a 230V UPS, plug one end of the loose UPS power cord into the UPS power outlet and the other end into an ac power source in the cabinet, that is, the (power distribution unit (Figure 17).

Do not connect the UPS to the same power source/circuit as power supply B.

STEP 6. Push the power button on the UPS to turn on the UPS power. If the storage system does not begin to power up immediately, push the storage system power button once.

STEP 7. Verify that the replacement UPS is operating.

- a. Start up Navisphere Express. See Procedure 29, "Running Navisphere Express," on page 163 in the *Intel Storage System SSR212PP User Guide*.

STEP 8. Verify UPS operation:

- a. In the Navisphere Express navigation pane, under View, click Components.
- b. On the Components page, in the Device column, locate the entry for the uninterruptible power supply and verify that its State is Charging or Normal.

STEP 9. Return the faulty UPS.



CAUTION

The battery must be disconnected before shipping the UPS to the manufacturer.

- a. Unplug the battery connector (refer to the documentation that shipped with the replacement UPS).
- b. Pack the defective UPS in the packaging from the replacement UPS.
- c. Return the defective UPS to the address provided with the replacement UPS.

Replacing a Disk Module

7

This procedure describes how to replace disk modules in an SSR212PP-Series storage system.

For greater clarity, the illustrations in this document show the storage-system chassis independent of a cabinet or desktside mounting hardware.

Configuration Rules and Recommendations



CAUTION

Before you install a replacement disk, make certain any hot spare configured with the original disk pool is completely reconstructed:

1. Start up Navisphere Express. See Procedure 29, "[Running Navisphere Express](#)," on page 163 in the *Intel Storage System SSR212PP User Guide*.
2. In the navigation pane, under Manage, click Hot Spare.
3. Verify that the Replacing field says Data has been reconstructed to the hot spare.
4. If the hot spare is still transitioning, wait until the disk pool has written all necessary data to the hot spare.

The following rules and recommendations apply to all SSR212PP-Series systems.



CAUTION

If possible, all disks in an SSR212PP-Series enclosure should have the same speed and capacity. If you are installing a disk with a new speed and/or capacity, you need to verify that the FLARE™ operating environment (OE) version running on the storage system supports this new disk. If the version of FLARE OE running on your storage system does not support the disk you are installing, you must upgrade your storage system to the latest version of FLARE OE before installing the new disk.

- All disks in a disk pool should have the same capacity. Since all disks in a pool are bound to match the smallest capacity disk, you will waste disk space if the disks do not have the same capacity.
- All disks in a disk pool should have the same speed.
- You cannot use disk modules in slots 0-3 as hot spares. You can configure a hot spare in any other slot; SSR212PP-Series enclosures allow unused slots (with filler modules) between drives.

Handling Disk Modules

Disk modules are extremely sensitive electronic components. Always handle a disk module gently, and observe the following guidelines:

- Whenever possible or practical, replace a disk module with another of the same model. Refer to the SSR212PP support website for a list of approved disk replacements.
- Follow the instructions in the section on handling FRUs in this document.
- Disk modules are sensitive to the extreme temperatures sometimes encountered during shipping. We recommend that you leave new disk modules in their shipping material, and expose the package to ambient temperature for at least four hours before attempting to use the new modules in your system.
- Wear a properly attached ESD wristband when removing or replacing a disk module.
- When removing a disk module, pull the module partially out of the slot, then wait 30 seconds for the drive to spin down before removing it.
- Place modules on a soft, antistatic surface, such as an industry-standard antistatic foam pad or the container used to ship the module. Never place a disk module directly on a hard surface.
- Never hit modules, stack modules, or allow them to tip over or fall.
- Avoid touching any exposed electronic components and circuits on the disk module.
- Do not remove a faulty disk module until you have a replacement module (with the same or an approved part number) or a filler module available. The part number (PN005xxxxx) appears on the front of the module.

STEP 1. Unlock and remove the front bezel.



CAUTION

The bezel is required for EMI compliance when the storage system is powered up. Remove it only to replace or add a disk module.

- a. Insert the key that shipped with your storage system into the bezel lock, and turn it to release the lock (Figure 18).
- b. Press the two latch buttons on the bezel surface toward each other to release the bezel from the cabinet (Figure 18).
- c. Pull the bezel off the cabinet and put it on a clean, static-free surface (Figure 18).

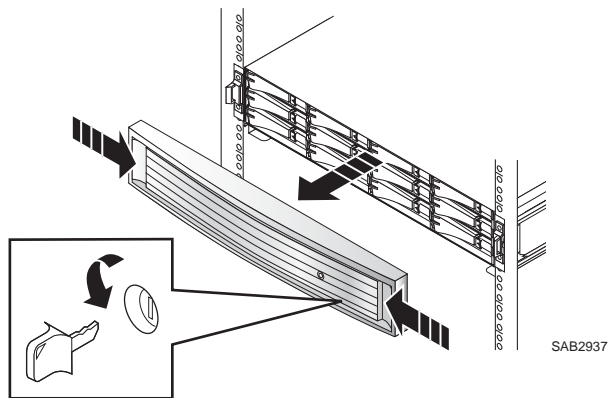


FIGURE 18. Unlocking and Removing the Front Bezel

STEP 2. Remove the faulty disk module.



CAUTION

If the disk module belongs to a disk pool that has virtual disks, do not move it to another disk slot in the storage system. This could make the information on the virtual disk inaccessible.

To determine if it is safe to move the disk, start Navisphere Express on the storage system (see Procedure 29, "[Running Navisphere Express](#)," on page 163 in the *Intel Storage System SSR212PP User Guide*), and click **Manage ▶ Disk Pools**. Select the name of the disk pool that includes the disk. If the **Disk Pool - Details** page lists any virtual disks, do not move the disk.

- a. Attach an ESD wristband to your wrist and the storage system (see Procedure 1, "[Handling Field-Replaceable Units \(FRU\)](#)," on page 1).
- b. If the active light that points to the disk is on steadily, pull the latch, and slowly pull the module about 1 in (3 cm) from its slot, and wait 30 seconds for the disk to stop spinning. Remove the module and place it on a padded, static-free surface.
- c. If the active light is off or mostly off you do not need to wait for the disk to stop spinning. Pull the latch and slowly pull the module from its slot ([Figure 19](#)).

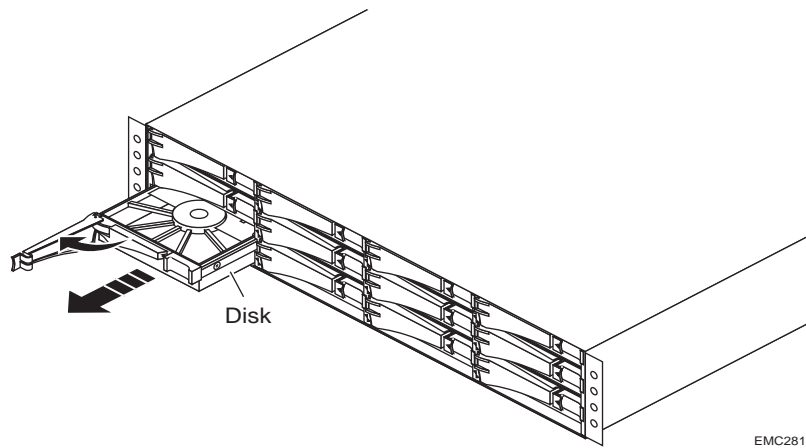


FIGURE 19. Removing a Disk Module

STEP 3. Install the replacement disk module.



CAUTION

The disk module you install must have a dark metallic grey handle. Do not install a disk module with a blue-grey or light grey handle. If you are installing multiple disk modules in a storage system that is powered up, wait at least 10 seconds before sliding the next disk module into position.

- a. Align the replacement module with the guides in the slot.
- b. Gently push the module completely into the slot, and ensure that the module seats completely by pushing in on the disk label as you engage the latch (Figure 20). The disk module Active light flashes to indicate the disk spin-up sequence.

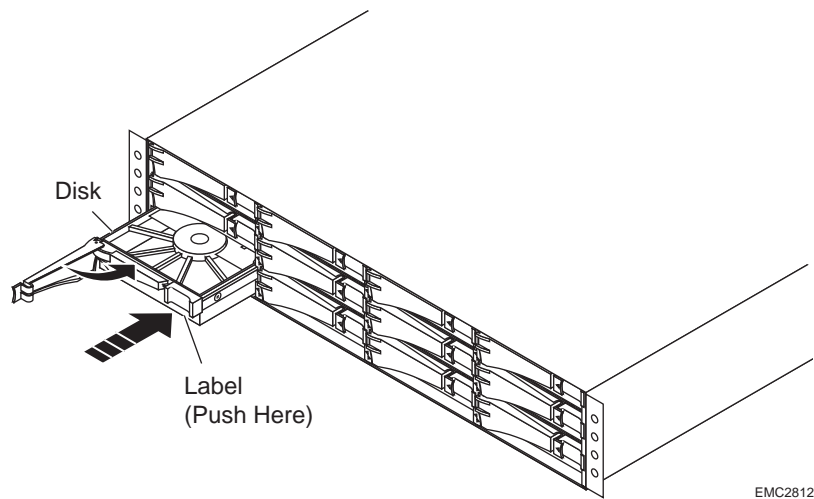


FIGURE 20. Installing a Disk Module

STEP 4. 4. Remove and store the ESD wristband and continue to the next section to install the front bezel.

STEP 5. Install and lock the front bezel:

- a. Align the bezel with the storage system (Figure 21).
- b. Gently push the bezel into place on the cabinet until it latches (Figure 21).
- c. Secure the bezel by turning the key in the lock (Figure 21).

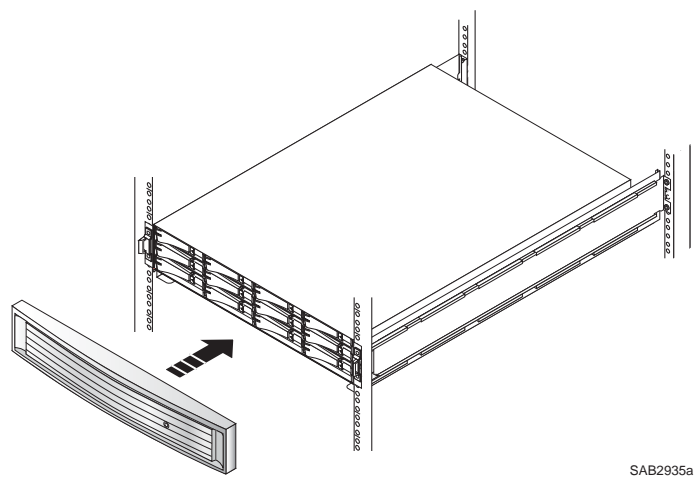


FIGURE 21. Installing and Locking the Front Bezel

STEP 6. Verify that the system is working correctly. See Procedure 11, "Verifying the Operation of a New or Replaced Component," on page 33.

Replacing a System Fan

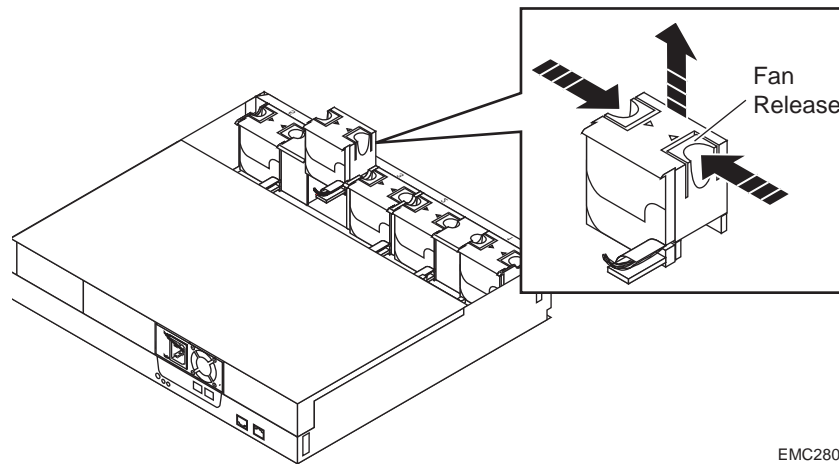
8

This procedure describes how to replace the SSR212PP-Series system fans, specified by Navisphere Express as fans 1-5.

For a description of how to replace SSR212PP-Series CPU fans, specified as fans 6 and 7, see Procedure 9, "Replacing a CPU Fan," on page 27.

For greater clarity, the illustrations in this document show the storage-system chassis independent of a cabinet or desktside mounting hardware.

- STEP 1.** Read "Handling Field-Replaceable Units (FRU)" on page 1. If possible, have an ESD wriststrap attached to your wrist as you perform the following steps.
- STEP 2.** Remove the SP assembly from the chassis. See Procedure 2, "Accessing the Storage Processor Assembly," on page 3.
- STEP 3.** The SSR212PP-Series system fans are labeled 1, 2, 3, 4, 5 on the fan tray. As indicated by the arrows on the faulty fan, pinch the release latches together as you pull the fan straight up and away from the motherboard (Figure 22). The four-pin power connector will lift off the motherboard as you lift its fan.



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FIGURE 22. Removing a System Fan from the SP Assembly Motherboard

- STEP 4.** Install the replacement system fan.
 - a. Remove the replacement fan from its antistatic bag.
 - b. Align the new fan in its slot in the fan tray.
 - c. Push the fan straight down and into the connector.

- STEP 5.** Re-install the SP assembly in the chassis:
- a.** Slide the assembly into place and reconnect the cables. See Procedure 2, "[Accessing the Storage Processor Assembly](#)," on page 3.
 - b.** Power the system on.
- STEP 6.** Verify that the system is working correctly. See Procedure 11, "[Verifying the Operation of a New or Replaced Component](#)," on page 33.

Replacing a CPU Fan

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This document describes how to replace a CPU fan (6 or 7) on the SSR212PP-Series motherboard. CPU fan 6 is dedicated to the central processing unit on SP A, and is the only CPU fan in SSR212PPf or SSR212PPi systems. CPU fan 7 cools the processor on SP B in an SSR212PP2f or SSR212PP2i storage system. (Replacing a failed system fan 1-5 is covered in another document.)

For a description of how to replace SSR212PP-Series system fans, specified as fans 1-5, see Procedure 8, "[Replacing a System Fan](#)," on page 25.

For greater clarity, the illustrations in this document show the storage-system chassis independent of a cabinet or deskside mounting hardware.

- STEP 1.** Read "[Handling Field-Replaceable Units \(FRU\)](#)" on page 1. If possible, have an ESD wriststrap attached to your wrist as you perform the following steps.
- STEP 2.** Remove the SP assembly from the chassis and raise the cover. See Procedure 2, "[Accessing the Storage Processor Assembly](#)," on page 3.
- STEP 3.** Remove the faulty CPU fan.
 - a.** Carefully disconnect the power cable that connects the fan to the motherboard.
 - b.** Pull the fan straight up, out of the connector, and away from the motherboard ([Figure 23](#)).

The illustrations in this section show the replacement of CPU fan 6, in an SSR212PPf or SSR212PPi. Use the same procedure to replace fan 7. The second CPU fan resides on SP B, to the left (from the system rear) of SP A.

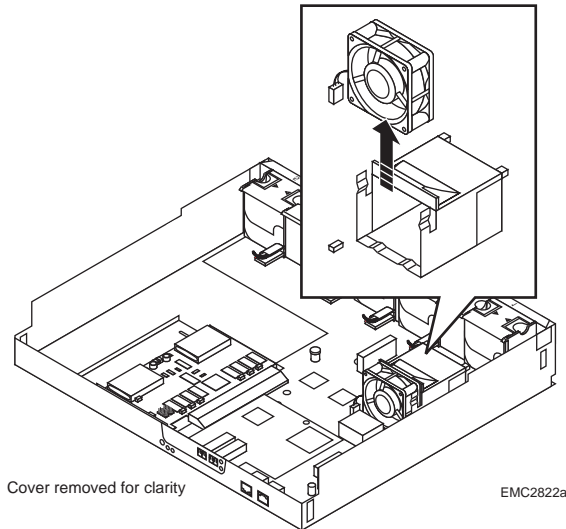


FIGURE 23. Removing the CPU Fan from the Motherboard

STEP 4. Install the replacement CPU fan

- a. Remove the replacement fan from its antistatic bag.
- b. Align the replacement fan as indicated by the arrows on its top and side (the arrows should point up from the motherboard and away from the processor). Note that the power cord can comfortably reach the motherboard only in the correct orientation.
- c. Carefully push the replacement fan straight down and into its connector; then connect the power cord. The connector is keyed to ensure the correct orientation (Figure 24).

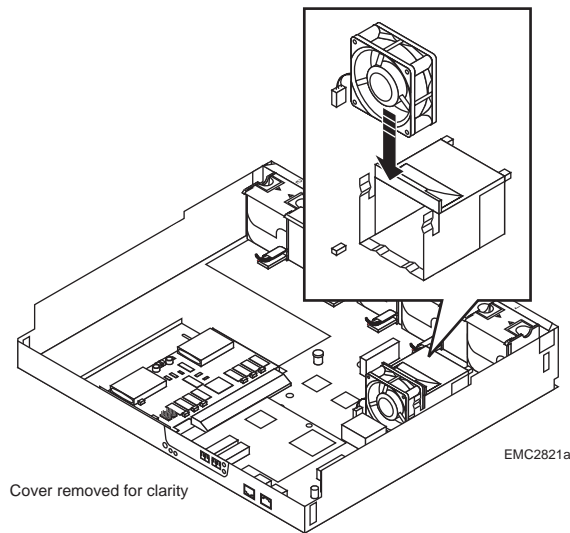


FIGURE 24. Connecting the CPU Fan to the Motherboard

- STEP 5.** Lower the cover of the SP assembly. See Procedure 2, "[Accessing the Storage Processor Assembly](#)," on page 3.
- STEP 6.** Re-install the SP assembly in the chassis:
- a. Slide the assembly into place and reconnect the cables. See Procedure 2, "[Accessing the Storage Processor Assembly](#)," on page 3.
 - b. Power the system on.
- STEP 7.** Verify that the system is working correctly. See Procedure 11, "[Verifying the Operation of a New or Replaced Component](#)," on page 33.

Replacing a Memory Card (DIMM)

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This procedure describes how to replace the dual in-line memory modules (DIMMs or memory cards) on an SSR212PP-Series motherboard.

For greater clarity, the illustrations in this note show the storage-system chassis independent of a cabinet or desktside mounting hardware.

- STEP 1.** Read "[Handling Field-Replaceable Units \(FRU\)](#)" on page 1. If possible, have an ESD wriststrap attached to your wrist as you perform the following steps.
- STEP 2.** Remove the SP assembly from the chassis and raise the cover. See Procedure 2, "[Accessing the Storage Processor Assembly](#)," on page 3.
- STEP 3.** Remove the memory card from the SP.
 - a.** To release the memory card from the system processor mother board, push down on the spring latches on either side of the card.
 - b.** Touching only the outside edges, pull the memory card straight up and out of the connector ([Figure 25](#)).

The illustrations in this section show the replacement of the SP A memory card, in an SSR212PP-Series storage system. The memory card for SP B and the procedure to remove it are identical, except that the second memory card resides to the left (from the system rear) of SP A.

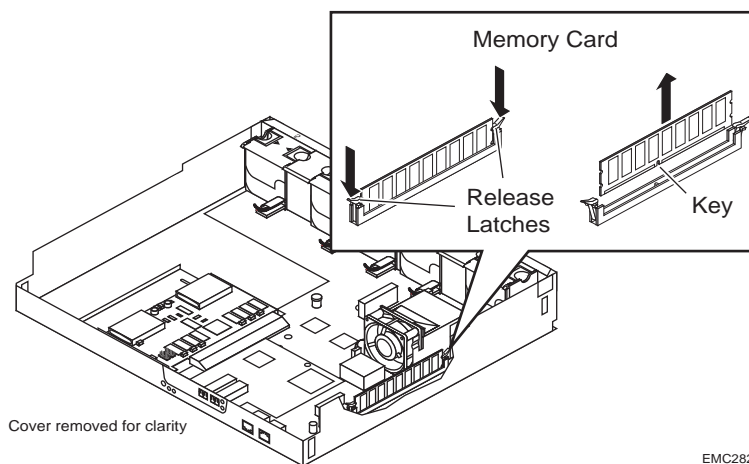


FIGURE 25. Removing the Memory Card from the Motherboard

- STEP 4.** Install the replacement memory card.
- a. Remove the replacement card from its antistatic bag.
 - b. Touching only the outside edges, align the new memory card with the motherboard connector. Note that the connector and card are keyed to prevent incorrect alignment.
 - c. Carefully push the memory card straight down into the connector ([Figure 26](#)). When the card is properly seated into the connector, the release latches snap into place, securing the connection.

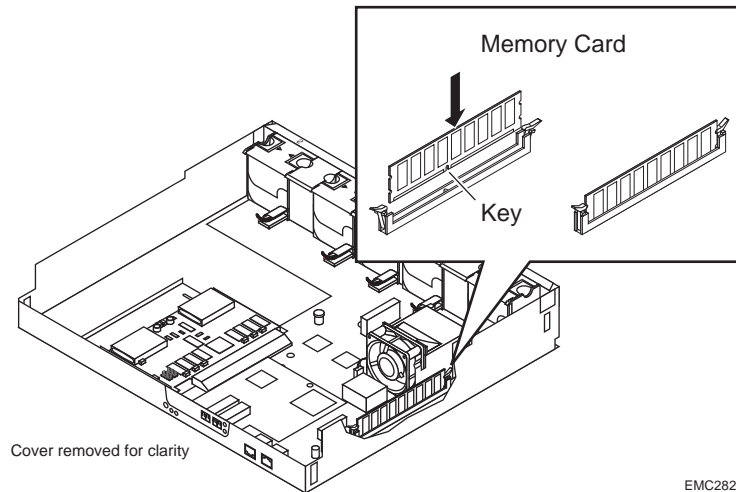


FIGURE 26. Connecting the Memory Card to the Motherboard

- STEP 5.** Lower the assembly cover. See Procedure 2, "[Accessing the Storage Processor Assembly,](#)" on page 3.
- STEP 6.** Re-install the SP assembly in the chassis:
- a. Slide the assembly into place and reconnect the cables. See Procedure 2, "[Accessing the Storage Processor Assembly,](#)" on page 3.
 - b. Power the system on.
- STEP 7.** Verify that the system is working correctly. See Procedure 11, "[Verifying the Operation of a New or Replaced Component,](#)" on page 33.

Verifying the Operation of a New or Replaced Component

11

- STEP 1.** From a network-connected host, start Navisphere Express. See Procedure 29, "Running Navisphere Express," on page 163.
- STEP 2.** In the Navisphere Express navigation pane, under View, click Components.
- STEP 3.** Scan the list of components to verify that all components are recognized and working properly.

Charging a Cache Card

The discharged cache card in a single-SP storage system may take 3-4 hours to fully charge after powerup, during which time a green LED (visible inside the SP assembly from the rear) blinks. A solid green LED indicates that the card is fully charged. Your storage system will operate with cache disabled until the card can support cache.

If the cache card was completely discharged before you powered on the storage system, Navisphere Express may report that the card is faulted until charging completes.

If your battery-backed cache card shows an amber fault LED, or does not appear to be functioning properly within five hours, contact your service provider.

Rebuilding a Replacement Disk

It may take several minutes to rebuild a replacement disk by restoring data to it from the disk pool. Depending on the size of the disk, how much data is on the disks, and whether I/O is running during the rebuild, the process can take from a few minutes to many hours.

