

Replacing a DS5000 controller

Statement 1:



DANGER

Electrical current from power, telephone, and communication cables is hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet.
- Connect to properly wired outlets any equipment that will be attached to this product.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.

To Connect:	To Disconnect:
<ol style="list-style-type: none">1. Turn everything OFF.2. First, attach all cables to devices.3. Attach signal cables to connectors.4. Attach power cords to outlet.5. Turn device ON.	<ol style="list-style-type: none">1. Turn everything OFF.2. First, remove power cords from outlet.3. Remove signal cables from connectors.4. Remove all cables from devices.

Statement 3:



CAUTION:

When laser products (such as CD-ROMs, DVD drives, fiber optic devices, or transmitters) are installed, note the following:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.



DANGER

Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following.

Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

Class 1 Laser statement

Class 1 Laser Product
Laser Klasse 1
Laser Klasse 1
Luokan 1 Laserlaitte
Appareil À Laser de Classe 1

IEC 825-11993 CENELEC EN 60 825

Attention: Before you replace a RAID controller, verify the following:

- The replacement RAID controller part number matches the part number of the RAID controller to be replaced. To provide full functionality, the two controllers should have the same memory capacity. Although two controllers of different memories can be paired in a storage subsystem, the mismatch causes some functions to be disabled (for example, the cache mirroring function).
- Both power supply and fan units must be connected and powered on with no lighted Needs Attention LEDs. Ensure that the Power LEDs on each of the power supply and fan units are lit. If either of the power supply and fan units is not optimal, it is recommended that you replace that component before you proceed with the controller replacement procedure.
- If you are replacing an optimal controller, first make sure that the other RAID controller is optimal and that the fibre channel path from the hosts to the other RAID controller is also optimal.
- Be aware that each RAID controller has a unique hardware Ethernet address, which is printed on a label on the front.

Use the following procedure to replace a controller in a DS5000 Storage Subsystem.

1. Use the DS Storage Manager client software to save a storage subsystem profile.
2. If you are:

- Replacing a failed controller, locate the failed controller by checking the Needs Attention status LEDs on the controllers in the storage subsystem (see Figure 1). Skip to step 4.
 - Upgrading an optimal controller, for example, upgrading to a new controller, or adding or upgrading a host interface card or memory card to an existing controller, go to step 3.
3. Prepare the controller for removal by performing the following steps:
 - a. Using the DS Storage Manager client software, on the Subsystem Management window menu bar, click **Advanced ► Trouble Shooting ► Prepare for Removal**.
 - b. On the Prepare for removal dialog window, in the Enclosure drop down menu, select **Controller Enclosure**.
 - c. In the Component drop down menu, select the controller you want to remove.
Available controller options are controller in slot A or controller in slot B.
 - d. Click the **Prepare for removal** button.
The Service Action Allowed LED turns on (turns blue) on the controller you selected to remove.
 - e. Go to step 5.

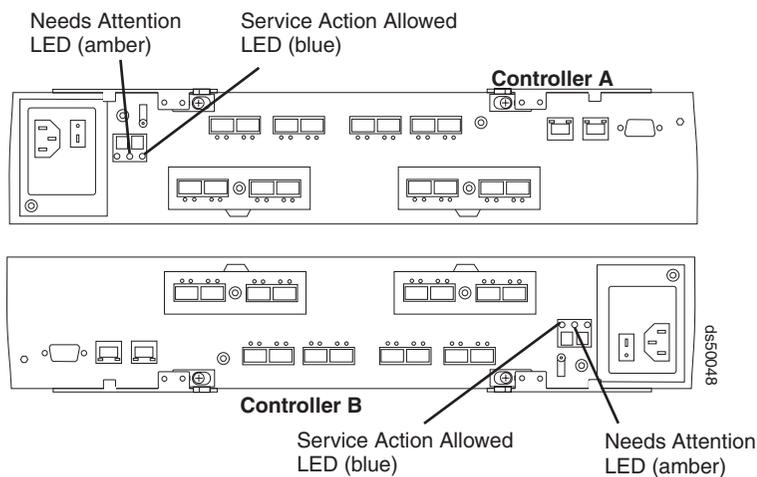


Figure 1. RAID controller Needs Attention and Service Action Allowed LEDs

4. Is the Service Action Allowed LED turned on?

Figure 1 shows the location of the Service Action Allowed LED on the back of a controller.

Attention: Never remove a controller unless the Service Action Allowed LED is turned on. Doing so can result in a potential loss of data.

 - Yes – Go to step 5.
 - No – Another component requires attention before you can remove the controller. Normally, this situation indicates that a power supply and fan unit is either powered off or failed. Ensure that both power supply and fan units are powered on and in an optimal state. If the Service Action Allowed LED of the controller you are replacing is unlit and both power supply and fan units are in an optimal state, contact your IBM® support representative.

Electrostatic discharge can damage sensitive components. Touching the storage subsystem or its components without using a proper ground might damage the equipment. To avoid damage, use proper antistatic protection while handling any components.
5. Put on antistatic protection.
6. (If applicable) Unpack the new controller. Save all packing materials in the event you need to return the new controller.
7. (If applicable) Determine whether the replacement controller will serve as controller A or controller B. (Controller A is inserted in the top controller bay; controller B is inserted in the bottom controller

bay.) Then apply the controller labels for host channels, drive channels, power inputs, and numeric display to the replacement controller. The controller labels and instructions are included with the replacement controller. Make sure that the labels are aligned properly and do not cover any ports or LEDs.

Attention: Handle and install fiber-optic cables properly to avoid degraded performance or loss of communications with devices.

8. Disconnect all attached interface cables from the controller you are replacing or upgrading, including the SFP modules. Ensure that you label each cable so that you can reconnect them correctly to the new or upgraded controller. Figure 2 shows the location of the connectors on the back of a controller.

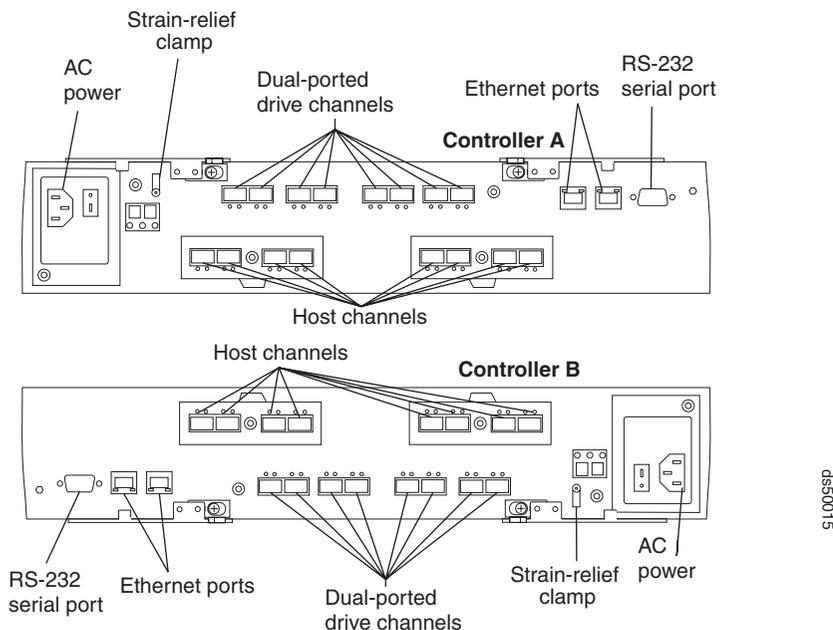


Figure 2. Connectors on the back of each controller

Use the following procedure to remove the SFPs from the RAID controller that you are replacing or upgrading:

- a. Remove the LC-LC fibre-channel cable from the SFP module.
- b. Unlock the SFP module latch:
 - For SFP modules that contain plastic tabs, unlock the SFP module latch by pulling the plastic tab outward 10°, as shown in Figure 3.

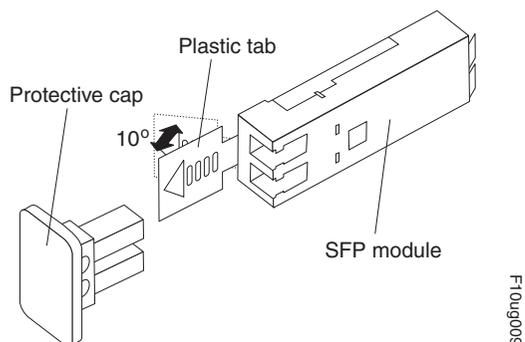


Figure 3. Unlocking the SFP module latch - plastic variety

- For SFP modules that contain wire tabs, unlock the SFP module latch by pulling the wire latch outward 90°, as shown in Figure 4.

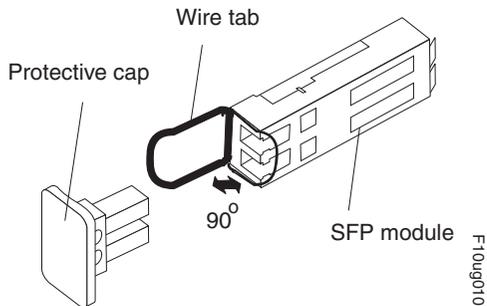


Figure 4. Unlocking the SFP module latch - wire variety

- c. With the SFP latch in the unlocked position, extract the SFP module.
 - For SFP modules that contain plastic tabs, slide the SFP module out of the port.
 - For SFP modules that contain wire tabs, grasp the wire latch and pull the SFP module out of the minihub port.
 - d. Replace the protective cap on the SFP module.
 - e. Place the SFP module into a static-protective package.
 - f. Replace the protective cap on the port.
9. Remove the strain-relief nut and cable strain-relief clamp from the RAID controller.
 10. Unplug the power cord from the electrical outlet and then disconnect the power cord from the ac power connector on the controller.
 11. Release the controller levers and remove the controller. Figure 5 shows the controller sliding from the storage subsystem chassis.

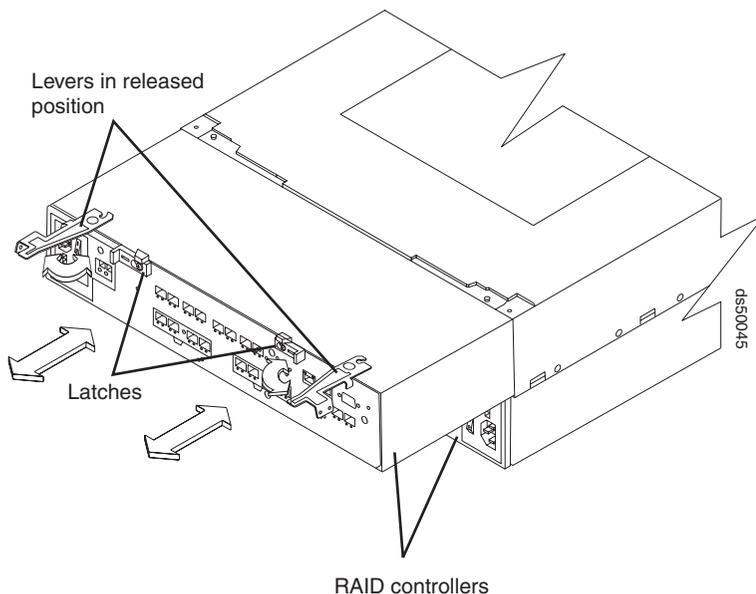


Figure 5. Removing a controller from the DS5000

12. Remove the following cards from the controller you removed in step 11 and install in the new (replacement) controller:
 - Host interface card

- Cache memory card
- Flash memory card

For instructions on how to remove and replace these cards, refer to the following publications: *Installing or replacing a DS5000™ host interface card* and *Installing or replacing a DS5000 cache or flash memory card*.

- Find the label on the top of the new or upgraded controller and record its media access control (MAC) address.
- Install the new or replacement controller by performing the following:
 - Carefully position the controller at the back of the storage subsystem chassis. Ensure that the controller can slide into the storage subsystem chassis without obstruction.
 - With the left and right levers rotated out perpendicular to the face of the controller, slide the back of the controller into the appropriate slot.
 - Push on both sides of the controller so that it slides into the slot evenly. *Stop inserting the controller when it is about 1 inch from being fully inserted into the slot.* With the controller not fully inserted in the slot, attach all the SFPs and cables that you disconnected from the controller in step 8 on page 4.
 - Replace the SFPs into the appropriate ports.
 - Reconnect all cables, including all host and drive channel cables and secondary cables (such as Ethernet connections).
 - Holding both levers, slowly push the controller until the notches in both the left and right levers are aligned with the pins on the DS5000 enclosure so that the controller is pulled evenly into the DS5000 storage subsystem chassis, ensuring full electrical connection contact on all interface pins.

Attention: Verify that the controller does not snag any other DS5000 cables when you slide it into the controller bay.
 - Press the controller fully into the slot, engaging the pins on the enclosure.
 - Hold open both latches and push both left and right levers simultaneously to the closed position. Release the latches. When you release the latches, you should hear both latches snap over the levers, indicating that the component is locked in place.
- Wrap the strain-relief clamp around the power cord approximately 20 cm (8 in.) from the controller connection end. Leave some slack between the clamp and the controller end of the power cord. Replace the strain-relief nut and tighten it securely to secure the clamp to the controller unit.
- Connect the power cord to the ac power connector of the controller you replaced or upgraded. Plug the power cord into a properly grounded electrical outlet.
- Wait up to 5 minutes for the DS Storage Manager client software to recognize the controller you replaced or upgraded.
- Complete any remaining Recovery Guru procedures for controller replacement, if needed.
- Check the LEDs on the controller to verify that the controller is fully operational. See Figure 1 on page 3.

The LEDs come on and go off intermittently for approximately 60 seconds or possibly longer. After this time, you are able to discover the controller through the DS Storage Manager software.
- Remove the antistatic protection.
- Use the DS Storage Manager client Subsystem Management window to check the status of all components in the storage subsystem.
 - If the controller you replaced or upgraded is online and the DS Storage Manager client Subsystem Management window indicates normal operation, go to step 24 on page 7.
 - If the controller you replaced or upgraded is online and the DS Storage Manager client Subsystem Management window indicates a problem status, verify that the controller is installed correctly. Reinstall the controller if necessary. Go to step 23 on page 7.
 - If the controller you replaced or upgraded is offline, go to step 22 on page 7.

22. If the newly inserted controller is in an offline state, see the DS Storage Manager client online help for instructions on bringing the controller online.
If necessary, open the DS Storage Manager Subsystem Management window and place the controller online; select the offline controller and click **Advanced ► Recovery ► Place controller online**.
23. Verify the state of the LEDs on the newly inserted controller. You can also use the Storage Manager Subsystem Management window to identify any new faults. Do any storage subsystems have a fault (Needs Attention) status?
 - Yes – Select the Recovery Guru toolbar button in the Subsystem Management window, and complete the recovery procedure. If the problem persists, contact your IBM service representative.
 - No – Go to step 24.
24. Use the DS Storage Manager client software to print a new storage subsystem profile.

Trademarks

IBM and System Storage™ are trademarks of International Business Machines Corporation in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.

First edition

© Copyright International Business Machines Corporation 2008. All rights reserved.

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

(1P) P/N: 44e5654

