SF-series hardware information

Element Software

NetApp
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SF-series hardware information

You can find information about installing and maintaining SF-series storage nodes.

Here are the links to the installation and maintenance content:

- Install and setup SolidFire C-series nodes
- Install and setup Fibre Channel nodes
- Install and setup SF-series storage nodes
- Replace a chassis
- Replace drives
- Replace a power supply unit

Find more information

- SolidFire and Element Software Documentation
- Documentation for earlier versions of NetApp SolidFire and Element products

Replace a chassis

You might need to replace the chassis if the fan, central processing unit (CPU), or dual inline memory module (DIMM) fails, or to fix overheating issues or problems with the boot process. Cluster faults in the NetApp Element software user interface (UI) and the blinking amber light in the front of the chassis are indications of a possible need for chassis replacement. You should contact NetApp Support before you proceed.

What you'll need

- You have contacted NetApp Support.

  If you are ordering a replacement, you must have a case opened with NetApp Support.

- You have obtained the replacement chassis.
- You have an electrostatic discharge (ESD) wristband, or you have taken other antistatic protection.
- If you need to perform the Return to Factory Image (RTFI) process, you have obtained the USB key.

  NetApp Support will help you decide if RTFI is needed. See this KB article (login required).

- You have a keyboard and monitor.

About this task

The instructions in this document apply if you have a one-rack unit (1U) chassis with any of the following nodes:

- SF2405
- SF3010
- SF4805

- SF6010
- SF9605
- SF9608
- SF9010
- SF19210
- SF38410
- SF-FCN-01
- FC0025

Steps

1. Locate the service tag of the failed chassis and verify that the serial number matches the number on the case you opened with NetApp Support when you ordered the replacement.

   You can locate the service tag from the front of the chassis.

   The following figure is an example of the service tag:

   The above figure is an example. The exact location of the service tag might vary depending on your hardware model.

2. Plug in the keyboard and monitor to the back of the failed chassis.
3. Verify chassis information with NetApp Support.
4. Power down the chassis.
5. Label the drives in the front of the chassis and cables at the back.

   Fibre Channel nodes do not have drives in the front.

6. Remove the power supply units and cables.
7. Remove the drives carefully, and place them on an antistatic, level surface.

   If you have a Fibre Channel node, you can skip this step.

8. Remove the chassis by pressing the latch or unscrewing the thumbscrew, based on your hardware model.

   You should package and return the failed chassis to NetApp.

9. **Optional**: Remove the rails and install the new rails that were shipped with your replacement chassis.

   You can choose to reuse the existing rails. If you are reusing the existing rails, you can skip this step.

10. Slide the replacement chassis on to the rails.
11. For storage nodes, insert the drives from the failed chassis to the replacement chassis.

    You should insert the drives in the same slots as they were in the failed chassis.

12. Install the power supply units.
13. Insert the power supply cables, and the 1GbE and 10GbE cables in their original ports.

    Small form-factor pluggable (SFP) transceivers might be inserted in the 10GbE ports of the replacement chassis. You should remove them before you cable the 10GbE ports.

14. If you have determined that you do not need to perform the RTFI process on the node, boot the node, and wait until the terminal user interface (TUI) appears. Proceed to step 16 and allow the cluster to re-image the node automatically when you add it by using the UI.
15. **Optional**: If NetApp Support recommends re-imaging the node with a USB key, perform the following substeps:
    a. Power on the chassis. It boots with the RTFI key image.
    b. At the first prompt, type **Y** to image the storage node.
    c. At the second prompt, type **N** for hardware health checks.

       If the RTFI script detects a problem with a hardware component, it displays an error in the console. If you see an error, contact NetApp Support. After the RTFI process completes, the node shuts down.

    d. Remove the USB key from the USB slot.
    e. Boot the newly imaged node, and wait for the TUI to appear.
16. Configure the network and cluster information from the TUI.

    You can contact NetApp Support for assistance.

17. Add the new node to the cluster using the cluster TUI.
18. Pack and return the failed chassis.

Find more information

- SolidFire and Element Software Documentation
- Documentation for earlier versions of NetApp SolidFire and Element products

Replace drives for SF-series storage nodes

You can hot-swap a failed solid-state drive with a replacement drive.

What you'll need

- You have a replacement drive.
- You have an electrostatic discharge (ESD) wristband, or you have taken other antistatic precautions.
- You have contacted NetApp Support to verify that the SSD needs to be replaced and for help with the proper resolution procedure.

  You will need the service tag or serial number when you call NetApp Support. Support will work with you to get a replacement drive according to your Service Level Agreement.

About this task

The instructions apply to the following SolidFire storage node models:

- SF2405
- SF3010
- SF4805
- SF6010
- SF9605
- SF9608
- SF9010
- SF19210
- SF38410

The following figure shows the placement of the drives in an SF9605 chassis:

The above figure is an example. SF9608 has a different drive layout that includes only eight drives that are numbered one through eight, from left to right.

Slot 0 holds the metadata drive for the node. If you are replacing the drive in slot 0, you must attach the sticker included in the shipping box on the replacement drive, so that you can identify it separately from the rest. SF3010 is an exception, because metadata is kept on the internal serial advanced technology attachment (SATA) dual inline memory module (DIMM).

Follow these best practices while handling drives:

- Prevent electrostatic discharge (ESD) by keeping the drive in the ESD bag until you are ready to install it.
- Do not insert a metal tool or knife into the ESD bag.
- Open the ESD bag by hand or cut the top off with a pair of scissors.
- Keep the ESD bag and any packing materials in case you must return a drive later.
- Always wear an ESD wrist strap grounded to an unpainted surface on your chassis.
- Always use both hands when removing, installing, or carrying a drive.
- Never force a drive into the chassis.
- Do not stack drives on top of each other.
- Always use approved packaging when shipping drives.

Here is a high-level overview of the steps:

- Remove the drive from the cluster
- Replace the drive from the chassis
- Add the drive to the cluster

Remove the drive from the cluster

The SolidFire system puts a drive in a failed state if the drive's self-diagnostics tells the node it has failed or if communication with the drive stops for five and a half minutes or longer. The system displays a list of the failed drives. You should remove a failed drive from the failed drive list in NetApp Element software.

Steps

1. In the Element UI, select **Cluster** > **Drives**.
2. Select **Failed** to view the list of failed drives.
3. Note the slot number of the failed drive.

   You need this information to locate the failed drive in the chassis.

4. Remove the failed drive using one of the following methods:

Option	Steps
To remove individual drives	a. Select **Actions** for the drive you want to remove. b. Select **Remove**.
To remove multiple drives	a. Select all the drives you want to remove, and the select **Bulk Actions**. b. Select **Remove**.

Replace the drive from the chassis

After you remove a failed drive from the failed drive list in the Element UI, you are ready to physically replace the failed drive from the chassis.

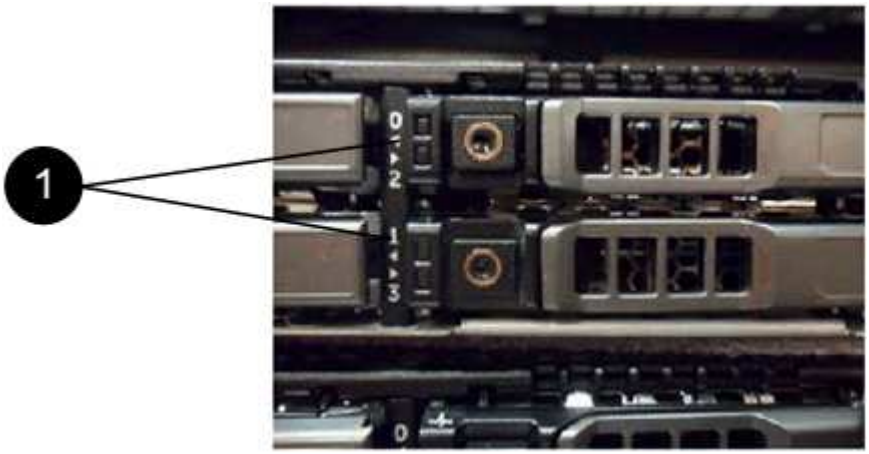
Steps

1. Unpack the replacement drive, and place it on a flat, static-free surface near the rack.

   Save the packing materials for when you return the failed drive to NetApp.

2. Match the slot number of the failed drive from the Element UI with the number on the chassis.

   The following figure is an example to show the numbering of the drive slots:



Item	Description
1	Drive slot numbers

3. Press the red circle on the drive you want to remove to release the drive.

   The latch clicks open.

4. Slide the drive out of the chassis, and place it on a static-free, level surface.
5. Press the red circle on the replacement drive before you slide it into the slot.
6. Insert the replacement drive, and press the red circle to close the latch.
7. Notify NetApp Support about the drive replacement.

   NetApp Support will provide instructions for returning the failed drive.

Add the drive to the cluster

After you install a new drive in the chassis, it registers as available. You should add the drive to the cluster using the Element UI before it can participate in the cluster.

Steps

1. In the Element UI, click **Cluster** > **Drives**.
2. Click **Available** to view the list of available drives.

3. Choose one of the following options to add drives:

Option	Steps
To add individual drives	a. Select the **Actions** button for the drive you want to add. b. Select **Add**.
To add multiple drives	a. Select the check boxes of the drives to add, and then select **Bulk Actions**. b. Select **Add**.

Find more information

- SolidFire and Element Software Documentation
- Documentation for earlier versions of NetApp SolidFire and Element products

Replace a power supply unit

Each SolidFire chassis includes two power supply units for power redundancy. If a power supply unit fails, you should replace it as soon as possible to ensure that the chassis has a redundant power source.

What you'll need

- You have determined that the power supply unit needs to be replaced.
- You have a replacement power supply unit.
- You have verified that the second power supply unit is operating.
- You have an electrostatic discharge (ESD) wristband, or you have taken other antistatic precautions.

About this task

The instructions apply if you have a one-rack unit (1U) chassis with any of the following nodes:

- SF2405
- SF3010
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- SF6010
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- SF9010
- SF19210
- SF38410
- SF-FCN-01
- FC0025

Steps

1. Unplug the power cord from the power supply unit that you are replacing.
2. Press the release button to slide the power supply unit out of the chassis.

   Ensure that you use both hands to support the weight of the power supply unit.

3. Using both hands, align the edges of the replacement power supply unit with the opening in the chassis, and gently push the unit into the chassis.

   Do not use excessive force when sliding the power supply unit into the chassis to prevent damage to the hardware.

4. Plug in the power cord.
5. Return the failed unit to NetApp by following the instructions in the box that was shipped to you.

   You can contact NetApp Support for help with the replacement procedure.

Find more information

- SolidFire and Element Software Documentation
- Documentation for earlier versions of NetApp SolidFire and Element products

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