Replacing a boot device in a FAS22xx system running Data ONTAP 8.x

The boot device stores a primary and secondary set of system files on it (also called the *boot image*) that the system uses when it boots. The steps you follow to replace a boot device differ, depending on whether your system is running Data ONTAP 8.x in 7-Mode or Cluster-Mode.

**Before you begin**

Before extracting the compressed system files during the boot device installation process, make sure that the utility you use is set to suppress any automatic CR/LF conversions in the extracted files.

If you experience any problems during netboot, you can verify the integrity of the files extracted from the package by comparing the `md5sum` values stored in the `MD5SUMS` file.

**About this task**

- The steps for replacing a boot device in a system running 7-Mode are different than for a system running Cluster-Mode. You must use the correct procedure for your version of Data ONTAP 8.x.
- The term *boot device* refers to the USB boot media.
- *Cluster-Mode* refers to a system running Data ONTAP in Cluster-Mode.
- *7-Mode* refers to a system running Data ONTAP in 7-Mode.

**Choices**

- *Replacing a boot device in a system running in 7-Mode* on page 1
- *Replacing a boot device in a system running in Cluster-Mode* on page 14

### Replacing a boot device in a system running in 7-Mode

Replacing a boot device in 7-Mode involves shutting down the system, removing the old boot device, and transferring the system files to the new boot device.

**About this task**

This procedure is for systems running in 7-Mode. If your system is running in Cluster-Mode, you must use that procedure instead.

**Steps**

1. *Shutting down a node* on page 2
2. *Opening the system* on page 2
3. *Removing the boot device from the controller module* on page 4
4. *Installing the boot device* on page 5
Shutting down a node
When replacing the boot device in a system running in 7-Mode, you must shut down the node. Depending on your system's configuration, you might also need to turn off the power supplies.

About this task
Your system's configuration determines whether you turn off your power supplies after shutting down the node:

• If you have two controller modules in the same chassis, you must leave the power supplies turned on to provide power to the partner node.
• If you have one controller module in the chassis that is either part of an HA pair or in a stand-alone configuration, you must turn off the power supplies in the target node chassis.

Steps
1. Shut down the system or node:

<table>
<thead>
<tr>
<th>If the system is in...</th>
<th>Then...</th>
</tr>
</thead>
</table>
| A stand-alone configuration and is running | a. Enter the following command at the console: \texttt{halt -t 0} 
\texttt{b. Go to the next step.} |
| A stand-alone configuration and is not running | Go to the next step. |
| An HA pair | a. Check the status of the target node by entering the following command from the partner node's console: 
\texttt{cf status} 
\texttt{b. Take one of the following actions, depending on the result of the cf status command:} 
\texttt{• If the target node is not running or has been taken over by the partner node, go to the next step.} 
\texttt{• If the target node took over the partner node, give back the partner node using the cf giveback command from the target node, initiate the takeover from the partner node using the cf takeover command, and then go to the next step.} 
\texttt{• If the target node has not been taken over by the partner node and is running, enter the following command from the partner node, and then go to the next step:} 
\texttt{cf takeover} |

2. If applicable, turn off the power supplies and unplug both power cords from the power source.

Opening the system
To access components inside the controller module, you must open the system.

Steps
1. If you are not already grounded, properly ground yourself.
2. Unplug the system cables and SFPs from the controller module, as needed, and keep track of where the cables were connected.
   Leave the cables in the cable management arm, so that when you reinstall the cable management arm, the cables are organized.
3. Remove the cable management arms from the left and right sides of the controller module and set them aside.
4. Squeeze the latch on the cam handle until it releases, open the cam handle fully to release the controller module from the midplane, and then, using two hands, pull the controller module out of the chassis.

5. Turn the controller module over and open it by sliding the blue tabs to release the cover, and then swing the cover up and open.
Removing the boot device from the controller module

You must remove the old or failed boot device from the target controller module in your system prior to installing the new or replacement boot device.

Steps

1. If you are not already grounded, properly ground yourself.

2. Turn the controller module so that you can see where the boot device is located.

   Use the FRU map on the controller module or the following illustration to help you locate the boot device enclosure.

   **Note:** The illustration shows a controller module with a mezzanine card. Your system might have a mezzanine card or a blank.
3. Open the boot device cover and gently lift the boot device out of the housing.
   While lifting the boot device out of the housing, make sure that you hold the boot device by the sides adjacent to the notches on the housing.

4. Set the boot device aside.

**Installing the boot device**

After you remove the old boot device, you must transfer system files and restore configuration information to your replacement boot device using one of several methods.

**Before you begin**

*Note:* For systems running in 7-Mode, NetApp recommends using the nondisruptive procedure for HA configurations running Data ONTAP 8.0.1 and later. For systems running in Cluster-Mode, NetApp recommends using the nondisruptive procedure for HA configurations running Data ONTAP Data ONTAP 8.1.1 and later.

**Choices**

- *Installing the boot device and transferring system files nondisruptively using netboot in systems running Data ONTAP 8.1* on page 6
- *Installing the boot device and transferring system files nondisruptively using netboot in systems running Data ONTAP 8.1.1 and later* on page 8
Installing the boot device and transferring system files nondisruptively using netboot in systems running Data ONTAP 8.1

You can transfer the system files and restore configuration information to your HA pair nondisruptively by using netboot and the partner node.

Before you begin

- You must have the blank replacement boot device you received from your provider.
- You must have a network interface to the HA pair partner node.
- You must have a separate IP address to use to netboot the target node.

About this task

The following procedure is written with the assumption that the target node has been taken over by the partner node and that the target node has booted to the boot environment prompt after the takeover has been completed.

Attention: You can only use this nondisruptive procedure in an HA pair that is running Data ONTAP 8.1.

Steps

1. Download and extract the file used for performing the netboot of your system:
   a) Download the appropriate netboot.tgz file for your platform from the NetApp Support Site to a web-accessible directory.
   b) Change to the web-accessible directory.
   c) Extract the contents of the netboot.tgz file to the target directory by entering the following command:

```
   tar -zxvf netboot.tgz
```

   Your directory listing should contain the following directory:
   netboot/

2. Download the image.tgz file from the NetApp Support Site to the web-accessible directory.

   Your directory listing should contain the following file and directory:
   image.tgz netboot/

3. If you are not already grounded, properly ground yourself.

4. Open the boot device cover, if applicable.

5. Align the boot device with the boot device socket or connector, and then firmly push the boot device into the socket or connector.

6. Check the boot device to make sure that it is seated squarely and completely in the socket or connector.

   If necessary, remove the boot device and reseat it into the socket.

7. Close the boot device cover.

8. Close the controller module cover, and then turn the controller module over.

9. Align the end of the controller module with the opening in the chassis, and then gently push the controller module halfway into the system.

10. Reinstall the cable management arms and recable the system, as needed.

    When recabling, remember to reinstall the media converters (SFPs) if you are using fiber cables.

11. Push the controller module all the way into the system, firmly push the cam handle to finish seating it, and then push the cam handle to the closed position.

12. The next step depends on your system configuration:
If your system has... Then...

| One controller module in the chassis | Reconnect the power cables to the power supplies and to the power sources, and then turn on the power. |
| Two controller modules in the chassis | The node already began rebooting; go to the next step. |

13. Set up the TFTP server on the partner node by entering the following commands on the partner node console:

   ```
   partner options tftpd.enable off
   partner options tftpd.rootdir /etc
   partner options tftpd.enable on
   ```

14. Depending on your network configuration, enter one of the following commands at the boot environment prompt:

<table>
<thead>
<tr>
<th>If you...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have DHCP enabled</td>
<td>Enter the following command: <code>ifconfig e0a -auto</code></td>
</tr>
</tbody>
</table>
| Do not have DHCP enabled | Enter the following command: `ifconfig e0a -addr=filer_addr -mask=netmask -gw=gateway -dns=dns_addr -domain=dns_domain`

   * `filer_addr` is the IP address of the storage system.
   * `netmask` is the network mask of the storage system.
   * `gateway` is the gateway for the storage system.
   * `dns_addr` is the IP address of a name server on your network.
   * `dns_domain` is the Domain Name System (DNS) domain name. If you use this optional parameter, you do not need a fully qualified domain name in the netboot server URL; you need only the server’s host name.

   **Note:** To netboot the node when your system is running in 7-Mode, use an IP address that is not the management IP address for the target. If your system is running in Cluster-Mode, you can use the management IP address.

   **Note:** Other parameters might be necessary for your interface. For details, use the `help ifconfig` command at the firmware prompt.

15. At the boot environment prompt, enter the following command:

   ```
   netboot http://path_to_web-accessible_directory/netboot/kernel
   ```

16. Select the **Install new software first** option from the displayed menu.

   This menu option downloads and installs the new Data ONTAP image to the boot device. If you are prompted to continue the procedure, enter `y` when prompted.

17. Enter `y` when you see the following prompt:

   ```
   This procedure is not supported for Non-Disruptive Upgrade on an HA pair.
   Do you want to continue? [y|no] y
   ```

18. Enter the path to the `image.tgz` when you see the following prompt:

   ```
   What is the URL for the package?
   http://path_to_web-accessible_directory/image.tgz
   ```

19. Restore the backup configuration on the target node by entering `y` and then entering the IP address of the server containing the `varfs.tgz` file when you see the following screen:

   **Example**

   ```
   ********************************************************************************
   * Restore Backup Configuration                                            *
   * This procedure only applies to storage controllers that                *
   ********************************************************************************
   ```
Replacing a boot device in a FAS22xx system running Data ONTAP 8.x

Installing the boot device and transferring system files nondisruptively using netboot in systems running Data ONTAP 8.1.1 and later

You can transfer the system files and restore configuration information to your HA pair nondisruptively by using netboot and the partner node.

Before you begin

- You must have the blank replacement boot device you received from your provider
- You must have a network interface to the HA pair partner node
- You must have a separate IP address to use to netboot the target node

About this task

The following procedure is written with the assumption that the target node has been taken over by the partner node and that the target node has booted to the boot environment prompt after the takeover has been completed.

Attention: You can only use this nondisruptive procedure in an HA pair that is running Data ONTAP 8.1.1 and later.

Steps

1. Download and extract the file used for performing the netboot of your system:
a) Download the appropriate netboot.tgz file for your platform from the NetApp Support Site to a web-accessible directory.
b) Change to the web-accessible directory.
c) Extract the contents of the netboot.tgz file to the target directory by entering the following command:

```
tar -zxvf netboot.tgz
```

Your directory listing should contain the following directory:
```
netboot/
```

2. Download the image.tgz file from the NetApp Support Site to the web-accessible directory.

Your directory listing should contain the following file and directory:
```
image.tgz  netboot/
```

3. If you are not already grounded, properly ground yourself.

4. Open the boot device cover, if applicable.

5. Align the boot device with the boot device socket or connector, and then firmly push the boot device into the socket or connector.

6. Check the boot device to make sure that it is seated squarely and completely in the socket or connector.
   
   If necessary, remove the boot device and reseat it into the socket.

7. Close the boot device cover.

8. Close the controller module cover, and then turn the controller module over.

9. Align the end of the controller module with the opening in the chassis, and then gently push the controller module halfway into the system.

10. Reinstall the cable management arms and recable the system, as needed.

    When recabling, remember to reinstall the media converters (SFPs) if you are using fiber cables.

11. Push the controller module all the way into the system, firmly push the cam handle to finish seating it, and then push the cam handle to the closed position.

12. The next step depends on your system configuration:

<table>
<thead>
<tr>
<th>If your system has...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>One controller module in the chassis</td>
<td>Reconnect the power cables to the power supplies and to the power sources, and then turn on the power.</td>
</tr>
<tr>
<td>Two controller modules in the chassis</td>
<td>The node already began rebooting; go to the next step.</td>
</tr>
</tbody>
</table>

13. Depending on your network configuration, enter one of the following commands at the boot environment prompt:

<table>
<thead>
<tr>
<th>If you...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have DHCP enabled</td>
<td>Enter the following command:</td>
</tr>
<tr>
<td></td>
<td><code>ifconfig e0a -auto</code></td>
</tr>
</tbody>
</table>
If you... | Then...
---|---
Do not have DHCP enabled | Enter the following command:
```
ifconfig e0a -addr=filer_addr -mask=netmask -gw=gateway -dns=dns_addr -domain=dns_domain
```

- `filer_addr` is the IP address of the storage system.
- `netmask` is the network mask of the storage system.
- `gateway` is the gateway for the storage system.
- `dns_addr` is the IP address of a name server on your network.
- `dns_domain` is the Domain Name System (DNS) domain name. If you use this optional parameter, you do not need a fully qualified domain name in the netboot server URL; you need only the server’s host name.

**Note:** To netboot the node when your system is running in 7-Mode, use an IP address that is not the management IP address for the target. If your system is running in Cluster-Mode, you can use the management IP address.

**Note:** Other parameters might be necessary for your interface. For details, use the `help ifconfig` command at the firmware prompt.

14. At the boot environment prompt, enter the following command:
```
netboot http://path_to_web-accessible_directory/netboot/kernel
```

15. Select the **Install new software first** option from the displayed menu.

   This menu option downloads and installs the new Data ONTAP image to the boot device. If you are prompted to continue the procedure, enter `y` when prompted.

16. Enter `y` when you see the following prompt:
```
This procedure is not supported for Non-Disruptive Upgrade on an HA pair.
Do you want to continue? [y|no]  y
```

17. Enter the path to the `image.tgz` when you see the following prompt:
```
What is the URL for the package?
http://path_to_web-accessible_directory/image.tgz
```

18. Restore the backup configuration on the target node by entering `y` and then entering the IP address of the server containing the `varfs.tgz` file when you see the following screen:

   **Example**

   `****************************************************************
   *             Restore Backup Configuration                     *
   *  This procedure only applies to storage controllers that      *
   *  are configured as an HA pair.                              *
   *  Choose Yes to restore the "varfs" backup configuration      *
   *  from the SSH server. Refer to the Boot Device Replacement  *
   *  guide for more details.                                   *
   *  Choose No to skip the backup and recovery and return to the *
   *  boot menu.                                                 *
   ****************************************************************
   Do you want to restore the backup configuration
now? {y|n}  y
```

   Start the `restore_backup` procedure on this node's HA partner.

   The restore configuration has been copied from the HA partner to this node,
19. Copy the varfs.tgz file from the HA partner node to the target node by entering the following command from the partner node console:

   `restore_backup target_node.netboot_IP.address`

Use the same IP address that was used for the netboot command.

20. Finish the restore backup on the target node by entering y when you see the following screen:

   **Example**

   The restore configuration has been copied from the HA partner to this node, would you like to use this restored copy now? {y|n} y

   CF device: /dev/ad0 found...

   Checking /dev/ad0s1 file system... success.

   Mounting /dev/ad0s1 to /cfcard... success.

   Checking /cfcard/x86/freebsd mount point... success.

   Restoring backup configuration...

21. Reboot the target node by entering the following command on the target node console:

   `boot_ontap`

22. After the target node has rebooted, complete the procedure by entering the following command on the partner node's console:

   `cf giveback`

### Installing the boot device and transferring system files disruptively using netboot

You can transfer the system files and restore configuration information to your system by using netboot to copy the system files to the replacement boot device.

**Before you begin**

- You must have the blank replacement boot device you received from your provider.
- You must have access to an HTTP server.
- You must have access to the NetApp Support Site at support.netapp.com.

This enables you to download the necessary system files for your platform and version of Data ONTAP running on it.

**About this task**

You can use this disruptive procedure in a system that is running Data ONTAP 8.x.

**Attention:** This procedure is disruptive, even when using it with a system in an HA configuration, because an immediate giveback and re-takeover occur during the procedure. If possible, you should use the nondisruptive procedure for HA configurations running Data ONTAP 8.0.1 and later operating in 7-Mode.

**Steps**

1. Download and extract the file used for performing the netboot of your system:
   a) Download the appropriate `netboot.tgz` file for your platform from the NetApp Support Site to a web-accessible directory.
   b) Change to the web-accessible directory.
   c) Extract the contents of the `netboot.tgz` file to the target directory by entering the following command:

      `tar -zxvf netboot.tgz`

   Your directory listing should contain the following directory:
2. Download the `image.tgz` file from the NetApp Support Site to the web-accessible directory.

   Your directory listing should contain the following file and directory:
   `image.tgz netboot/`

3. If you are not already grounded, properly ground yourself.

4. Open the boot device cover, if applicable.

5. Align the boot device with the boot device socket or connector, and then firmly push the boot device into the socket or connector.

6. Check the boot device to make sure that it is seated squarely and completely in the socket or connector.

   If necessary, remove the boot device and reseat it into the socket.

7. Close the boot device cover.

8. Close the controller module cover, and then turn the controller module over.

9. Align the end of the controller module with the opening in the chassis, and then gently push the controller module halfway into the system.

10. Reinstall the cable management arms and recable the system, as needed.

    When recabling, remember to reinstall the media converters (SFPs) if you are using fiber cables.

11. Push the controller module all the way into the system, firmly push the cam handle to finish seating it, and then push the cam handle to the closed position.

12. The next step depends on your system configuration:

    | If your system has... | Then... |
    |-----------------------|---------|
    | One controller module in the chassis | Reconnect the power cables to the power supplies and to the power sources, and then turn on the power. |
    | Two controller modules in the chassis | The node already began rebooting; go to the next step. |

13. Depending on your network configuration, enter one of the following commands at the boot environment prompt:

    | If you... | Then... |
    |-----------|---------|
    | Have DHCP enabled | Enter the following command: |
    |------------|---------------|
    | ifconfig e0a -auto |
    | Do not have DHCP enabled | Enter the following command: |
    |--------------|---------------------------------|
    | ifconfig e0a -addr=filer_addr -mask=netmask -gw=gateway -dns=dns_addr -domain=dns_domain |

    - `filer_addr` is the IP address of the storage system.
    - `netmask` is the network mask of the storage system.
    - `gateway` is the gateway for the storage system.
    - `dns_addr` is the IP address of a name server on your network.
    - `dns_domain` is the Domain Name System (DNS) domain name. If you use this optional parameter, you do not need a fully qualified domain name in the netboot server URL; you need only the server’s host name.

    **Note:** To netboot the node when your system is running in 7-Mode, use an IP address that is not the management IP address for the target. If your system is running in Cluster-Mode, you can use the management IP address.

    **Note:** Other parameters might be necessary for your interface. For details, use the `help ifconfig` command at the firmware prompt.

14. At the boot environment prompt, enter the following command:
The system begins to boot, but stops at the Boot menu.

15. Select the **Install new software first** option from the displayed menu.

This menu option downloads and installs the new Data ONTAP image to the boot device. If you are prompted to continue the procedure, enter `y` when prompted.

16. The next step depends on which version of Data ONTAP is installed on your system:

<table>
<thead>
<tr>
<th>If your system is running...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data ONTAP 8.0</td>
<td>Reboot the node by entering <code>y</code> when you see the following prompt:</td>
</tr>
<tr>
<td></td>
<td>The node must be rebooted to start using the newly installed software. Do you want to reboot now? [y/n] <code>y</code></td>
</tr>
<tr>
<td></td>
<td>The controller module reboots, but stops at the Boot menu because the boot device was reformatted and the configuration data needs to be restored.</td>
</tr>
<tr>
<td>Data ONTAP 8.0.1 and later</td>
<td>Complete the following substeps:</td>
</tr>
<tr>
<td></td>
<td>a. Enter <code>n</code> to skip the backup recovery when you see the following prompt:</td>
</tr>
<tr>
<td></td>
<td>Do you want to restore the backup configuration now? {y</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> If your system is running Data ONTAP 8.1.1 and later, the prompt says <strong>SSH server</strong>.</td>
</tr>
<tr>
<td></td>
<td>b. Reboot the node by entering <code>y</code> when you see the following prompt:</td>
</tr>
<tr>
<td></td>
<td>The node must be rebooted to start using the newly installed software. Do you want to reboot now? [y/n] <code>y</code></td>
</tr>
<tr>
<td></td>
<td>The controller module reboots, but stops at the Boot environment prompt.</td>
</tr>
<tr>
<td></td>
<td>c. Boot Data ONTAP by entering the following command at the boot environment prompt:</td>
</tr>
<tr>
<td></td>
<td><code>boot_ontap</code></td>
</tr>
<tr>
<td></td>
<td>The controller module reboots, but stops at the Boot menu because the boot device was reformatted and the configuration data needs to be restored.</td>
</tr>
</tbody>
</table>

17. Select the **Update flash from backup config** option from the displayed menu.

What is the URL for the package?

http://path_to_web-accessible_directory/image.tgz

18. Enter `y` when you see the following prompt:
This will replace all flash-based configuration with the last backup to disk. Are you sure you want to continue?: y

The system automatically reboots when the update flash (syncflash) process is complete.

19. Your next step depends on your system configuration.

<table>
<thead>
<tr>
<th>If your system is...</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A stand-alone configuration</td>
<td>You can begin using your system.</td>
</tr>
</tbody>
</table>
| An HA pair | Complete the following substeps:
  - a. Enter the following command at the boot environment prompt:
    ```
    boot_ontap
    ```
  - b. Give back the node after the boot process is complete by entering the following command from the partner console:
    ```
    cf giveback
    ```

---

**Replacing a boot device in a system running in Cluster-Mode**

Replacing a boot device in Cluster-Mode involves shutting down the node, removing the old boot device, and transferring the system files to the new boot device using either netboot on a local server or netboot with an HTTP server.

**About this task**

This procedure is for systems running Data ONTAP Cluster-Mode. If your system is running Data ONTAP 7-Mode, you must use that procedure instead.

**Steps**

1. **Shutting down a node in a high-availability configuration** on page 14
2. **Opening the system** on page 15
3. **Removing the boot device from the controller module** on page 17
4. **Installing the boot device** on page 18

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**Shutting down a node in a high-availability configuration**

To shut down the node you must determine the status of the node and, if necessary, take over the node so that the partner continues to serve data from the node's storage.

**About this task**

*Note:* Leave the power supplies turned on at the end of this procedure to provide power to the partner node.

**Steps**

1. Check the status of the target node (the node you want to perform maintenance on) by entering the following command at the system console of either node:
   ```
   storage failover show
   ```
2. Take one of the following actions, depending on the result of the `storage failover show` command:

<table>
<thead>
<tr>
<th>If...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neither node is in takeover mode</td>
<td>Go to the next step in this procedure.</td>
</tr>
<tr>
<td>The partner node took over the target node</td>
<td>The target node is in a state where you can begin removing it from the system chassis.</td>
</tr>
<tr>
<td>If...</td>
<td>Then...</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>The target node took over the partner node</td>
<td>a. Correct the problem that caused the takeover.</td>
</tr>
<tr>
<td></td>
<td>b. Enter the following command from the target node console:</td>
</tr>
<tr>
<td></td>
<td>storage failover giveback -fromnode target_node_name</td>
</tr>
<tr>
<td></td>
<td>c. Go back to the beginning of this procedure.</td>
</tr>
</tbody>
</table>

3. Take over the target node by entering the following command from the partner node’s console:

    storage failover takeover -bynode partner_node_name

4. Set the following boot environment variable on the target node at the boot environment prompt:

    setenv bootarg.init.boot_clustered true

### Opening the system

To access components inside the controller module, you must open the system.

### Steps

1. If you are not already grounded, properly ground yourself.

2. Unplug the system cables and SFPs from the controller module, as needed, and keep track of where the cables were connected.

   Leave the cables in the cable management arm, so that when you reinstall the cable management arm, the cables are organized.

3. Remove the cable management arms from the left and right sides of the controller module and set them aside.

4. Squeeze the latch on the cam handle until it releases, open the cam handle fully to release the controller module from the midplane, and then, using two hands, pull the controller module out of the chassis.
5. Turn the controller module over and open it by sliding the blue tabs to release the cover, and then swing the cover up and open.
Removing the boot device from the controller module

You must remove the old or failed boot device from the target controller module in your system prior to installing the new or replacement boot device.

Steps

1. If you are not already grounded, properly ground yourself.
2. Turn the controller module so that you can see where the boot device is located.
   Use the FRU map on the controller module or the following illustration to help you locate the boot device enclosure.
   
   **Note:** The illustration shows a controller module with a mezzanine card. Your system might have a mezzanine card or a blank.

3. Open the boot device cover and gently lift the boot device out of the housing.
   While lifting the boot device out of the housing, make sure that you hold the boot device by the sides adjacent to the notches on the housing.
4. Set the boot device aside.
Installing the boot device

After you remove the old boot device, you must transfer system files and restore configuration information to your replacement boot device using one of several methods.

Before you begin

Note: For systems running in 7-Mode, NetApp recommends using the nondisruptive procedure for HA configurations running Data ONTAP 8.0.1 and later. For systems running in Cluster-Mode, NetApp recommends using the nondisruptive procedure for HA configurations running Data ONTAP Data ONTAP 8.1.1 and later.

Choices

• Installing the boot device and transferring system files nondisruptively using netboot in systems running Data ONTAP 8.1.1 and later on page 18
• Installing the boot device and transferring system files disruptively using netboot on page 21

Installing the boot device and transferring system files nondisruptively using netboot in systems running Data ONTAP 8.1.1 and later

You can transfer the system files and restore configuration information to your HA pair nondisruptively by using netboot and the partner node.

Before you begin

• You must have the blank replacement boot device you received from your provider.
• You must have a network interface to the HA pair partner node.
• You must have a separate IP address to use to netboot the target node.

About this task

The following procedure is written with the assumption that the target node has been taken over by the partner node and that the target node has booted to the boot environment prompt after the takeover has been completed.

Attention: You can only use this nondisruptive procedure in an HA pair that is running Data ONTAP 8.1.1 and later. If your system is running Data ONTAP 8.1 operating in Cluster-Mode, you can only use the disruptive procedure.

Steps

1. Download and extract the file used for performing the netboot of your system:
   a) Download the appropriate netboot.tgz file for your platform from the NetApp Support Site to a web-accessible directory.
   b) Change to the web-accessible directory.
   c) Extract the contents of the netboot.tgz file to the target directory by entering the following command:
   
   ```
   tar -zxvf netboot.tgz
   ```

   Your directory listing should contain the following directory:
   
   ```
   netboot/
   ```

2. Download the image.tgz file from the NetApp Support Site to the web-accessible directory.

   Your directory listing should contain the following file and directory:
   
   ```
   image.tgz netboot/
   ```

3. If you are not already grounded, properly ground yourself.

4. Open the boot device cover, if applicable.
5. Align the boot device with the boot device socket or connector, and then firmly push the boot device into the socket or connector.
6. Check the boot device to make sure that it is seated squarely and completely in the socket or connector. If necessary, remove the boot device and reseat it into the socket.
7. Close the boot device cover.
8. Close the controller module cover, and then turn the controller module over.
9. Align the end of the controller module with the opening in the chassis, and then gently push the controller module halfway into the system.
10. Reinstall the cable management arms and recable the system, as needed. When recabling, remember to reinstall the media converters (SFPs) if you are using fiber cables.
11. Push the controller module all the way into the system, firmly push the cam handle to finish seating it, and then push the cam handle to the closed position.
12. The next step depends on your system configuration:

<table>
<thead>
<tr>
<th>If your system has...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>One controller module in the chassis</td>
<td>Reconnect the power cables to the power supplies and to the power sources, and then turn on the power.</td>
</tr>
<tr>
<td>Two controller modules in the chassis</td>
<td>The node already began rebooting; go to the next step.</td>
</tr>
</tbody>
</table>

13. Set the following boot environment variable at the boot environment prompt on the target node console:

```
setenv bootarg.init.boot_clustered true
```

14. Depending on your network configuration, enter one of the following commands at the boot environment prompt:

<table>
<thead>
<tr>
<th>If you...</th>
<th>Then...</th>
</tr>
</thead>
</table>
| Have DHCP enabled | Enter the following command:
| `ifconfig e0a -auto`
| Do not have DHCP enabled | Enter the following command:
| `ifconfig e0a -addr=filer_addr -mask=netmask -gw=gateway -dns=dns_addr -domain=dns_domain`

- `filer_addr` is the IP address of the storage system.
- `netmask` is the network mask of the storage system.
- `gateway` is the gateway for the storage system.
- `dns_addr` is the IP address of a name server on your network.
- `dns_domain` is the Domain Name System (DNS) domain name. If you use this optional parameter, you do not need a fully qualified domain name in the netboot server URL; you need only the server’s host name.

**Note:** To netboot the node when your system is running in 7-Mode, use an IP address that is not the management IP address for the target. If your system is running in Cluster-Mode, you can use the management IP address.

**Note:** Other parameters might be necessary for your interface. For details, use the `help ifconfig` command at the firmware prompt.

15. At the boot environment prompt, enter the following command:

```
netboot http://path_to_web-accessible_directory/netboot/kernel
```

16. Select the **Install new software first** option from the displayed menu.

This menu option downloads and installs the new Data ONTAP image to the boot device. If you are prompted to continue the procedure, enter `y` when prompted.
17. Enter **y** when you see the following prompt:

```
This procedure is not supported for Non-Disruptive Upgrade on an HA pair.
Do you want to continue? [y|no] **y**
```

18. Enter the path to the `image.tgz` when you see the following prompt:

```
What is the URL for the package?
http://path_to_web-accessible_directory/image.tgz
```

19. Restore the backup configuration by entering **y** when you see the following screen:

```
Example

****************************************************************
*             Restore Backup Configuration                     *
*  This procedure only applies to storage controllers that     *
*  are configured as an HA pair.                              *
*                                                             *
*  Choose Yes to restore the "varfs" backup configuration      *
*  from the SSH server. Refer to the Boot Device Replacement  *
*  guide for more details.                                    *
*  Choose No to skip the backup recovery and return to the    *
*  boot menu.                                                 *
****************************************************************

Do you want to restore the backup configuration now? {y|n}

**y**
```

Start the restore_backup procedure on this node's HA partner.

```
The restore configuration has been copied from the HA partner to this node. Would you like to use this restored copy now? {y|n}

**y**
```

20. Copy the `varfs.tgz` file from the HA partner node to the target node by entering the following command from the partner node console:

```
  system node run -node partner_node_name -command restore_backup
  target_node.netboot_IP.address
```

Use the same IP address that was used for the `netboot` command.

21. Finish the restore backup on the target node by entering **y** when you see the following screen:

```
Example

The restore configuration has been copied from the HA partner to this node, would you like to use this restored copy now? {y|n} **y**

CF device: /dev/ad0 found...
Checking /dev/ad0s1 file system... success.
Mounting /dev/ad0s1 to /cfcard... success.
Checking /cfcard/x86/freebsd mount point... success.
Restoring backup configuration...
```

22. Reboot the target node by entering the following command on the target node console:

```
  boot_ontap
```

23. After the target node has rebooted, complete the procedure by entering the following command on the partner node console:

```
  storage failover giveback -fromnode partner_node_name
```
Installing the boot device and transferring system files disruptively using netboot

You can transfer the system files and restore configuration information to your HA pair disruptively by using netboot to copy the system files to the replacement boot device.

Before you begin

- You must have the blank replacement boot device you received from your provider.
- You must have access to an HTTP server.
- You must have access to the NetApp Support Site at support.netapp.com.
  This enables you to download the necessary system files for your platform and version of Data ONTAP running on it.

About this task

You can use this disruptive procedure only in a system that is running Data ONTAP 8.x in Cluster-Mode.

Attention: This procedure is disruptive, even when using it with a system in an HA pair, because an immediate giveback and re-takeover occur during the procedure.

Steps

1. Download and extract the file used for performing the netboot of your system:
   a) Download the appropriate netboot.tgz file for your platform from the NetApp Support Site to a web-accessible directory.
   b) Change to the web-accessible directory.
   c) Extract the contents of the netboot.tgz file to the target directory by entering the following command:
      ```
      tar -zxvf netboot.tgz
      ```
      Your directory listing should contain the following directory:
      netboot/

2. Download the image.tgz file from the NetApp Support Site to the web-accessible directory.
   Your directory listing should contain the following file and directory:
   image.tgz netboot/

3. If you are not already grounded, properly ground yourself.

4. Open the boot device cover, if applicable.

5. Align the boot device with the boot device socket or connector, and then firmly push the boot device into the socket or connector.

6. Check the boot device to make sure that it is seated squarely and completely in the socket or connector.
   If necessary, remove the boot device and reseat it into the socket.

7. Close the boot device cover.

8. Close the controller module cover, and then turn the controller module over.

9. Align the end of the controller module with the opening in the chassis, and then gently push the controller module halfway into the system.

10. Reinstall the cable management arms and recable the system, as needed.
    When recabling, remember to reinstall the media converters (SFPs) if you are using fiber cables.

11. Push the controller module all the way into the system, firmly push the cam handle to finish seating it, and then push the cam handle to the closed position.

12. The next step depends on your system configuration:
If your system has... Then...

| One controller module in the chassis | Reconnect the power cables to the power supplies and to the power sources, and then turn on the power. |
| Two controller modules in the chassis | The node already began rebooting; go to the next step. |

13. Set the following boot environment variables at the boot environment prompt on the target node console:

   setenv bootarg.init.boot_clustered true
   setenv bootarg.init.usebootp false

   **Note:** The `bootarg.init.usebootp` variable needs to be set only if your system is running Data ONTAP 8.0.

14. Depending on your network configuration, enter one of the following commands at the boot environment prompt:

<table>
<thead>
<tr>
<th>If you...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have DHCP enabled</td>
<td>Enter the following command: <code>ifconfig e0a -auto</code></td>
</tr>
</tbody>
</table>
| Do not have DHCP enabled | Enter the following command: `ifconfig e0a -addr=filer_addr -mask=netmask -gw=gateway -dns=dns_addr -domain=dns_domain`

   - `filer_addr` is the IP address of the storage system.
   - `netmask` is the network mask of the storage system.
   - `gateway` is the gateway for the storage system.
   - `dns_addr` is the IP address of a name server on your network.
   - `dns_domain` is the Domain Name System (DNS) domain name. If you use this optional parameter, you do not need a fully qualified domain name in the netboot server URL; you need only the server's host name.

   **Note:** To netboot the node when your system is running in 7-Mode, use an IP address that is not the management IP address for the target. If your system is running in Cluster-Mode, you can use the management IP address.

   **Note:** Other parameters might be necessary for your interface. For details, use the `help ifconfig` command at the firmware prompt.

15. At the boot environment prompt, enter the following command:

   netboot http://path_to_the_web-accessible_directory/netboot/kernel

   The system begins to boot, but stops at the Boot menu.

16. Select the **Install new software first** option from the displayed menu.

   This menu option downloads and installs the new Data ONTAP image to the boot device. If you are prompted to continue the procedure, enter `y` when prompted.

17. Your next step depends on which version of Data ONTAP is installed on your system.

<table>
<thead>
<tr>
<th>If your system is running...</th>
<th>Then...</th>
</tr>
</thead>
</table>
| Data ONTAP 8.0 | Reboot the node by entering `y` when you see the following prompt:
   The node must be rebooted to start using the newly installed software. Do you want to reboot now? [y/n]
   `y`
   The controller module reboots, but stops at the Boot menu because the boot device was reformatted and the configuration data needs to be restored. |

22 Replacing a boot device in a FAS22xx system running Data ONTAP 8.x
If your system is running...

Data ONTAP 8.0.1 and later

Complete the following substeps:

a. Enter `n` to skip the backup recovery when you see the following prompt:

```
****************************************************************************************************
* Restore Backup Configuration
* This procedure only applies to storage controllers that are configured as an HA pair.
* Choose Yes to restore the 'varfs' backup configuration from a TFTP server. Refer to the Boot Device Replacement guide for more details.
* Choose No to skip the back up recovery and return to the boot menu.
****************************************************************************************************

Do you want to restore the backup configuration now? {y|n}

n

Note: If your system is running Data ONTAP 8.1.1 and later, the prompt says SSH server.
```

b. Reboot the node by entering `y` when you see the following prompt:

```
The node must be rebooted to start using the newly installed software. Do you want to reboot now? {y/n} y
```

The controller module reboots, but stops at the boot environment prompt.

c. Boot Data ONTAP by entering the following command at the boot environment prompt:

```
boot_ontap
```

The controller module reboots, but stops at the Boot menu because the boot device was reformatted and the configuration data needs to be restored.

18. Select the **Update flash from backup config** option from the displayed menu.

If you are asked to continue with the update, enter `y` when prompted.

19. Give back the target node by entering the following command from the partner console:

```
storage failover giveback -fromnode partner_node_name
```
Completing the replacement process

After you replace the part, you can return the failed part to NetApp, as described in the RMA instructions shipped with the kit. Contact technical support at support.netapp.com, 888-463-8277 (North America), 00-800-44-638277 (Europe), or +800-800-80-800 (Asia/Pacific) if you need the RMA number or additional help with the replacement procedure.

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You can also contact us in the following ways:

- NetApp, Inc., 495 East Java Drive, Sunnyvale, CA 94089 U.S.
- Telephone: +1 (408) 822-6000
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