This document provides instructions for replacing a Solid State Drive (SSD) in Data Domain DD9500 and DD9800 systems.

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Revision history

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<td>03</td>
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Related documentation

EMC provides a variety of document types to support our products. End-user documents include user guides, hardware installation guides, administrator guides, software guides, part replacement guides, release notes, and others. Integration documents describe how to integrate Data Domain systems with third party backup applications, and compatibility matrices show which components are compatible with each other.

This document refers to other EMC documents by title. To locate a referenced document, go to the EMC Support website at https://support.emc.com, enter the document title in the search box, and click the search button.

Note

Hard copies of a document may be out of date. Always check for the current version of a document before you start an upgrade or begin a significant configuration change.

Tools and supplies needed

For a list of recommended tools and supplies for field work, see the document titled FE Toolkit Inventory and Common Procedures for FRU Tasks at https://support.emc.com.

Overview: DD9500 and DD9800 Solid State Drives (SSD)

There are four hot swappable 400 GB SSDs located near the top edge of the front panel shown within the red rectangle. The SSDs are numbered, from left to right, as 0, 1, 2 and 3.

Each SSD contains an LED status indicator. Blue indicates a running functional status while amber indicates failed status.

Figure 1  SSD drives in the front of the system
1. Slot 0
2. Slot 1
3. Slot 2
4. Slot 3

The LEDs in the front are shown in the following figure.

**Figure 2** Front LEDs

1. SSD LED in slot 0
2. SSD LED in slot 1
3. SSD LED in slot 2
4. SSD LED in slot 3
5. System power LED — Blue light indicates system running
Remove the bezel

Procedure

1. Remove the bezel on your DD9500/DD9800 system by grasping both hand holds and pressing toward the center of the bezel until the latches release from the sides of the chassis. The red circles identify the latches on each bezel.

   Figure 4 Removing the bezel

Identify a failed SSD drive

Procedure

1. Identify the failed SSD drive by observing the service LED of the failed SSD. The service LED on a failed SSD glows a steady amber.

   Table 2 SSD LED status indicators

<table>
<thead>
<tr>
<th>Part</th>
<th>Description or Location</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSD</td>
<td>Top LED</td>
<td>Solid blue, disk ready, blinks while busy.</td>
</tr>
<tr>
<td>SSD</td>
<td>Bottom LED</td>
<td>Dark indicates healthy. Solid amber indicates disk fail.</td>
</tr>
</tbody>
</table>
3. Log in as a sysadmin user.

4. Enter the `disk show state` command to display the state of all disk drives and to identify a failed disk. Sample output for this command is shown.

   Note
   Failed F and absent A are possible values.

   # disk show state
   Enclosure    Disk
   1            2 3 4 5 6 7 8 9 10 11 12 13 14 15
   1            . . F
   2            0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   Legend       State           Count
   ------       ------------     -----  
   .           In Use Disks    2
   s           Spare Disks     2
   O           Foreign Disks   14
   F           Failed Disks    1
   ------       ------------     -----  
   Total 19 disks

   Disk     Disks    Progress (%)    Remaining (minutes)
   Group    Reconstructing      ----   -------
   ---      ------------        -----   --------
   dg0      (1 pending)        n/a   n/a

   5. Enter the `disk beacon enclosure-id.disk-id` command to correctly identify the failed SSD drive that needs replacement:

   # disk beacon enclosure-id.disk-id

Remove and install an SSD drive

Note

- Whenever servicing parts in a running system, move slowly while inserting and latching the new parts. This avoids creating strong vibrations in the chassis which might interfere with other operating components.
- Always replace a failed SSD as soon as possible. A system can run with one failed SSD. However, another SSD failure disables the system.
- Only trained and qualified personnel should install or replace this equipment.
- During the procedure, wear a grounding wrist strap to avoid ESD damage to the equipment.

Replace an SSD drive

CAUTION

DD9500 and DD9800 systems use 400 GB SSDs. Check the label on the release bezel of the drive for the 400 GB number.
Procedure

1. Slide the orange latch to the left and pull the release bezel to remove the SSD drive from its slot.

   Figure 5  Removing an SSD drive

2. Pull the drive from the chassis.

3. You can use the `disk show state` command to see that the output indicates an absent A state for that disk:

   # disk show state
   
   Enclosure Disk
   1     1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
   1     . . . s
   2     0 0 0 0 0 0 0 0 0 0 0 0 0 0 s
   ___  ----------------------------------------------

   Legend   State           Count
   ------   -------------   -----  
   .        In Use Disks    2
   s        Spare Disks     2
   O        Foreign Disks   14
   A        Absent Disks    1
   ------   -------------   -----  
   Total 19 disks

   Disk    Disks    Progress Remaining
   Group   Reconstructing (%)    (minutes)
   -----   --------------   --------   ---------  
   dg0     (1 pending)      n/a        n/a
   -----   --------------   --------   ---------  

4. Get the replacement drive for the system labeled 400 GB on the release bezel of the drive.

5. Install a replacement drive by pushing the drive fully into the drive bay until the latch begins to close.

6. Close the release bezel until it clicks into place.
Solid State Drive Replacement

**Verify the replacement SSD**

**Procedure**

1. The system reports the state of a replacement SSD depending on the history of the SSD. Enter the `disk show state` command to display the state of all SSD drives. This command checks that the SSD is recognized by the Data Domain system. In the command display, the disk state should be spare or reconstructing.

```
# disk show state
Enclosure | Disk | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
----------|------|----------------------------------------------
1         | s .  | . R                                          |
2         | O O O O O O O O O O O O O O O O O O | s
----------|------|----------------------------------------------
Legend    | State | Count
------    | ------|-----
.         | In Use Disks | 2
s         | Spare Disks   | 2
O         | Foreign Disks | 14
R         | Spare (reconstructing) Disks | 1
------    | ----------- | ----
Total 19 disks
Disk Group | Disks | Reconstructing | Progress (%) | Remaining (minutes)
---- ------ | ------ | -------------- | -------- | ----------
dg0      | 1.4    | 4              | 15         |
```

2. A replacement SSD that is inserted into the system is recognized as a failed disk drive and is noted as failed when first installed. An auto-spare process should change the status to spare in a few minutes. An amber LED should turn off after an SSD has been replaced.

3. If the SSD shows as failed, enter the `disk unfail` command with the correct disk-id.

```
# disk unfail 1.4

The 'disk unfail' command will add the disk to the head unit and mark it as a spare. Any existing data on this disk will be lost.

Are you sure? (yes|no|?) [no]: yes
ok, proceeding.
```

4. Enter the `disk show state` command to display the state of all SSD drives to make sure all the disks are in good state.

**Note**

When the amber fault light has turned off, all the disk are in good state.
Complete the procedure

Procedure

1. Once the replacement is deemed functional, install the front bezel by pushing into place.

2. Return the failed or replaced part(s) to EMC Data Domain. Reuse the packaging from the new part(s) and use the included prepaid waybill for shipping. Reference the RMA number on the outside of the package.

3. Send an autosupport report from the system by entering the `autosupport send` command.
Complete the procedure