Dell EMC Data Domain DD6800 System

Installation Guide

302-005-016 REV 01
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TABLES
CHAPTER 1

Planning and Site Preparation

- Tools and supplies needed
- Safety information
- Field-installed systems vs. factory-racked systems
Tools and supplies needed
These tools and supplies may be helpful for the installation and setup tasks for Data Domain systems.

- Null modem cable (DB-9 female to female), plus spare
- USB-to-DB-9 serial (male connector) converter cable if the laptop does not have a serial port, plus spare
- Power adapter, C13 to NEMA 5–15 (if based in North America), or a power cord for your laptop power adapter with a C13 plug, so that you can power your laptop from a rack PDU
- Antistatic wrist strap and conductive foam pad
- Screwdrivers:
  - Phillips #2 with a 12 in. or longer blade
  - Phillips #2 (standard-length blade)
  - Phillips #1
  - Flat head 3/16 in.
  - Flat head 1/4 in.
  - Torx T10
- Flashlight
- Needle nose pliers
- Diagonal wire cutters (for cutting tie wraps)
- 2 GB or greater USB flash memory drive
- Tie wraps (4 in. and 8 in.)
- (recommended) Roll of 5/8 inch Velcro cable tie material (3M Scotchmate SJ-3401 or similar)

Safety information

⚠️ CAUTION ⚠️

- If the system is used in a manner that is not specified by the manufacturer, the protection that is provided by the equipment may be impaired.
- The RJ45 sockets on the motherboard, PCI cards, or I/O modules are for Ethernet connection only and must not be connected to a telecommunications network.

Review this list of important safety recommendations.

- All plug-in modules and blank plates are part of the fire enclosure and must be removed only when a replacement can be added immediately. The system must not be run without all parts in place.
- Operate the system controller from a power supply input voltage range of 100–240 VAC and 50–60 Hz. The ES30 and FS15 shelves use 100–240 VAC and 50–60 Hz. DS60 shelves use 200–240 VAC and 50–60 Hz.
- Each component is intended to operate with all working power supplies installed.
- Provide a suitable power source with electrical overload protection.
- A safe electrical earth connection must be provided to each power cord. Check the grounding of the power sources before applying power.
- The plug on each power supply cord is used as the main device to disconnect power from the system. Ensure that the socket outlets are located near the equipment and are easily accessible.
- Permanently unplug the unit if you think it is damaged in any way and before moving the system. Systems include two power supplies. To remove system power completely, disconnect both power supplies.
- The power connections must always be disconnected before removal or replacement of a power supply module from the system.
- A faulty power supply module must be replaced within 24 hours.
- Do not lift system components by yourself. Systems weigh up to 80 lbs (36.29 kg), an ES30 expansion shelf weighs up to 68 lbs (30.8 kg), and a DS60 shelf weighs up to 225 lbs (102 KG)

**CAUTION**

Data Domain systems are heavy. Use at least two people or a mechanical lift to move any system.

- Do not lift an expansion shelf by the front handles on any modules. The handles are not designed to support the weight of the populated shelf.
- To comply with applicable safety, emission, and thermal requirements, covers must not be removed and all bays must be fitted with plug-in modules.
- Once removed from the shipping box, it is ok to lift the system or the chassis

**Figure 1** Warning about lifting the system

- To prevent the rack from becoming top-heavy, load the rack with storage shelves beginning at the bottom and the system in the designated location.
- Data Domain recommends that you wear a suitable antistatic wrist or ankle strap for ESD protection. Observe all conventional ESD precautions when handling plug-in modules and components.

**Field-installed systems vs. factory-racked systems**

Data Domain systems are available from the factory as components to install in an existing rack on site, or pre-installed in a rack. The following sections provide additional information about each type of installation.
Field-installed systems
This installation guide is primarily intended for systems shipped as components to be installed in an existing rack on site. Follow all the instructions in this document to rack, cable, and configure the system.

Factory-racked systems
Factory-racked systems are pre-installed in the rack, with the cables already connected. Follow the instructions in the chapter Configure System For Use to configure the factory-racked system.

The following documents, available from the Online Support website at https://support.emc.com, provide additional information about the factory rack:

- Dell EMC 40U-P Cabinet Site Preparation Guide
- Dell EMC 40U-P Cabinet Unpacking and Setup Guide
- Data Domain Rack Service Guide
CHAPTER 2

Install the System in the Rack

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Unpack the system

1. Remove the accessories and rail mount kit from the shipping packages.

2. Remove the controller and the bezels from the shipping packages.

**CAUTION**

Data Domain systems are heavy. Always use two people or a mechanical lift to move a system.

**Figure 2** Warning about lifting the system

3. Remove expansion shelves and their bezels from the shipping packages.

Rails and cable management assembly

The rail kit is universal in that it supports all rack mounting hole types and sizes. Both the front and the rear ends of the rail kit contain threaded posts that come with a cap installed. The cap fits square and round hole unthreaded racks. Large flat headed M4 screws insert through the rail into the rail kit to secure the rail to the rack.

When installing rails, do not tighten the screws all the way until all the screws are in place. This assures that the screws are all screwed in the same distance, and prevents one from skewing the others.

The rail kit includes two bracket assemblies, one marked for the left side and one marked for the right side of the rack.

A cable management assembly (CMA), for organization of cables at the rear of the system, is already installed onto the system on a Data Domain rack. For field installed systems, the CMA is shipped with the system.
Identify the rack location to install the system

Identify the designated location for the system controller or controllers in the rack.

- When using systems with ES30 shelves:
  - The designated location for a single node, or the primary node of an HA pair is U13-U14 in rack 1.
  - The designated location for the standby node of an HA pair is U15-16 in rack 1.
- When using systems with DS60 shelves:
  - The designated location for a single node, or the primary node of an HA pair is U22-U23 in rack 1.
  - The designated location for the standby node of an HA pair is U25-26 in rack 1.

Note

The designated slots in the rack are the recommended location for the systems to support the cabling described in this document. Other locations may require different cable lengths for some configurations.

Install the rails

This procedures describes how to install the mounting rails.

Procedure

1. If EIA rail mounting holes of 7.1 MM diameter round, or M5, 12-24, 10-32 threaded, are being used, install the filler using the pin as shown. If not, proceed to the next step.
Once the filler is installed to the rail, the installation can continue as follows.

2. At the front of the cabinet, insert the two adaptors on the front of the rail into the correct holes in the 2U space.

3. Insert one screw into the lower hole to hold the front of the rails in place. Do not fully tighten the screw at this time.

Note

An 18-inch screwdriver (minimum) is required to install the screw into the rear of the rails.

4. At the rear of the cabinet, align and insert the two adaptors on the rear of the rail with the mounting holes in the NEMA channel. Make sure the rail is level.
5. Use an 18-inch screwdriver (minimum) to secure the rear of the rail to the NEMA channel using one screw.
6. Tighten the front screw.
7. Repeat for the other rail.

Install the system into a rack

**CAUTION**

Data Domain systems are heavy. Always use two people or a mechanical lift to move a system.

Figure 4 Warning about lifting the system

**CAUTION**

- The system controller should be installed in the pre-defined location for the system controller in the rack to comply with Data Domain rack mounting guidelines.
- Do not apply AC power to the system controller until all expansion shelves and cables are installed.
- Ensure the PSNT label, which is in a slot just beneath the power supply on the rear of the chassis is not damaged or snagged during the installation of the system into the rack.

Procedure

1. From the front of the rack, lift the chassis to install the system in the rack in the correct location.
2. Slide the unit onto the rails and push it fully into the cabinet until the mounting holes on the unit are flush with the NEMA channel.

3. Secure the unit to the NEMA channel and rails using four screws, two on each side.

4. Check the PSNT label in the slot just beneath the power supply at the rear of the chassis.
Installing the cable management assembly

Installing a cable management assembly (CMA) can help keep the system neat and organized.

Procedure

1. Align and insert the CMA tabs in the tongues on the rails and align the plunger in the hole of the mounting rail on both sides.

2. Working one side at a time, pull out the plunger and slide the CMA tabs as required until the plunger pin snaps into the mounting hole of the rail.

Figure 6 Installing the CMA on the rack
3. Open the velcro straps to route cables through the CMA. Secure the cables in place using the velcro straps.

4. To adjust the CMA position depth (in or out), pull inward on the orange latches (1) and pull out or push in on the arm simultaneously as needed (2).

---

**Note**

The I/O modules, the NVRAM module, the power supply units and the 2.5" disks can be accessed for removal and replacement with the CMA in place. Adjust the depth of the CMA arms to access these modules.

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**Figure 7 Adjusting the CMA depth**

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**Installing the expansion shelves into the racks**

---

**CAUTION**

- Data Domain systems are heavy. Always use two people or a mechanical lift to move and install a Data Domain system. Use caution to install the expansion shelves.
- Ensure that each rack is securely anchored to prevent tipping.

---

1. From the front of a rack, lift the shelf to the designated rack location.
2. Add shelves to the racks in order, one at a time, from the bottom of a rack to the top filling each string in that rack before going to the next.

Note

Strings in add-on racks may connect to the same string number in other racks.

Shelves are added in the order V1.1, V1.2, V1.3, V1.4, V2.1, V2.2, and so on. Shelves are labeled VN.M. VN refers to string "N" and the "M" is the number of the shelf in the string. For example, V3.2 refers to the second shelf in the third string.

3. Secure each expansion shelf in the rack.

4. When installing an SSD shelf for Data Domain metadata on flash:
   - The SSD shelf counts towards the total number of shelves connected to the system.
   - Data Domain recommends installing the SSD shelf in the V1.1 position, but if that is not possible, the shelf can be placed in a different location in the rack so long as cables of sufficient length are available.

Note

V1.1 is recommended for better performance because this will be the 1st hop where data will be written. If the SSD shelf is connected to the last enclosure in a chain, then each read/write request has to go through many hops, which introduces latency issues when compared to when the SSD shelf is on the 1st shelf of a chain.
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Connecting ES30 shelves

The cabling diagrams in this section show maximum configurations. Not all systems will have all the disk shelves shown in the diagrams.

Add shelf-to-shelf cables between shelves in a loop and to the controller as shown in the diagrams.

1. Cable from the B Controller EXPANSION ♦ port of the lower shelf to the B controller HOST ● port of the next higher shelf.
2. Then cable from the A Controller HOST ● port of lower shelf to the A controller EXPANSION ♦ port of the next higher shelf.
3. There are no specific placement or cabling requirements for SSD shelves, or the metadata shelves for DD Cloud Tier configurations. These shelves can be installed and cabled the same way as standard ES30 shelves. SSD shelves and DD Cloud Tier metadata do not need to be cabled in a separate set from the other ES30 shelves.

For HA pairs, the primary and standby nodes use different cables to connect to ES30 shelves. The primary node uses cables for ES30 host ports (●), and the standby node uses cables for ES30 expansion ports (♦).

**ES30 cable information**

When connecting ES30 shelves, different cables are required for the following connections:

- Connecting the primary node to the ES30 shelf loop
- Connecting the standby node to the ES30 shelf loop
- Connecting an ES30 shelf to an ES30 shelf within a loop

Table 1 Cables for primary or single node to ES30 shelf loop

<p>| HD-mini-SAS connector on controller, SFF-8088 connector keyed for host port on ES30 |
|---------------------------------|-----------------|-----------------|</p>
<table>
<thead>
<tr>
<th>Cable model code</th>
<th>Part number</th>
<th>Cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-SAS-HDMS2</td>
<td>038-003-810</td>
<td>2 m (79 in)</td>
</tr>
<tr>
<td>X-SAS-HDMS3</td>
<td>038-003-811</td>
<td>3 m (118 in)</td>
</tr>
<tr>
<td>X-SAS-HDMS5</td>
<td>038-003-813</td>
<td>5 m (196 in)</td>
</tr>
</tbody>
</table>

Table 2 Cables for standby node to ES30 shelf loop

<p>| HD-mini-SAS connector on controller, SFF-8088 connector keyed for expansion port on ES30 |
|---------------------------------|-----------------|-----------------|</p>
<table>
<thead>
<tr>
<th>Cable model</th>
<th>Part number</th>
<th>Cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-HA-ES30-SAS-2</td>
<td>038-004-108</td>
<td>2 m (79 in)</td>
</tr>
<tr>
<td>X-HA-ES30-SAS-5</td>
<td>038-004-111</td>
<td>5 m (196 in)</td>
</tr>
</tbody>
</table>
Table 3 ES30 to ES30 cable options

<table>
<thead>
<tr>
<th>Cable model</th>
<th>Part number</th>
<th>Cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-SAS-MSMS1</td>
<td>038-003-786</td>
<td>1 m (39 in.)</td>
</tr>
<tr>
<td>X-SAS-MSMS2</td>
<td>038-003-787</td>
<td>2 m (79 in.)</td>
</tr>
<tr>
<td>X-SAS-MSMS3</td>
<td>038-003-751</td>
<td>3 m (118 in.)</td>
</tr>
<tr>
<td>X-SAS-MSMS4</td>
<td>038-003-628</td>
<td>4 m (158 in.)</td>
</tr>
<tr>
<td>X-SAS-MSMS5</td>
<td>038-003-666</td>
<td>5 m (196 in.)</td>
</tr>
</tbody>
</table>

DD6800 (single node, DD Cloud Tier, or ERSO)

DD6800 systems support a maximum of 28 shelves, divided into four sets of seven shelves.

**Note**

For configurations of 16 SAS shelves or less, do not exceed four shelves per set.

Table 4 DD6800 with ES30 cabling instructions

<table>
<thead>
<tr>
<th>String (Loop)</th>
<th>I/O - Port</th>
<th>Shelf Port</th>
<th>Length a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O 7 - Port 0</td>
<td>B controller HOST ⬤ port of shelf V1.1</td>
<td>2M</td>
</tr>
<tr>
<td>1</td>
<td>I/O 2 - Port 0</td>
<td>A controller HOST ⬤ port of the highest number shelf in V1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 7 - Port 2</td>
<td>B controller HOST ⬤ port of shelf V2.1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 2 - Port 2</td>
<td>A controller HOST ⬤ port of the highest number shelf in V2</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 7 - Port 1</td>
<td>B controller HOST ⬤ port of shelf V3.1</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 2 - Port 1</td>
<td>A controller HOST ⬤ port of the highest number shelf in V3</td>
<td>2M</td>
</tr>
<tr>
<td>4</td>
<td>I/O 7 - Port 3</td>
<td>B controller HOST ⬤ port of shelf V4.1</td>
<td>3M</td>
</tr>
<tr>
<td>4</td>
<td>I/O 2 - Port 3</td>
<td>A controller HOST ⬤ port of the highest number shelf in V4</td>
<td>3M</td>
</tr>
</tbody>
</table>

a. Cable lengths shown are designed for Data Domain racks. Longer cables (up to 5M) can be used.
**DD6800 (HA or HA with DD Cloud Tier)**

DD6800 systems supports a maximum of 28 shelves, divided into four sets of seven shelves.

---

**Note**

For configurations of 16 SAS shelves or less, do not exceed four shelves per set.
Table 5 DD6800 with ES30 primary node cabling instructions

<table>
<thead>
<tr>
<th>String (Loop)</th>
<th>I/O - Port</th>
<th>Shelf Port</th>
<th>Length a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O 7 - Port 0</td>
<td>B controller HOST ● port of shelf V1.1</td>
<td>2M</td>
</tr>
<tr>
<td>1</td>
<td>I/O 2 - Port 0</td>
<td>A controller HOST ● port of the highest number shelf in V1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 7 - Port 2</td>
<td>B controller HOST ● port of shelf V2.1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 2 - Port 2</td>
<td>A controller HOST ● port of the highest number shelf in V2</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 7 - Port 1</td>
<td>B controller HOST ● port of shelf V3.1</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 2 - Port 1</td>
<td>A controller HOST ● port of the highest number shelf in V3</td>
<td>2M</td>
</tr>
<tr>
<td>4</td>
<td>I/O 7 - Port 3</td>
<td>B controller HOST ● port of shelf V4.1</td>
<td>3M</td>
</tr>
<tr>
<td>4</td>
<td>I/O 2 - Port 3</td>
<td>A controller HOST ● port of the highest number shelf in V4</td>
<td>3M</td>
</tr>
</tbody>
</table>

a. Cable lengths shown are designed for Data Domain racks. Longer cables (up to 5M) can be used.

Table 6 DD6800 with ES30 standby node cabling instructions

<table>
<thead>
<tr>
<th>String (Loop)</th>
<th>I/O - Port</th>
<th>Shelf Port</th>
<th>Length a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O 7 - Port 0</td>
<td>A controller EXPANSION ● port of shelf V1.1</td>
<td>2M</td>
</tr>
<tr>
<td>1</td>
<td>I/O 2 - Port 0</td>
<td>B controller EXPANSION ● port of the highest number shelf in V1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 7 - Port 2</td>
<td>A controller EXPANSION ● port of shelf V2.1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 2 - Port 2</td>
<td>B controller EXPANSION ● port of the highest number shelf in V2</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 7 - Port 1</td>
<td>A controller EXPANSION ● port of shelf V3.1</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 2 - Port 1</td>
<td>B controller EXPANSION ● port of the highest number shelf in V3</td>
<td>2M</td>
</tr>
<tr>
<td>4</td>
<td>I/O 7 - Port 3</td>
<td>A controller EXPANSION ● port of shelf V4.1</td>
<td>3M</td>
</tr>
<tr>
<td>4</td>
<td>I/O 2 - Port 3</td>
<td>B controller EXPANSION ● port of the highest number shelf in V4</td>
<td>3M</td>
</tr>
</tbody>
</table>

a. Cable lengths shown are designed for Data Domain racks. Longer cables (up to 5M) can be used.
Figure 9 DD6800 with ES30 shelves, HA or HA with DD Cloud Tier
Connecting DS60 shelves

The cabling diagrams in this section show maximum configurations. Not all systems will have all the disk shelves shown in the diagrams.

Add shelf-to-shelf cables between shelves in a loop and to the controller as shown in the diagrams.

1. The recommended cabling for HA utilizes a maximum of three loops.
2. There are no specific placement or cabling requirements for SSD shelves. These shelves can be installed and cabled the same way as standard ES30 shelves.
3. The SSD shelf counts towards the total number of shelves connected to the system.
4. Data Domain recommends installing the SSD shelf in the V1.1 position, but if that is not possible, the shelf can be placed in a different location in the rack so long as cables of sufficient length are available.

Note

V1.1 is recommended for better performance because this will be the 1st hop where data will be written. If the SSD shelf is connected to the last enclosure in a chain, then each read/write request has to go through many hops, which introduces latency issues when compared to when the SSD shelf is on the 1st shelf of a chain.

5. Use the cable management assembly to support and organize all cables.

DS60 cable information

When connecting DS60 shelves, the same cable type connects a controller to a DS60 shelf, or a DS60 shelf to a DS60 shelf.

Table 7 DS60 cables

<table>
<thead>
<tr>
<th>HD-mini-SAS connector on controller and enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable model code</td>
</tr>
<tr>
<td>------------------</td>
</tr>
<tr>
<td>XC-DS60-SAS-3M</td>
</tr>
<tr>
<td>XC-DS60-SAS-4M</td>
</tr>
<tr>
<td>XC-DS60-SAS-5M</td>
</tr>
</tbody>
</table>

DD6800

Table 8 DD6800 with DS60 cabling instructions

<table>
<thead>
<tr>
<th>String (Loop)</th>
<th>I/O - Port</th>
<th>Shelf Port</th>
<th>Length a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O 7 - Port 0</td>
<td>A controller port 0 of shelf V1.1</td>
<td>2M</td>
</tr>
<tr>
<td>1</td>
<td>I/O 2 - Port 0</td>
<td>B controller port 0 of the highest number shelf in V1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 7 - Port 1</td>
<td>A controller port 0 of shelf V2.1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 2 - Port 1</td>
<td>B controller port 0 of the highest number shelf in V2</td>
<td>2M</td>
</tr>
</tbody>
</table>
Table 8 DD6800 with DS60 cabling instructions (continued)

<table>
<thead>
<tr>
<th>String (Loop)</th>
<th>I/O - Port</th>
<th>Shelf Port</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>I/O 7 - Port 2</td>
<td>A controller port 0 of shelf V3.1</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 2 - Port 2</td>
<td>B controller port 0 of the highest number shelf in V3</td>
<td>2M</td>
</tr>
</tbody>
</table>

a. Cable lengths shown are designed for Data Domain racks. Longer cables (up to 5M) can be used.
Figure 10 DD6800 with DS60 shelves
## DD6800 with HA

### Table 9 DD6800 with DS60 primary node cabling instructions

<table>
<thead>
<tr>
<th>String (Loop)</th>
<th>I/O - Port</th>
<th>Shelf Port</th>
<th>Length a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O 7 - Port 0</td>
<td>A controller port 0 of shelf V1.1</td>
<td>2M</td>
</tr>
<tr>
<td>1</td>
<td>I/O 2 - Port 0</td>
<td>B controller port 0 of the highest number shelf in V1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 7 - Port 1</td>
<td>A controller port 0 of shelf V2.1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 2 - Port 1</td>
<td>B controller port 0 of the highest number shelf in V2</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 7 - Port 2</td>
<td>A controller port 0 of shelf V3.1</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 2 - Port 2</td>
<td>B controller port 0 of the highest number shelf in V3</td>
<td>2M</td>
</tr>
<tr>
<td>4</td>
<td>I/O 7 - Port 3</td>
<td>A controller HOST port of the SSD shelf</td>
<td>2M</td>
</tr>
<tr>
<td>4</td>
<td>I/O 2 - Port 3</td>
<td>B controller HOST port of the SSD shelf</td>
<td>2M</td>
</tr>
</tbody>
</table>

a. Cable lengths shown are designed for Data Domain racks. Longer cables (up to 5M) can be used.

### Table 10 DD6800 with DS60 standby node cabling instructions

<table>
<thead>
<tr>
<th>String (Loop)</th>
<th>I/O - Port</th>
<th>Shelf Port</th>
<th>Length a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O 7 - Port 0</td>
<td>B controller port 2 of shelf V1.1</td>
<td>2M</td>
</tr>
<tr>
<td>1</td>
<td>I/O 2 - Port 0</td>
<td>A controller port 2 of the highest number shelf in V1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 7 - Port 1</td>
<td>B controller port 2 of shelf V2.1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 2 - Port 1</td>
<td>A controller port 2 of the highest number shelf in V2</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 7 - Port 2</td>
<td>B controller port 2 of shelf V3.1</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 2 - Port 2</td>
<td>A controller port 2 of the highest number shelf in V3</td>
<td>2M</td>
</tr>
<tr>
<td>4</td>
<td>I/O 7 - Port 3</td>
<td>A controller EXPANSION port of the SSD shelf</td>
<td>2M</td>
</tr>
<tr>
<td>4</td>
<td>I/O 2 - Port 3</td>
<td>B controller EXPANSION port of the SSD shelf</td>
<td>2M</td>
</tr>
</tbody>
</table>

a. Cable lengths shown are designed for Data Domain racks. Longer cables (up to 5M) can be used.
DD6800 with DD Cloud Tier

**Table 11 DD6800 with DS60 DD Cloud Tier cabling instructions**

<table>
<thead>
<tr>
<th>String (Loop)</th>
<th>I/O - Port</th>
<th>Shelf Port</th>
<th>Length a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O 7 - Port 0</td>
<td>A controller port 0 of shelf V1.1</td>
<td>2M</td>
</tr>
</tbody>
</table>
**Table 11** DD6800 with DS60 DD Cloud Tier cabling instructions (continued)

<table>
<thead>
<tr>
<th>String (Loop)</th>
<th>I/O - Port</th>
<th>Shelf Port</th>
<th>Length a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O 2 - Port 0</td>
<td>B controller port 0 of the highest number shelf in V1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 7 - Port 1</td>
<td>A controller HOST port of the second metadata shelf</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 2 - Port 1</td>
<td>B controller HOST port of the first metadata shelf</td>
<td>2M</td>
</tr>
</tbody>
</table>

a. Cable lengths shown are designed for Data Domain racks. Longer cables (up to 5M) can be used.
Figure 12 DD6800 with DS60 shelves, DD Cloud Tier

Table 12 DD6800 with DS60 HA and DD Cloud Tier primary node cabling instructions

<table>
<thead>
<tr>
<th>String (Loop)</th>
<th>I/O - Port</th>
<th>Shelf Port</th>
<th>Length ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O 7 - Port 0</td>
<td>A controller port 0 of shelf V1.1</td>
<td>2M</td>
</tr>
</tbody>
</table>
Table 12: DD6800 with DS60 HA and DD Cloud Tier primary node cabling instructions (continued)

<table>
<thead>
<tr>
<th>String (Loop)</th>
<th>I/O - Port</th>
<th>Shelf Port</th>
<th>Length a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O 2 - Port 0</td>
<td>B controller port 0 of the highest number shelf in V1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 7 - Port 2</td>
<td>A controller HOST ★ port of the second metadata shelf</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 2 - Port 0</td>
<td>B controller HOST ★ port of the first metadata shelf</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 7 - Port 3</td>
<td>A controller HOST ★ port of the SSD shelf</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 2 - Port 3</td>
<td>B controller HOST ★ port of the SSD shelf</td>
<td>2M</td>
</tr>
</tbody>
</table>

a. Cable lengths shown are designed for Data Domain racks. Longer cables (up to 5M) can be used.

Table 13: DD6800 with DS60 HA and DD Cloud Tier standby node cabling instructions

<table>
<thead>
<tr>
<th>String (Loop)</th>
<th>I/O - Port</th>
<th>Shelf Port</th>
<th>Length a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O 7 - Port 0</td>
<td>B controller port 2 of shelf V1.1</td>
<td>2M</td>
</tr>
<tr>
<td>1</td>
<td>I/O 2 - Port 0</td>
<td>A controller port 2 of the highest number shelf in V1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 7 - Port 2</td>
<td>B controller EXPANSION ★ port of the second metadata shelf</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 2 - Port 2</td>
<td>A controller EXPANSION ★ port of the first metadata shelf</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 7 - Port 3</td>
<td>A controller EXPANSION ★ port of the SSD shelf</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 2 - Port 3</td>
<td>B controller EXPANSION ★ port of the SSD shelf</td>
<td>2M</td>
</tr>
</tbody>
</table>

a. Cable lengths shown are designed for Data Domain racks. Longer cables (up to 5M) can be used.
DD6800 with ERSO

Table 14 DD6800 with DS60 ERSO

<table>
<thead>
<tr>
<th>String (Loop)</th>
<th>I/O - Port</th>
<th>Shelf Port</th>
<th>Length a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O 7 - Port 0</td>
<td>A controller port 0 of shelf V1.1</td>
<td>2M</td>
</tr>
</tbody>
</table>
Table 14 DD6800 with DS60 ERSO (continued)

<table>
<thead>
<tr>
<th>String (Loop)</th>
<th>I/O - Port</th>
<th>Shelf Port</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I/O 2 - Port 0</td>
<td>B controller port 0 of the highest number shelf in V1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 7 - Port 1</td>
<td>A controller port 0 of shelf V2.1</td>
<td>2M</td>
</tr>
<tr>
<td>2</td>
<td>I/O 2 - Port 1</td>
<td>B controller port 0 of the highest number shelf in V2</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 7 - Port 2</td>
<td>A controller port 0 of shelf V3.1</td>
<td>2M</td>
</tr>
<tr>
<td>3</td>
<td>I/O 2 - Port 2</td>
<td>B controller port 0 of the highest number shelf in V3</td>
<td>5M</td>
</tr>
<tr>
<td>4</td>
<td>I/O 7 - Port 3</td>
<td>A controller port 0 of shelf V4.1</td>
<td>5M</td>
</tr>
<tr>
<td>4</td>
<td>I/O 2 - Port 3</td>
<td>B controller port 0 of the highest number shelf in V4</td>
<td>5M</td>
</tr>
</tbody>
</table>

a. Cable lengths shown are designed for Data Domain racks. Longer cables (up to 5M) can be used.
Connecting the HA interconnect

The HA interconnect consists of a 10 GbE I/O module in slot 1 of each node in the HA pair. This connection between the two nodes provides the standby node with the information needed to fail over if the active node suffers a failure, and maintain the connections to hosts and clients after the failover is complete.
Note
- The interconnect IP address is automatically configured with the IPv6 prefix d:d:d:d:d:/80
- If there is an IP conflict, set the registry key config.net.interconnect_ip6prefix.

Procedure
1. Refer to the diagram for the port connections.

   ![Figure 15 HA interconnect](image)

   2. Cable port 0 of the interconnect I/O module in node 0, slot 1 to port 0 of the interconnect I/O module in node 1, slot 1.

   3. Cable port 1 of the interconnect I/O module in node 0, slot 1 to port 1 of the interconnect I/O module in node 1, slot 1.

Installing the front bezel

Procedure
1. Align the bezel with the enclosure.
2. Gently push the bezel into place on the cabinet until it latches.
3. If the bezel has a key lock, lock the bezel the provided key.

Connect data cables

1. Enable data transfer Ethernet connectivity. Repeat for each connection.
   a. If using 1 Gb copper Ethernet, attach a Cat 5e or Cat 6 copper Ethernet cable to an RJ-45 Ethernet network port (start with ethMa and go up).
   b. If using 10 Gb copper Ethernet with an SFP+ connector, use a qualified SFP+ copper cable.
   c. If using 1/10 Gb fiber Ethernet, use MMF-850nm cables with LC duplex connectors.
   d. For 10GBaseT connections, use Cat6a S- STP Ethernet cables.
2. Enable data transfer Fibre Channel (FC) connectivity. Repeat for each connection.
a. Attach a Fibre Channel fiber optical cable (LC connector) to an I/O module port on the controller, and attach the other end (LC connector) to an FC switch or to an FC port on your server.

Power on all systems

---

**Note**

Power on all expansion shelves first before powering on the controller.

1. Connect power cables to each expansion shelf receptacle and attach the retention clips.

2. Provide power to power on each expansion shelf. The shelves power on when plugged in. Ensure that each shelf power cable is connected to a different power source.

---

**Note**

Wait approximately 3 minutes after all expansion shelves are powered on before powering on the controller.

3. Provide power to power on the controller. The system powers on when plugged in. The first boot may take several minutes to complete.

---

**Note**

Connect systems to redundant AC power sources. Redundant power sources allow one AC source to fail or be serviced without impacting system operation. PSU0 should be attached to one AC source. PSU1 should be attached to the other AC source.

---

a. Connect power cables to each receptacle and attach the retention clips.

b. Ensure that each power supply is connected to a different power source.
Connect Cables and Power On
CHAPTER 4

Configure System for Use

- Enable administrative communication .................................................. 44
- Accepting the End User License Agreement ........................................... 45
- Run the configuration wizard ................................................................. 45
- Configure HA .......................................................................................... 48
Enable administrative communication

For HA pairs, administrative communication must be enabled on both nodes.

The administrative interfaces are located on the management module on the rear of the chassis. These interfaces are for management network traffic only. Do not use these interfaces for data traffic.

1. Connect an administrative console to the serial port on the back panel of the system.

2. **Note**
   You must have 115200 baud rate for the system to work correctly; 9600 baud rate does not work.

Launch a terminal emulation program from your computer and configure the following communication settings:

**Table 15** Communications settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baud rate</td>
<td>115200</td>
</tr>
<tr>
<td>Data bits</td>
<td>8</td>
</tr>
<tr>
<td>Stop bits</td>
<td>1</td>
</tr>
<tr>
<td>Parity</td>
<td>None</td>
</tr>
<tr>
<td>Flow control</td>
<td>None</td>
</tr>
<tr>
<td>Emulation</td>
<td>VT-100</td>
</tr>
</tbody>
</table>

3. Press **Enter** to activate the console.

   **Note**
   If you do not see the prompt on your terminal to log in, then complete Step 4.

4. Verify the front blue power LED (blue square) is on. If it is not, make sure the power cables are fully seated at both ends, and both AC sources are on.

5. **Note**
   The initial username is **sysadmin** and the initial password is the system serial number.

   Log in to the Data Domain console using the **sysadmin** username.

   "localhost.localdomain login: sysadmin"

6. Type the default password, which is the system serial number. The Product ID/SN tag is attached beneath the power supply at the rear of the system. See the rear panel of the system for the Product ID/SN tag.

   Password: **system_serial_number**
Note

If you type an incorrect password four consecutive times, the system locks out the specified username for 120 seconds. The login count and lockout period are configurable and might be different on your system. See the *Data Domain Operating System Administration Guide* and the *Data Domain Operating System Command Reference Guide* for setting these values.

For Data Domain HA systems, SSH keys created on the active node take 30 seconds to one minute to propagate to the standby node.

**Accepting the End User License Agreement**

The first time you log in to a Data Domain system, the End User License Agreement (EULA) is displayed.

At the end of the EULA, you are prompted to accept it:

Press any key then hit enter to acknowledge the receipt of EULA information

**Note**

The customer must accept the EULA. A Data Domain representative should not accept this agreement. If a customer is not present, press `Ctrl-C` to exit from the EULA acceptance screen and continue the installation.

The customer can later type the following to redisplay the EULA and accept it:

```bash
system show eula
```

**Run the configuration wizard**

The CLI configuration wizard starts automatically the first time the system starts. The wizard prompts you through a series of questions that provide just enough information for initial system configuration and basic network connectivity.

**Note**

You can begin the CLI configuration wizard manually by typing `config setup`.

**Configuring the network**

**Procedure**

1. Enter `yes` to configure the system for network connectivity.

   ```bash
   Network Configuration
   Configure Network at this time (yes|no) [no]: yes
   ```

2. Enter `yes` to configure DHCP (Dynamic Host Configuration Protocol) to obtain network parameters (such as, the host name, domain name, and IP addresses) dynamically from a DHCP server. Or enter `no` to configure the parameters manually.

   ```bash
   Use DHCP
   Use DHCP for hostname, domainname, default gateway and DNS servers? (At least one interface needs to be configured using DHCP) (yes|no|?)
   ```
3. Enter a fully qualified domain name (FQDN) for the host name; for example, str01.yourcompany.com. Or accept the host name, if the system was able to discover it.

   Enter the hostname for this system (fully-qualified domain name): [ ]:

4. Enter the DNS (Domain Name System) domain name; for example, yourcompany.com. Or accept the domain name, if the system was able to discover it.

   Domainname
   Enter your DNS domainname [ ]:

5. Enable and configure each Ethernet interface. Accept or decline DHCP for each interface. If the port does not use DHCP to discover network parameters automatically, enter the information manually.

   Ethernet port eth0a
  Enable Ethernet port eth0a (yes|no|?) [yes]: no

   Ethernet port eth0b
   Enable Ethernet port eth0b (yes|no|?) [no]: yes
   Use DHCP on Ethernet port eth0b (yes|no|?) [no]:
   Enter the IP address for eth0b [192.168.10.185]:
   Enter the netmask for eth0b [255.255.255.0]:

6. Enter the IP address of the default routing gateway. Or accept the default gateway, if the system was able to discover it.

   Default Gateway
   Enter the default gateway IP address: 192.168.10.1

7. Enter the IPv6 address of the default routing gateway. Or accept the IPv6 address of the default gateway, if the system was able to discover it. If IPv6 is not in use, leave the field empty, and press Enter to continue.

   IPV6 Default Gateway
   Enter the ipv6 default gateway IP address:

8. Enter up to three DNS servers to use for resolving host names to IP addresses. Use a comma-separated or space-separated list. Enter a space for no DNS servers. Or accept the IP addresses of the DNS servers, if the system was able to discover them.

   DNS Servers
   Enter the DNS Server list (zero, one, two or three IP addresses): 192.168.10.1

9. A summary of the network settings is displayed. You can accept the settings (Save), reject the settings and exit to the CLI (Cancel), or return to the beginning of the current section and change the settings (Retry). Entering Retry displays your previous responses for each prompt. Press Return to accept the displayed value or enter a new one.

   Pending Network Settings
   Hostname              ddbeta1.dallasrdc.com
   Domain name            dallasrdc.com
   Default Gateway         192.168.10.1
   DNS Server List        192.168.10.1

   Port       Enabled Cable DHCP IP Address Netmask or Prefix Length
   -----   ------ ----- ---- ------- --------- ------------------------
   eth0a    no      no  n/a n/a    n/a
   eth0b    no      no  n/a n/a    n/a
Configuring additional system parameters

Most installations would benefit from the configuration of a few additional system parameters, provided in this section for convenience.

**Note**

You can also use the Data Domain (DD) System Manager GUI interface to configure the system parameters. Open a web browser, and enter your Data Domain system’s IP address in the browser’s address text box. Log in when the DD System Manager login screen displays. Use the DD System Manager online help for more information.

**Procedure**

1. To set up the mail server, enter:

   ```
   # config set mailserver mail.datadomain.com
   The Mail (SMTP) server is: mail.datadomain.com
   ```

2. To set up the system location, enter:

   ```
   # config set location "Dallas Regional Data Center Lab, 5000 Apple Drive Suite #130, Dallas, Tx"
   The System Location is: Dallas Regional Data Center Lab, 5000 Apple Drive Suite #130, Dallas, Tx
   ```

3. To add one or more time servers, enter:

   ```
   # ntp add timeserver 192.168.101.1
   Remote Time Servers: 192.168.101.1
   ```

4. To enable the NTP daemon, enter:

   ```
   # ntp enable
   NTP enabled.
   ```

5. To change the system time zone, enter:

   ```
   # config set timezone US/Central
   The Timezone name is: US/Central
   *** You made a change to the timezone setting. To fully effect this change
   *** (in currently running processes), you need to reboot the machine.
   ```

6. Reboot the system for the time zone change to take effect:

   ```
   # system reboot
   The 'system reboot' command reboots the system. File access is interrupted during the reboot.
   Are you sure? (yes|no|?) [no]: yes
   ok, proceeding.
   The system is going down for reboot.
   ```

7. After the system completes the reboot, login again as sysadmin using the serial number as a password. Press ctrl-c to get through the EULA, sysadmin password prompt, and config setup wizard.
Configure HA

8. Generate an autosupport sent to yourself to use as ACG input:

```bash
# autosupport send your.email@emc.com
OK: Message sent.
```

**Configure HA**

**Before you begin**

- The HA interconnect between both nodes is connected.

  **Note**

  *Connecting the HA interconnect* on page 39 describes how to cable the HA interconnect.

- The data connections on both nodes are connected.

Configure the two nodes as an HA pair.

**Procedure**

1. Identify which node will serve as the primary node.

2. On the primary node, create the HA pairing.

   Run the following command:
   ```bash
   ha create peer {<ipaddr> | <hostname>} [ha-name <ha-system-name>]
   ```

   **Note**

   - Specify the hostname or the IP address of the standby node.
   - Specifying an HA system name:
     - Assigns node 0 the local hostname `<HA-system-name>-p0`.
     - Assigns node 1 the local hostname `<HA-system-name>-p1`.
   - The `ha create` command will fail if one node is configured to use DHCP and the other node is configured to use static IP addresses. Both nodes must use the same method to configure IP addresses.

   ```bash
   ha create peer mysystem-p1.emc.com ha-name mysystem.emc.com
   ```

   Both nodes reboot, and are configured as an HA pair when they come back up.

3. On the primary node, configure one or more floating IP addresses for data access.

   Run the following command:
   ```bash
   net config <interface-name> <IP address> netmask <netmask> type floating
   ```
Note

The net config command with the float option is the only way to configure a floating IP address. There is no method available in Data Domain System Manager to configure a floating IP address.

```
net config eth1a 2.2.2.1 netmask 255.255.255.0 type floating
```
Configure System for Use