

## DD670 Hardware Overview

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# DD670 Hardware Overview

This document describes the hardware components of DD670 systems.

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## Related Documentation

The Documentation page at <https://my.datadomain.com/documentation> provides access to three categories of documents that are related to use of Data Domain products:

- End user documents, under Product Documentation.
- Documents about how to integrate Data Domain systems with third party backup applications, under Integration Documentation.
- Matrices that show which components are compatible with each other, under Compatibility Matrices.

### ▼ View Data Domain documents

1. Log into the support portal at: <https://my.datadomain.com/documentation>.
2. To view user documents, click Product Documentation and then perform the following steps:
  - a. Select the Data Domain model from the Platform list and click View.
  - b. On the row for the correct Data Domain operating system (DD OS) version, click View under Documentation.
  - c. Click the desired title.
3. To view integration-related documents, perform the following steps:
  - a. Click Integration Documentation.
  - b. Select the vendor from the Vendor menu.
  - c. Select the desired title from the list and click View.
4. To view compatibility matrices, perform the following steps.
  - a. Click Compatibility Matrices.
  - b. Select the desired title from Product menu and click View.

# System Features

Table 1 shows the DD670 features:

**Table 1:** DD670 features

Feature	DD670
<b>Rack Height</b>	2U. Supported only in four-post racks.
<b>NVRAM</b>	One 1 GB battery-backed NVRAM card for data integrity during a power outage
<b>Power</b>	Dual redundant, hot swap power
<b>Fans</b>	Two fan assemblies with eight fans total.
<b>Motherboard IO</b>	Two 1000/100/10 Copper Ethernet
<b>PCI Slots in the Riser Card Cage</b>	Six PCIe x8 slots. One slot has an x16 connector. See <a href="#">“PCI Cards and Slot Assignments”</a> on page 9.
<b>Memory</b>	16 GB (4 x 4 GB) or 36 GB (9 x 4 GB)
<b>Slide Rails</b>	X-DD1406X-RAIL Spare, Slide Rail Kit, DD670, DD860, DD860g 24.0 – 36.0 in.
<b>Processors</b>	One quad-core processor

## Storage Capacity

Table 2 lists the capacities of the DD670. Data Domain system internal indexes and other product components use variable amounts of storage, depending on the type of data and the sizes of files. If you send different data sets to otherwise identical systems, one system may, over time, have room for more or less actual backup data than another.

**Note:** Data Domain system commands compute and display amounts of disk space or data as decimal multiples of certain powers of two ( $2^{10}$ ,  $2^{20}$ ,  $2^{30}$ , and so forth). For example, 7 GiB of disk space =  $7 \times 2^{30}$  bytes =  $7 \times 1,073,741,824$  bytes. Data Domain refers to this process as *Base 2 calculation*.

**Table 2:** DD670 System Capacities

System	Internal Disks	Raw Storage (Base 10)	Data Storage Space (Base 2 Calculation)	Data Storage Space (Base 10 Calculation)	External Storage
DD670	Twelve 1 TB SATA HDD	12 TB (internal) Up to 64 TB (external)	7.55 TiB (internal) 43.29 TiB (external) 52,060 GiB (total)	8.3 TB (internal) 47.6 TB (external)	Up to 47.6 TB in any combination of up to four ES20-8TB, ES20-16TB, or ES20-32TB shelves

**Note:** For information about the Data Domain ES20 expansion shelf, see the separate document, *Data Domain Expansion Shelf Hardware Guide*.

# Front Control Panel

The control panel is at the right edge of the front panel. The control panel contains the following switches and LED, from top to bottom:

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**Power Button** Press to start boot (if not running). Use the `system poweroff` command to shut down the system. Never shut down the system by pressing the power button. The button glows steady green in the normal operating state, and blinks to indicate that the system is in a power-saving state.

**ID Enclosure Button** Press the ID switch to light the blue ID LEDs on the front and back panels. When working with a large number of rack mounted units, all of similar appearance, use the ID LEDs to keep track of which unit you are working on. The button glows steady blue after being pressed or after activation by a system command. A system command can also cause the button to blink while the system is under service.

**System Fault LED** This LED illuminates in green or amber to report a system fault.



Display	Meaning	Possible Causes
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Steady Green	On	Normal operation
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Blinking Green	Startup	The system is booting, initializing, or downloading a firmware update.
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Steady Amber	Critical Fault	The system needs to be shut down and serviced. Causes include hardware errors and critical overheating.
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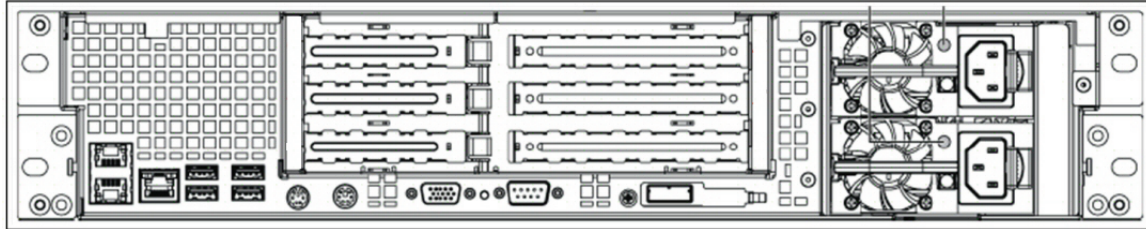
Blinking Amber	Non-fatal Fault	The system is reporting a non-fatal problem that requires service. Possible causes include:
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- Overheating warning
  - Overvoltage warning
  - Single fan failure
  - Power Supply or AC failure
  - PCIe link degraded
  - SAS interface degraded
  - Disk drive failure
  - Other system-identified problems
-

# Back Panel

The back panel has the following major functional areas (see [Figure 1](#)):

- Power Supply Units
- Hardware Interfaces
- System card interfaces (see “[PCI Cards and Slot Assignments](#)” on page 9)



**Figure 1:** Back Panel

A sticker on the back panel (not shown in [Figure 1](#)) shows the system MAC address.

## Power Supply Units

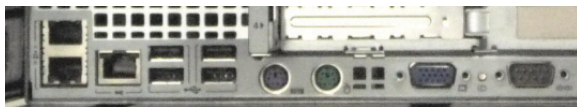
The systems have two power supply units. Each power unit has an LED that glows green when the unit is functional. The LED glows amber if the unit has failed, but still has power. The LED blinks amber if the power supply does not have AC power. The LED flashes green when the Data Domain system is turned off but the unit is still plugged in to a live power source. The LED is dark if the unit has no power.

## Hardware Interfaces

The hardware interfaces (see [Figure 2](#)) enable you to connect to the system through a serial console, monitor, and keyboard, or through an Ethernet connection.

The pair of Ethernet interfaces at the left — eth0a (top) and eth0b (bottom) — are for data transfer to the Data Domain system or for administrative access over a network. Both Ethernet interfaces are 1000 Base-T Gigabit copper ports with RJ45 connectors that can accept 10/100 Base-T or Gigabit connections. The single 10/100 Base-T Ethernet port to the right of the pair of Ethernet ports is used for system maintenance only.

Each Ethernet connection has two LEDs, one on each side of the connector. The left LED is the Link/ Activity LED. When it is dark, the port has no live connection. It glows green when a link is established and flashes green with transmit/receive traffic. The right LED is the Speed LED. It indicates 1 Gbps when amber, 100 Mbps when green, and 10 Mbps when off.



**Figure 2:** Hardware Interfaces on the Back Panel

The four USB ports, keyboard port, mouse port, VGA port, and serial port are not used during normal operation. They may be used while the system is being serviced. The SAS JBOD connector is never used.

# PCI Cards and Slot Assignments

The system supports the following required and optional PCI cards:

- The 1024 MB NVRAM card
- Serial attached SCSI (SAS) HBA cards for expansion shelves connectivity
- Optional network interface (NIC) cards
- Optional dual-port 8Gb Fibre Channel host bus adapter (HBA) cards for the VTL feature

**Figure 3:** PCI Slot Numbering

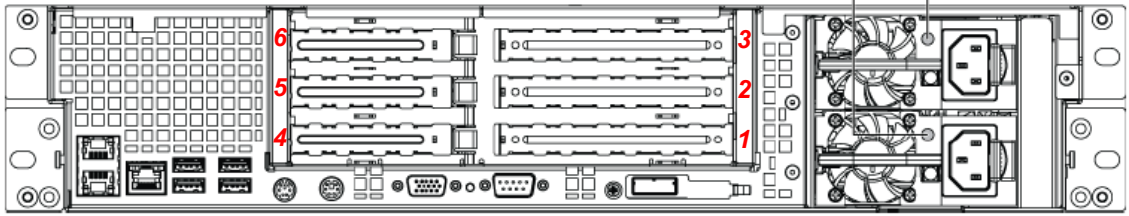


Table 3 shows the PCI card slot assignments for the DD670.

**Table 3:** DD670 PCI Card Slot Assignments

Slot 6 PCIe x8 (x8 conn) Low profile	Slot 5 PCIe x8 (x8 conn) Low profile	Slot 4 PCIe x8 (x8 conn) Low profile	Slot 3 PCIe x8 (x8 conn) Full height	Slot 2 PCIe x8 (x8 conn) Full height	Slot 1 PCIe x8 (x16 conn) Full height
NVRAM	Ethernet or VTL or empty	Ethernet or VTL or empty	Empty or SAS	Empty or SAS	Ethernet or VTL or empty

## Standard PCI Cards

All DD670 systems have one NVRAM card.

A DD670 system optionally has two quad-port Serial Attached SCSI (SAS) HBA PCIe cards for expansion shelf connectivity. Each SAS HBA port accepts a mini SAS connector.

## VTL and Ethernet Card Options

All systems have three slots available for optional Ethernet NIC and VTL HBA cards. The optional VTL feature requires at least one VTL HBA card. Depending on your needs, you can leave these slots empty or install up to three Ethernet cards, up to two VTL cards, or any combination of Ethernet cards and up to two VTL cards.

The VTL HBA card is a dual-port 8 Gbps VTL Fibre Channel PCIe card.

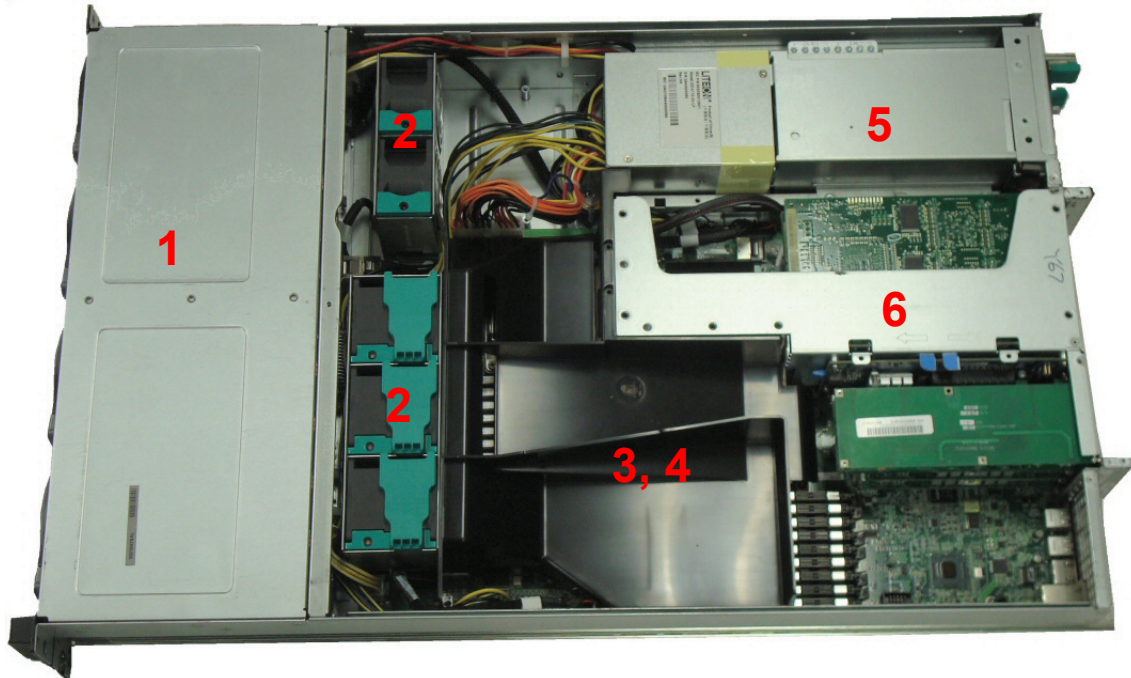
The available Ethernet NIC cards are:

- Dual port copper 1Gb (1000 Base-SX) Ethernet PCIe NIC with RJ-45 connectors
- Dual port optical 1Gb (1000 Base-SX) multi-mode fiber Ethernet PCIe NIC with LC connectors
- Dual port copper 10 Gb Ethernet PCIe NIC with SFP+ connectors
- Dual port optical 10 Gb Ethernet PCIe NIC with LC connectors

See the “Network Management” chapter in the *Data Domain Operating System Administration Guide* for help configuring the Ethernet interfaces for failover and aggregation.

## System Components (Top Cover Removed)

Figure 4 shows the location of system components from the center fans to the back panel of a system. The PCI card array is in the back left corner of the chassis when viewed from the front of the system



**Figure 4:** Top View (Cover Removed)

**Table 4:** System Components

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1	Hard Disk Drive Bays
2	Fans
3	Air Duct
4	Memory DIMMs (under the air duct)
5	Power Supplies
6	Riser Card Cage

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