Dell MD1280 Storage Enclosure Getting Started Guide

Regulatory Model: SP-2584, E11J

Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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Installation and configuration

WARNING: Before completing the following tasks, review the safety instructions that came with the system.

NOTE: The system is intended for restricted access location.

Installation safety precautions

When mounting an enclosure in a rack, you must follow the safety requirements listed here.

- The rack construction must be capable of supporting the total weight of the installed enclosure(s) and the design must incorporate stabilizing features suitable to prevent the rack tipping, or being pushed over during installation or in normal use.
- When loading a rack with enclosures, load the enclosures into the rack from bottom and remove the enclosures from the top.
- To avoid danger of a rack toppling over, do not slide more than one enclosure out of the rack at a time.
- The system must be operated with low pressure rear exhaust installation [back pressure created by rack doors and obstacles not to exceed 5 Pascals (0.5 mm water gauge)].
- The rack design must consider the maximum operating ambient temperature for the unit, which is 35°C.
- The rack must have a safe electrical distribution system. It must provide over-current protection for the unit and must not be overloaded by the total number of units installed in the rack. When resolving these issues, consider the electrical power consumption rating displayed on the name plate.
- The electrical distribution system must provide a reliable ground for each unit in the rack.

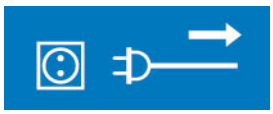
NOTE:

Heavy weight warning.

A fully configured MD1280 enclosure weighs up to 103.7 kg (287.5 lbs). An unpopulated enclosure weighs 64 kg (141 lb). Use appropriate lifting methods.

High temperature warning.

The operating temperature inside the enclosure can reach up to 60° C (140 °F). Be careful when opening drive drawers and removing carriers.



Electrical disconnection warning.

Indicates that all electrical supply connections to the enclosure should be disconnected before proceeding.

Unpacking the system

NOTE: Unpacking, installing, and deploying your Dell Storage must be carried out only by a certified service technician.

Before you begin, make sure the site where you intend to set up and use the Dell Storage has the following:

- 208 V power from an independent source or a rack power distribution unit with a UPS (110 V power will not work.).
- A 5U space in the lower 20U of the rack. If planning to install above the 20U mark, a customer-provided mechanical lift must be made available.

Installation overview

The installation process includes the following general tasks.

CAUTION: If installed in a closed-or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer. For more information, see the Technical Specifications section in this document.

1. Assemble the rails following the safety instructions and the rack installation instructions provided with your system.
2. Unpack the enclosure.

   WARNING: Two people using lift straps are required to avoid injury.
3. Install the enclosures into the rack.
   - Always load the rack from the bottom for weight stability.
   - If you have fewer than the maximum number of enclosures, you can allow room for expansion.

WARNING: If installing above the lower 20U of a rack, a customer-provided mechanical lift must be used to avoid injury.

4. Insert each disk drive in carrier (DDIC) into the enclosure one at a time.
   - Protect the hard drive from static discharge.
   - Handle DDICs by the edges of the frame.

CAUTION: If the enclosure system operates for too long (depending on altitude) with drive drawers open, the enclosure can overheat, causing power failure and data loss. Such use may invalidate the warranty.

5. Close the drive drawers after adding all DDICs.

Figure 1. Installing enclosure in a rack

1. Drawer release (2) — One on each side of drawer. Releases the open-drawer locks.

a. Pull and hold both drive drawers releases, and then slightly push the drawers inside.

b. Release and push the drive drawers in until it clicks into place.

WARNING: After releasing the open-drawer locks, move hands away from the slides before pushing the drawer in to avoid injury.

Connecting the power cables

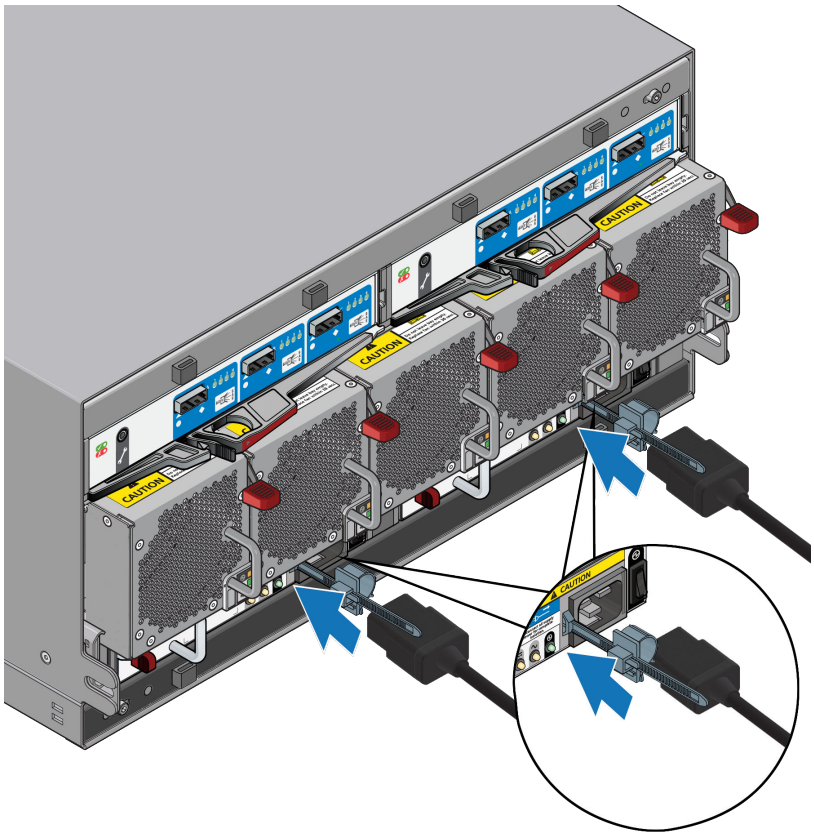


Figure 2. Connecting the power cables

Ensure that the power switch is OFF before connecting the power cables.

CAUTION: Be careful when closing the rear rack door to ensure that power cords have adequate space as some racks might not be sufficiently deep.

Securing the power cables

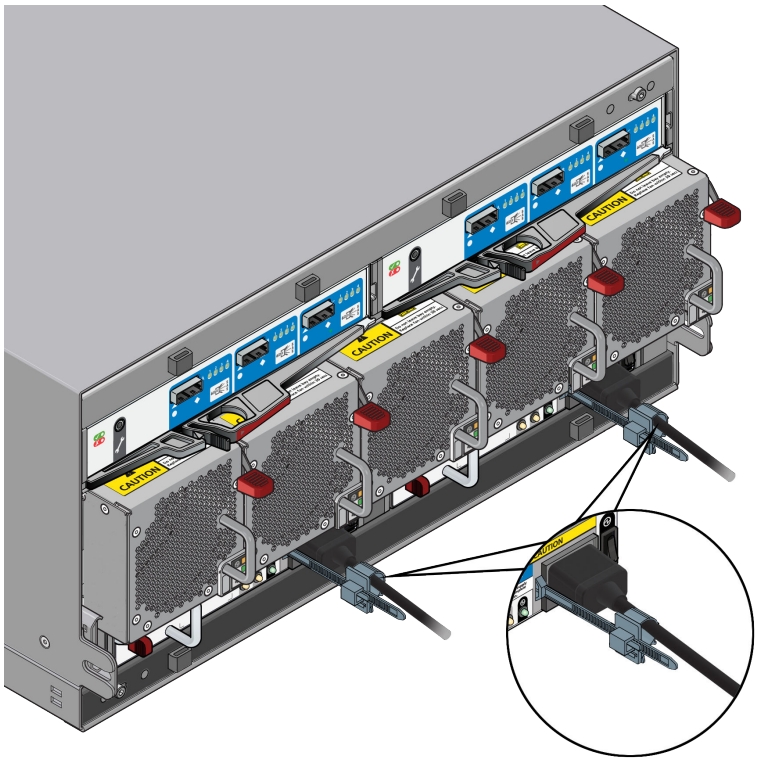


Figure 3. Securing the power cables

1. Secure the power cables firmly to the bracket using the clip provided.
2. Plug the other end of the power cables into a grounded electrical outlet or a separate power source such as an uninterrupted power supply (UPS) or a power distribution unit (PDU).

Location of power switches

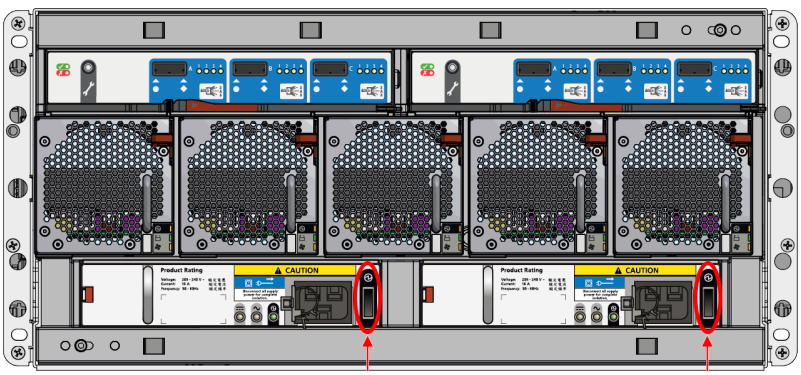


Figure 4. Location of power switches

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Other information you may need

WARNING: See the safety and regulatory information that shipped with your system. Warranty information may be included within this document or as a separate document.

- The rack documentation included with your rack solution describes the process of installing your system into a rack.
- The *Service Guide* provides information about enclosure service and maintenance. This document is available online at **dell.com/support/home**.
- The *Administrators Guide* provides information about how to configure, manage, and update your MD1280 Storage Enclosure. This document is available online at **dell.com/support/home**.

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Technical specifications

Drives	
SAS hard drives	Up to 84 3.5-inch SAS hot-swappable hard drives (6.0 Gbps or 12.0 Gbps)

Storage Bridge Bay (SBB) Modules	
SBBs	Two hot-swappable EMM I/O modules

Connectivity	
Configurations	Various server-attached configuration including but not limited to 168 hard drives in redudant-path enclosure chains. Servers can support up to six enclosure chains.

Redundant Array of Independent Disks (RAID)	
Controller	Various server-based RAID controller or SAS HBA.
Management	RAID management by using Dell Storage System Manager version 6.4 or later.

Back-Plane Board	
Connectors	• 84 SAS hard-drive connectors • Two sets of SBB connectors • Five cooling fan module connectors • Two power supply unit (PSU) connectors

Back-Panel Connectors (per SBB)	
SAS connectors	• Asymmetric SAS Cabling for connection to the controller and for expansion to an additional enclosure • Support Mini-SAS HD to Mini-SAS cable universally keyed for the following lengths that are currently supported: Controller to MD1280: • 0.5 m • 2 m

Back-Panel Connectors (per SBB)	
	• 3 m • 5 m MD1280 to MD1280: • 0.6 m • 2 m • 4 m • 6 m **NOTE:** SAS connectors are SFF-8086/ SFF-8088-compliant.

LED Indicators	
Front panel	• One two-digit LCD indicator for Unit ID, error code, and unit location identifier • One two-color LED indicator for power status • One single-color LED indicator for module fault status (enclosure as a whole) • One single-color LED indicator for logical fault status (drive, HBA, RAID controller, and so on) • One single-color LED indicator for drive drawer 1 fault status • One single-color LED indicator for drive drawer 2 fault status
Drive drawer	• One single-color LED indicator for sideplane card and power status • One single-color LED indicator for drive drawer fault status • One single-color LED indicator for logical fault status • One single-color LED indicator for cable fault status • Six single-color LED indicators for data transfer status
Disk Drive In Carrier (DDIC)	One single-color LED for hard drive fault status
6 Gb SAS IO module	14 one-color LED status indicators, four each for the three SAS ports, and two for the module status
Cooling module	• One single-color LED indicator for module status • One single-color LED indicator for battery fault status (not currently used) • One single-color LED indicator for fan fault status
Power Supply Unit (PSU)	• One single-color LED indicator for PSU fault status

LED Indicators	
	• One single-color LED indicator for AC power fault status • One single-color LED indicator for power status

Power Supply Units	
AC PSU (per PSU)	
Watt	2.8 kW
Voltage	200–240 VAC (8.6 A–4.3 A)
Heat dissipation	191–147 W
Maximum inrush current	Under typical line conditions and over the entire system ambient operating range, the inrush current may reach 55 A for each PSU for 10 ms or less

Available Hard Drive Power (Per Slot)	
Supported hard drive power consumption (continuous)	Up to 1.16 A at +5 V Up to 1.6 A at +12 V

IO Card Power (Per Slot)	
Maximum power consumed by IO Card	11 W at +12 V
Maximum available power	100 W at +12 V
Maximum available power	1 W at +5 V (standby)

Physical	
Height	22.23 cm (8.75 inches)
Width	48.26 cm (19 inches)
Depth (front mounting bracket to rear surface)	91.5 cm (36 inches)
Depth (front surface to rear surface)	96 cm (38 inches)
Full Weight (maximum configuration)	130.7 kg (287.5 lb)
Shipping Weight (without drives)	62 kg (137 lb)

Environmental

NOTE: For additional information about environmental measurements for specific system configurations, see **dell.com/environmental_datasheets**.

Temperature

Operating	5° to 35°C (41° to 95°F) with a maximum temperature gradation of 10°C per hour NOTE: Maximum 35°C up to 2134 m (7000 ft), derate to 30°C for 2134 m to 3000 m (7000 ft to 10,000 ft).
Storage	–40° to 70°C (–40° to 158°F) with a maximum temperature gradation of 20°C an hour

Relative humidity

Operating	20 percent to 80 percent (noncondensing) with a maximum humidity gradation of 10 percent an hour
Storage	5 percent to 100 percent (noncondensing)

Maximum vibration

Operating	0.21 g at 5–500 Hz for 15 min
Storage	1.04 g at 2–200 Hz for 15 min

Maximum shock

Operating	Half-sine shock 5 g +/- 5 percent with a pulse duration of 10 ms +/- 10 percent in operational orientations only
Storage	• Z-axis: 30 g 10 ms half-sine • Horizontal (X) axis and vertical (Y) axis: 20 g 10 ms half-sine

Altitude

Operating	–30.5 to 3000 m (–100 to 10,000 ft) NOTE: Maximum 35°C up to 2134 m (7000 ft), derate to 30°C for 2134 m to 3000 m (7000 ft to 10,000 ft).
Storage	–300 m to 12,192 m (–1000 ft to 40,000 ft)

Airborne Contaminant Level

Environmental	
Class	G2 or lower as defined by ISA-S71.04-1985

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Contacting Dell

Dell provides several online and telephone-based support and service options. If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer-service issues:

1. Go to **dell.com/support**.
2. Select your country from the drop-down menu on the bottom right corner of the page.
3. For customized support:
   a. Enter your system Service Tag in the **Enter your Service Tag** field.
   b. Click **Submit**.
      The support page that lists the various support categories is displayed.
4. For general support:
   a. Select your product category.
   b. Select your product segment.
   c. Select your product.
      The support page that lists the various support categories is displayed.