Dell EMC VEP4600 Installation Guide

March 2022

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Rev. A08

Notes, cautions, and warnings

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

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.

Contents

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About this guide

This guide provides site preparation recommendations, step-by-step procedures for rack mounting and desk mounting your platform, inserting modules, and connecting to a power source.

CAUTION: To avoid electrostatic discharge (ESD) damage, wear grounding wrist straps when handling this equipment.

NOTE: Only trained and qualified personnel can install this equipment. Read this guide before you install and power up this equipment. This equipment contains two power cords. Disconnect both power cords before servicing.

NOTE: This equipment contains optical transceivers, which comply with the limits of Class 1 laser radiation.

Figure 1. Class 1 laser product tag

NOTE: When no cable is connected, visible and invisible laser radiation may emit from the aperture of the optical transceiver ports. Avoid exposure to laser radiation. Do not stare into open apertures.

Regulatory

Marketing model VEP4600 is represented by the regulatory model E25W and the regulatory type E25W001.

Topics:

Related documents

For more information about the Virtual Edge Platform 4600 (VEP4600), see the following documents:

- *VEP4600 Setup Guide*
- *VEP4600 Release Notes*
- *VEP4600 Expansion Cards Release Notes*
- *VEP4600 Technical Guide*
- *VEP4600 Diag Guide*
- *VEP4600 BIOS User Guide*
- *VEP4600 BMC User Guide*

NOTE: For the most recent documentation, see www.dell.com/support.

Information symbols

This book uses the following information symbols:

NOTE: The **Note** icon signals important operational information.

CAUTION: **The Caution icon signals information about situations that could result in equipment damage or loss of data.**

NOTE: The **Warning** icon signals information about hardware handling that could result in injury.

NOTE: The **ESD Warning** icon requires that you take electrostatic precautions when handling the device.

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VEP4600 platform

The following sections describe the Dell EMC Virtual Edge Platform 4600 (VEP4600) platform:

Topics:

Introduction

The VEP4600 platform is a one rack unit, x86-based networking platform running virtualized universal customer premise equipment (uCPE) functions and basic switching/routing functions as a top-of-rack device. In addition, the VEP4600 platform has four 1000Base-T user networking ports and two 10GbE small form-factor pluggable plus (SFP+) networking ports. The platform includes one or two hot-swappable AC power supply units (PSUs) and four or five hot-swappable fan units with normal (front-to-back) airflow.

There are two fixed VEP4600 Expansion Cards slots on the I/O side which permits networking expansion with the additional network interface controller (NIC) ports.

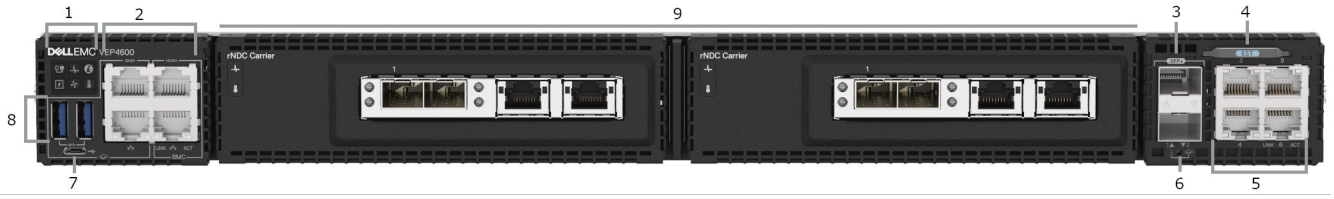

Figure 2. VEP4600 I/O-side view

1. Platform status Icons LEDs
2. RS-232 console ports (top) and 10/100/1000 Base-T ports (bottom)
3. SFP+ ports
4. Luggage tag
5. 1000Base-T networking ports
6. Advanced Configuration and Power Interface (ACPI) Power button

   NOTE: See Site preparation power descriptions
7. Micro USB type-B port
8. USB Type A ports
9. rNDC VEP4600 Expansion cards (optional)

The VEP4600 platform has one RJ-45 serial console port for the processor, one RJ-45 serial console port for the baseboard management controller (BMC), one micro USB type-B console port for the processor, one 10/100/1000 Base-T RJ-45 Ethernet management port for the processor, and one 10/100/1000 BaseT RJ-45 Ethernet management port for the BMC.

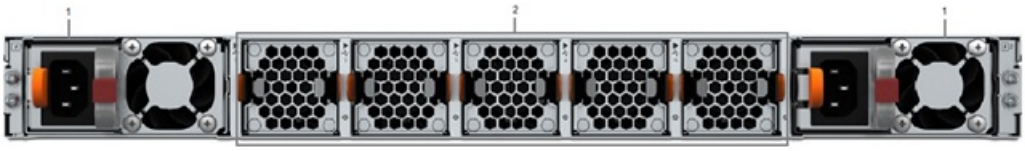

Figure 3. VEP4600 PSU-side

1. PSUs
2. Fans

Features

The VEP4600 platform offers the following features:

- Two 10GbE SFP+ ports
- Four 1000Base-T ports
- One Micro USB type-B console port
- Two USB Type-A ports for more file storage
- One board management controller (BMC)
- One RJ-45, RS-232 serial console port for the processor
- One RJ-45, RS-232 serial console port for the BMC
- One 10/100/1000BaseT RJ-45 Ethernet management port for the processor
- One 10/100/1000BaseT RJ-45 Ethernet management port for the BMC
- One or two AC hot-swappable redundant power supplies, depending on the configuration
- Four or five hot-swappable fan modules with normal (front-to-back) airflow, depending on the configuration
- Standard 1U platform

Physical dimensions

The VEP4600 platform have the following physical dimensions:

- 434 x 381 x 43.6 mm (W x D x H)
- 17.1 x 15 x 1.72 inches (W x D x H)
- PSU/fan tray handle: 1.57 inches (40 mm)

LED display

The VEP4600 platform includes LED displays on the I/O side of the platform. Some LED behaviors may change after you install your software.

LED behaviors

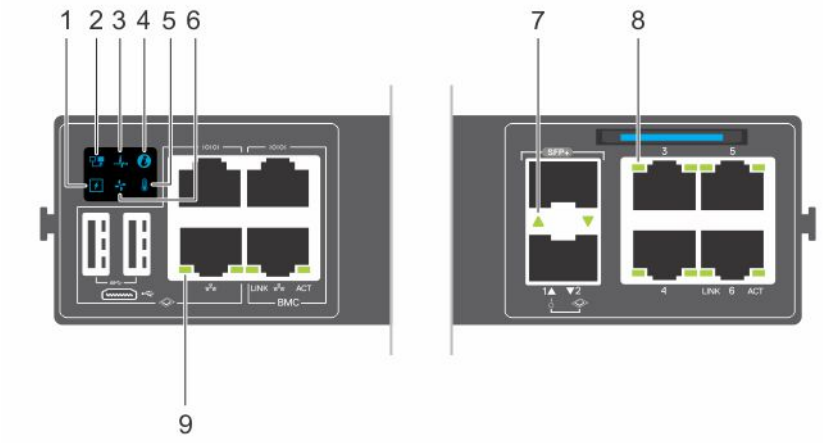

Figure 4. VEP4600 LEDs

1. Power LED
2. Primary unit indicator LED
3. System LED
4. Locator LED
5. Temperature LED
6. Fan LED
7. SFP+ indicator LED
8. 10/100/1000 BaseT RJ-45 networking link (left) and activity (right) LEDs
9. 10/100/1000 BaseT RJ-45 networking link (left) and activity (right) LEDs for the processor (left) and for the BMC (right)

Table 1. VEP4600 LED behavior

LED	Description
System Status/Health LED	• Off—system off or in standby • Solid green—Normal operation • Flashing green—Booting • Solid yellow (amber)—Critical system error or CPU power off. • Flashing yellow—Noncritical system error, fan failure, or power supply failure
Power LED	• Off—system off or in standby • Solid Green—Normal operation • Solid yellow—POST is in process • Flashing yellow—Power supply failed
Primary unit indicator LED	• Solid green—The system is in Stand-alone mode • Off—The systems in standby mode
FAN LED	• Off—system off or in standby • Solid green—Normal operation; fan powered and running at the expected RPM • Solid yellow—Fan failed
PSU LED	• Off—No power • Solid green—Normal operation or standby mode • Solid yellow—Power supply critical event causing a shutdown

Table 1. VEP4600 LED behavior (continued)

LED	Description
	• Flashing yellow—PSU warning event; power continues to operate
LOCATOR LED/System Beacon	• Off—Locator function disabled • Flashing blue with 1 sec on and 1 sec off – Locator function enabled • Flashing blue with 2 sec on and 1 sec off – system in standby
Temperature status LED	• Off—system off or in standby • Solid green—temperature is normal • Solid yellow—temperature is at the limit • Flashing yellow—temperature is over the limit
RJ-45 Ethernet link LED	• Off—No link • Solid green—Link operating at a maximum speed, autonegotiated/forced or 1G • Solid yellow—Link operating at a lower speed, autonegotiated/forced or 10/100M
RJ-45 Ethernet Activity LED	• Off—No activity • Flashing green—Port activity

Table 2. System management Ethernet port LEDs

LED	Description
Link LED	• Off—No link • Solid green—Link operating at a maximum speed, autonegotiated/forced or 1G • Solid yellow—Link operating at a lower speed, autonegotiated/forced or 10/100M
Activity LED	• Off—No activity • Flashing green—Port activity

Table 3. SFP+ port LEDs

LED	Description
Link/Activity LED	• Off—No link • Solid green—Link operating at maximum speed, 10G • Solid yellow—Link operating at a lower speed, 1G • Flashing green—port activity for 10G • Flashing yellow—port activity for 1G

Expansion card LED behavior

Both system and temperature LEDs are dual-color, green and amber. There are two LEDs on the rNDC front panel:

1. System LED
2. Temperature LED

NOTE: rNDC port LED behavior can be found in their respective datasheets.

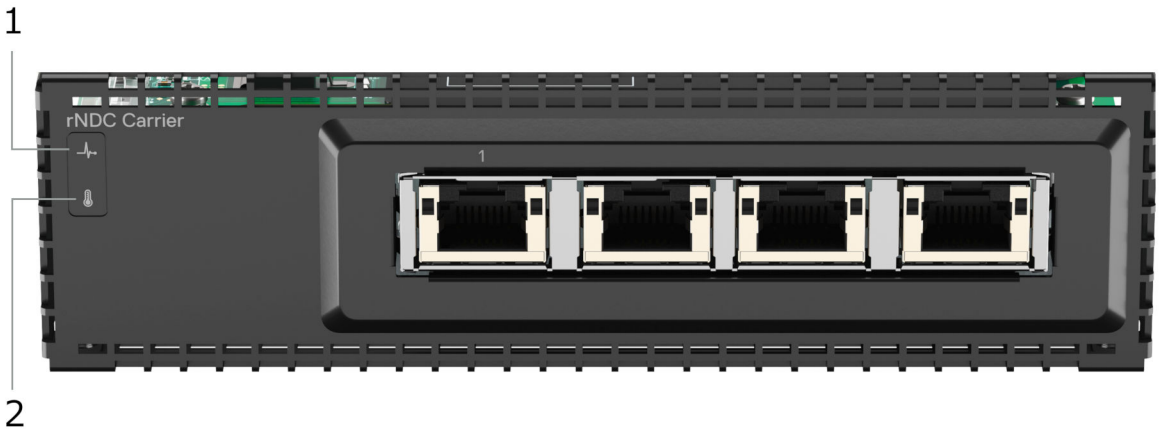

Figure 5. rNDC front panel LED call-outs

Table 4. Expansion card LEDs

LED	Description
1.) System LED	• Off—Card is off • Solid green—Normal operation • Solid yellow—Citical card error • Flashing green—Booting • Flashing yellow—Noncritical card error
2.) Temperature LED	• Off—Card is off • Solid green—Normal temperature operation • Solid yellow—Temperature is at the limit • Flashing yellow—Temperature is over the limit

Pre-requisites

NOTE: For detailed installation instructions, see Site preparations and VEP4600 installation.

The following is a list of components required for successful platform installation:

- VEP4600 platform
- AC country- and regional-specific cables to connect the AC power source to each of the platforms' AC power supplies
- Two-post rail kit mounting brackets for rack installation, included
- Screws for rack installation
- #1 and #2 Phillips screwdrivers, not included
- M2 Philips drive screwdriver, not included
- Ground cable screws (included) for L-bracket—order separately
- M3 ground lug assembly kit screw, depending on your platform
- Copper/fiber cables

Other optional components are:

- UL-certified ground lug assembly kit with bracket
- Extra mounting brackets for the 4-post mount
- Extra power supply unit
- Extra fan module

VEP4600 configurations

You can order the VEP4600 in the following configuration:

- Two 10GbE SFP+ and four 1000 Base-T ports, one or two AC PSU power supplies, and four or five normal fan subsystems with airflow from the front to back, depending on the configuration.

  NOTE: DC PSU optional configuration offered as a custom-kit. Simply contact a Dell Sales Representative.

  - Sixteen-core systems use five fans and two AC PSUs.
  - Eight-core systems use four fans one or two AC PSUs.
  - Four-core systems use four fans and one AC PSU.

Luggage tag

The VEP4600 has a pull-out tag, known as a luggage tag, on the I/O-side of the platform. The front of the luggage tag includes platform ID information.

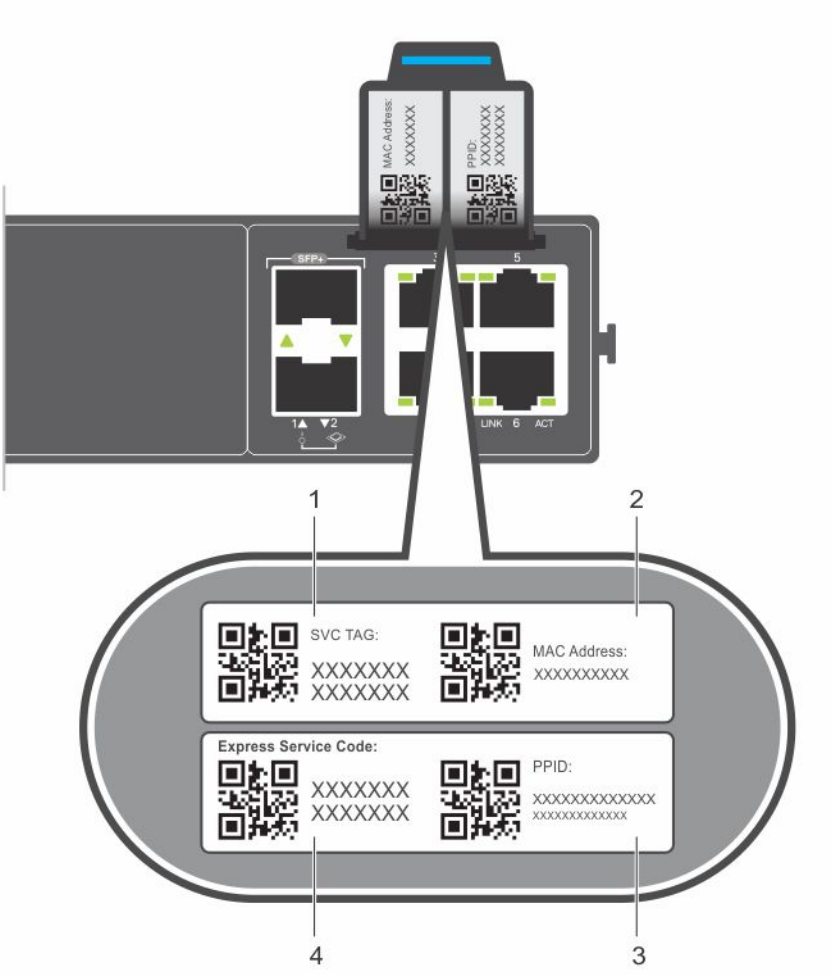

Figure 6. VEP4600 luggage tag

1. SVC tag
2. MAC address
3. PPID
4. Express service code

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Site preparations

VEP4600 is universal customer premise equipment (uCPE). To connect the service provider edge or enterprise branch to the cloud, use VEP4600 to host multiple virtual network functions (VNFs), such as SD-WAN, routing, firewall, and deep-packet inspection.

For more information about platform specifications, see Specifications .

NOTE: Install the VEP4600 in a rack or cabinet before installing the components.

Topics:

Site selection

CAUTION: The mezzanine cards are intended for professional installation only.

CAUTION: Professional installation instructions: This product is designed for specific applications and needs to be installed by qualified personnel with RF and regulatory related knowledge. The general user shall not attempt to install.

Install your equipment in restricted access areas. A restricted access area is one where service personnel can only gain access using a special tool, lock, key, or other means of security. The authority responsible for the location controls access to the restricted area.

Ensure that the area where you install your platform meets the following safety requirements:

- Near an adequate power source. Connect the platform to the appropriate branch circuit protection according to your local electrical codes.
- Environmental—platform location—continuous temperature range is from 0°C to 45°C (32°F to 113°F).
- Operating humidity is from 5 to 90 percent non-condensing, continuous.
- In a dry, clean, well-ventilated, and temperature-controlled room, away from heat sources such as hot cooling vents or direct sunlight.
- Away from sources of severe electromagnetic noise.
- Positioned in a rack or cabinet, or on a desktop with adequate space in the front, back, and sides for proper ventilation and access.
- Install the platform in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.

For more information about platform storage and environmental temperatures, see Specifications .

Cabinet placement

Install the VEP4600 only in indoor cabinets designed for use in a controlled environment.

Do not install the platform in outside cabinets. For cabinet placement requirements, see `Site selection section` .

The cabinet must meet minimum size requirements. Airflow must be in accordance with the Electronic Industries Alliance (EIA) standard. Ensure that there is a minimum of 5 inches (12.7 cm) between the intake and exhaust vents and the cabinet wall.

Rack mounting

When you prepare your equipment rack, ensure that the rack is grounded.

Ground the equipment rack to the same ground point the power service in your area uses. The ground path must be permanent.

Platform ground

Dell EMC recommends you ground your platform. Use the VEP4600 in a common bond network (CBN).

Connect the grounding cables as described in the `VEP4600 installation` section. .

Fans and airflow

The VEP4600 supports fan units with airflow from front to back.

Fan combinations

The fan speed varies based on internal temperature monitoring. The VEP4600 never intentionally turns off the fans.

Table 5. Ventilation specifications

Ventilation clearance requirements	
Horizontal (table top) placement	Minimum of 5 inches (12.7 cm) of clearance between the unit's exhaust vents.
Vertical (rack) placement	Minimum of 5 inches (12.7 cm) of clearance from the back of the vertically racked unit's exhaust vents to a wall or enclosure.

For more information, see Fans.

Power

Connect the platform to the applicable power source using the appropriate power cable. An AC power cable is included with the platform.

When installing an AC platform, follow the requirements of the National Electrical Code, ANSI/NFPA 70, where applicable.

The platform is powered-up when you connect the power cable between the platform and the power source. For more information, see Power supplies.

CAUTION: Always disconnect the power cable before you service the power supply slots. The platform has multiple power cables. Before servicing, ensure that all power cables are disconnected.

CAUTION: Use the power supply cable as the main disconnect device. Ensure that the socket-outlet is located and installed near the equipment and is easily accessible.

ACPI on/off button

The ACPI (Advanced Configuration and Power Interface) on/off button is on the I/O-side of the platform.

ACPI button options:

- Short push:
  - Sends ACPI power event to the Operating System (OS.)

    NOTE: Response depends on configuration of how the OS is booted-up when it receives a ACPI power event. The response may ignore the button push or shutdown the system.
- Long push:
  - Sends ACPI power event to the OS and immediately puts the CPU to sleep. When CPU is in sleep state, a short push brings the CPU out of sleep and reboots the system.

CAUTION: Always turn off the processor correctly. Hold the ACPI on/off button down for five seconds to boot-up after a correct processor shutdown.

NOTE: Before you unplug the platform power cable, either turn off the processor using the software console or hold the ACPI on/off button down for **five** seconds.

Storing components

If you do not install your VEP4600 and components immediately, properly store the platform and all optional components using these guidelines:

- Storage location temperature must remain constant. The storage range is from -40°C to 70°C (-40°F to 158°F).
- Store on a dry surface or floor, away from direct sunlight, heat, and air conditioning ducts.
- Store in a dust-free environment.

NOTE: ESD damage can occur when components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the VEP4600 and accessories. After you remove the original packaging, place the VEP4600 and components on an anti-static surface.

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VEP4600 installation

To install the VEP4600, complete the installation procedures in the order presented in this section.

Always handle the platform and components with care. Avoid dropping the platform or its field replaceable units (FRUs).

NOTE: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the VEP4600 and components. As with all electrical devices of this type, take all the necessary safety precautions to prevent injury when installing this platform.

Topics:

Unpack

Unpack the platform carefully.

NOTE: Before unpacking the platform, inspect the container and immediately report any evidence of damage.

When unpacking the platform, make sure that the following items are included:

- One VEP4600
- One RJ-45 to DB-9 female cable
- Two-post rail kit; no tools required
- One or two country- or region-specific AC power cords, depending on the configuration
- VEP4600 Setup Guide
- Safety and regulatory Information
- Warranty and aupport Information

1. Place the container on a clean, flat surface and cut all straps securing the container.
2. Open the container or remove the container top.
3. Carefully remove the platform from the container and place it on a secure and clean surface.
4. Remove all packing material.
5. Inspect the product and accessories for damage.

VEP Expansion Card installation

The VEP4600 platform offers the following features:

NOTE: Customers are not to attempt installing Virtual Edge Platform (VEP) 4600 expansion cards. A Dell EMC Certified technician must perform this installation.

CAUTION: The mezzanine cards are intended for professional installation only.

CAUTION: Professional installation instructions: This product is designed for specific applications and needs to be installed by qualified personnel with RF and regulatory related knowledge. The general user shall not attempt to install or change the setting.

Ground lug

Dell EMC recommends you ground your switch; however, grounding is optional and the ground lug assembly kit is not included with the switch. The ground lug must be a UL-recognized, crimp-type lug. To order a UL-certified ground lug with bracket, contact your Dell EMC sales representative.

NOTE: The ground cable is not included with the switch.

NOTE: For AC-powered platforms, although the third conductor of the AC power cord provides a ground path, Dell EMC recommends grounding your platform with a dedicated ground wire.

To attach a ground lug assembly to the switch, use the included two M3 ground lug bracket screws. The switch ships with the M3 ground lug bracket screws attached.

CAUTION: Grounding conductors *must* be made of copper. Do not use aluminum conductors.

NOTE: Coat the one-hole lug with an anti-oxidant compound before crimping. Also, bring any unplated mating surfaces to a clean finish and coat with an antioxidant before mating. Plated mating surfaces must be clean and free from contamination.

NOTE: The rack installation ears are not suitable for grounding.

Before you install the switch into the dual-tray:

1. Cut the ground cable (not included) to the desired length. The cable length must facilitate proper operation of the fault interrupt circuits. Use the shortest cable route allowable.
2. Unscrew the two attached M3 screws and set aside.
3. Attach the ground lug and bracket to the switch using the M3 screws.
   Order a UL-certified GND lug with bracket separately.

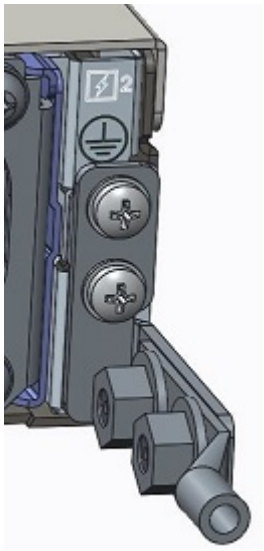


Figure 7. VEP4600 ground lug attached

4. Attach the other end of the ground cable to a suitable ground point such as the rack or cabinet.

Rack or cabinet hardware installation

You may either place the platform on a rack shelf or mount the platform directly into a 19" wide, EIA-310- E-compliant rack.

The platform includes two-post rail assemblies.

WARNING: This document is a condensed reference. Read the safety instructions in your `Safety, Environmental, and Regulatory information` booklet before you begin.

NOTE: The illustrations in this document are not intended to represent a specific platform.

NOTE: Do not the use the mounted two-post rails as a shelf or a workplace.

Rack mount safety considerations

- Rack loading—Overloading or uneven loading of racks may result in shelf or rack failure, possibly damaging the equipment and causing personal injury. Stabilize racks in a permanent location before loading begins. Mount the components starting at the bottom of the rack, then work to the top. Do not exceed your rack's load rating.
- Power considerations—Connect only to the power source specified on the unit. When you install multiple electrical components in a rack, ensure that the total component power ratings do not exceed the circuit capabilities. Overloaded power sources and extension cords present fire and shock hazards.
- Elevated ambient temperature—If installed in a closed rack assembly, the operating temperature of the rack environment may be greater than the room ambient temperature. Use care not to exceed the 45°C maximum ambient temperature of the platform.
- Reduced air flow—Install the equipment in the rack so that the amount of airflow required for safe operation of the equipment is not compromised.
- Reliable earthing—Maintain reliable earthing of rack-mounted equipment. Pay particular attention to the supply connections other than the direct connections to the branch circuit, for example, use of power strips.
- Do not mount the equipment with the back panel facing downward.

Alternative mounting positions

How to reverse the rail mounting brackets.

If the users want to front-mount (flush-mount) the unit, remove and re-position the L-brackets with the following steps:

1. Remove 8x M3 screws on each rail assembly with number 1 Phillips screw driver.

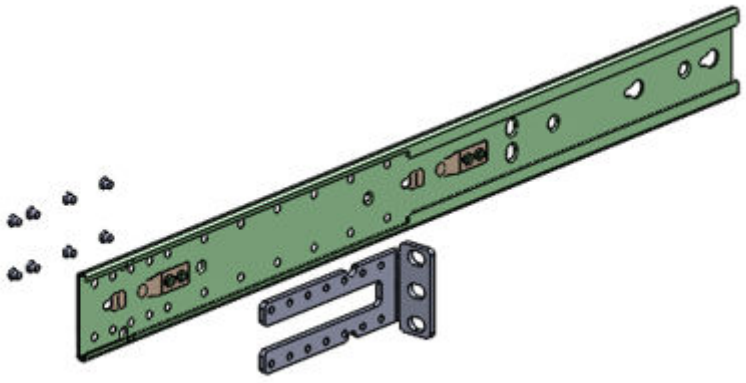


Figure 8. Remove 8x M3

2. Reverse the small bracket. Secure bracket with 8X M3 screws. Torque to 3 In/lbs.

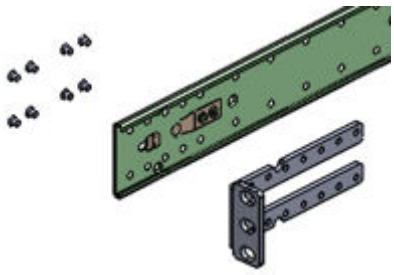


Figure 9. Reverse small bracket

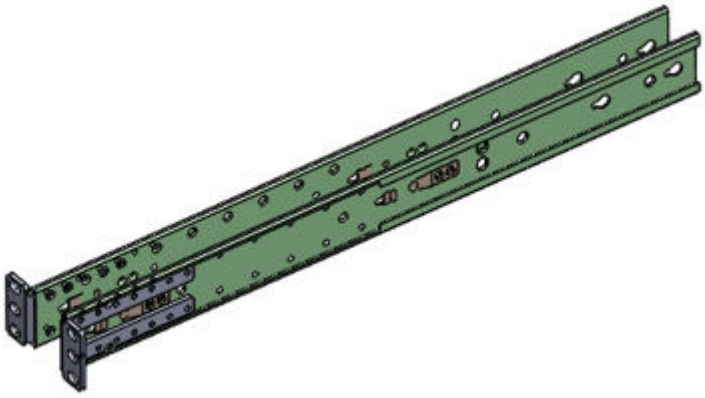


Figure 10. Reversed rail mounting bracket position

3. Mount unit on front-mount (flush-mount) rails.

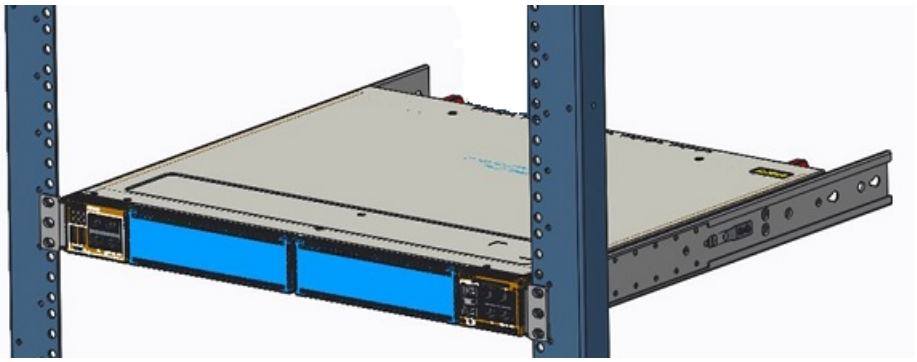


Figure 11. Platform flush-mounted on two posts

Two-post installation

To easily configure your rack for installation of the VEP4600, use the two-post rack mounting system provided. To complete this installation, supply four rack-mounting screws.

To begin installation, separate each rail assembly by sliding the inside rail out of the outside rail.

NOTE: For more installation instructions, see the installation labels attached to the rail assembly.

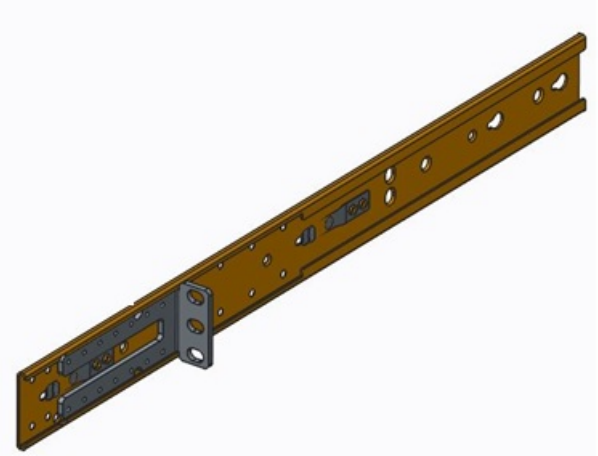


Figure 12. Two-post rail

Four-post installation

To complete this installation, supply eight rack-mounting screws.

NOTE: For more installation instructions, see the installation labels attached to the rail assembly.

1. Separate each rail assembly by sliding the inside rail out of the outside rail.
2. Attach the inner platform rails to the VEP4600.

   Line up the half-holes on the rail with the mounting heads on the platform and attach the rail to the platform. Slide the rail back until it locks into place.

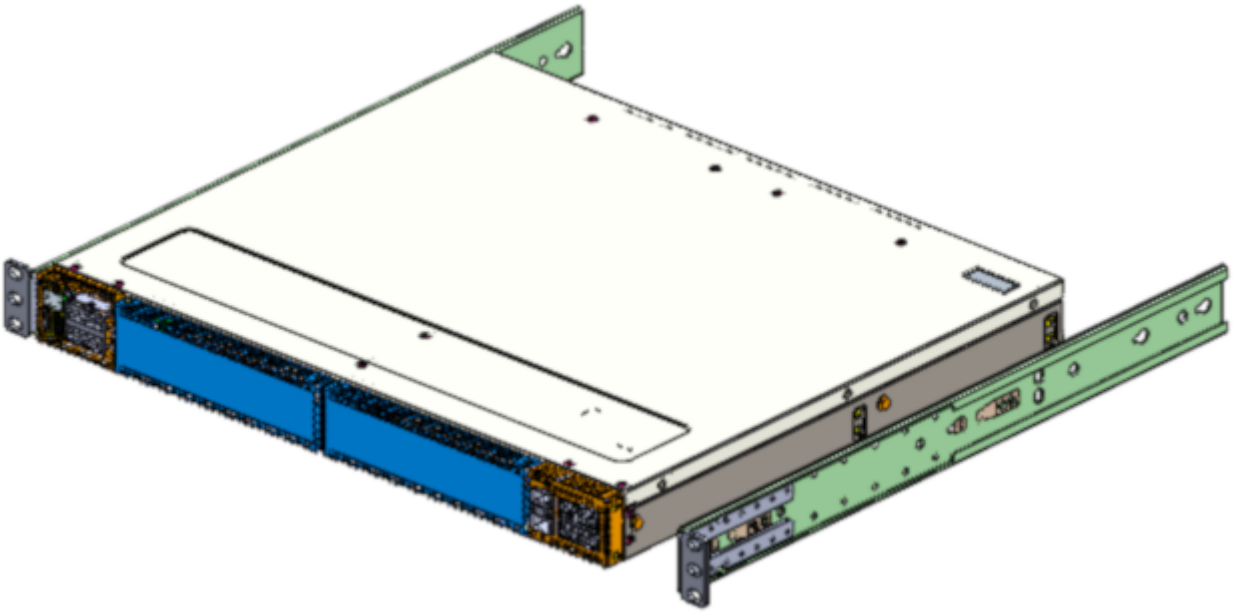


Figure 13. Platform rail attachment

3. Repeat on the other side of the platform.
4. Attach the platform rails to the four-post rack rails using two user-supplied screws on each side.

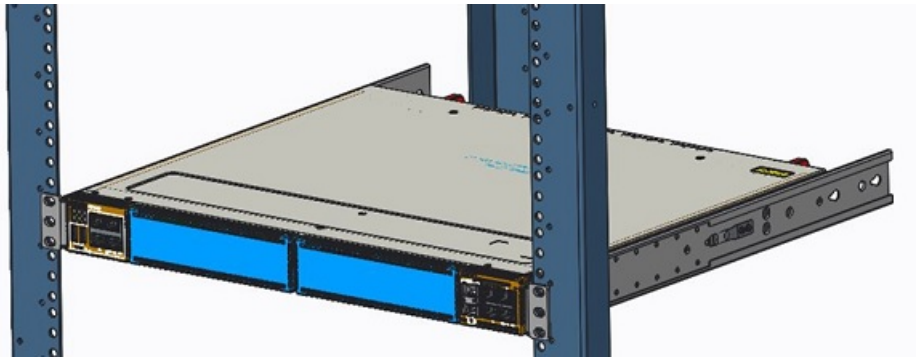


Figure 14. Platform four-post front installed

5. Align the rear rack rails to the front rail and slide into place.

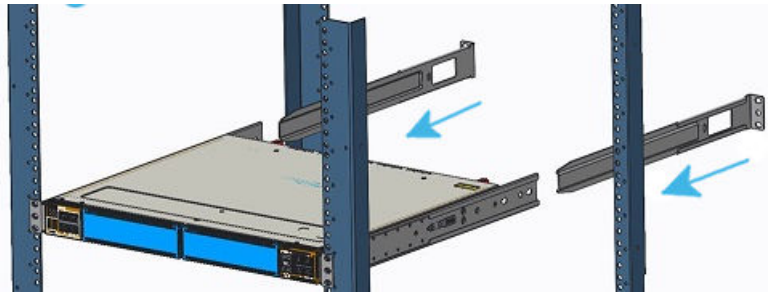


Figure 15. Rear platform rail

About three inches before you fully insert your platform, the rail locking feature engages to keep the platform from inadvertently sliding out and falling.

NOTE: Screw the rear rails into rear rack posts to secure them.

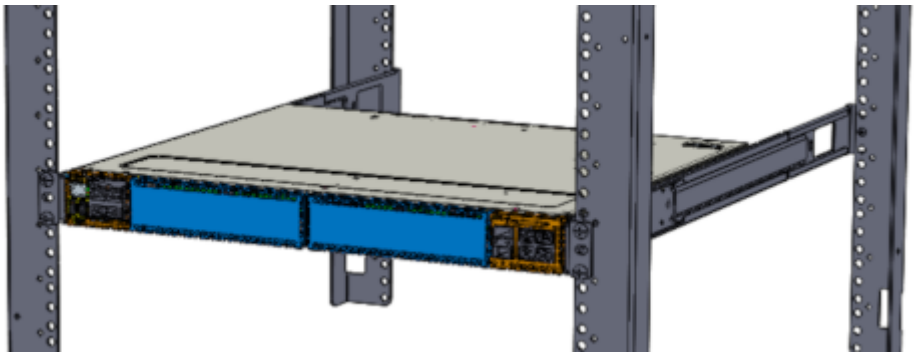


Figure 16. Platform four-post rear installed

To remove the platform, unscrew the rack-mounting screws and slide the platform forward.

Optics installation

The VEP4600 has SFP+ optical ports.

For a list of supported optics, see the specification sheets at www.dell.com/support or contact your Dell EMC Sales representative.

CAUTION: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the VEP4600 and components.

WARNING: When working with optical fibers, follow all warning labels and always wear eye protection. Never look directly into the end of a terminated or unterminated fiber or connector as it may cause eye damage.

1. Position the optic to enter the port correctly.
   The optic has a key that prevents it from being inserted incorrectly.
2. Insert the optic into the port until it gently snaps into place.

NOTE: When you cable the ports, be sure not to interfere with the airflow from the small vent holes above and below the ports.

Optics removal

Remove an optic by pushing the tab on the optic and sliding the optic from the port.

When removing optics with direct attach cables (DACs) from the port, pull the release tab firmly and steadily. Before pulling the release tab, you may need to gently push the optic into the port to ensure that it is seated properly. Do not jerk or tug repeatedly on the tab.

Platform power-up

Supply power to the VEP4600 after it is mounted in a rack or cabinet.

Dell EMC recommends reinspecting your platform before powering it up. Verify the following:

- Optional: The equipment is properly secured to the rack and properly grounded.
- Optional: The equipment rack is properly mounted and grounded.
- The ambient temperature around the unit, which may be higher than the room temperature, is within the limits specified for the VEP4600. For more information, see the `Specifications` section.
- There is sufficient airflow around the unit.
- The input circuits are correctly sized for the loads and that you use sufficient overcurrent protection devices.
- All protective covers are in place.

CAUTION: Do not power up the platform if you did not install a fan module.

NOTE: A US AC power cable is included for powering up an AC power supply. You must order all other power cables separately.

NOTE: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the VEP4600 and components.

Power up sequence

When the platform powers up, the fans immediately come on at high speed. The fan speed slows as the platform continues to boot up.

5

Power supplies

VEP4600 power supply specifications, installation, and replacement.

The VEP4600 ships with one or two AC power supplies, depending on the configuration. Airflow is from the front to back. The red indicator is the normal airflow direction.

NOTE: DC PSU optional configuration offered as a custom-kit. Contact Dell EMC support site at www.dell.com/support/.

Two PSUs are required for full redundancy, but the platform can operate with a single PSU.

The PSUs are field replaceable and hot-swappable. When running with full redundancy—two power supplies installed and running—you can remove and replace one PSU without disrupting traffic.

CAUTION: To prevent electrical shock, ensure that the VEP4600 is grounded properly. If you do not ground your equipment correctly, excessive emissions may result. Use a qualified electrician to ensure that the power cables meet your local electrical requirements.

NOTE: Connect the power supply to the appropriate branch circuit protection as defined by your local electrical codes. Verify that the remote power source complies with the platform input power specifications.

NOTE: If you use a single PSU, install a blank plate in the other PSU slot. Use power supply 2 (PSU2) as the blank-plate slot. You do not need tools to install the blank plate.

NOTE: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the VEP4600 and components.

Topics:

Components, AC or DC PSU LEDs

AC PSU LEDs

Figure 17. Installed AC PSUs

1. AC PSUs

- Solid green—Input is OK.
- Flashing yellow (amber)—There is a fault with the PSU.
- Flashing green blink at 1Hz—Platform is in a standby/CR state.
- Off—PSU is off.

DC PSU LEDs

1. DC PSUs

- Solid green—Input voltage ok and output good.
- Flashing yellow (amber)—There is a Standby mode or PSU failure (OC, OT, OV, Fan fault).
- Off—PSU is off.

AC power supply installation

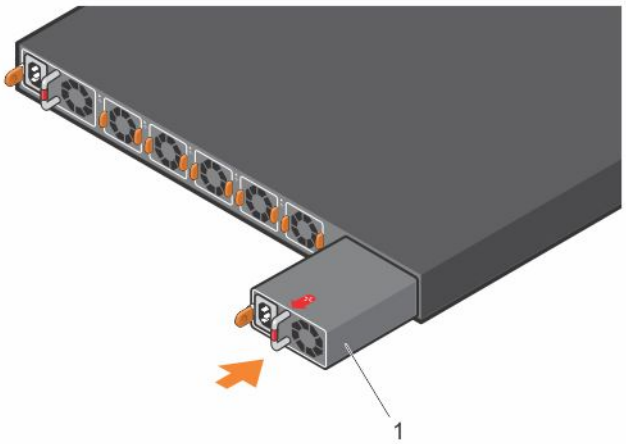
NOTE: The PSU slides into the slot smoothly. Do not force a PSU into a slot as this action may damage the PSU or the platform.

NOTE: Ensure that you correctly install the PSU. When you install the PSU correctly, the power connector is on the left side of the PSU.

NOTE: If you use a single PSU, install a blank plate in the other PSU slot. If you are only using one power supply, install the power supply in the first slot, PSU1. Install a blank plate in the second slot, PSU2.

1. Pull out the PSU slot cover.
2. Remove the PSU from the electro-static bag.
3. Insert the PSU into the platform PSU slot—insert the exposed PSU connector first.

   The PSU slot is keyed so that you can only fully insert the PSU in one orientation. When you install the PSU correctly, it snaps into place and is flushed with the back of the platform.



1. PSU installation

4. Plug in the appropriate AC 3-prongs cord from the platform PSU to the external power source.
5. Repeat steps 1 through 4 if you have a redundant PSU using the second PSU slot.

NOTE: The VEP4600 powers up when you connect the cables between the power supply and the power source.

AC power supply replacement

CAUTION: Disconnect the power cord before removing the power supplies. Also, disconnect all power cords before servicing.

NOTE: The PSU slides into the slot smoothly. Do not force a PSU into a slot as this action may damage the PSU or the VEP4600.

NOTE: If a PSU fails, you must replace the PSU unit. There are no field serviceable components in the PSU. To request a hardware replacement, see www.dell.com/support.

NOTE: If you use a single PSU, install a blank plate in the other PSU slot. If you are only using one power supply, install the power supply in the first slot, PSU1. Install a blank plate in the second slot, PSU2.

1. Disconnect the power cable from the PSU.
2. Push the lever towards the right and use the grab handle to pull the PSU out of power supply bay.

   NOTE: The PSU is locked in place. Unlock for removal by pushing the orange lever to the right.

3. Use the grab handle on the replacement PSU to slide it into the power supply bay.
4. Attach the power cord to the replacement PSU.

   NOTE: The platform powers up when the cables are connected between the power supply and the power source.

DC power supply installation

DC PSU customer kit instructions.

NOTE: Before starting PSU DC power supply installation process, verify that your unit has a minimum version of BMC 2.20.

1. Use AC PSU to power-up the unit.
2. Download the latest Unified firmware updater from www.dell.com/drivers/ if your unit does not have the minimum BMC version 2.20.
3. Upgrade your BMC to version 2.20 using Unified firmware update 3.0 for DC PSU support.
4. Power down the system.
5. Remove the AC PSUs.
6. Insert number 10 to number 3 AWG wires into the Molex terminal block that comes with the DC PSU, maintaining correct polarity of -48V and RTN wires.

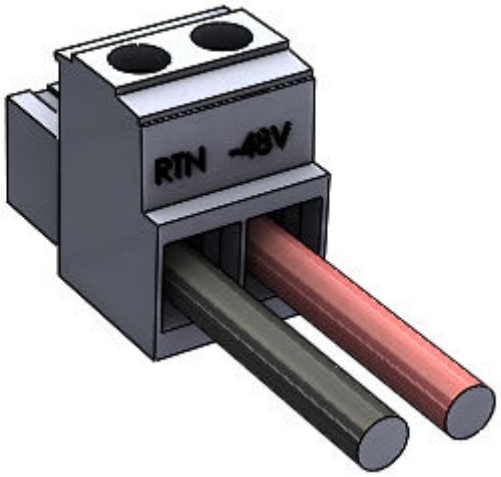


Figure 18. Molex terminal block

7. Tighten the screws with a number 1 Philips screwdriver on the terminal block to secure the number 10 to number 3 AWG wires.

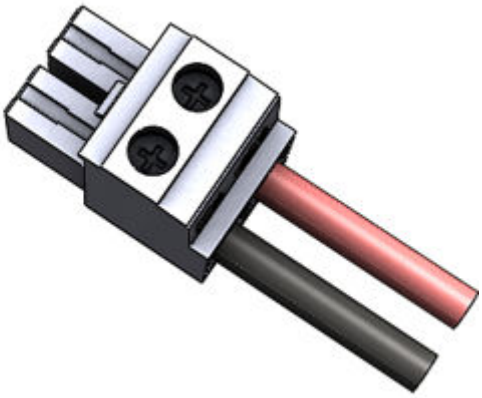


Figure 19. Tighten wires to terminal block

8. Mate the terminal block to the connector on DC PSU. Place the VEP4600 System Label from the kit on top of the DC PSU cover.

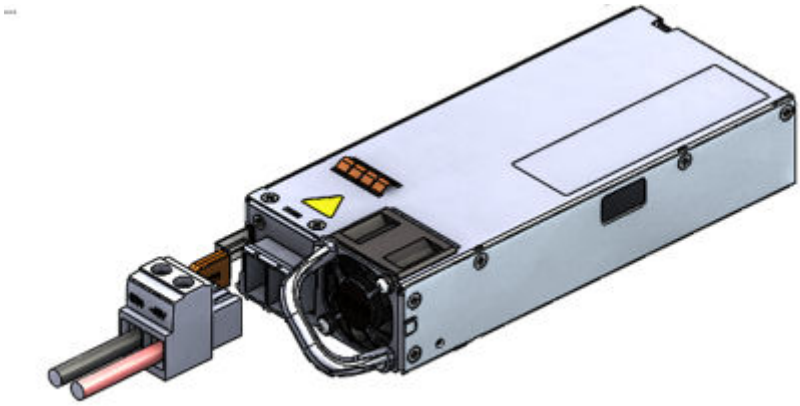


Figure 20. Mate terminal block to DC PSU

9. Locate the overlay label in the kit and place it over the existing label in the unit.

Figure 21. DC overlay label

10. Insert DC PSUs to switch.

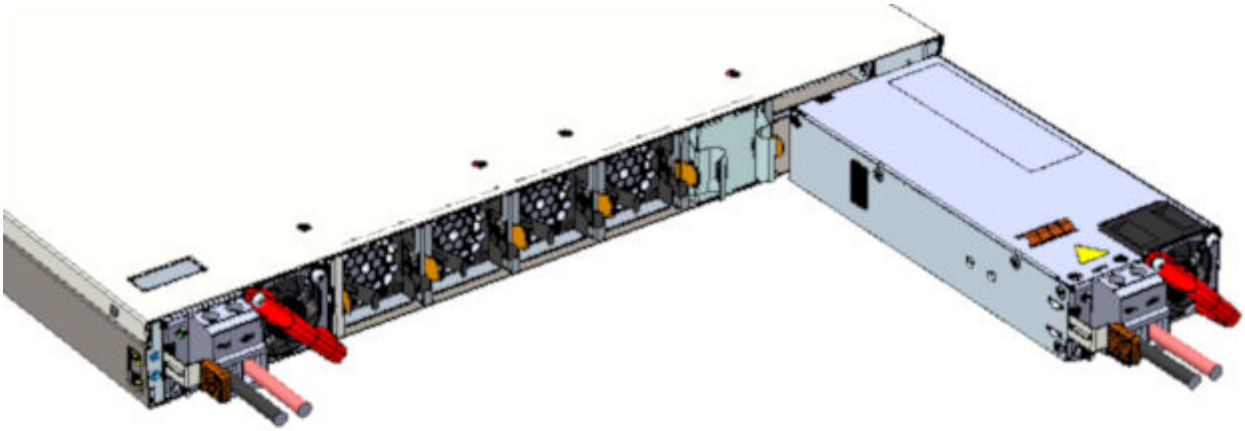


Figure 22. Insert DC PSU to switch

11. Crimp number 6 and number 3 AWG wire to ground lug.

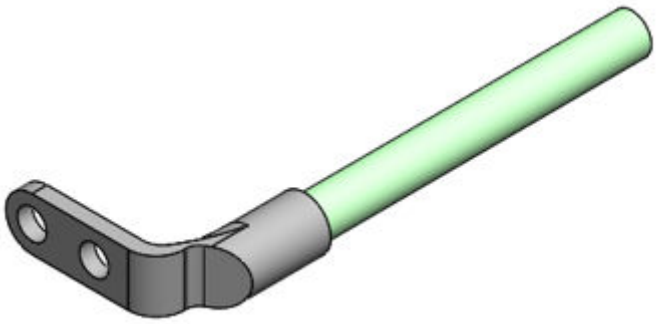


Figure 23. Ground lug

12. Attach ground wire to switch. Secure ground lug with a number 1 Philips screwdriver.

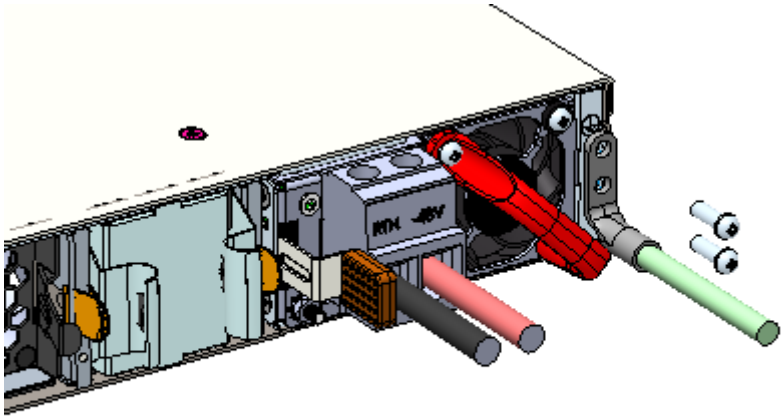


Figure 24. Attach ground lug and wire to switch

NOTE: Torque screws to 6-inch pounds.

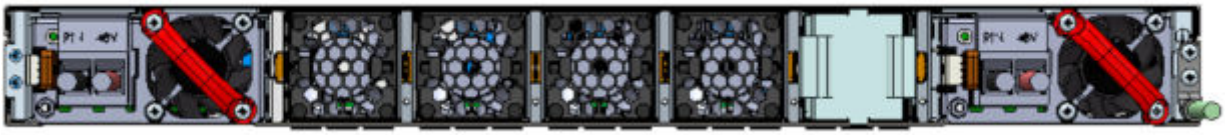


Figure 25. Installed DC PSU(s)

6

Fans

The VEP4600 comes from the factory with one or two PSUs and four or five fan modules installed in the platform, depending on the configuration. The fan modules and the power supplies, which have integrated fans, are hot-swappable.

In addition to the power supply modules, you can order fan modules separately to install.

The VEP4600 supports airflow from the I/O side to the PSU side. The red indicator is the normal airflow direction.

Environmental factors can decrease the amount of time required between fan replacements. Check the environmental factors regularly. An increase in temperature and/or particulate matter in the air might affect performance; for example, new equipment installation.

CAUTION: Check the fans at six-month intervals; replace them as necessary. Regularly monitor the speeds of the fans to accurately determine replacement intervals.

Topics:

Components

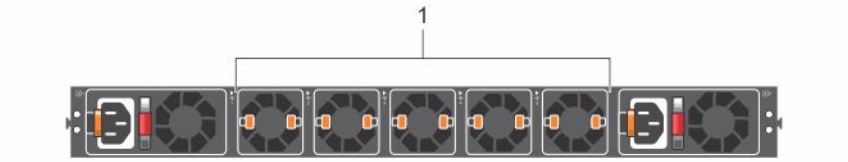


Figure 26. VEP4600 fan modules

1. Fan modules

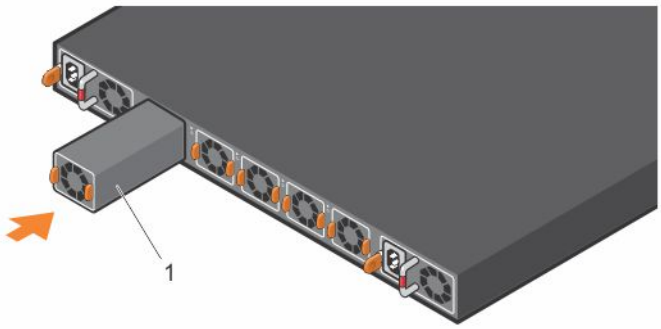
Fan LEDs

- Solid green—Fan function is normal.
- Flashing yellow (amber)—There is a fan fault.
- Off—Fan is off.

Fan module installation

The fan modules in the VEP4600 are field replaceable. Module slot 1 is on the left side of the platform; module slot 5 is on the right side of the platform when facing the fan side of the unit.

1. Take the fan module out of the shipping box.
2. Slide the module into the bay.



1. Fan module installation

Fan module replacement

To request a hardware replacement, see www.dell.com/support.

CAUTION: Complete the following steps within one minute or the platform temperature could rise above safe thresholds and the platform could shut down:

1. Squeeze the two orange levers on the fan module together to unlock the module. With the two orange levers squeezed, pull and slide the fan module out of the bay.
2. Slide the replacement module into the bay.

7

Management ports

Besides the 10/100/1000Base-T RJ-45 ports, the VEP4600 provides several ports for management and storage.

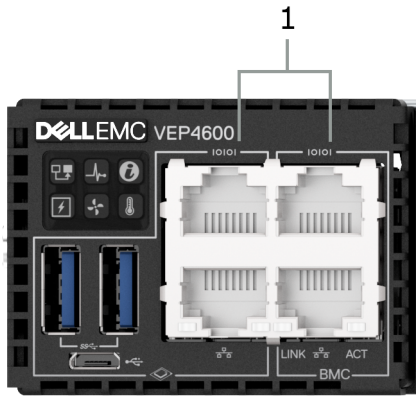
NOTE: The output examples in this section are for reference only. Your output may vary.

Topics:

RS-232 console port access

The RS-232 console port is on the I/O-side of the VEP4600.

Figure 27. VEP4600 RS-232 console and management ports



1.) RS-232: processor console port (left); BMC console port (right)

CAUTION: Ensure that any equipment attached to the serial port can support the required 115200 baud rate.

NOTE: Before starting this procedure, ensure that your PC has a 9-pin serial port and that you have installed a terminal emulation program on the PC.

NOTE: If your PC's serial port cannot accept a female DB-9 connector, use a DB-9 male-to-male adaptor.

1. Install the provided RJ-45 connector-side of the provided cable into the platform console port.
2. Install the DB-9 female-side of the provided copper cable into your PC's serial port. Or install the DB-9 cable into other data terminal equipment (DTE) server hardware.
3. Keep the default terminal settings on the console as follows:
   - 115200 baud rate
   - No parity
   - 8 data bits
   - 1 stop bit
   - No flow control

MicroUSB-B console port access

The MicroUSB-B console port is on the front below the two USB ports on the VEP4600.

The terminal settings are the same for the serial console port and the RS-232/RJ-45 console port:

- 115200 baud rate
- No parity
- 8 data bits
- 1 stop bit
- No flow control

When you connect the microUSB-B port, it becomes the primary connection and, while connected, all messages are sent to the microUSB-B port.

NOTE: The VEP4600 uses the Silicon Labs CP2102 USB-B chip. To find the correct USB-B universal asynchronous receiver-transmitter (UART) driver, see https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers. When you connect the microUSB-B port, it becomes the primary connection and, while connected, all messages are sent to the microUSB-B port.

NOTE: Before starting this procedure, be sure that you have a terminal emulation program already installed on your PC. Install the appropriate drivers to support the microUSB-B port. To download Dell EMC drivers, see www.dell.com/support. If your computer requires non-Dell EMC drivers, contact Dell EMC Technical Support for assistance.

1. Power on the PC.
2. Connect the USB-A end of cable into an available USB port on the PC.
3. Install the necessary USB device drivers.

   To download Dell EMC drivers, see www.dell.com/support. If your computer requires non-Dell EMC drivers, contact Dell EMC Technical Support for assistance.
4. Connect the microUSB-B end of cable into the microUSB-B console port on the platform.
5. Open your terminal software emulation program to access the platform.
6. Located the serial port on the PC that corresponds to the USB-serial connection and select this serial port in the terminal software.
7. Confirm that the terminal settings on your terminal software emulation program are as follows:
   - 115200 baud rate
   - No parity
   - 8 data bits
   - 1 stop bit
   - No flow control
8. Power on the platform.

   NOTE: System should be turned on only after terminal software is started and set up with correct baud rate.

8

Specifications

This section lists the VEP4600 specifications.

CAUTION: Operate the product at an ambient temperature not higher than 113°F (45°C).

NOTE: For RoHS information, see Restricted Material Compliance .

Topics:

Chassis physical design

Table 6. Chassis physical design

Parameter	Specifications
Height	1.72 inches (43.6 mm)
Width	17.1 inches (434 mm)
Depth	• 15 inches (381 mm) • PSU/fan tray handle: 1.57 inches (40 mm)
Chassis weight with factory-installed components	16.40lbs (7.43 kg), (2 PSUs, and 5 fans, 1 rNDC card)
Rack clearance required	• Front: 5 inches (12.7 cm) • Back: 5 inches (12.7 cm)

Table 7. Environmental parameters

Parameter	Specifications
Operating temperature	0°C to 45°C (32°F to 113°F) continuously **NOTE:** Reduce maximum temperature by 1°C/125 meters (1°F/228 feet) above 950 meters (3,117 feet).
Operating humidity	• 5% to 85% (RH), non-condensing, continuously • 5% to 90% (RH), non-condensing, short term • Short term is </= 1% of operational hours per year.
Storage temperature	–40°F to 70°C (–40°F to 158°F)
Storage humidity	5% to 95%, non-condensing
Maximum thermal output	311 W = 1024 BTU/Hr
Maximum operational altitude	10,000 feet (3,048 meters)
Maximum non-operational altitude	35,000 feet (10,688 meters)
Shock	SV0115 — ODM

Table 8. AC power requirements

Parameter	Specifications
AC power supply	100–240 VAC 50/60 Hz
Typical current draw per platform	• 110VAC: 1.89A (16 core) 240VAC: 0.86 A (16 core) • 110VAC: 1.5A (8 core) 240VAC: 0.7A (8 core) • 110VAC: 1.35A (4 core) 240VAC: 0.65A (4 core)
Maximum power capability	• 5-fan 16-core processor: 311W • 4-fan 8-core processor: 230W • 4-fan 4-core processor: 220W
Typical power consumption	• 5-fan 16-core processor: 206.5W • 4-fan 8-core processor: 170W • 4-fan 4-core processor: 160W

Table 9. Expansion card AC power requirements

Parameter	Specifications
Maximum power consumption*	0.9 Watt rNDC Carrier
Typical power consumption*	0.37 Watt rNDC Carrier

rNDC power can be found in their respective datasheets.

*For the most current power consumption specifications, see the Installation Guide at www.dell.com/support.

IEEE standards

The VEP4600 platform complies with the following IEEE standards.

- 802.1ab (LLDP)
- 802.1ax (Layer 2)
- 802.1d, 802.1w, 802.1s, 802.1x (Mgmt/Security), 802.3x (Layer 2)
- 802.3 (1000BASE-KX)

Safety standards and compliance agency certifications

- CUS UL 60950-1, 2nd Edition
- CSA 60950-1-03, 2nd Edition
- EN 60950-1, 2nd Edition
- EN 60825-1, 1st Edition
- EN 60825-1 Safety of Laser Products—Part 1: Equipment Classification Requirements and User's Guide
- EN 60825-2 Safety of Laser Products—Part 2: Safety of Optical Fibre Communication Systems
- FDA Regulation 21CFR 1040.10 and 1040.11
- IEC 60950-1, 2nd Ed, including all National Deviations and Group Differences
- IEC 62368-1

Product recycling and disposal

You must recycle or discard this platform according to applicable local and national regulations. Dell EMC encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. Dell EMC offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products.

Waste electrical and electronic equipment (WEEE) directive for recovery, recycle and reuse of IT and telecommunications products

Dell EMC platforms are labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

Figure 28. The European WEEE symbol

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE.

Dell EMC products, which fall within the scope of the WEEE, are labeled with the crossed-out wheelie-bin symbol, as shown above, as required by WEEE.

For information on Dell EMC product recycling offerings, see the WEEE Recycling instructions on Support. For more information, contact the Dell EMC Technical Assistance Center.

Agency compliance

The VEP4600 is designed to comply with the following safety and agency requirements:

USA Federal Communications Commission statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures.

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

FCC Caution:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Industry Canada Statement

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

This device complies with RSS-247 of Industry Canada. Operation is subject to the condition that this device does not cause harmful interference.

Cet appareil est conforme à la norme RSS-247 d'Industrie Canada. L'opération est soumise à la condition que cet appareil ne provoque aucune interférence nuisible.

Brazil – Aviso da Anatel

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.

Brazilian certificante

European Union EMC directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. Dell EMC cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of this product, including the fitting of non-Dell EMC option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 32/CISPR34 and EN55032 / EN55034. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

NOTE: This is a Class A product. In a domestic environment, this device may cause radio interference, in which case, you may be required to take adequate measures.

European Community Contact

Dell EMC, EMEA - Central

Dahlienweg 19

66265 Heusweiler

Germany

Tel: +49 172 6802630

Email: EMEA Central Sales

India

This product conforms to the relevant Essential Requirements of TEC, Department of Telecommunications, Ministry of Communications, Govt of India, New Delhi-110001.

Japan VCCI compliance for class A equipment

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Figure 29. Japan: VCCI compliance for class A equipment

This is Class A product based on the standard of the Voluntary Control Council For Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

NOTE: Use the AC power cords with Dell EMC equipment only. Do not use Dell EMC AC power cords with any unauthorized hardware.

本製品に同梱いたしております電源コードセットは、本製品専用です。本電源コードセットは、本製品以外の製品ならびに他の用途でご使用いただくことは出来ません。製品本体には同梱された電源コードセットを使用し、他製品の電源コードセットを使用しないで下さい。

Figure 30. Japan: warning label

Korean certification of compliance

A급 기기 (업무용 방송통신기자재)	이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

Figure 31. Korean certification of compliance

	[equipment type]
품명(Product Name)	Ethernet Switch
모델명(Model)	[model number]
신청인(Applicant)	Dell Technologies
제조자(Manufacturer)	[Manufacturer]
제조년월(Manufacturing Date)	[date]
제조국(Country of Origin)	China

Figure 32. Korean package label

Mexico certification of compliance

La operación de este equipo está sujeta a las siguientes dos condiciones:

1. Es posible que este equipo o dispositivo no cause interferencia perjudicial y
2. Este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

Taiwanese certification of compliance

The Taiwanese radio certification of compliance is as follows:

台灣: 國家通訊傳播委員會

低功率電波輻射性電機管理辦法

第十二條經型式認證合格之低功率射頻電機，非經許可，公司、商號或使

用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發

現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。 前項合法通信，指依電信法規定作業之

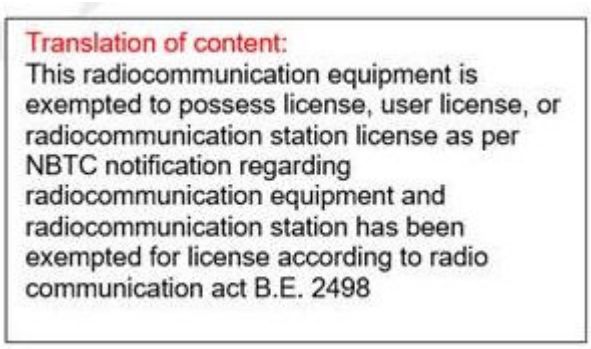
無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

在 5.25-5.35 秭赫頻帶內操作之無線資訊傳輸設備，限於室內使用。

Thailand certification of compliance

Thailand radio compliance.

Thailand radio compliance certificate



Thailand radio compliance certificate translated

Singapore certification of compliance

Singapore radio compliance.

Complies with IMDA Standards

Registration number: N2515-19

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Dell EMC support

The Dell EMC support site provides documents and tools to help you use Dell EMC equipment and mitigate network outages. Through the support site you can obtain technical information, access software upgrades and patches, download available management software, and manage your open cases. The Dell EMC support site provides integrated, secure access to these services.

To access the Dell EMC support site, go to www.dell.com/support/. To display information in your language, scroll down to the bottom of the web page and select your country from the drop-down menu.

- To obtain product-specific information, enter the 7-character Service Tag or 11-digit express service code of your switch, which is found on the pull-out tag, also known as a luggage tag, and click **Submit**.
- To receive more technical support, click **Contact Us**. On the Contact Information web page, click **Technical Support**.

To access switch documentation, go to www.dell.com/manuals/ and enter your switch type.

To search for drivers and downloads, go to the **Drivers & Downloads** tab for your switch.

To participate in Dell EMC community blogs and forums, go to www.dell.com/community.