Dell Networking C1048P
Getting Started Guide

Regulatory Model: C1048P

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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About This Guide

This document is intended to help you get started by installing the C1048P port extender (PE) for use with a C9010 switch and connecting to a network.

For more detailed information about C1048P installation and software configuration, see the documents in the following table, which are available on the Dell Networking Support website (Dell Networking Support).

Table 1. C1048P Documents

Information	Documentation
Hardware installation and power-up instructions	*Dell Networking C1048P Installation Guide*
Software configuration	*Dell Networking Configuration Guide for C9000 Series Switches*
Command-line interface	*Dell Networking Command-Line Reference Guide for C9000 Series Switches*
Latest updates	*Dell Networking C9010 and C1048P Release Notes*

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C1048P Hardware Description

The Dell Networking C1048P is a stackable Gigabit Ethernet port extender (PE) for campus access deployments. The C1048P is used as a 1 rack unit (RU) port extender for the C9010 modular chassis and requires a C9010 switch to operate. The C1048P functions as a remote line card that is physically connected to, and provisioned by, a C9010 over 10GbE uplinks. You can connect up to 40 C1048P PEs to a C9010 switch.

Deployed as a port extender, the C1048P extends the switching capability of the C9010. The C1048P uses a standards-based tagging mechanism coupled with virtual port technology to multiplex and demultiplex data-plane traffic to and from the C9010, which functions as a central point of control.

Although the C1048P PE does not switch traffic, it provides switch services in the same way as a chassis line card, including ACLs for quality of service (QoS) and security, statistics gathering, multicast delivery, LACP link aggregation, and device discovery through LLDP. The C1048P provides 1GbE Power over Ethernet plus (PoE+) connectivity, 10GbE uplink capability, and supports PE stacking.

The C1048P PE has the following physical dimensions:

- 440.0 x 257.0 x 43.5 mm (W x D x H)
- 17.3 x 15.2 x 1.7 inches (W x D x H)

Unpacking the Switch

The C1048P PE and its accessories ship in a single box. Before unpacking the switch, inspect the container and immediately report any evidence of damage. Verify that you have received your ordered items. If any item is missing or damaged, contact your Dell Networking representative or reseller for assistance.

△ **CAUTION: Always wear an electrostatic discharge (ESD)-preventive wrist or heel ground strap when handling the PE and its components. Ground yourself by using an antistatic wrist strap or other device and connect it to the ESD grounding jack on the chassis. As with all electrical devices of this type, take the necessary safety precautions to prevent injury when installing this system.**

Unpack the C1048P by carefully removing the device from the container and place it on a secure and clean surface.

The base C1048P package ships with:

- One C1048P chassis
- One rack-mount kit for rack installation, including two mounting brackets, bolts, and cage nuts
- One set of self-adhesive rubber pads for a free-standing PE (four pads are included)
- *C1048P Getting Started Guide*
- *Safety and Regulatory Information*

- *Warranty and Support Information*
- *Software License Agreement*

You can order additional items, such as optics, cables, and external power supplies.

C1048P Front Panel

The ports on the front panel of the C1048P PE are shown in the following illustration and described below.

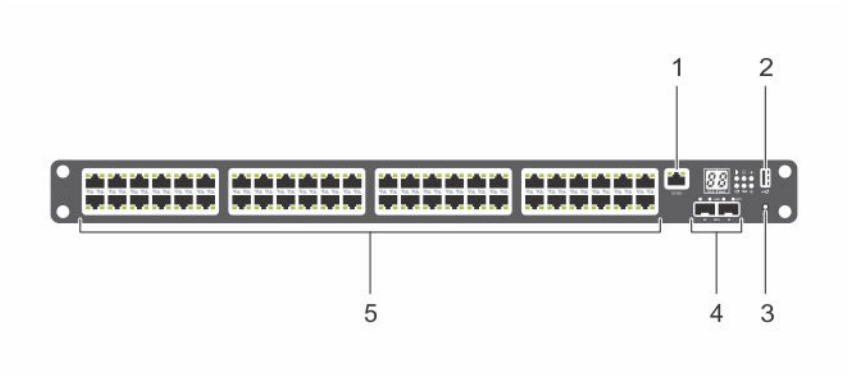

Figure 1. C1048P Front Panel: Ports and Reset Button

1. Console port

   The console port provides serial communication using the RS-232 protocol to connect a console terminal and access the C1048P command-line interface (CLI). To set up a console connection, use the serial cable (RJ-45 to DB-9 female connectors) shipped with the C9010. The console port operates as an asynchronous link from 1200 to 115,200 baud. The default settings are 9600 baud rate, 8 data bits, No Parity, 1 Stop Bit, and No Flow Control.

2. USB port

   The Type-A, female USB port supports a USB 2.0-compliant flash memory drive. The C1048P can read or write to a flash drive formatted as FAT-32. Use a USB flash drive to copy files and images to the C1048P.

3. Reset button

   Access the reset button through a pinhole. To perform a hard reset of the C1048P, insert the tip of a paper clip or similar tool into the pinhole. When the PE reboots, it re-establishes communication with an attached C9010, which downloads the latest SW configuration settings.

4. Two 10GbE SFP+ ports

   Two SFP+ ports provide 10GbE uplinks to communicate with a C9010. To connect to a C9010 switch, at least one C1048P 10GbE SFP+ port is required. On the C1048P, 10GbE SFP+ ports are numbered 1 and 2, and only support uplinks to a parent C9010; they cannot be used as data ports.

5. Forty-eight Gigabit Ethernet ports

The 48 Gigabit Ethernet (10BASE-T, 100BASE-TX, 1000BASE-T) RJ-45 ports connect to downstream servers and edge devices. These ports support auto-negotiation for speed, flow control, and duplex transmission. C1048P Gigabit Ethernet ports are numbered 1 to 48.

NOTE: Dell Networking does not recommend that you connect a Gigabit Ethernet port to another switch or bridge. A loop in the topology may result.

The C1048P automatically detects the difference between crossed and straight-through cables on RJ-45 ports and automatically chooses the MDI or MDIX configuration to match the other end. The RJ-45 ports support full-duplex mode 10/100/1000 Mbps speeds on standard Category 5 UTP cable and Power over Ethernet — PoE (15.4W) and PoE+ (30W).

NOTE: C1048P RJ-45 ports do not support half-duplex mode.

By default, all C1048P Gigabit Ethernet interfaces run in Layer 2 mode. You can configure up to eight C1048P Gigabit Ethernet interfaces in a port channel that connects to a downstream edge device.

LED Descriptions: Front Panel

The light emitting diode (LED) displays for PE ID and stack number, temperature, power, system, stack master, power, fan, and SFP+ link status are on the right side of the C1048P front panel. 10/100/1000BASE-T port LEDs are located above each port.

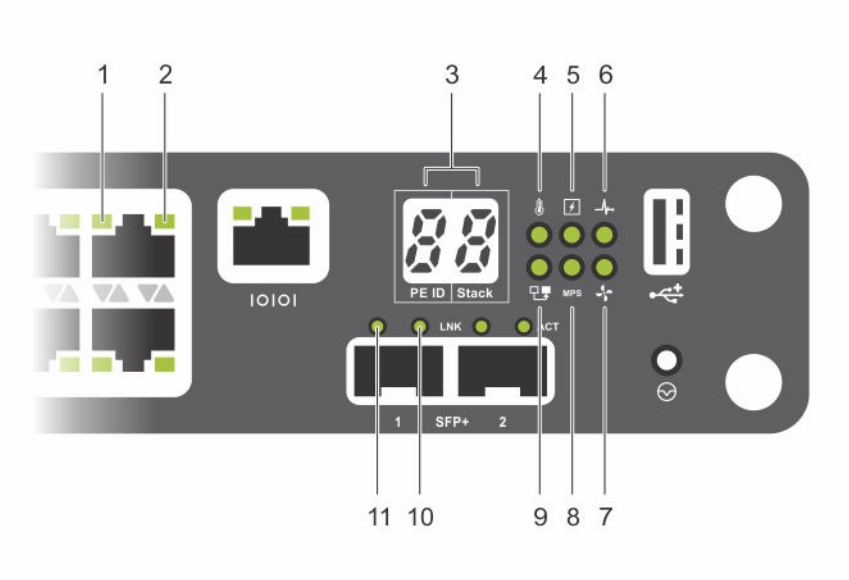

Figure 2. C1048P Front Panel: LEDs

1. 10/100/1000BASE-T port LED: Link
2. 10/100/1000BASE-T port LED: Activity
3. PE ID and Stack ID numbers
4. Temperature LED
5. Power/Locator LED
6. Status LED
7. Fan LED
8. External power supply: Status LED
9. Stack Master/Member LED
10. 10GbE SFP+ uplink port 1: Activity LED
11. 10GbE SFP+ uplink port 1: Link LED

10/100/1000BASE-T Port LEDs

The following table describes 10/100/1000BASE-T port LEDs (items 1 and 2 in Figure 2).

C1048P 10/100/1000BASE-T Port LEDs

LED	Description
Link	Link speed on port • Off: No link is up. • Solid green: The port is operating at 1000 Mbps. • Solid yellow: The port is operating at 10/100 Mbps.
Activity	Data transmission on port • Off: No transmit/receive activity and PoE power is off. • Flashing green: The port is actively transmitting/receiving and PoE power is off. • Flashing yellow: The port is actively transmitting/receiving and PoE power is on. • Solid yellow: No transmit/receive activity and PoE power is on.

System LEDs

The following table describes the system LEDs on the C1048P front panel (items 3 to 11 in Figure 2).

C1048P System LEDs

LED	Description
PE ID | Stack	When the C1048P is online and connected to a C9010, a scrolling port-extender ID (PE ID) from 0 to 255 displays in the left, seven-segment LED. A fixed stack-unit ID number from 0 to 7 displays in the right LED. If the C1048P is not connected to a C9010, the PE ID LED is blank. For more information, see Pre-provisioning a Port Extender. **NOTE:** The PE ID number displays as a scrolling three-digit number. Each digit displays briefly followed by a dash (-) before the next digit displays. A blank displays before the three-digit number repeats in the display. For example, the PE ID 175 displays 1, -, 7,-, 5, followed by a blank before the PE ID number repeats. Similarly, the PE ID 7 displays as 007: 0, -, 0, -, 7, followed by a blank.
Temperature	Temperature status • Solid green: Normal operation; the temperature is below the minor threshold of 140°F (C60°C). • Solid red: Warning condition; the temperature exceeds the major threshold of 167°F (75°C).
Power/Locator	Internal power status • Solid green: Normal operation • Blinking green: The PE locator is enabled.

LED	Description
	• Off: Error condition — There is no power reaching the PE or the PE has a power failure.
 Status	System operational status • Solid green: Normal operation • Blinking green: The PE is booting. • Solid red: Critical system error • Blinking red: Non-critical system error, such as a fan or power supply failure
 Fan	• Solid green: The fan is powered on and is operating at normal RPM speed. • Solid red: Fan failure
 MPS	Modular power supply (MPS) status (redundant external power supply) • Off: No external (modular) power supply is used. • Solid green: The PE is receiving power. • Solid red: An external power supply is detected, but is not receiving power.
 Stack Master/ Member	Stack master status • Off: The PE is operating as a stack member. • Solid green: The PE is operating as a stack master or in standalone mode. NOTE: While the C1048P is booting up in standalone or stacking mode, the Stack Master LED is solid green.
SFP+ LNK (left LED above port)	SFP+ link status • Off: No data link • Solid green: Link is up and operating at maximum 10G port speed. • Solid amber: Link is up and operating at lower 1G port speed.
SFP+ ACT (right LED above port)	SFP+ activity status • Off: No data link activity • Flashing green: Link is up and transmitting/receiving data.

C1048P Back Panel

The back panel of the C1048P PE is shown in the following illustration and described below.

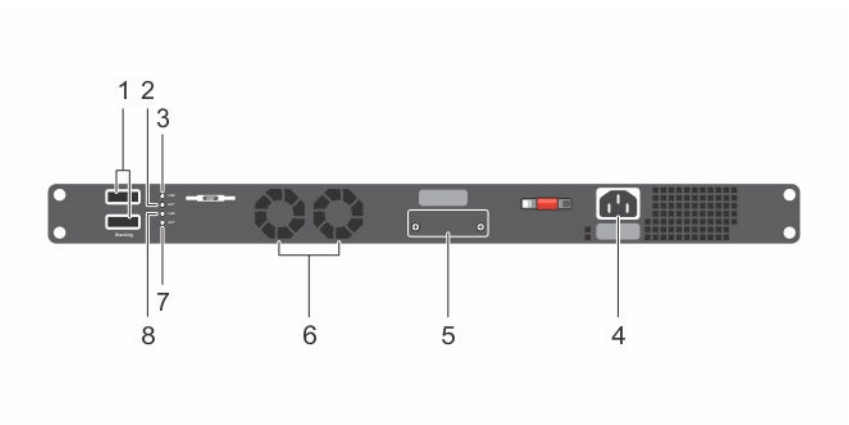

Figure 3. C1048P Back Panel

1. Stack ports: Each C1048P has two fixed mini-SAS (STD) stacking connectors on its back panel. Stack port 1 is on top; stack port 2 is on the bottom.

   You can stack up to eight C1048P PEs using the mini-SAS ports on the back panel. A C1048P PE supports stacking only with other C1048P PEs. When you connect multiple C1048P PEs using the stack ports, the PEs operate as a single unit with up to 384 front panel ports. The stack operates and is managed from a C9010 switch as a single entity.

   In a C1048P stack, the Stack Master/Member LED on the front panel indicates operational status (standalone, stack master, or member unit). For more information about C1048P LED behavior, see System LEDs.
2. Stack port 1: Activity LED
3. Stack port 1: Link LED
4. Main AC power supply connector: The C1048P PE has an internal 1000-watt power supply that feeds up to 24 PoE devices at full PoE+ power (850W). PoE power is dynamically allocated.

   NOTE: The AC power connector on a C1048P requires an IEC-320-C15 power cable, which is different than the C13 power cable used on most lower wattage switches.
5. External DC power supply connector: You can connect an additional external power supply (MPS1000) to provide 1000 watts and full power coverage for all 48 PoE devices (1800W).
6. Fan vents: Two fans are used to cool the C1048P PE.
7. Stack port 2: Activity LED
8. Stack port 2: Link LED

Stack Port LEDs

The stack port LEDs are located to the right of each stack port. The Link LED is above the Activity LED.

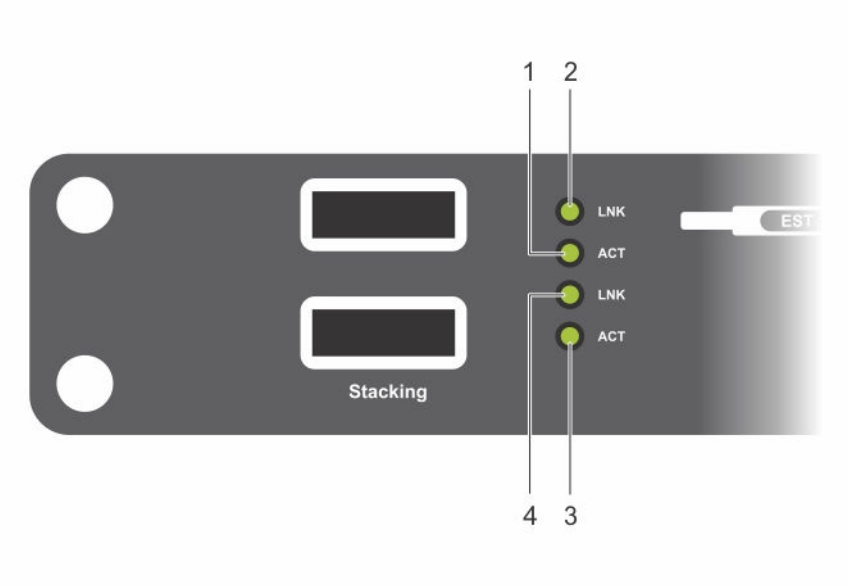

Figure 4. C1048P Back Panel: Stack Port LEDs

1. Stack port 1: Activity LED
2. Stack port 1: Link LED
3. Stack port 2: Activity LED
4. Stack port 2: Link LED

Table 2. C1048P Stack Port LEDs

Stack Port LED	Description
LNK	Stack port link • Off: No link is up. • Solid green: Stack link is up.
ACT	Stack port activity • Off: No data link activity. • Flashing green: Stack link is up and transmitting/receiving data.

Before You Start: Site Preparation

Before installing the C1048P port extender, make sure that your installation site meets these requirements:

- **Clearance**: There is adequate space in front of the PE so you can read the LEDs, and adequate space around and behind the switch for cabling, power connections, and ventilation. The AC power cord can reach from the power outlet to the utility-panel connector. Airflow around the PE and through the rear vents is unobstructed.
- **Cabling**: Route the cabling to avoid sources of electrical noise, such as radio transmitters, broadcast amplifiers, power lines, and fluorescent lighting fixtures. Make sure that the cabling is safely away from

other devices that might damage the cables. If necessary, allow one RU space between devices to provide room for cabling.

- **Temperature**: The ambient temperature around the operating PE is from 0 to 45°C (32 to 113°F).
- **Altitude**: Altitude at the installation site is below 10,000 feet (3048 m).
- **Humidity**: The relative humidity around the operating PE is 8% to 85% (non-condensing) with a maximum humidity gradation of 10% per hour.
- **Dust**: Install the PE in an environment as free as possible from dust and foreign conductive material (such as metal flakes from construction activities). Cooling mechanisms, such as fans and blowers in the switch, can draw dust and other particles causing contaminant buildup inside the chassis, which can result in system malfunction.

3

Installing the Hardware

To install the C1048P PE, mount it into a 19" wide, EIA-310-E compliant rack. You can install the C1048P in a 1U 4-post front-rack or 1U 2-post (flush and center) rack configuration. Using a rack mount tray is optional.

To install the C1048P PE in a rack:

1. (Optional) Install a rack mount tray in a 2- or 4-post rack.
2. Install the C1048P chassis in the rack using mounting brackets.
3. Connect the C1048P to a C9010 switch.
4. (Optional) Set up a C1048P stack by connecting to other C1048Ps.
5. Power up the system.

To connect the C1048P to a network after you install it in a rack and power it up, configure the initial software settings. For more information, see Configuring the Software.

NOTE: Although Dell Networking strongly recommends that you install the C1048P in a rack, you may install it on a flat surface as a free-standing device. The surface must be able to support the weight of the C1048P and the PE cables. The C1048P ships with four self-adhesive rubber pads.

1. When installing the C1048P on a flat surface, attach the self-adhesive rubber pads on each location marked on the bottom of the switch (unless you are using a rack).
2. Set the C1048P on a flat surface. Make sure that it has proper ventilation by leaving 5 cm (2 inches) on each side and 13 cm (5 inches) at the back.

Before You Start: Rack Safety Considerations

Before installing the C1048P in a rack, review the following rack mounting safety considerations.

WARNING: For complete safety information, read the safety instructions in your *Safety, Environmental, and Regulatory Information* booklet before you begin. This document contains a condensed summary.

- Rack loading — Overloading or uneven loading of racks may result in shelf or rack failure, causing damage to the equipment and possible personal injury. Stabilize racks in a permanent location before loading begins. Mount components beginning at the bottom of the rack, then work to the top. Do not exceed your rack 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 circuit capabilities. Overloaded power sources and extension cords present fire and shock hazards.
- Elevated ambient temperature — If you install the system in a closed rack assembly, the operating temperature of the rack environment may be greater than room ambient. Use care not to exceed the 50 degrees C maximum ambient temperature of the switch.

- Reduced air flow — Install the port extender in the rack so that the front-to-back airflow (I/O ports to PSU) is not obstructed.
- Reliable earthing — Maintain reliable earthing of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit; for example, use of power strips.
- Rack mounting — Do not mount the port extender with the rear panel facing in the downward position.

Installing a Rack Mount Tray (Optional)

You can use a rack mount tray to support the weight of the C1048P in a 4-post rack. You must order the tray separately.

To install a rack mount tray in a 4-post rack, follow the instructions provided with the tray kit. Decide on the desired height to mount the switch in the rack. Position the tray at that height and tighten it to the rack posts using the screws shipped with the tray (items 1 to 4 in Figure 5).

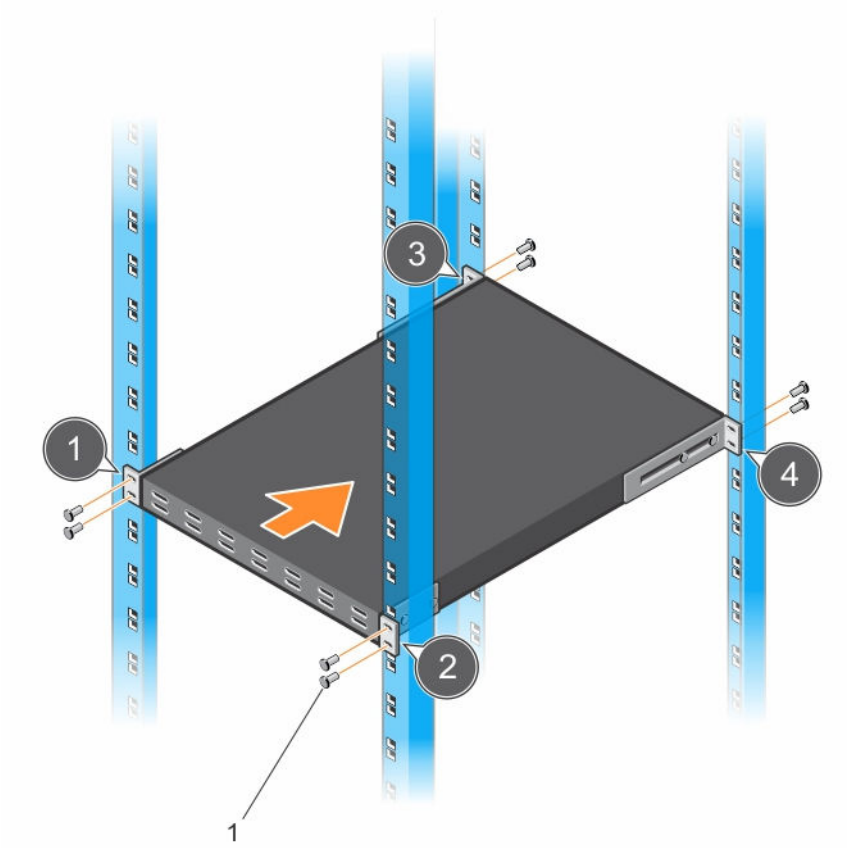

Figure 5. Example of a Mount Rack Tray

Installing the C1048P in a Rack

You can install the C1048P in a 1 RU 4-post front-rack or 1 RU 2-post (flush and center) rack configuration. Although the procedure in this section describes C1048P installation in a 1 RU 2-post front-rack configuration, follow the same steps to install a C1048P in a 1 RU 4-post rack.

WARNING: Never mount the C1048P in a rack that is suspended under a table or desk, or attached to a wall.

CAUTION: Before installing the C1048P in a rack, disconnect all cables (if attached) and remove all self-adhesive pads (if attached) from the underside of the C1048P.

CAUTION: If you plan to install multiple C1048P PEs in a rack, mount the C1048s from the bottom up. Make sure that the air flow through the ventilation holes on each C1048P is not obstructed.

1. Align the holes on the right rack-mount bracket with the holes on the right side (facing you) of the C1048P.
2. Secure the bracket (item 3 in Figure 6) to the chassis by tightening the screws (item 2 in Figure 6) provided with the mount bracket.

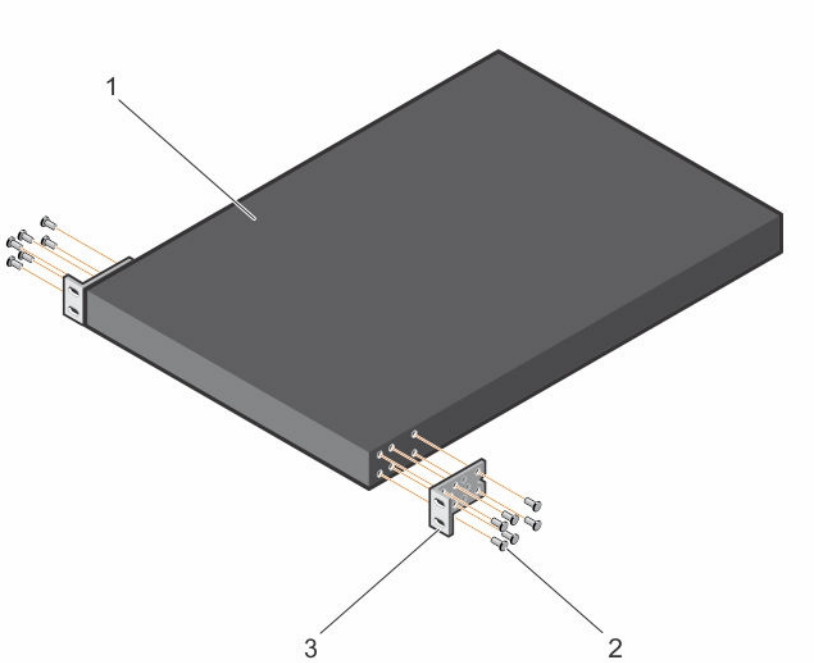

Figure 6. Attaching Mount Brackets to the C1048P

3. Repeat Steps 1 and 2 to attach the left rack-mount bracket on the C1048P.
4. Mount the C1048P into a 48.26 cm (19 inch) rack. Align the holes on each bracket flange with the holes on a rack post.

5. Secure the C1048P to the rack using the rack bolts (provided with the mount brackets) or cage nuts and cage-nut bolts with washers (provided with the rack). Tighten the bolts on the bottom of each bracket flange first; then tighten the bolts on top (item 1 in Figure 7).

CAUTION: Make sure that the rack bolts provided with the mounting brackets fit the threaded holes in the rack.

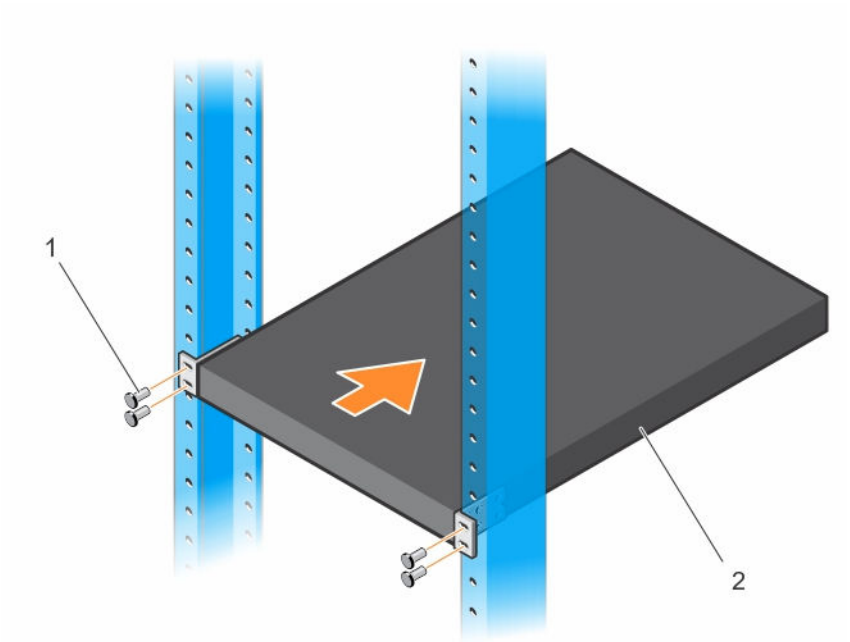

Figure 7. Mounting the C1048P in a 2-Post Rack

Connecting to a C9010 Switch

The C1048P port extender has two 10G SFP+ ports on the front panel (see Figure 2). The two SFP+ ports provide 10GbE uplinks to a C9010 switch with SFP+ transceivers. At least one 10GbE SFP+ uplink is required to connect to a C9010 switch.

NOTE: A C1048P can connect to a C9010 switch only through a 10GbE SFP+ port; a C1048P cannot connect to a C9010 through a 10/100/1000 Mbps RJ-45 port.

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

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

To connect to a C9010:

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

3. Connect one end of an appropriately connectorized fiber-optic cable into the port. Connect the other end to an SFP+ connector in a C9010 switch.

Stacking Multiple C1048P Port Extenders

The C1048P supports PE stacking, which allows multiple C1048P units to act as a single port extender. You can stack up to eight C1048Ps using the stack ports on the back panel.

C1048P stack ports support the Serial Attached SCSI (SAS) protocol and operate as mini-SAS ports. The C1048P supports stacking only with other C1048P port extenders. You can connect up to eight C1048Ps together through the stack ports so that they operate as a single unit with up to 384 front panel ports. The stack operates and is managed as a single entity.

NOTE: If you are installing a stack of C1048Ps, assemble and cable the stack before powering it up. When you power up a stack for the first time, the C1048P units receive the provisioned configuration from the parent C9010. A stack master unit is elected based on the highest MAC address or highest provisioned priority. The master unit may occupy any location in the stack. The Stack Master LED on the front panel is illuminated on the master unit.

NOTE: Although individual C1048P stack members do not require a separate uplink to a parent C9010, Dell Networking recommends connecting more than one C1048P stack unit to the C9010 for redundancy. A C1048P stack unit uses the stacking connection to the master PE for its C9010 uplink. For more information, see Connecting to a C9010 Switch.

Creating a C1048P Stack

Create a C1048P stack by connecting adjacent units using the mini-SAS stack ports on the back panel. Figure 8 shows the switches connected in a ring topology, the recommended topology for a C1048P stack.

1. Install the C1048Ps to be stacked in a rack as described in Installing the C1048P in a Rack.
2. Starting with the C1048P at the top of the stack, connect a mini-SAS cable from a stack port on its back panel into one of the stack ports on the C1048P directly below it in the rack. You must separately order mini-SAS cables. If necessary, use a longer (1 meter or 3 meter) mini-SAS cable to connect the C1048Ps.
3. Connect a mini-SAS cable in the other stack port on the second C1048P and into one of the stack ports on the third C1048P directly below it. Continue from top to bottom until all C1048Ps in the rack are connected with a mini-SAS cable.
4. Connect a mini-SAS cable from the bottom C1048P in the stack to the top C1048P to complete a ring topology.

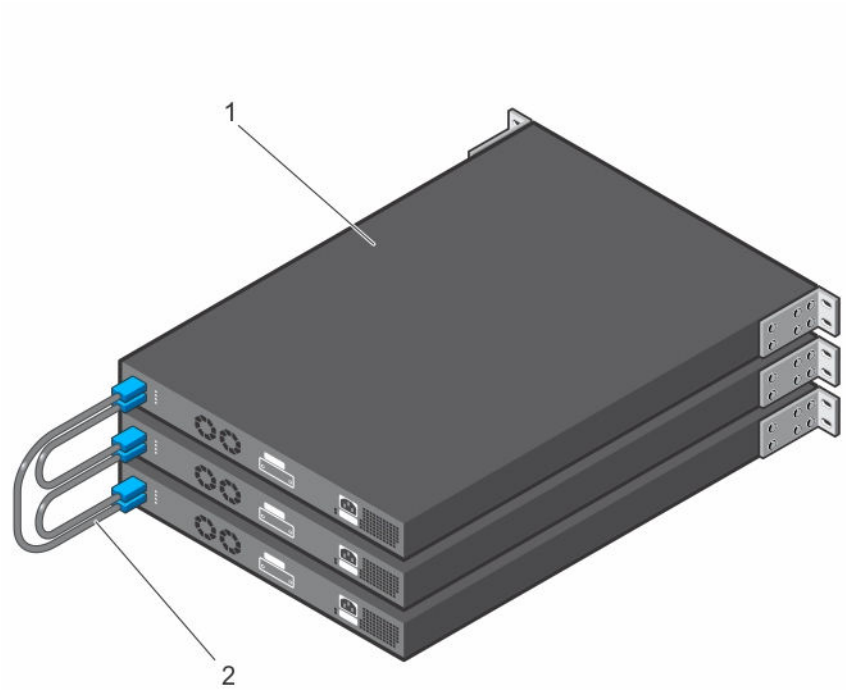

Figure 8. C1048P Stack in a Ring Topology

1. C1048P stack
2. Mini-SAS cables attached in a ring topology

The C1048P stack in Figure 8 is connected in a ring topology with the following physical connections between port extenders. The PEs are numbered Unit 0 to Unit 2. After you power on the stack units, the Stack Master LED on the C1048P that is elected master displays solid green.

- The bottom mini-SAS port on the top unit is connected to the top mini-SAS port on the middle unit.
- The bottom mini-SAS port on the middle unit is connected to the top mini-SAS port on the bottom unit.
- The bottom mini-SAS port on the bottom unit is connected to the top mini-SAS port on the top unit.

C1048P Standby

A C1048P stack supports a standby or backup unit that assumes the stack master role if the master unit in the stack fails. The parent C9010 maintains a synchronized copy of the running configuration for the stack. When the system detects a stack-master failure, the C9010 initializes the standby unit and enables all other stack units with the current configuration.

Although the standby unit is automatically selected in the stack, you can use the command-line interface on the C9010 or C1048P console to manually configure a different stack member as standby. For more information, see the *Dell Networking Configuration Guide for C9000 Series Switches*.

Powering up the C1048P

CAUTION: Read the safety information in the *Safety and Regulatory Information* manual and the safety information for C9000 Series switches that connect to the C1048P.

The C1048P has one internal power supply. The AC and DC power connectors are on the back panel (see Back Panel).

To power up a C1048P, connect it to an AC power source:

1. Using an IEC-320-C15 power cable with safety ground, connect the power cable to the AC main receptacle on the back panel.
2. Connect the power cable to a grounded AC outlet.

If you connect to a redundant, external DC power supply, use the Dell Networking MPS1000. Connect the DC power cable from the power supply to the DC receptacle on the back panel.

After you connect the C1048P to a power source, the C1048P boots up. After a successful boot-up, the temperature, power, system status, and fan LEDs display solid green. The fans adjust to an operational speed based on the current traffic load. The SFP+ Link LED displays solid green when the uplink to the parent C9010 is up. The SFP+ Activity LED blinks green when the uplink is transmitting/receiving data.

4

Configuring the Software

To complete the hardware installation, install the C1048P in a rack, attach an uplink cable to a parent C9010 switch, (optionally) set up a C1048P stack, and power on the port extender.

To provision a C1048P, you can configure basic software settings from the C9010 console either before or after you connect the C1048P to a C9010. For example, you can pre-configure software settings to download from the parent C9010 after you power on the C1048P. Provisioning pre-configured C1048P settings is performed using a discovery and authentication process through a port-channel interface on the C9010.

The C9010 port-channel interface enabled for PE communication consists of member ports configured with the `cascade port` command. For more information, see Provisioning a Port Extender.

Provisioning a Port Extender

You can provision a C1048P with an initial software configuration before or after you install and power on the PE. To provision a C1048P, start from the C9010 console and enter the following commands. If you enter the commands before you install the C1048P with a parent C9010, the pre-configured software settings download to the C1048P as soon as you attach it to a C9010 port and power it up.

NOTE: Although you can provision a C1048P after you install and power it on, Dell Networking recommends pre-configuring the software provisioning before you install it. Then connect the C1048P to a pre-configured, cascaded C9010 port. In this way, you can "plug and play" a C1048P with a parent C9010.

1. Turn on support for port-extender configuration on a C9010.
   CONFIGURATION mode

   ```
   Dell(conf)# feature extended-bridge
   ```

2. Enter Port-Extender configuration mode to pre-provision a C1048P.
   CONFIGURATION mode

   ```
   Dell(conf)# pe provision pe-id
   ```

   - *pe-id* is a PE ID number from 0 to 255. You must enter a *pe-id* value; there is no default.
3. (Optional) Provision a C1048P for PE stacking.
   PORT-EXTENDER CONFIGURATION mode

   ```
   Dell(conf-pe-0)# stack-unit unit-id type unit-type
   ```

   - *unit-id* is a stack-unit ID number from 0 to 7. The default value is 0.
   - *unit-type* is a stack-unit type. The only supported value is `C1048P`.
4. Provisioning a C1048P automatically creates a LAG (port channel) on the C9010. The C9010 LAG member ports are the cascade ports configured for the PE with the `cascade interface`

command. The cascade ports must be operationally up (`no shutdown` command) and have a default port configuration with no L2 and L3 configuration. The port interfaces must be the same type. You can configure up to eight C9010 ports in the auto-LAG. The generated auto-LAG number is from 257 to 513.

PORT-EXTENDER CONFIGURATION mode

```
Dell(conf-pe-0)# cascade interface interface-type slot/port-range
```

- `interface` *`interface-type`* specifies a C9010 10-Gigabit Ethernet interface. The only supported value is `TenGigabitEthernet` *`slot/port-range`*.
- *`slot/port-range`* specifies a C9010 10GbE port, including slot number and either a single port number, a port range, or a combination of both for auto-LAG configuration.
  - The range of slot numbers is from 0 to 11. In line-card slots 0 to 9, the range of port numbers is from 0 to 23; in RPM slots 10 and 11, the range of port numbers is from 0 to 3.
  - Enter a port range with or without spaces; for example, `cascade interface tengigabitethernet 0/1-5` or `cascade interface tengigabitethernet 0/1 - 5`.
  - You can enter up to six comma-separated ranges or port numbers; for example, `cascade interface tengigabitethernet 0/1-2,8,10-12,15`.

5. Verify the provisioned configuration on a C1048P.

   EXEC Privilege mode

```
Dell# show pe brief

Dell# show pe pe-id

Dell# show interface port-channel brief
```

Example of Provisioning a Port Extender

```
Dell(conf)# feature extended-bridge
Dell(conf)# pe provision 2
Dell(conf-pe-2)# stack-unit 0 type c1048p
Dell(conf-pe-2)# cascade interface tengigabitethernet 0/1-2
Dell(conf-pe-2)# exit
Dell(conf)# interface range tengigabitethernet 0/1-2
Dell(conf-if-te-0/1-2)# no shutdown
Dell(conf-if)# end
Dell# show pe brief
           --  Port Extenders Information  --
-------------------------------------------------------------
  PE-id  Status   Stack-size   Type      System-MAC
-------------------------------------------------------------
    2    online     1         C1048P    34:17:eb:00:bb:11
```

NOTE: If the status of a port extender is `error`, communication with an attached C9010 was unsuccessful, possibly due to a mismatch in software version (SVM) or another communication error. Wait five minutes for an auto-upgrade of the port extender to complete. If the status does not change to `online`, contact Dell Networking Support for assistance.

```
Dell# show pe 2
Codes:  A - Active, I - Inactive
Reason: CTM - Card Type Mismatch, CAM - CAM ACL Mismatch
        SVM - Software Version Mismatch, UE - Unknown Error

PE-ID assigned: 2
```

```
Status: online
System Mac: 34:17:eb:00:bb:11
PE Up Time: 00:01:48
PE Discovery Status: Provisioned PE
User Configured Cascade Ports: Te 0/1(A),Te 0/2(A)
Dynamically Discovered Cascade Ports: None
Cascade LAG: Po 258(Up)
-------------------------------------------------------------------------
Stack-id   Status    Reason      Type        UnitMac        No. of Ports
-------------------------------------------------------------------------
    0      online    -           C1048P  34:17:eb:00:bb:11      48
```

NOTE: In the User-Configured Cascade Ports field, `A` (active) indicates that a C9010 port is up (`no shutdown`) and configured as a cascade port; `I` (inactive) indicates that a port is down and configured as a cascade port.

```
Dell# show interface port-channel brief
Codes: L - LACP Port-channel
       O - OpenFlow Controller Port-channel
       A - Auto Port-channel

    LAG  Mode  Status       Uptime      Ports
A   258  N/A   up           14:45:26    Te 0/1,2  (up)
```

PE Port Numbering

On the C1048P, the 48 Gigabit Ethernet ports support full-duplex mode 10/100/1000 Mbps speeds on standard Category 5 UTP cable and Power over Ethernet — PoE (15.4W) and PoE+ (30W).

After the initial C1048P software provisioning is performed, you can configure L2 and other software features on the C1048P by entering CLI commands on the C9010 console. C1048P interfaces are identified in the command syntax:

`interface peGigE` *`pe-id/pe-stack—unit-id/port-number`*

where *pe-id* is a port-extender ID number from 0 to 255; *pe-stack-unit-id* is a PE stack-unit number from 0 to 7; *port-number* is a port number from 1 to 48.

10/100/1000BASE-T ports on the front panel are numbered from 1 to 48, starting with the upper port on the far left side (facing you). Odd-numbered ports 1-47 are on top; even-numbered ports 2-48 are on the bottom. The two 10GbE SFP+ ports (shown in Figure 1), which are used only for uplinks to an attached C9010, are numbered 1 and 2.

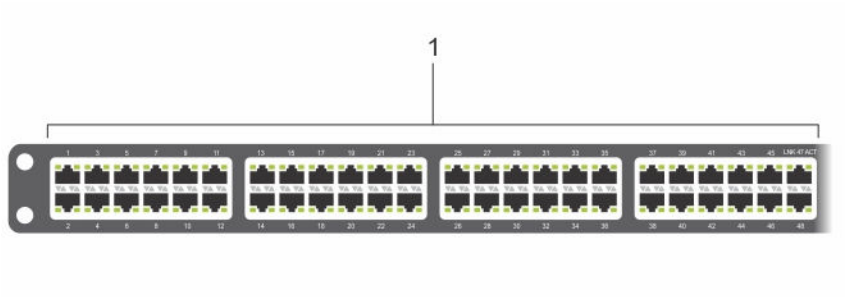

Figure 9. C1048P Port Numbering

1. C1048P 10/100/1000BASE-T ports 1-48

Next Steps

After you complete the initial C1048P provisioning, you can configure L2 software features on the C1048P from the C9010 console CLI, including LLDP, 802.1x, LACP, loop detection and BPDU guard. No other L2 protocols are supported. IP address and L3 protocol configuration on C1048P ports are not supported. For detailed information, see the *Dell Networking Configuration Guide for C9000 Series Switches*.

When the C1048P is online, you can enter the `connect pe` *`pe-id`* command on the C9010 console to remotely log in to the C1048P CLI. To log in, enter the user name `peadmin` and the password `calvin`. After logging in, you can enter show and stack renumbering commands on the C1048P.

To move through command modes in the C1048P CLI, see the Command Modes section in the *Dell Networking C9010 Getting Started Guide*.

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Dell Networking Support

The Dell Networking Support site provides a range of documents and tools to assist you with using Dell Networking equipment and mitigating the impact of network outages. Through the support site you can obtain technical information regarding Dell Networking products, access software upgrades and patches, download available management software, and manage your open cases. The Dell Networking support site provides integrated, secure access to these services.

To access the Dell Networking Support site, go to https://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 C1048P and click **Submit**.

  To view the service tag or express service code on a C1048P, pull out the tag (item 1 in Figure 10) on the upper left side of the back panel.
- To receive additional kinds of technical support, click **Contact Us**. On the Contact Information web page, click **Technical Support**.

To access C9000 Series documentation, go to https://www.dell.com/manuals/.

To search for drivers and downloads, go to https://www.dell.com/drivers/.

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

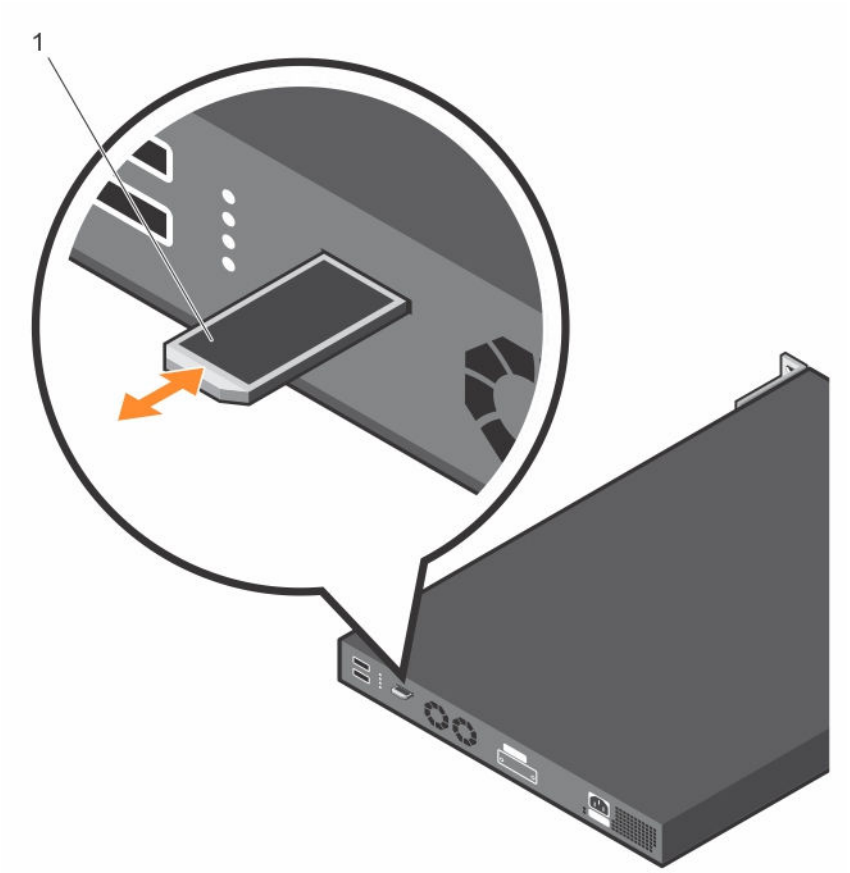

Figure 10. C1048P Service Tag

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Technical Specifications

The following tables describe the technical specifications for the C1048P port extender.

Table 3. Chassis Physical Design

Parameter	Specifications
Height	1.7 inches (4.35 cm)
Width	17.32 inches (44 cm)
Depth	15.23 inches (38.7 cm)
Chassis weight	15 lbs (6.8 kg) with factory installed components
	44.31 lbs (20.1 kg) fully loaded

Table 4. Environmental Parameters

Parameter	Specifications
Operating temperature	32°F to 113°F (0°C to 45°C)
Maximum operating humidity	95% (non-condensing)
Storage temperature	–40°F to 149°F (–40°C to 65°C)
Storage relative humidity	85% (non-condensing)

Table 5. AC Power Requirements

Parameter	Specifications
Nominal input voltage	100-240 VAC 50/60 Hz
Maximum AC power supply input current (based on 1200W output for 100/120V lines and 1600W output for 200/240V lines)	8.9 A @ 100V per AC power supply
	7.9 A @ 120V per AC power supply
	3.85 A @ 200V per AC power supply
	3.55 A @ 240V per AC power supply
Maximum steady state current consumption for main PSU with an MPS1000 external power supply bank	110V circuit: ~15.8A
	220V circuit: ~7.7A
Maximum power consumption for main PSU with an MPS1000 external power supply bank	1,738W @ 110V
	1,694W @ 220V

Parameter	Specifications
Maximum thermal output	1,017 BTU/hr @ 110V (1.738W - 1,440W PoE = 298W switch power)