Dell Force10
S2410 System
Quick Start Guide

Regulatory Model:
S2410P/S2410CP

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Notes, Cautions, and Warnings

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

CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

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

If you purchased a Dell n Series computer, any references in this publication to Microsoft Windows operating systems are not applicable.

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Regulatory Model: S2410P/S2410CP

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About this Guide

This document is intended as a Quick Start Guide to get new systems up and running and ready for configuration. For complete installation and configuration information, refer to the following documents:

Documentation	S2410
Hardware installation and power-up instructions	*Installing the S2410 System*
Software configuration	*SFTOS Configuration Guide for the S2410*
Command line interface	*SFTOS Command Line Reference*
Latest updates	*S-Series and SFTOS Release Notes*

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Installing the Hardware

This guide assumes all site preparation has been performed before installing the chassis.

Installing the S2410 Chassis in a Rack or Cabinet

There are two models of the S2410 switch. Each model includes:

S2410P

- 24 fixed 10GbE XFP ports (needs XFP optics)
- 1 RJ-45 console port with RS-232 signaling
- 1 RJ-45 dedicated Ethernet Management port (labeled 10/100 Ethernet)

S2410CP

- 20 fixed 10GbE BaseCX4 ports
- 4 ports for optional 10G XFP transceivers (needs XFP optics)
- 1 RJ-45 console port with RS-232 signaling
- 1 RJ-45 10/100 dedicated Ethernet Management port (labeled 10/100 Ethernet).

To install the S2410 system, Dell Force10 recommends that you complete the installation procedures in the order presented below.

Always handle the system with care. Avoid dropping the S2410 chassis.

CAUTION: Always wear an ESD-preventive wrist or heel ground strap when handling the S2410. As with all electrical devices of this type, take all necessary safety precautions to prevent injury when installing this system. Electrostatic discharge (ESD) damage can occur if components are mishandled.

Attaching Mounting Brackets

S2410 systems have no stacking or other optional modules, so, to install the S2410 system, you can simply install the system on a tabletop, in a rack, or in a cabinet, turn it on, and then connect ports.

The S2410 is shipped with two universal front-mounting brackets (rack ears), which are contained in a bag with 3 Phillips screws for each rack ear.

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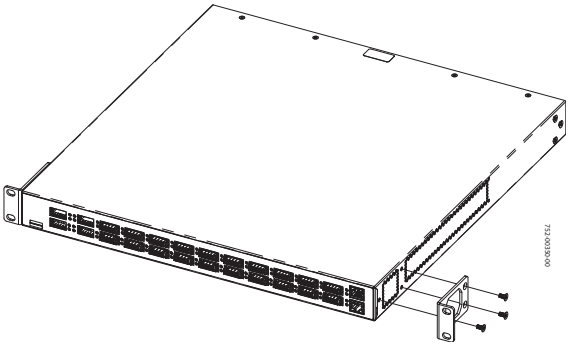
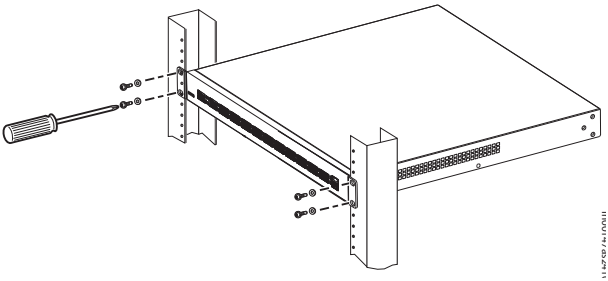
Step	Task
1	Take the brackets and screws out of their packaging. **CAUTION: Use only the supplied screws for attaching the rack ears. Longer screws might compromise the electronics. Shorter or weaker screws might not adequately support the S2410.**
2	Attach the ears to the front corners of the switch.



Installing on Rack

Ensure that your equipment rack is earth ground. The equipment rack must be grounded to the same ground point used by the power service in your area. The ground path must be permanent.

Install chassis into 2-post rack or cabinet

Step	Task
1	Dell Force10 recommends that one person hold the S2410 chassis in place while a second person attaches the brackets to the posts.
2	Position the S2410 chassis in the rack. Attach the bracket "ears" to the rack or cabinet posts, using the supplied screws for each bracket. Ensure the screws are tightened firmly.  **NOTE:** The rack ears supplied with the S2410 have a hole in the middle to accommodate the vent in the S2410.
3	Secure the chassis with two screws through each bracket and onto the front rack post.

Ground Connector

You will need two grounded AC power sources.

Use the supplied AC power cords to connect the S2410 to the AC power source Ideally, the power sources are on separate circuits.

Connect the plug to the AC receptacles at the rear of the S2410, making sure the cords are secure at both ends. Connecting either power cord starts the system (no on/off switch).

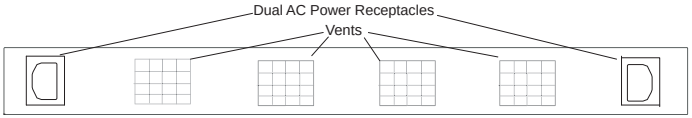
Supplying Power to the System

NOTE: The power cords shipped by default with the S2410 chassis are for the United States. Several versions of the power cord are available, based on country requirements.

CAUTION: The power supply cord is used as the main disconnect device; ensure that the socket-outlet is located/installed near the equipment and is easily accessible.

Both S2410 models (S2410CP and S2410P) provide built-in dual AC power supplies. Ideally, the power sources would be on separate circuits. While only one power supply is needed for the unit to operate, if both power supplies are connected, the power supplies act as redundant backups and do some load sharing, although the sharing is not necessarily equal.

There are no DC power or backup power options.

Step	Task
1	Connect the power cord plugs to the AC receptacles at each rear corner of the S2410. Make sure that the cords are secure. 
2	Connecting either power cord to power starts the system. There is no on/off switch. **NOTE:** The AC receptacles are labeled A and B, matched to the PSU A and PSU B status LEDs on the face of the S2410. Labeling the power cords A and B can help in a diagnostic situation.

Fans

Fan replacement is not offered as an option in the field.

Ventilation is primarily side-to-side (some vents in back), with seven fans on the left side of the switch that operate at a constant speed.

Accessing CX4 Ports

CX4 10G copper ports are pre-installed in the S2410CP. Using a CX4 port requires only the insertion, into the port, of the appropriate CX4 cable with the correct CX4 cable connector. Using a cable with a bail latch-type connector is simple: You push the connector into the port. To remove it, simply pull back on the bail latch. The S2410CP provides up to 1W per port for either active copper cables or optical-to-electrical converters.

NOTE: The qualified 15 meter cable is an active cable and requires that the end labeled “Active” be connected to the S2410CP in order to operate correctly.

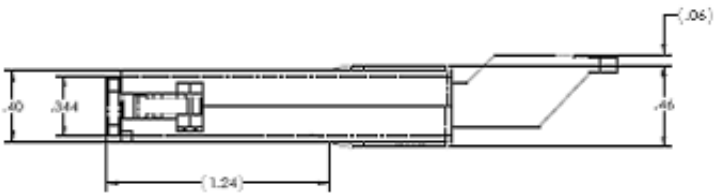
S2410 CX4 ports, because they are tightly packed, only accept cables with a connector that has a low-profile pull-tab and low-profile cable housing. Using any cable that is not approved by Dell Force10 might cause interface errors and/or have issues with mechanical fit. CX4 cables are not included with the S2410, but Dell Force10 has certified cables to use with the S2410. For a list of approved cables, see the S2410 data sheet:
http://www.force10networks.com/products/s2410.asp

CAUTION: Use of unqualified cables can result in interface errors, and Dell Force10 will not support applications using non-qualified cabling.

NOTE: The S2410 CX4 ports auto-sense the length of the attached cable, so their pre-emphasis does not need to be set manually.

Required CX4 Cable Housing Clearances

The maximum back shell dimensions of an acceptable CX4 connector are shown below. Use of a CX4 connector that exceeds those dimensions can cause damage to the S2410CP connectors and possible failure of the interface.



No portion of the back shell nor any latching mechanism on the diminutive side of the trapezoidal CX4 connector nozzle shall extend more than 0.230 inches from the connector centerline parallel to that side. No portion of the back shell nor any latching mechanism on the opposite side of the trapezoidal connector nozzle shall extend more than 0.375 inches from the connector centerline parallel to that side. No portion of the back shell nor any latching mechanism shall extend more than 0.0495 inches from the centerline of the connector centerline perpendicular to the long axis of the trapezoidal nozzle.

Accessing XFP Ports

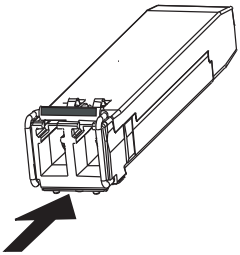
Dell Force10 offers various types of XFP transceivers. For details, see:

http://www.force10networks.com/products/specifications.asp

All ports in the S2410P use XFP transceivers except the dedicated Ethernet Management port, and the S2410CP includes four XFP ports. The XFP transceiver (not included in the S2410 chassis shipping box) is a small rectangular module that you insert into the port and into which you insert an optical cable. Each XFP contains two fiber optic leads. XFPs are hot-insertable and swappable.

CAUTION: Electrostatic discharge (ESD) damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S2410 and its components.

WARNING: Do not look directly into an optical port, which could result in physical harm.

Step	Task
1	Position the XFP so it is in the upright position (XFPs on the bottom (even-numbered ports) are upside down; odd-numbered ports (on top) install right-side up), with the bail latch on top in the closed position, as shown here. For details on XFP installation, see the instruction that accompanies the XFP. 
2	Insert the XFP gently into the port until it snaps into place. (The design of the XFP prevents it from seating incorrectly.)
3	The XFP transceiver contains Rx and Tx labels on the two fiber optic connections, and the connections have keyways that prevent inserting the cables incorrectly.

CAUTION: Before connecting a transceiver to a source, check the receive power of the transceiver with an optical power meter. Generally, Dell Force10 specified optics are not to be subjected to receive power higher than that stipulated by the optic specification. If the optic is exposed to optical power in excess of the specification, there is a high likelihood that it will be damaged. Optical specifications for Dell Force10 branded devices are at the following URL: http://www.force10networks.com/products/mediaspecifications.asp

S2410 Specifications

Chassis Physical Design

Parameter	S2410P	S2410CP
Height	1.73 inches (4.4 cm)	1.73 inches (4.4 cm)

Parameter	S2410P	S2410CP
Width	17 inches (432 mm)	17 inches (432 mm)
Depth	16.73 inches (425 mm)	16.73 inches (425 mm)
Chassis weight with factory-installed components	12 pounds (5.5 kg)	12 pounds (5.5 kg)
Rack clearance required	Front: 5-inches (12.7 cm) Rear: 5-inches (12.7 cm)	Front: 5-inches (12.7 cm) Rear: 5-inches (12.7 cm)

Environmental Parameters

Parameter	S2410P	S2410CP
Temperature	32° to 104°F (0° to 40°C)	32° to 104°F (0° to 40°C)
	-40° to 158°F (-20° to 70°C)	-40° to 158°F (-20° to 70°C)
Thermal Dissipation (Maximum Thermal Output)	S2410P: 768.2 BTU/Hour	S2410CP: 426.8 BTU/Hour
Maximum altitude	No performance degradation to 10,000 feet (3,048 meters)	No performance degradation to 10,000 feet (3,048 meters)
Relative humidity	Operating: 10 to 90% relative humidity (RH) non-condensing	Operating: 10 to 90% relative humidity (RH) non-condensing
	Storage: 10 to 95% RH non-condensing	Storage: 10 to 95% RH non-condensing
Shock	MIL-STD-810	MIL-STD-810
Vibration	Telcordia GR-63-CORE	Telcordia GR-63-CORE
ISO 7779 A-weighted sound pressure level	S2410P: 61.5 dBA at 73.4°F (23°C)	S2410CP: 61.5 dBA at 73.4°F (23°C)

Power Supply

Parameter	S2410P	S2410CP
Nominal Input Voltage	100 - 240 VAC, 50/60 Hz, auto-sensing	100 - 240 VAC, 50/60 Hz, auto-sensing

Parameter	S2410P	S2410CP
Maximum Current Draw	S2410P: 2.05 A @ 100/120 VAC, 1.025 A @ 200/240 VAC	S2410CP: 1.5 A @ 100/120 VAC, .575 A @ 200/240 VAC
Maximum Power Consumption	S2410P: 225W (3.5W per XFP)	S2410CP: 125W

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Installing the Software

Navigating CLI Modes

The SFTOS prompt changes to indicate the CLI mode. You must move linearly through the command modes, with the exception of the **end** command which takes you directly to Privileged EXEC mode; the **exit** command moves you up one command mode level.

Console Access

You must first connect the console port to a management terminal in order to use the Command Line Interface (CLI) to set up alternative management interfaces, such as an SFTOS Web User Interface connection to the Ethernet Management port.

NOTE: Before starting this procedure, be sure you have a terminal emulation program already installed on your PC.

Step	Task
1	CAUTION: You must use a rollover cable (same as used for the E-Series) to connect to the console port. This is in contrast to the straight-through cable used on other S-Series models. In more detail, the cable connections are pin 1 to pin 8, pin 2 to pin 7, pin 3 to pin 6, pin 4 to pin 5, and the inverse for pins 5 through 8. If necessary, connect the RJ-45/DB-9 adapter that is shipped with the S2410 system to the end of the RJ-45 cable that will connect to your terminal.

Step	Task
2	Set your initial console terminal settings to match the default console settings on the switch: 9600 baud rate No parity 8 data bits 1 stop bit No flow control (console port only) After establishing a connection, you can modify the settings to match at each end of the connection.
3	If you use the console port to download software to the switch, you will probably want to raise the console baud rate. Establish a connection with the default settings to verify the connection. Then use the **lineconfig** command to access the Line Config mode, and use the **serial baudrate** command to raise the baud rate on the console port. (Match the settings in your terminal access program.)

Accessing the RJ-45 Console Port with a DB-9 Adapter

You can connect to the console using an RJ-45 to DB-9 adapter along with the RJ-45 rollover cable if the DTE has a DB-9 interface. Table 2-1 lists the pin assignments.

Table 2-1. Pin Assignments Between the Console and a DTE Terminal Server

Console Port	RJ-45 to DB-9 Adapter
Signal	Port Pinout
NC	1
DTR	2
TxD	3
GND	4
GND	5
RxD	6
DSR	7

Table 2-1. Pin Assignments Between the Console and a DTE Terminal Server

Console Port	RJ-45 to DB-9 Adapter
Signal	Port Pinout
NC	8

Accessing the Ethernet Management Port

The S2410 includes the Ethernet Management port on the right front of the chassis (labeled 10/100 Ethernet) that is dedicated to switch management. With a standard RJ-45 Ethernet cable, connect it to any Ethernet port in your network through which you can access the switch via a Telnet, SSH, SNMP, or Web client.

For details on configuring the port (setting up an IP address to it) for management access, refer to the *SFTOS Configuration Guide for the S2410.*

Default Configuration

A version of SFTOS is pre-loaded onto the chassis, however the system is not configured when you power up for the first time (except for the default host name, which is `Force10`). You must configure the system using the CLI.

Configure Layer 2 (Data Link) Mode

When the switch is first installed, all ports are disabled. To enable all ports in Layer 2, enter the **no shutdown all** command in Global Config mode. Alternatively, you can use the **no shutdown** command in Interface Config mode.

Task	Command Syntax	Command Mode
Enable the interface	**no shutdown**	Interface Config

Configure a Host Name

If you have more than one individually managed S-Series switch, you can differentiate them by creating a unique CLI host name prompt for each switch. Use the **hostname** command, in Global Config mode, to edit the prompt. The host name is case-sensitive and can be up to 64 characters in length.

Task	Command Syntax	Command Mode
Create a new host name	**hostname** *name*	Global Config

Access the System Remotely

Configure the Management Port IP Address

On first startup, you have management access only through the console port. If you want to manage the switch through an IP-based access method (Telnet, SSH, SNMP, TFTP, etc.), you must configure a management IP interface, using the following the procedure.

Step	Task	Command Syntax	Command Mode
1	Display current management IP configuration.	**show interface managementethernet**	User Exec or Privileged Exec
2	Set the IP gateway of the management interface.	**management route default** *gateway*	Global Config
3	Invoke the (Config-if-ma)# prompt.	**interface managementethernet**	Global Config
4	Set the IP address and subnet mask of the management interface.	**ip address** *ipaddr subnetmask*	(Config-if-ma)# prompt within the Global Config mode

NOTE: Creating a management IP address is supported by both the Layer 2 (Switching) and Layer 3 (Routing) licenses of SFTOS.

By default, the management address is reachable from all ports on the default VLAN, VLAN 1. One or more ports in that VLAN must be enabled.

After you enable and connect ports in the management VLAN and configure the management IP address, as described above, you can manage the switch through a variety of means.

Configuring an Interface with an IP Address

NOTE: You must have the optional SFTOS Layer 3 Package installed to configure routing commands and to set IP addressing an interface. Use the **show version** command to determine what software is installed.

To assign an IP address to an interface, use the following commands:

Step	Task	Command Syntax	Command Mode
1	Enables routing for the switch.	**ip routing**	Global Config
2	Configures an IP address on an interface. The IP address may be a secondary IP address.	**ip address**	Interface Config

NOTE: You must configure ip routing at a global level, and 'routing' at an interface level for you to be able to ping from, and to, the address.

IP configuration takes precedence over VLAN configuration on a port. Therefore, configuring an IP Address and 'routing' on an interface disables participation in VLANs on that interface.

Configure a Management Route

On first startup, you have management access only through the console port. If you want to manage the switch through an IP-based access method (Telnet, SSH, SNMP, TFTP, etc.), you must configure a management IP interface, using the following the procedure.

Step	Task	Command Syntax	Command Mode
1	Display current management IP configuration.	**show interface managementethernet**	User Exec or Privileged Exec
2	Set the IP gateway of the management interface.	**management route default** *gateway*	Global Config

Step	Task	Command Syntax	Command Mode
3	Invoke the (Config-if-ma)# prompt.	**interface managementethernet**	Global Config
4	Set the IP address and subnet mask of the management interface.	**ip address** *ipaddr subnetmask*	(Config-if-ma)# prompt within the Global Config mode

NOTE: Creating a management IP address is supported by both the Layer 2 (Switching) and Layer 3 (Routing) licenses of SFTOS.

By default, the management address is reachable from all ports on the default VLAN, VLAN 1. One or more ports in that VLAN must be enabled.

After you enable and connect ports in the management VLAN and configure the management IP address, you can manage the switch through a variety of means.

Configure a Username and Password

The **username** *passwd* command creates the username and password in one statement. You can change a password either by reentering the command with the new password or by removing the user with the **no username** command and reentering the user with a new password.

Step	Task	Command Syntax	Command Mode
1	Configure a username and password.	**username** *passwd*	Config
2	Removing a username.	**no username**	Config

Configure the Enable Password

The Privileged Exec password (commonly called the “enable” password), is not set when the S2410 starts for the first time. To set the enable password, access the Privileged Exec mode (also called “enable mode”) and then the Global Config mode. Enter the **enable passwd** command, then press Enter.

Enabling Ports

When the S2410 is first installed, all ports are disabled by default. You can use the **no shutdown** command for a specific interface (Interface Config mode). To enable all ports, enter **no shutdown al**l in Global Config mode.

Setting the IP Address for the Service Port

The S2410 supports the Ethernet Management port (labeled 10/100 Ethernet and commonly called the service port). It is a dedicated management port (in addition to the console port and the virtual management port). You can use the service port to access the switch through Telnet, SSH, TFTP, or the SFTOS Web UI.

Step	Task	Command Syntax	Command Mode
1	Specify the network configuration protocol to be used (Bootp or DHCP) for configuring access to the Ethernet Management port. Alternatively, leave the default at none to require the Ethernet Management port to be manually configured with IP information.	**serviceport protocol {none | bootp | dhcp}**	Global Config
2	If you left the default at none, manually configure the IP address, IP subnet mask, and default IP gateway of the Ethernet Management port.	**serviceport ip** *ipaddr netmask* [*gateway*]	Global Config
3	Verify the service port configuration.	**show serviceport**	Privileged Exec

Setting the IP Address of the Virtual Management Port

If you want to access the switch through Telnet, SSH, TFTP, or the SFTOS Web UI, you must set up the service port to configure an IP address that is accessible, by default, through ports in VLAN 1. You can also do both with separate IP addresses.

Step	Task	Command Syntax	Command Mode
1	Set the IP gateway of the management interface.	**management route default** *gateway*	Global Config
2	Invoke the (Config-if-ma)# prompt.	**interface managementethernet**	Global Config
3	Set the IP address and subnet mask of the management interface.	**ip address** *ipaddr subnetmask*	(Config-if-ma)# prompt
4	Verify management IP configuration.	**show interface managementethernet**	User Exec or Privileged Exec

NOTE: By default, the virtual management IP address is reachable from VLAN 1 and all physical ports are members of VLAN 1. So the management IP address will be reachable from all enabled physical ports by default.

Creating a Simple Configuration using VLANs and STP

NOTE: As noted in Enabling Ports, all ports are disabled by default. Enable them with the **no shutdown all** command (Global Config mode), or individually with the **no shutdown** command. The equivalent action on the Web UI is to select **Enable** in the Admin mode field on the Port Configuration panel.

Use the **line interface** command to create a VLAN and then add a tagged interface and an untagged interface to it.

Enabling Spanning Tree Protocol

Spanning Tree Protocol (STP) is off by default. First, you must enable STP globally. Next, enable STP on the desired ports. Using the CLI to enable STP, it is possible to enable spanning tree globally and on all the ports with just two commands.

Step	Task	Command Syntax	Command Mode
1	Enable STP globally.	**spanning-tree**	Config
2	Enable STP on all ports.	**spanning-tree port mode enable all**	Config

Create a Port-based VLAN

When you set up a management IP address, you can manage the switch through any enabled port in VLAN1.

By default, the management VLAN is set up on the default VLAN 1, and includes all ports. The default VLAN is VLAN 1. It cannot be changed.

NOTE: All ports are disabled by default. Enable them with no shutdown all (Global Config mode), or individually with the **no shutdown** command.

Step	Task	Command Syntax	Command Mode
1	Specify a new or existing VLAN by VLAN number.	**interface vlan** *vlan-id*	Global Config

Step	Task	Command Syntax	Command Mode
2	To add tagged ports to the VLAN, specify a single port in unit/slot/port format to add to the selected VLAN, or specify a sequential port range as unit/slot/port-unit/slot/port. Specify a non-sequential port range as unit/slot/port, unit/slot/port,... Specify a LAG ID as an integer (List LAG IDs with show interface port-channel brief.)	**[no] tagged** *unit/slot/port*	Interface VLAN
3	To add untagged ports to the VLAN, specify either a port, port range, port channel, or port channel range, as described above.	**[no] untagged** *unit/slot/port*	Interface VLAN
4	(OPTIONAL) Name the VLAN.	**name** *VLAN-name*	Interface VLAN
5	Verify the configuration.	**show vlan id** *vlanid*	Privileged Exec

NOTE: Enable each port added to the VLAN.

Assign Interfaces to a VLAN

Executing the **interface vlan** command (Global Config mode) either creates a VLAN or selects a previously created VLAN and then enters the Interface VLAN mode, where you have access to commands that configure the selected VLAN.

Assign an IP Address to a VLAN

NOTE: You must have the optional SFTOS Layer 3 Package installed to configure routing commands and to set IP addressing an interface. Refer to the SFTOS Configuration Guide for information on implementing the Layer 3 capabilities.

Step	Task	Command Syntax	Command Mode
1	Enables routing for the switch.	**ip routing**	Global Config
2	Configures an IP address on an interface. The IP address may be a secondary IP address.	**ip address**	Interface Config

IP configuration takes precedence over VLAN configuration on a port. Therefore, configuring an IP Address and routing on an interface disables participation in VLANs on that interface.

Connecting the S2410 to the Network

Once you have completed the hardware installation and software configuration for the S2410, you can connect to your company network by following your company's cabling requirements.

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