



Installation — Modules

Avaya Virtual Services Platform 9000

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NN46250-301, 03.01
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Chapter 1: Regulatory Information and Safety Precautions

Read the information in this section to learn about regulatory conformities and compliances.

International Regulatory Statements of Conformity

This is to certify that the Avaya Virtual Services Platform 9000 chassis and components installed within the chassis were evaluated to the international regulatory standards for electromagnetic compliance (EMC) and safety and were found to have met the requirements for the following international standards:

- EMC—Electromagnetic Emissions—CISPR 22, Class A
- EMC—Electromagnetic Immunity—CISPR 24
- Electrical Safety—IEC 60950, with CB member national deviations

Further, the equipment has been certified as compliant with the national standards as detailed in the following sections.

National Electromagnetic Compliance (EMC) Statements of Compliance

FCC Statement (USA only)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense.

ICES Statement (Canada only)

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (Virtual Services Platform 9000 chassis and installed components) does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique (Virtual Services Platform 9000 chassis) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

CE Marking Statement (Europe only)

EN 55 022 Statements

This is to certify that the Virtual Services Platform 9000 chassis and components installed within the chassis are shielded against the generation of radio interference in accordance with the application of Council Directive 2004/108/EC. Conformity is declared by the application of EN 55 022 Class A (CISPR 22).

Caution:

This device is a Class A product. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users are required to take appropriate measures necessary to correct the interference at their own expense.

EN 55 024 Statement

This is to certify that the Virtual Services Platform 9000 chassis is shielded against the susceptibility to radio interference in accordance with the application of Council Directive 2004/108/EC. Conformity is declared by the application of EN 55 024 (CISPR 24).

EN 300386 Statement

The Virtual Services Platform 9000 chassis complies with the requirements of EN 300386 V1.3.3 for emissions and for immunity for a Class A device intended for use in either Telecommunications centre or locations other than telecommunications centres given the performance criteria as specified by the manufacturer.

EC Declaration of Conformity

This product conforms to the provisions of the R&TTE Directive 1999/5/EC.

European Union and European Free Trade Association (EFTA) Notice



All products labeled with the CE marking comply with R&TTE Directive (1999/5/EEC) which includes the Electromagnetic Compliance (EMC) Directive (2004/108/EC) and the Low Voltage Directive (2006/95/EC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (ENs). The equivalent international standards are listed in parenthesis.

- EN 55022 (CISPR 22)–Electromagnetic Interference
- EN 55024 (IEC 61000-4-2, -3, -4, -5, -6, -8, -11)–Electromagnetic Immunity
- EN 61000-3-2 (IEC 610000-3-2)–Power Line Harmonics
- EN 61000-3-3 (IEC 610000-3-3)–Power Line Flicker

VCCI Statement (Japan/Nippon only)

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) for information technology equipment. 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.

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National Safety Statements of Compliance

CE Marking Statement (Europe only)

EN 60 950 Statement

This is to certify that the Virtual Services Platform 9000 chassis and components installed within the chassis are in compliance with the requirements of EN 60 950 in accordance with the Low Voltage Directive. Additional national differences for all European Union countries have been evaluated for compliance. Some components installed within the Virtual Services Platform 9000 chassis may use a nickel-metal hydride (NiMH) and/or lithium-ion battery. The NiMH and lithium-ion batteries are long-life batteries, and it is very possible that you will never need to replace them. However, should you need to replace them, refer to the individual component manual for directions on replacement and disposal of the battery.

Denan Statement (Japan/Nippon only)



警告

本製品を安全にご使用頂くため、以下のことにご注意ください。

- 接続ケーブル、電源コード、ACアダプタなどの部品は、必ず製品に同梱されています。添付品または指定品をご使用ください。添付品・指定品以外の部品をご使用になると故障や動作不良、火災の原因となることがあります。
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-

Safety Messages

This section describes the different precautionary notices used in this document. This section also contains precautionary notices that you must read for safe operation of the Avaya Virtual Services Platform 9000.

Notices

Notice paragraphs alert you about issues that require your attention. The following sections describe the types of notices. For a list of safety messages used in this guide and their translations, see the Translations of safety messages chapter.

Attention Notice



Important:

An attention notice provides important information regarding the installation and operation of Avaya products.

Caution ESD Notice



Electrostatic alert:

ESD

ESD notices provide information about how to avoid discharge of static electricity and subsequent damage to Avaya products.



Electrostatic alert:

ESD (décharge électrostatique)

La mention ESD fournit des informations sur les moyens de prévenir une décharge électrostatique et d'éviter d'endommager les produits Avaya.

 **Electrostatic alert:**
ACHTUNG ESD

ESD-Hinweise bieten Information dazu, wie man die Entladung von statischer Elektrizität und Folgeschäden an Avaya-Produkten verhindert.

 **Electrostatic alert:**
PRECAUCIÓN ESD (Descarga electrostática)

El aviso de ESD brinda información acerca de cómo evitar una descarga de electricidad estática y el daño posterior a los productos Avaya.

 **Electrostatic alert:**
CUIDADO ESD

Os avisos do ESD oferecem informações sobre como evitar descarga de eletricidade estática e os conseqüentes danos aos produtos da Avaya.

 **Electrostatic alert:**
ATTENZIONE ESD

Le indicazioni ESD forniscono informazioni per evitare scariche di elettricità statica e i danni correlati per i prodotti Avaya.

Caution Notice

 **Caution:**

Caution notices provide information about how to avoid possible service disruption or damage to Avaya products.

 **Caution:**
ATTENTION

La mention Attention fournit des informations sur les moyens de prévenir une perturbation possible du service et d'éviter d'endommager les produits Avaya.

 **Caution:**
ACHTUNG

Achtungshinweise bieten Informationen dazu, wie man mögliche Dienstunterbrechungen oder Schäden an Avaya-Produkten verhindert.

 **Caution:**
PRECAUCIÓN

Los avisos de Precaución brindan información acerca de cómo evitar posibles interrupciones del servicio o el daño a los productos Avaya.

 **Caution:**
CUIDADO

Os avisos de cuidado oferecem informações sobre como evitar possíveis interrupções do serviço ou danos aos produtos da Avaya.

 **Caution:**
ATTENZIONE

Le indicazioni di attenzione forniscono informazioni per evitare possibili interruzioni del servizio o danni ai prodotti Avaya.

Warning Notice

 **Warning:**

Warning notices provide information about how to avoid personal injury when working with Avaya products.

 **Warning:**
AVERTISSEMENT

La mention Avertissement fournit des informations sur les moyens de prévenir les risques de blessure lors de la manipulation de produits Avaya.

 **Warning:**
WARNUNG

Warnhinweise bieten Informationen dazu, wie man Personenschäden bei der Arbeit mit Avaya-Produkten verhindert.

 **Warning:**
ADVERTENCIA

Los avisos de Advertencia brindan información acerca de cómo prevenir las lesiones a personas al trabajar con productos Avaya.

 **Warning:**
AVISO

Os avisos oferecem informações sobre como evitar ferimentos ao trabalhar com os produtos da Avaya.

 **Warning:**
AVVISO

Le indicazioni di avviso forniscono informazioni per evitare danni alle persone durante l'utilizzo dei prodotti Avaya.

Danger High Voltage Notice

Voltage:

Danger—High Voltage notices provide information about how to avoid a situation or condition that can cause serious personal injury or death from high voltage or electric shock.

Voltage:

La mention Danger—Tension élevée fournit des informations sur les moyens de prévenir une situation ou une condition qui pourrait entraîner un risque de blessure grave ou mortelle à la suite d'une tension élevée ou d'un choc électrique.

Voltage:

GEFAHR

Hinweise mit „Vorsicht – Hochspannung“ bieten Informationen dazu, wie man Situationen oder Umstände verhindert, die zu schweren Personenschäden oder Tod durch Hochspannung oder Stromschlag führen können.

Voltage:

PELIGRO

Los avisos de Peligro-Alto voltaje brindan información acerca de cómo evitar una situación o condición que cause graves lesiones a personas o la muerte, a causa de una electrocución o de una descarga de alto voltaje.

Voltage:

PERIGO

Avisos de Perigo—Alta Tensão oferecem informações sobre como evitar uma situação ou condição que possa causar graves ferimentos ou morte devido a alta tensão ou choques elétricos.

Voltage:

PERICOLO

Le indicazioni Pericolo—Alta tensione forniscono informazioni per evitare situazioni o condizioni che potrebbero causare gravi danni alle persone o il decesso a causa dell'alta tensione o di scosse elettriche.

Danger Notice

Danger:

Danger notices provide information about how to avoid a situation or condition that can cause serious personal injury or death.

 **Danger:**

La mention Danger fournit des informations sur les moyens de prévenir une situation ou une condition qui pourrait entraîner un risque de blessure grave ou mortelle.

 **Danger:**

GEFAHR

Gefahrenhinweise stellen Informationen darüber bereit, wie man Situationen oder Umständen verhindert, die zu schweren Personenschäden oder Tod führen können.

 **Danger:**

PELIGRO

Los avisos de Peligro brindan información acerca de cómo evitar una situación o condición que pueda causar lesiones personales graves o la muerte.

 **Danger:**

PERIGO

Avisos de perigo oferecem informações sobre como evitar uma situação ou condição que possa causar graves ferimentos ou morte.

 **Danger:**

PERICOLO

Le indicazioni di pericolo forniscono informazioni per evitare situazioni o condizioni che potrebbero causare gravi danni alle persone o il decesso.

Chapter 2: Purpose of this document

This document describes the conceptual and procedural information to module installation on Avaya Virtual Services Platform 9000. This document also specifies initial preparation, processes, technical specifications, and safety requirements.

Purpose of this document

Chapter 3: New in this release

The following sections detail what's new in *Avaya Virtual Services Platform 9000 Installation—Modules NN46250–301* for Release 3.2.

Features

There are no feature changes.

Other changes

See the following sections for information about changes that are not feature-related.

Compact flash memory card

You can hot swap the Compact Flash memory card. For more information about hot swapping the Compact Flash memory card or the removal of the external storage devices, see [Removing external storage devices from the CP module](#) on page 55.

Glossary

A glossary of related terms is added to the end of this document.

Introduction chapter and navigation

Introduction chapter is renamed to Purpose of the document that states the purpose of referring to that document. Navigation is removed to reduce the length of the document.

Terminology

Terminology no longer exists in a separate document. Terminology for this document is in a glossary at the end of this document.

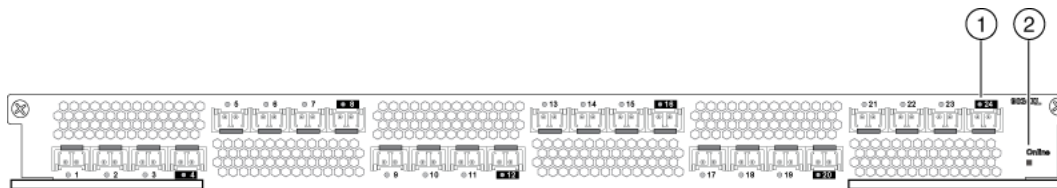
New in this release

Chapter 4: Module fundamentals

The Avaya Virtual Services Platform 9000 modules provide full complement of core routing and switching capabilities. Use this section to help you understand and use each module.

9024XL module

The 9024XL module provides 24 10GBASE-X, small form factor pluggable plus (SFP+) ports (see the following figure). Each SFP+ connector has 20 pins. For more information about supported SFP+, see *Avaya Virtual Services Platform 9000 Installation — SFP Hardware Components*, NN46250-305.



- 1 - Port Status LED
- 2 - Module online LED

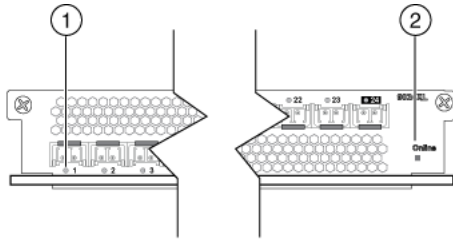
Figure 1: 9024XL module

If you install at least four SF modules, the 9024XL module has a 3.5:1 oversubscribed line rate over 24 ports; 6 ports can provide full line rate if you do not use the other ports. The 9024XL module has six clusters with four ports each (delimited by the black square around the port number). You can pick any one port out of the four in each of the six clusters of four ports to form the six ports, which can provide full line rate for the attached interfaces.

On the 9024XL module, ports support 9600 byte frames. The 9024XL module uses the SFP+ transceivers but also supports the SFP transceivers.

The 9024XL module supports a 10GE LAN mode.

The following figure shows the location of the 9024XL module LEDs.



- 1 - Port status LED
- 2 - Module online LED

Figure 2: 9024XL module LEDs

The following table describes the 9024XL module LEDs.

Table 1: 9024XL module LED description

Type	Label	Color, State	Meaning
Port	Port number	Off	The port is connected but has no link and no SFP+.
		Amber/Steady	Local fault
		Amber/Blinking/Slow	Remote fault
		Green/Blinking/Slow	The port is administratively disabled.
		Green/Blinking/Fast	The port is transmitting or receiving data. The rate of blink indicates the level of activity on the link.
		Green/Steady	The port is connected, has link, but no data.
Module	Online	Off	The module power is off.
		Amber/Steady	The module is running diagnostics and starting.
		Amber/Blinking/Slow	The module is initializing the software.
		Amber/Blinking/Medium	The module is starting the application.
		Amber/Blinking/Fast	Image synchronization is complete.
		Green/Blinking/Medium	The module has completed its power-on self-test and software initialization.
		Green/Steady	The module is functioning normally.

Type	Label	Color, State	Meaning
		Red/Blinking/Fast	The module has exceeded the high temperature threshold. The cooling system now runs at full speed.
		Red/Steady	The module is faulty and not functioning. Replace the module.

9048GB module

The 9048GB module supports up to 48 SFPs with 24 ports in each slice and 12 ports in each lane. On the 9048GB module, ports support 9600 byte frames.

The 9048GB module has a data transfer capability of 100/1000 Mb/s for each port. For more information about supported SFP, see *Avaya Virtual Services Platform 9000 Installation — SFP Hardware Components*, NN46250-305. The following figure shows the 9048GB module.



Figure 3: 9048GB module

The following figure shows the location of 9048GB module LEDs.

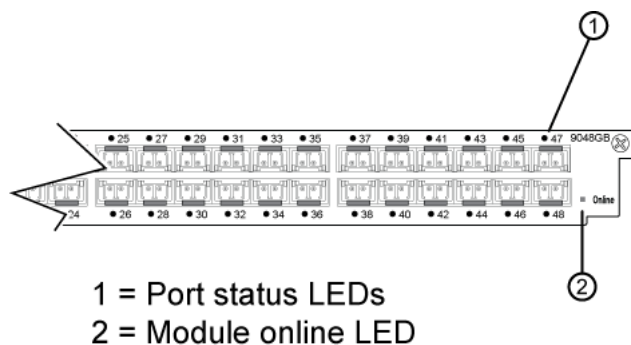


Figure 4: 9048GB module LEDs

The following table describes the 9048GB module LEDs.

Table 2: 9048GB module LED description

Type	Label	Color, State	Meaning
Port	Port number	Off	The port is connected but has no link and no SFP.

Type	Label	Color, State	Meaning
		Amber/Steady	Local fault
		Amber/Blinking/Slow	Remote fault
		Green/Blinking/Slow	The port is administratively disabled.
		Green/Blinking/Fast	The port is transmitting or receiving data. The rate of blink indicates the level of activity on the link.
		Green/Steady	The port is connected, has a link, but no data.
Module	Online	Off	The module power is off.
		Amber/Steady	The module is running diagnostics and starting.
		Amber/Blinking/Slow	The module is initializing the software.
		Amber/Blinking/Medium	The module is starting the application.
		Amber/Blinking/Fast	Image synchronization is complete.
		Green/Blinking/Medium	The module has completed its power-on self-test and software initialization.
		Green/Steady	The module is functioning normally.
		Red/Blinking/Fast	The module has exceeded the high temperature threshold. The cooling system now runs at full speed.
		Red/Steady	The module is faulty and not functioning. Replace the module.

9048GT module

The 9048GT module provides 48 10/100/1000BASE-TX ports that use 8 pin module (RJ-45) connectors

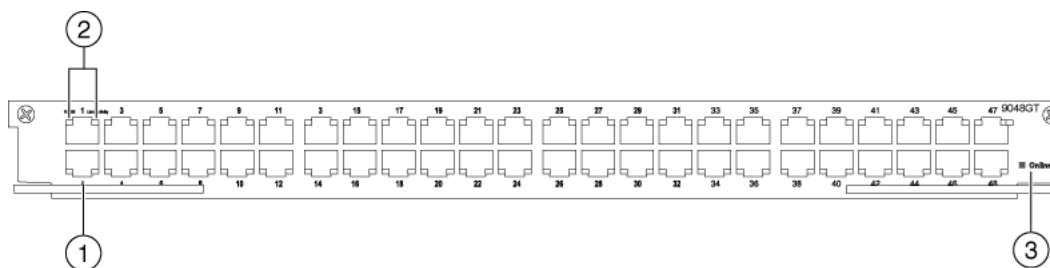
Each port operates either at 10 Mb/s, 100 Mb/s, or 1000 Mb/s (1 Gb/s) and supports the IEEE 802.3-2002. Distances of up to 100 meters are obtainable with category 5 unshielded twisted pair (UTP) cable. This module supports 1000BASE-T 802.3ab.

On the 9048GT module, ports support 9600 byte frames.

The 9048GT module ports support the IEEE 802.3 1998 Clause 28 Auto-Negotiation standard. Each port can operate in full- or half-duplex mode. When a port connects to another device that also supports the IEEE 802.3 1998 Clause 28 Auto-Negotiation standard, the two devices

negotiate the highest possible data rate and the duplex mode of operation. The 9048GT module further supports Custom Auto-Negotiation Advertisements (CANA).

The following figure shows the 9048GT module and the location of the module LEDs.



- 1 - 10/100/1000Base-T port
- 2 - Port LEDs: 10/100/1000 (speed) Link/Activity
- 3 - Module online LED

Figure 5: 9048GT module LEDs

The following table describes the 9048GT module LEDs.

Table 3: 9048GT module LED description

Type	Label	Color, State	Meaning
Port	Speed	Off	The port operates at 10 Mb/s.
		Green/Blinking/Medium	The port operates at 100 Mb/s.
		Green/Steady	The port operates at 1000 Mb/s.
	Link and activity	Off	The port has no link.
		Amber/steady	The port has a local fault.
		Amber/blinking/slow	The port has a remote fault.
		Green/slow	The port is administratively disabled.
Green/blinking		The rate of blinking indicates the rate of activity.	
Green/steady	The link is active but not receiving or transmitting.		
Module	Online	Off	The module power is off.
		Amber/Steady	The module is running diagnostics and starting.
		Amber/Blinking/Slow	The module is initializing the software.

Type	Label	Color, State	Meaning
		Amber/Blinking/Medium	The module is starting the application.
		Amber/Blinking/Fast	Image synchronization is complete.
		Green/Blinking/Medium	The module has completed its power-on self-test and software initialization.
		Green/Steady	The module is functioning normally.
		Red/Blinking/Fast	The module has exceeded the high temperature threshold. The cooling system now runs at full speed.
		Red/Steady	The module is faulty and not functioning. Replace the module.

When you disable auto-negotiation on a port, the port defaults to a particular speed (even if there is no link connection).

9080CP module

The 9080CP Control Processor (CP) module performs the following tasks:

- runs all high level protocols, for example, Border Gateway Protocol (BGP) and Open Shortest Path First (OSPF)
- distributes routing updates
- manages and configures the interface and Switch Fabric (SF) modules
- maintains and monitors the health of the chassis
- displays and monitors the LEDs for the modules installed in the back of the chassis
- provides operations, administration, and management interface (OA&M) for the system operator

 **Important:**

The 9080CP module architecture provides redundancy when you use two CP modules in a system.

! Important:

When you install the CP module, an external Compact Flash card is mandatory. The CP module includes a 2 GB Compact Flash card. To order another Compact Flash card, use the order code EC1411010-E6.

Install the CP modules in slots CP1 and CP2. If you use only one CP module, install it in CP1. CP1 is the master CPU, by default. If you use two CP modules, CP2 is the standby CPU. You can change the master CPU configuration through ACLI or Enterprise Device Manager (EDM).

The 9080CP module provides the following interfaces:

- Universal Serial Bus (USB) type A (primary)
- management

The management port is an Ethernet port that uses an RJ-45 connector. It supports 10/100/1000 auto-negotiation.

- console port

The console port is a serial port that uses an RS232 DB9 male connector.

- Compact Flash

The Compact Flash interface provides additional storage above the 2 GB of internal flash on the CP module.



Figure 6: 9080CP module

Each CP module contains an internal compact flash and a boot flash. The CP module uses the 2 Gb internal flash to store configuration files, software releases, log files, and core dumps. The boot flash does not contain a file system; it ensures the module starts by itself after it receives power.

It is strongly recommended that the external Compact Flash card is used for logging and core dumps. The CP module was designed to use the external Compact Flash card for this purpose.

The CP module includes a recessed Reset switch. Insert a small item, for example, a paperclip, into the hole to reset the module.

The following figure shows the location of the CP module LEDs and features.

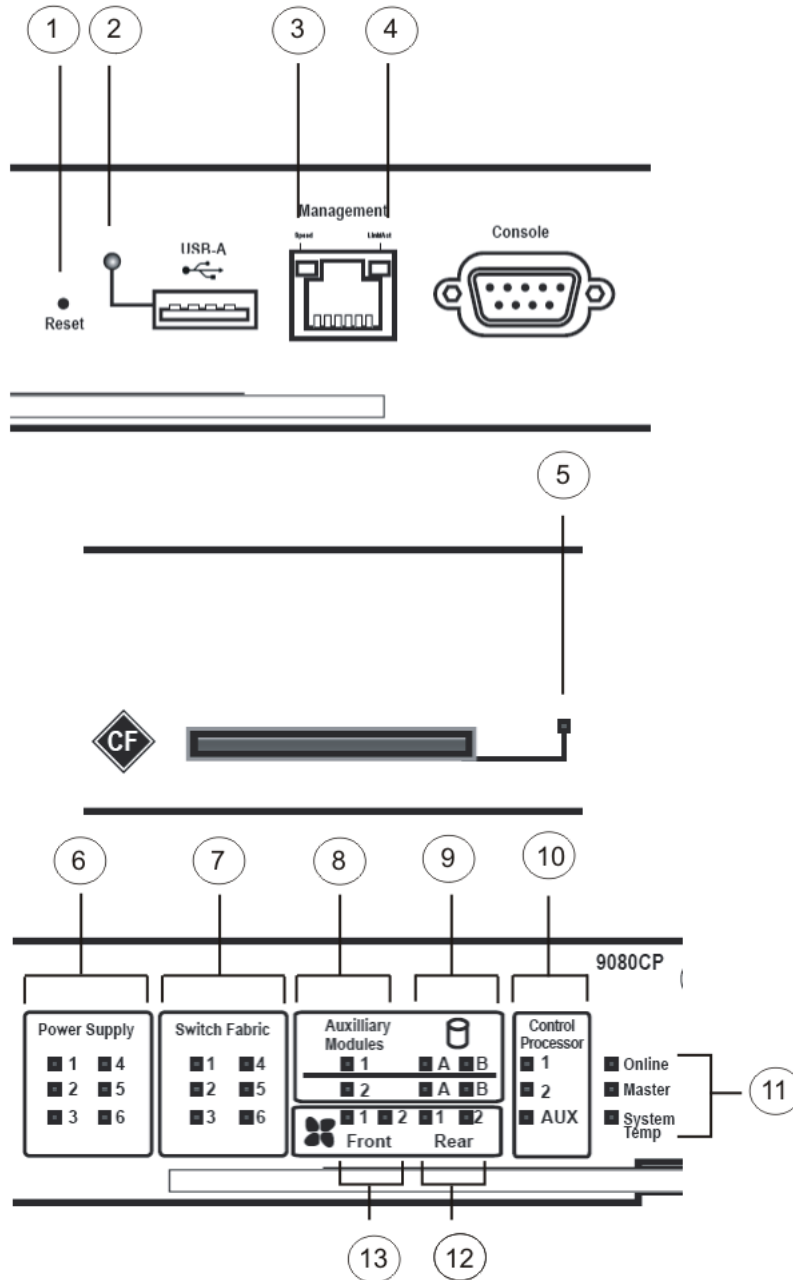


Figure 7: 9080CP module LEDs

The following table identifies the CP module LEDs and features.

Table 4: 9080CP module LEDs

Number	Description
1	Recessed Reset switch

Number	Description
2	USB port LED
3	Management port speed LED
4	Management port link and activity LED
5	Compact Flash status LED
6	Power supply status LEDs
7	Switch Fabric status LEDs
8	Auxiliary module status LEDs
9	Auxiliary module storage LEDs
10	Control Processor and Auxiliary module status LEDs
11	CP module and system LEDs
12	9012RC SF cooling module LEDs
13	9012FC IO cooling module LEDs

The following table describes the LEDs for the USB, management, and Compact Flash ports.

Table 5: 9080CP port LED description

Label	Color/state	Description
USB	Off	A USB device is not inserted.
	Green/blinking/medium	The system is writing to or reading from the device.
	Green/steady	The device is available.
Speed	Off	The port operates at 10 Mb/s.
	Green/blinking/medium	The port operates at 100 Mb/s.
	Green/steady	The port operates at 1000 Mb/s.
Link/Act.	Off	The port does not have a link.
	Amber/steady	The port experiences a local fault.
	Amber/blinking/slow	The port experiences a remote fault.
	Green/blinking (intermittent/fast)	The port has link activity. The rate of blinking indicates the level of activity on the link.
	Green/steady	The link is active but not passing traffic.
Compact Flash	Off	A Compact Flash card is not inserted.

Label	Color/state	Description
	Green/blinking/medium	The system is writing to or reading from the card.
	Green/steady	The card is available.

The following table describes the LEDs for the power supply modules, Switch Fabric modules, and Control Processor modules. The Auxiliary module slots are reserved for future releases.

Table 6: 9080CP modules LED description

Label	Color/State	Description
Module slot number	Off	The module is not installed.
	Amber/steady	The module is starting. For a power supply module, this state indicates redundant power is taking over.
	Green/steady	The module is installed.
	Red	The module is not operational. Replace the module.

The following table describes the CP module and system LEDs.

Table 7: 9080CP module and system LED description

Label	Color/State	Description
Online	Amber/steady	This state is the default state.
	Amber/blinking/slow	The module is initializing the software.
	Amber/blinking/medium	The module is starting the application.
	Amber/blinking/fast	The module has completed image synchronization.
	Green/blinking/medium	The module is communicating with interface modules.
	Green/steady	The module is connected and functioning normally.
	Red/steady	The module is not functioning.
Master	Off	The CP module is not the master but is in cold standby mode (online LED green).

Label	Color/State	Description
	Amber/steady	The CP module transitions control from the local system to the overall system.
	Green/blinking/medium	The CP module is not the master but is in hot standby mode (online LED green).
	Green/steady	The CP module is the master.
System temp	Off	The power is off.
	Amber/steady	The system is starting.
	Green/steady	The temperature is normal for system operation.
	Red/steady	The system has exceeded the maximum operating temperature. You can configure the system to shutdown after x minutes or continue to operate. After x minutes, the CP module turns off the overheating module to prevent damage to the module.

The following table describes the cooling module LEDs.

Table 8: 9080CP cooling module LED description

Label	Color/State	Description
Module slot number	Off	The specified cooling module is not present in the chassis.
	Amber/steady	One or more fans in the cooling module have failed and the remaining fans have increased speed to continue to cool the chassis.
	Green/steady	The specified cooling module operates normally.
	Red/steady	An excessive number of fans in the cooling module have failed. Replace the cooling module.

You can install a second CP module for redundancy.

The USB port provides access to removable media through which images and configuration files can be read or written. You can use the USB port for storing software images. The USB can be accessed when you connect to the switch through the console, in-band or out-of-band management. You can remove the USB mass storage device by following the standard procedure for the removal of external devices. For more information on removal of USB mass

storage device, see [Removing external storage devices from the CP module](#) on page 55. Sudden removal of the USB device can cause data loss or can damage the hardware.

Use the console port and management port for out-of-band management. Use a DB-9 connector for the console port and use RJ-45 for the management port. Use the external Compact Flash card for log files and to save configurations.

9090SF module

Install the Switch Fabric (SF) module vertically in one of the six right most slots at the back of the Avaya Virtual Services Platform 9000 chassis. The SF module provides a back-end switching solution in the midplane chassis. The following figure shows the SF module.

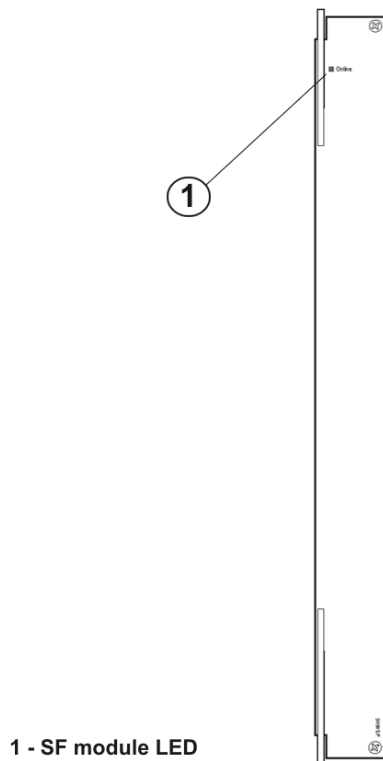


Figure 8: 9090SF module

Each SF module connects to 10 interface module slots and 2 CP module slots simultaneously. You can install a maximum of 6 SF modules in each chassis in an N + 1 configuration with redundancy. With Release 3.1, you must install a minimum of three SF modules in the chassis; Avaya recommends that you install four SF modules for redundancy. Install an SF module in slots SF1 and SF4; install a third SF module in one of the remaining slots.

The SF module slots are numbered from right to left. The slot location determines the module function. Slots SF1 and SF4 provide the arbitration and scheduling for traffic (and therefore,

bandwidth management) from the interface modules. The remaining slots provide additional bandwidth. Avaya recommends that you populate another two SF slots to provide additional bandwidth. Each chassis has slots for five operational SF modules plus one hot backup.

If you do not install an SF module in either SF1 or SF4, or if the modules are not operational, all ports on the interface modules shut down. No data can pass through the system without an SF module in one of these two slots. You can access the system only through the console port on the CP module. After you bring a nonoperational SF module online in either SF1 or SF4, the system automatically resets to ensure it initializes correctly and to provide predictable behavior.

 **Important:**

Avaya recommends that you install SF modules in both slot SF1 and slot SF4 to provide redundancy. You must have a functioning SF module in at least one of these slots for proper operation of the interface modules.

The following table describes the SF module LED.

Table 9: 9090SF module LED description

Label	Color, State	Meaning
Online	Off	The module power is off.
	Amber/steady	The module is running diagnostics and is starting. The module is administratively turned off. Do not remove the module from the system.
	Amber/blinking/slow	The module is initializing the software.
	Amber/blinking/medium	The module is starting the application.
	Amber/blinking/fast	The module has completed image synchronization.
	Green/steady	The module has completed the power-on self-test and software initialization. The module is functioning normally.
	Red/blinking/fast	The module has exceeded the high temperature threshold. The cooling system now runs at full speed.
	Red/steady	The module is faulty and not functioning. Replace the module.

Module removal and services behavior considerations

After you remove or replace a module in the chassis, you can expect the following results:

- If you replace a module with a different type of module, the system discards the configuration of the old ports, and the new ports are added to the default VLAN.
- If you remove an interface module from an operating switch, and replace it with the same type of module, the system restores the configuration.
- If you save the configuration, turn off the switch, replace a module with a different type of module, and turn the system on again, the system discards the configuration of the old ports and adds new ports to either the default VLAN or an unassigned VLAN.

The ability of the switch to load configuration files for modules depends on whether the module is present in the chassis. By design, configuration files do not completely load if the module is not installed.

If you start the Virtual Services Platform 9000 without the modules and want to completely load the configuration files, there are two methods you can use. You can install the module, and then restart. Or, you can install the module, and source, and then save the configuration file (which avoids a restart).

Monitoring and temperature alarms

The system monitors the temperature on the modules. An alarm is triggered after the module temperature exceeds the threshold value (60 degree Celsius (°C)). The module alarms are cleared after the module temperature falls below the threshold value.

The following command displays the temperature on all the modules: **show sys-info temperature**

```
VSP-9012:1(config)#show sys-info temperature
```

```
Temperature Info :
```

Slot	Zone-1 Temp	Zone-2 Temp	Zone-3 Temp	Zone-4 Temp	Zone-5 Temp	Highest Temp	Lowest Temp	Alarm Threshold	Shutdown Threshold
1	27	24	--	26	25	27	24	60	70
4	29	26	30	28	26	30	26	60	70
SF4	26	--	--	28	--	28	26	60	70

The zone alarm is triggered after one of the following events occurs:

- A module alarm is triggered.
- Module alarms are cleared, but the fan still cools the system.

You can see the zone alarm information under the Fan Trays Info section of the command output for **show sys-info** command:

```
Fan Trays Info :
```

```
Zone Info :  
  
FRONT zone :  
  Mode : NORMAL  
  Zone Alarm Timer : 0 seconds  
  Mode Status : Normal  
  Highest Temperature : 42 C  
REAR zone :  
  Mode : NORMAL  
  Zone Alarm Timer : 0 seconds  
  Mode Status : Normal  
  Highest Temperature : 29 C
```

When the zone alarm is triggered, the fan speed increases and the LED color changes on the front panel. The system clears the module alarm after the temperature falls below 60 °C; however, the zone temperature must reduce further to avoid multiple set and clear alarms and constant turning up and down of the fan speed when the module temperature fluctuates continuously around (above and below) the threshold temperature. The zone alarm clears after the temperature falls below 50 °C.

Chapter 5: Module installation and connection

About this task

Install and connect Avaya Virtual Services Platform 9000 modules to provide communications interfaces for switching and routing operations.

The Virtual Services Platform 9000 modules are sensitive to static electricity. Static discharge from your clothing or other fixtures around you, even at levels that do not create a spark, can cause damage to hardware.



Electrostatic alert:

Risk of equipment damage

Electrostatic discharge (ESD) can damage hardware. Follow the procedures in this section to protect your equipment from damage.

To prevent electrostatic discharge damage when you work with the Virtual Services Platform 9000, place each module on a grounded antistatic mat until you can install it. If you do not have an antistatic mat, wear a discharge leash or wrist strap to free yourself of static before you touch a module. An antistatic wrist strap is shipped with the Virtual Services Platform 9000 chassis. You can also free yourself of static by touching the metal chassis before you handle the module.

When you handle modules, do not touch components on the circuit boards; always handle module by their edges. Store unused modules in protective packaging.



Caution:

Risk of equipment damage. Do not touch the top of the module or you can damage pins, components and connectors.



Caution:

Modules are heavy. Damage to a module can occur if it's bumped into another object, including other modules installed in a chassis. Use both hands to support modules.



Note:

You can remove multiple modules, wait for 15 minutes and insert the new modules.

Always place the modules on appropriate antistatic material.

Support the module from underneath with two hands. Do not touch the top of the module. Do not touch the pins or electrical connections.

Module installation and connection

Do not leave slots open. Fill all slots with modules or filler modules to maintain safety compliance, proper cooling, and EMI containment.

Do not over tighten screws. Tighten until snug. Do not use a power tool to tighten screws.

Be careful not to bump a module's connectors against an adjacent module's ejector levers. Damage to connectors may result.

This task flow shows you the sequence of procedures you perform to install and connect modules.

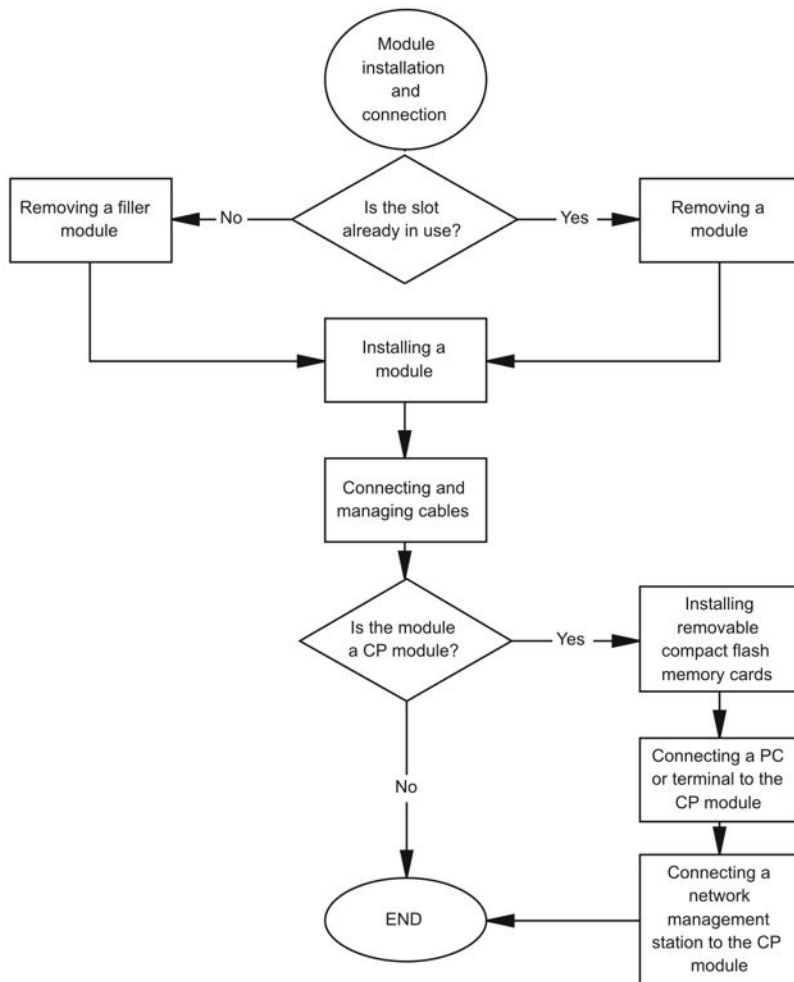


Figure 9: Module installation and connection procedures

Removing a filler module

About this task

Remove a filler module to install a new module or to clean the module slot. Avaya ships the chassis with filler modules in each empty module slot.

Do not operate the Avaya Virtual Services Platform 9000 with an empty module slot, except during module replacement. During module replacement, the slot is empty for approximately 6 to 10 minutes. Do not leave the chassis in this condition.

Remove the filler modules from the front of the chassis to install a 9024XL, 9048GB, 9048GT, or 9080CP module into the Virtual Services Platform 9000. Removing a filler module from the front of the chassis takes approximately one minute.

Remove the filler module from the back of the chassis to install the 9090SF module into the Virtual Services Platform 9000. Removing a filler module from the back of the chassis takes approximately one minute.

 **Caution:**

Risk of electromagnetic interference

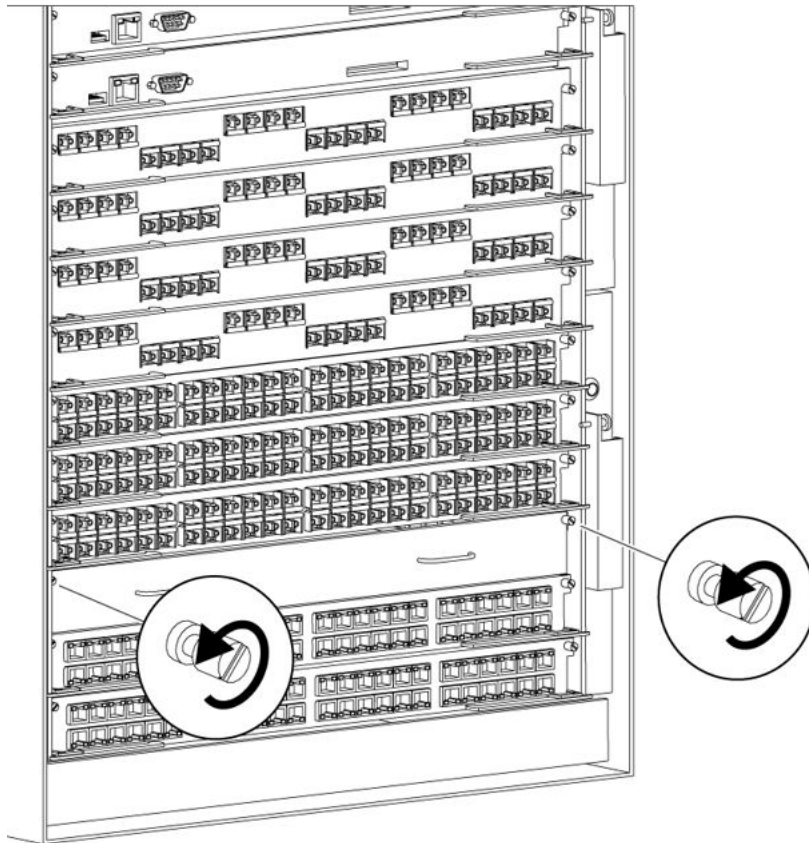
Do not operate the Virtual Services Platform 9000 with an empty module slot. If you need to replace a failed module and you do not have a replacement module, leave the failed module installed or install a filler module.

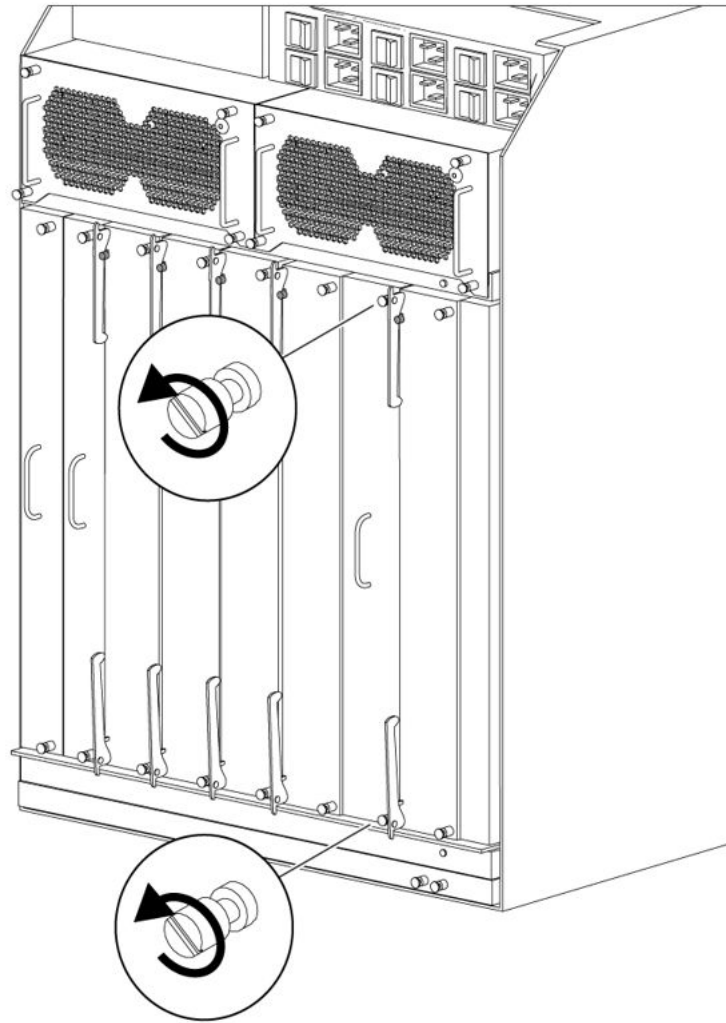
Operating the switch with an empty module slot can cause electromagnetic interference to other equipment in the area. Improper equipment cooling can also result.

 **Important:**

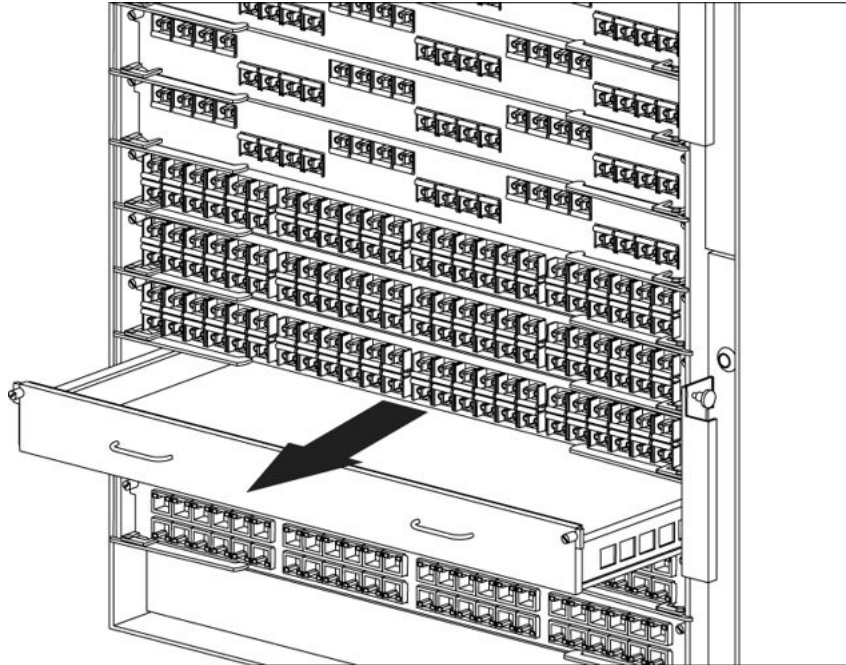
Procedure

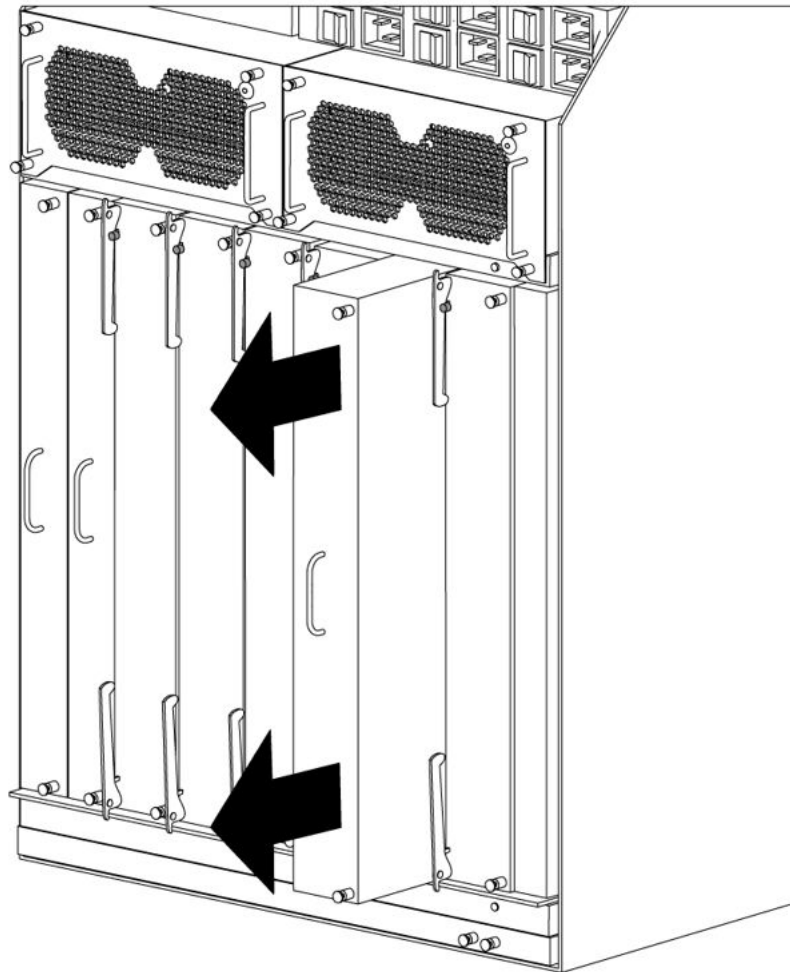
1. Use a Phillips screwdriver to loosen the two captive screws that fasten the filler module to the chassis.





2. Grasp the two handles on the front filler module or the one handle on the back filler module.
3. Pull the filler module away from the slot.





Installing a filler module

About this task

If you plan to remove a module from the chassis without immediately replacing it, you must install a filler module in the slot to maintain proper airflow and cooling. Always cover unused module slots with filler modules.

Do not operate the Avaya Virtual Services Platform 9000 with an empty module slot, except during module replacement. During module replacement, the slot is empty for approximately 6 to 10 minutes. Do not leave the chassis in this condition.

The filler module resembles a module and is installed in the empty module slot. Installing a filler module takes approximately one minute.

 **Caution:**

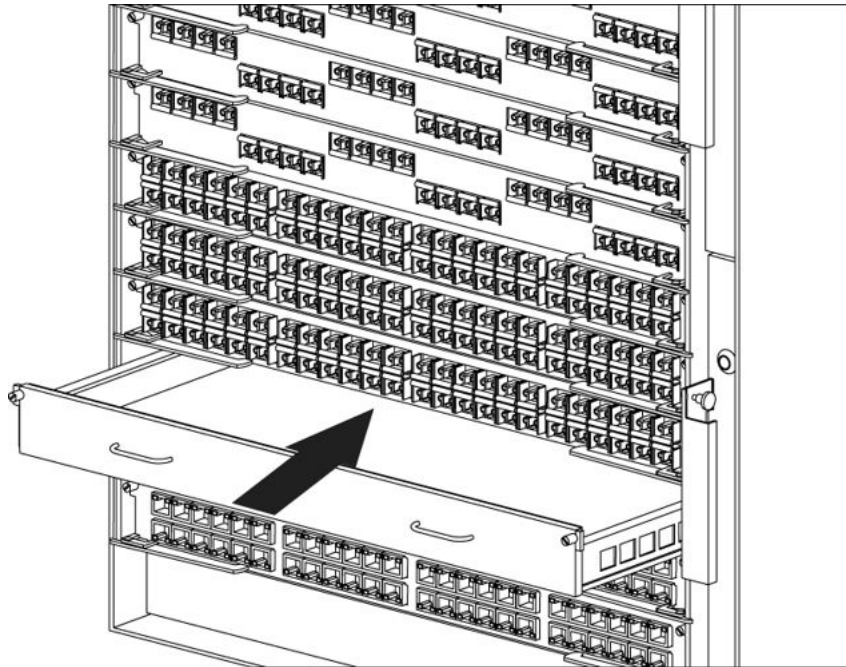
Risk of electromagnetic interference

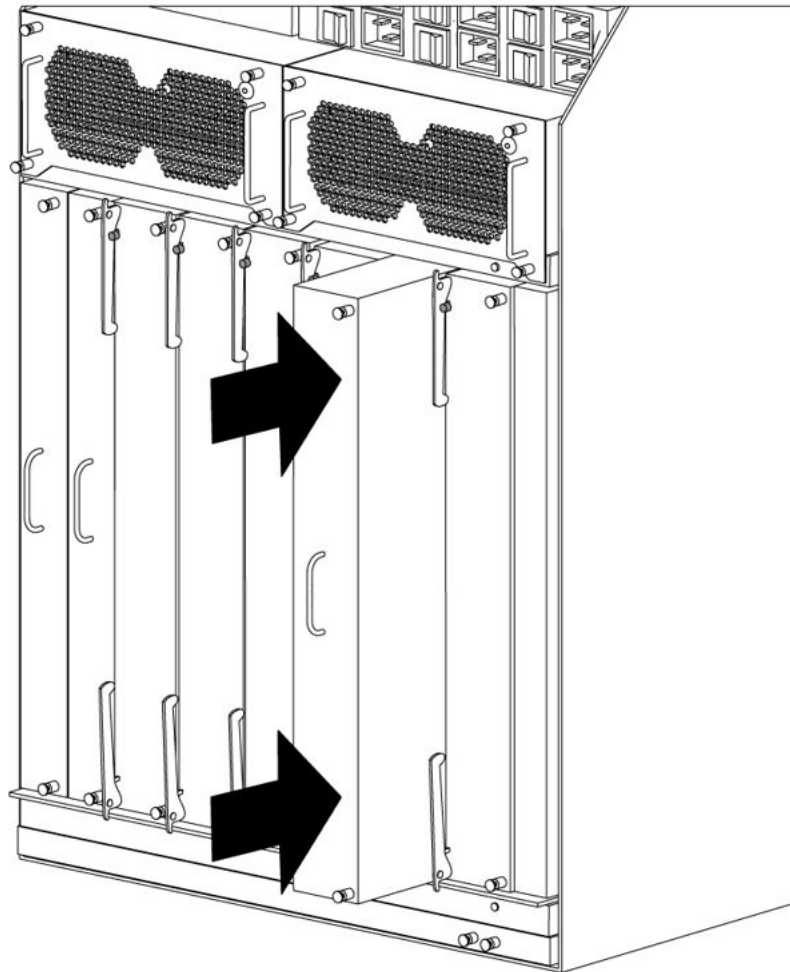
Do not operate the Virtual Services Platform 9000 with an empty module slot. If you need to replace a failed module and you do not have a replacement module, leave the failed module installed or install a filler module.

Operating the switch with an empty module slot can cause electromagnetic interference to other equipment in the area. Improper equipment cooling can also result.

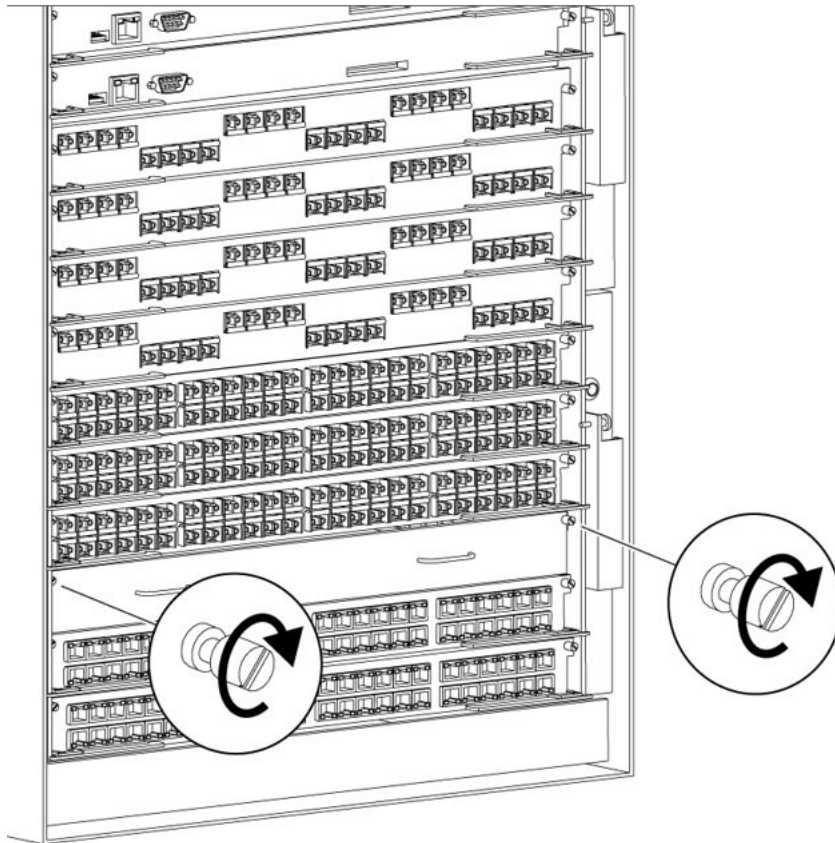
Procedure

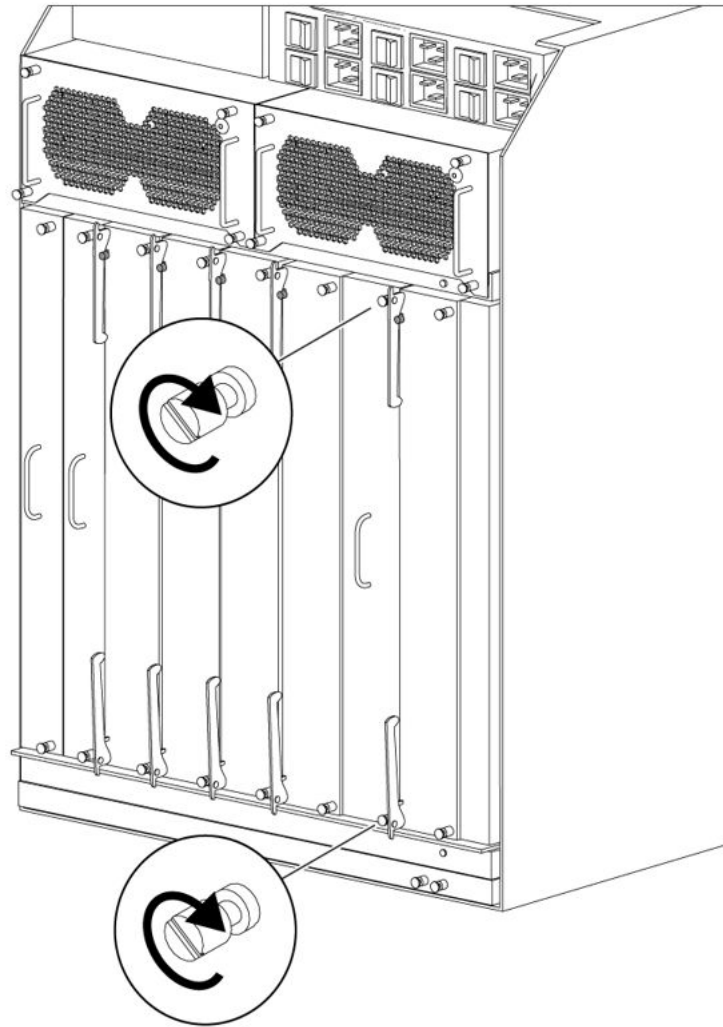
1. Locate the slot where you want to install the filler module.
2. Insert the filler module into the slot.





3. Use the two handles on the front filler module or the one handle on the back filler module to seat the module midplane connectors.
4. Use a Phillips screwdriver to tighten the two screws.





Removing a module

Before you begin

- Before you remove the Control Processor (CP) module, back up your configuration. If the chassis includes only one CP module and you remove it, the switch does not operate.
- Ensure that traffic is not traversing the module. Disable the module before you remove it.

About this task

Remove a module to install another module. Removing a module takes approximately three to five minutes.



Warning:

Risk of eye injury by laser

Fiber optic equipment can emit laser or infrared light that can injure your eyes. Never look into an optical fiber or connector port. Always assume that fiber optic cables are connected to a light source.



Electrostatic alert:

Risk of equipment damage

Electrostatic discharge can damage hardware. Follow ESD procedures to protect your equipment from damage.



Caution:

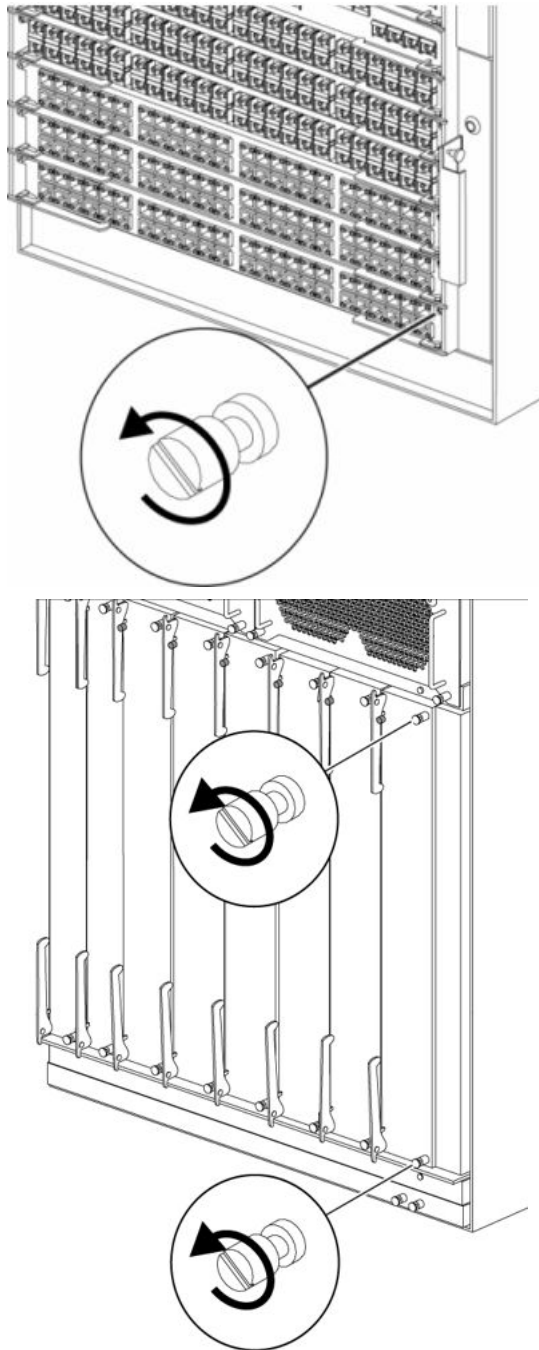
Risk of electromagnetic interference

Do not operate the Virtual Services Platform 9000 with an empty module slot. If you need to replace a failed module and you do not have a replacement module, leave the failed module installed or install a filler module.

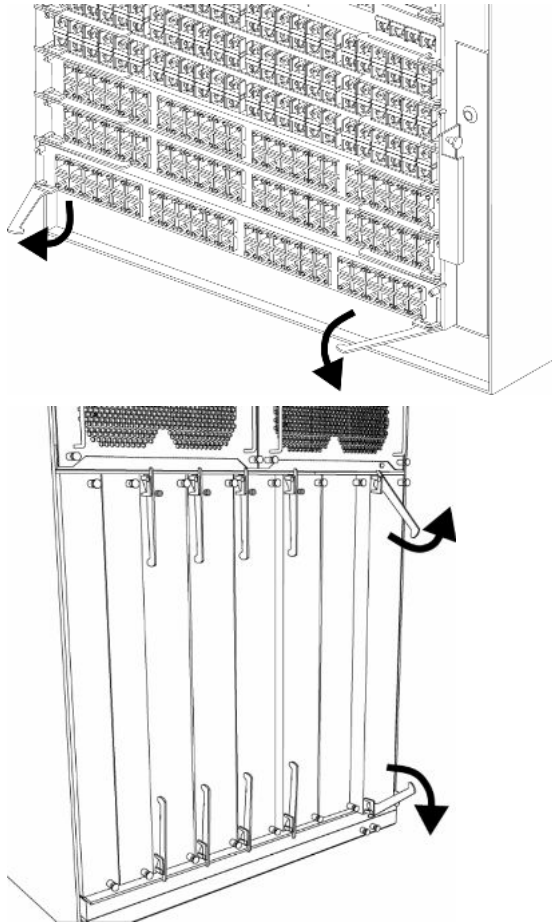
Operating the switch with an empty module slot can cause electromagnetic interference to other equipment in the area. Improper equipment cooling can also result.

Procedure

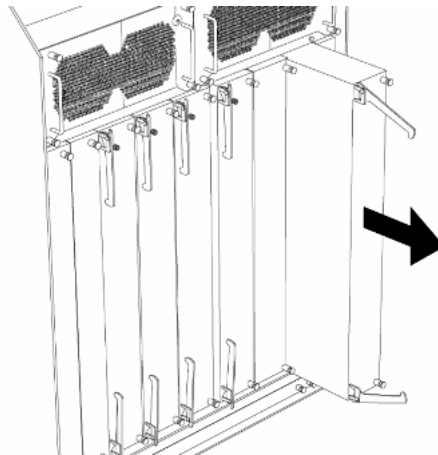
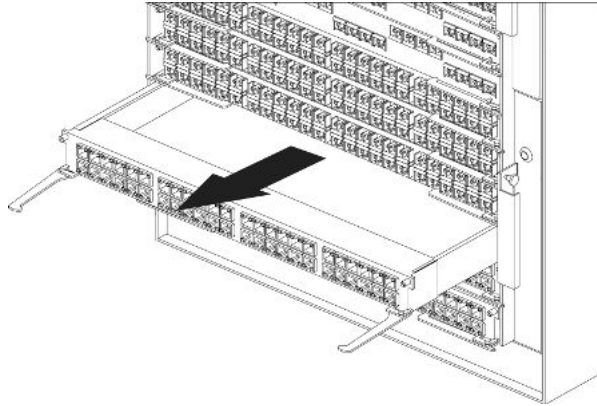
1. Disconnect cables attached to the ports on the module.
2. Use a Phillips screwdriver to loosen the two captive screws that secure the module to the chassis.



3. Rotate the insert or extract levers to eject the module from the chassis as shown in the following figures.



4. Slide the module out of the chassis as shown in the following figures.



Do not operate a chassis without either a filler module or a module installed in a slot.

Installing a module

About this task

Install a module to replace an existing module or to add new capability to the Avaya Virtual Services Platform 9000. Installing a module takes approximately three to five minutes.

The CP module, SF module, and interface modules use the same installation method; the difference is the chassis slot location. Install CP modules horizontally in slots CP1 and CP2 and IO modules in slots IO3 to IO12 at the front of the chassis. Install SF modules vertically at the back of the chassis.

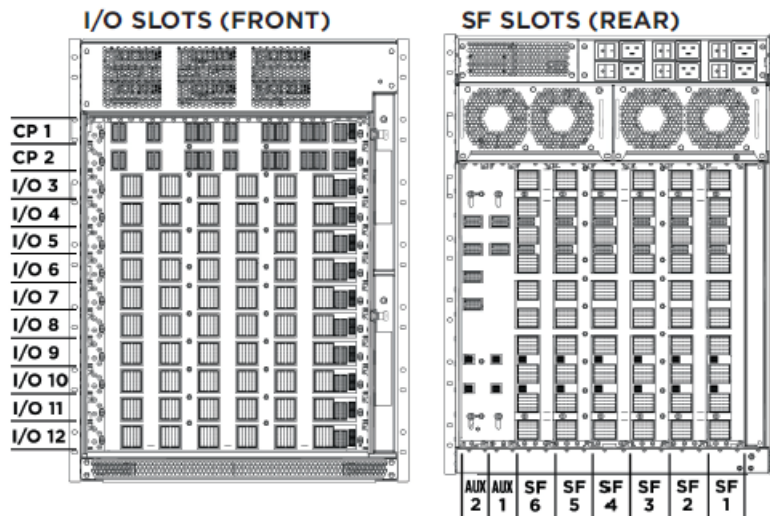
 **Electrostatic alert:**
Risk of equipment damage

Modules are heavy. Use both hands to insert the module. Ensure that the module connects with the back module connector.

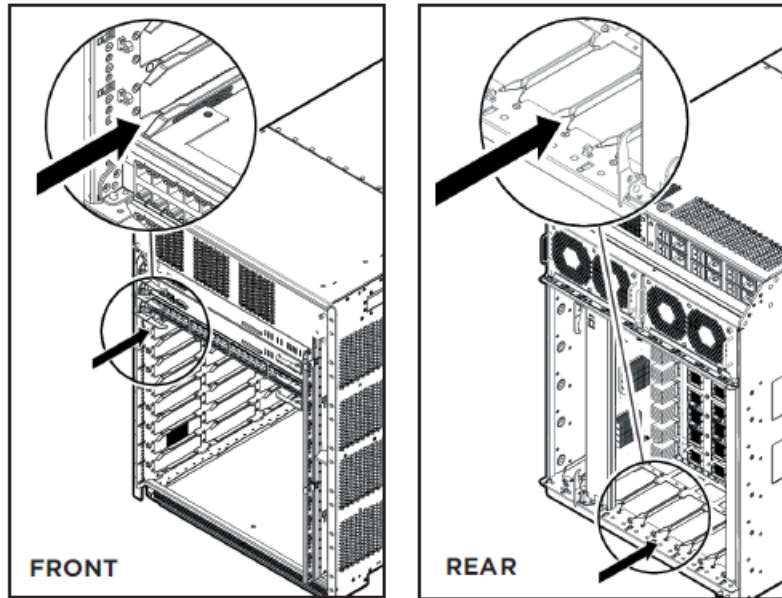
Protect the interface connectors during handling and as you install modules into the chassis.

Procedure

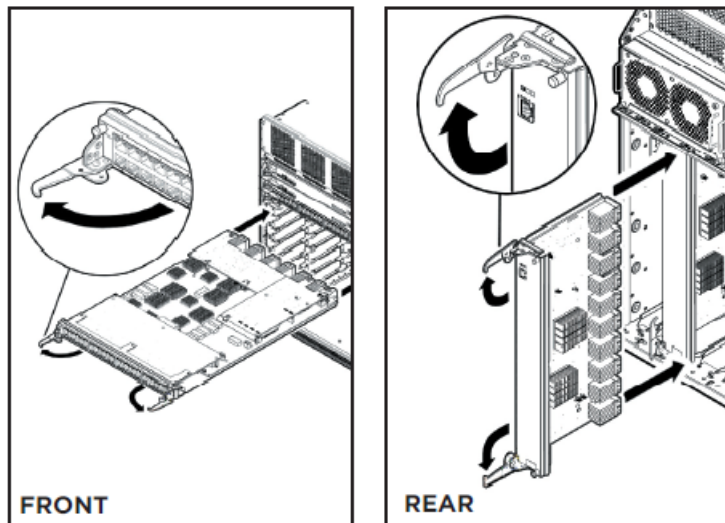
1. Locate the slot where you want to install the module. I/O modules should be installed starting at the top, with the lowest slot number. When installing the Switch Fabric modules, for proper operation you must first populate slots SF4 and SF1 and then populate the rest of the slots from the left, starting with slot 6. Slot numbering is illustrated below.



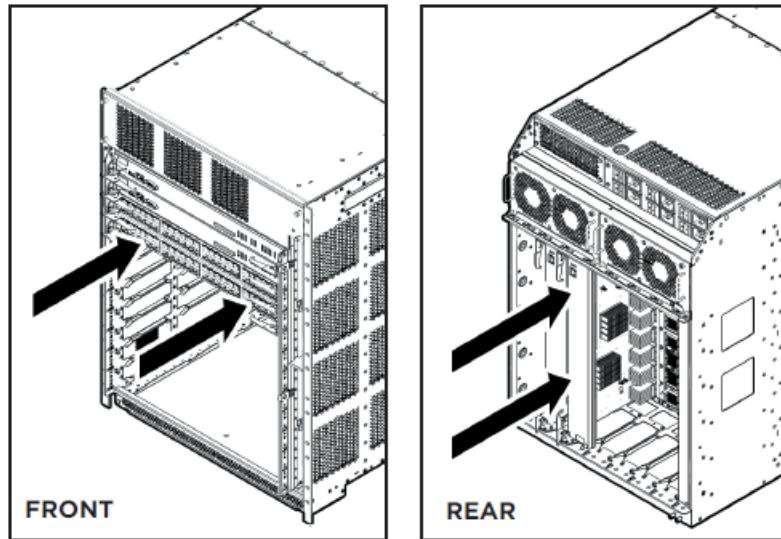
2. Align the module base-plate with the guide rails on either side of the opening for horizontal modules or the guide rails at the top and bottom of the opening for vertical modules.



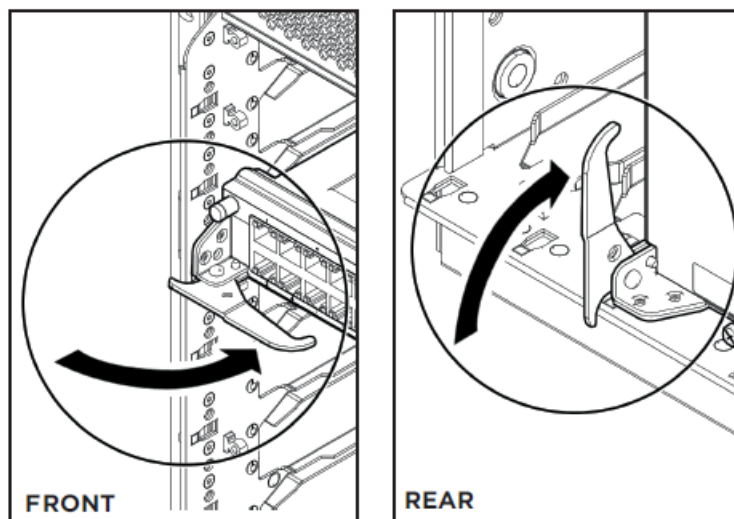
3. Before you fully insert the module into the slot, rotate the action levers away from the module until they form a 90° angle with the front of the module then carefully slide the module partway into the slot.



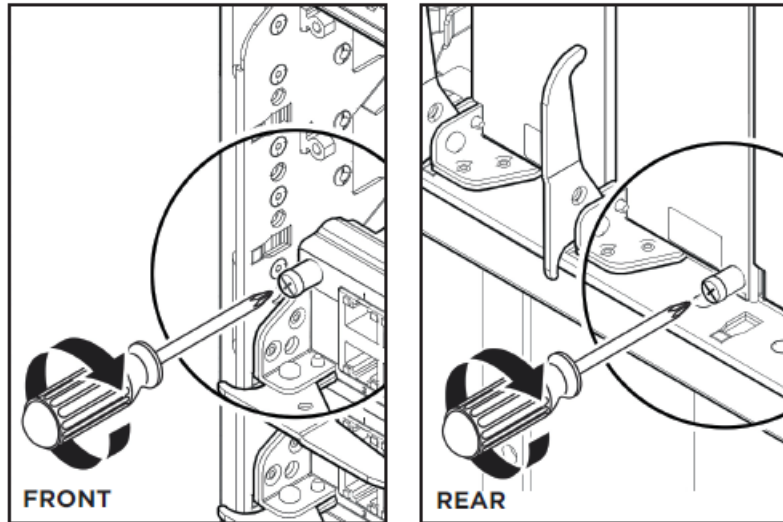
4. Apply equal force to each action lever to insert the module into the slot until the module stops moving. Gently seat the module interface connectors by pressing on the outside edges of the module near the action levers.



5. Continue seating the module by rotating the action levers until the levers are parallel with the front face panel and the module is fully seated.



6. Use a Phillips screwdriver to tighten the two captive screws to secure the module to the chassis. Ensure that both screws are snug for proper module operation.



Hot swapping a module

Before you begin

- You must log on to the Global Configuration mode in ACLI.

About this task

CP, IO, SF, fan and power modules can be hot swapped without service interruption. Take note of the following considerations when hot swapping these kinds of modules:

- If there is no redundant power and a power module is pulled out, one or more card may be automatically powered down to ensure the chassis is running within the available power budget.
- Fan modules may be removed and re-inserted. Prolonged running without a fan tray may cause one or more cards to overheat and automatically be shutdown.
- Powering down CP, IO and SF modules prior removal is recommended due to:
 - CP cards that are removed without powering down first may corrupt files on the internal or external flash file systems due to partial writes.
 - IO and SF cards may loose in-flight packets when they are removed when active.
- When removing an CP, IO or SF card, a waiting period of 15 seconds must be taken before removing another card or re-inserting a card. The reason for this waiting period is:
 - The chassis can re-configure the fabric links on all cards. If the chassis has not been given enough time to re-configure the fabric, data loss may happen.
 - The card needs to fully power down. This may take several seconds. If re-inserted too quickly, some parts on the card may not be properly reset.

- Do not insert or remove modules while up- or downgrading. Removing or inserting modules during these times may abort or rollback the up- or downgrade.
- Do not insert or remove modules during the power up sequence. Doing so may cause a delay in booting the chassis. Instead insert or remove modules when the chassis is fully booted.
- Master CP cards cannot be powered down. To remove a master CP, first switch over to the standby CP with the ACLI command `sys action cpu-switchover`. If there is no standby CP present, reset the chassis with the `reset -y` ACLI command and remove the CP while it starts rebooting. This is signified by all LEDs turning amber.

Perform this procedure to hot swap an Avaya Virtual Service Platform 9000 I/O module.

You can use this procedure to upgrade to the latest modules.

 **Caution:**

Risk of traffic loss or corruption

Do not hot swap or insert modules in a switch while the switch starts. If you do, the switch can not recognize the module, which causes module initialization failure.

 **Electrostatic alert:**

Risk of equipment damage

To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an ESD jack.

Use the data in the following table to use the `slot shutdown` command.

Variable	Value
<code>{slot/port[-slot/port][,...]}</code>	Identifies the slot and port in one of the following formats: a single slot and port (3/1), a range of slots and ports (3/2-3/4), or a series of slots and ports (3/2,5/3,6/2).

Procedure

1. Connect to the primary CP.
2. Avaya recommends that you disable the module to avoid possible packet loss:
`slot shutdown {slot/port[-slot/port][,...]}`
3. If you disabled the module, confirm that the module is disabled. The Online LED of the module is amber if the module is disabled. You can also verify that the module is disabled by using the following command:
`show tech`
4. Remove the module.
5. Insert the new module.

The chassis automatically enables the new module.

6. Confirm that the new module is operational:
`show tech`
The Online LED of the module illuminates.
7. Confirm that traffic is traversing the module as normal.

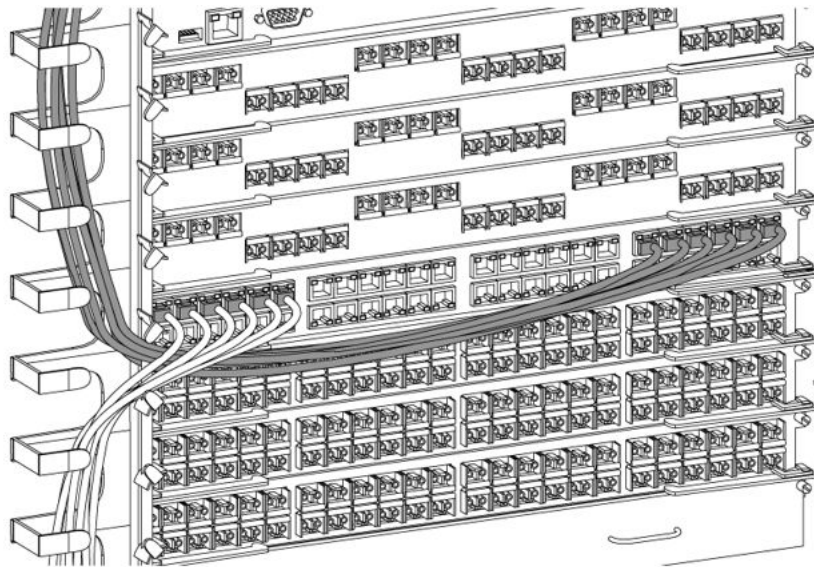
Connecting and managing cables

About this task

Use cable management brackets to keep groups of cable clusters fastened and out of the way, but accessible for maintenance. To facilitate module installation and removal, connect, label, and bundle the cables for each module together.

Procedure

1. Connect the appropriate cable to the module.
2. Route the cable up to the appropriate cable management bracket and channel as shown in the following figure.



3. Route the cable to the termination panel, loosely fastening it with Velcro straps or sheet fiber along the path.
4. Fasten the connector to the termination panel end of the cable.
If you use cables manufactured by Avaya, the connectors are already fastened to predetermined lengths of cable.

5. Label the unconnected end of the cable with the node identifier (from site records) and the shelf, cage, slot, and port number.
 6. After you connect all the transmitting cables from the same module to the termination panel, use Velcro straps or sheet fiber wrapped around the cables to manage them.
-

Installing removable compact flash memory cards

About this task

Install an external Compact Flash memory card in a CP module to provide alternative storage media to save configuration parameters.

Procedure

1. Position the card with the label facing up and the insert arrow pointing toward the card receptacle.
 2. Insert the card into the card receptacle.
 3. Gently push in the card until it fits tightly in place.
-

Removing external storage devices from the CP module

Perform this procedure to safely remove USB and external Compact Flash devices from the CP module. You must perform this procedure to prevent data loss or hardware damage.

Important:

Do not unplug the storage device without first performing this procedure.

You must use the appropriate stop command to unmount the device before you physically remove it from the CP module.

Before you begin

Several system tools use the external Compact Flash as the default storage location. Check the following features before you remove the card:

- Packet Capture (PCAP)
- logging
- debug or trace

The VSP 9000 stop command will not succeed if the specified device is in use. Common uses that impede the proper execution of the stop command are:

- USB or external Compact Flash file access is in progress (move, copy, read, or write) to or from USB or external Compact Flash.

Discontinue operations or wait for access completion before you use the stop command.

- The ACLI session current working directory is configured for the device you need to remove.

Change the current working directory to internal Compact Flash, which is the default.

- Logging is enabled to the external Compact Flash, which is the default.

Use the `show logging config` command to verify the current storage location. If the location is the external Compact Flash card that you need to remove, use the `no logging logToExtFlash` command to log to the internal Compact Flash.

- PCAP is enabled.

Disable PCAP, which requires the external Compact Flash. Use the `show pcap` command to verify if PCAP is enabled. To disable PCAP, use the `no pcap enable` command.

- Debugging features are enabled.

The debug-config file and trace-logging flags must be disabled, which is the default. Use the `show boot config flags` command to verify the status. Use the `no boot config flags debug-config file` or the `no boot config flags trace-logging` command to disable these flags.

Procedure

1. Remove a USB device:
 - a) Unmount the USB device:

```
usb-stop
```
 - b) Wait for the response that indicates it is safe to remove the device.
 - c) Physically remove the device.
2. Remove an external Compact Flash device:
 - a) Unmount the external flash device:

```
extflash-stop
```
 - b) Wait for the response that indicates it is safe to remove the device.
 - c) Physically remove the device.

Example

```
VSP-9012:1#usb-stop
```

```
It is now safe to remove the USB device.
```



```
VSP-9012:1#extflash-stop
```

It is now safe to remove the external Compact Flash device.

Next steps

No restrictions or requirements exist before you can reinsert a USB or external Compact Flash device. You can insert these devices at any time and VSP 9000 automatically recognizes them. The devices are accessible within seconds after insertion.

After you insert the external Compact Flash, you should enable logging to the external Compact Flash by using the `logging logToExtFlash` command.

Additionally, you can enable the following features as required:

- PCAP
- debug-config file or trace-logging flags

Connecting a PC or terminal to the CP module

Before you begin

- You require an serial console cable with an RS232 DB9 male connector.

About this task

To establish a local session with the Avaya Virtual Services Platform 9000, connect a PC or a VT-100 terminal to the console port on the CP. This local connection provides communication with the system during initial commissioning.

Procedure

1. Turn on the PC terminal
2. Configure the terminal or a communications port on the PC using the parameters in the following table.

See the PC or terminal user manual for instructions.

Parameter	Value
Baud rate	9600
Data bits	8
Stop bits	1
Parity	None

3. Insert the male DB9 connector of the serial cable into the console port on the CP module.
4. Attach the female DB9 connector of the cable to the serial communications port on the PC or terminal.

5. Start a communication session using a serial communication program.

Job aid

The following table provides the console port pinout.

Table 10: Console port pinout

Pin number	Direction	Signal
1	In	DCD (Data Carrier Detect)
2	In	RX (Receive Data)
3	Out	TX (Transmit Data)
4	Out	DTR (Data Terminal Ready)
5	—	GND (Signal Ground)
6	In	DSR (Data Set Ready)
7	Out	RTS (Request To Send)
8	In	CTS (Clear To Send)
9	In	RI (Ring Indicator)

Connecting a network management station to the CP module

About this task

Use the management port to connect the switch to a network management station for out-of-band management using a Web browser.

Procedure

1. Connect a standard straight-through Ethernet cable to the network management station.
For 10 Mb/s connections, you can use Category 3, 4, or 5 copper unshielded twisted pair (Ethernet) cable. Use only Category 5 UTP cable to connect ports that operate at 100 Mb/s or 1000 Mb/s.

2. Connect the other end of the cable to the RJ-45 port on the CP module.



Chapter 6: Technical specifications

This section provides technical specifications for the Avaya Virtual Services Platform 9000 modules.

General specifications

The following table lists general specifications applicable to all modules.

Table 11: General module specifications

Supported standards
IEEE Std 802.3ae Clause 45
IEEE Std 802.3/2002
IEEE 802.3 1998 Clause 28
IEEE Std 802.3, 1998 Clause 4 Media Access Control CSMA/CD
IEEE Std 802.3, 1998 Clause 14 10BASE-T
ANSI/IEEE Std 802.3, 1998 Media Access Control (MAC) Bridges
IEEE 802.1Q Virtual Bridged Local Area Networks
IEEE Std 802.3, 1998 Clause 34-42
IEEE 802.3, 1998 Clause 31 (MAC Control)
IEEE Std 802.3ab
IEEE Std 802.3af

Data rate and encoding
10 Mb/s Manchester encoding
100 Mb/s 4B/ 5B encoding
1000 Mb/s 8B/ 10B encoding
10 Gb/s 64/ 66B encoding

The following table provides module environmental, addressing, and performance specifications.

Table 12: Module specifications

Environmental specifications	
Operating temperature	0–40C (32–104F)
Storage temperature	– 25–70C (– 13–158F)
Operating humidity	0-95%
Storage humidity	92.5%
Operating altitude	0–3000m (0–10000ft)
Free fall or drop	ISO 4180-s, NISTA 1A (check)
Vibration	IEC 68-2-6/34 (check)
Shock or bump	IEC 68-2-27/29

Performance specifications (64-byte packets)	
Routing and switching forwarding rates	Refer to specifications for each module
Latency	Minimum 10 microseconds

Address database size	
Address table size:	
Addressing:	48-bit MAC address
	32-bit IPv4 address
Frame length:	64– 1518 bytes (IEEE 802.1Q Untagged)
	64–1522 bytes (IEEE 802.1Q Tagged)

The following table describes electromagnetic interference specifications.

Table 13: Electromagnetic interference specifications

Electromagnetic emissions	
Meets requirements of:	
United States:	FCC CFR47 Part 15, Subpart B, Class A
Canada:	ICES-003, Issue-4, Class A
Australia/New Zealand:	AS/NZS CISPR 22:2006, Class A
Japan:	VCCI-V3/97.04, Class A
Europe:	EN 55022:2006/ A1:2007 Class A EN 61000-3-2:2006 EN 61000-3-3:1995:A1:2001/ A2:2005 EN 300 386 v1.3.3

Electromagnetic emissions	
Electromagnetic susceptibility:	EN55024:1998/A1:2001/A2:2003/CISPR 24:1997

The following table describes safety agency approvals.

Table 14: Safety agency approvals

Safety agency approvals	
Global basis for certification:	IEC 60950-1 with national deviations
United States:	UL60950-1
Canada:	CSA 22.2 No. 60950-1
Australia/New Zealand:	AS/NZS 60950-1
Europe:	EN60950-1 (CE Marking)

Port density of the modules

The following table provides port density information for each module.

Table 15: Port density for Avaya Virtual Services Platform 9000 interface modules

Module type	Port type	Maximum number of ports for each module
9048GB	1000BASE-T	Supports full 48 1000Base-T SFPs
	1000BASE-SX DDI	Supports full 48 1000Base-SX DDI SFPs
	1000BASE-LX DDI	Supports full 48 1000Base-LX DDI SFPs
	1000BASE-ZX DDI	Supports full 48 1000Base-ZX DDI SFPs
	1000BASE-BX DDI	Supports full 48 1000Base-BX DDI SFPs
	1000BASE-EX DDI	Supports full 48 1000Base-EX DDI SFPs
	CWDM	Supports full 48 CWDM 40km and 70km SFPs
9048GT	10BASE-T/100BASE-TX/ 1000BASE-T	Supports full 48 ports of category-3, category-5, category-5+, and

Module type	Port type	Maximum number of ports for each module
		category-6 unshielded twisted pair cable
9024XL	10GBASE-SR	Supports full 24 10GBASE-SR SFP +
	10GBASE-LRM	Supports full 24 10GBASE-LRM SFP+
	10GBASE-LR	Supports full 24 10GBASE-LR SFP +
	10GBASE-ER	Supports full 24 10GBASE-ER SFP +.

9024XL module specifications

The following table describes the 9024XL module specifications.

Table 16: 9024XL module specifications

Physical specifications	
Height:	1.625 in. (4.13 cm)
Width:	15.5 in. (39.37 cm)
Depth:	24.0 in. (60.96 cm)
Weight:	14.5 lb (6.58 kg)

Electrical specifications	
Power consumption	575 W, with short range SFP+
Thermal rating:	1962 BTU/hr
MTBF rating	209 908 hours (23.94 years)
Connector type	SFP+
Performance specifications	
Maximum throughput	105 Mpps (70 Gbps/140 Gbps – for full duplex) when chassis is equipped with 5 SF modules.

9048GB module specifications

The following table describes the 9048GB module specifications.

Table 17: 9048GB module specifications

Physical specifications	
Height:	1.625 in. (4.13 cm)
Width:	15.5 in. (39.37 cm)
Depth:	24.0 in. (60.96 cm)
Weight:	13.5 lb (6.12 kg)

Electrical specifications	
Power consumption	340 W, with short range SFP
Thermal rating:	1160 BTU/hr
MTBF rating	267 953 hours (30.55 years)
Connector type	SFP
Performance specifications	
Maximum throughput	70 Mpps (46 Gbps/92 Gbps – for full duplex) when chassis is equipped with 5 SF modules.

9048GT module specifications

The following table lists specifications for the 9048GT module.

Table 18: 9048GT module specifications


Physical specifications	
Height:	1.625 in. (4.13 cm)
Width:	15.5 in. (39.37 cm)
Depth:	24.0 in. (60.96 cm)
Weight:	14.0 lb (6.35 kg)

Electrical specifications	
Power consumption	350 W
Thermal rating:	1194 BTU/hr
MTBF rating	278 629 hours (31.77 years)
Connector type	RJ-45
Performance specifications	
Maximum throughput	70 Mpps (46 Gbps/92 Gbps – for full duplex) when chassis is equipped with 5 SF modules.

9048GT port connectors

The ports on the 9048GT module are RJ-45 ports (see the following figure).

Table 19: Pin assignments: 9048GT module

Connector	Pin number	Signal
	1	Bidirectional Data A + (BI_DA+)
	2	Bidirectional Data A – (BI_DA–)
	3	Bidirectional Data B + (BI_DB+)
	4	Bidirectional Data C + (BI_DC+)
	5	Bidirectional Data C – (BI_DC–)
	6	Bidirectional Data B – (BI_DB–)
	7	Bidirectional Data D + (BI_DD+)
	8	Bidirectional Data D – (BI_DD–)

9080CP module specifications

The following table describes the 9080CP module specifications.

Table 20: 9080CP module specifications

Physical specifications	
Height:	1.625 in. (4.13 cm)
Width:	15.5 in. (39.37 cm)
Depth:	24.0 in. (60.96 cm)
Weight:	10.5 lb (4.76 kg)


Electrical specifications	
Power consumption:	80 W
Thermal rating:	273 BTU/hr
MTBF rating	777 001 hours (88.60 years)

Connector types	
Ethernet Management port:	RJ-45 connector wired as MDI
Console port:	DB-9 connector

9080CP management port

The management port is a 10/100/1000 Mb/s Ethernet port implemented on an RJ-45 connector wired as an MDI connection. (see the following table).

Table 21: Pin assignments: 9080CP module management port

Connector	Pin number	Signal
	1	Output transmit data + (TX+)
	2	Output transmit data - (TX-)
	3	Input receive data + (RX+)
	6	Input receive data - (RX-)
	4, 5, 7, 8	Not used

9080CP console port

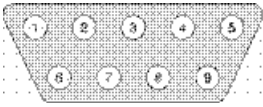
The console serial port is a male DB-9/RS232 connector. This port operates as a data terminal equipment (DTE) device. Default settings for this port are

- 9600 bits/s
- 8 data bits
- no parity
- 1 stop bit

Connection to TX and RX signals and GND is sufficient for the console serial port to fully function. The console port does not support inbound flow control; that is, the port does not toggle control lines to indicate an input buffer full condition.

The following table lists the pin assignments for the console port.

Table 22: Pin assignments: Console port for DB-9 RS-232 Male DTE (interface)

Connector	Pin number	Signal
	1	Data Carrier Detect (DCD)
	2	Receive Data (RXD)
	3	Transmit Data (TXD)
	4	Data Terminal Ready (DTR)
	5	Ground (GND)
	6	Data Set Ready (DSR)
	7	Request to Send (RTS)
	8	Clear to Send (CTS)
	9	Ring Indicator

9090SF module specifications

The following table describes the 9090SF specifications.

Table 23: 9090SF specifications

Physical specifications	
Height:	15.75 in. (40.01 cm)
Width:	2.25 in. (5.72 cm)
Depth:	8.5 in. (21.59 cm)
Weight:	4.5 lb (2.04 kg)

Electrical specifications	
Power consumption	70 W (slots SF1 and SF4) 50 W (slots SF2, SF3, SF5, and SF6)
Thermal rating:	239 BTU/hr (slots SF1 and SF4) 170 BTU/hr (slots SF2, SF3, SF5, and SF6)
MTBF rating	1 447 178 hours (165.02 years)

Performance specifications	
Maximum throughput	Provides 70 Gb/s throughput for each 9024XL when chassis is equipped with 5 SF modules.

Provides 46 Gb/s throughput for each 9048GT or 9048GB when chassis is equipped with 5 SF modules.

Required cables

The following table lists the cable requirements for the Avaya Virtual Services Platform 9000 modules. For SFP and SFP+ cable types and cable lengths, see *Avaya Virtual Services Platform 9000 Installation — SFP Hardware Components*, NN46250-305.

Table 24: Connectors and cables for Virtual Services Platform 9000

Module	Connector	Recommended cable type	Maximum cable length
9024XL	Duplex LC	Depends on the SFP+ model	Depends on the SFP+ model
9048GT	RJ-45	EIA CAT 5 or 6 UTP	328 ft (100 m)
9048GB	Duplex LC or RJ-45	Depends on SFP model	Depends on SFP model
Control Processor	RJ-45 ethernet Management port	Straight-through Ethernet cable: EIA CAT 3, 4, or 5 UTP for 10 Mb/s operation; EIA CAT 5 or 6 UTP required for 100 Mb/s operation, EIA CAT 6 required for 1000 Mb/s	328 ft (100 m)
	DB-9 serial port	RS-232	

Chapter 7: Translations of Safety Messages

This section contains translations of precautionary notices that you must read and follow for safe operation of the Avaya Virtual Services Platform 9000.

Class A electromagnetic interference caution statement



Caution:

Risk of electromagnetic interference

This device is a Class A product. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users are required to take appropriate measures necessary to correct the interference at their own expense.



Caution:

ATTENTION

Le périphérique est un produit de Classe A. Le fonctionnement de cet équipement dans une zone résidentielle risque de causer des interférences nuisibles, auquel cas l'utilisateur devra y remédier à ses propres frais.



Caution:

ACHTUNG

Dies ist ein Gerät der Klasse A. Bei Einsatz des Geräts in Wohngebieten kann es Störungen des Radio- und Fernsehempfangs verursachen. In diesem Fall muss der Benutzer alle notwendigen Maßnahmen ergreifen, die möglicherweise nötig sind, um die Störungen auf eigene Rechnung zu beheben.



Caution:

PRECAUCIÓN

Este es un producto clase A. El uso de este equipo en áreas residenciales puede causar interferencias nocivas, en cuyo caso, se requerirá que los usuarios tomen cualquier medida necesaria para corregir la interferencia por cuenta propia.



Caution:

CUIDADO

Este dispositivo é um produto Classe A. Operar este equipamento em uma área residencial provavelmente causará interferência prejudicial; neste caso, espera-se que os usuários tomem as medidas necessárias para corrigir a interferência por sua própria conta.



Caution:

ATTENZIONE

Questo dispositivo è un prodotto di Classe A. Il funzionamento di questo apparecchio in aree residenziali potrebbe causare interferenze dannose, nel cui caso agli utenti verrà richiesto di adottare tutte le misure necessarie per porre rimedio alle interferenze a proprie spese.

Electromagnetic interference caution statement

 **Caution:**

Risk of electromagnetic interference

Do not operate the Virtual Services Platform 9000 with an empty module slot. If you need to replace a failed module and you do not have a replacement module, leave the failed module installed or install a filler module.

Operating the switch with an empty module slot can cause electromagnetic interference to other equipment in the area. Improper equipment cooling can also result.

 **Caution:**

ATTENTION

Risques d'interférences électromagnétiques

N'utilisez pas le Virtual Services Platform 9000 si l'emplacement du module est vide. Ne retirez pas un module, même défectueux, si vous ne disposez pas d'un module de remplacement. Laissez le module défectueux en place ou installez un panneau de remplissage.

Toute utilisation de l'interrupteur lorsque l'emplacement du module est vide risque de provoquer des interférences électromagnétiques avec le matériel situé à proximité. Une mauvaise ventilation de l'appareil est également susceptible de provoquer des interférences.

 **Caution:**

ACHTUNG

Risiko von Elektromagnetischen Störungen

Nehmen Sie Virtual Services Platform 9000 niemals mit einem unbestückten Modulsteckplatz in Betrieb. Wenn Sie ein defektes Modul ersetzen müssen, ohne ein Ersatzmodul zur Hand zu haben, lassen Sie das defekte Modul installiert, oder installieren Sie eine Aussparungsabdeckung.

Wird das Vermittlungssystem mit einem unbestückten Modulsteckplatz betrieben, kann dies elektromagnetische Störungen verursachen, die sich auch auf andere Geräte in der Umgebung auswirken.

Außerdem kann eine unzureichende Gerätekühlung die Folge sein.

 **Caution:**

PRECAUCIÓN

Riesgo de interferencia electromagnética

Riesgo de interferencia electromagnética No opere Virtual Services Platform 9000 si existe una ranura de módulo vacía. Si necesita reemplazar un módulo defectuoso y no cuenta con uno de repuesto, deje el módulo en su lugar o instale un panel de relleno. El funcionamiento del conmutador con una ranura de módulo vacía puede ocasionar interferencias electromagnéticas en otros equipos del área.

Asimismo, es posible que los equipos se enfrien inadecuadamente.



Caution:

CUIDADO

Risco de interferência eletromagnética

Não opere o insira o Virtual Services Platform 9000 com um slot de módulos vazio. Se for preciso substituir um módulo com defeito e você não tiver um módulo de substituição, deixe o módulo com defeito instalado ou instale um painel de preenchimento.

Trabalhar no comutador com um slot de módulos vazio pode causar interferência eletromagnética a outro equipamento na área. O resfriamento inadequado do equipamento também pode resultar uma interferência.



Caution:

ATTENZIONE

Rischio di interferenza elettromagnetica

Non utilizzare il Virtual Services Platform 9000 con un alloggiamento modulo vuoto. Se è necessario sostituire un modulo guasto ma non si dispone di un modulo per la sostituzione, lasciare installato quello guasto o installare un pannello di riempimento.

L'uso dell'interruttore con l'alloggiamento modulo vuoto può provocare un'interferenza elettromagnetica su altri apparecchi presenti nella zona, oltre che un inadeguato raffreddamento dell'apparecchio stesso.

Electrostatic discharge caution statement



Electrostatic alert:

ESD

To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an electrostatic discharge (ESD) jack when performing maintenance on this product. Ensure that the wrist strap makes contact with your skin.



Electrostatic alert:

ATTENTION

ESD (décharge électrostatique)

Pour prévenir tout dommage dû à une décharge électrostatique, vous devez toujours porter un bracelet antistatique connecté à une prise pour décharge électrostatique (ESD) lors de l'exécution d'opérations de maintenance sur ce produit. Assurez-vous que le bracelet antistatique est en contact avec votre peau.



Electrostatic alert:

ACHTUNG

ESD

Um Schäden durch elektrostatische Entladung zu verhindern, tragen Sie bei der Instandhaltung dieses Produkts immer ein antistatisches Band am Handgelenk, das mit einer ESD-Buchse verbunden ist. Stellen Sie

 **Electrostatic alert:**
PRECAUCIÓN

ESD (Descarga electrostática)

Para prevenir el daño producido por una descarga electrostática, use siempre una pulsera antiestática conectada a un enchufe de descarga electrostática (ESD) al realizar el mantenimiento de este producto. Asegúrese de que la pulsera antiestática haga contacto con su piel.

 **Electrostatic alert:**
CUIDADO

ESD


Para evitar danos com descarga eletrostática, sempre use uma pulseira antiestática que esteja conectada a uma tomada de descarga eletrostática (ESD) quando estiver realizando a manutenção deste produto. Certifique-se de que a pulseira esteja em contato com sua pele.

 **Electrostatic alert:**
ATTENZIONE

ESD

Per evitare danni derivanti da scariche elettrostatiche, indossare sempre un polsino antistatico collegato a una presa di scarico elettrostatico (ESD) durante la manutenzione del prodotto. Accertarsi che il polsino sia a contatto con la pelle.

Laser eye safety warning statement

 **Warning:**
Risk of eye injury by laser

Fiber optic equipment can emit laser or infrared light that can injure your eyes. Never look into an optical fiber or connector port. Always assume that fiber optic cables are connected to a light source.

 **Warning:**
AVERTISSEMENT

Risques de blessure oculaire par lumière laser

L'équipement de fibres optiques peut émettre une lumière laser ou infrarouge nuisible à vos yeux. Ne regardez jamais en direction de fibres optiques ou d'un port connecteur. Supposez toujours que les câbles de fibres optiques sont connectés à une source de lumière.

 **Warning:**
WARNUNG

Risiko einer Augenverletzung durch Laser

Risiko einer Augenverletzung durch Laser Glasfasergeräte können Laserstrahlen oder ultraviolettes Licht aussenden, das Ihre Augen verletzen kann. Schauen Sie nie direkt in einen Glasfaserleiter oder Verbindungsanschluss. Gehen Sie immer davon aus, dass Glasfaserkabel mit einer Lichtquelle verbunden sind.



Warning:

ADVERTENCIA

Riesgo de lesión en los ojos por láser

El equipo de fibra óptica puede emitir una luz láser o infrarroja que dañe sus ojos. Nunca mire un puerto de fibra óptica o conector. Siempre asuma que los cables de fibra óptica están conectados a una fuente de luz.



Warning:

AVISO

O laser pode causar ferimentos no olho

O equipamento de fibra óptica pode emitir laser ou luz infravermelha que pode causar danos a sua vista. Nunca olhe para dentro da fibra óptica ou da porta do conector. Tenha sempre em mente que os cabos de fibra óptica estão ligados a uma fonte de luz.



Warning:

AVVISO

Rischio di ustioni agli occhi dovute al laser

Le apparecchiature con fibre ottiche possono emettere raggi laser o infrarossi in grado di provocare ferite agli occhi. Non guardare mai all'interno di una porta di connessione o una fibra ottica. Tenere sempre presente che i cavi a fibra ottica sono collegati a una sorgente luminosa.

Chapter 8: Customer service

Visit the Avaya Web site to access the complete range of services and support that Avaya provides. Go to www.avaya.com or go to one of the pages listed in the following sections.

Getting technical documentation

To download and print selected technical publications and release notes directly from the Internet, go to www.avaya.com/support.

Getting product training

Ongoing product training is available. For more information or to register, you can access the Web site at www.avaya.com/support. From this Web site, you can locate the Training contacts link on the left-hand navigation pane.

Getting help from a distributor or reseller

If you purchased a service contract for your Avaya product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller for assistance.

Getting technical support from the Avaya Web site

The easiest and most effective way to get technical support for Avaya products is from the Avaya Technical Support Web site at www.avaya.com/support.

Glossary

bandwidth	A measure of transmission capacity for a particular pathway, expressed in megabits per second (Mb/s).
Compact Flash	Offers flash memory in a small form factor.
Control Processor (CP) module	The Control Processor module is responsible for running all high level protocols (BGP, OSPF) and distributing the results (routing updates) to the rest of the system, managing and configuring the IO and Switch Fabric modules, and maintaining and monitoring the health of the chassis.
Custom AutoNegotiation Advertisement (CANA)	An enhancement of the IEEE 802.3 autonegotiation process on the 10/100/1000 copper ports. Custom AutoNegotiation Advertisement offers improved control over the autonegotiation process. The system advertises all port capabilities that include, for tri-speed ports, 10 Mb/s, 100 Mb/s, 1000 Mb/s speeds, and duplex and half-duplex modes of operation. This advertisement results in autonegotiation between the local and remote end that settles on the highest common denominator. Custom AutoNegotiation Advertisement can advertise a user-defined subset of the capabilities that settle on a lower or particular capability.
database description (DD) packets	Exchanged when a link is initially established between neighboring routers that synchronizes their link state databases. The Open Shortest Path First (OSPF) protocol uses DD packets.
Data Communications Equipment (DCE)	A network device (such as a modem) that establishes, maintains, and terminates a session.
Electromagnetic Interference (EMI)	Electromagnetic radiation released from an electronic device that disrupts the operation or performance of another device.
Interface (IO) cooling module	The IO cooling module is a hot swappable fan tray used to cool the interface and CP modules.
Interface module	An interface module is a module that provides network connectivity for various media (sometimes called Layer 0) and protocol types. Interface modules are also called Ethernet modules.
light emitting diode (LED)	A semiconductor diode that emits light when a current passes through.
NonVolatile Random Access Memory (NVRAM)	Random Access Memory that retains its contents after electrical power turns off.

operation, administration, and maintenance (OA&M)

operation, administration, and maintenance (OA&M)	All the tasks necessary for providing, maintaining, or modifying switching system services.
packet loss	Expressed as a percentage of packets dropped over a specified interval. Keep packet loss to a minimum to deliver effective IP telephony and IP video services.
small form factor pluggable (SFP)	A hot-swappable input and output enhancement component used with Avaya products to allow gigabit Ethernet ports to link with other gigabit Ethernet ports over various media types.
small form factor pluggable plus (SFP+)	SFP+ transceivers are similar to SFPs in physical appearance but SFP+ transceivers provide Ethernet at 10 gigabit per second (Gb/s).
Switch Fabric (SF) cooling module	The SF cooling module is a hot swappable fan tray used to cool the Switch Fabric (SF) modules.
Switch Fabric (SF) module	The Switch Fabric module connects to all interface and Control Processor modules. You can install 6 SF modules in Virtual Services Platform 9000, using 5 SF modules plus 1 as a hot backup. The SF modules comprise a data path and a control path, and provide a back end switching solution in the midplane chassis.
unshielded twisted pair (UTP)	A cable with one or more pairs of twisted insulated copper conductors bound in a single plastic sheath.