



Installation — Chassis

Avaya Virtual Services Platform 9000

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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.

Russia, Belarus, and Kazakhstan Requirement

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In order to comply with existing laws, Avaya's products that are supplied to Russia, Belarus, and Kazakhstan are supplied with a configuration which is in line with existing legislation. Modifications may lead to product certifications becoming invalid. Any modification of preinstalled software and firmware, including installation of other or more current firmware or software, therefore is done at the responsibility of the person or company executing the changes. Avaya is not responsible for any modifications to the product made on or for use on the territory of Russia, Belarus and Kazakhstan other than modifications executed and certified by Avaya itself.

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 55022 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 55022 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 55024 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 55024 (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.

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

BSMI statement (Taiwan only)

BSMI statement (Taiwan only)

This is a Class A product based on the standard of the Bureau of Standards, Metrology and Inspection (BSMI) CNS 13438 and CNS 14336–1, Class A.

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Chinese EMI and safety warnings

Voltage:

Risk of injury by electric shock

Before working on this equipment, be aware of good safety practices and the hazards involved with electrical circuits. Use only power cords that have a good grounding path. Ensure that the switch is properly grounded before powering on the unit.

 電壓警告:

觸電受傷的危險性

在此設備上進行作業之前，要認知到良好的安全行為和涉及電子電路可能的危害。使用的電源線需有接地路徑。確保供電給設備之前，有適當的接地。

Warning:

Disconnecting the power cord is the only way to turn off power to this device. Always connect the power cord in a location that can be reached quickly and safely in case of emergency.

 警告使用者:

斷開電源線，是關閉該設備電源的唯一方法。始終確保連接電源線的位置，在緊急情況下，是可以快速且安全抵達的一個位置。

Electrostatic alert:

Risk of equipment damage

To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an ESD jack when connecting cables or performing maintenance on this device.

⚠ 靜電提醒：

設備損壞的風險

為了防止靜電放電的破壞，在此設備上連接纜線或執行維護時，始終戴上防靜電腕帶並連接到ESD插孔。

KCC Notice (Republic of Korea only)

This device has been approved for use in Business applications only per the Class A requirements of the Republic of Korea Communications Commission (KCC). This device may not be sold for use in a non-business application.

For Class A:

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

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おり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。
- 同梱されております付属の電源コードを他の機器には使用しないでください。上記注意事項を守らないと、死亡や大怪我など人身事故の原因となることがあります。

Información NOM (únicamente para México)

La información siguiente se proporciona en el dispositivo o en los dispositivos descritos en este documento, en cumplimiento con los requisitos de la Norma Oficial Mexicana (NOM):

Exportador:	Avaya Inc. 4655 Great America Parkway Santa Clara, CA 95054 USA
Importador:	Avaya Communication de México SA de CV Av. Presidente Masarik 111 Piso 6 Col Chapultepec Morales Deleg. Miguel Hidalgo México D.F. 11570
Embarcar a:	Model 9006AC: 100-120 VCA, 47-63 Hz, 13.3 A (100 VCA) - 11.2 A (120 VCA) max. por fuente de poder 200-240 VCA, 47-63 Hz, 11.8 A (200 VCA) – 9.9 A (240 VCA) max. por fuente de poder

NOM Statement (Mexico only)

The following information is provided on the devices described in this document in compliance with the safety requirements of the Norma Oficial Mexicana (NOM):

Exporter:	Avaya Inc. 4655 Great America Parkway Santa Clara CA 95054 USA
Importer:	Avaya Communication de México, S.A. de C.V. Av. Presidente Masarik 111

Piso 6
Col Chapultepec Morales
Deleg. Miguel Hldalgo
México D.F. 11570

Input:

Model 9006AC:

100-120 VAC, 47–63 Hz, 13.3 A (100 VAC) - 11.2 A (120 VAC)
maximum for each power supply

200-240 VAC, 47–63 Hz, 11.8 A (200 VAC) – 9.9 A (240 VAC)
maximum for each power supply

National Environmental Statement of Compliance

The WEEE Directive 2002/96/EC and RoHS (Restriction of Hazardous Substances) Directive 2002/95/EC set collection, recycling and recovery targets for various categories of electrical products and their waste.

Restriction on Hazardous Substances Directive Compliance Statement

The Restriction on Hazardous Substances Directive (RoHS) (2002/95/EC), which accompanies the WEEE Directive, bans the use of heavy metals and brominated flame-retardants in the manufacture of electrical and electronic equipment. Specifically, restricted materials under the RoHS Directive are Lead (including solder used in PCB's), Cadmium, Mercury, Hexavalent Chromium, and Bromine.

Avaya declares compliance with the European Union (EU) RoHS Directive (2002/95/EC) in that Lead, which is a restricted hazardous substance, is used only in accordance to the exemption(s) to Article 4(1), item 7 granted by the European Union (EU) RoHS Directive (2002/95/EC) in the Annex—"lead in solders for network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunication".

WEEE Directive Compliance Statement



This product at end of life is subject to separate collection and treatment in the EU Member States, Norway, and Switzerland and therefore is marked with the symbol shown at the left. Treatment applied at end of life of these products in these countries shall comply with the applicable national laws implementing Directive 2002/96/EC on Waste of Electrical and Electronic Equipment (WEEE).

Avaya declares compliance with the European Union (EU) WEEE Directive (2002/96/EC).

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 chassis installation on Avaya Virtual Services Platform 9000. This document also specifies requirements, initial preparation, chassis operations, processes, technical specifications, and safety requirements.

Purpose of this document

Chapter 3: New in this release

The following sections describe the changes in *Avaya Virtual Services Platform 9000 Installation—Chassis*, NN46250–304 for Release 3.3.

Features

There are no feature-related changes.

Other changes

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

Regulatory information

[Información NOM \(únicamente para México\)](#) on page 12 is updated.

[National Environmental Statement of Compliance](#) on page 13 is added.

Documentation updates

The following sections are updated and added:

- [Virtual Services Platform 9000 9012 chassis](#) on page 23.
- [Protecting modules](#) on page 29.
- [Data center floor plan](#) on page 30.
- [Optimizing cooling in a data center](#) on page 32.
- [Other cooling considerations](#) on page 38.
- [Monitoring and temperature alarms](#) on page 39.
- [Reduce the chassis weight](#) on page 49.

Cooling modules

The model names for cooling modules are updated in software and documentation. For more information, see:

- [Airflow in the 9012 chassis](#) on page 34
- [Part numbers](#) on page 67
- [Component input power](#) on page 70

Chapter 4: 9012 chassis installation fundamentals

The Avaya Virtual Services Platform 9000 chassis consists of a sheet metal enclosure, a midplane, cooling modules, and power supplies. The number of power supplies needed depends on the specific hardware configuration and redundancy needs.

Virtual Services Platform 9000 9012 chassis

The front of the Virtual Services Platform 9000 chassis has ten slots for interface modules and two slots for Control Processor (CP) modules. Slots are numbered from top to bottom. The front of the Virtual Services Platform 9000 chassis also has two bays for cooling modules and six bays for power supplies. The following figure shows the front view of the chassis.

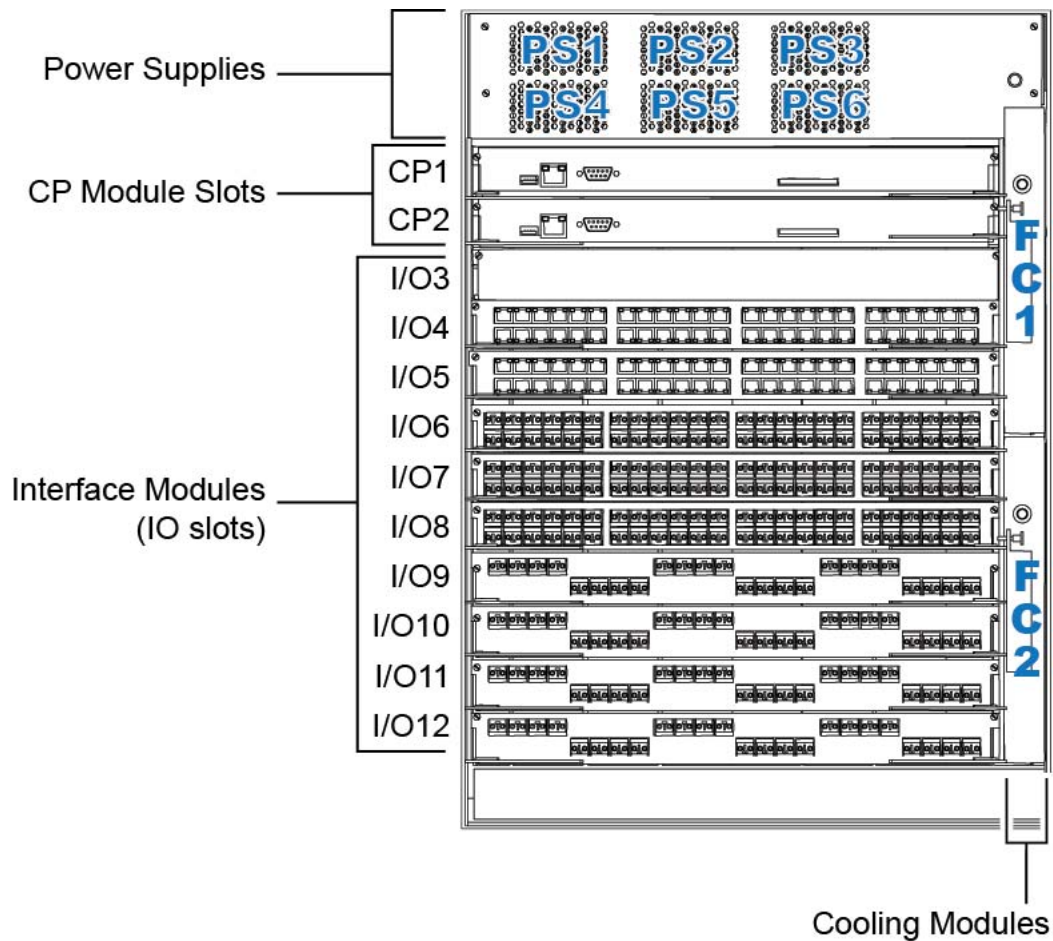


Figure 1: Virtual Services Platform 9000 chassis front view

In the rear, the chassis has six slots for Switch Fabric (SF) modules and two auxiliary slots for future use. Rear slots are numbered from right to left. The rear also has two bays for cooling modules. There are six separate IEC 60320-C20 AC power inlets and six power switches which connect the main AC power to their corresponding power supply bays. The following figure shows the rear view of the chassis. The ground bonding location is located in the bottom right part of the chassis.

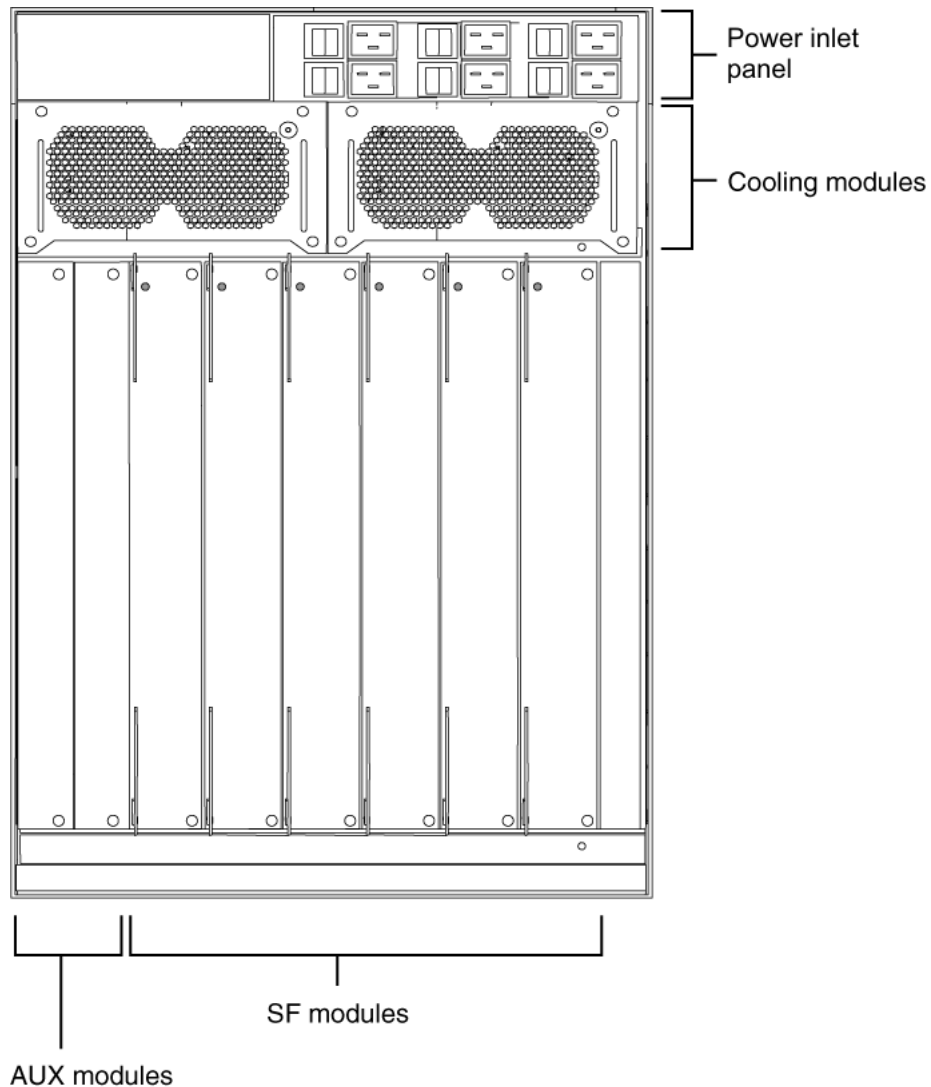


Figure 2: Virtual Services Platform 9000 chassis rear view

Power supplies

This section describes the 9006 AC power supply, the power inlets and how to plan for feed and power supply redundancy.

- [9006AC power supply](#) on page 26
- [Power supply and power inlet locations](#) on page 26
- [Power supply redundancy](#) on page 26
- [Power feed redundancy](#) on page 27

9006AC power supply

The Avaya Virtual Services Platform 9000 chassis has six bays for AC power supply installation. Install the power supplies in the front of the chassis and plug the power plugs in the corresponding power inlets at the back of the chassis.

To configure a Avaya Virtual Services Platform 9000 system, consider the total power consumption to ensure proper system performance. The total input power consumption of the components (modules and cooling modules) must not exceed the output power rating of the power supply. For more information about the power consumption of each module, see [Component input power](#) on page 70.

When the Avaya Virtual Services Platform 9000 operates in a redundant power configuration, you can upgrade or replace power supplies while the chassis remains in operation.

For more information about power supply installation and electrical specifications, see *Avaya Virtual Services Platform 9000 Installation — AC Power Supply, NN46250-303*.

Power supply and power inlet locations

In the front of the chassis, the power supply bays are numbered from left to right, so 1, 2, and 3 on the first row, and 4, 5, and 6 on the second row.

The power inlets in the back of chassis are numbered from left to right, so 3, 2, and 1 on the first row, and 6, 5, and 4 on the second row (as viewed from the back).

For more information about grounding the Virtual Services Platform 9000 and related precautions, see [Grounding the chassis](#) on page 59.

Power supply redundancy

This section uses "n" to represent the number of power supplies required to operate the power system without redundancy, and "m" to represent the number of redundant power supplies required to improve the system availability. You can configure the Virtual Services Platform 9000 for $n + n$ redundancy by means of distributing an "A" power feed to the "A" power shelf (which comprises of AC power supplies 1, 2, and 3), and a "B" power feed to the "B" power shelf (which comprises of AC power supplies 4, 5, and 6). Apply this power configuration protection against simultaneous power supply and individual power feed failure. Use $n + m$ redundancy to ensure internal redundancy in the event of a power supply failure. Install an additional power supply (additional to what you require to power your hardware configuration) to provide $n + m$ redundancy. If two separate power feeds are not available at the site power distribution, you can only configure the system for $n + m$ redundancy.

Use $n + n$ redundancy to ensure redundancy in the event that an external failure occurs (for example, an entire power feed within the building fails). To ensure $n + n$ redundancy, you must install power supplies to provide twice the power requirements of your hardware configuration.

Important:

The system reserves the following power requirements:

- 80 Watts (W) each for the primary and secondary Control Processor (CP) modules
- 70 W each for the Switch Fabric (SF) modules located in slots 1 and 4

- 150 W each for the two IO fan trays
- 65 W each for the two SF fan trays

Refer to [Component input power](#) on page 70 for information on power consumption.

Power feed redundancy

Avaya recommends that you use two separate power feeds to plug the AC power supplies. The power supplies in the 9012 chassis are divided in two shelves. The top shelf (shelf "A") consists of power supplies 1, 2, and 3, while the bottom shelf (shelf "B") consists of power supplies 4, 5, and 6. If you use n + n redundancy and plug the power supplies from the top shelf in power feed "A", and the power supplies from the bottom shelf in power feed "B", this gives you power feed redundancy. Each shelf can provide 3600 W or 6000 W, depending if you use 100-120 V AC or 200-240 V AC. Ensure that each power supply connects to a dedicated breaker.

Cooling modules

The Avaya Virtual Services Platform 9000 chassis uses four cooling modules. Two cooling modules at the front of the chassis cool the CP and interface modules. Two cooling modules at the back of the chassis cool the SF modules.

You install the cooling modules for the interface and CP modules at the front of the chassis. The cooling modules plug into the midplane. The cooling air flows from left to right, as viewed from the front. A green LED indicates correct fan operation.

You install the cooling modules for the SF modules at the back of the chassis. The cooling air flows from front to back to cool the SF and auxiliary modules.

See *Avaya Virtual Services Platform 9000 Installation — Cooling Modules, NN46250-302* for information about installing cooling modules.

Switch Fabric module

Virtual Services Platform 9000 requires you to install a minimum of three SF modules in the chassis. Avaya recommends that you install a minimum of four SF modules for redundancy. You must install an SF module in slots SF1 and SF4; install a third SF module in one of the remaining slots.

Each SF module connects to the ten different interface module slots and the two CP module slots simultaneously. You can install a maximum of six SF modules in each chassis in a 5 + 1 redundancy configuration.

The SF module slot numbers increment from right to left when you view the chassis from the rear. The slot location determines the module function. Slots 1 and 4 provide the arbitration

and scheduling for traffic (and therefore, bandwidth management) from the interface modules and provide redundancy when both slots are populated. The other slots provide additional bandwidth.

Important:

Avaya recommends that you install SF modules in both Slot 1 and Slot 4 (to provide redundancy). You must have a functioning SF module in at least one of those slots for proper operation of the interface modules.

Bandwidth is dependent on your hardware configuration.

Control Processor module

The 9080CP module performs the following tasks:

- runs all high level protocols, for example Border Gateway Protocol (BGP) and Open Shortest Path First (OSPF)
- distributes the routing update
- manages and configures the interface and SF modules
- maintains and monitors the health of the chassis
- displays the status of the modules installed at the back of the chassis using LEDs

Virtual Services Platform 9000 allows you to hot swap the external storage devices (compact flash memory card or the USB devices). Any sudden removal of external storage devices can cause data loss or damage the hardware. For more information on the removal of external storage devices, see [Removing external storage devices from the CP module](#) on page 57.

For more information about installing CP modules, see *Avaya Virtual Services Platform 9000 Installation — Modules, NN46250-301*.

Protecting modules

Virtual Services Platform 9000 modules are larger and heavier than Ethernet Routing Switch 8000 series modules.

Handle the modules used in Virtual Services Platform 9000 with care. Take the following items into consideration when you handle modules:

- To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an ESD jack when connecting cables or performing maintenance on this device.
- Always place the modules on appropriate antistatic material.
- Do not touch the top of the module or you can damage pins, components, and connectors. Doing so can result in equipment damage.
- Damage to a module can occur if it is bumped into another object, including other modules installed in a chassis. Use both hands to support modules.
- Support the module from underneath with two hands. Do not touch the top of the module. Do not touch the pins or electrical connections.
- Do not stack modules one on top of the other when you move them.
- Be careful not to bump module connectors against the action levers of an adjacent module. Damage to connectors can result.
- 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.

Site requirements

Ensure that the installation site meets the space requirements described in this section. For more information about environmental and electrical requirements, see [Technical specifications](#) on page 69.

The installation site must provide sufficient free space around the chassis to ensure proper ventilation and service access.

You can install up to three Avaya Virtual Services Platform 9000 chassis in a single rack. Although there are no space requirement between units, leave enough room between units to remove and replace modules.

Important:

Chassis units should be installed from the bottom up to ensure racks do not become top heavy and fall over.

Plan ahead to have three people present to lift the chassis. The chassis weighs in excess of 160 lb (73 kg) and requires a minimum of three people to lift. A mechanical lift should always be used when one is available.

Use the following guidelines to plan front and rear access:

- For proper ventilation, Avaya recommends 36 inches (in.) (91 centimeters [cm]) of free space in both the front and the back of the machine, and also 6 in. (15.2 cm) on each side.
- Air inlet temperature to each chassis must be within the specified range.

Important:

To ensure efficient cooling, both the air intake (left side of the chassis) and air exhaust (right side of the chassis) require a minimum of 6 in. (152.4 mm) of distance from any adjacent equipment which would either obstruct air flow or provide preheated air to the intake side.

Each power supply must operate from a dedicated branch circuit. For $n + n$ redundancy, you must connect half the branch circuits on one power feed, and the other half of the branch circuits on a separate power feed. On top of power supply redundancy, this also provides power feed redundancy.

Data center floor plan

Typically a data center optimizes airflow through the creation of hot aisles and cold aisles.

The cold aisles can have a raised floor, which consists of tiles with perforations to allow cold air to enter the devices.

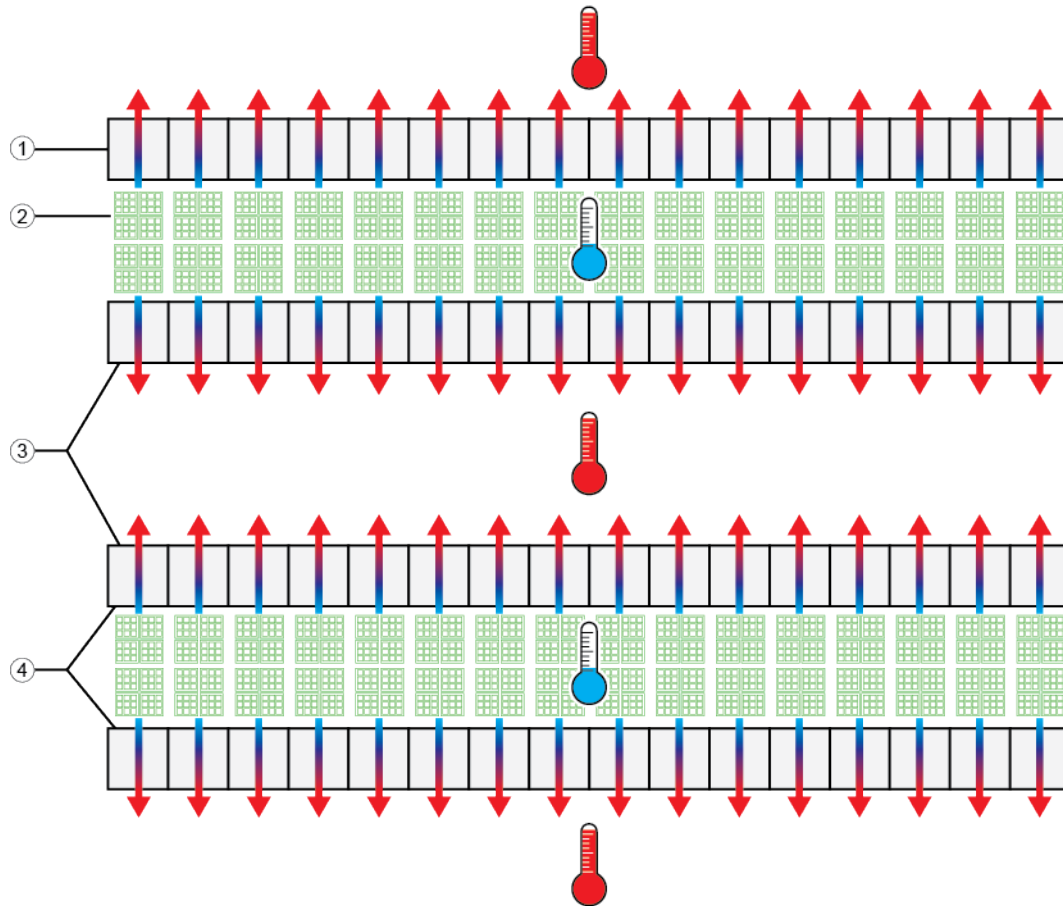


Figure 3: Data center floor plan of hot and cold aisles

Diagram	Description
1	Chassis racks
2	Cold aisle floor tiles in a raised floor
3	Back of chassis
4	Front of chassis

In a data center configuration, the front of equipment faces the cold aisle, while the rear of the equipment faces the hot aisle. The chassis take in cold air from the cold aisle and discharge hot air into the hot aisle.

Each 9012 chassis takes in cold air from the left and discharges hot air to the right.

The typical data center layout works well for front-to-back cooling, but not as well for side-to-side cooling.

In this typical setup, if you place each 9012 chassis in a row from left to right, then the chassis to the left discharges hot air into the cool intake of the chassis to the right. This installation does not optimize cool airflow.

Optimizing cooling in a data center

To optimize left-to-right cooling, perform the following tasks:

- Increase the space between each 9012 chassis
- Relocate the cooling floor tiles to improve cool air movement into the side of the 9012 chassis
- Add baffles to redirect the hot air the 9012 chassis discharges from the right side to the hot aisle at the back

For instance, in the following diagram the hot and cold aisles remain, but now space exists between some of the 9012 chassis. Baffles are added to redirect air from the side to the back of the chassis into the hot aisles. Cooling tiles are relocated near the cool air intake to improve cooling.

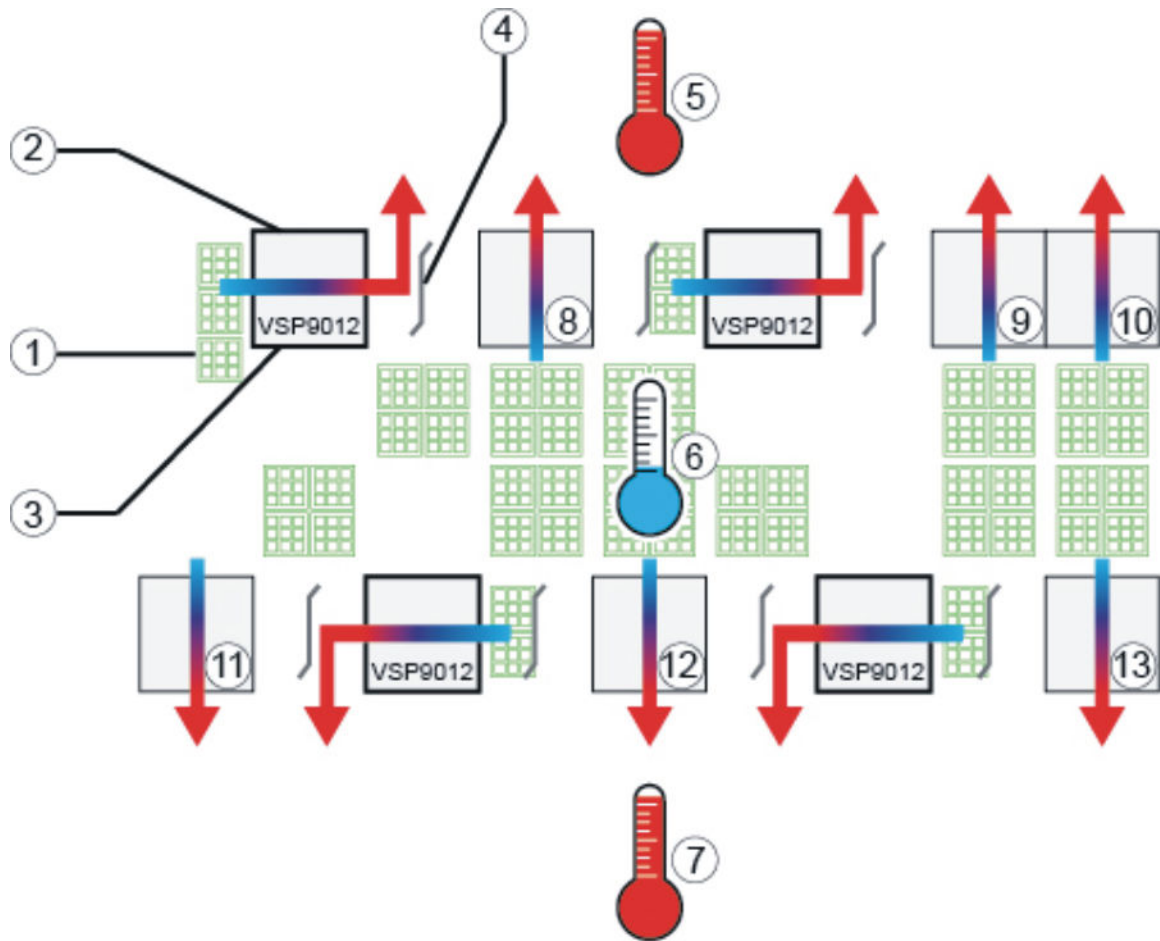


Figure 4: Data center with optimized cooling

Table 1: Data center with optimized cooling

Diagram	Description
1	Cooling tiles
2	Back of 9012 chassis
3	Front of 9012 chassis
4	Baffle
5, 7	Hot aisles
6	Cold aisle
8 to 13	Other equipment, front to back cooling

Airflow in the 9012 chassis

Airflow in the Virtual Services Platform 9000 9012 chassis is from left-to-right (as viewed from the front) for I/O modules and front-to-back for switch fabric cards and power supplies.

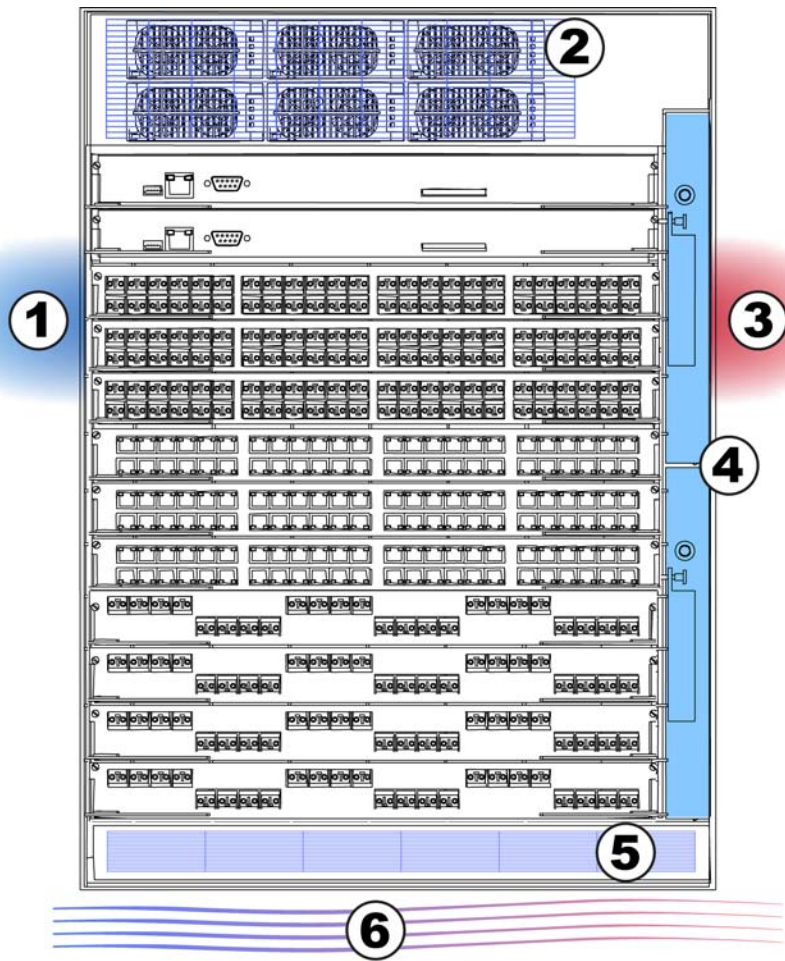


Figure 5: Front of the 9012 chassis

Table 2: Front of the 9012 chassis

Diagram	Description
1	I/O module air inlet
2	Power supply fan air inlet
3	I/O module air exhaust
4	9012FC cooling modules

Diagram	Description
5	Switch Fabric module air inlet
6	Airflow — left to right

Left-to-right cooling

Airflow moves from left to right to cool the Control Processor and interface modules. Two 9012FC cooling modules, located on the front right side of the 9012 chassis, provide this air movement and have adjustable fan speed that depends on the system temperature.

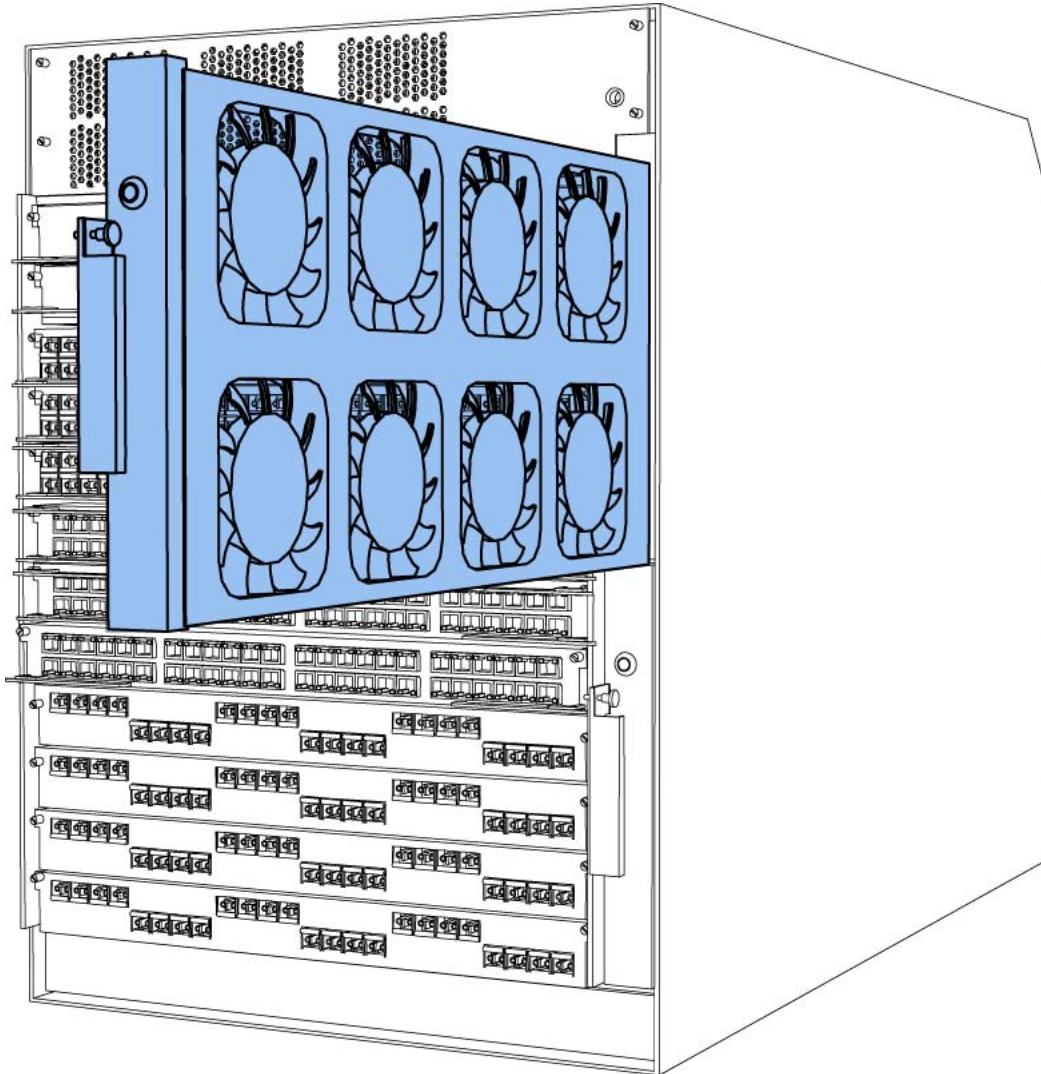


Figure 6: 9012FC cooling module

Each 9012FC cooling module has eight fans. The platform polls all line card and CP card sensors and adjusts the 9012FC fan speed accordingly.

Front-to-back cooling

Airflow moves from front-to-back to cool the Switch Fabric and auxiliary modules. Two 9012RC cooling modules, at the top back of the 9012 chassis, provide the air movement and have adjustable fan speed that depends on system temperature.

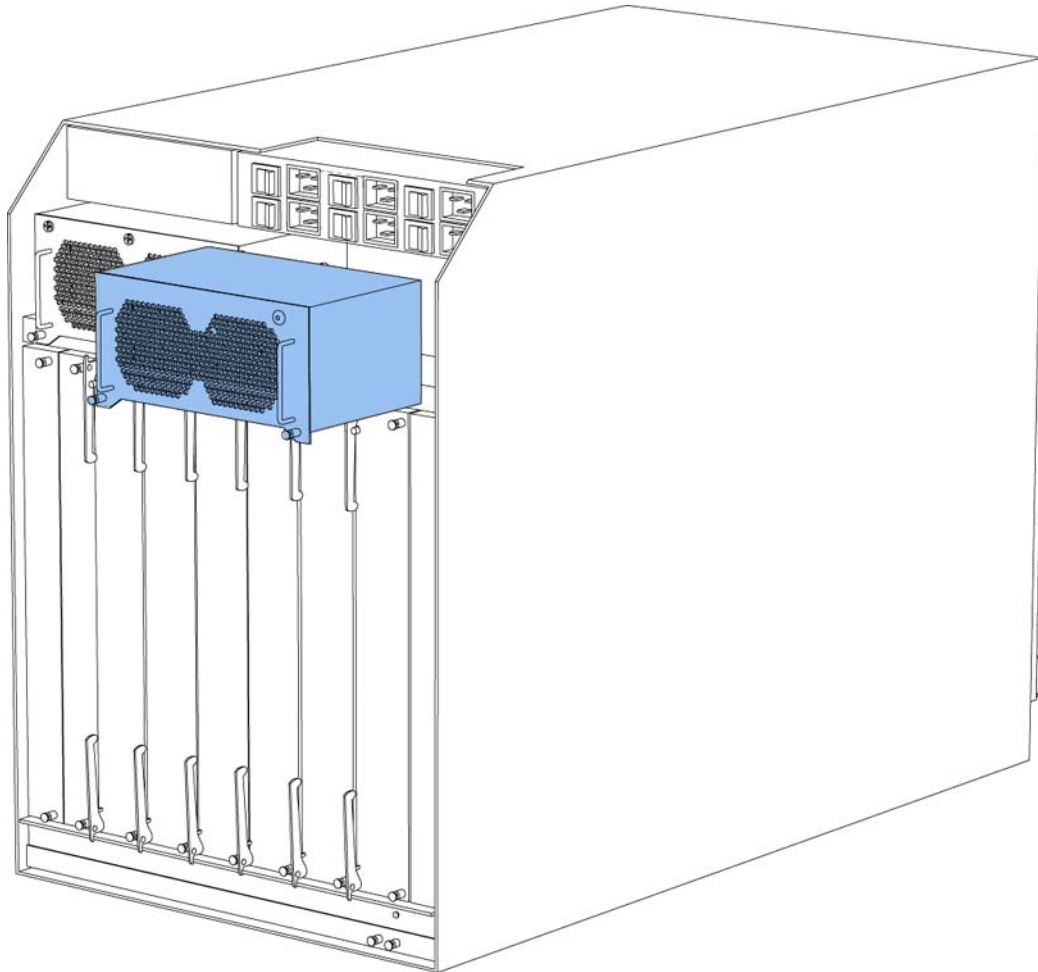


Figure 7: 9012RC cooling module

In the 9012 chassis, two fans exist in each 9012RC cooling module and pull air from front-to-back. The platform polls all Switch Fabric card sensors and adjusts the 9012RC fan speed accordingly.

Note:

Do not place the 9012 chassis directly against a wall, equipment, or other obstruction. Avaya recommends 36 inches (91 centimeters) of free space in both the front and back of the machine and also 6 inches (15.2 centimeters) on each side extra). Depending on the circumstances, increase the free space at the side to allow for more airflow or cool airflow into the 9012 chassis.

9012 chassis placement

If you place each 9012 chassis in a row from left to right, then the chassis to the left discharges hot air into the cool intake of the chassis to the right.

To optimize airflow, stagger each chassis in racks and add a baffle that redirects hot air discharged by a chassis from the side to the hot aisle at the back.

Note:

Before setting up your data center plan airflow of cool air into each chassis.

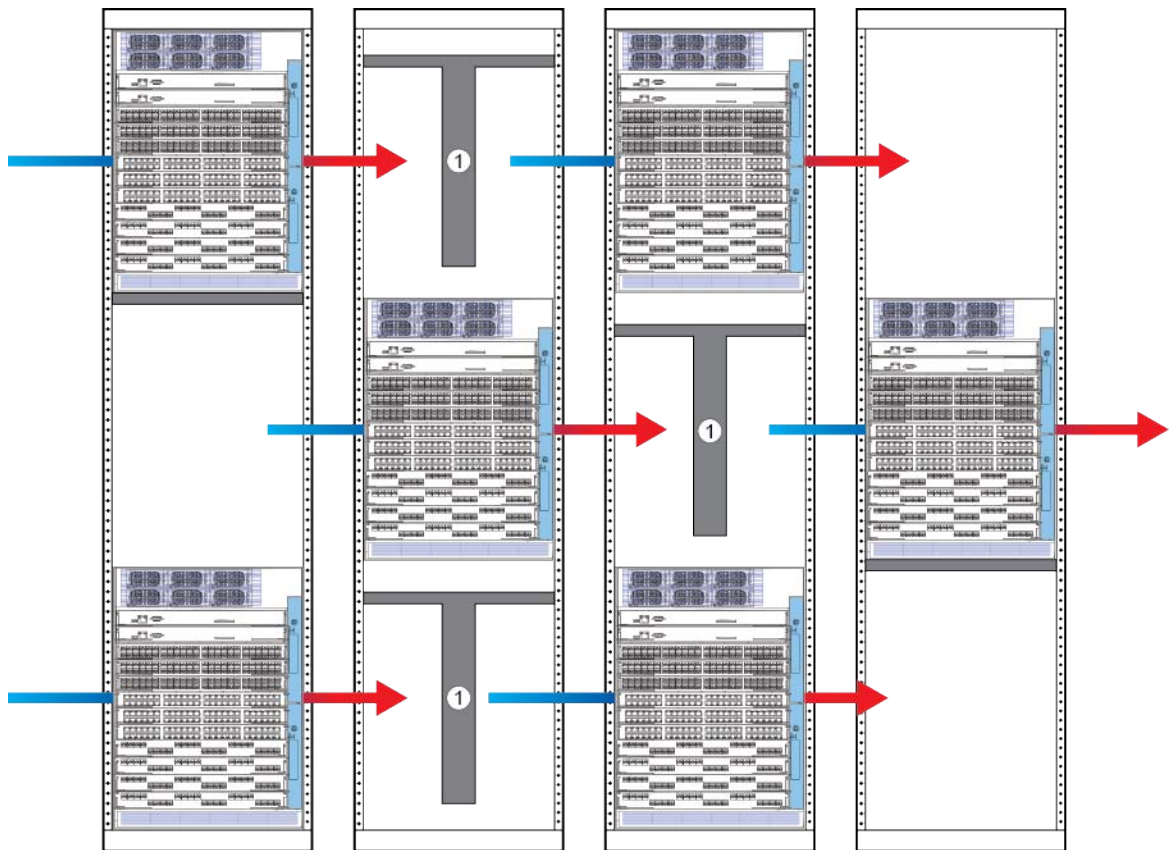
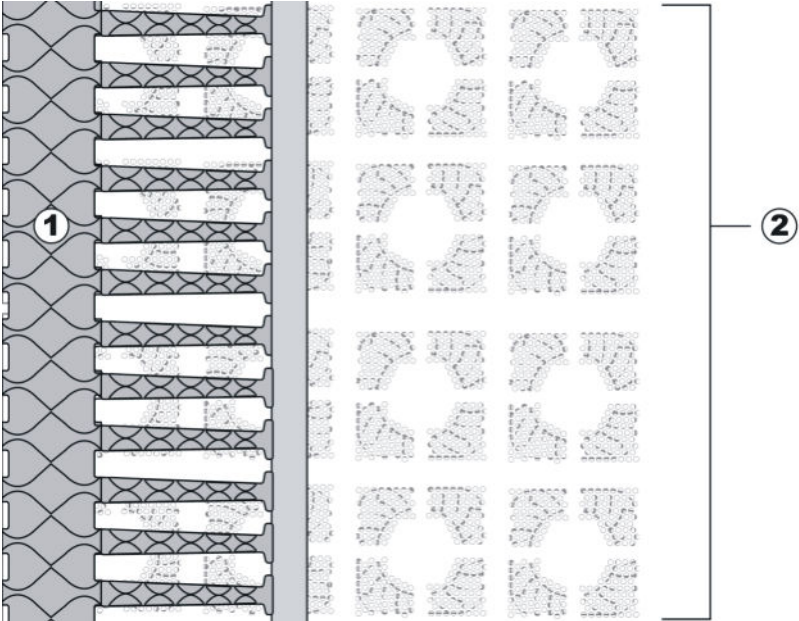


Figure 8: Arrangement of 9012 chassis in rack to optimize airflow

Other cooling considerations

This table offers suggestions for other cooling considerations.

Situation	Considerations				
Raised floors versus non-raised floors for cooling	If you do not have raised floors for cooling you need to ensure air is injected into the cool intake at the left side. You can add extra stand alone fans to ensure air enters the chassis.				
Adjacent equipment	Consider hot airflow from other pieces of equipment in the vicinity of the 9012 chassis. Computers, Telecommunications, and other equipment located above and below the 9012 chassis can discharge hot air onto the chassis.				
Blocked cooling modules	Placement of the 9012 chassis near walls or placement of exterior items for cable management can decrease the capacity of the cooling modules. For instance, the following diagram shows how cable management blocks two out of four fans in a row. As a result, the cooling module can only offer 50 per cent of the cooling airflow.  Figure 9: Cooling module cable management <table><tr><th>Diagram</th><th>Description</th></tr><tr><td>1</td><td>Cable management blocking fan</td></tr></table>	Diagram	Description	1	Cable management blocking fan
Diagram	Description				
1	Cable management blocking fan				

Situation	Considerations	
	Diagram	Description
		2 Fans
Clearance	Do not place the 9012 chassis directly against a wall, equipment, or other obstruction. Avaya recommends 36 inches (91 centimeters) of free space in both the front and back of the machine and also 6 inches (15.2 centimeters) on each side. However, dependent on circumstances, increase the space at the side of the 9012 chassis to improve airflow.	

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 degrees Celsius (°C)). The module alarms are cleared after the module temperature falls below the threshold value (2 degrees below 60 C). The module shuts down at 65 C.

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 Zone-2 Zone-3 Zone-4 Zone-5 Highest Lowest Alarm Shutdown
Temp Temp Temp Temp Temp Temp Temp Threshold Threshold
1 27 24 -- 26 25 27 24 60 65
4 29 26 30 28 26 30 26 60 65
SF4 26 -- -- 28 -- 28 26 60 65
```

Each of the zones correspond to temperature sensors on the modules. For instance, the I/O module has five temperature zones. Zones 1, 2, and 3 are inlet sensors and 4 and 5 are outlet air sensors. The SF has two temperature sensors and the CP has four temperature sensors.

The alarm threshold is the temperature the zone can reach before the device moves from normal to alarm mode. The shutdown threshold is the temperature that causes the module to shutdown if reached on any sensor in a module.

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 59 °C (2 degrees 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.

Hardware requirements

This section includes information about the hardware shipped with the Avaya Virtual Services Platform 9000 chassis.

Shipped Assembly 9012 12 Slot Chassis hardware

In addition to the Avaya Virtual Services Platform 9000 chassis, your shipping container contains several hardware accessories. Verify that the items in the shipping container match those on the shipment packing list.

Use the following table as a checklist when you verify the contents of the shipping container. See [Part numbers](#) on page 67 for information about ordering replacement parts.

Table 3: 9012 chassis shipping accessories

Check	Accessory	Usage
	9012 chassis	
	Ten interface and Control Processor (CP) filler panels	Filler panels must be installed in unused slots.
	Four Switch Fabric (SF) filler panels	Filler panels must be installed in unused slots.
	Two Auxiliary card filler panels	Filler panels must be installed in unused slots.
	Regulatory label	
	Two SF fan trays	
	Two IO fan trays	
	One DB9 to DB9 connector	
	One accessory kit	

Check	Accessory	Usage
	One cable manager assembly	
	One generic label accessory kit	
	Screws and hardware:	The hardware required to mount the chassis in a rack depends on your rack type.
	12 Phillips-head screws 12 clip nuts	Mount the chassis to a rack rail. Use the clip nuts, if necessary.
	4 Phillips-head screws 4 hex nuts	Mount the installation shelf to a rack rail. Mount the installation shelf to a rack rail.
	4 pan-head screws	Install the cable management bracket.
	Installation shelf	Mount the Virtual Services Platform 9000 chassis in an equipment rack.
	One left front cable management bracket	Manage network interface cables.
	Grounding kit hardware	Connects the chassis to the ground of the rack.

The following figure illustrates the accessories in the chassis shipping container.

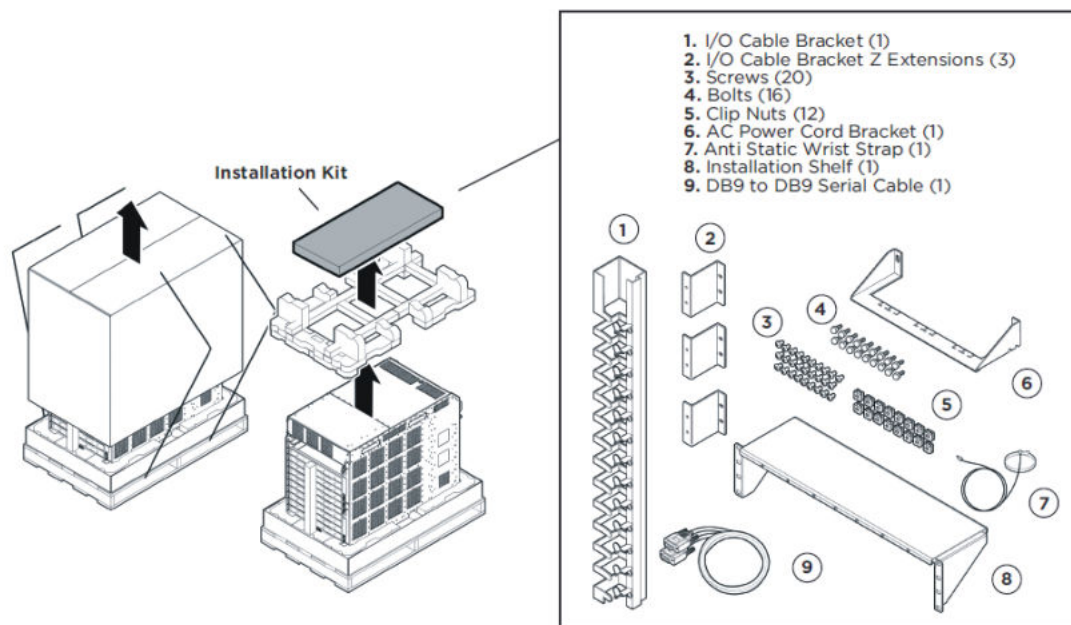


Figure 10: Accessories of the chassis shipping container

Other equipment

You will require items not included in the Virtual Services Platform 9000 chassis accessory package. The following sections describe these items. Before you install the Virtual Services

Platform 9000 hardware, ensure that you obtain all the cables, tools, and other equipment you need.

To configure startup options and to monitor the results of startup diagnostics, you can attach a PC, laptop, VT100 console or equivalent, such as a PC terminal emulator.

The hardware required to mount the Avaya Virtual Services Platform 9000 chassis in an equipment rack depends on your equipment rack type.

You need a Phillips screwdriver to install the Virtual Services Platform 9000 chassis in a standard rail-type equipment rack if using Avaya-supplied screws.

Install the device in standard EIA-310D 19-inch (in.) racks and ETSI 600-millimeter (mm) racks. The chassis fits a standard 19-in. rack using the mounting brackets that ship with the unit. To install the chassis in an ETSI 600-mm rack, you must provide mounting brackets to adapt the chassis to the rack.

If the rack does not use threaded rail holes, you must use the supplied clip nuts with the clip nut screws.

Avaya does not include the cables required for your network configuration in the Virtual Services Platform 9000 chassis accessory package.

Successful installation verification

In a normal power-up sequence, the LEDs light as follows:

- After you apply power to the switch, the corresponding power supply AC power LEDs and cooling module LED lights, and the Online LED for each interface module lights amber.
- Each interface module initiates a self-test during which the port and module LEDs display various patterns to indicate the progress of the self-test.
- Upon successful completion of the self-test (within 5 to 15 minutes after you apply power, depending on the module type), the interface module Online LED transitions from amber to green.

If the LEDs on the modules light in this sequence, your installation is successful. Contact your network administrator to verify that the Avaya Virtual Services Platform 9000 connects to the network.

If the LEDs do not light in this sequence, contact your local Avaya Technical Solutions Center.

Chassis installation time requirements

The following table lists the procedures you perform to install the Virtual Services Platform 9000 chassis and the estimated time you need to complete each procedure. Not all procedures are required for every Virtual Services Platform 9000 system.

Table 4: Installation procedures and time requirements

Procedure	Time requirement
Reducing the chassis weight	5 minutes
Attaching the mounting brackets	5 minutes
Mounting the chassis in a two-post rack	12–30 minutes
Installing the cable management brackets	5 minutes
Grounding the chassis	12 minutes

Chapter 5: 9012 chassis installation

About this task

This section describes how to install the Avaya Virtual Services Platform 9000 chassis.

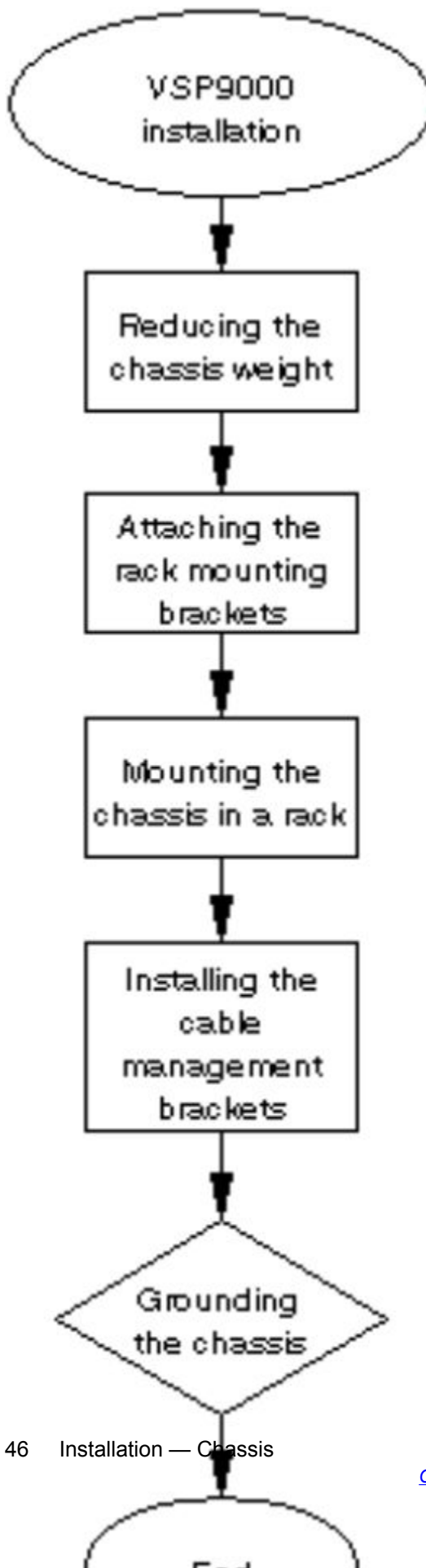
Before you begin the installation of the Avaya Virtual Services Platform 9000 chassis, ensure you have completed the following actions:

- Inspect all items for shipping damage. If you find items that are damaged, do not install the chassis. Call the Avaya Technical Solutions Center in your area.
- Verify that the items in the shipping container match those on the shipment packing list.
- Verify that you have all other required hardware.

Warning:

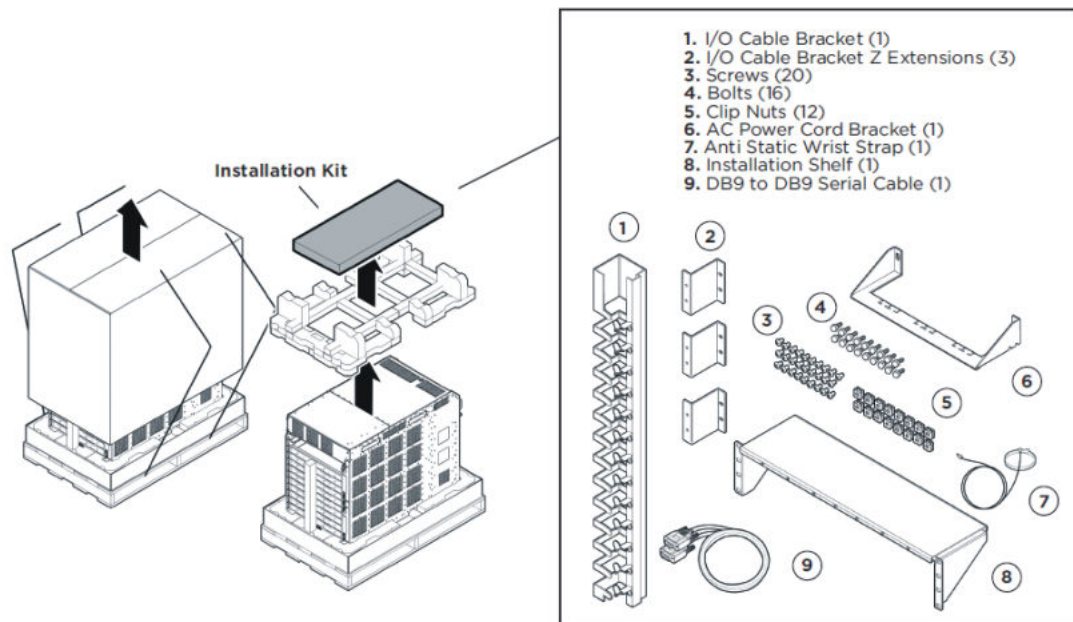
The procedures in this task flow should be performed by trained service personnel only.

The following task flow shows you the sequence of procedures you perform to install the chassis.



Unpack the installation kit

Unpack the installation kit and remove the included equipment.



Note:

Extra screws and bolts are included to support a variety of installation options. You may not need to use all of the hardware provided.

If the installation kit does not contain the above components, contact Avaya Support.

Install the installation shelf

About this task

The installation shelf is an optional item used for installation of the chassis in a rack. You can mount a chassis on top of another Virtual Services Platform 9000 chassis instead of using the installation shelf.

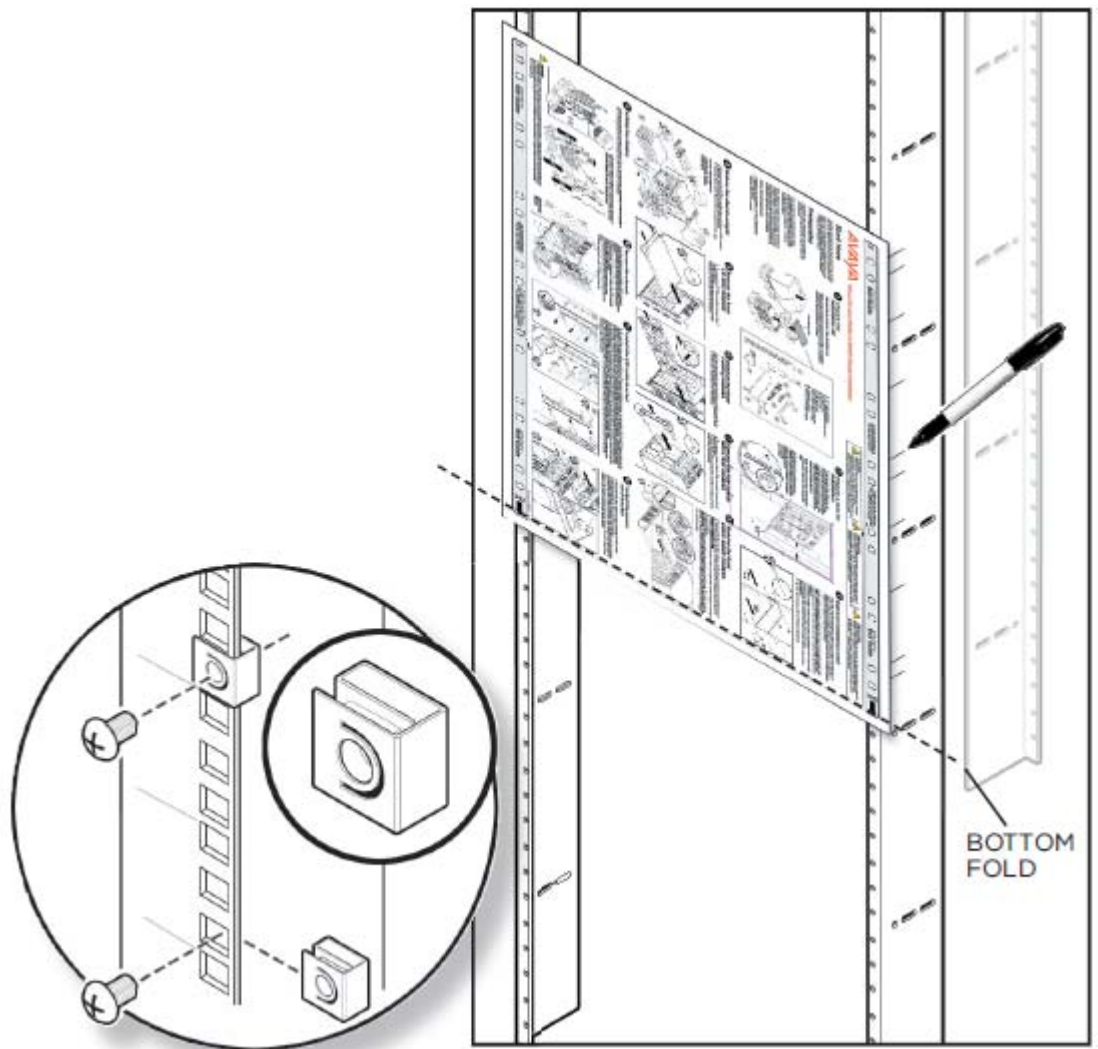
Procedure

1. Use the rail guides provided at the top and bottom of the installation poster to identify where you want the chassis bottom to rest, then mark that location and the location of the rail guide holes on the front of the rack. Start at the bottom of the rack and install subsequent chassis above it.

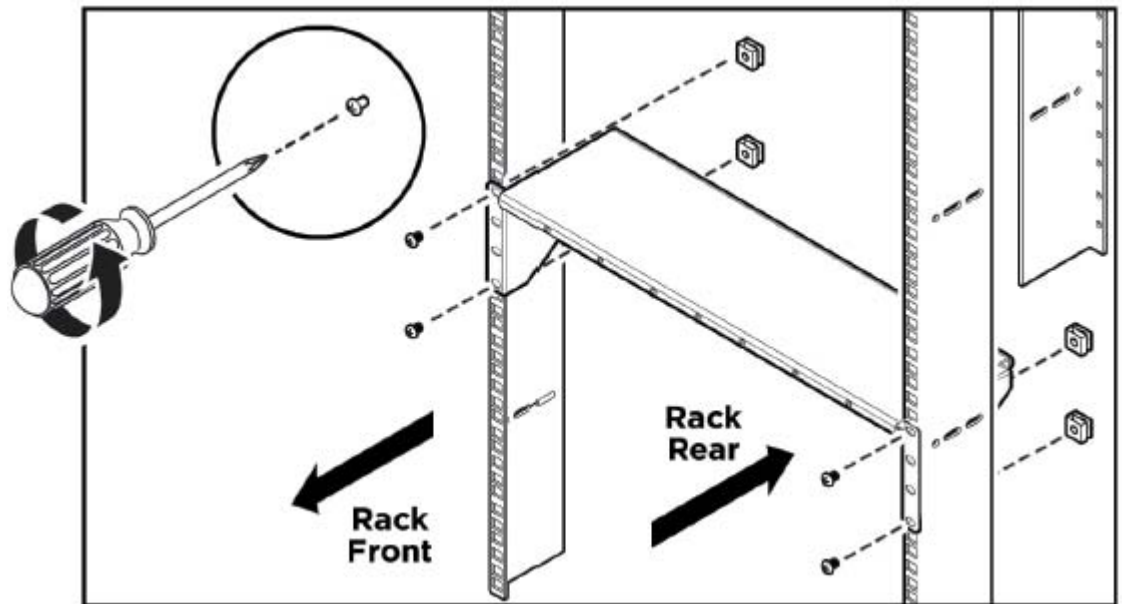
Note:

Folding or trimming off the margins of the poster will help with marking the rack.

2. If the holes in the vertical supports require clip nuts, insert a clip nut in each of the 14 locations where you marked the holes. Clip nuts are included. If necessary, use the clip nuts for your specific rack model.



3. Place the installation shelf at the mark on the rack, inside the rails. Hold the installation shelf in position, and then align the mounting rail with the two holes on each side of the vertical rack support.
4. Insert a Phillips screw through each installation shelf mounting hole and into the corresponding hole in the rack.
5. If using hex nuts, add a nut to each screw and tighten using a hex wrench.
6. Tighten each screw with a Phillips screwdriver.



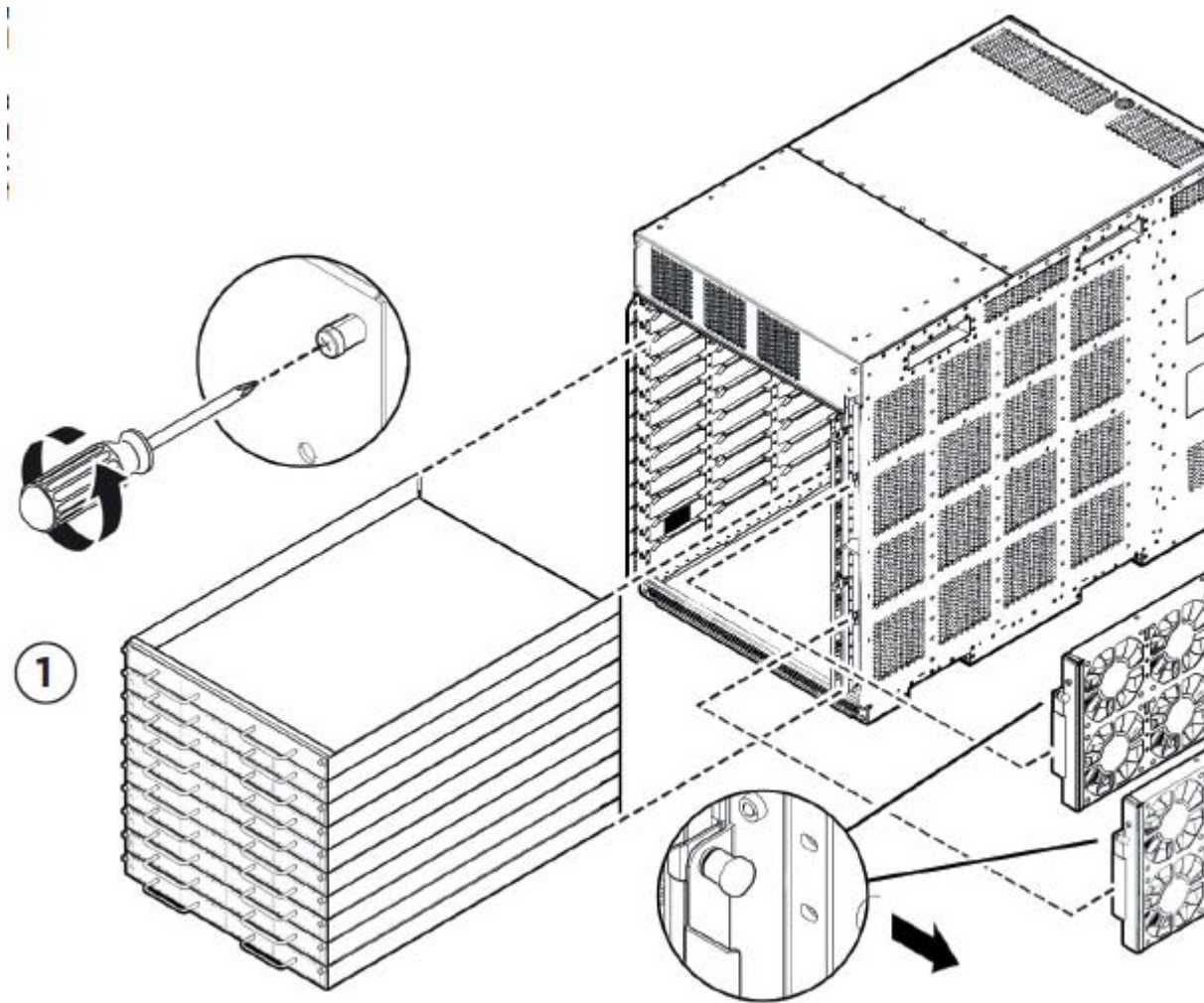
Reduce the chassis weight

About this task

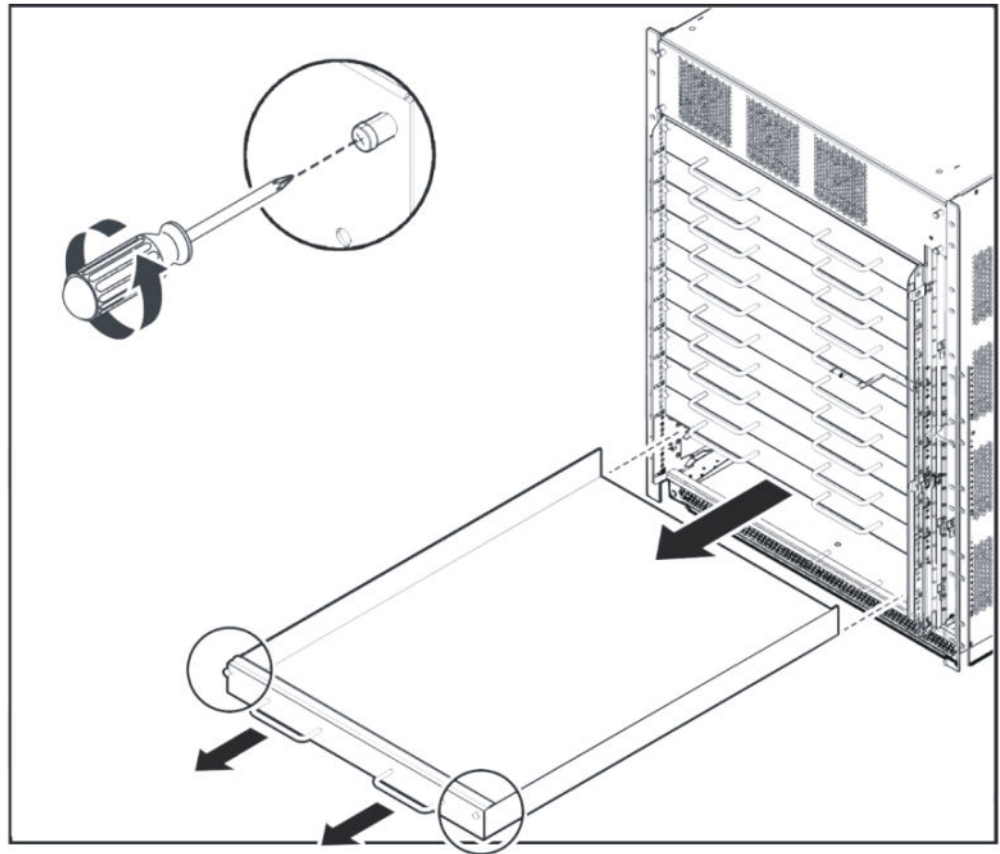
Reduce the chassis weight to make the chassis easier to lift and to reduce the risk of personal injury or equipment damage.

Procedure

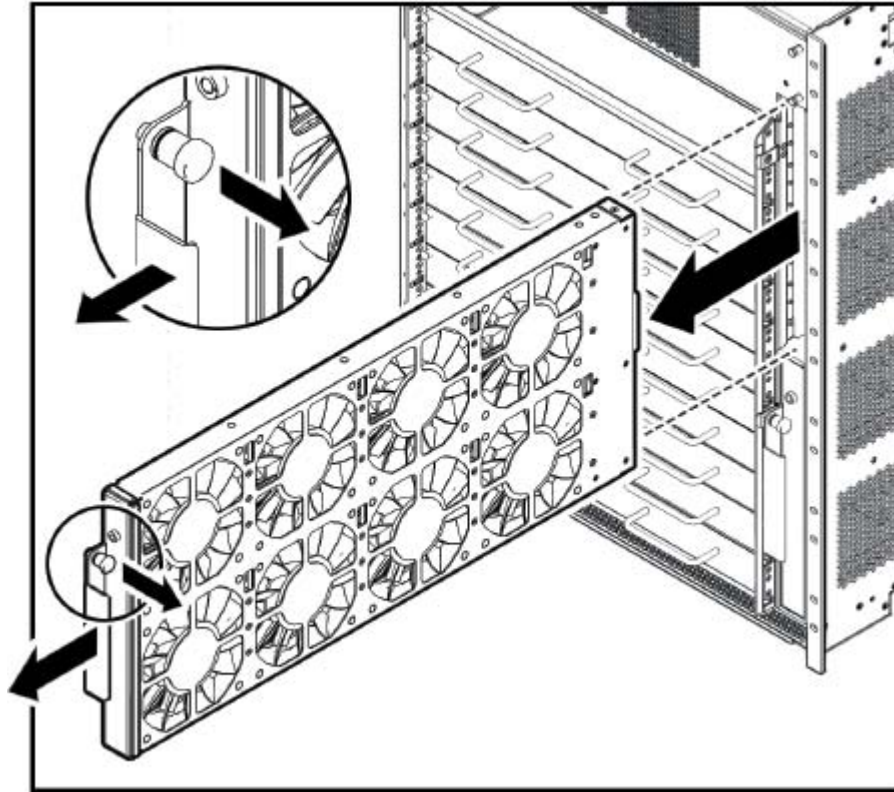
1. Remove the 10 I/O filler modules from the front of the chassis.
2. Remove the 2 cooling modules from the front of the chassis.



3. Unseat the I/O filler module by loosening the 2 captive screws, grasping the two handles, and gently pulling the module out and away from the chassis.



4. Remove the cooling modules by pulling the retaining pin that holds it in place while gently pulling the module's handle to move it out and away from the chassis.



Important:

Do not install additional components before mounting the chassis in the rack.

Important:

All unused slots should contain filler modules. Ensure filler modules removed to reduce the chassis weight are reinstalled after chassis installation.

Lift the chassis

About this task

The chassis weighs in excess of 160 lb (73 kg) and requires a minimum of three people to lift. Always use a mechanical lift when one is available.

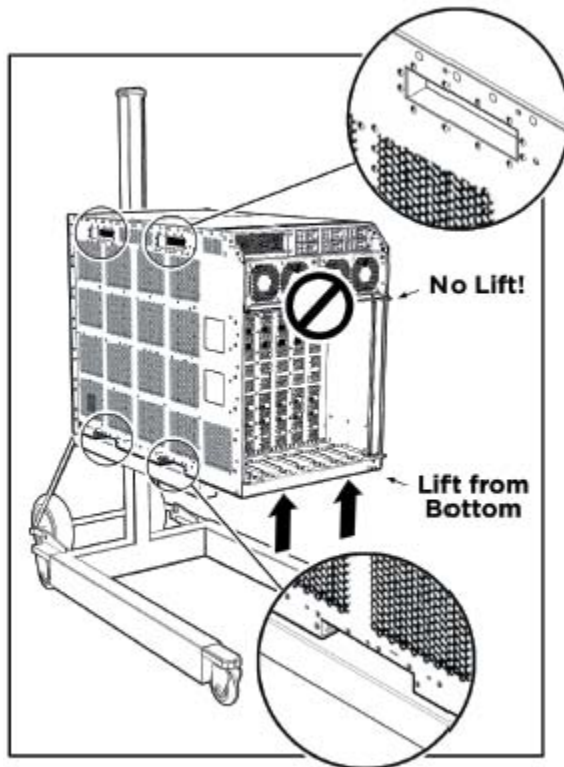


Figure 12: Lift the chassis

Use the recessed handles at the top and bottom of the chassis sides to lift the chassis. From the rear: Lift the chassis from the bottom only.

Important:

Reduce the weight of the chassis as much as possible before you lift it. Always use a mechanical lift when one is available. Ensure you have at least three people to lift the chassis. Use a third person to support the chassis from behind the rack, as you position the chassis on the shelf and hold it in place. Take care to lift the chassis from the bottom.

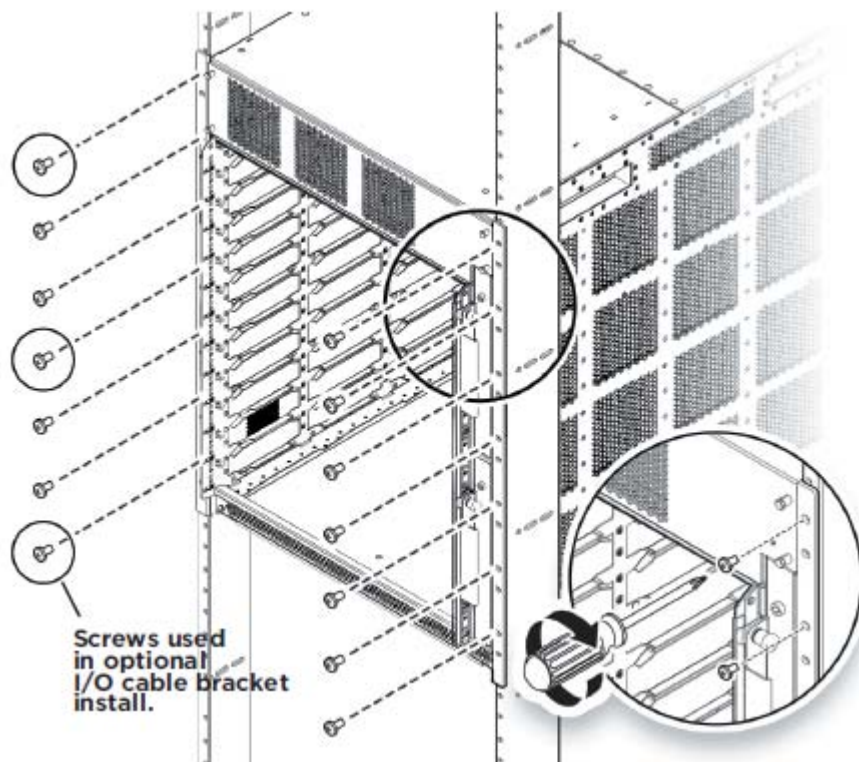
Secure the chassis

About this task

Mount the Avaya Virtual Services Platform 9000 chassis in a standard two-post or four-post equipment rack.

Procedure

1. Hold the Virtual Services Platform 9000 chassis in position and align the flanged end of the chassis mounting bracket with the holes on either side of the vertical rack support.
2. Ensure that the 7 hole pairs on either side of the rack vertical supports match horizontally.
3. Insert 4 phillips screws through each hole on the mounting bracket in the 7 screw positions in the flange and rack. If you'll be installing the optional I/O cable bracket then don't insert screws into the top (1st), middle (4th) and bottom (7th) screw positions of the left side flange and rack.
4. Tighten each screw with a Phillips screwdriver.



Assemble and install cable management brackets

About this task

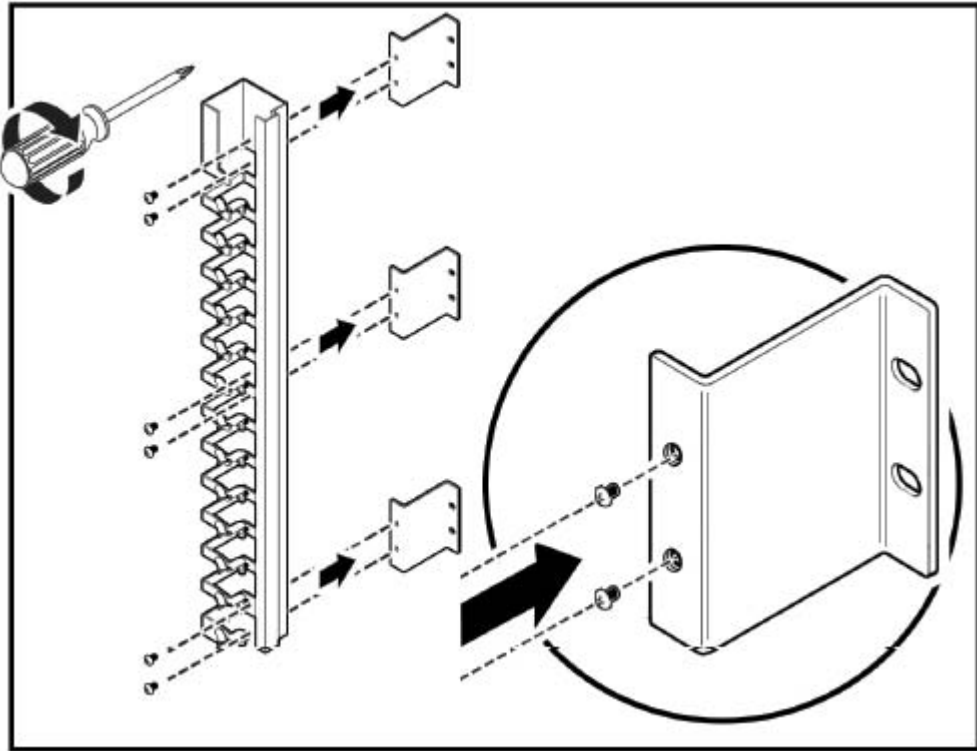
This procedure is used to install the I/O and power cable brackets. Use these brackets to keep cable clusters fastened and out of the way but still accessible for maintenance.

Important:

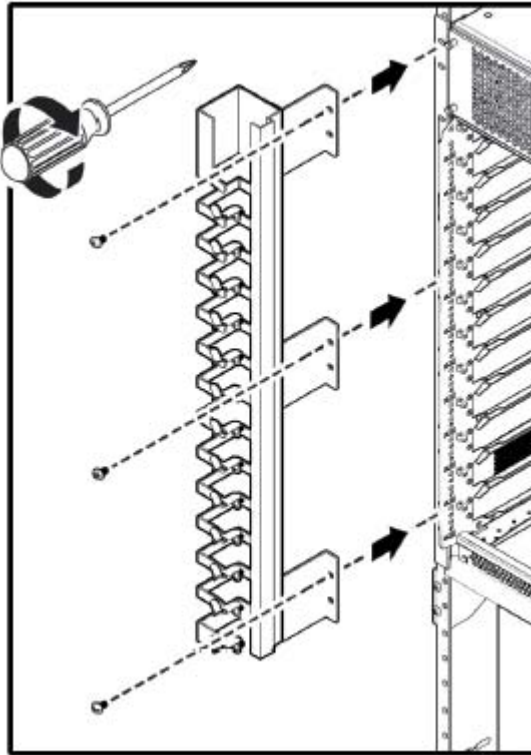
Do not attach any cables until after the bracket installation.

Procedure

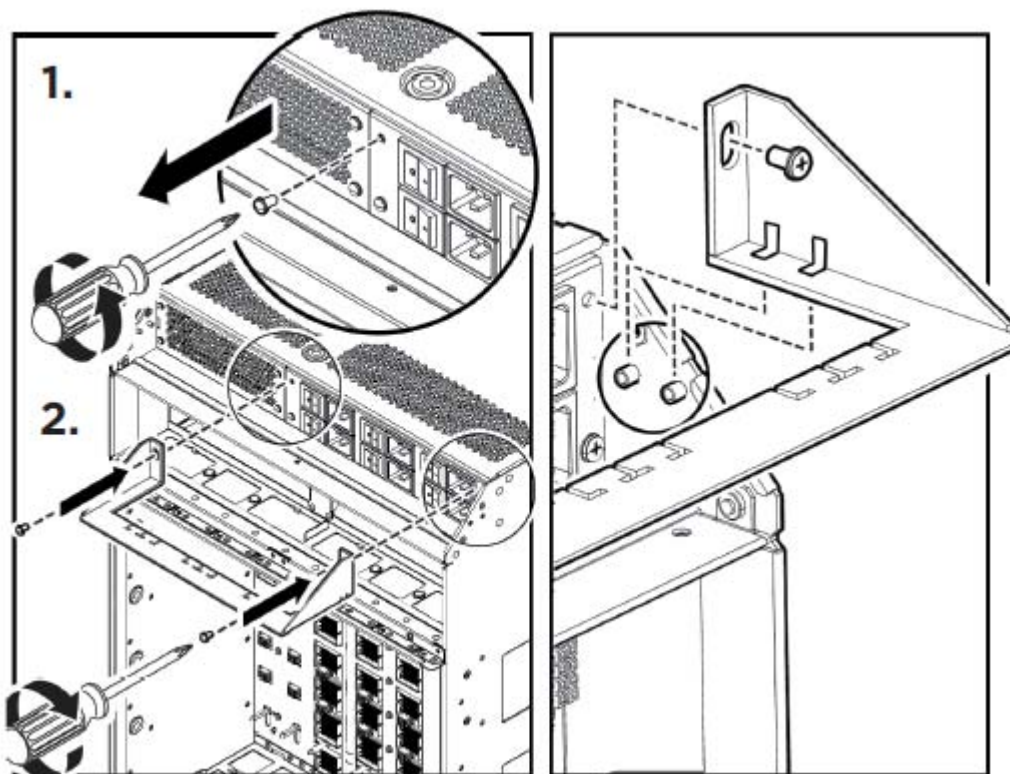
1. Attach the three Z brackets to the vertical cable bracket as shown below using 6 of the screws provided. Nuts are not required since the Z brackets are already threaded on one side for connection to the I/O cable bracket using screws alone.



2. Use 3 Phillips screws to fasten the I/O cable management assembly to the top, middle and bottom screw positions of the left flange and rail.



3. Remove the two upper screws from the power cable receptacle panel on the rear of the chassis.
4. Position the power cable bracket notches over the chassis positioning studs and reuse the two screws you removed to fasten the power cable bracket as shown. Do not attach any cables until after the bracket installation.



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.

About this task

Note:

Avaya recommends that you use the Avaya Compact Flash device (EC1411010-E6) with the VSP 9000 because it has been validated for proper operation on the VSP 9000. Avaya recommends that you do not use other Compact Flash devices because they have not been verified for VSP 9000 compatibility, and can result in loss of access to the Compact Flash device.

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

Grounding the chassis

Before you begin

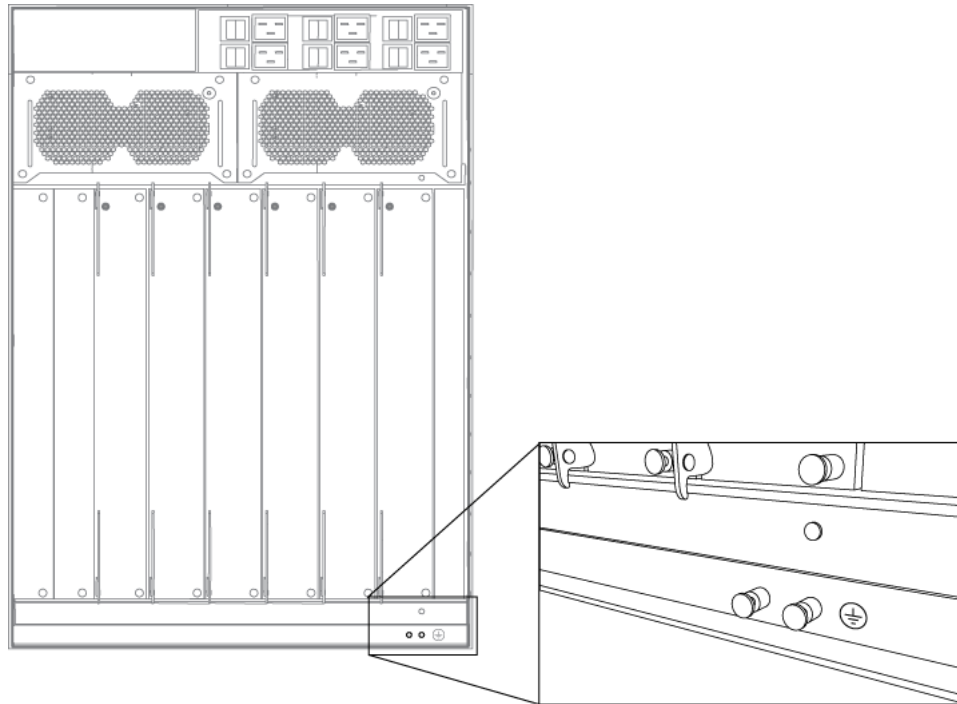
- Ensure you have a two-hole cable lug that fits over the grounding studs.
- Ensure you have a nut and a locking washer for the grounding stud.
- Ensure you have a 6-AWG green and yellow grounding wire long enough to connect to the ground point.
- Ensure you have a 6 mm socket or nut driver.

About this task

Avaya recommends that you ground the Avaya Virtual Services Platform 9000 chassis before you install power supplies or connect power and network cables to the system.

Procedure

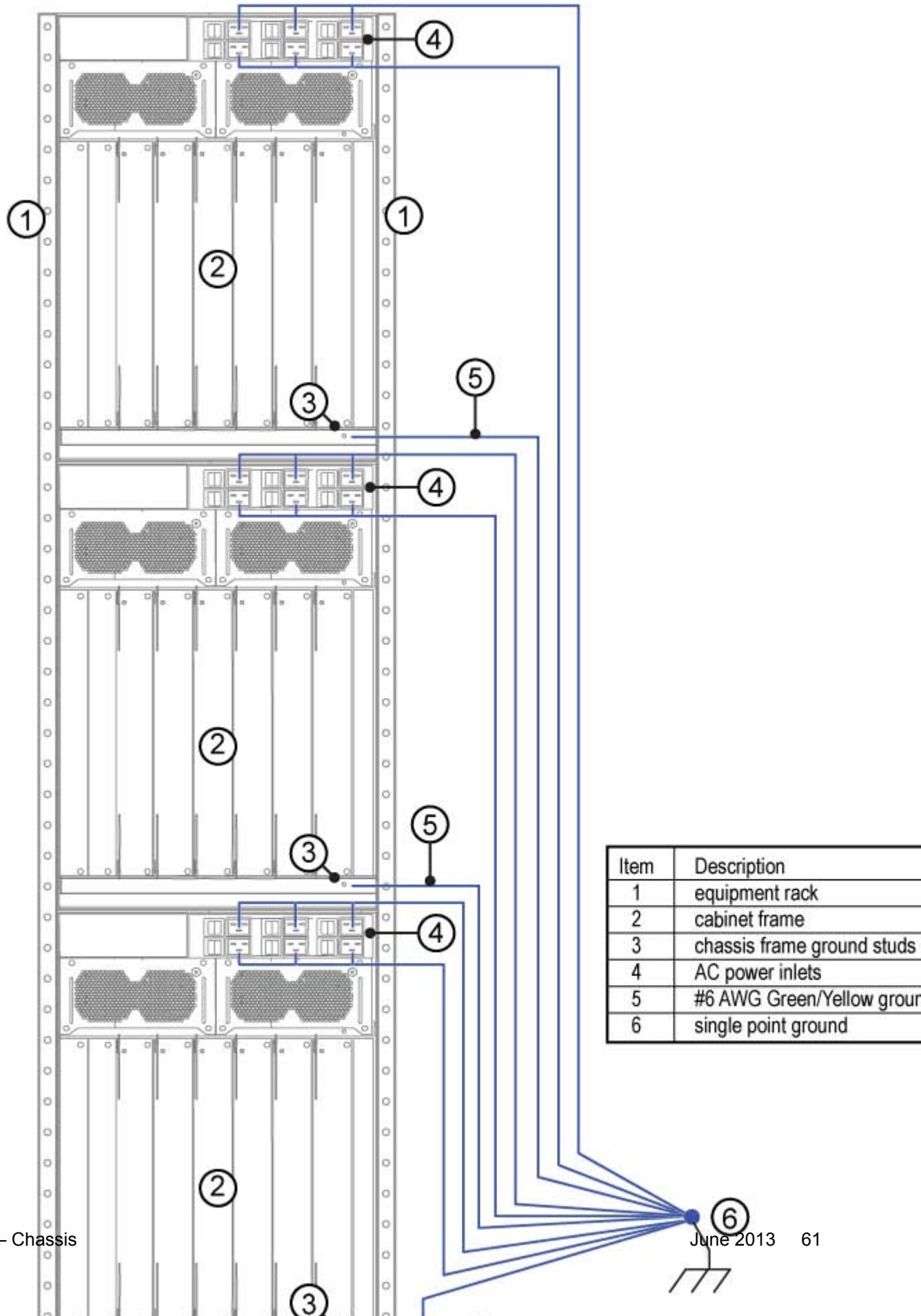
1. Crimp the two hole lug onto the ground wire.
2. Attach the chassis ground cable to the grounding studs on the chassis. As shown in the following figure, the studs are located on the bottom right part of the back of the chassis.



3. Bond the chassis ground cable to the single point ground window.

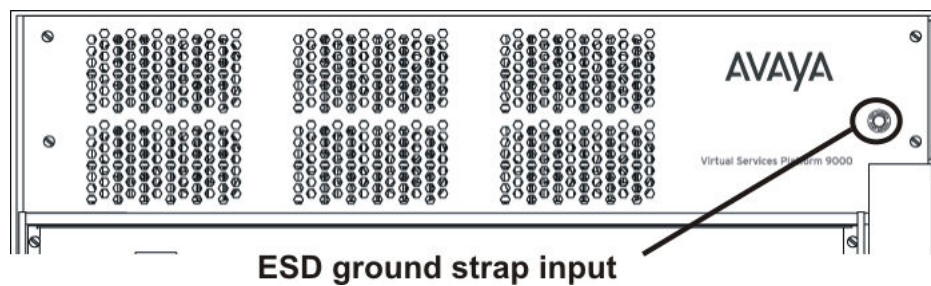
Job aid

The following figure shows an example of how to attach the chassis ground cable to the rack grounding strip.



Item	Description
1	equipment rack
2	cabinet frame
3	chassis frame ground studs
4	AC power inlets
5	#6 AWG Green/Yellow ground wire
6	single point ground

The following figure shows the ESD ground strap input location on the front of the chassis. There are also two ESD ground strap input sites on the rear of the chassis.



Chapter 6: Chassis operations

About this task

This section describes some of the routine tasks you perform to operate the Avaya Virtual Services Platform 9000.

Determining the minimum number of AC power supplies

Before you begin

- For more information about the power requirements for each module, see [Component input power](#) on page 70.

Important:

The system reserves the following power requirements:

- 80 Watts (W) each for the primary and secondary Control Processor (CP) modules
- 70 W each for the Switch Fabric (SF) modules located in slots 1 and 4
- 150 W each for the two IO fan trays
- 65 W each for the two SF fan trays
-

About this task

Determine the minimum number of power supplies required to ensure there is enough power to operate the installed components. You can install a maximum of six 9006AC power supplies.

Procedure

1. Add the total input power consumption for all components (modules and cooling modules assemblies).
2. Refer to the output power rating of the power supply based on the input connection.

Important:

If either the individual or the combined power requirements for the components exceed the power supply rating, you need to add at least one additional power supply to your configuration.

3. Consider your redundant power supply needs.
-

Powering up the system

Before you begin

- For more information about installing a 9006AC power supply, see *Avaya Virtual Services Platform 9000 Installation — Power Supply, NN46250-303*.
- For more information about the power supply LEDs, see *Avaya Virtual Services Platform 9000 Installation — Power Supply, NN46250-303*.

Caution:

The AC power switches are double pole. The 9006AC power supply incorporates double pole and neutral fusing.

About this task

Connect the power supplies and power up the system to start up the Avaya Virtual Services Platform 9000.

Procedure

1. Determine power subsystem operating configuration based on module load requirements and power redundancy needs.
2. Install the required power supplies in the power shelf bays.
3. Ensure the AC power switches are in the off position.
4. Determine the appropriate power cord based on the power supply operating power and site requirements.
5. Connect the AC power cords to the AC power inlets and the power outlets.
6. For each power supply, turn on the corresponding power switch to the on position.

If your chassis contains multiple power supplies, you can turn on the power supplies simultaneously or one at a time. If you wait too long to turn on the additional power supplies, one or more of the power supplies could stay or enter current limit based on the system load condition until you power on a sufficient number of power supplies to guarantee the system powers on.
7. Verify the AC power LEDs on each power supply illuminates green, and that the service and fault LEDs are not illuminated.
8. Verify the cooling module LED on the CP modules illuminate green.

9. Verify that air flows from the cooling modules out through the vents of the chassis, and that the power supply fans are operational.
The cooling module LED can illuminate red while the fans power to operational speed.
10. If the power supply AC LEDs remain off indicating loss of AC power, the service or fault LEDs are illuminated and you cannot feel air flow from the chassis vents, or from each power supply, turn the power switch to the off position to diagnose the problem or replace the failed power supply.
If the problem persists, contact the Avaya Technical Solutions Center.

Resetting the Avaya Virtual Services Platform 9000

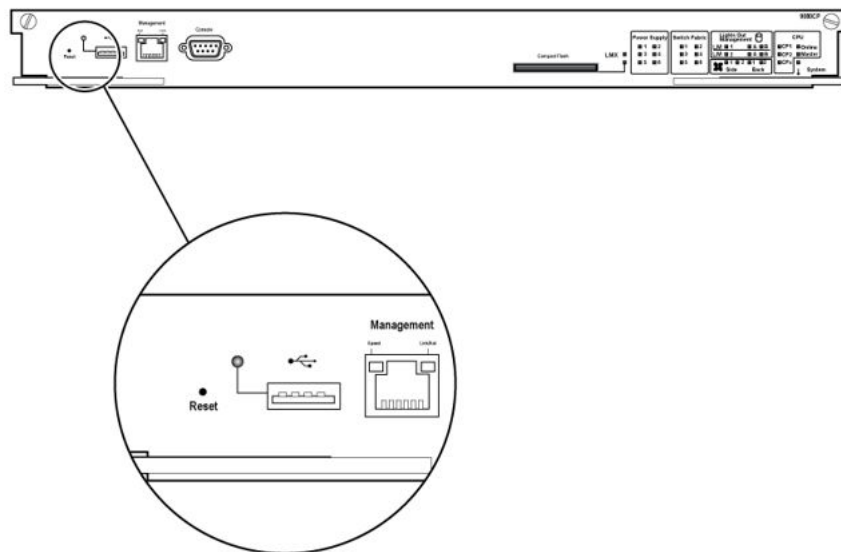
About this task

Reset the Avaya Virtual Services Platform 9000 to restart the hardware without cycling power.

Procedure

On the CP module, press Reset.

The following figure shows the location of the recessed Reset button.



Chapter 7: Part numbers

The following table lists the Avaya Virtual Services Platform 9000 part numbers associated with the hardware.

Products can be ordered with European Union Environmental Directive (EUED) Restriction of Hazardous Substances (RoHS) (EUED RoHS) compliancy. EUED RoHS compliant products are designated with -E5 or -E6 (for example EC1405A01-E6).

Table 5: Part numbers

Part number	Item
EC1402001-E6	Shipped Assembly 9012 12 Slot Chassis
EC1405A01-E6	9006AC Power Supply
EC1404007-E6	9080CP CPU Module
EC1404001-E6	9024XL 24 SFP+ Module
EC1404002-E6	9048GB 48 SFP Module
EC1404003-E6	9048GT 48 10/100/1000 Module
EC1411001-E6	9012FC Side Fan Tray
EC1411002-E6	9012RC Fabric Fan Tray
EC1404006-E6	9090SF Switch fabric module
EC1411006-E6	Spare Front Module Filler Panel for 9012 12-Slot Chassis
EC1411007-E6	Spare Switch Fabric Filler Panel for 9012 12-Slot Chassis
EC1411008-E6	Spare Power Supply Filler Panel for 9012 12-Slot Chassis
EC1411009-E6	Spare Auxiliary Module Filler Panel for 9012 12-Slot Chassis
EC1411010-E6	2GB Compact Flash Memory Card for 9080CP Module

Chapter 8: Technical specifications

This section details the specifications for the Avaya Virtual Services Platform 9000.

Chassis weight

The following table provides the chassis weight with each component.

Table 6: Chassis weight including components and cables

Chassis and components	Weight
Chassis and midplane	160 lb (73 kg)
Chassis, midplane, and cooling modules	183 lb (83 kg)
Chassis midplane, cooling modules, and full length filler modules	288 lb (131 kg)

AC power supply

This section provides power ratings for the AC power supply.

The following table lists the input power specifications.

Table 7: AC input power specifications

Parameter	Specification at input voltage 100-120 V AC	Specification at input voltage 200-240 V AC
Input current	13.3 A (100 V AC) - 11.2 A (120 V AC)	11.8 A (200 V AC) – 9.9 A (240 V AC)
Operating frequency range	47–63 Hz	47-63 Hz
Input volt-ampere (VA)	1445 VA	2325 VA
Efficiency	85% minimum, 90% typical	88% minimum, 93% typical
Input power consumption	1416 W	2277 W
Heat dissipation (thermal output)	724 British Thermal Unit (BTU)/hour	933 BTU/hour

Parameter	Specification at input voltage 100-120 V AC	Specification at input voltage 200-240 V AC
Hold-up time (See note 1.)	25 ms	20 ms
Note 1: Measurement starts at zero crossing of the AC voltage. Measurement made at full load and voltage is allowed to decay to 44 VDC.		

The following table lists the DC output power specifications.

Table 8: DC output power specifications

Parameter	Specification at input voltage 100–120 V AC	Specification at input voltage 200–240 V AC
Maximum main output power	1200 W	2000 W
Maximum main output current	22 A	37 A
Auxiliary output voltage / power	5 V DC / 3.75 W	5 V DC / 3.75 W
Output voltage set-point	54 V DC	54 V DC
Mean time between failures (See note 1.)	400 000 hours	400 000 hours
Note 1: Per telcordia SR-332, 25 C, full load, method 1, case III		

Component input power

The following table provides input power specifications for the Virtual Services Platform 9000 components.

Important:

The system reserves the following power requirements:

- 80 Watts (W) each for the primary and secondary Control Processor (CP) modules
- 70 W each for the Switch Fabric (SF) modules located in slots 1 and 4
- 150 W each for the two IO fan trays
- 65 W each for the two SF fan trays

Table 9: Component input power

Component	Total input power (watts)	Thermal output rating (BTU/hour)
9080CP Central Processor Module	80	273

Component	Total input power (watts)	Thermal output rating (BTU/hour)
9090SF Switch Fabric Module, slots 1 and 4.	70	239
9090SF Switch Fabric Module, slots 2, 3, 5, and 6.	50	170
9012RC Fabric Fan Tray (Maximum fan speed)	65	222
9012FC Side Fan Tray (Maximum fan speed)	150	512
9048GT interface module	350	1194
9048GB interface module	340	1160
9024XL interface module	575	1962

Rack mount

You can install a maximum of three Avaya Virtual Services Platform 9000 chassis in a standard 19 in. wide 7 ft. tall rack.

Important:

Chassis units should be installed from the bottom up to ensure racks do not become top heavy and fall over.

Power supply selection

Power management identifies the available power in the chassis, called the power budget, and determines if enough power is available to operate the installed components. For more information about the power management feature and configuration instructions, see *Avaya Virtual Services Platform 9000 Administration, NN46250-600*

Virtual Services Platform 9000 chassis specifications

This section provides physical, environmental, and electrical specifications for the Avaya Virtual Services Platform 9000 chassis and includes the following topics:

- [Physical specifications](#) on page 72
- [Network Equipment Building Standard](#) on page 72
- [Environmental specifications](#) on page 72
- [Maximum airflow](#) on page 73
- [International regulatory requirements](#) on page 73

Physical specifications

The following physical specifications apply to the Avaya Virtual Services Platform 9000 chassis.

Table 10: 9012 chassis physical specifications

Parameter		Specification
Height		24.375 in. (61.91 cm)
Rack units (RU)		14
Width		17.5 in. (44.45 cm)
Depth		32.5 in. (82.55 cm) plus cable management system
Weight	Chassis and midplane	160 lb (73 kg)
	Chassis and midplane, and cooling modules	183 lb (83 kg)
	Chassis and midplane, cooling modules, and full length filler modules	288 lb (131 kg)

Network Equipment Building Standard

The Virtual Services Platform 9000 chassis does not comply with Network Equipment Building Standard (NEBS) Level 3 as specified in SR3580.

Environmental specifications

The following environmental specifications apply to the Virtual Services Platform 9000 chassis.

Table 11: 9012 chassis environmental specifications

Parameter	Specification
Operating temperature (room or ambient temperature)	0C to 40C (32F to 104F)
Storage temperature	– 25C to 70C (– 13F to 158F)
Operating humidity	10% to 90%
Storage humidity	0 to 90%
Operating altitude	0 ft to 10 000 ft
Storage altitude	0 ft to 10 000 ft

Maximum airflow

The maximum airflow specification for the Virtual Services Platform 9000 chassis is 500 linear ft/min for side-to-side airflow in the front of the chassis, and 350 linear ft/min for front-to-back airflow for modules installed at the rear of the chassis.

International regulatory requirements

The Virtual Services Platform 9000 chassis conforms to the following international regulatory requirements:

- [Electromagnetic emissions](#) on page 73
- [Electromagnetic immunity](#) on page 74
- [Safety agency certification](#) on page 74

Electromagnetic emissions

The Virtual Services Platform 9000 chassis conforms to the following electromagnetic emissions standards.

Table 12: 9012 chassis electromagnetic emissions

Parameter	Specification
United States	FCC CFR47 Part 15, Subpart B, Class A
Canada	ICES-003, Issue-4, Class A
Europe	EN 55022:2006/ A1:2007 Class A; EN 61000-3-2/A14, EN 300 386 v1.3.3, EN55024:1998/A1:2001/A2:2003, EN 61000-3-3:1995:A1:2001/A2:2005
Australia/New Zealand	AS/NZS CISPR 22:2006, Class A
Japan	VCCI-V3/97.04, Class A

Electromagnetic immunity

The Virtual Services Platform 9000 chassis conforms to the following electromagnetic immunity standards.

Table 13: 9012 chassis electromagnetic immunity

Parameter	Specification
Global basis for certification	CISPR 24:1997
Europe	EN 55024:1998

Safety agency certification

The Virtual Services Platform 9000 chassis conforms to the following safety agency standards.

Table 14: 9012 chassis safety agency certification

Parameter	Specification
Global basis for certification	IEC 60950-1 current edition with all CB member deviations
US	ULIEC 60950-1
Canada	CSA 22.2 No. IEC 60950-1
Europe	ENIEC 60950-1 (CE Marking)
Australia/New Zealand	AS/NZS IEC 60950-1

Chapter 9: 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 device caution statement

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.

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.

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 sicher, dass das Band am Handgelenk Kontakt zur Haut hat.

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 fiber optic 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

Glasfasergeräte können Laserstrahlen oder ultraviolette 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 ótica pode emitir laser ou luz infravermelha que pode causar danos a sua vista. Nunca olhe para dentro da fibra ótica ou da porta do conector. Tenha sempre em mente que os cabos de fibra ótica 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.

Lifting 9012 chassis warning statement

Warning:

Risk of personal injury

It requires three people to lift the Virtual Services Platform 9000 chassis. To make the chassis lighter, remove the modules and power supplies before you lift it.

Warning:

AVERTISSEMENT

Risques de blessure corporelle

Trois personnes sont nécessaires pour soulever le châssis VSP. Pour alléger le châssis, retirez les modules et les alimentations avant de le soulever.

Warning:

WARNUNG

Verletzungsrisiko

Es sind 3 Personen notwendig, um das Chassis des VSP anzuheben. Entfernen Sie vor dem Anheben die Module und die Netzteile, um so das Gewicht des Chassis zu reduzieren.

Warning:

ADVERTENCIA

Riesgo de lesiones

Se necesitan tres personas para levantar el chasis de VSP. Para alivianar el peso, retire los módulos y las fuentes de alimentación antes de levantarlo.

Warning:

AVISO

Risco de ferimento

Para erguer o chassi VSP, são necessárias três pessoas. Para erguer o chassi, remova os módulos e as fontes de alimentação antes de erguê-lo.

Warning:

AVVISO

Rischio di lesioni personali

Per sollevare lo chassis VSP, sono necessarie tre persone. Per alleggerire lo chassis, rimuovere i moduli e gli alimentatori prima di sollevarlo.

Chapter 10: 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

cable assembly	An optical-fiber cable with connectors installed on one or both ends. The cable assembly interconnects the cabling system with opto-electronic equipment at either end of the system. Cable assemblies with connectors only on one end are called pigtailed. Cable assemblies with connectors on both ends are called jumpers or patch cords.
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.
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.
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) 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.

