Installing the Avaya Virtual Services Platform 9000

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Chapter 1: Introduction

Purpose

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.

Related resources

Documentation

See *Documentation Reference for Avaya Virtual Services Platform 9000,* NN46250-100 for a list of the documentation for this product.

Training

Ongoing product training is available. For more information or to register, you can access the website at http://avaya-learning.com/.

Course code	Course title
4D00010E	Knowledge Access: ACIS - Avaya ERS 8000 and VSP 9000 Implementation
5D00040E	Knowledge Access: ACSS - Avaya VSP 9000 Support

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  - In **Search**, type the product name. On the Search Results page, select **Video** in the **Content Type** column on the left.
- To find the Avaya Mentor videos on YouTube, go to www.youtube.com/AvayaMentor and perform one of the following actions:
  - Enter a key word or key words in the Search Channel to search for a specific product or topic.
  - Scroll down Playlists, and click the name of a topic to see the available list of videos posted on the website.

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Searching a documentation collection

On the Avaya Support website, you can download the documentation library for a specific product and software release to perform searches across an entire document collection. For example, you can perform a single, simultaneous search across the collection to quickly find all occurrences of a particular feature. Use this procedure to perform an index search of your documentation collection.

Before you begin

- Download the documentation collection zip file to your local computer.
- You must have Adobe Acrobat or Adobe Reader installed on your computer.

Procedure

1. Extract the document collection zip file into a folder.

2. Navigate to the folder that contains the extracted files and open the file named <*product_name_release*>.pdx.
3. In the Search dialog box, select the option **In the index named <*product_name_release*>.pdx**.
4. Enter a search word or phrase.
5. Select any of the following to narrow your search:
   - Whole Words Only
   - Case-Sensitive
   - Include Bookmarks
   - Include Comments
6. Click **Search**.

   The search results show the number of documents and instances found. You can sort the search results by Relevance Ranking, Date Modified, Filename, or Location. The default is Relevance Ranking.

Chapter 2: New in this release

The following sections describe what is new in *Installing the Avaya Virtual Services Platform 9000,* NN46250-304, for Release 4.0.

Features

See the following sections for information on feature-related changes.

9012QQ-2 I/O module

Release 4.0.1 introduces a second generation 9012QQ-2 Input/Output (I/O) module.

The 9012QQ-2 module is a 12-port 40 gigabit-per-second (Gbps) module that supports QSFP+ fiber transceivers, and also directly-attached cables (DACs).

For more information about the 9012QQ-2 I/O module, see:

- Component input power on page 99.
- Part numbers on page 105.

For more information about the 9012QQ-2 module specifications, see *Installing Modules in Avaya Virtual Services Platform 9000,* NN46250-301.

9048XS-2 module

Release 4.0 introduces a second generation 9048XS-2 Input/Output (I/O) module.

The 9048XS-2 module is a 48-port 10-gigabit-per-second (Gbps) module that supports both 10GBASE-R small form factor pluggable plus (SFP+) and 1000BASE-X SFP transceivers. You can use second generation I/O modules in first generation mode or second generation mode. For more information, see:

- Power supplies on page 14.
- Switch Fabric modules on page 25.
- Power supplies on page 50.
- Switch Fabric module on page 52.
- Component input power on page 99.
- Part numbers on page 105.

9012FCHS cooling module

Information is updated for the 9012FCHS high-speed cooling module for use with second generation modules on the Virtual Services Platform 9012.

- Cooling modules on page 53.
- Airflow in the Virtual Services Platform 9012 on page 53.
- Component input power on page 99.

High altitude operating temperature

The document is updated in relation to the high altitude operating temperature for the chassis. Avaya recommends a decrease in the high temperature value by 1.8 °F for each 1,000 foot increase in altitude (1 °C for each 305 meter increase in altitude.) For more information, see:

- VSP 9010 chassis specifications on page 101.
- VSP 9012 chassis specifications on page 103.

Installing a new chassis

Release 4.0 adds a new procedure for the best practice for installing a new chassis. For more information, see Installing a new chassis on page 88.

show sys-info

Release 4.0 updates the output for the **`show sys-info`** command. For more information, see:

- Temperature alarms on page 17.
- Temperature alarms on page 57.

Other changes

See the following sections for other changes to the documentation.

Document title

Release 4.0 updates the document title to *Installing the Avaya Virtual Services Platform 9000*, NN46250–304, from *Avaya Virtual Services Platform 9000 Installation – Chassis*, NN46250–304.

Regulatory information

Regulatory information is removed from this document because the content exists in a separate regulatory document. For more information, see *Regulatory Reference for Avaya Virtual Services Platform 9000,* NN46250-112 (700509061).

Chapter 3: Virtual Services Platform 9010 chassis

This chapter provides information to install the Virtual Services Platform 9010 chassis.

Virtual Services Platform 9010 chassis fundamentals

The Avaya Virtual Services Platform 9010 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.

Important:

The 9080CP module in a Virtual Services Platform 9010 AC chassis must run software Release 3.4 or later. You cannot plug and play a 9080CP module from a Virtual Services Platform 9012 chassis to a Virtual Services Platform 9010 AC chassis if the Virtual Services Platform 9012 runs a software version earlier than Release 3.4. For more information about hardware and software compatibility, see *Release Notes for Avaya Virtual Services Platform 9000,* NN46250-401.

Virtual Services Platform 9010 chassis introduction

This section provides an introduction to the chassis layout.

The front of the Virtual Services Platform 9010 chassis has two vertical slots for Control Processor (CP) modules and eight vertical slots for I/O modules. Slots are numbered from left to right.

The front of the chassis also provides two bays for cooling modules and eight bays for power supplies. The following figure shows the front view of the chassis.

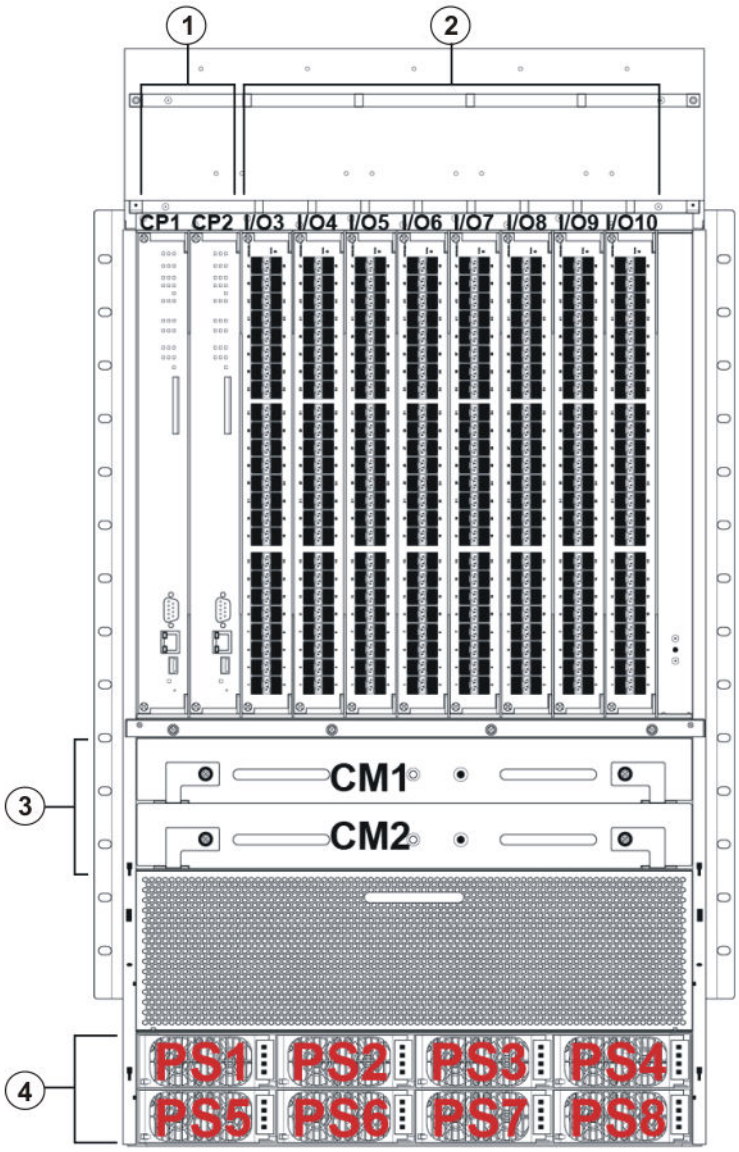


Figure 1: VSP 9010 chassis front view

The following table identifies the numbered items in the preceding figure.

Table 1: Figure notes for VSP 9010 chassis front view

Number	Component
1	CP modules
2	I/O modules
3	Cooling modules
4	Power supplies

In the rear, the chassis has six horizontal slots for Switch Fabric (SF) modules. The rear slot numbering increases from bottom to top.

The rear of the AC-input chassis provides eight separate power inlets, and eight power switches that connect the main power to the corresponding power supply bays.

The following figure shows the rear view of the AC-input chassis.

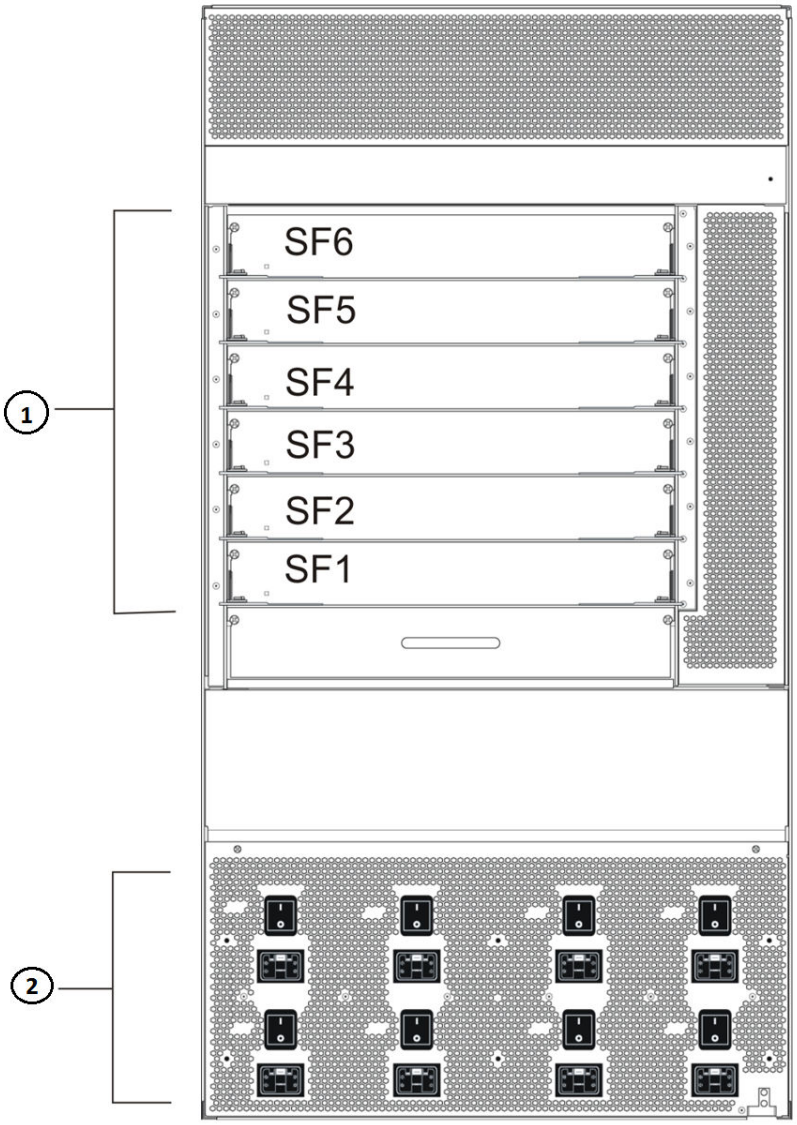


Figure 2: VSP 9010 AC chassis rear view

The following table identifies the numbered items in the preceding figure.

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Table 2: Figure notes for VSP 9010 AC chassis rear view

Number	Component
1	SF modules
2	AC power inlet panel

The ground bonding location is at the bottom right of the chassis rear.

Power supplies

The Virtual Services Platform 9010 chassis is available in an AC power version.

For the AC chassis you can use a 2,000 W AC power supply. You can wire these supplies to 120 VAC or 240 VAC source. You must order appropriate power cords to make this connection at the rear of the chassis.

The Virtual Services Platform 9010 has eight power supply bays for population of up to eight power supplies. You must install filler panels in unpopulated power supply bays. The filler panels assure that proper air flow is available for the installed power supplies. The chassis ships with six filler panels installed; power supply bays 1 and 5 are unpopulated.

Install the power supplies in the front of the chassis, and connect the power cords at the rear of the chassis.

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 installed power supplies. For more information about the power consumption of each module, see Component input power on page 99.

If the chassis 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, see *Installing AC Power Supplies in Avaya Virtual Services Platform 9000,* NN46250-303.

Power supply and power inlet locations

You can install up to eight power supplies at the bottom front of the chassis. Ensure you power all supplies in a chassis from different circuits at the same voltage source.

In the front of the chassis, power supply bays are numbered increasing from left to right, so 1, 2, 3, and 4 on the first row, and then 5, 6, 7, and 8 on the second row.

The individual AC power switches and inlet connectors at the back of the Virtual Services Platform 9010AC chassis are numbered decreasing left to right, so 4, 3, 2, and 1 on the first row, and then 8, 7, 6, and 5 on the second row.

Power supply redundancy

The Virtual Services Platform 9010 supports multiple power supplies for custom power redundancy configurations. Two typical configurations are n + 1 or n + n, where n is the number of required power supplies to power the chassis and modules.

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An n + 1 redundant configuration provides power in the event of a single power supply failure, single circuit breaker trip, or knocked-out power cord.

An n + n redundant configuration provides power in the event of a loss of a single power phase in the building. Balance the line side voltage source between building phases.

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
- 1,900 W for a pair of 9010CM cooling modules that operate at full speed

Power feed redundancy

Avaya recommends that you use two separate power feeds for the power supplies.

The power supplies in the Virtual Services Platform 9010 chassis are divided in two shelves. Each shelf consists of four independent power source and filter circuits. The eight circuits are independent and you can configure either building phase to any circuit.

If you use n + n redundancy and plug four power supplies in to power feed "A", and the remaining four power supplies in to power feed "B", this configuration gives you power feed redundancy.

Ensure that each AC power circuit connects to a dedicated breaker.

Cooling modules

The Virtual Services Platform 9010 uses two cooling modules. Install the two cooling modules at the front of the chassis, below the CP and I/O modules. Each cooling module includes four fans.

Virtual Services Platform 9010 uses two cooling modules to create airflow redundancy. In the case of a single fan failure, or full failure of a cooling module, the other cooling module fans blow cooling air through the failing fans to continue cooling installed modules.

Warning:

If the upper cooling module fails, leave it in place until you can install a replacement cooling module. Do not remove the top cooling module and leave that slot empty. The chassis will depressurize with a significant loss in cooling capacity of the fans. Damage to equipment can result.

Do not partially remove the fans and leave them in the chassis. This action results in the blockage of airflow, causing significant loss in the cooling module air volume.

You must either fully seat a cooling module and lock it into the slot, or completely remove it from the chassis slot.

Airflow in the Virtual Services Platform 9010

Cool air enters the Virtual Services Platform 9010 through an air inlet vent below the cooling modules. The fans in the cooling modules draw the cool air in, and push it up and over the CP, I/O, and SF modules. The hot air exhaust is at the rear of the chassis.

The power supplies include their own fans for cooling. The power supplies draw cool air in at the front of the chassis, and hot air exits at the rear.

Looking at the rear of the AC chassis, the hot air exhaust for the CP and I/O modules is at the top. The hot air exhaust for the SF modules is to the right of the SF module slots.

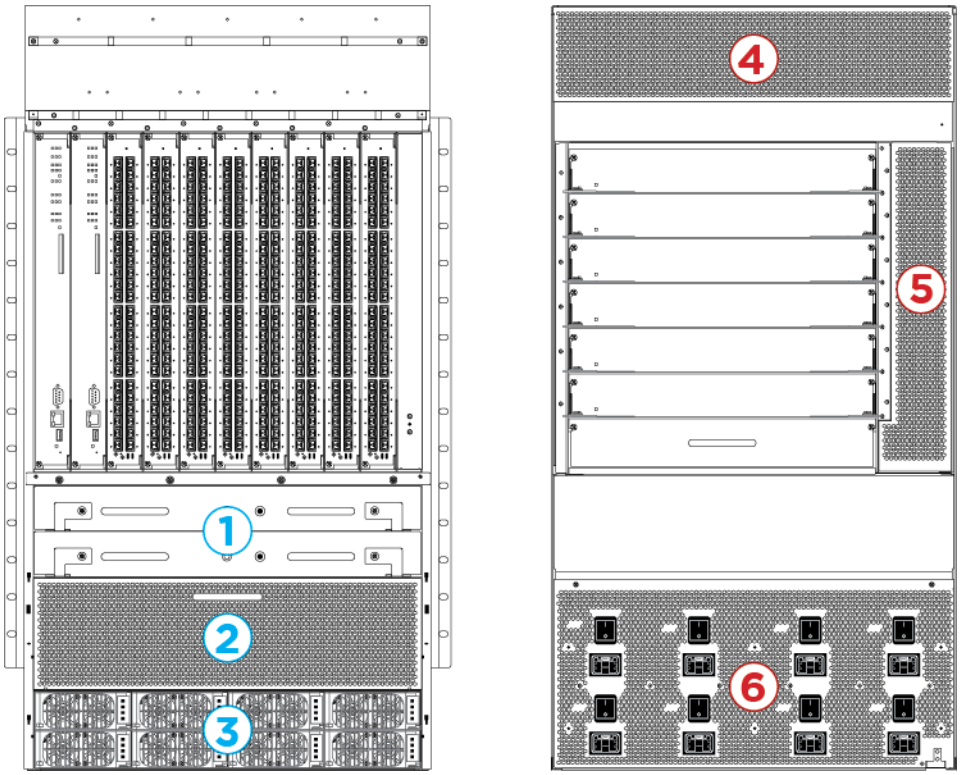


Figure 3: Front-to-back cooling in the Virtual Services Platform 9010

The following table identifies the numbered areas in the preceding figure.

Table 3: Airflow in the Virtual Services Platform 9010

Diagram	Description
1	Cooling modules installed at the front of the chassis.
2	Cool air inlet at the front of the chassis.
3	Power supply air inlet.
4	Hot air exhaust for the CP and I/O modules at the rear of the chassis.
5	Hot air exhaust for the SF modules at the rear of the chassis.
6	Hot air exhaust for the power supplies at the rear of the chassis.

Temperature alarms

The system monitors the temperature on the modules. If a module exceeds the alarm threshold temperature by one degree, the system initiates an SNMP trap and the module online LED displays as blinking red.

After the temperature of the module exceeds the alarm threshold temperature, the system logs the temperatures of all sensors each time the temperature increases by one degree or decreases by two degrees within a 30-second polling period. The module online LED returns to green when all module temperatures are below the threshold.

The system shuts down the module when the module exceeds the shutdown threshold temperature by one degree.

Virtual Services Platform 9010 temperature threshold quick reference

Use the information in the following table as a quick reference for temperature thresholds on the Virtual Services Platform 9010.

Note:

The I/O module alarm threshold and shutdown threshold temperatures differ for the Virtual Services Platform 9010 and the Virtual Services Platform 9012.

Table 4: Alarm threshold and shutdown threshold temperatures for VSP 9010 modules

Modules on the VSP 9010	Module LED color	Alarm threshold	Shutdown threshold
CP and SF modules	Blinking red	54 °C At 55 °C, the system triggers the alarm when the module exceeds the alarm threshold by one degree.	59 °C At 60 °C, the system shuts down the module when the module exceeds the shutdown threshold by one degree.
	Green	Alarm clears after the temperatures of the modules are at 53 °C.	—
First generation I/O module sensors in first generation mode			
Inlet and outlet sensors	Blinking red	69 °C At 70 °C, the system triggers the alarm when the module exceeds the alarm threshold by one degree.	74 °C At 75 °C, the system shuts down the module when the module exceeds the shutdown threshold by one degree.
	Green	Alarm clears after the temperatures of the modules are at 68 °C.	—
Second generation I/O module sensors			
Inlet and outlet sensors	Blinking red	79 °C	84 °C

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Modules on the VSP 9010	Module LED color	Alarm threshold	Shutdown threshold
		At 80 °C, the system triggers the alarm when the module exceeds the alarm threshold by one degree.	At 85 °C, the system shuts down the module when the module exceeds the shutdown threshold by one degree.
	Green	Alarm clears after the temperatures of the modules are at 78 °C.	—
Field Programmable Gate Array (FPGA) sensors	Blinking red	90 °C At 91 °C, the system triggers the alarm when the module exceeds the alarm threshold by one degree.	95 °C At 96 °C, the system shuts down the module when the module exceeds the shutdown threshold by one degree.
	Green	Alarm clears after the temperatures of the modules are at 89 °C.	—
Fabric Adapter (FA) sensors	Blinking red	100 °C At 101 °C, the system triggers the alarm when the module exceeds the alarm threshold by one degree.	105 °C At 106 °C, the system shuts down the module when the module exceeds the shutdown threshold by one degree.
	Green	Alarm clears after the temperatures of the modules are at 99 °C.	—

Bringing the module online

If a module shuts down due to heat, you must intervene to bring the slot back online. After you correct the temperature issue and the heat condition clears, you must bring the module back online. The module does not go online again unless you re-enable the module. After CP, SF, or I/O modules shut down, use the **`sys power slot {slot[-slot][,...]}`** command to bring the module back online.

Fan speed

The cooling module fan speed increases as the temperature reading of the sensors increases. The cooling module fan speed decreases as the temperature reading of the sensors decreases.

System temperature information

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 air sensors and 4 and 5 are outlet air sensors. The SF module has two temperature sensors and the CP module has four temperature sensors. The alarm threshold is the temperature the zone can reach before the device moves from normal to alarm mode. If the module exceeds the shutdown threshold by one degree it causes the module to shut down.

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

- A module alarm is triggered.
- Module alarms are cleared.

Heat sensor locations for first generation and second generation I/O modules

The following figure shows the baseboard component of a first generation I/O module on the left and the PIM component of a first generation I/O module on the right.

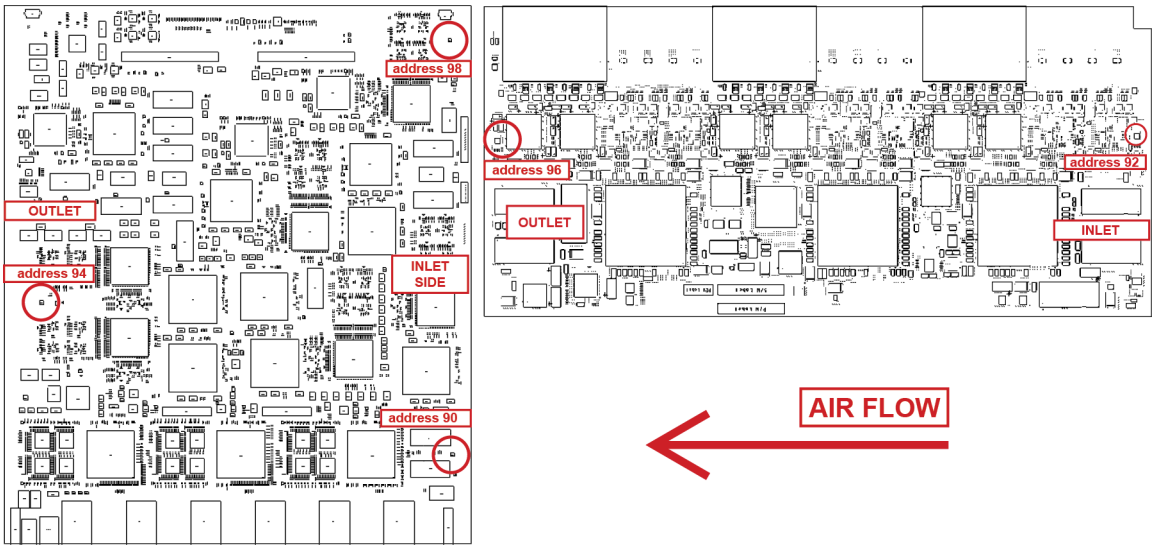
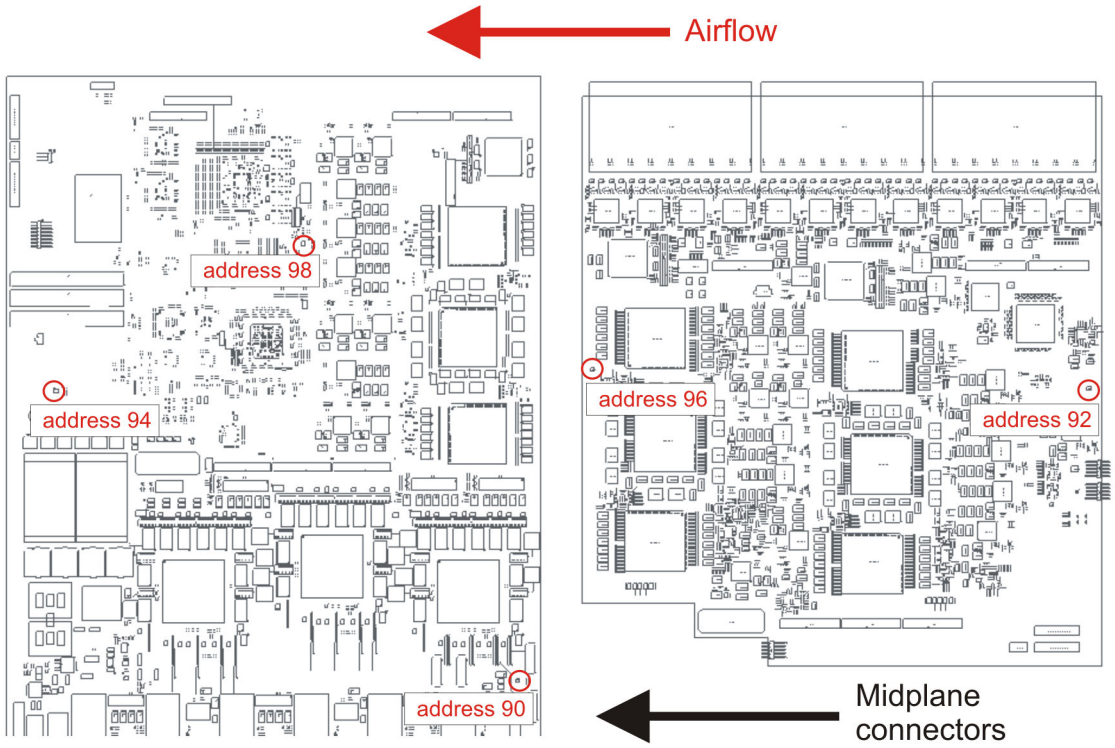


Figure 4: Heat sensor locations in a first generation I/O module

The following figure shows the baseboard component of a second generation I/O module on the left and the PIM component of a second generation I/O module on the right.

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Use the following table to understand the heat sensors in the preceding I/O modules for first generation and second generation modules.

Table 5: Zone to heat sensor mapping for first generation .and second generation I/O modules

Zones	Heat sensors
zone 1	address 90
zone 2	address 92
zone 3	address 98
zone 4	address 94
zone 5	address 96

The system monitors the temperature every 30 seconds and displays the temperature on all the modules with the following command: **`show sys-info temperature`**

Note:

The I/O module alarm threshold and shutdown threshold temperatures differ for the Virtual Services Platform 9010 and the Virtual Services Platform 9012.

The following example shows command output for both first and second generation I/O modules.

```
Switch:1#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
```


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```
1      36      32      --      32      31      36      31      54      59
2      40      32      --      32      31      40      31      54      59
3      37      39      32      45      48      48      32      69      74
4      32      31      38      35      43      43      31      79      84
6      31      30      37      36      43      43      30      79      84
7      31      31      41      38      49      49      31      79      84
8      33      31      38      38      49      49      31      79      84
9      37      38      35      54      50      54      35      69      74
10     34      34      31      48      50      50      31      69      74
SF1    32      --      --      38      --      38      32      54      59
SF2    30      --      --      37      --      37      30      54      59
SF3    32      --      --      38      --      38      32      54      59
SF4    32      --      --      39      --      39      32      54      59
SF5    34      --      --      41      --      41      34      54      59
SF6    33      --      --      40      --      40      33      54      59
```

The following example displays additional command output that appears for second generation I/O modules.

```
Extended Temperature Zones :

                     Sensor Temperatures

Slot Zone    Slice-1      Slice-2      Slice-3    Highest  Lowest    Alarm     Shutdown
               1   2   3   1   2   3   1   2   3      Temp    Temp  Threshold  Threshold
 4   FPGA     49  45  51  50  51  52  44  51  52        52      44     90         95
 4   FA       39  --  --  48  --  --  71  --  --        71      39    100        105
 6   FPGA     52  53  56  50  52  57  50  49  51        57      49     90         95
 6   FA       39  --  --  49  --  --  62  --  --        62      39    100        105
 7   FPGA     47  51  52  55  56  55  52  59  58        59      47     90         95
 7   FA       42  --  --  50  --  --  66  --  --        66      42    100        105
 8   FPGA     67  51  52  55  53  52  55  57  61        67      51     90         95
 8   FA       39  --  --  50  --  --  72  --  --        72      39    100        105
```

The following table describes the output for the **`show sys-info temperature`**.

Table 6: sh

Value	Description
Temperature Info	
Zones 1 through 3	Specifies the inlet sensors on the module.
Zones 4 and 5	Specifies the outlet sensors on the module.
Highest Temp	Specifies the highest temperature reached on the slot.
Lowest Temp	Specifies the lowest temperature reached on the slot.
Alarm Threshold	Specifies the temperature, when exceeded by one degree, that causes the system to initiate an SNMP trap and causes the module online LED to display as blinking and red.
Shutdown Threshold	Specifies the temperature, when exceeded by one degree, that causes the system to shutdown the module by removing power from the slot.
Extended Temperature Zones This information applies only to second generation modules.	

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Value	Description
FPGA	Specifies the temperature of the FPGA sensors. A value of -- indicates that this sensor is not available on this slot.
FA	Specifies the temperature of the FA sensor, located on the slice. A value of -- indicates that this sensor is not available on this slot.
Slice-1 through Slice–3	Specifies temperature information for sensors on each slice. Sensors provide temperature information for various datapath components.
Highest Temp	Specifies the highest temperature of all the FPGA or FA sensors located on this I/O module.
Lowest Temp	Specifies the lowest temperature of all the FPGA or FA sensors located on this I/O module.
Alarm Threshold	Specifies the FPGA or FA temperature, when exceeded by one degree, that causes an alarm.
Shutdown Threshold	Specifies the FPGA or FA temperature, when exceeded by one degree, that causes the system to shutdown the module by removing power from the slot.

Virtual Services Platform 9010 show sys-info output

On the Virtual Services Platform 9010, you can see the zone alarm information under the Fan Trays Info section of the command output for the **`show sys-info`** command. The following output displays on a Virtual Services Platform 9010 without a second generation module:

```
Fan Trays Info :

   Zone Info :
      FRONT zone :

        Mode : NORMAL
        Mode Status : Normal
        Highest Temperature : 37 C
        Extended Zone :
          FPGA Highest Temperature : --
          FA Highest Temperature : --
      REAR zone :
        Mode : NORMAL
        Mode Status : Normal
        Highest Temperature : 0 C

   Fan Info :
          Tray   CardType           Serial#            Part#
         FAN 1     9010CM                       EC1411012-E6
         FAN 2     9010CM                       EC1411012-E6

          Zone       Tray     Unit      Status
         FRONT      FAN 1        1          OK
         FRONT      FAN 1        2          OK
         FRONT      FAN 1        3          OK
         FRONT      FAN 1        4          OK
         FRONT      FAN 2        1          OK
         FRONT      FAN 2        2          OK
```


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```
        FRONT      FAN 2        3          OK
        FRONT      FAN 2        4          OK
```

The following output displays on a Virtual Services Platform 9010 with a second generation module:

```
Fan Trays Info :

   Zone Info :

      FRONT zone :
        Mode : NORMAL
        Mode Status : Normal
        Highest Temperature : 53 C
        Extended Zone :
          FPGA Highest Temperature : 67 C
          FA Highest Temperature : 72 C
      REAR zone :
        Mode : NORMAL
        Mode Status : Normal
        Highest Temperature : 0 C

   Fan Info :
          Tray   CardType           Serial#            Part#
         FAN 1     9010CM    LBNNTMC29Y004F     EC1411012-E6
         FAN 2     9010CM    LBNNTMC29Y0043     EC1411012-E6

          Zone       Tray     Unit      Status
         FRONT      FAN 1        1          OK
         FRONT      FAN 1        2          OK
         FRONT      FAN 1        3          OK
         FRONT      FAN 1        4          OK
         FRONT      FAN 2        1          OK

         FRONT      FAN 2        2          OK
         FRONT      FAN 2        3          OK
         FRONT      FAN 2        4          OK
```

Use the data in the following table to understand the output for the **`show sys-info`** command on the Virtual Services Platform 9010.

Value		Description
FRONT zone: For the 9010 module, the front zone consists of two fan trays with four fans in each tray, which cool the CP and I/O modules.	Mode:	Each zone operates in either normal mode or alarm mode.
	Mode Status:	Normal Mode – All the fans are healthy and no temperatures exceed the warning threshold. Alarm Mode – Indicates fan or fan tray failures or temperature exceed the warning threshold.
	Highest Temperature	Specifies the highest temperature reached in the front zone.
	Extended Zone:	

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Value		Description
	FPGA Highest Temperature	This information applies only to second generation modules. Specifies the temperature of the FPGA sensors. A value of -- indicates that this sensor is not available on this slot.
	FA Highest Temperature	This information applies only to second generation modules. Specifies the temperature of the FA sensor, located on the slice. A value of -- indicates that this sensor is not available on this slot.
REAR zone: For Virtual Services Platform 9010, no rear fan controllers exist. **Note:** For VSP 9012, rear fan controllers exist and the output displays different values.	Mode:	For VSP 9010, no rear fan zone exists, as a result, Mode always displays as NORMAL.
	Mode Status:	For VSP 9010, no rear fan zone exists, as a result, the Mode Status always displays as Normal.
	Highest Temperature	For VSP 9010, no rear fan zone exists, as a result, the temperature always reports as 0 C.
Fan Info:	FAN 1	Specifies the module type under card type.
	FAN 2	Specifies the module type under card type.
	FRONT FAN 1 Unit 1	Specifies the status of a fan in the first cooling module.
	FRONT FAN 1 Unit 2	Specifies the status of a fan in the first cooling module.
	FRONT FAN 1 Unit 3	Specifies the status of a fan in the first cooling module.
	FRONT FAN 1 Unit 4	Specifies the status of a fan in the first cooling module.
	FRONT FAN 2 Unit 1	Specifies the status of a fan in the second cooling module.
	FRONT FAN 2 Unit 2	Specifies the status of a fan in the second cooling module.
	FRONT FAN 2 Unit 3	Specifies the status of a fan in the second cooling module.
	FRONT FAN 2 Unit 4	Specifies the status of a fan in the second cooling module.

Switch Fabric modules

The Virtual Services Platform 9010 chassis uses the 9095SF module.

Each SF module connects to eight different I/O module slots and two CP module slots simultaneously. You can install a maximum of six SF modules in each chassis, in a 5 + 1 redundancy configuration.

If you install a second generation module in Virtual Services Platform 9010, you must have a minimum of five SF modules installed. Populate slots SF1 and SF4, and use any other slots for the remaining three SF modules.

If you install a first generation module in Virtual Services Platform 9010, you must have a minimum of three SF modules installed. Populate slots SF1 and SF4, and use any other slot for the remaining SF module.

The SF module slot numbers increment from bottom to top when you view the chassis from the rear. The slot location determines the module function. Slots SF1 and SF4 provide the arbitration and traffic scheduling, and therefore, bandwidth management, from the I/O modules, and provide redundancy when both slots are populated. The other slots provide additional bandwidth.

Bandwidth requirements depend 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 I/O 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

You can 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 95.

For more information about how to install CP modules, see *Installing Modules in Avaya Virtual Services Platform 9000,* NN46250-301.

Important:

The 9080CP module in a Virtual Services Platform 9010 AC chassis must run software Release 3.4 or later. You cannot plug and play a 9080CP module from a Virtual Services Platform 9012 chassis to a Virtual Services Platform 9010 AC chassis if the Virtual Services Platform 9012

runs a software version earlier than Release 3.4. For more information about hardware and software compatibility, see *Release Notes for Avaya Virtual Services Platform 9000,* NN46250-401.

Site requirements

Ensure that the installation site meets the requirements described in this section. For more information about environmental and electrical requirements, see Technical specifications on page 98.

General requirements

Plan ahead to have three people present to lift the chassis. The chassis weighs in excess of 141 lb (64 kg). Always use a mechanical lift when one is available.

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. In addition to power supply redundancy, this configuration also provides power feed redundancy.

The power supplies in the Virtual Services Platform 9010 chassis are divided in two shelves. Each shelf consists of four independent power source and filter circuits. The eight circuits are independent and you can configure either building phase to any circuit.

Space requirements

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

You can install up to two Virtual Services Platform 9010 chassis in a single rack.

Warning:

Install chassis units from the bottom up to ensure racks do not become top heavy and fall over.

For proper ventilation and module replacement, you must ensure a minimum of 36 inches of free space in both the front and back of the chassis. Create a cool aisle at the front of the chassis and a hot aisle at the rear of the chassis. Air inlet temperature to each chassis must be within the specified range.

Hardware requirements

This section includes information about the hardware that ships with the Virtual Services Platform 9010 chassis.

Shipped assembly Virtual Services Platform 9010 AC chassis hardware

In addition to the Virtual Services Platform 9010 AC chassis, your shipping container includes 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. For more information about ordering replacement parts, see Part numbers on page 105.

Table 7: VSP 9010 AC chassis shipping accessories

Check	Accessory	Usage
	VSP 9010 AC chassis	
	Eight I/O and CP filler modules	You must install filler modules in unused slots.
	Four SF filler modules	You must install filler modules in unused slots.
	Six power supply filler panels	You must install filler panels in unused bays. Power supply bays 1 and 5 ship unpopulated.
	Eight power cord retainers	Use to prevent the accidental removal of power cords.
	Two cooling modules	
	One DB9 to DB9 connector	
	One chassis cover panel kit	The cover panel kit includes the cable management cover with two mounting brackets and screws, and the air inlet cover with mounting bracket.
	Screws and hardware:	The hardware required to mount the chassis in a rack depends on your rack type.
	Phillips-head screws Clip nuts	Mount the chassis to a rack rail. Use the clip nuts, if necessary.
	Phillips-head screws Hex nuts	Mount the installation shelf to a rack rail. If the rack does not use threaded rail holes, you must use the supplied clip nuts with the clip nut screws.
	Installation shelf	Mount the chassis in an equipment rack.
	Grounding kit hardware	Connect the chassis to the ground of the rack.

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

Comments? infodev@avaya.com

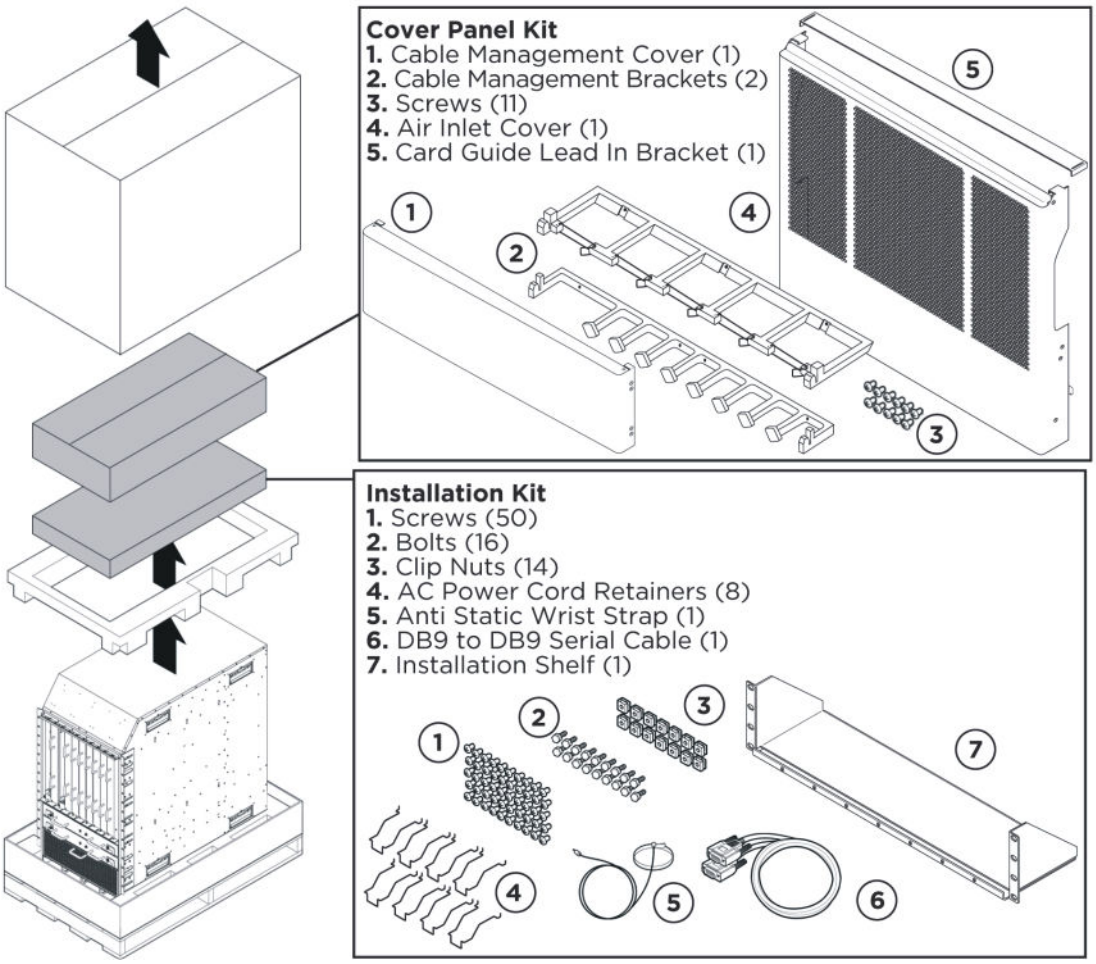


Figure 5: Accessories of the chassis shipping container

Other equipment

You require items not included in the chassis accessory package. Before you install the hardware, ensure that you obtain all the cables, tools, and other equipment you need.

Requirement	Description
PC, laptop, VT100 console, or equivalent	You can attach these items to the chassis to configure startup options or monitor the results of startup diagnostics.
Rack mounting hardware	The hardware to mount the chassis in an equipment rack depends on your rack type. Install the device in a standard EIA-310D 19–inch or ETSI 600–millimeter (mm) rack. The chassis fits in a standard 19–inch 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.

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Requirement	Description
Phillips screwdriver	You need a Phillips screwdriver to install the chassis in a standard rail-type equipment rack if you use Avaya-supplied screws.
Cables	The chassis accessory package does not include the cables required for your network configuration.

Rack mount

You can install a maximum of two Virtual Services Platform 9010 chassis in a standard 19 inch wide, 7 foot tall rack.

Warning:

Install chassis units from the bottom up to ensure racks do not become top heavy, and fall over.

Virtual Services Platform 9010 chassis installation

This section provides the procedures to install the Virtual Services Platform 9010 chassis.

Before you begin

- Inspect all items for shipping damage. If you find damaged items, 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 section must be performed by trained service personnel only.

Chassis installation time requirements

The following table lists the procedures you perform to install the Virtual Services Platform 9010 chassis, and the estimated time you need to complete each procedure. All systems do not require every procedure.

Table 8: VSP 9010 installation procedures and time requirements

Procedure	Time requirement
Reducing the chassis weight	5 minutes
Securing the chassis in a flush-mount configuration	12–30 minutes
Securing the chassis in a mid-mount configuration	12–30 minutes

Procedure	Time requirement
Grounding the chassis	12 minutes

Unpacking the shipping container

Remove the equipment in the shipping container. In addition to the chassis, the shipping container includes an installation kit and a cover panel kit.

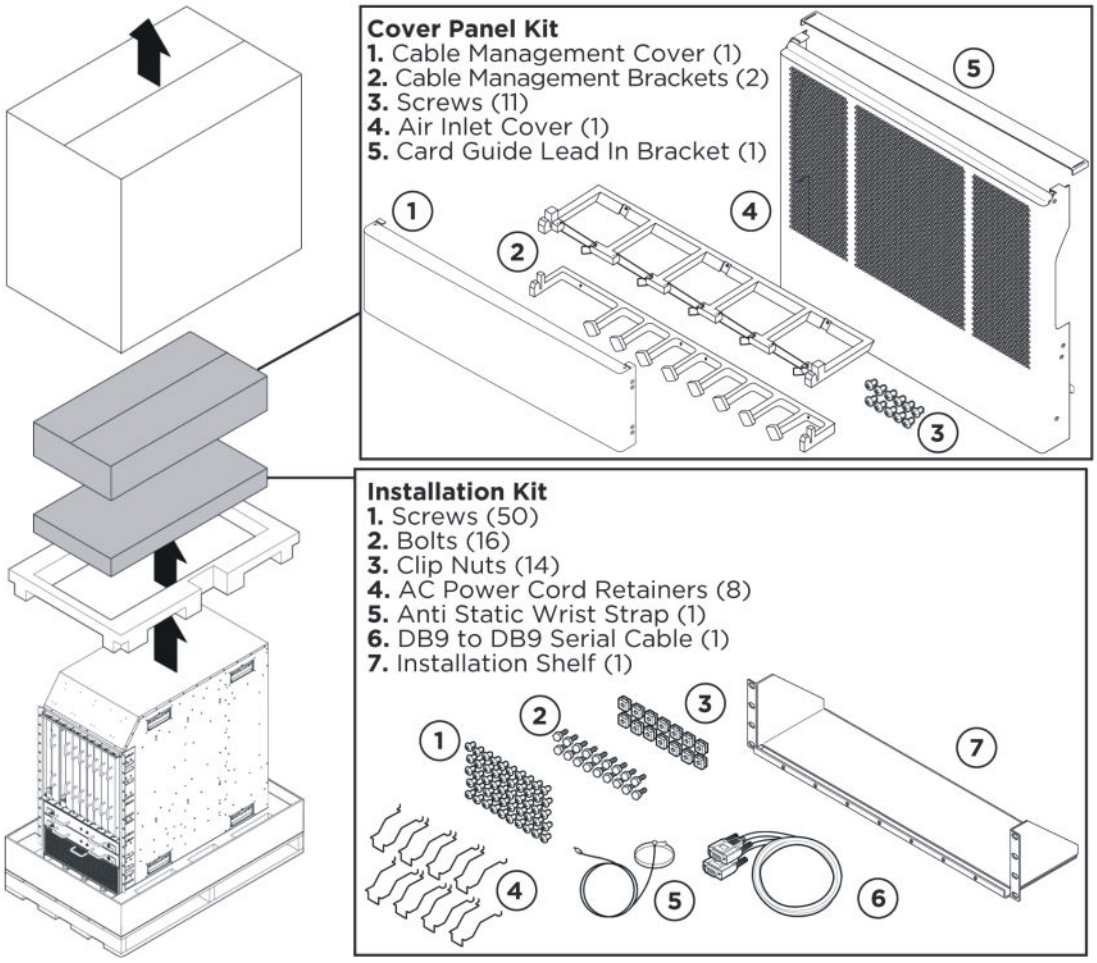
About this task

The installation kit includes extra screws and bolts to support a variety of installation options. You do not need to use all of the hardware provided.

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

Procedure

Unpack the shipping container for the AC chassis.



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Installing the installation shelf

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

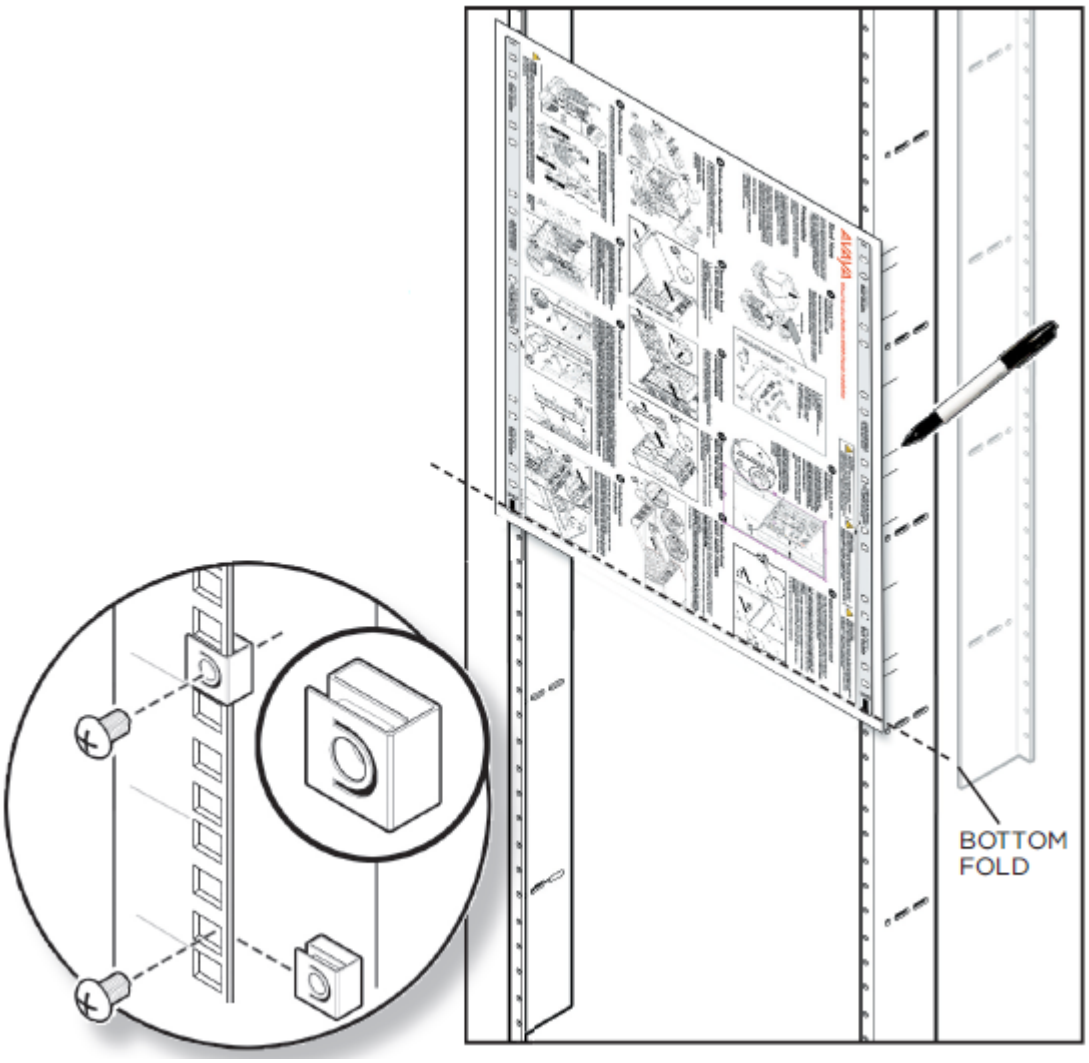
1. Use the rail guides provided at the top and bottom of the installation poster to identify where you want the chassis bottom to rest, and then mark that location and the location of the rail guide holes on the front of the rack. Start at the bottom of the rack and install subsequent chassis above it.

   Note:

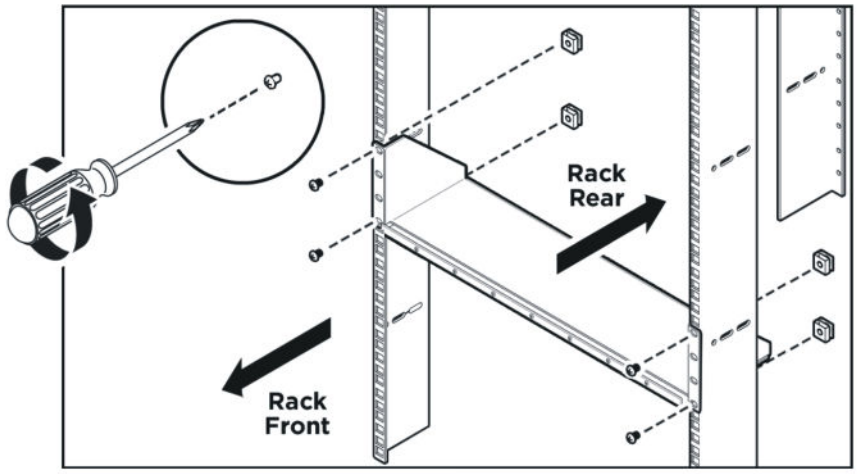
   Fold or trim off the margins of the poster to help mark the rack.

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

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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 then tighten using a hex wrench.
6. Tighten each screw with a Phillips screwdriver.



Reducing the chassis weight

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

Remove the filler modules from the front and rear of the chassis.

Remove the two cooling modules from the front of the chassis.

About this task

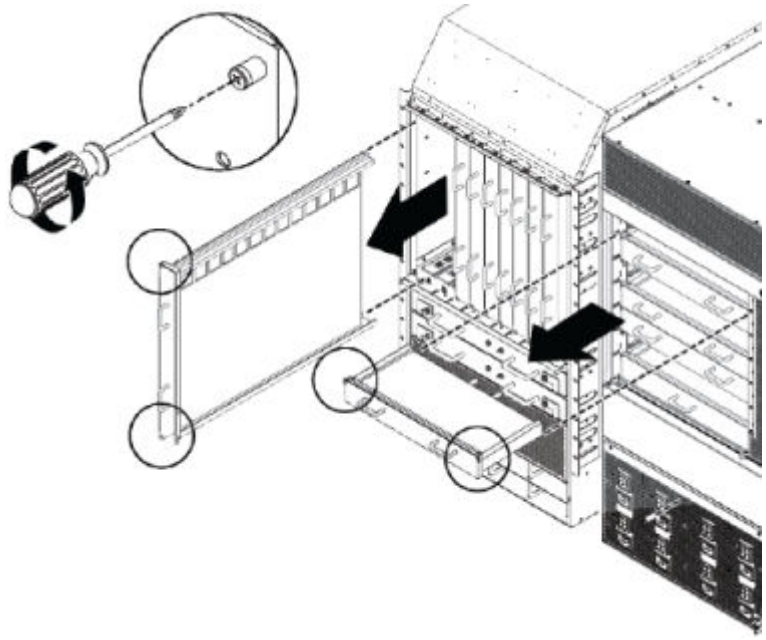
Important:

Do not install additional components before you mount the chassis in the rack.

All unused slots must contain filler modules. If you remove filler modules to reduce the chassis weight, ensure you reinstall them after you complete the chassis installation.

Procedure

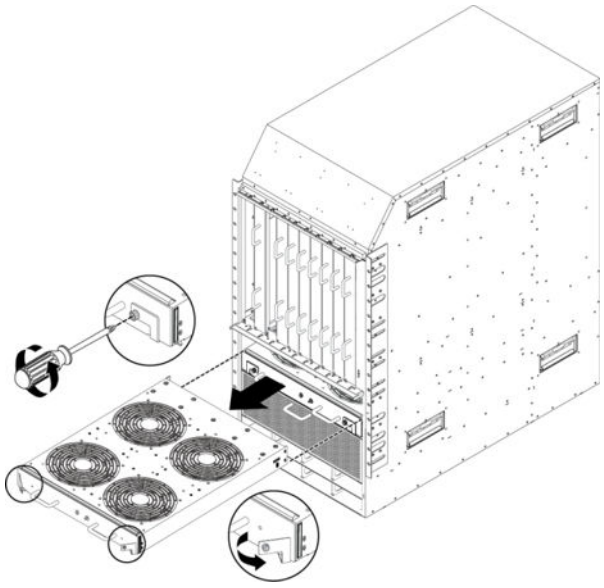
1. To unseat the filler module, loosen the two captive screws, grasp the two handles, and gently pull the module out and away from the chassis.



2. To unseat the cooling module, loosen the two captive screws, rotate the tabs to release the cooling module, and then grasp the two handles to gently pull the module out and away from the chassis.

   Warning:

   The cooling module is heavy. Use both hands to support the weight of the module.



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Lifting the chassis

The Virtual Services Platform 9010 weighs in excess of 141 lb (64 kg). Each chassis requires a minimum of three people to lift. Always use a mechanical lift when one is available.

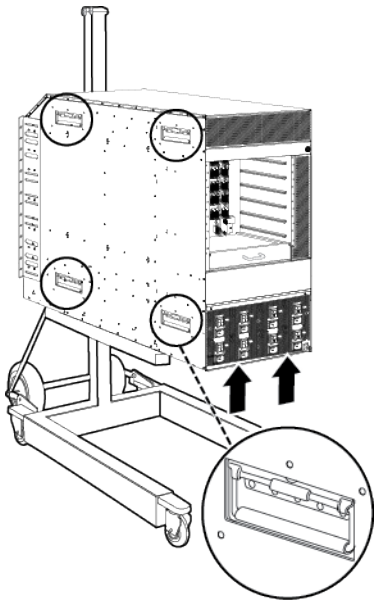
Use the handles that swing out from the top and bottom of the chassis sides to lift the chassis. To use the handles, swing the handle up and out from the chassis. From the rear, lift the chassis from the bottom only.

Before you begin

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 two people to lift the chassis at the sides and 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.

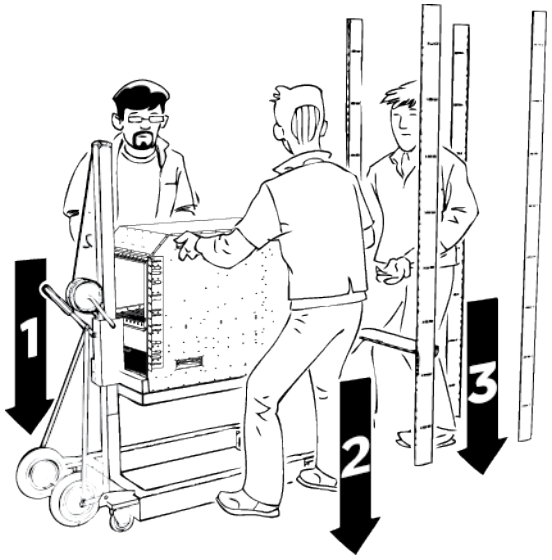
Procedure

1. Use the recessed handles at the top and bottom of the chassis sides to lift the chassis. To use the handles, swing the handle up and out from the chassis.



2. From the rear of the chassis, lift the chassis from the bottom only.

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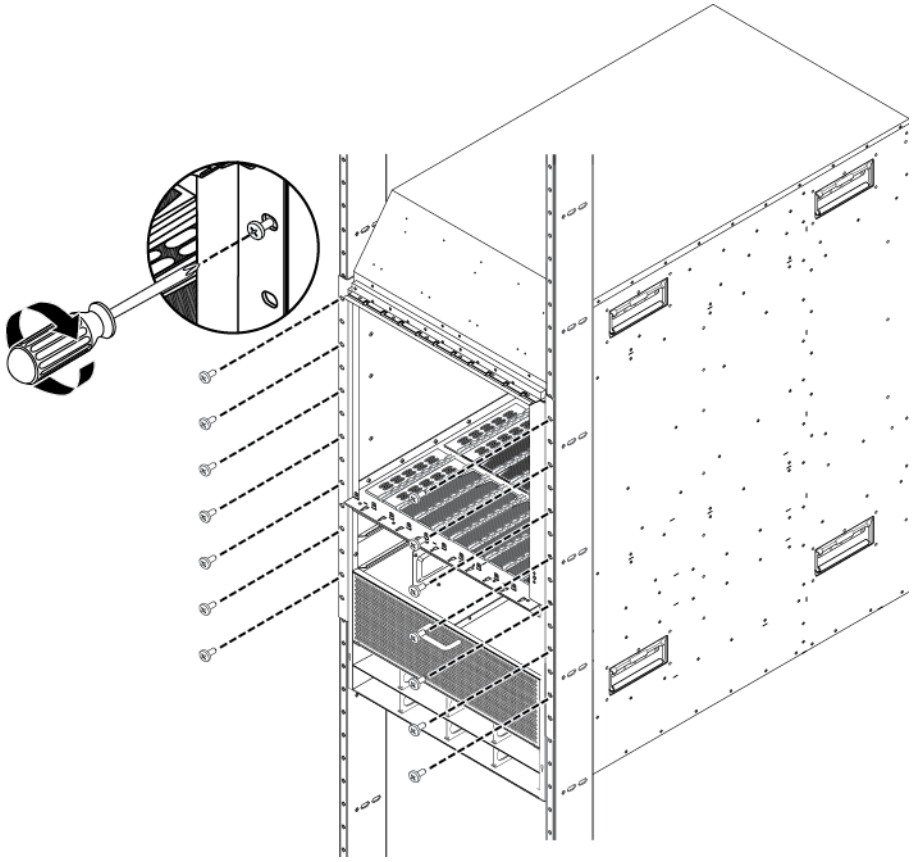


Securing the chassis in a flush-mount configuration

Mount the Virtual Services Platform 9010 in a standard two-post or four-post equipment rack. This procedure aligns the chassis front with the rack.

Procedure

1. Hold the 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 hole pairs on either side of the rack vertical supports match horizontally.
3. Insert a Phillips screw through each hole on the mounting bracket in the screw positions in the flange and rack.
4. Tighten each screw with a Phillips screwdriver.



Securing the chassis in a mid-mount configuration

Mount the Virtual Services Platform 9010 chassis in a standard two-post or four-post equipment rack in a mid-mount configuration. You must remove the mounting brackets, and then install them at the midmount location of the chassis.

About this task

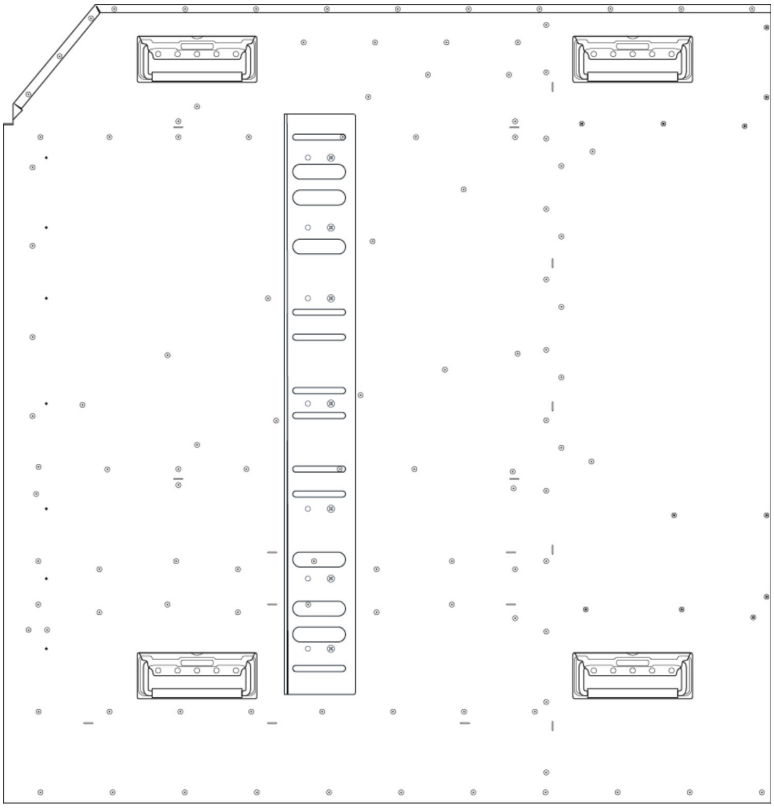
The default configuration is a flush-mount configuration. The rack mounting brackets for the flush-mount configuration are installed at the factory before the chassis ships.

Select the configuration that best meets your floor plan, room layout, or rack style requirements.

Procedure

1. Remove the mounting brackets attached to the front of the chassis sides.
2. Align the holes on the mid-mount bracket with the holes in the mid-mount location on the chassis side.

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3. Insert a Phillips screw through each hole on the mounting bracket and chassis.
4. Use a Phillips screwdriver to tighten the screws.
5. Hold the chassis in position and align the flanged end of the mounting bracket with the holes on either side of the rack support.
6. Ensure that the holes on either side of the rack supports match horizontally.
7. Insert a Phillips screw through each hole on the mounting bracket in the screw positions in the flange and rack.
8. Use a Phillips screwdriver to tighten the screws.

Attaching the cable management

Use this procedure to attach the cable management brackets and cable management cover to the top of the Virtual Services Platform 9010 chassis.

The cable management includes wire bales that swing out for dressing cables. The wire bales swing back in place to latch and retain the cables. The top cover is placed over the cable management.

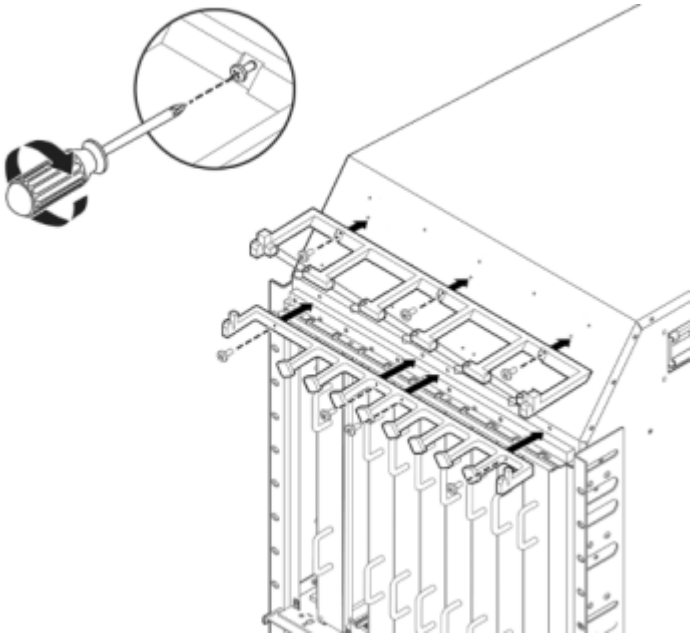
Before you begin

- Secure the chassis in the rack. Do not attach the cable management cover before you mount the chassis in a rack.

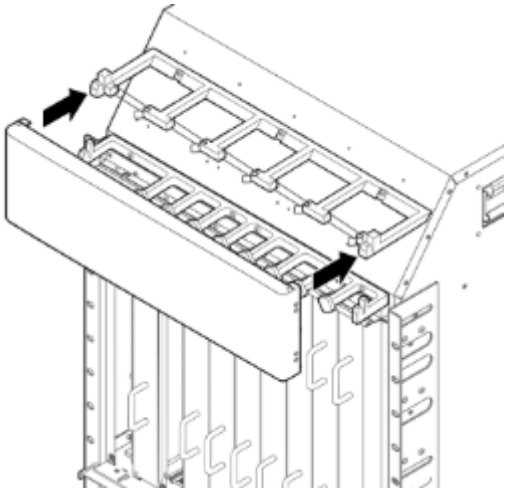
Comments? infodev@avaya.com

Procedure

1. Align the holes in the upper cable management bracket to the holes on the top of the chassis front.
2. Use the screws to attach the bracket to the chassis.
3. Align the holes in the lower cable management bracket to the holes on the top of the chassis front.
4. Use the screws to attach the bracket to the chassis.

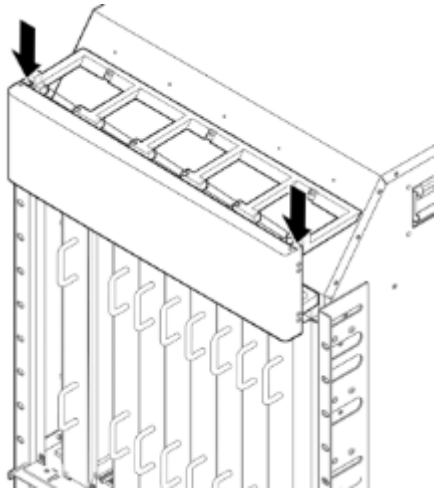


5. Align the tabs of each side of the cable management cover with the slots on the brackets.



6. Lower the cover into place.

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Attaching the air inlet cover

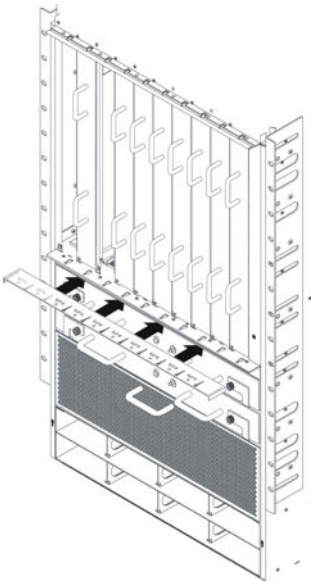
Attach the air inlet cover to maintain proper cooling airflow in the chassis.

Before you begin

- Secure the chassis in the rack. Do not attach this cover before you mount the chassis in a rack.

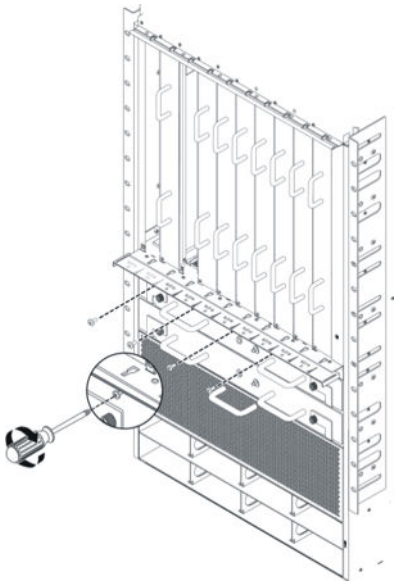
Procedure

1. Align the holes in the card guide lead in bracket with the holes in the chassis.

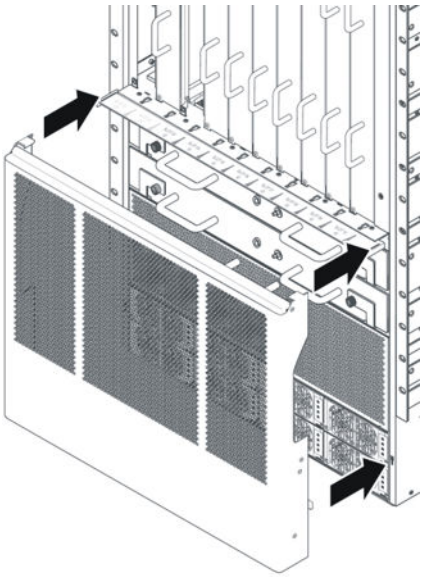


2. Use the screws to attach the bracket to the chassis.

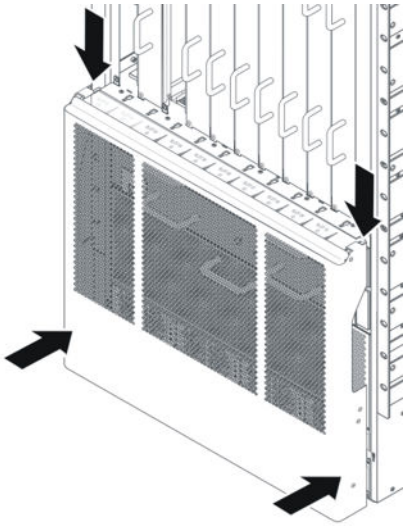
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3. Align the hooks on the cover with the slots on the mounting bracket and with the keyholes on the chassis.



4. Insert the hooks into the slots and keyholes to secure the cover to the chassis.

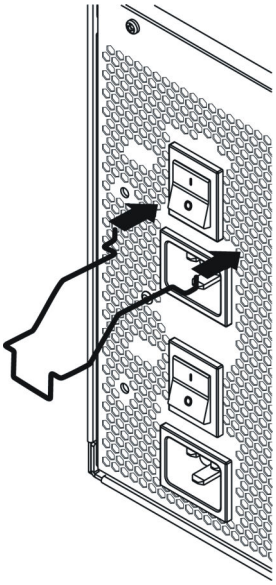


Attaching the AC power cord retainer

Attach the power cord retainer to support the power cords at the back of the AC chassis.

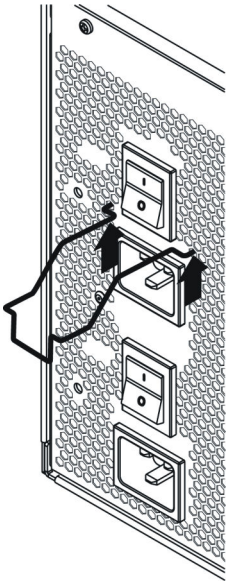
Procedure

1. Insert the L-shaped ends of the retainer into the holes on each side of the power switch.

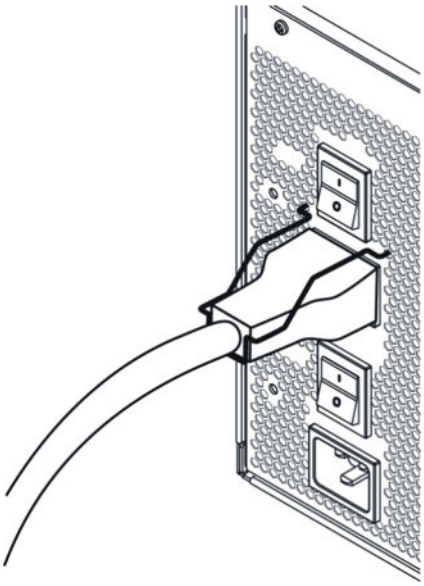


2. Push the L-shaped ends up to fully engage the retainer.

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3. Place the power cord in the notch of the retainer.



Grounding the chassis

Ground the chassis before you install power supplies or connect power and network cables to the system.

Before you begin

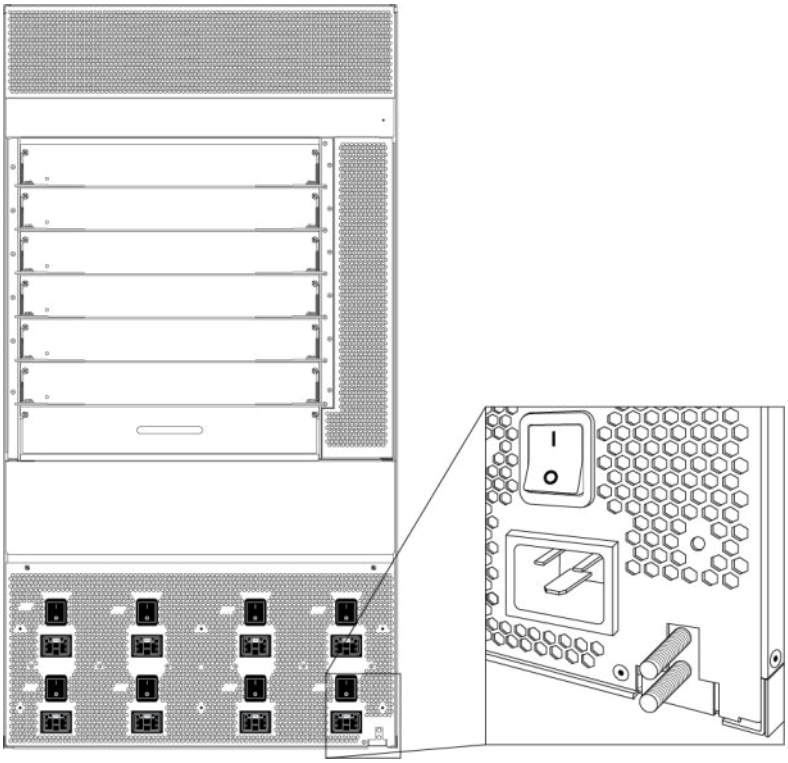
- Ensure you have a two-hole cable lug that fits over the grounding studs.
- Ensure you have a nut and a locking washer for the grounding stud.

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- Ensure you have a 6-AWG green and yellow ground wire long enough to connect to the ground point.
- Ensure you have a 1/4 inch (6 mm) socket or nut driver.

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 grounding studs are located on the bottom right of the chassis rear.



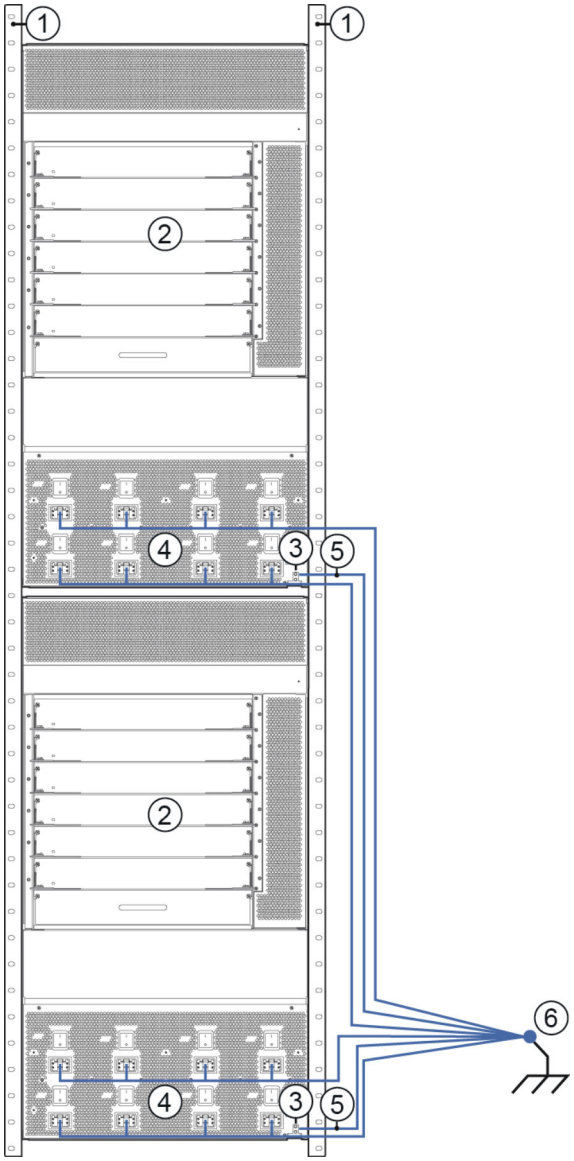
3. Bond the chassis ground cable to the single point ground window.

Job aid

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

Figure 6: Rack grounding strip example

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The following table identifies the numbered items in the preceding figure.

Item	Description
1	Equipment rack
2	Cabinet frame
3	Chassis frame ground studs
4	AC power inlets
5	#6 AWG green/yellow ground wire (not provided)
6	Single point ground

The following figure shows the ESD ground strap input location on the front of the chassis.

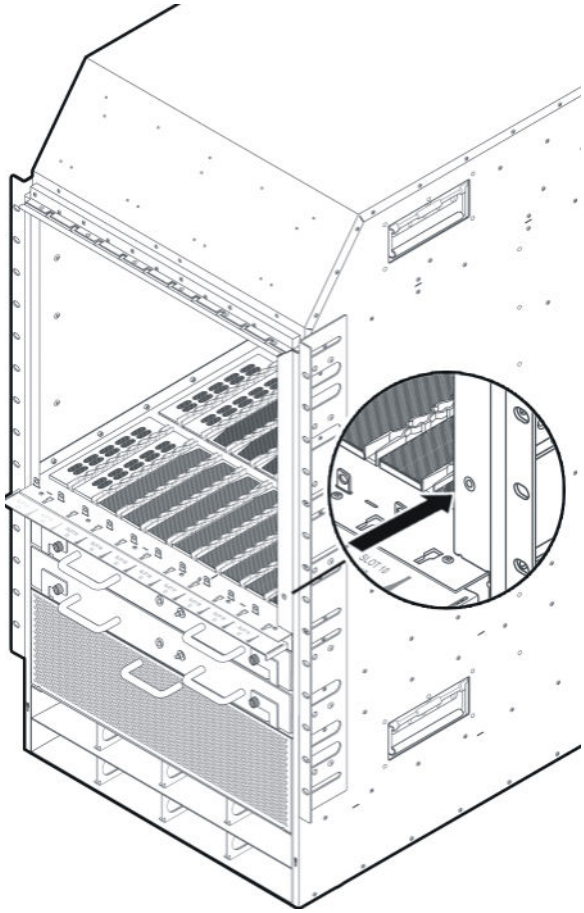


Figure 7: ESD ground strap input (front)

The following figure shows the ESD ground strap input location on the rear of the chassis.

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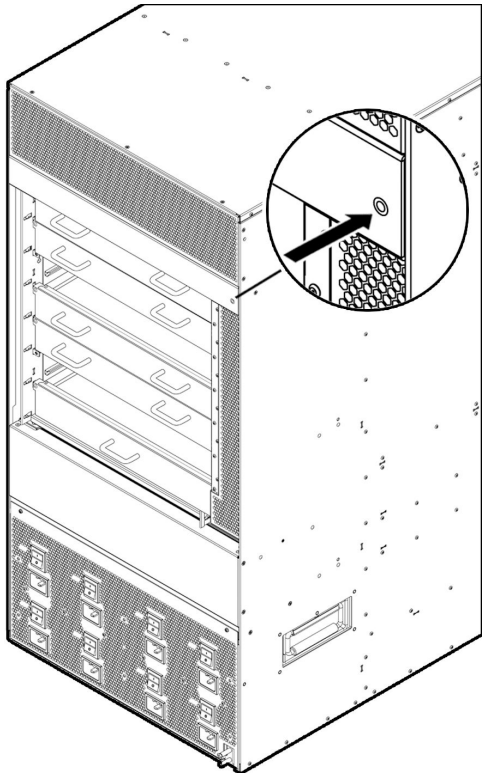


Figure 8: ESD ground strap input (rear)

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 power LEDs and cooling module LED lights amber.
- After the CP module starts to boot, the Online LED for each I/O module lights amber.
- Each I/O 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 I/O 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.

Chapter 4: Virtual Services Platform 9012 chassis

This chapter provides information to install the Virtual Services Platform 9012 chassis.

Virtual Services Platform 9012 chassis fundamentals

The Avaya Virtual Services Platform 9012 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 9012 chassis introduction

The front of the Virtual Services Platform 9012 chassis has ten slots for I/O modules and two slots for Control Processor (CP) modules. Slots are numbered from top to bottom. The front of the Virtual Services Platform 9012 chassis also has two bays for cooling modules and six bays for AC power supplies. The following figure shows the front view of the chassis.

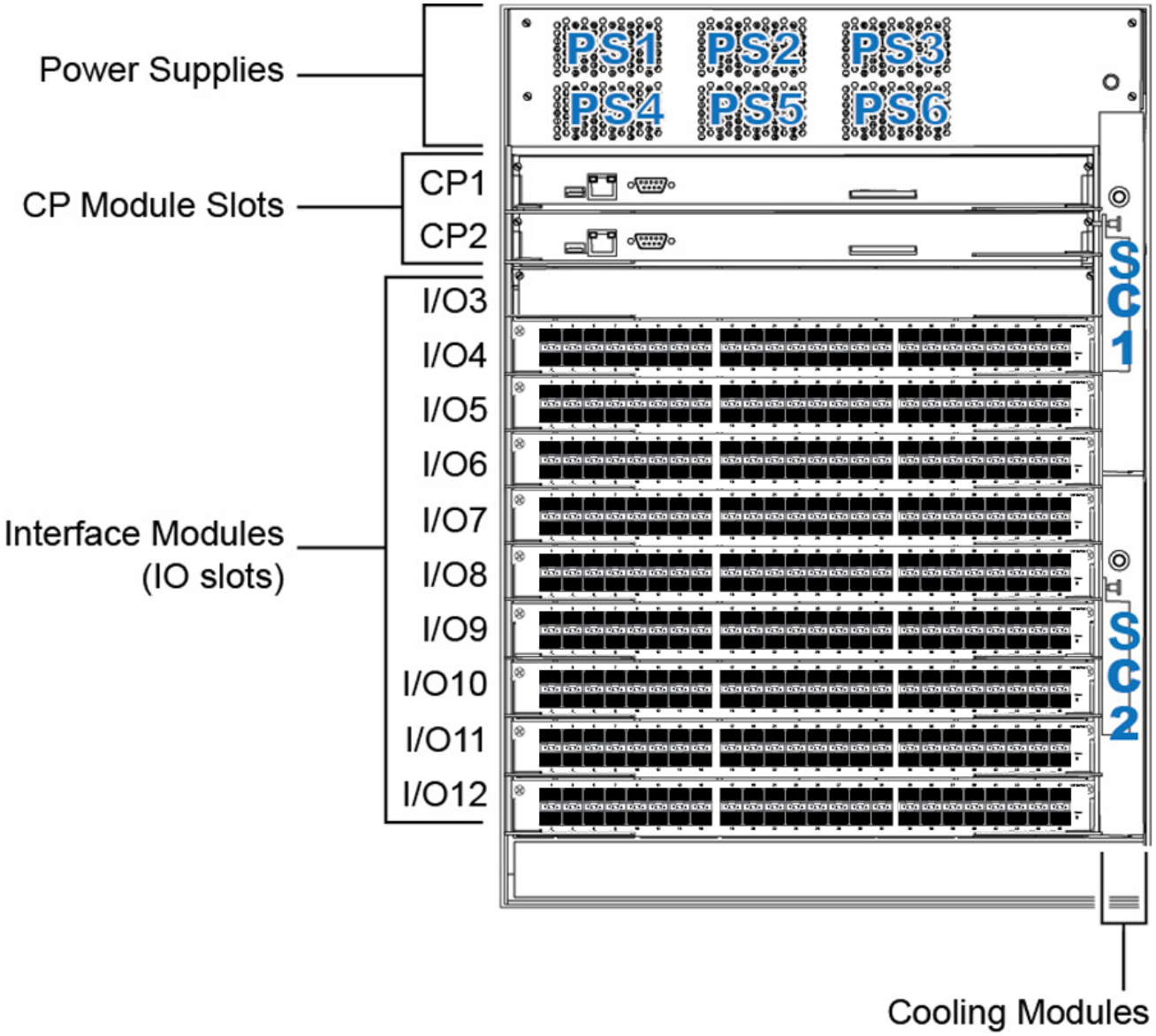


Figure 9: VSP 9012 chassis front view

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. Six separate IEC 60320-C20 AC power inlets and six power switches exist, 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 in the bottom right part of the chassis.

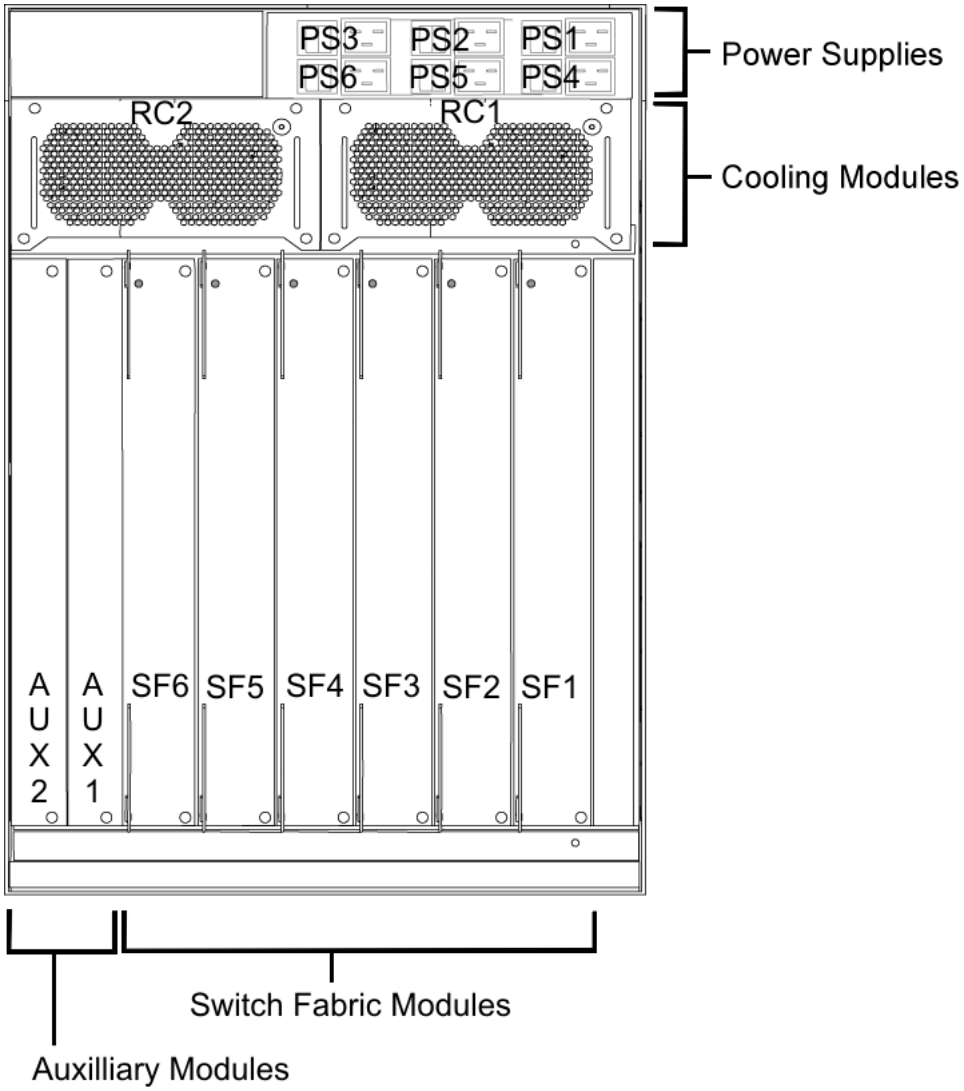


Figure 10: VSP 9012 chassis rear view

Power supplies

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

AC power supplies

The Virtual Services Platform 9012 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. The Virtual Services Platform 9012 chassis does not support DC-input power supplies.

To configure a Virtual Services Platform 9012 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 99.

When the Virtual Services Platform 9012 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, see *Installing AC Power Supplies in Avaya Virtual Services Platform 9000,* NN46250-303.

Power supply and power inlet locations

In the front of the chassis, the power supply bays are numbered increasing 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 decreasing 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 9012 and related precautions, see Grounding the chassis on page 83.

Power supply redundancy

The Virtual Services Platform 9012 supports multiple power supplies for custom power redundancy configurations. Two typical configurations are n + 1 or n + n, where n is the number of required power supplies to power the chassis and modules.

You can configure the Virtual Services Platform 9012 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 + n redundancy to ensure internal redundancy in the event of a power supply failure. Install an additional power supply, which is additional to what you require to power your hardware configuration, to provide n + n redundancy. If two separate power feeds are not available at the site power distribution, you can only configure the system for n + n 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
- 150 W each for the two 9012FCHS cooling modules (Virtual Services Platform 9012 chassis only)
- 65 W each for the two SF fan trays

See Component input power on page 99 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 (at 100-120 VAC) or 6000 to 9825 W (at 200-240 VAC), depending on the AC power supplies you install. Ensure that each power supply connects to a dedicated breaker.

Switch Fabric module

Each SF module connects to the ten different I/O 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 I/O 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 SF1 and SF4 to provide redundancy. You must have a functioning SF module in at least one of those slots for proper operation of the I/O modules.

If you install a second generation module in Virtual Services Platform 9010 or Virtual Services Platform 9012, you must have a minimum of five SF modules installed. Populate slots SF1 and SF4, and use any other slots for the remaining three SF modules.

If you install a first generation module in Virtual Services Platform 9010 or Virtual Services Platform 9012, you must have a minimum of three SF modules installed. Populate slots SF1 and SF4, and use any other slot for the remaining SF module.

Bandwidth is dependent on your hardware configuration.

The Virtual Services Platform 9012 chassis can use the 9090SF module.

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 I/O and SF modules
- maintains and monitors the health of the chassis

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- displays the status of the modules installed at the back of the chassis using LEDs

You can 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 95.

For more information about how to install CP modules, see *Installing Modules in Avaya Virtual Services Platform 9000,* NN46250-301.

Important:

The 9080CP module in a Virtual Services Platform 9010 AC chassis must run software Release 3.4 or later. You cannot plug and play a 9080CP module from a Virtual Services Platform 9012 chassis to a Virtual Services Platform 9010 AC chassis if the Virtual Services Platform 9012 runs a software version earlier than Release 3.4. For more information about hardware and software compatibility, see *Release Notes for Avaya Virtual Services Platform 9000,* NN46250-401.

Cooling modules

The Virtual Services Platform 9012 chassis uses four cooling modules. Two cooling modules at the front of the chassis cool the CP and I/O modules. Two cooling modules at the back of the chassis cool the SF modules.

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.

You install the cooling modules for the I/O 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.

Note:

If you use second generation modules with the Virtual Services Platform 9012, you must use the 9012FCHS cooling module for the Virtual Services Platform 9012. If you insert a second generation module into the Virtual Services Platform 9012, the system checks what cooling modules are in use, and if the system does not use the 9012FCHS cooling module, the second generation modules remain offline.

You can use 9012FCHS cooling modules with first generation modules in the Virtual Services Platform 9012, but you are not required to use the 9012FCHS cooling modules with first generation modules.

See *Installing Cooling Modules in Avaya Virtual Services Platform 9000,* NN46250-302, for information about how to install cooling modules.

Airflow in the Virtual Services Platform 9012

Airflow in the Virtual Services Platform 9012 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.

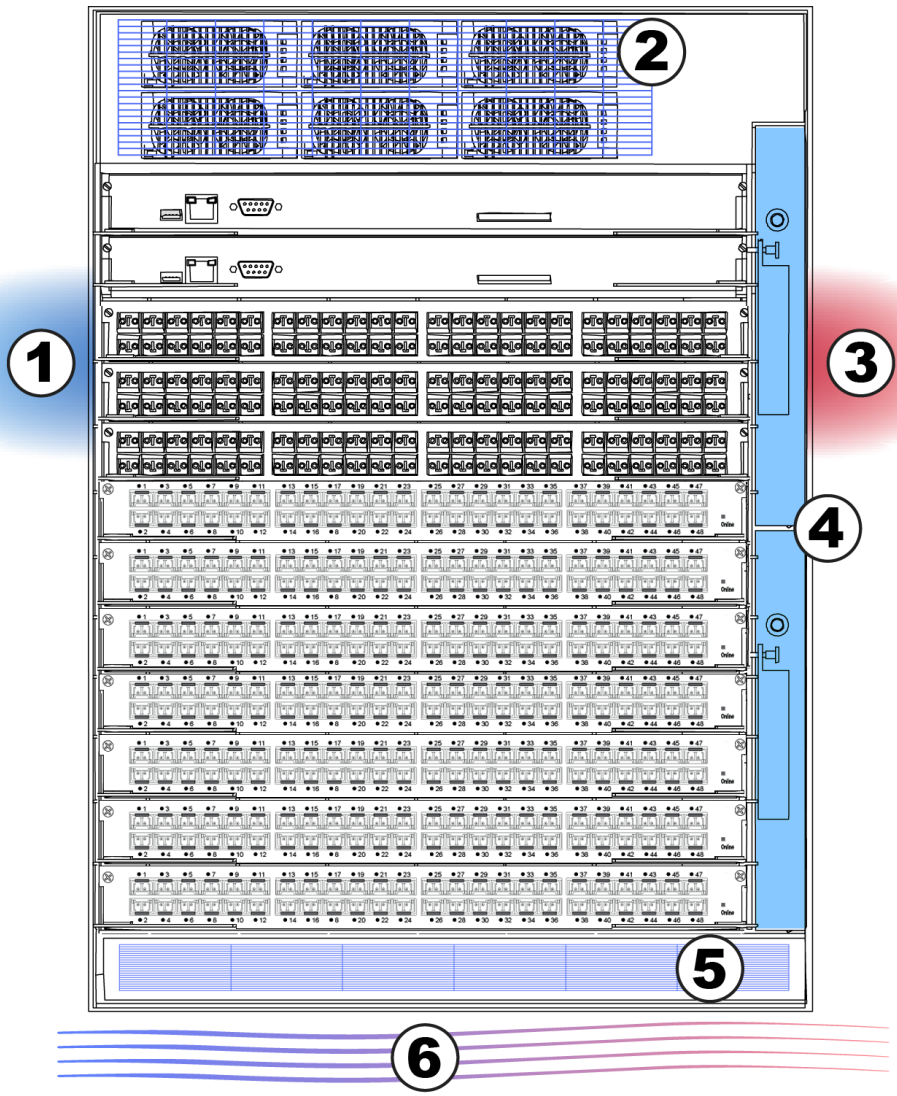


Figure 11: Front of the Virtual Services Platform 9012

Table 9: Front of the Virtual Services Platform 9012

Diagram	Description
1	I/O module air inlet
2	Power supply fan air inlet
3	I/O module air exhaust
4	9012FC or 9012FCHS cooling modules
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 I/O modules. You require either two 9012FC cooling modules or two 9012FCHS cooling modules (for use with second generation modules in second generation mode or first generation modules in first generation mode) on the front right side of the Virtual Services Platform 9012. The 9012 cooling modules provide air movement and have an adjustable fan speed that depends on the system temperature.

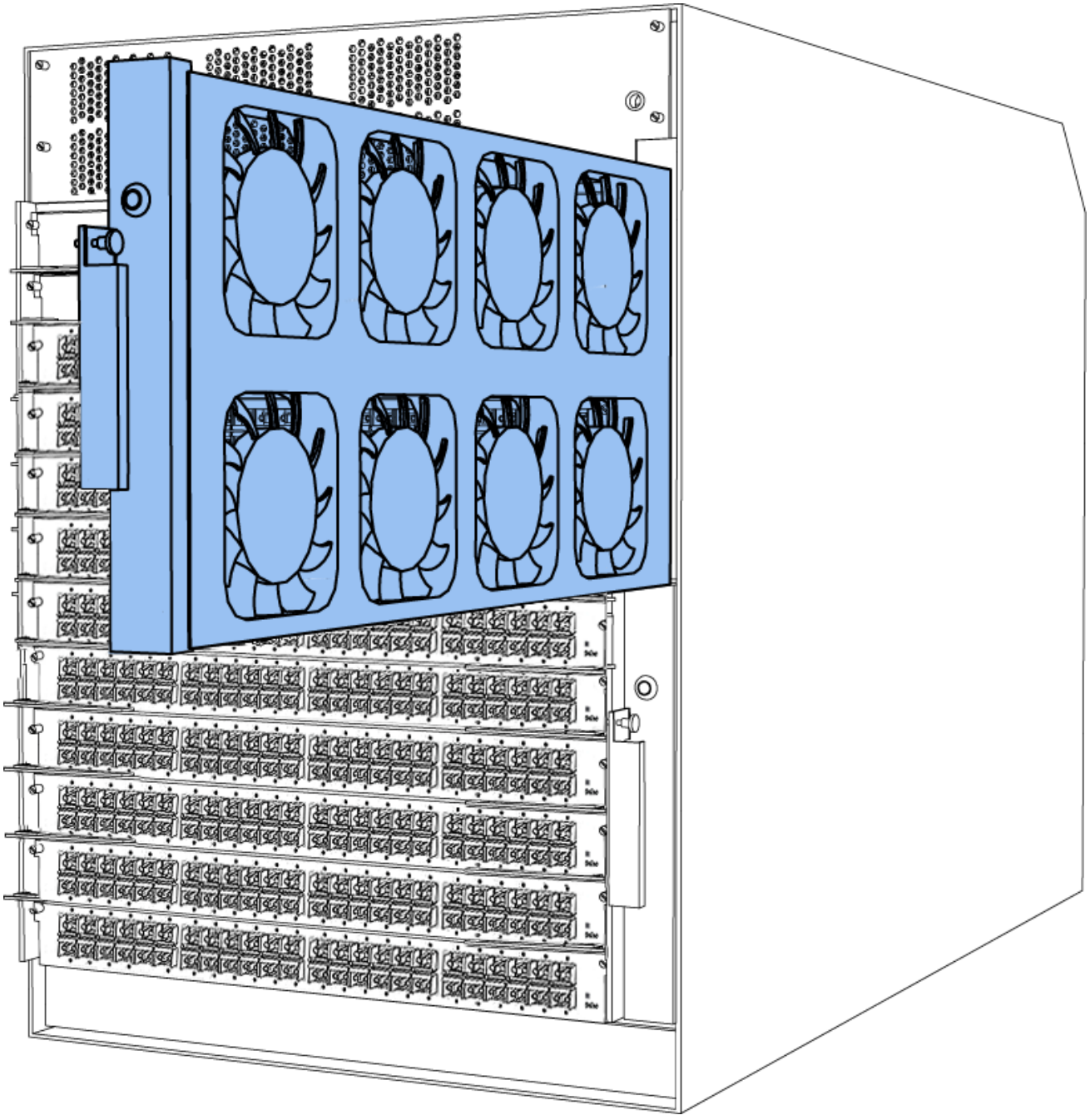


Figure 12: 9012 cooling module

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Each 9012FC cooling module or 9012FCHS cooling module has eight fans. The platform polls all I/O module and CP module sensors, and adjusts the 9012 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 Virtual Services Platform 9012, provide the air movement and have adjustable fan speed that depends on system temperature.

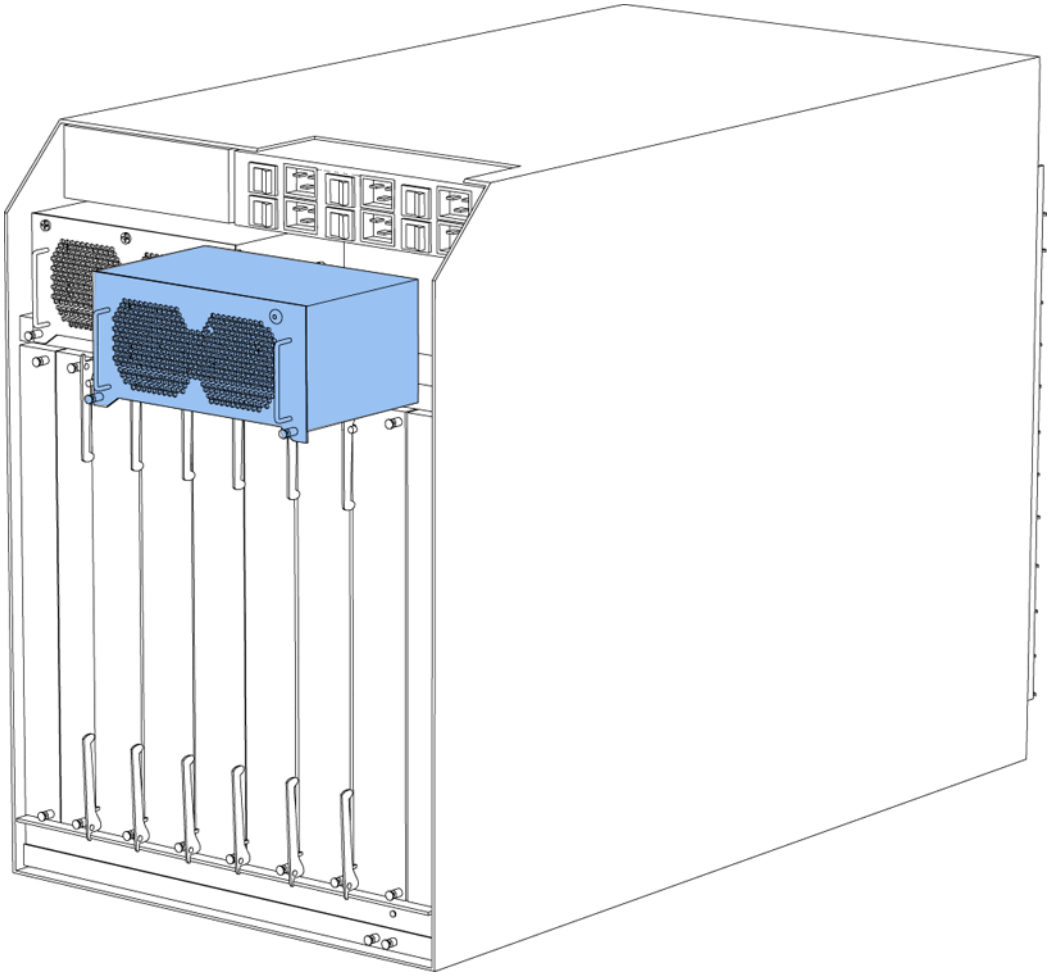


Figure 13: 9012RC cooling module

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

Note:

Do not place the Virtual Services Platform 9012 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 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 Virtual Services Platform 9012.

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Temperature alarms

The system monitors the temperature on the modules. If a module exceeds the alarm threshold temperature by one degree, the system initiates an SNMP trap and the module online LED displays as blinking red.

After the temperature of the module exceeds the alarm threshold temperature, the system logs the temperatures of all sensors each time the temperature increases by one degree or decreases by two degrees within a 30-second polling period. The module online LED returns to green when all module temperatures are below the threshold.

The system shuts down the module when the module exceeds the shutdown threshold temperature by one degree.

Virtual Services Platform 9012 temperature threshold quick reference

Use the information in the following table as a quick reference for temperature thresholds on the Virtual Services Platform 9012.

Note:

The I/O module alarm threshold and shutdown threshold temperatures differ for the Virtual Services Platform 9010 and the Virtual Services Platform 9012.

Table 10: Alarm threshold and shutdown threshold temperatures for VSP 9012 modules

Modules on the VSP 9012	Module LED color	Alarm threshold	Shutdown threshold
CP and SF modules	Blinking red	54 °C At 55 °C, the system triggers the alarm when the module exceeds the alarm threshold by one degree.	59 °C At 60 °C, the system shuts down the module when the module exceeds the shutdown threshold by one degree.
	Green	Alarm clears after the temperatures of the modules are at 53 °C.	—
First generation I/O module sensors in first generation mode			
Inlet and outlet sensors	Blinking red	59 °C At 60 °C, the system triggers the alarm when the module exceeds the alarm threshold by one degree.	64 °C At 65 °C, the system shuts down the module when the module exceeds the shutdown threshold by one degree.
	Green	Alarm clears after the temperatures of the modules are at 58 °C.	—
Second generation I/O module sensors			
Inlet and outlet sensors	Blinking red	69 °C	74 °C

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Modules on the VSP 9012	Module LED color	Alarm threshold	Shutdown threshold
		At 70 °C, the system triggers the alarm when the module exceeds the alarm threshold by one degree.	At 75 °C, the system shuts down the module when the module exceeds the shutdown threshold by one degree.
	Green	Alarm clears after the temperatures of the modules are at 68 °C.	—
Field Programmable Gate Array (FPGA) sensors	Blinking red	90 °C At 91 °C, the system triggers the alarm when the module exceeds the alarm threshold by one degree.	95 °C At 96 °C, the system shuts down the module when the module exceeds the shutdown threshold by one degree.
	Green	Alarm clears after the temperatures of the modules are at 89 °C.	—
Fabric Adapter (FA) sensors	Blinking red	100 °C At 101 °C, the system triggers the alarm when the module exceeds the alarm threshold by one degree.	105 °C At 106 °C, the system shuts down the module when the module exceeds the shutdown threshold by one degree.
	Green	Alarm clears after the temperatures of the modules are at 99 °C.	—

Bringing the module online

If a module shuts down due to heat, you must intervene to bring the slot back online. After you correct the temperature issue and the heat condition clears, you must bring the module back online. The module does not go online again unless you re-enable the module. After CP, SF, or I/O modules shut down, use the **`sys power slot {slot[-slot][,...]}`** command to bring the module back online.

Fan speed

The cooling module fan speed increases as the temperature reading of the sensors increases. The cooling module fan speed decreases as the temperature reading of the sensors decreases.

System temperature information

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 air sensors and 4 and 5 are outlet air sensors. The SF module has two temperature sensors and the CP module has four temperature sensors. The alarm threshold is the temperature the zone can reach before the device moves from normal to alarm mode. If the module exceeds the shutdown threshold by one degree it causes the module to shut down.

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

- A module alarm is triggered.
- Module alarms are cleared.

Heat sensor locations for first generation and second generation I/O modules

The following figure shows the baseboard component of a first generation I/O module on the left and the PIM component of a first generation I/O module on the right.

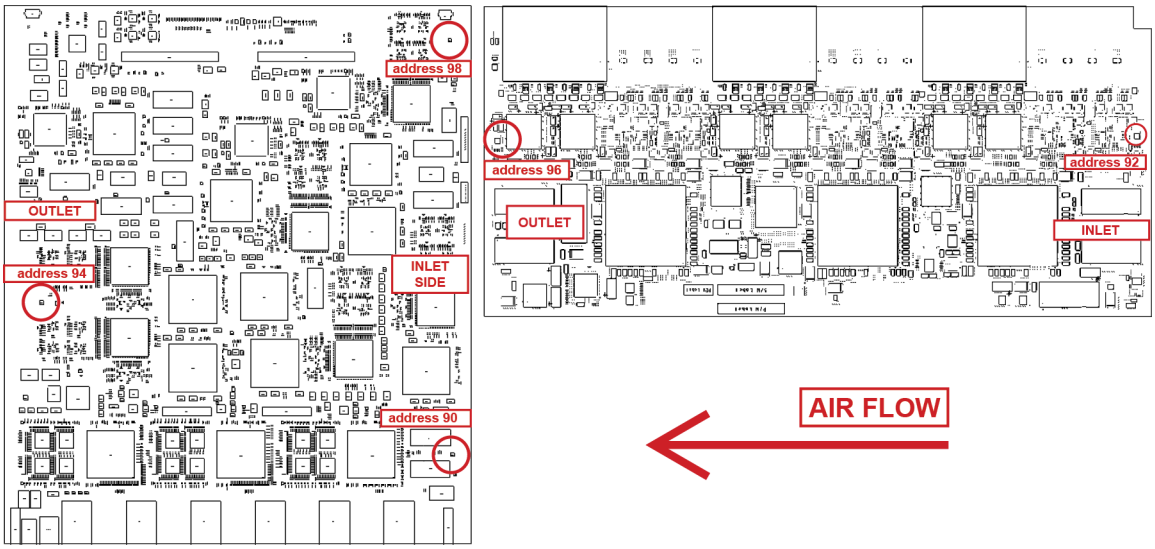


Figure 14: Heat sensor locations in a first generation I/O module

The following figure shows the baseboard component of a second generation I/O module on the left and the PIM component of a second generation I/O module on the right.

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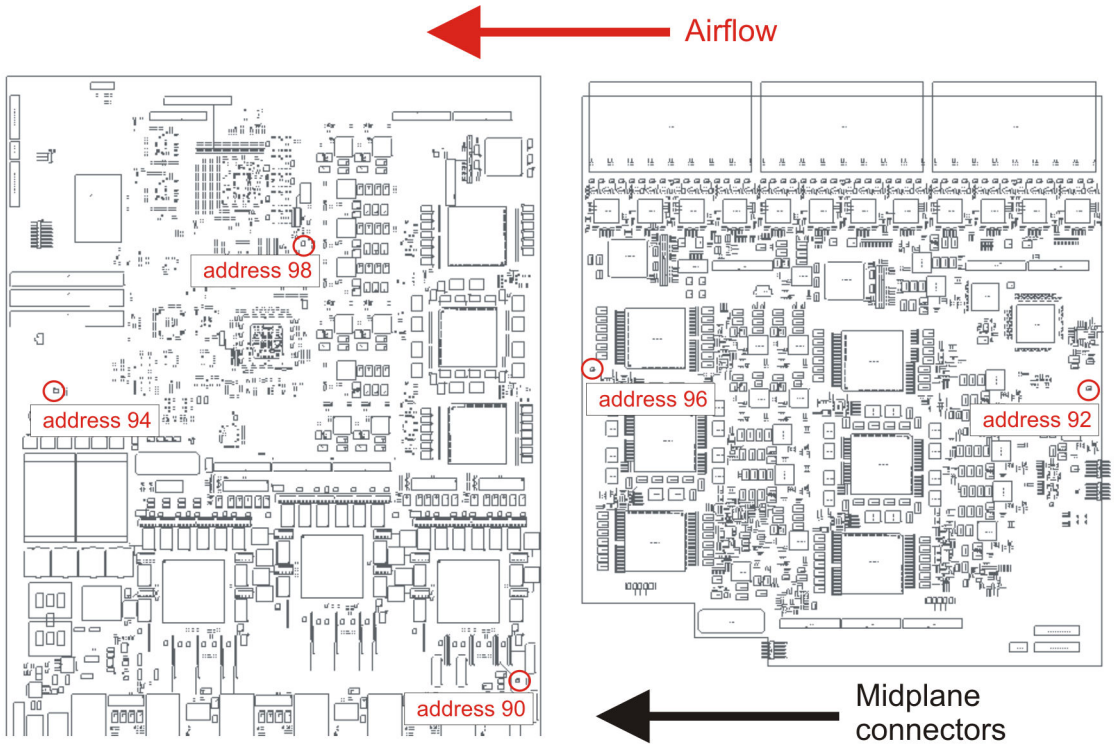


Figure 15: Heat sensor locations in a second generation I/O module

Use the following table to understand the heat sensors in the preceding I/O modules for first generation and second generation modules.

Table 11: Zone to heat sensor mapping for first generation .and second generation I/O modules

Zones	Heat sensors
zone 1	address 90
zone 2	address 92
zone 3	address 98
zone 4	address 94
zone 5	address 96

The system monitors the temperature every 30 seconds and displays the temperature on all the modules with the following command: **`show sys-info temperature`**

Note:

The I/O module alarm threshold and shutdown threshold temperatures differ for the Virtual Services Platform 9010 and the Virtual Services Platform 9012.

The following example shows command output for both first and second generation I/O modules.

```
Switch:1#show sys-info temperature

Temperature Info :
```


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```
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     37     25     --     31     24       37      24     54         59
2     34     25     --     30     23       34      23     54         59
4     33     29     39     36     45       45      29     69         74
8     35     30     38     36     43       43      30     69         74
10    34     34     41     38     47       47      34     69         74
12    35     29     34     35     30       35      29     59         64
SF1   33     --     --     40     --       40      33     54         59
SF2   32     --     --     36     --       36      32     54         59
SF3   30     --     --     31     --       31      30     54         59
SF4   29     --     --     31     --       31      29     54         59
SF5   31     --     --     36     --       36      31     54         59
```

The following example displays additional command output that appears for second generation I/O modules.

```
Extended Temperature Zones :

                     Sensor Temperatures

Slot  Zone    Slice-1     Slice-2     Slice-3    Highest  Lowest  Alarm     Shutdown
              1   2   3   1   2   3   1   2   3  Temp     Temp    Threshold Threshold
4     FPGA    56  51  56  56  55  59  54  47  62  62       47      90         95
4     FA      41  --  --  49  --  --  66  --  --  66       41      100        105
8     FPGA    58  53  57  55  55  51  53  51  51  58       51      90         95
8     FA      37  --  --  53  --  --  70  --  --  70       37      100        105
10    FPGA    53  51  51  55  57  59  57  57  53  59       51      90         95
10    FA      41  --  --  49  --  --  64  --  --  64       41      100        105
```

The following table describes the output for the **`show sys-info temperature`** command.

Value	Description
Temperature Info	
Zones 1 through 3	Specifies the inlet sensors on the module.
Zones 4 and 5	Specifies the outlet sensors on the module.
Highest Temp	Specifies the highest temperature reached on the slot.
Lowest Temp	Specifies the lowest temperature reached on the slot.
Alarm Threshold	Specifies the temperature, when exceeded by one degree, that causes the system to initiate an SNMP trap and causes the module online LED to display as blinking and red.
Shutdown Threshold	Specifies the temperature, when exceeded by one degree, that causes the system to shutdown the module by removing power from the slot.
Extended Temperature Zones This information applies only to second generation modules.	
FPGA	Specifies the temperature of the FPGA sensors. A value of -- indicates that this sensor is not available on this slot.

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Value	Description
fa	Specifies the temperature of the FA sensor, located on the slice. A value of -- indicates that this sensor is not available on this slot.
Slice-1 through Slice–3	Specifies temperature information for sensors on each slice. Sensors provide temperature information for various datapath components.
Highest Temp	Specifies the highest temperature of all the FPGA or FA sensors located on this I/O module.
Lowest Temp	Specifies the lowest temperature of all the FPGA or FA sensors located on this I/O module.
Alarm Threshold	Specifies the FPGA or FA temperature, when exceeded by one degree, that causes an alarm.
Shutdown Threshold	Specifies the FPGA or FA temperature, when exceeded by one degree, that causes the system to shutdown the module by removing power from the slot.

Virtual Services Platform 9012 show sys-info output

On the Virtual Services Platform 9012, you can see the zone alarm information under the Fan Trays Info section of the command output for the **`show sys-info`** command. The following output displays on a Virtual Services Platform 9012 without a second generation module:

```
Fan Trays Info :

   Zone Info :

      FRONT zone :
        Mode : NORMAL
        Mode Status : Normal
        Highest Temperature : 33 C
        Extended Zone :
          FPGA Highest Temperature : --
          FA Highest Temperature : --
      REAR zone :
        Mode : NORMAL
        Mode Status : Normal
        Highest Temperature : 31 C

   Fan Info :
          Tray   CardType           Serial#            Part#
      IO-FAN 1     9012FC
      IO-FAN 2     9012FC
      SF-FAN 1     9012RC
      SF-FAN 2     9012RC

           Zone        Tray     Unit      Status
         FRONT   IO-FAN 1        1          OK
         FRONT   IO-FAN 1        2          OK
         FRONT   IO-FAN 1        3          OK

         FRONT   IO-FAN 1        4          OK
         FRONT   IO-FAN 1        5          OK
         FRONT   IO-FAN 1        6          OK
         FRONT   IO-FAN 1        7          OK
```


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```
         FRONT   IO-FAN 1        8          OK
         FRONT   IO-FAN 2        1          OK
         FRONT   IO-FAN 2        2          OK
         FRONT   IO-FAN 2        3          OK
         FRONT   IO-FAN 2        4          OK
         FRONT   IO-FAN 2        5          OK
         FRONT   IO-FAN 2        6          OK
         FRONT   IO-FAN 2        7          OK
         FRONT   IO-FAN 2        8          OK
          REAR   SF-FAN 1        1          OK
          REAR   SF-FAN 1        2          OK
          REAR   SF-FAN 2        1          OK
          REAR   SF-FAN 2        2          OK
```

The following output displays on a Virtual Services Platform 9012 with a second generation module:

```
Fan Trays Info :

   Zone Info :

      FRONT zone :
        Mode : NORMAL
        Mode Status : Normal
        Highest Temperature : 49 C
        Extended Zone :
          FPGA Highest Temperature : 62 C
          FA Highest Temperature : 70 C
      REAR zone :
        Mode : NORMAL
        Mode Status : Normal
        Highest Temperature : 40 C

   Fan Info :
          Tray   CardType           Serial#            Part#
      IO-FAN 1   9012FCHS    LBNNTMRJ000172     EC1411004-E6
      IO-FAN 2   9012FCHS    LBNNTMRJ00015T     EC1411004-E6
      SF-FAN 1     9012RC    LBNNTMRJ000049     EC1411002-E6
      SF-FAN 2     9012RC    LBNNTMRJ000046     EC1411002-E6

          Zone       Tray     Unit      Status
         FRONT   IO-FAN 1        1          OK
         FRONT   IO-FAN 1        2          OK
         FRONT   IO-FAN 1        3          OK

         FRONT   IO-FAN 1        4          OK
         FRONT   IO-FAN 1        5          OK
         FRONT   IO-FAN 1        6          OK
         FRONT   IO-FAN 1        7          OK
         FRONT   IO-FAN 1        8          OK
         FRONT   IO-FAN 2        1          OK
         FRONT   IO-FAN 2        2          OK
         FRONT   IO-FAN 2        3          OK
         FRONT   IO-FAN 2        4          OK
         FRONT   IO-FAN 2        5          OK
         FRONT   IO-FAN 2        6          OK
         FRONT   IO-FAN 2        7          OK
         FRONT   IO-FAN 2        8          OK
          REAR   SF-FAN 1        1          OK
          REAR   SF-FAN 1        2          OK
          REAR   SF-FAN 2        1          OK
          REAR   SF-FAN 2        2          OK
```

Use the data in the following table to understand the output for the **`show sys-info`** command on the Virtual Services Platform 9012.

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Value		Description
FRONT zone: For the VSP 9012, the front zone consists of two fan trays with eight fans in each tray, which cool the CP and I/O modules.	Mode:	Each zone operates in either normal mode or alarm mode.
	Mode Status:	Normal Mode – All the fans are healthy and no temperatures exceed the warning threshold. Alarm Mode – Indicates fan or fan tray failures or temperature exceed the warning threshold.
	Highest Temperature	Specifies the highest temperature reached in the front zone.
	Extended Zone:	
	FPGA Highest Temperature	This information applies only to second generation modules. Specifies the temperature of the FPGA sensors. A value of -- indicates that this sensor is not available on this slot.
	FA Highest Temperature	This information applies only to second generation modules. Specifies the temperature of the FA sensor, located on the slice. A value of -- indicates that this sensor is not available on this slot.
REAR zone: For the VSP 9012, the rear zone consists of two fan trays with two fans in each tray, which cool the SF modules.	Mode:	Each zone operates in either normal mode or alarm mode.
	Mode Status:	Normal Mode – All the fans are healthy and no temperatures exceed the warning threshold. Alarm Mode – Indicates fan or fan tray failures or temperature exceed the warning threshold.
	Highest Temperature	Specifies the highest temperature reached in the front zone.
Fan Info:	IO-FAN 1	Specifies the module type.
	IO-FAN 2	Specifies the module type.
	SF-FAN 1	Specifies the module type.
	SF-FAN 2	Specifies the module type.
	FRONT IO-FAN 1 (1-8)	Specifies the status of each of the fans in the first cooling module.
	FRONT IO-FAN 2 (1-8)	Specifies the status of each of the fans in the first cooling module.

Value		Description
	REAR SF-FAN 1 (1-2)	Specifies the status of each of the fans in the rear cooling module.
	REAR SF-FAN 2 (1-2)	Specifies the status of each of the fans in the rear cooling module.

Virtual Services Platform 9012 placement in the rack

If you place each Virtual Services Platform 9012 in a row from left to right, 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.

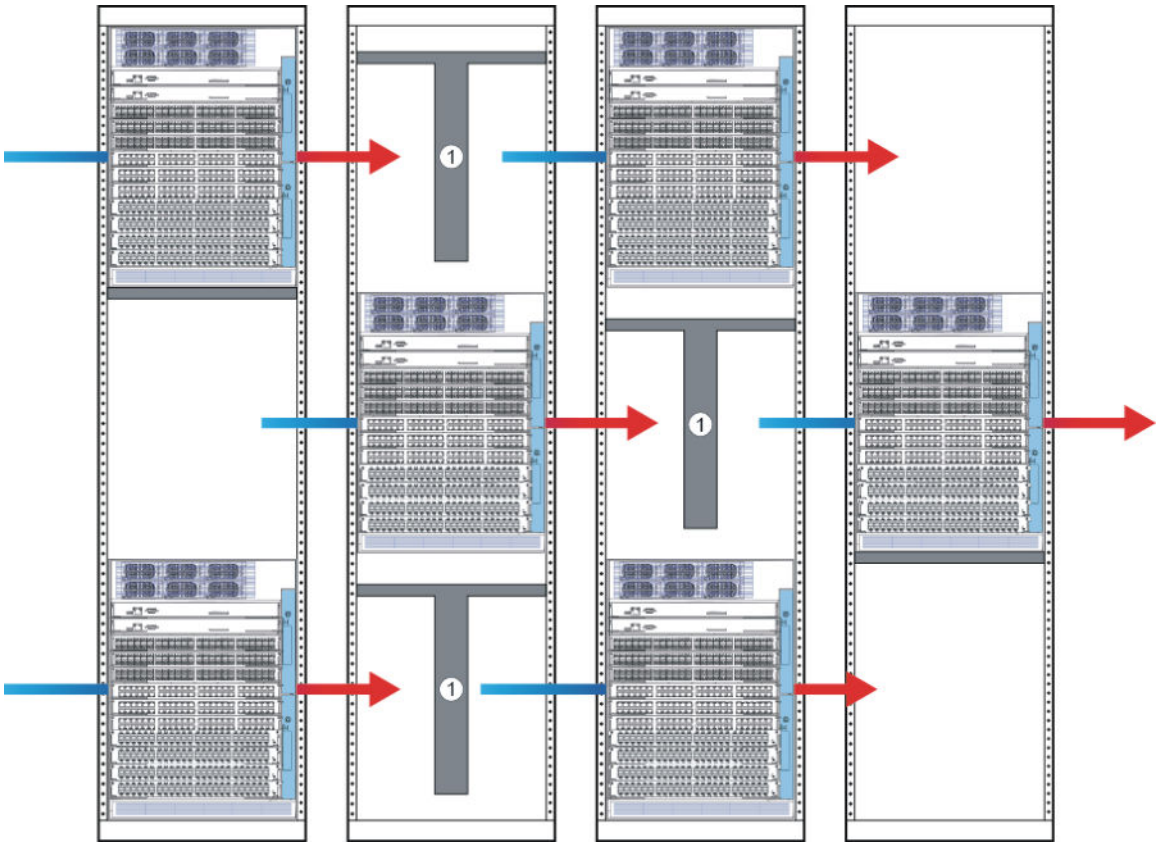


Figure 16: Arrangement of VSP 9012 in rack to optimize airflow

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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.

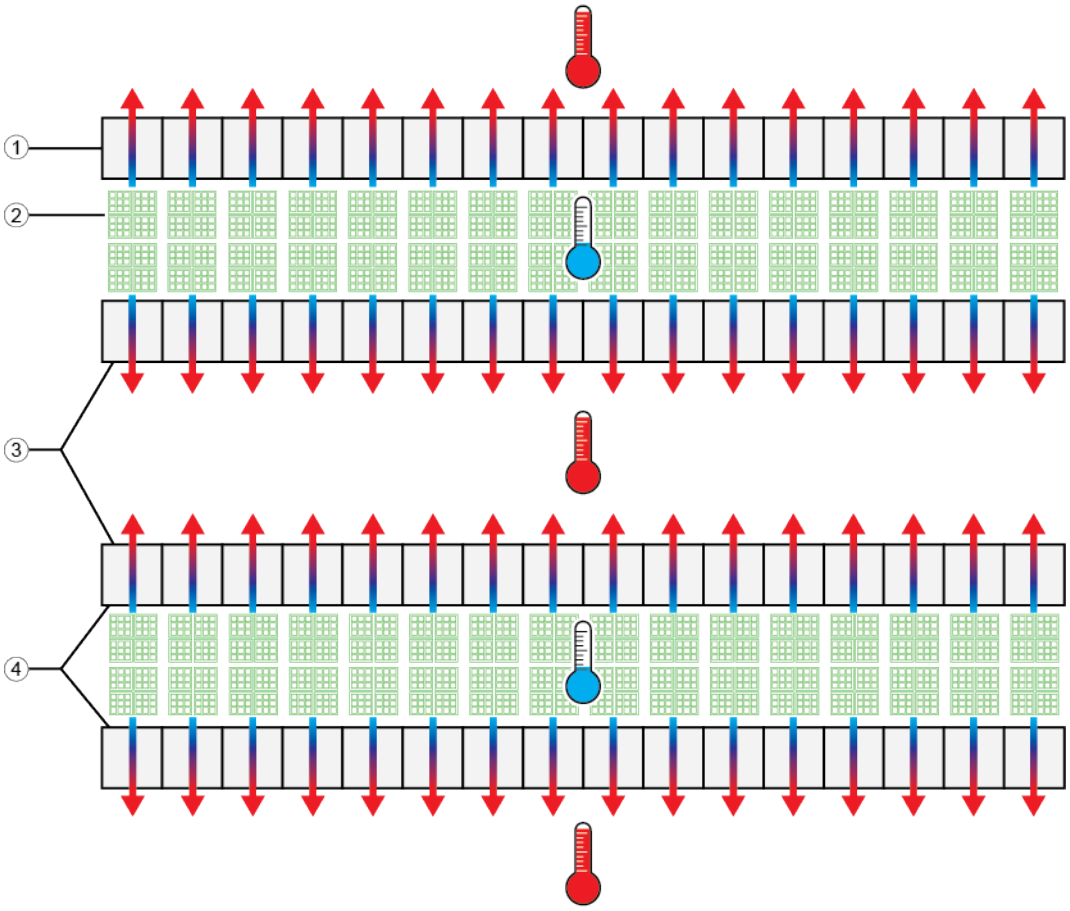


Figure 17: Data center floor plan of hot and cold aisles

The following table describes the layout of the data center in the preceding figure.

Table 12: Data center layout

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

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In a data center configuration, the front of the 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 Virtual Services Platform 9012 chassis takes in cold air from the left and discharges hot air to the right. The Virtual Services Platform 9010 chassis takes in cold air from the front and discharges hot air from the back.

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 Virtual Services Platform 9012 chassis in a row from left to right, 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 Virtual Services Platform 9012 chassis
- Relocate the cooling floor tiles to improve cool air movement into the side of the Virtual Services Platform 9012 chassis
- Add baffles to redirect the hot air discharged from the Virtual Services Platform 9012 chassis 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 Virtual Services Platform 9012 chassis. Baffles are added to redirect air from the side to the back of the chassis into the hot aisles. Cooling floor tiles are relocated near the cool air intake to improve cooling.

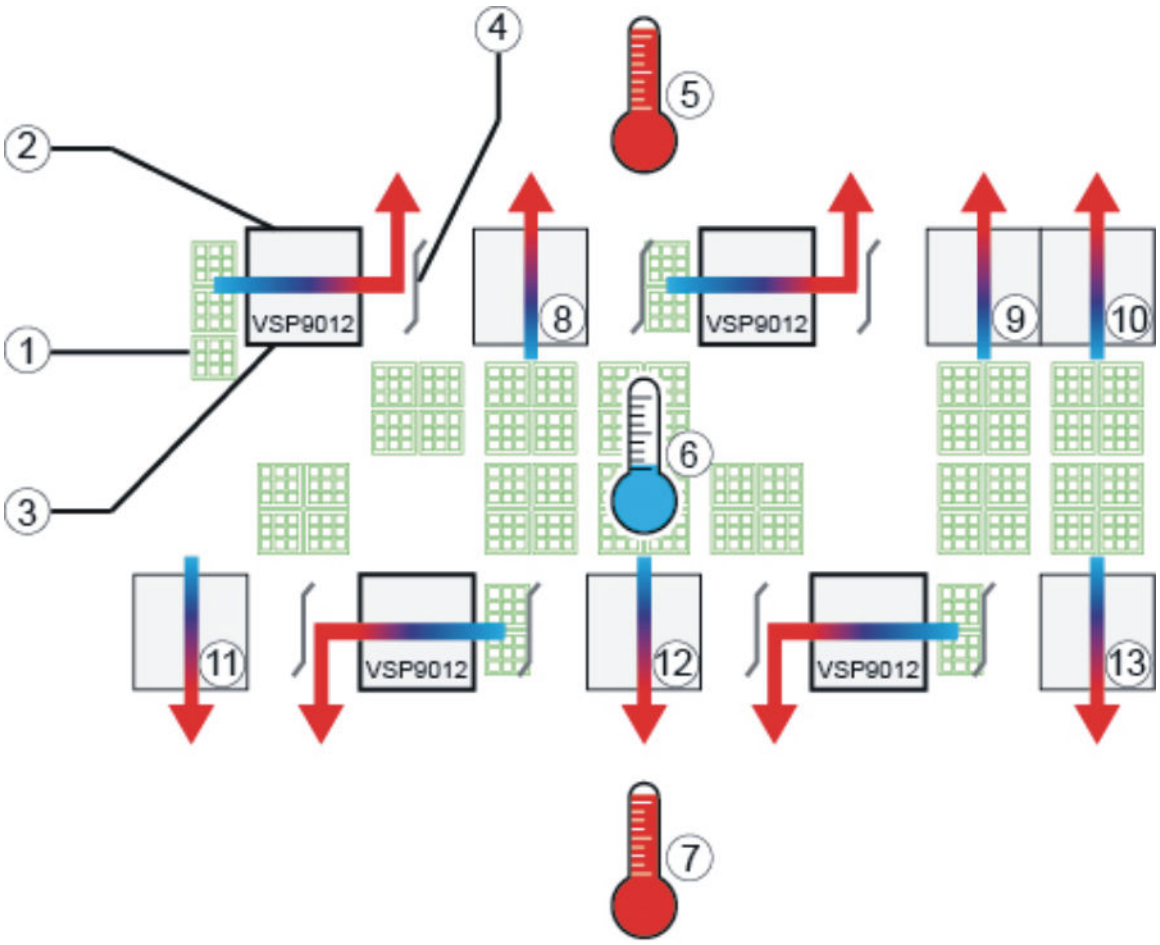


Figure 18: Data center with optimized cooling

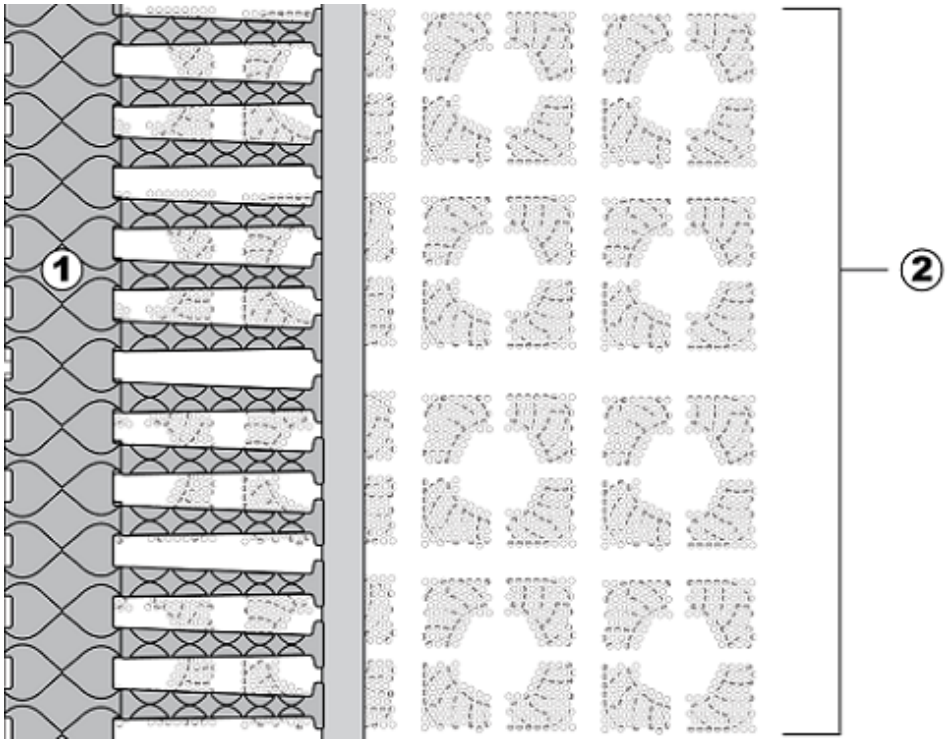
Table 13: Data center with optimized cooling

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

Other cooling considerations

This table offers suggestions for other cooling considerations.

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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 Virtual Services Platform 9012. Computers, Telecommunications, and other equipment located above and below the Virtual Services Platform 9012 can discharge hot air onto the chassis.
Blocked cooling modules	Placement of the Virtual Services Platform 9012 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 19: Cable management cooling modules** **Diagram** / **Description** 1 — Cable management blocking fans 2 — Fans
Clearance	Do not place the Virtual Services Platform 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 6 inches (15.2 centimeters) on each side). However, dependent on circumstances, increase the space at the side of the Virtual Services Platform 9012 to improve airflow.

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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 98.

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

You can install up to three Virtual Services Platform 9012 chassis in a single rack. Although no space requirement exists between units, leave enough room between units to remove and replace modules.

Warning:

Install chassis units 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. Always use a mechanical lift 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 inches (152.4 mm) of distance from any adjacent equipment that can 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. In addition to power supply redundancy, this configuration also provides power feed redundancy.

Hardware requirements

This section includes information about the hardware that ships with the VSP 9012 chassis.

Shipped assembly Virtual Services Platform 9012 chassis hardware

In addition to the Virtual Services Platform 9012 chassis, your shipping container includes 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. For more information about ordering replacement parts, see Part numbers on page 105 .

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Table 14: 9012 chassis shipping accessories

Check	Accessory	Usage
	VSP 9012 chassis	
	Ten I/O 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	
	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.
	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.

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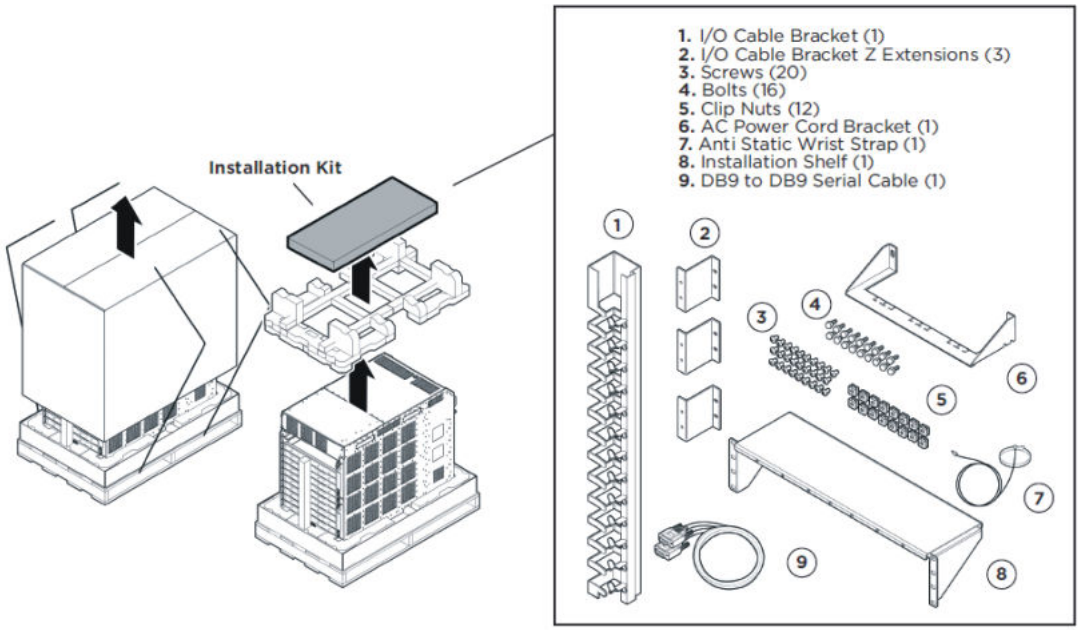


Figure 20: Accessories of the chassis shipping container

Other equipment

You require items not included in the Virtual Services Platform 9012 chassis accessory package. The following sections describe these items. Before you install the Virtual Services Platform 9012 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 9012 chassis in an equipment rack depends on your equipment rack type.

You need a Phillips screwdriver to install the Virtual Services Platform 9012 chassis in a standard rail-type equipment rack if using Avaya-supplied screws.

Install the device in standard EIA-310D 19-inch racks and ETSI 600-millimeter (mm) racks. The chassis fits a standard 19-inch 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 9012 chassis accessory package.

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Rack mount

You can install a maximum of three Virtual Services Platform 9012 chassis in a standard 19 in. wide 7 ft. tall rack.

Warning:

Install chassis units from the bottom up to ensure racks do not become top heavy, and fall over.

Virtual Services Platform 9012 chassis installation

This section describes how to install the Virtual Services Platform 9012 chassis.

Before you begin

Before you begin the installation of the Virtual Services Platform 9012 chassis, ensure you complete 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.

About this task

Warning:

Only trained service personnel must perform the procedures in this section.

Chassis installation time requirements

The following table lists the procedures you perform to install the Virtual Services Platform 9012 chassis, and the estimated time you need to complete each procedure. Not all procedures are required for every system.

Table 15: VSP 9012 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

Unpacking the installation kit

Unpack the installation kit and remove the included equipment.

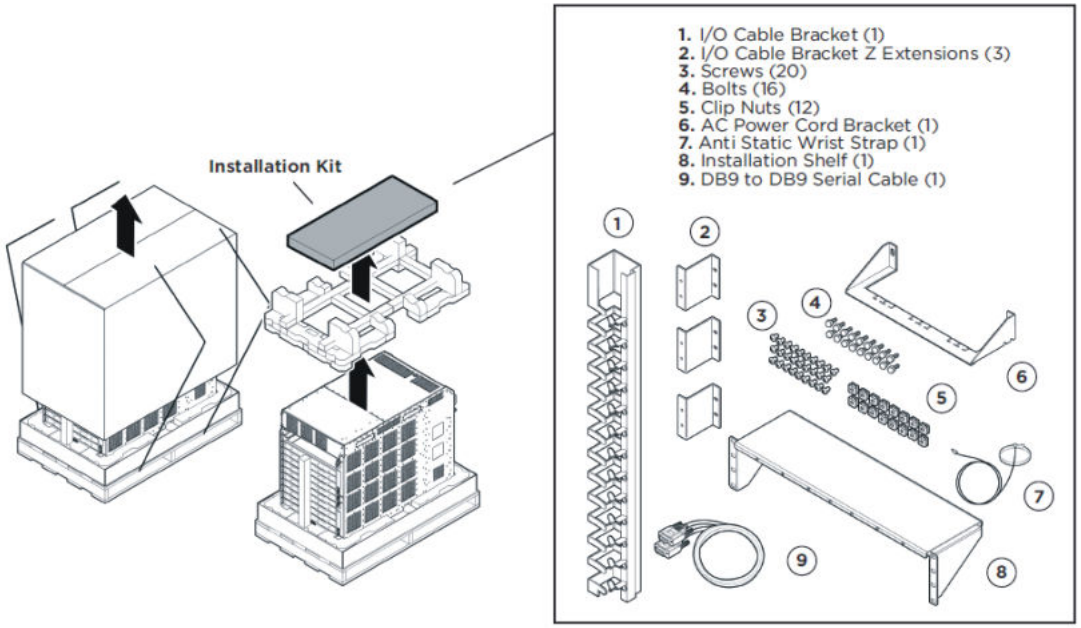
About this task

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

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

Procedure

Unpack the installation kit:



Installing the installation shelf

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, and then mark that location and the location of the rail

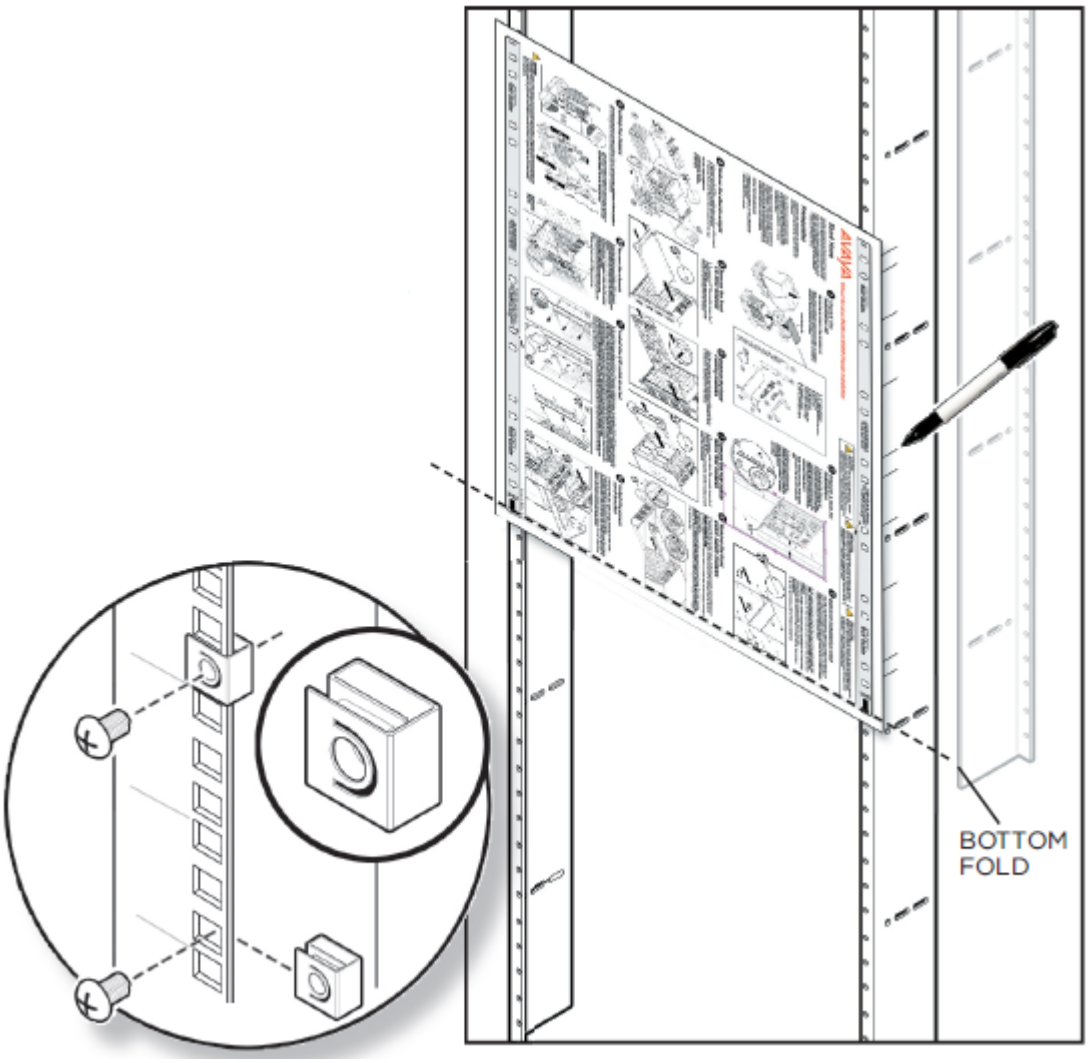
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guide holes on the front of the rack. Start at the bottom of the rack and install subsequent chassis above it.

Note:

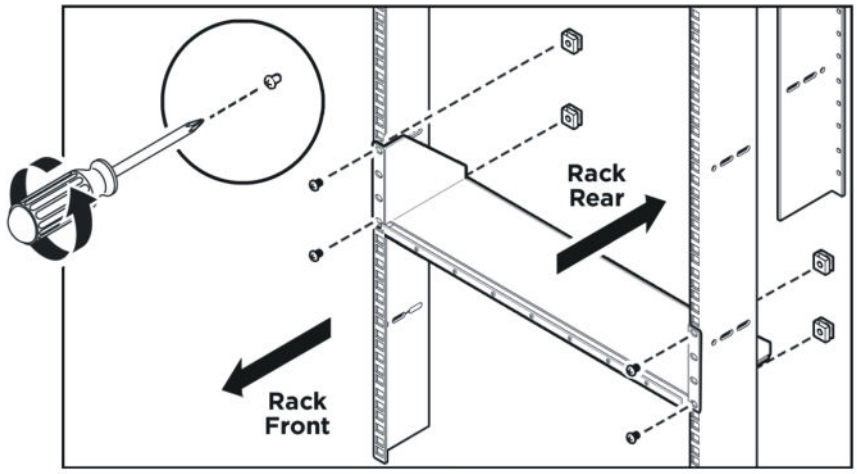
Fold or trim off the margins of the poster to help mark the rack.

2. If the holes in the vertical supports require clip nuts, insert a clip nut in each of the 14 locations where you mark the holes. Avaya includes clip nuts. 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 then tighten using a hex wrench.

6. Tighten each screw with a Phillips screwdriver.



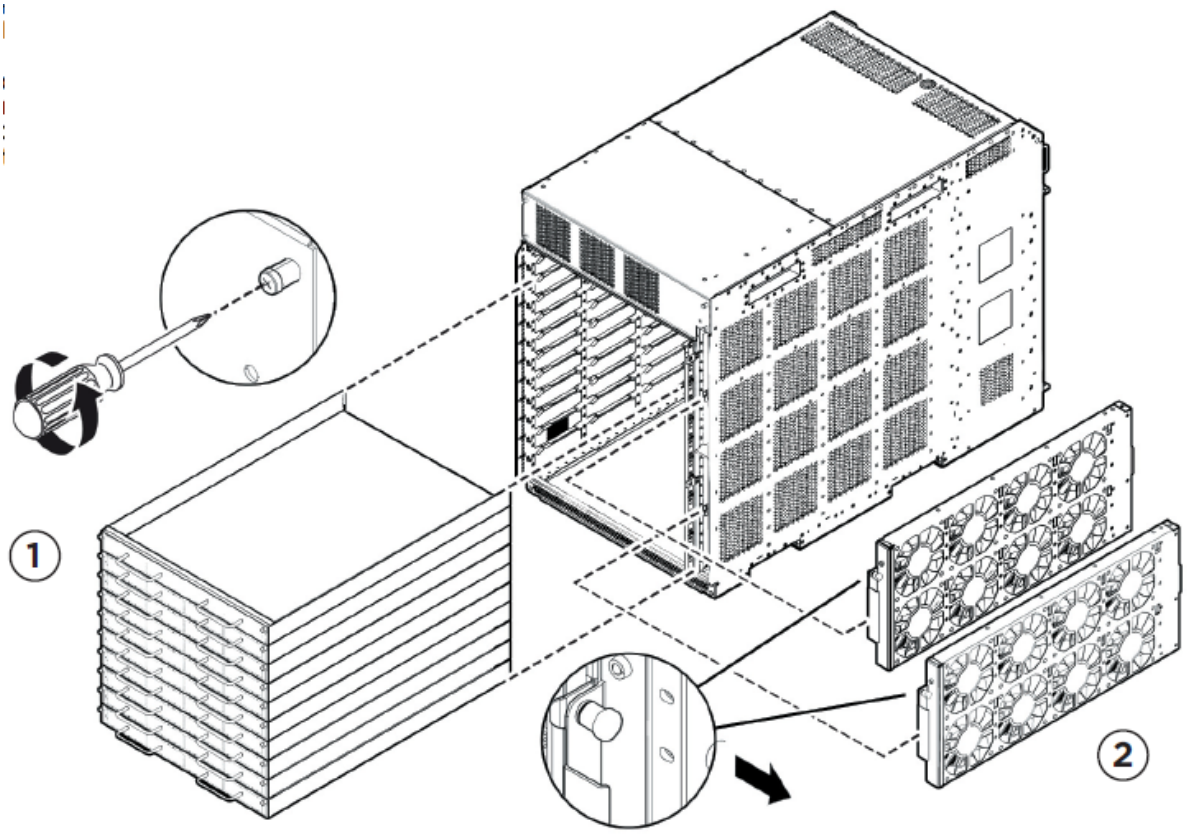
Reducing the chassis weight

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

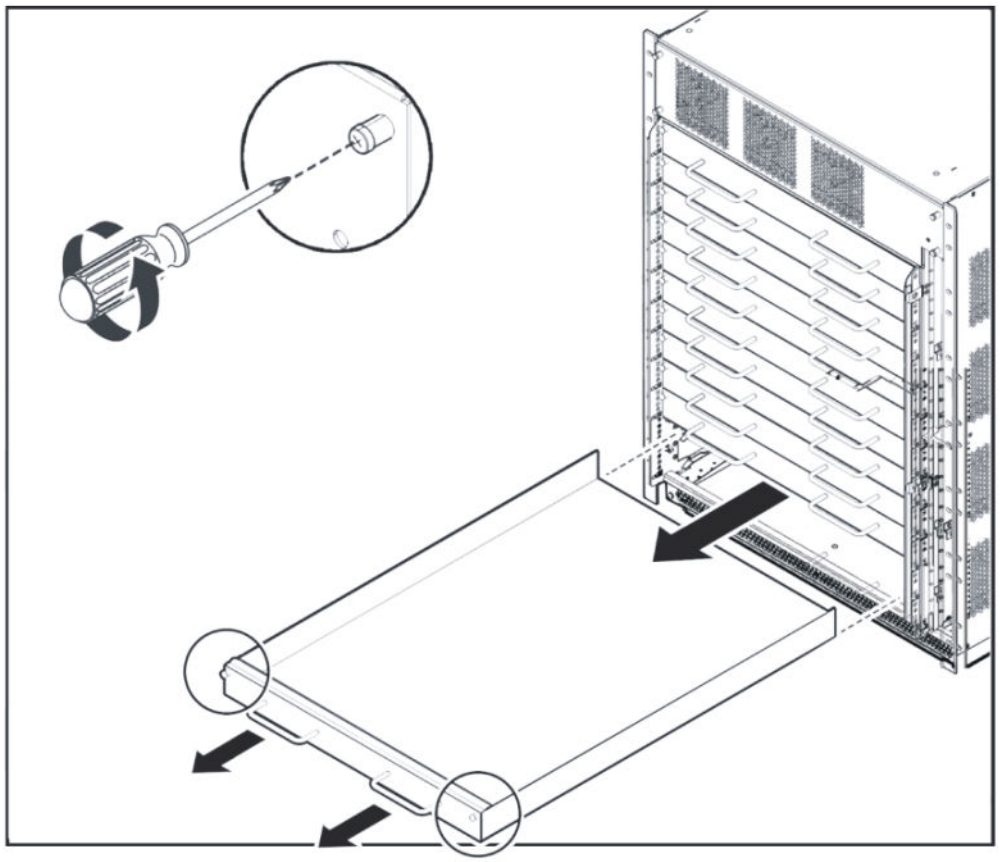
Procedure

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

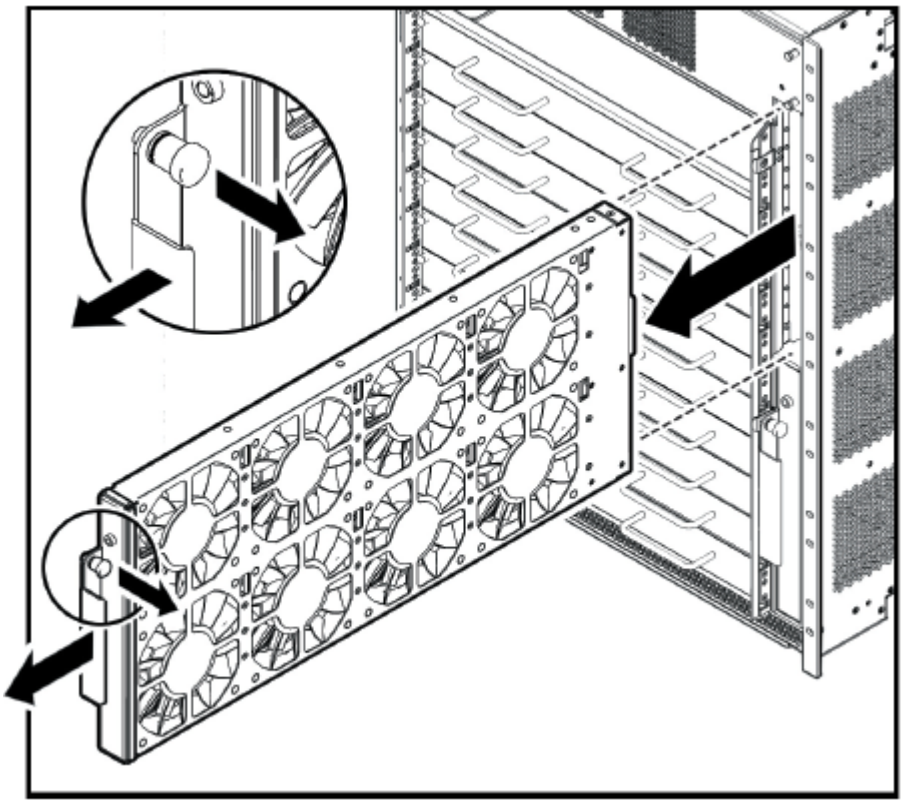
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3. Unseat the I/O filler module by loosening the 2 captive screws, grasping the two handles, and gently pulling the module out and away from the chassis.



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



Important:

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

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

Lifting the Virtual Services Platform 9012

The Virtual Services Platform 9012 weighs in excess of 160 lb (73 kg). Each chassis requires a minimum of three people to lift. Always use a mechanical lift when one is available.

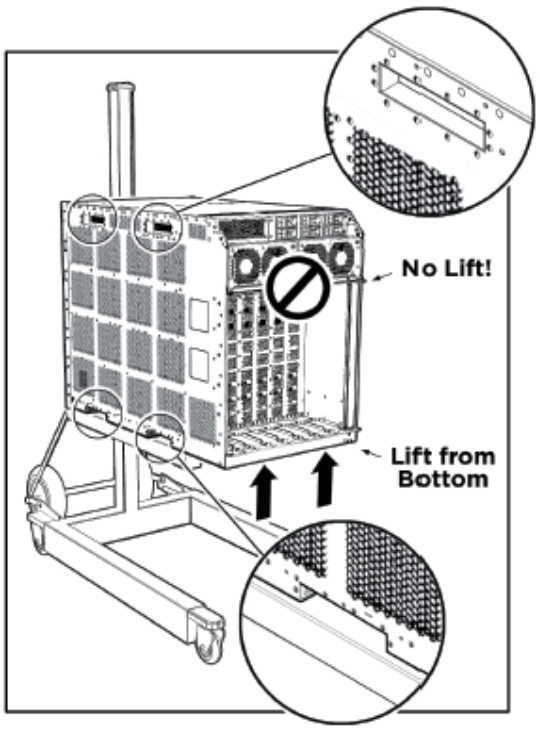
Before you begin

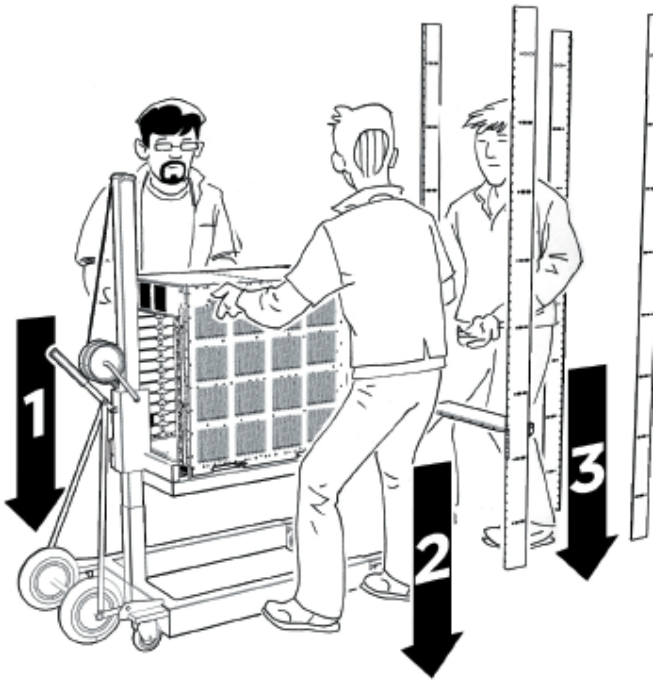
Important:

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.

Procedure

Use the recessed handles at the top and bottom of the Virtual Services Platform 9012 sides to lift the chassis. From the rear of the Virtual Services Platform 9012, lift the chassis from the bottom only.



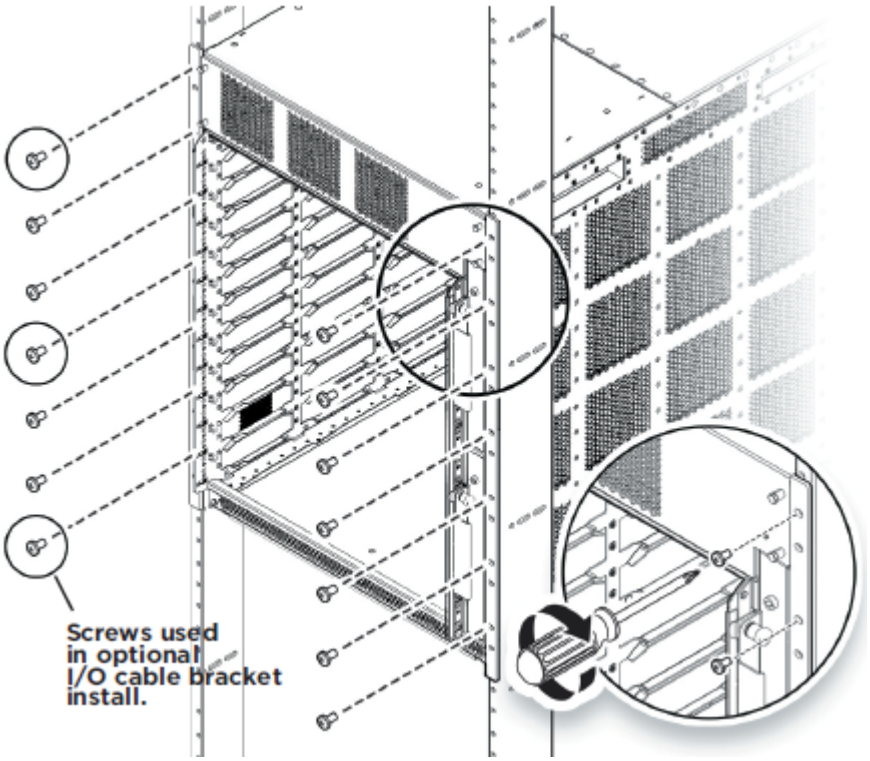


Securing the chassis

Mount the Virtual Services Platform 9012 chassis in a standard two-post or four-post equipment rack.

Procedure

1. Hold the 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 plan to install the optional I/O cable bracket, do not 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.



Assembling and installing cable management brackets

Use this procedure 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.

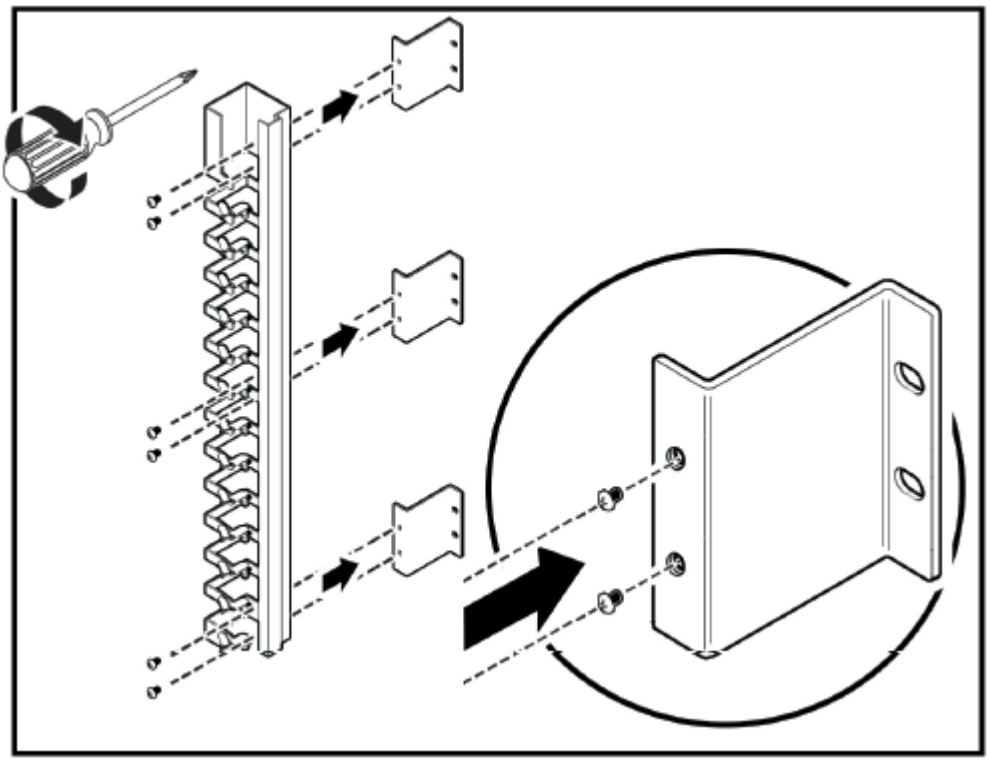
About this task

Important:

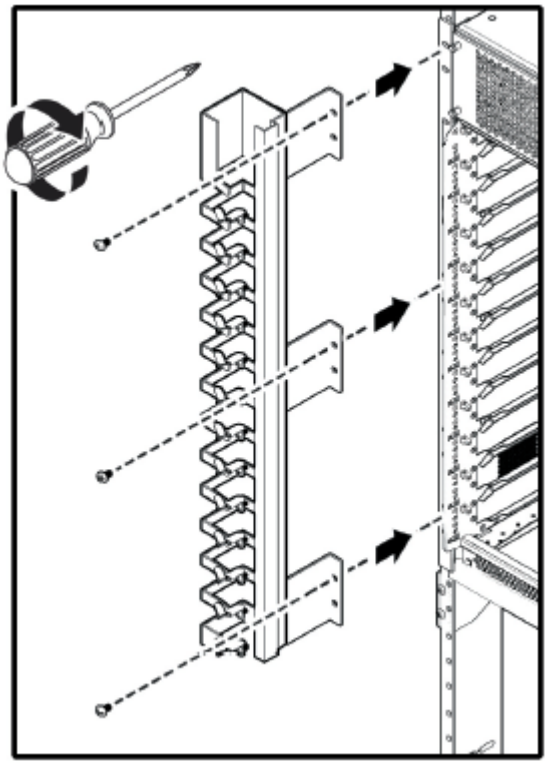
Do not attach any cables until after the bracket installation.

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.

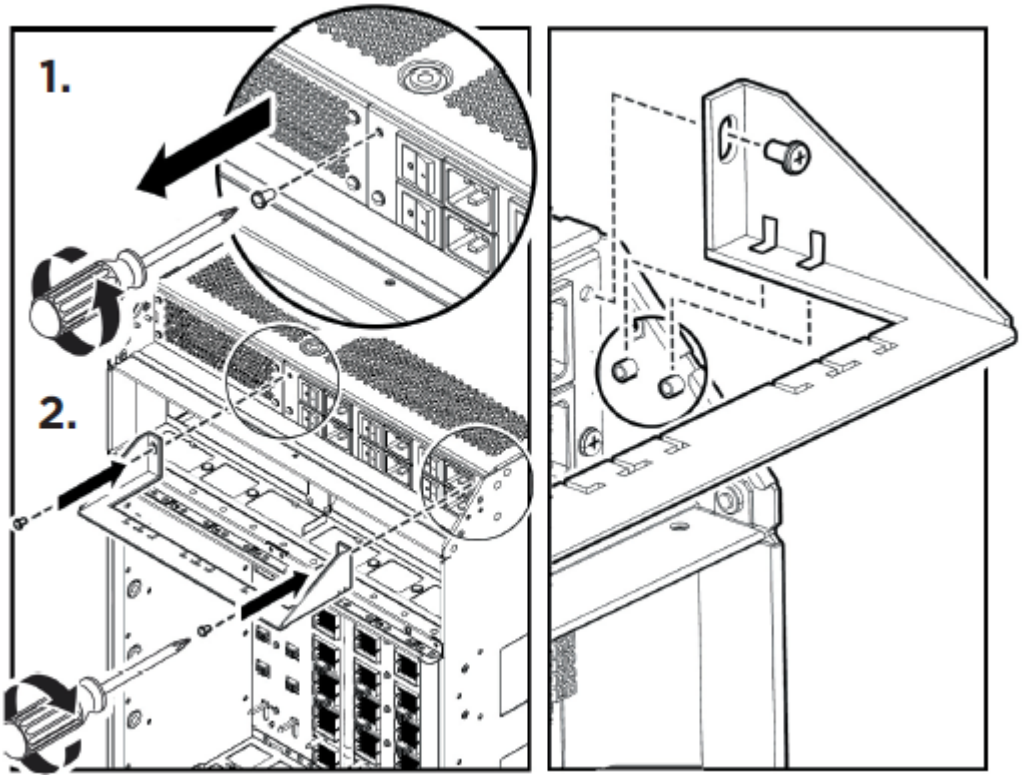


2. Use 3 Phillips screws to fasten the I/O cable management assembly to the top, middle and bottom screw positions of the left flange and rail.



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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.



Grounding the chassis

Ground the chassis before you install power supplies or connect power and network cables to the system.

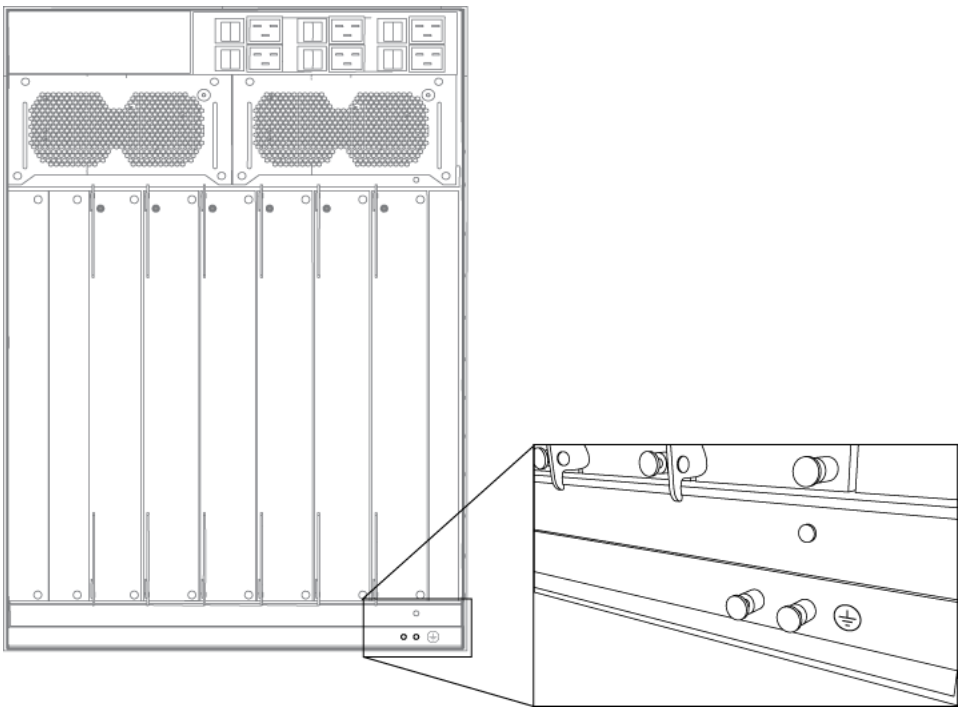
Before you begin

- 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 1/4 inch (6 mm) socket or nut driver.

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.

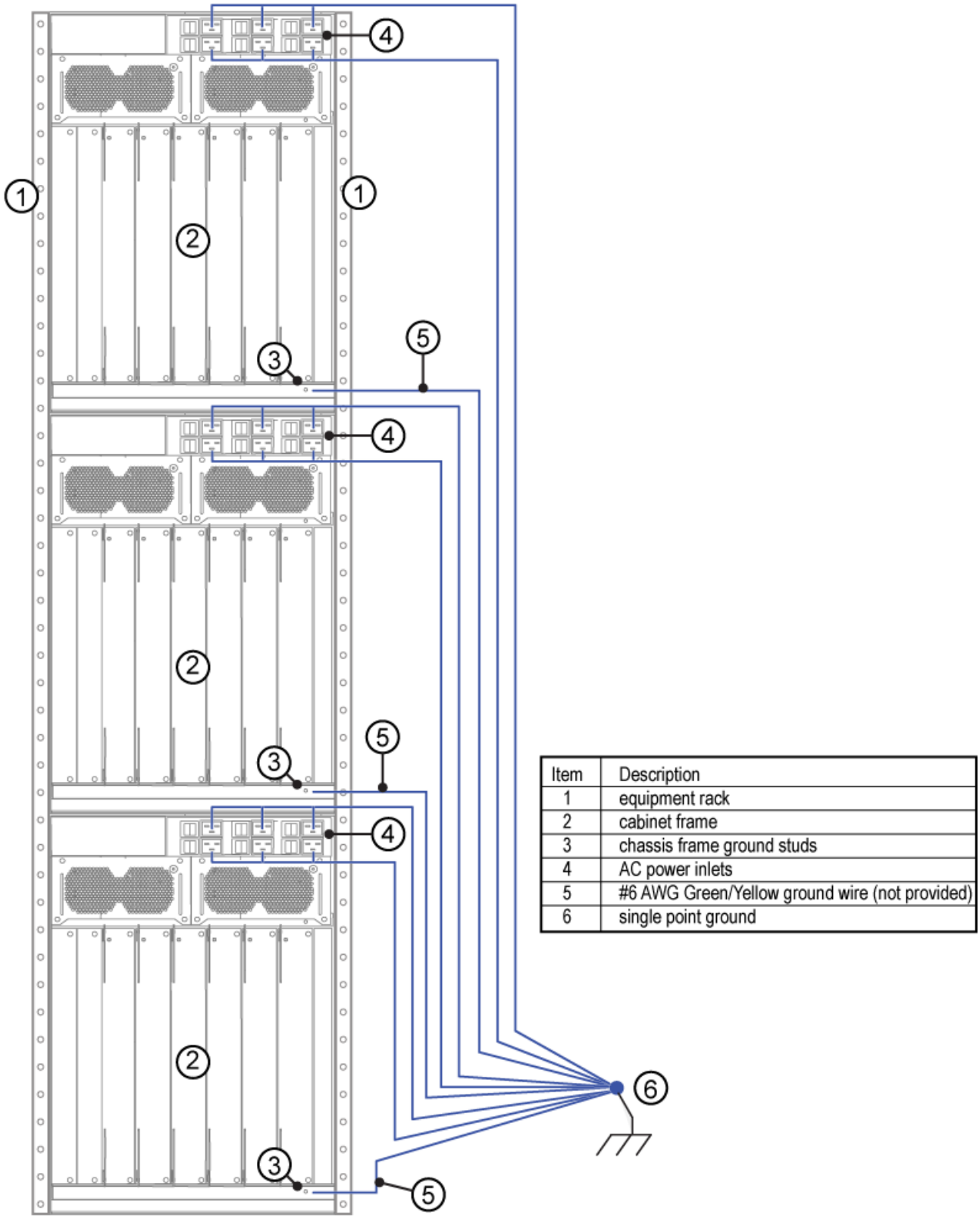


3. Bond the chassis ground cable to the single point ground window.

Job aid

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

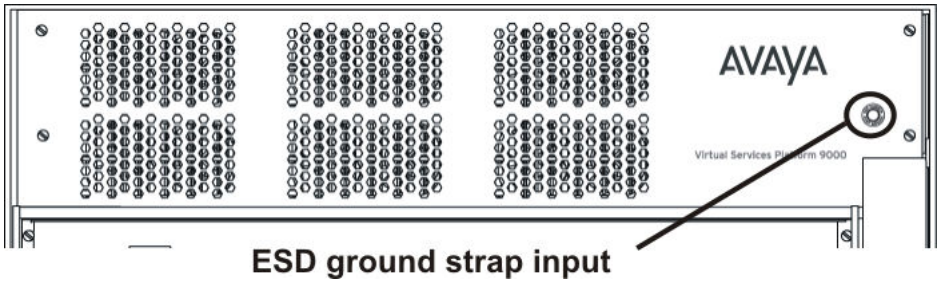
Comments? infodev@avaya.com



Item	Description
1	equipment rack
2	cabinet frame
3	chassis frame ground studs
4	AC power inlets
5	#6 AWG Green/Yellow ground wire (not provided)
6	single point ground

Figure 21: Rack grounding strip example

The following figure shows the ESD ground strap input location on the front of the chassis. Two ESD ground strap input locations also exist on the rear of the chassis.



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 power LEDs and cooling module LED lights amber.
- After the CP module starts to boot, the Online LED for each I/O module lights amber.
- Each I/O 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 I/O 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.

Chapter 5: 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 power supplies

Determine the minimum number of power supplies required to ensure enough power exists to operate the installed components. You can install a maximum of six power supplies in the Virtual Services Platform 9012 chassis or eight in the Virtual Services Platform 9010 chassis.

Before you begin

- For more information about the power requirements for each module, see Component input power on page 99.

About this task

To determine how many power supplies you need, you can also download *ERS 8000 / VSP 9000 Power Supply Calculator*, NN48500–519 from the **System Management & Planning** section of the Virtual Services Platform 9000 product documentation at https://support.avaya.com.

Procedure

1. Add the total input power consumption for all components (modules and cooling module assemblies).
2. See 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.

Installing a new chassis

Use the following procedure to install a new Virtual Services Platform 9010 or a new Virtual Services Platform 9012 chassis.

Procedure

1. Insert the cooling modules.

   If you use the Virtual Services Platform 9012 with second generation Input/Output (I/O) modules, use the 9012FCHS cooling modules.

2. Insert one Control Processor (CP) module in slot 1 and one Switch Fabric (SF) module in SF1, and turn on the chassis.

   Please refer to the example at the end of this procedure to guide you through the messages on the console, especially if you think the system is not responding. The process can take several minutes.

3. Ensure the CP module in slot 1 and the SF module in SF1 are running, and also that the first CP module displays at the console login prompt, and then insert the second CP module in slot 2.

   It can take several minutes for the CP module in slot 2 to synchronize with the master CP module. Upgrade messages display on the console of the CP in slot 1. The image synchronization runs automatically between the two CP modules. During this process, one or two reboots of the CP module in slot 2 can occur.

4. Insert the rest of the SF modules, one at a time, starting with SF4, and then insert SF2, SF3, SF5, and SF6. The system displays status messages on the console of the CP in slot 1 as the system detects and upgrades SF modules. The process can take several minutes. Once all of the SF modules are running, proceed to the next step.

   Use the **`show sys-info`** command to ensure all of the SF modules are up.

   You require a minimum of five SF modules if you use second generation I/O modules. You require six SF modules for redundancy with second generation I/O modules.

5. Insert each I/O module, one at a time, and wait for the system to detect and update the I/O module before you insert the next I/O module. You can insert the I/O modules in whichever order you want.

   Allow up to 30 minutes for second generation I/O modules to upgrade.

6. Ensure the status LED turns green on each I/O module, and all ports light up.

Example

The following is a sample of the log messages you see on the console of the CP module, after you insert the CP module and SF module, and turn on the chassis.

```
********************************************************************************
CP1  [12/10/14 14:00:15.409] 0x00270422 00000000 GlobalRouter SW INFO cold boot
(0x00000001)
CP1  [12/10/14 14:00:15.409] 0x00270422 00000000 GlobalRouter SW INFO intflash file
system cumulative: ret=1747 mod=1091
```


Comments? infodev@avaya.com

```
CP1  [12/10/14 14:00:20.421] 0x00010787 00000000 GlobalRouter HW INFO Got mastership,
master

CP1  [12/10/14 14:00:22.909] 0x00034594 00000000 GlobalRouter SW INFO System boot
CP1  [12/10/14 14:00:22.909] 0x00034595 00000000 GlobalRouter SW INFO VSP-9000 System
Software Release 3.4.5.0_B002
CP1  [12/10/14 14:00:24.991] 0x00010704 00000000 GlobalRouter HW INFO Waiting for CAN
initialization
CP1  [12/10/14 14:00:24.992] 0x00010774 00000000 GlobalRouter HW INFO Detected 9012
chassis
CP1  [12/10/14 14:00:25.022] 0x0001081c 00400010.1 DYNAMIC SET GlobalRouter HW INFO Slot
1 is initializing.
CP1  [12/10/14 14:00:25.022] 0x0001081c 00400010.21 DYNAMIC SET GlobalRouter HW INFO Slot
SF 1 is initializing.
CP1  [12/10/14 14:00:26.058] 0x000bc5cd 00000000 GlobalRouter RIP INFO Created instance
of RIP
CP1  [12/10/14 14:00:26.060] 0x0019c58e 007b0001 DYNAMIC CLEAR GlobalRouter VRF INFO VRF
is up
CP1  [12/10/14 14:00:26.062] 0x0019c58e 007b0001 DYNAMIC CLEAR MgmtRouter VRF INFO VRF is
up
CP1  [12/10/14 14:00:26.142] 0x00300604 00000000 GlobalRouter SLAMON INFO Starting Slamon
Monitor Agent Controller
CP1  [12/10/14 14:00:26.143] 0x0027042b 00000000 GlobalRouter SW INFO Process slamon.sh
started, pid:2739
CP1  [12/10/14 14:00:26.291] 0x000345b3 00000000 GlobalRouter SW INFO Waiting for fabric
and control plane initialization
CP1  [12/10/14 14:00:26.296] 0x00248519 00000000 GlobalRouter SF-APP INFO SF Manager
Initialized!
CP1  [12/10/14 14:00:27.482] 0x00010729 00000000 GlobalRouter HW INFO Detected 9006AC
Power Supply in slot PS 1. Adding 1200 watts to available power
CP1  [12/10/14 14:00:27.482] 0x00010728 0040000a.3 DYNAMIC SET GlobalRouter HW WARNING
Power Supply PS 3 is either faulty or AC power is not being supplied to back of chassis
for this supply
CP1  [12/10/14 14:00:27.483] 0x00010729 00000000 GlobalRouter HW INFO Detected 9006AC
Power Supply in slot PS 6. Adding 1200 watts to available power
CP1  [12/10/14 14:00:27.483] 0x00010830 00000000 GlobalRouter HW INFO Detected 9012RC
module (Serial#: ) in slot SF-FAN 2
CP1  [12/10/14 14:00:27.483] 0x00010830 00000000 GlobalRouter HW INFO Detected 9012RC
module (Serial#: ) in slot SF-FAN 1
CP1  [12/10/14 14:00:27.484] 0x00010830 00000000 GlobalRouter HW INFO Detected 9012FC
module (Serial#: ) in slot IO-FAN 2

CP1  [12/10/14 14:00:27.484] 0x00010830 00000000 GlobalRouter HW INFO Detected 9012FC
module (Serial#: ) in slot IO-FAN 1
CP1  [12/10/14 14:00:27.485] 0x00010830 00000000 GlobalRouter HW INFO Detected 9080CP
module (Serial#: ) in slot 1
CP1  [12/10/14 14:00:27.487] 0x00010830 00000000 GlobalRouter HW INFO Detected 9090SF
module (Serial#: SSCHJW02GY) in slot SF 1
CP1  [12/10/14 14:00:27.551] 0x00300604 00000000 GlobalRouter SLAMON INFO SLA Monitor
Agent Controller started
CP1  [12/10/14 14:00:27.987] 0x00010787 00000000 GlobalRouter HW INFO Got mastership,
master
CP1  [12/10/14 14:00:27.992] 0x00010705 00000000 GlobalRouter HW INFO CAN initialized
CP1  [12/10/14 14:00:28.293] 0x000345b5 00000000 GlobalRouter SW INFO Fabric and control
plane are initialized
CP1  [12/10/14 14:00:28.350] 0x0008850f 00000000 GlobalRouter SW INFO Waiting for all
cards to be ready for configuration download
CP1  [12/10/14 14:00:28.356] 0x00040601 00000000 GlobalRouter WEB INFO HTTPS: Using the
existing Server Cert/Key
CP1  [12/10/14 14:00:31.627] 0x0001071e 00000000 GlobalRouter HW INFO Applied power to
module 9090SF in slot SF 1
CP1  [12/10/14 14:00:32.145] 0x0001081d 00400010.1 DYNAMIC CLEAR GlobalRouter HW INFO
Slot 1 is finished initialization.
CP1  [12/10/14 14:00:32.146] 0x0001081d 00400010.21 DYNAMIC CLEAR GlobalRouter HW INFO
Slot SF 1 is finished initialization.
```


Comments? infodev@avaya.com

```
CP1  [12/10/14 14:00:33.481] 0x00300604 00000000 GlobalRouter SLAMON INFO slamonLoop:
Entering main loop

CP1  [12/10/14 14:00:58.561] 0x00264503 00000000 GlobalRouter SW INFO Slot SF1: IMAGE
SYNC: Running pre-install script for image version ndtrc
CP1  [12/10/14 14:00:59.219] 0x00264503 00000000 GlobalRouter SW INFO Slot SF1: IMAGE
SYNC: Running post-install script for image version ndtrc
CP1  [12/10/14 14:00:59.219] 0x00264503 00000000 GlobalRouter SW INFO Slot SF1: IMAGE
SYNC: rebooting
CP1  [12/10/14 14:00:59.262] 0x00264503 00000000 GlobalRouter SW WARNING Slot SF1: Reset
due to image sync upgrade.
CP1  [12/10/14 14:01:01.410] 0x0001080e 00000000 GlobalRouter HW WARNING Reset Detected
for module 9090SF in slot SF 1
CP1  [12/10/14 14:01:01.411] 0x00010756 0040000b.21 PERSISTENT SET GlobalRouter HW
WARNING Module 9090SF in slot SF 1 is non-operational

****** Please wait -- SF is going through its upgrade ******

CP1  [12/10/14 14:01:58.138] 0x00010750 00000000 GlobalRouter HW INFO Module 9090SF in
slot SF 1 is ready for configuration download
CP1  [12/10/14 14:01:58.138] 0x00010758 00000000 GlobalRouter HW INFO Downloading
configuration to all cards
CP1  [12/10/14 14:01:58.139] 0x00088512 00000000 GlobalRouter SW INFO Loading
configuration from /intflash/SUSTDEV-VSP1.cfg
CP1  [12/10/14 14:01:58.590] 0x000c8587 00000000 GlobalRouter SW INFO NTP Enabled
CP1  [12/10/14 14:01:58.612] 0x00010757 00000000 GlobalRouter HW INFO Initial
configuration download to all cards completed
CP1  [12/10/14 14:01:58.614] 0x0003458b 00000000 GlobalRouter SW INFO The system is ready
CP1  [12/10/14 14:01:58.614] 0x00004595 00000000 GlobalRouter SNMP INFO Booted with file

CP1  [12/10/14 14:01:59.619] 0x0000467d 00000000 GlobalRouter SNMP INFO Power Supply
Up(PsId=1, OperStatus=3)
CP1  [12/10/14 14:01:59.619] 0x0000467d 00000000 GlobalRouter SNMP INFO Power Supply
Up(PsId=6, OperStatus=3)
CP1  [12/10/14 14:02:01.358] 0x0001081f 00000000 GlobalRouter HW INFO Downloaded
configuration for slot 1 in 0 ms.
CP1  [12/10/14 14:02:01.433] 0x00248546 09200003.1 DYNAMIC SET Global SF-APP WARNING
SYSTEM HAS 1 BME - No Switch Fabric Redundancy Control !!!
CP1  [12/10/14 14:02:02.992] 0x0000c5ec 00300001.64 DYNAMIC CLEAR GlobalRouter HW INFO
Link Up(1/1)

CP1  [12/10/14 14:02:48.320] 0x000045e5 00400005 DYNAMIC SET GlobalRouter SNMP INFO
Sending Cold-Start Trap
CP1  [12/10/14 14:02:48.321] 0x000005a7 00000006.1 DYNAMIC SET GlobalRouter SW WARNING No
configured hosts are reachable for log file transfer
CP1  [12/10/14 14:03:58.604] 0x00088524 00000000 GlobalRouter SW INFO Boot sequence
successful

AVAYA COMMAND LINE INTERFACE

Login:

****** CP in slot 1 and SF in SF1 are up and running ******
****** Insert CP in slot 2 ********************************

CP1  [12/10/14 14:09:40.781] 0x0001081c 00400010.2 DYNAMIC SET GlobalRouter HW INFO Slot
2 is initializing.
CP1  [12/10/14 14:09:46.813] 0x00010830 00000000 GlobalRouter HW INFO Detected 9080CP
module (Serial#: SSCHJV026I) in slot 2
CP1  [12/10/14 14:09:46.813] 0x0001081d 00400010.2 DYNAMIC CLEAR GlobalRouter HW INFO
Slot 2 is finished initialization.
CP2  [12/10/14 14:10:40.997] 0x00270422 00000000 GlobalRouter SW INFO cold boot
(0x00000001)
CP2  [12/10/14 14:10:40.998] 0x00270422 00000000 GlobalRouter SW INFO intflash file
system cumulative: ret=1286 mod=876
```

```
****** Wait for FPGA upgrade ******

CP1  [12/10/14 14:13:03.140] 0x00264532 00000000 GlobalRouter SW INFO Slot 2: FPGAs
updated. Rebooting.
CP1  [12/10/14 14:13:03.140] 0x00264503 00000000 GlobalRouter SW WARNING Slot 2: Reset
due to image sync upgrade.
CP1  [12/10/14 14:13:05.417] 0x0001080e 00000000 GlobalRouter HW WARNING Reset Detected
for module 9080CP in slot 2
CP1  [12/10/14 14:13:05.419] 0x00010756 0040000b.2 PERSISTENT SET GlobalRouter HW WARNING
Module 9080CP in slot 2 is non-operational

CP2  [12/10/14 14:14:04.905] 0x00270422 00000000 GlobalRouter SW INFO warm boot
(0x24440000)
CP2  [12/10/14 14:14:04.906] 0x00270422 00000000 GlobalRouter SW INFO intflash file
system cumulative: ret=1286 mod=876
CP1  [12/10/14 14:14:34.764] 0x00264503 00000000 GlobalRouter SW WARNING Slot 2: Reset
due to image sync upgrade.
CP1  [12/10/14 14:14:38.118] 0x00010756 0040000b.2 PERSISTENT SET GlobalRouter HW WARNING
Module 9080CP in slot 2 is non-operational
CP1  [12/10/14 14:14:41.809] 0x000045b7 00000000 GlobalRouter SNMP INFO HA-CPU: No peer
connection is established.
CP2  [12/10/14 14:15:53.566] 0x00270422 00000000 GlobalRouter SW INFO warm boot
(0x24440000)
CP2  [12/10/14 14:15:53.567] 0x00270422 00000000 GlobalRouter SW INFO intflash file
system cumulative: ret=1286 mod=876
CP2  [12/10/14 14:15:54.672] 0x00270430 00000000 GlobalRouter SW INFO SOFTWARE PATCHING:
Number of committed patches is 0
CP2  [12/10/14 14:16:12.882] 0x00264503 00000000 GlobalRouter SW INFO Backup CP /intflash/
release/ndtrc sync complete
CP2  [12/10/14 14:16:15.580] 0x0003458d 00000000 GlobalRouter SW INFO Waiting for cpu in
slot 1 ... 10 seconds
CP1  [12/10/14 14:16:23.984] 0x0001081f 00000000 GlobalRouter HW INFO Downloaded
configuration for slot 2 in 0 ms.
CP2  [12/10/14 14:16:27.542] 0x000005b2 00000000 GlobalRouter SW INFO Found serial number
<00:24:7f:9c:00:00> in file
CP2  [12/10/14 14:16:27.542] 0x000005ba 00000000 GlobalRouter SW INFO License
Successfully Loaded From License Type -- PREMIER
CP2  [12/10/14 14:16:27.653] 0x00034594 00000000 GlobalRouter SW INFO System boot
CP2  [12/10/14 14:16:27.653] 0x00034595 00000000 GlobalRouter SW INFO VSP-9000 System
Software Release 3.4.5.0_B002
CP2  [12/10/14 14:16:27.697] 0x00010704 00000000 GlobalRouter HW INFO Waiting for CAN
initialization
CP2  [12/10/14 14:16:28.226] 0x00300604 00000000 GlobalRouter SLAMON INFO Starting Slamon
Monitor Agent Controller
CP2  [12/10/14 14:16:28.245] 0x0003459d 00000000 GlobalRouter SW INFO CPU card entering
warm-standby mode...
CP2  [12/10/14 14:16:28.248] 0x00088512 00000000 GlobalRouter SW INFO Loading
configuration from /intflash/SUSTDEV-VSP1.cfg
CP2  [12/10/14 14:16:28.426] 0x00300604 00000000 GlobalRouter SLAMON INFO SLA Monitor
Agent Controller started
CP2  [12/10/14 14:16:28.528] 0x00010757 00000000 GlobalRouter HW INFO Initial
configuration download to all cards completed
CP1  [12/10/14 14:16:29.157] 0x0000c5ec 00300001.128 DYNAMIC CLEAR GlobalRouter HW INFO
Link Up(2/1)
CP2  [12/10/14 14:16:28.697] 0x00010705 00000000 GlobalRouter HW INFO CAN initialized
CP2  [12/10/14 14:16:31.370] 0x00300604 00000000 GlobalRouter SLAMON INFO slamonLoop:
Entering main loop
CP1  [12/10/14 14:16:51.000] 0x000c85a2 03200001 DYNAMIC CLEAR GlobalRouter SW INFO NTP
synchronization succeeded

AVAYA COMMAND LINE INTERFACE

Login:
```


Comments? infodev@avaya.com

```
****** CP in slot 1 , CP in slot 2 and SF in SF1 are up and running ******
****** insert SF in SF 4 ****************************

CP1  [12/10/14 17:49:13.871] 0x0001081c 00400010.24 DYNAMIC SET GlobalRouter HW INFO Slot
SF 4 is initializing.
CP1  [12/10/14 17:49:13.898] 0x00010830 00000000 GlobalRouter HW INFO Detected 9090SF
module (Serial#: SSCHJW02YP) in slot SF 4
CP1  [12/10/14 17:49:13.898] 0x0001081d 00400010.24 DYNAMIC CLEAR GlobalRouter HW INFO
Slot SF 4 is finished initialization.
CP1  [12/10/14 17:49:20.504] 0x0001071e 00000000 GlobalRouter HW INFO Applied power to
module 9090SF in slot SF 4
CP1  [12/10/14 17:50:04.941] 0x00264503 00000000 GlobalRouter SW INFO Slot SF4: IMAGE
SYNC: Running pre-install script for image version ndtrc
CP1  [12/10/14 17:50:05.642] 0x00264503 00000000 GlobalRouter SW INFO Slot SF4: IMAGE
SYNC: Uboot image is consistent
CP1  [12/10/14 17:50:06.243] 0x00264503 00000000 GlobalRouter SW INFO Slot SF4: IMAGE
SYNC: Kernel image is consistent
CP1  [12/10/14 17:50:06.844] 0x00264503 00000000 GlobalRouter SW INFO Slot SF4: IMAGE
SYNC: Root FS image is consistent
CP1  [12/10/14 17:50:06.844] 0x00264503 00000000 GlobalRouter SW INFO Slot SF4: IMAGE
SYNC: App FS image is being updated...
CP1  [12/10/14 17:50:25.478] 0x00264503 00000000 GlobalRouter SW INFO Slot SF4: IMAGE
SYNC: Running post-install script for image version ndtrc
CP1  [12/10/14 17:50:25.510] 0x00264518 00000000 GlobalRouter SW INFO Slot SF4: Backup
image updated with primary. Rebooting with backup image
CP1  [12/10/14 17:50:25.510] 0x00264503 00000000 GlobalRouter SW INFO Slot SF4: IMAGE
SYNC: rebooting
CP1  [12/10/14 17:50:25.579] 0x00264503 00000000 GlobalRouter SW WARNING Slot SF4: Reset
due to image sync upgrade.
CP1  [12/10/14 17:50:25.811] 0x00010756 0040000b.24 PERSISTENT SET GlobalRouter HW
WARNING Module 9090SF in slot SF 4 is non-operational
CP1  [12/10/14 17:51:25.069] 0x00248547 09200003.1 DYNAMIC CLEAR Global SF-APP INFO
SYSTEM HAS TWO BMEs - Switch Fabric Redundancy Control In Place !!!
CP1  [12/10/14 17:51:25.208] 0x00010750 00000000 GlobalRouter HW INFO Module 9090SF in
slot SF 4 is ready for configuration download
CP1  [12/10/14 17:51:25.208] 0x0001081f 00000000 GlobalRouter HW INFO Downloaded
configuration for slot SF 4 in 0 ms.

****** CP in slot 1 , CP in slot 2, SF in SF1 and SF in SF4 are up and running ******
****** Insert IO module in slot 9 ***********************************************

CP1  [12/10/14 17:54:13.496] 0x0001081c 00400010.9 DYNAMIC SET GlobalRouter HW INFO Slot
9 is initializing.
CP1  [12/10/14 17:54:13.523] 0x00010830 00000000 GlobalRouter HW INFO Detected 9048GT
module (Serial#: SSCHJY02SF) in slot 9
CP1  [12/10/14 17:54:13.523] 0x0001081d 00400010.9 DYNAMIC CLEAR GlobalRouter HW INFO
Slot 9 is finished initialization.
CP1  [12/10/14 17:54:18.887] 0x0001071e 00000000 GlobalRouter HW INFO Applied power to
module 9048GT in slot 9
CP1  [12/10/14 17:54:45.016] 0x00264503 00000000 GlobalRouter SW INFO Slot 9: IMAGE SYNC:
Running pre-install script for image version ndtrc
CP1  [12/10/14 17:54:46.116] 0x00264503 00000000 GlobalRouter SW INFO Slot 9: IMAGE SYNC:
K2 FPGA image is consistent
CP1  [12/10/14 17:54:46.117] 0x00264503 00000000 GlobalRouter SW INFO Slot 9: IMAGE SYNC:
Zagros FPGA image is being updated...

****** Wait for FPGA upgrade ******

CP1  [12/10/14 17:56:49.802] 0x00264503 00000000 GlobalRouter SW INFO Slot 9: IMAGE SYNC:
Running post-install script for image version ndtrc
CP1  [12/10/14 17:56:49.802] 0x00264532 00000000 GlobalRouter SW INFO Slot 9: FPGAs
updated. Rebooting.
CP1  [12/10/14 17:56:49.828] 0x00264503 00000000 GlobalRouter SW WARNING Slot 9: Reset
due to image sync upgrade.
CP1  [12/10/14 17:56:49.832] 0x00010756 0040000b.9 PERSISTENT SET GlobalRouter HW WARNING
```

```
Module 9048GT in slot 9 is non-operational
CP1  [12/10/14 17:57:26.916] 0x00264503 00000000 GlobalRouter SW INFO Slot 9: IMAGE SYNC:
Running pre-install script for image version ndtrc
CP1  [12/10/14 17:57:27.950] 0x00264503 00000000 GlobalRouter SW INFO Slot 9: IMAGE SYNC:
Running post-install script for image version ndtrc
CP1  [12/10/14 17:57:27.950] 0x00264503 00000000 GlobalRouter SW INFO Slot 9: IMAGE SYNC:
rebooting
CP1  [12/10/14 17:57:28.017] 0x00264503 00000000 GlobalRouter SW WARNING Slot 9: Reset
due to image sync upgrade.
CP1  [12/10/14 17:57:30.196] 0x00010756 0040000b.9 PERSISTENT SET GlobalRouter HW WARNING
Module 9048GT in slot 9 is non-operational
CP1  [12/10/14 17:58:45.248] 0x00010750 00000000 GlobalRouter HW INFO Module 9048GT in
slot 9 is ready for configuration download
CP1  [12/10/14 17:58:45.457] 0x0001081f 00000000 GlobalRouter HW INFO Downloaded
configuration for slot 9 in 208 ms.

AVAYA COMMAND LINE INTERFACE

Login:
```

Powering up the system

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

Before you begin

- For more information about how to install an AC power supply, see *Installing AC Power Supplies in Avaya Virtual Services Platform 9000,* NN46250-303.

Danger:

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

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 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 power cords to the power inlets and the power outlets.
6. For each power supply, turn 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 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 LEDs remain off indicating loss of 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.

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 you connect cables or you perform maintenance on this device.
- Always place the modules on appropriate antistatic material.
- Support the module from underneath with two hands. Do not touch components or connector pins with your hand, or damage can result.
- Damage to a module can occur if you bump the module into another object, including other modules installed in a chassis. Be careful not to bump module connectors against the action levers of an adjacent module. Damage to connectors can result. Use both hands to support modules.
- Visually inspect the connectors for damage before you insert the module. If you insert a module with damaged connectors you will damage the midplane.
- Check the clearance between the insertion lever and the gasket on adjacent modules during insertion or extraction.
- Do not stack modules one on top of the other when you move them.
- 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.

Removing external storage devices from the CP module

Perform this procedure to safely remove the USB and the 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 Virtual Services Platform 9000 stop command does 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 the USB, or the 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:

Use the Avaya Compact Flash device (EC1411010-E6) with the Virtual Services Platform 9000 because the Avaya Compact Flash is validated for proper operation on the Virtual Services

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Platform 9000. Do not use other Compact Flash devices because they are not verified for Virtual Services Platform 9000 compatibility, and can result in loss of access to the Compact Flash device.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. 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.
3. 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

Unmount and remove the USB:

```
VSP-9012:1>enable
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 Virtual Services Platform 9000 automatically recognizes them. The devices are accessible within seconds after insertion.

After you insert the external Compact Flash, enable logging to the external Compact Flash with the **`logging logToExtFlash`** command.

Additionally, you can enable the following features as required:

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

Resetting the Avaya Virtual Services Platform 9000

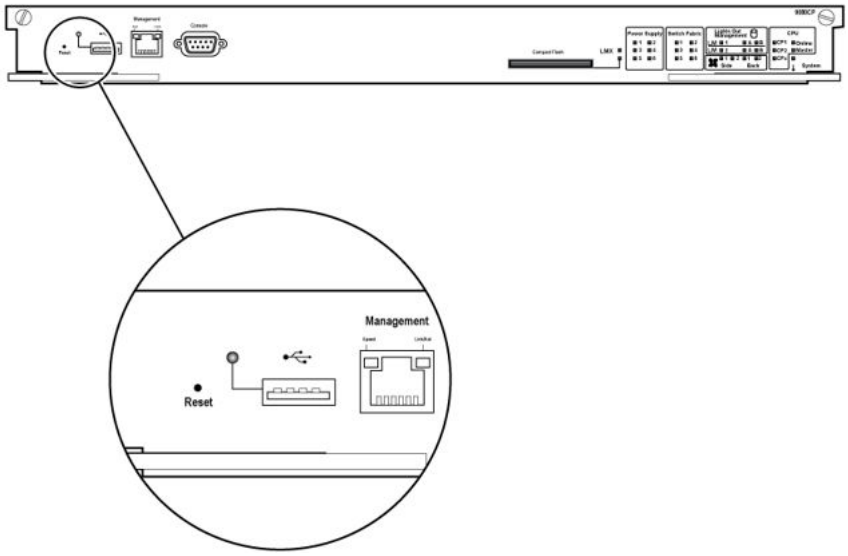
Reset the Avaya Virtual Services Platform 9000 to restart the hardware without cycling power.

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Procedure

On the CP module, press Reset.

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



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Chapter 6: Technical specifications

This section provides specifications for the Avaya Virtual Services Platform 9000 chassis models and components.

9006AC specifications

This section provides the input and output power specifications for the 9006AC power supply.

AC input power specifications

The following table describes the technical specifications for AC input power for the 9006AC power supply.

Table 16: Input power specifications

Parameter	Specification at input voltage 90-140 VAC	Specification at input voltage 185-275 VAC
Input current	13.3 A (100 VAC) - 11.2 A (120 VAC)	11.8 A (200 VAC) – 9.9 A (240 VAC)
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	1,416 W	2,277 W
Heat dissipation (thermal output)	724 British Thermal Unit (BTU)/ hour	933 BTU/hour
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.		

DC output power specifications

The following table describes the technical specifications for the DC output power for the 9006AC power supply.

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Table 17: Output power specifications

Parameter	Specification at input voltage 90–140 VAC	Specification at input voltage 185–275 VAC
Maximum main output power	1,200 W	2,000 W
Maximum main output current	22 A	37 A
Auxiliary output voltage / power	5 VDC / 3.75 W	5 VDC / 3.75 W
Output voltage set-point	54 VDC	54 VDC
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 Virtual Services Platform 9010 reserves the following power requirements:

- 80 watts (W) each for the primary and secondary Control Processor (CP) modules
- 70 W each for the 9095 Switch Fabric (SF) modules located in slots 1 and 4
- 1,900 W for a pair of 9010CM cooling modules that operate at full speed (Virtual Services Platform 9010 chassis only)

The Virtual Services Platform 9012 reserves the following power requirements:

- 80 watts (W) each for the primary and secondary Control Processor (CP) modules
- 70 W each for the 9090 SF modules located in slots 1 and 4
- 150 W each for the two IO cooling modules, either two 9012FC cooling modules used with first generation modules or two 9012FCHS cooling modules used with first or second generation modules (Virtual Services Platform 9012 chassis only)
- 65 W each for the two SF cooling modules (Virtual Services Platform 9012 chassis only)

Table 18: Component input power

Modules	Component	Total input power (watts)	Thermal output rating (BTU/hour)
Both VSP 9010 and VSP 9012	9080CP Central Processor Module	80	273
	9048GT I/O module	350	1,194
	9048GB I/O module	340	1,160
	9024XL I/O module	575	1,962

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Modules	Component	Total input power (watts)	Thermal output rating (BTU/hour)
	9048XS-2 I/O module	600	2,048
	9012QQ-2 I/O module	600	2,047
VSP 9010	9095SF Switch Fabric Module, slots 1 and 4.	70	239
	9095SF Switch Fabric Module, slots 2, 3, 5, and 6.	50	170
	9010CM cooling module (Maximum fan speed)	1,900 W for a pair of cooling modules	6, 483
VSP 9012	9090SF Switch Fabric Module, slots 1 and 4.	70	239
	9090SF Switch Fabric Module, slots 2, 3, 5, and 6.	50	170
	9012FC Side cooling module (Maximum fan speed)	150	512
	9012RC Fabric cooling module (Maximum fan speed)	65	222
	9012FCHS cooling module (Maximum fan speed) **Note:** If you use second generation modules with the VSP 9012, you must use the 9012FCHS cooling module in the front of the VSP 9012.	150	512

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 *Administering Avaya Virtual Services Platform 9000,* NN46250-600.

VSP 9010 chassis specifications

This section provides physical, environmental, and electrical specifications for the Virtual Services Platform 9010 chassis.

Physical specifications

The following physical specifications apply to the chassis.

Table 19: VSP 9010 chassis physical specifications

Parameter		Specification
Height		36.1 in. (915 mm)
Rack units (RU)		21
Width		17.19 in. (436.6 mm)
Depth		33.75 in. (857.85 mm)
Weight	Chassis and midplane	141 lb (64 kg)
	Chassis and midplane, and cooling modules	181 lb (82 kg)

Network Equipment Building Standard

The Virtual Services Platform 9010 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 chassis.

Table 20: VSP 9010 chassis environmental specifications

Parameter	Specification
Operating temperature (room or ambient temperature)	32°F to 104°F (0°C to 40°C) **Note:** With 9024XL modules with serial numbers starting with LBNNTMC9xxxxxx, the operating temperature is 0-38°C.
Operating temperature (high altitude)	Decrease the high temperature value by 1.8 °F for each 1,000 feet (1 °C for each 305 meters) increase in altitude.
Storage temperature	14°F to 140°F (– 10°C to 60°C)
Operating humidity	85%
Storage humidity	90%
Operating altitude	10,000 feet (3,048 meters)
Storage altitude	10,000 feet (3,048 meters)

International regulatory requirements

The Virtual Services Platform 9010 chassis conforms to the following international regulatory requirements.

Electromagnetic emissions:

The Virtual Services Platform 9010 chassis conforms to the following electromagnetic emissions standards.

Table 21: VSP 9010 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 9010 chassis conforms to the following electromagnetic immunity standards.

Table 22: 9010 chassis electromagnetic immunity

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

Safety agency certification:

The Virtual Services Platform 9010 chassis conforms to the following safety agency standards.

Table 23: VSP 9010 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
Mexico	NOM
Korea	MIC

VSP 9012 chassis specifications

This section provides physical, environmental, and electrical specifications for the Virtual Services Platform 9012 chassis.

Physical specifications

The following physical specifications apply to the chassis.

Table 24: VSP 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)

Network Equipment Building Standard

The Virtual Services Platform 9012 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 chassis.

Table 25: VSP 9012 chassis environmental specifications

Parameter	Specification
Operating temperature (room or ambient temperature)	0°C to 40°C (32°F to 104°F)
Operating temperature (high altitude)	Decrease the high temperature value by 1.8 °F for each 1,000 feet (1 °C for each 305 meters) increase in altitude.
Storage temperature	– 25°C to 70°C (– 13°F to 158°F)
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

International regulatory requirements

The Virtual Services Platform 9012 chassis conforms to the following international regulatory requirements.

Electromagnetic emissions:

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The Virtual Services Platform 9012 chassis conforms to the following electromagnetic emissions standards.

Table 26: VSP 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 9012 chassis conforms to the following electromagnetic immunity standards.

Table 27: VSP 9012 chassis electromagnetic immunity

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

Safety agency certification:

The Virtual Services Platform 9012 chassis conforms to the following safety agency standards.

Table 28: VSP 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
Mexico	NOM

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 29: Part numbers

Part number	Item
EC1402001-E6	Shipped assembly VSP 9012 12–slot chassis
EC1402002-E6	Shipped assembly VSP 9010 10–slot chassis (AC-input)
EC1404001-E6	9024XL 24 SFP+ I/O module
EC1404002-E6	9048GB 48 SFP I/O module
EC1404003-E6	9048GT 48 10/100/1000 I/O module
EC1404005-E6	9048XS-2 48 SFP+ I/O module
EC1404006-E6	9090SF Switch Fabric module for the VSP 9012 chassis
EC1404007-E6	9080CP CP module
EC1404008-E6	9012QQ-2 12 QSFP+ I/O module
EC1404009-E6	9095SF Switch Fabric module for the VSP 9010 chassis
EC1405A01-E6	9006AC power supply
EC1411001-E6	9012FC Side cooling module for the VSP 9012 chassis
EC1411002-E6	9012RC Fabric cooling module for the VSP 9012 chassis
EC1411004–E6	9012FCHS for the VSP 9012 chassis
EC1411006-E6	Spare front module filler module for the VSP 9012 chassis and VSP 9010 chassis
EC1411007-E6	Spare Switch Fabric filler module for the VSP 9012 chassis
EC1411009-E6	Spare auxiliary module filler module for the VSP 9012 chassis
EC1411010-E6	2GB Compact Flash memory card for 9080CP module
EC1411012-E6	9010CM Cooling module for the VSP 9010 chassis
EC1411013–E6	Spare Switch Fabric filler module for the VSP 9010 chassis
EC1411014–E6	Spare power supply filler panel for the VSP 9010 chassis

Part number	Item
EC1411015–E6	Spare 9010 Chassis Cover Panel Kit. Includes the cable management cover and air inlet cover.
EC1411016-E6	VSP 9024XL Ventilation-Cover for VSP 9010 chassis.

Chapter 8: 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 warning statement

Warning:

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.

Warning:

AVERTISSEMENT

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.

Warning:

WARNUNG

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.

Warning:

ADVERTENCIA

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.

Warning:

AVISO

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.

Warning:

AVVISO

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:

ELECTROSTATIC ALERT

ESD can damage electronic circuits. Do not touch electronic hardware unless you wear a grounding wrist strap or other static-dissipating device.

Electrostatic alert:

ELEKTROSTATIKWARNUNG

Elektronische Schaltkreise können durch elektrostatische Entladung beschädigt werden. Berühren Sie elektronische Hardware nur, wenn Sie ein Erdungsarmband oder ein anderes Statik ableitendes Medium tragen.

Electrostatic alert:

ALERTA DE ELECTROESTÁTICA

Una descarga electroestática puede dañar los circuitos eléctrónicos. No toque el hardware electrónico a no ser que utilicé una muñequera antiestática u otro dispositivo disipador de estática.

Electrostatic alert:

ALERTA CONCERNANT LES DÉCHARGES ÉLECTROSTATIQUES

Une décharge électrostatique (DES) peut endommager les circuits électroniques. Ne touchez pas le matériel électronique, à moins de mettre à votre poignet une bande de mise à la masse ou autre dispositif dissipant l'électricité statique.

Electrostatic alert:

ALERTA DE ELETROSTÁTICA

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ESD pode danificar circuitos eletrônicos. Não toque em equipamentos eletrônicos a menos que esteja utilizando pulseira de aterramento ou outro dispositivo para dissipação de energia estática.

Electrostatic alert:

AVVISO ELETTROSTATICO

Le scariche elettrostatiche (ESD) possono danneggiare i circuiti elettronici. Non toccare i componenti elettronici senza aver prima indossato un braccialetto antistatico o un altro dispositivo in grado di dissipare l'energia statica.

Laser eye safety danger statement

Danger:

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.

Danger:

DANGER

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.

Danger:

GEFAHR

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.

Danger:

PELIGRO

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.

Danger:

PERIGO

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.

Danger:

PERICOLO

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 chassis danger statement

Danger:

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.

Danger:

DANGER

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.

Danger:

GEFAHR

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.

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Danger:

PELIGRO

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.

Danger:

PERIGO

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.

Danger:

PERICOLO

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.

Electric shock multiple cord danger statement

Voltage:

Risk of injury by electric shock

This unit has more than one power supply cord. Disconnect all power supply cords before servicing to avoid electric shock.

Voltage:

Risques de blessure par choc électrique

Cet appareil comporte plus d'un cordon d'alimentation. Afin de prévenir les chocs electriques. Debrancher les cordons d'alimentation avant de faire le dépannage.

Voltage:

Gefahr eines Stromschlags

Dieses Gerät verfügt mehr als ein Netzkabel. Ziehen Sie zur Vermeidung eines Stromschlags vor der Wartung alle Netzkabel ab.

Voltage:

Rischio di infortuni elettrici

Questa unità è munita di più cavi di alimentazione. Per evitare scosse elettriche, scollegare tutti i cavi di alimentazione prima di eseguire la manutenzione.



Voltage:

Risco de ferimentos por choque elétrico

Esta unidade tem mais de um cabo de alimentação. Desconecte todos os cabos de alimentação antes da manutenção para evitar choque elétrico.



Voltage:

Riesgo de sufrir descargas eléctricas

Esta unidad tiene más de un cable de suministro de alimentación. Desconecte todos los cables de suministro de alimentación antes de realizar el servicio para evitar descargas eléctricas.

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 pigtails. Cable assemblies with connectors on both ends are called jumpers or patch cords.
Control Processor (CP) module	The Control Processor module runs all high level protocols (BGP, OSPF) and distributes the results (routing updates) to the rest of the system. The CP manages and configures the IO and Switch Fabric modules, and maintains and monitors the health of the chassis.
cooling module (9010CM)	The cooling module is a hot swappable fan tray used to cool the Control Processor, I/O, and Switch Fabric modules in the Virtual Services Platform 9010. Two cooling modules are installed horizontally in the front of the chassis.
I/O cooling module (9012FC)	The I/O cooling module is a hot swappable fan tray used to cool the I/O and CP modules in the Virtual Services Platform 9012.
I/O cooling module (9012FCHS)	The I/O cooling module is a hot swappable fan tray used to cool second generation I/O modules in the Virtual Services Platform 9000.
I/O module	An I/O module is a module that provides network connectivity for various media (sometimes called Layer 0) and protocol types. I/O modules are also called Ethernet modules.
light emitting diode (LED)	A semiconductor diode that emits light when a current passes through it.
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 gigabits per second (Gbps).

Switch Fabric (SF) cooling module (9012RC)	The SF cooling module is a hot swappable fan tray used to cool the Switch Fabric (SF) modules in the Virtual Services Platform 9012.
Switch Fabric (SF) module	The Switch Fabric module connects to all I/O 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.