

Cisco Catalyst CW9800M Wireless Controller Hardware Installation Guide

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Preface

This preface describes this guide and provides information about the conventions used in this guide, along with details about related documentation. It includes the following sections:

- Document Revision History, on page ix
- Document Objectives, on page ix
- Audience, on page ix
- Conventions, on page x
- Related Documentation, on page xi
- Obtaining Documentation and Submitting a Service Request, on page xi

Document Revision History

The following table shows the changes made to this document:

Date	Change Summary
April 2024	Fist version of the document

Document Objectives

This publication describes the installation of the .

Audience

This publication is primarily designed for persons responsible for installing, maintaining, and troubleshooting the . The users of this guide should:

- Be familiar with electronic circuitry and wiring practices.
- Have experience working as electronic or electromechanical technicians.
- Have experience in installing high-end networking equipment.

Note Some procedures described in this guide require a certified electrician.

Conventions

Text Type	Indication
User input	Text the user should enter exactly as shown or keys a user should press appear in this font.
Document titles	Document titles appear in *this font*.
System output	Terminal sessions and information that the system displays appear in **this font**.
CLI commands	CLI command keywords appear in **this font** . Variables in a CLI command appear in *this font* .
[ ]	Elements in square brackets are optional.
{x | y | z}	Required alternative keywords are grouped in braces and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
String	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
! #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the document.

Tip Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

Caution Means *reader be careful*. In this situation, you might perform an action that could result in equipment damage or loss of data.

Timesaver: Means *the described action saves time*. You can save time by performing the action described in the paragraph.

Warning **IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS. Statement 1071



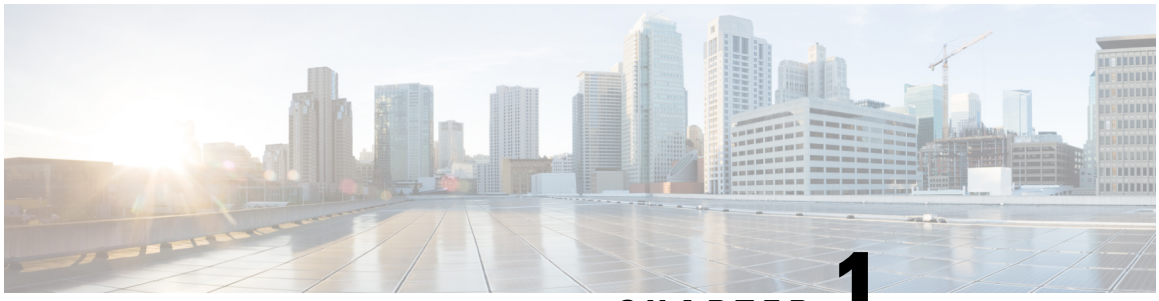
Related Documentation

- Release Notes for Cisco Catalyst 9800 Wireless Controller
- Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide
- Cisco Catalyst 9800 Series Wireless Controller Command Reference
- Cisco Wireless Solutions Software Compatibility Matrix

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see What's New in Cisco Product Documentation.

To receive new and revised Cisco technical content directly to your desktop, you can subscribe to the What's New in Cisco Product Documentation RSS feed. RSS feeds are a free service.



CHAPTER 1

Overview

- Summary of Cisco Catalyst CW9800M Wireless Controller Cisco Catalyst CW9800M Wireless Controller, on page 1
- Cisco Product Identification Standard, on page 9
- PID Label Location, on page 11

Summary of Cisco Catalyst CW9800M Wireless Controller Cisco Catalyst CW9800M Wireless Controller

Table 1: Cisco Catalyst CW9800M Wireless Controller Features

Feature	Description
Chassis Height	One rack-unit (1RU)
Processor	Intel Ice Lake D, 12-cores, 2 GHz
Memory Options	• Control Plane Memory—64 GB DDR4 • Bootflash storage—32 GB • Hard disk - 480 GB
Throughput	50 Gbps
TCAM	80 Mb
Number of APs supported	3000
Number of clients supported	32000
Ethernet Port Adapter (EPA)	2 built-in EPA
Redundancy Ports	One RJ-45 GE or one 1/10 GE SFP port
Console Port	One RJ-45 or one micro-USB console port
Service Ports	2 service ports (one RJ-45 and one SFP interface)

Feature	Description
Data Ports	2x25 GE and 4x1/10 GE ports
USB	Two USB 3.0 ports
Operating Temperature	41° to 104° F (5° to 40° C)
Short-term Operating Temperature	41° to 122° F (5° to 50° C)
Nominal Operative Humidity	5 to 85% non-condensing
Short-term Operative Humidity	5 to 90% non-condensing
Storage Temperature	–4° to 158° F (–20° to +70° C)
Operational Altitude	0 to 10,000 feet (0 to 3000 meters)
Field-replaceable units (FRU).	See Chapter 2: **Supported Hardware Components** for information on supported FRUs.

Front View

The following figure shows the front view of the Cisco Catalyst CW9800M Wireless Controller

Figure 1: Cisco Catalyst CW9800M Wireless Controller Front View

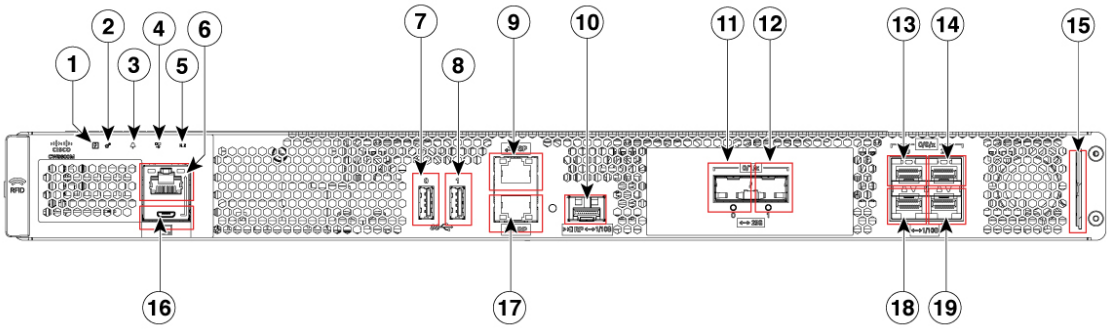


Table 2: Cisco Catalyst CW9800M Wireless Controller Front View

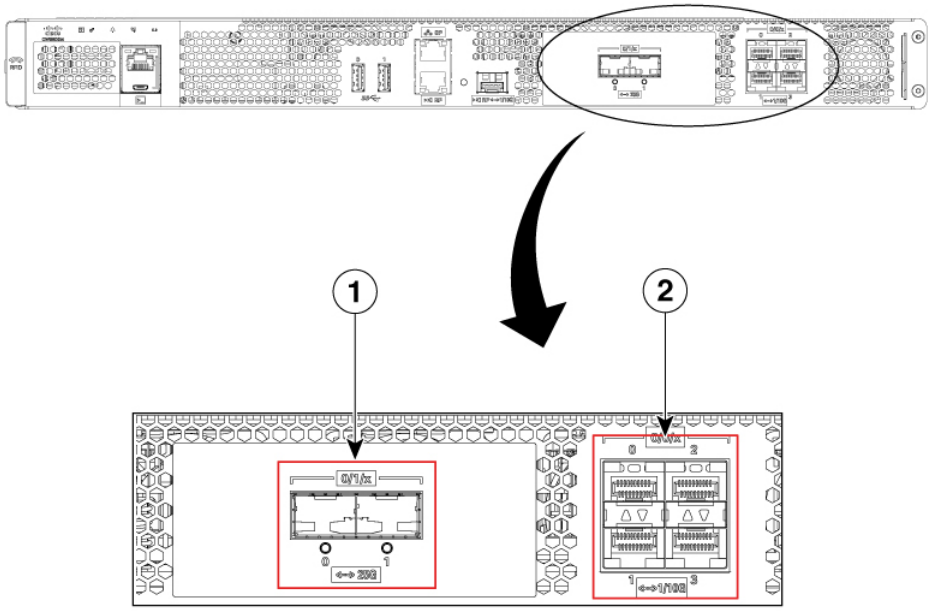
1	PWR—Power LED
2	SYS—System LED
3	ALM—Alarm LED
4	HA—High-Availability LED
5	M.2 SSD
6	RJ-45 compatible console port
7	USB Port 0

8	USB Port 1
9	SP— RJ-45 1 GE management port
10	RP— 1/10-GE SFP port
11	TwentyFiveGigE0/1/0—25-GE SFP+ Port 0
12	TwentyFiveGigE0/1/1—25-GE SFP+ Port 1
13	Te0/0/0—1-GE SFP/ 10-GE SFP+ Port 0
14	Te0/0/2—1-GE SFP/ 10-GE SFP+ Port 2
15	Carrier Label Tray
16	CON— Micro USB console port
17	RP— RJ-45 1 GE redundancy port
18	Te0/0/1—1-GE SFP/ 10-GE SFP+ Port 1
19	Te0/0/3—1-GE SFP/ 10-GE SFP+ Port 3

Note For the Cisco Catalyst CW9800M Wireless Controller, the power supply is located in the rear side of the chassis. See the **Rear View** section.

Built-In SFP and SFP+ Ports

Figure 2: Cisco Catalyst CW9800M Wireless Controller Port Numbering



1	Bay 1—2 X 25-GE SFP ports. The supported ports are: • TwentyFiveGigE0/1/0—25-GE SFP+ Port 0 • TwentyFiveGigE0/1/1—25-GE SFP+ Port 1	2	Bay 0—4 X 1-GE/10-GE SFP ports. The supported ports are: • Te0/0/0—1-GE SFP/ 10-GE SFP+ Port 0 • Te0/0/1—1-GE SFP/ 10-GE SFP+ Port 1 • Te0/0/2—1-GE SFP/ 10-GE SFP+ Port 2 • Te0/0/3—1-GE SFP/ 10-GE SFP+ Port 3

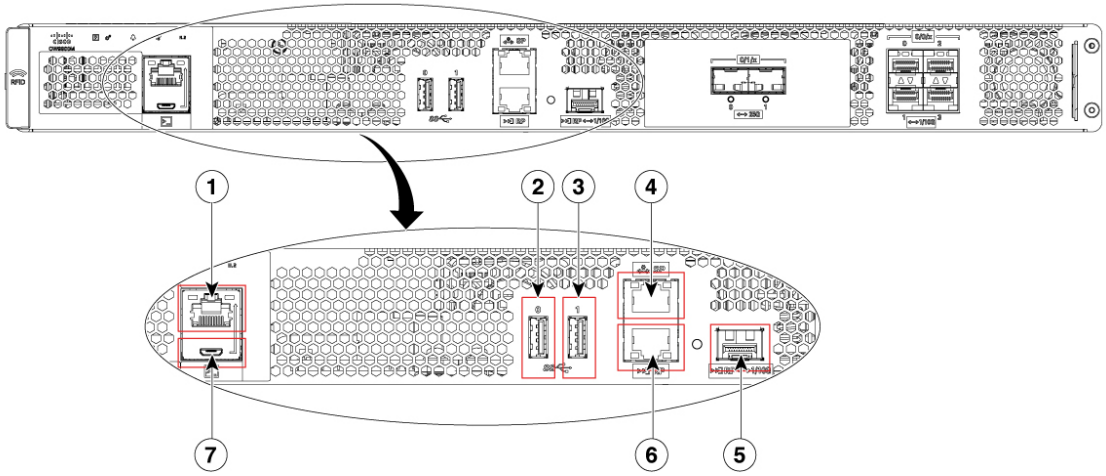
The port LEDs behave as follows:

- Off—Indicates the port is not enabled by software.
- Amber—Indicates the port is enabled by software but there is a problem with the link.
- Green—Indicates the port is enabled by software and there is valid link.

Management and Storage Connections

The following figure shows the management and storage connections for the Cisco Catalyst CW9800M Wireless Controller:

Figure 3: Management and Storage Connections for the Cisco Catalyst CW9800M Wireless Controller

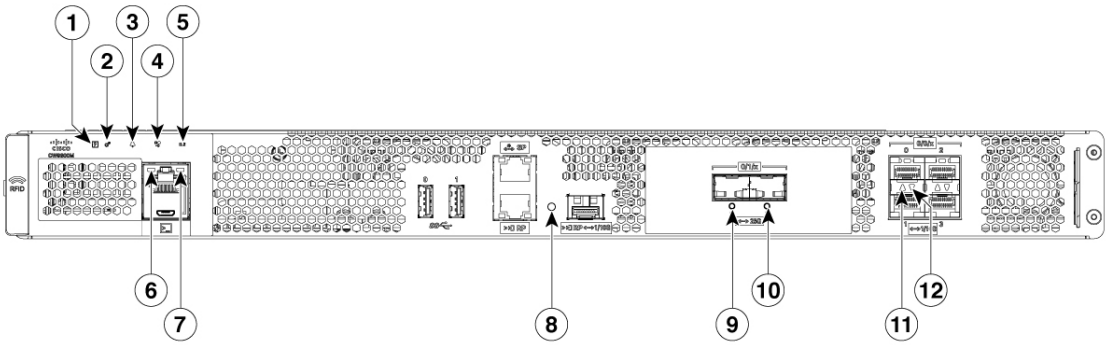


1	RJ-45 compatible console port	5	RP—1-GE/10-GE SFP port
2	USB port 0	6	RP—RJ-45 1 GE redundancy port
3	USB port 1	7	CON-Micro USB console port
4	SP—RJ-45 1GE managementport		

LEDs

The following figure shows the LEDs on the front panel of the Cisco Catalyst CW9800M Wireless Controller:

Figure 4: Cisco Catalyst CW9800M Wireless Controller LEDs



No.	LED Label	Description	LED Color	Behavior
1	PWR	Power	Green	If all the power rails are based on the specification.

No.	LED Label	Description	LED Color	Behavior
2	SYS	System	On 	Remains ON during IOS boot complete.
			Blinking Green 	Remains blinking when IOS booting is in progress.
			Amber 	Remains ON during system crash.
			Blinking Amber 	Remains blinking during secure boot failure.
			Off	Remains OFF during ROMMON boot.
3	ALM	Alarm	Green 	Remains ON during ROMMON boot complete.
			Blinking Green 	Remains blinking when system upgrade is in progress.
			Amber 	Remains ON during ROMMON and SYSTEM bootups.
			Blinking Amber 	Remains blinking during temperature error and secure boot failure.
			Red	Indicates that the system detects critical warnings.
			Off	Remains OFF during IOS boot. Normal Operation

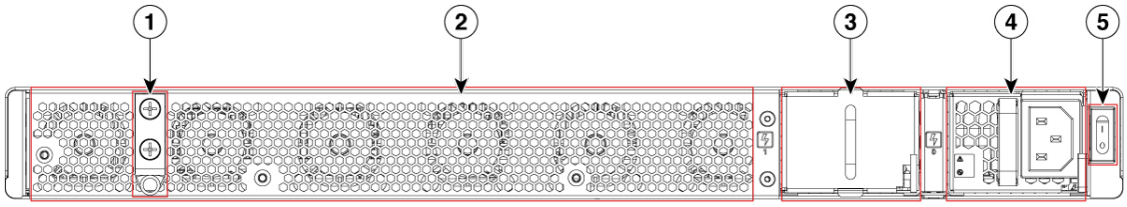
No.	LED Label	Description	LED Color	Behavior
4	HA	High Availability	Green 	Remains ON when HA is active.
			Blinking Green 	Remains blinking when HA Standby Hot.
			Amber 	Blinks slowly when booted or HA Standby Cold.
			Blinks Fast	Blinks fast during HA maintenance.
5	M.2 SSD	SSD Activity	Green 	Indicates active usage of the hard disk SSD memory devices in the unit.
6		RJ-45 Console Port Status LED	Green 	Indicates that the RJ-45 console port is active.
7		USB console Port LED	Green 	Indicates that the micro USB connector is used as the console.
8		RP RJ-45 or SFP Port	Green 	Indicates that the port is enabled and there is a valid Ethernet Link
			Amber 	Indicates that the port is enabled, but there is a problem with the Ethernet Link.
			OFF	Indicates that the port is not enabled.
9 and 10		Built-in EPA 1 (1 SFP + Port Status of 1 LED with 1 per SFP)	OFF	Indicates that the port is not enabled.
			Amber	Indicates that the port is enabled, but there is a problem with the Ethernet Link.
			Green 	Indicates that the port is enabled and there is a valid Ethernet Link

No.	LED Label	Description	LED Color	Behavior
11		1/10 GE SFP Port Status LED (1 per port for ports 0 and 2)	OFF	Indicates that the port is not enabled.
			Amber	Indicates that the port is enabled, but there is a problem with the Ethernet Link.
			Green	Indicates that the port is enabled and there is a valid Ethernet Link
12		1/10 GE SFP Port Status LED (1 per port for ports 1 and 3)	OFF	Indicates that the port is not enabled.
			Amber	Indicates that the port is enabled, but there is a problem with the Ethernet Link.
			Green	Indicates that the port is enabled and there is a valid Ethernet Link

Rear View

The following figure shows the rear view of the Cisco Catalyst CW9800M Wireless Controller:

Figure 5: Cisco Catalyst CW9800M Wireless Controller Rear View



1	Grounding lug	2	Fans
3	Power supply blank	4	AC power supply (PEM 0)
5	Power/standby switch		

The chassis has a front-to-rear airflow. Six internal fans draw cooling air into the chassis and across internal components to maintain an acceptable operating temperature. The fans are located at the rear of the chassis. The fans are numbered from 0 to 5, right to left.

The power supply (AC) is accessed from the rear of the controller and is hot-swappable.

Cisco Product Identification Standard

This section describes the Cisco products and services product identification standard. This feature provides you with the ability to effectively integrate and manage Cisco products in your network and business operations.

Unique Device Identifier

The Unique Device Identifier (UDI) is the Cisco product identification standard for hardware products. A product identification standard removes barriers to enterprise automation and can help you reduce operating expenses.

The UDI provides a consistent electronic, physical, and associated business-to-business information product identification standard.

The UDI is a combination of five data elements. The following table lists the UDI elements:

Table 3: UDI Elements

UDI Data Element	Electronic Visibility	Physical Visibility	Description
PID	Yes	Yes	Product ID, also known as product name, model name, product number
VID	Yes	Yes	Version ID
SN	Yes	Yes	Serial number, the unique instance of the PID
Entity Name	Yes	—	Type, such as chassis, slot, or power supply
Product Description	Yes	—	Additional product information

The combination of serial number and product ID (PID) is unique and consistent across all Cisco products. The PID that is coded on hardware is called a base product identifier.

Additional orderable PIDs can be associated to a base PID. For instance, an orderable PID may describe a packaging configuration for a product or a bundled group of products sold, tested, and shipped together. Specific unique device identifier (UDI) benefits include the following:

- Identifies:
  - Individual Cisco products in your networks
  - PIDs and serial numbers for service and replaceable products
  - Version IDs (VIDs) for product version visibility
- Facilitates discovery of products subject to recall or upgrade
- Enhances inventory automation of Cisco products

The Cisco product identification standard provides the following features:

show diag chassis eeprom Command

The **show diag chassis eeprom** command displays the PID, VID, PCB serial number, hardware revision, and other such information.

The following is sample output from the show diag chassis eeprom command:

```
Device# show diag chassis eeprom

MIDPLANE EEPROM data:

Product Identifier (PID) : CW9800M
Version Identifier (VID) : V00
PCB Serial Number        : JAE27210CBV
Top Assy. Part Number    : 68-7623-03
Hardware Revision        : 0.4
Asset ID                 :
CLEI Code                : CMM0000000

Power/Fan Module P0 EEPROM data:

Product Identifier (PID) : PWR-CH1-750WACR
Version Identifier (VID) : V01
PCB Serial Number        : ART2720FCKC
Hardware Revision        : 1.0
Asset ID                 :
CLEI Code                : CMUPAG1CAA

Power/Fan Module P1 EEPROM data is not initialized
```

Note Common Language Equipment Identification (CLEI) code is a ten-digit character code that identifies a specific product. A CLEI code is applied to each part within a Cisco Catalyst CW9800M Wireless Controller as they are programmed in manufacturing for shipment to customers.

show license udi Command

The **show license udi** command displays UDI information.

The following is sample output from the **show license udi** command:

```
Device# show license udi

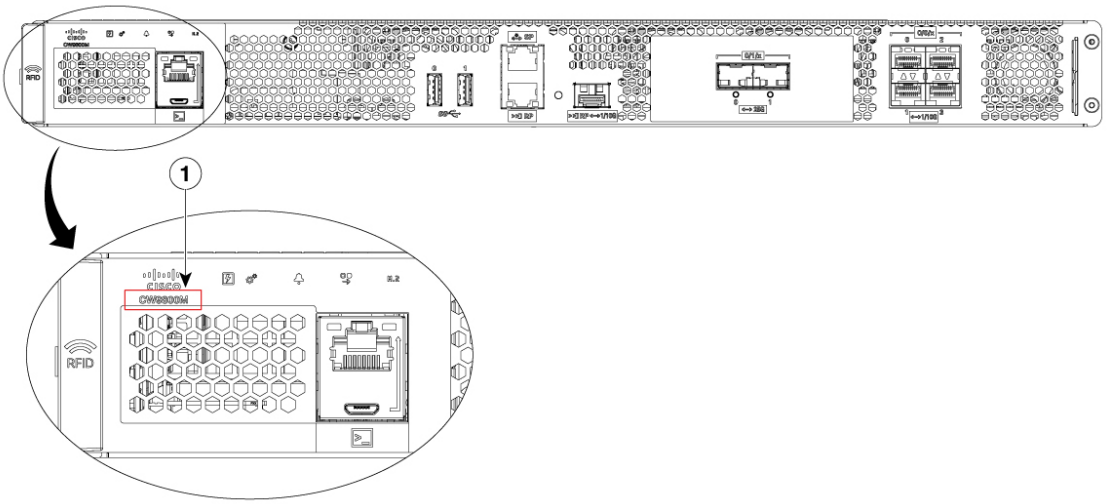
UDI: PID:CW9800M,SN:FLX271000RP
```

Note For complete information on the product identification standard, see https://www.cisco.com/c/en/us/products/unique-device-identifier-udi.html.

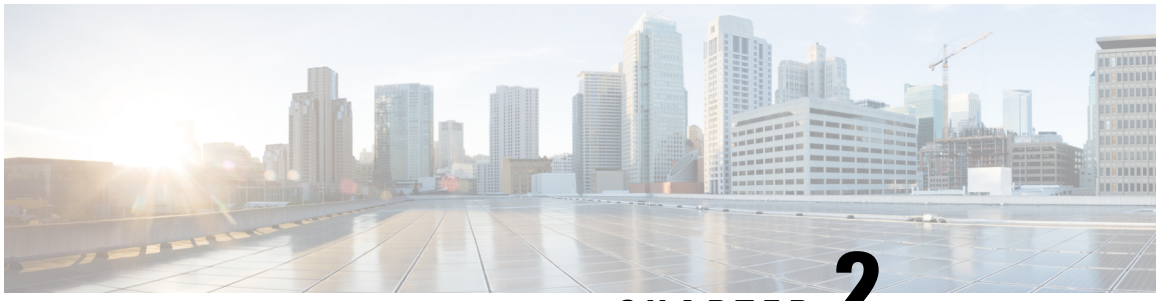
PID Label Location

The following figures show the location of the serial number and the PID/VID label on the Cisco Catalyst CW9800M Wireless Controller:

Figure 6: Cisco Catalyst CW9800M Wireless Controller Serial Number and PID/VID Label Location



1	PID Label



CHAPTER 2

Supported Hardware Components

This chapter contains information about the supported hardware components on the .

- Supported EPA, on page 13
- Supported SFP Models, on page 13
- Supported Transceivers, on page 14
- Power Supplies, on page 16

Supported EPA

The following table lists the supported EPA on the Cisco Catalyst CW9800M Wireless Controller .

PID	Description
EPA0	Four 1 GE/10 GE-ports that support small form-factor pluggable (SFP) optical transceivers to provide network connectivity. Ports are numbered 0 – 3. See the **Supported SFP Transceivers** section, for supported transceivers.
EPA1	Two 25 GE-ports that support small form-factor pluggable (SFP+) optical transceivers to provide network connectivity. Ports are numbered 0 - 2 in (TE0/1/0, 0/1/1, and 0/1/2 Bay 1) See the **Supported SFP Transceivers** section, for supported transceivers.

Supported SFP Models

This table lists the supported SFP models [25GBASE] on the Cisco Catalyst CW9800M Wireless Controller

Table 4: Supported 25GBASE SFP Models

PID	Description
SFP-25G-SR-S	25GBASE-SR SFP28 Module for MMF
SFP-25G-ER-I	25GBASE-ER, SFP28 Industrial Temperature Module for SMF

PID	Description
SFP-10/25G-LR-I	10/25GBASE-LR Module for SMF
SFP-10/25G-LR-S	10/25GBASE-LR SFP28 Module for SMF
SFP-10/25G-CSR-S	10/25GBASE-CSR SFP28 Module for MMF
SFP-10/25G-BXD-I	10GBASE-LR, 10GBASE-BR10, 25GBASE-BR10 SFP28, Bidirectional, Industrial Temperature Module for SMF
SFP-10/25G-BXU-I	10GBASE-LR, 10GBASE-BR10, 25GBASE-BR10 SFP28, Bidirectional, Industrial Temp Module for SMF
SFP-H25G-CU1M	25GBASE-CR1 Copper Cable 1-meter
SFP-H25G-CU5M	25GBASE-CR1 Copper Cable 5-meter
SFP-25G-AOC1M	25GBASE-AOC Active Optical Cable 1-meter
SFP-25G-AOC2M	25GBASE-AOC Active Optical Cable 2-meter
SFP-25G-AOC3M	25GBASE-AOC Active Optical Cable 3-meter
SFP-25G-AOC5M	25GBASE-AOC Active Optical Cable 5-meter
SFP-25G-AOC7M	25GBASE-AOC Active Optical Cable 7-meter
SFP-25G-AOC10M	25GBASE-AOC Active Optical Cable 10-meter

Note Starting with release Cisco IOS XE 26.1.1, these SFP models will successfully establish interfaces when connected between Cisco Catalyst CW9800M or CW9800H1 controllers and Nexus switches configured with FEC mode cl74:

- SFP-25G-CSR-S
- SFP-25G-LR-S
- SFP-25G-SR-S

Both Controllers and Nexus switches need to be configured with FEC mode cl74. Previously, interfaces did not come up with these SFPs under this configuration. This update improves compatibility and interface stability for these transceivers in such environments.

Supported Transceivers

The Cisco Catalyst CW9800M Wireless Controller supports the following small form-factor pluggable (SFP) transceiver types:

Bay	Ports	Cisco Catalyst CW9800M Wireless Controller
Bay 0	4 X 1 GE/10 GE ports • Te0/0/0—1-GE SFP/ 10-GE SFP+ Port 0 • Te0/0/2—1-GE SFP/ 10-GE SFP+ Port 2 • Te0/0/1—1-GE SFP/ 10-GE SFP+ Port 1 • Te0/0/3—1-GE SFP/ 10-GE SFP+ Port 3	SFP
Bay 1	2 X 25 GE ports • TwentyFiveGigE0/1/0—25-GE SFP+ Port 0 • TwentyFiveGigE0/1/1—25-GE SFP+ Port 1	SFP+

Table 5: Supported SFP Transceiver (1000BASE)

PID	Description
GLC-LH-SMD	1000BASE-LX/LH SFP transceiver module, MMF/SMF, 1310nm, DOM
GLC-SX-MMD	1000BASE-SX SFP transceiver module, MMF, 850nm, DOM
GLC-TE	1000BASE-T SFP transceiver module for category 5 copper wire
GLC-ZX-SMD	1000BASE-ZX SFP transceiver module, SMF, 1550nm, DOM
GLC-BX-U	1000BASE-BX SFP, 1310nm
GLC-BX-D	1000BASE-BX SFP, 1490nm
GLC-EX-SMD	1000BASE-EX SFP, long-wavelength, DOM

Table 6: Supported 10GBASE SFP+ Transceiver

PID	Description
SFP-10G-SR	10-GB-SR SFP+ Module for MMF
SFP-10G-SR-S	10-GB-SR-S SFP+ Module for MMF

PID	Description
SFP-10G-SR-I	10-GB-SR-I SFP+ Module for MMF
SFP-10G-LR	10-GB-LR SFP+ Module for SMF
SFP-10G-LR-X	10-GB-LR SFP+ Module for Extended Temp range
SFP-10G-ER	10-GB-ER SFP+ Module for SMF
SFP-10G-ZR-I	10-BG-ZR-I SFP+ Module for industrial operating temperature
SFP-10G-AOC1M	10-GB SFP+ model for AOC1M
SFP-10G-AOC2M	10-GB SFP+ model for AOC2M
SFP-10G-AOC3M	10-GB SFP+ model for AOC3M
SFP-10G-AOC5M	10-GB SFP+ model for AOC5M
SFP-10G-AOC7M	10-GB SFP+ model for AOC7M
SFP-H10GB-ACU7M	10-GB-CU SFP+ Cable 7 Meter, active
SFP-H10GB-ACU10M	10-GB-CU SFP+ Cable 10 Meter, active
SFP-H10GB-CU1M	10-GB SFP+ model for CU1M
SFP-H10GB-CU2M	10-GB SFP+ model for CU2M
SFP-H10GB-CU3M	10-GB SFP+ model for CU3M
SFP-H10GB-CU5M	10-GB SFP+ model for CU5M
SFP-H10GB-CU1-5M	10-GB SFP+ model for CU1-5M
SFP-H10GB-CU12-5M	10-GB SFP+ model for CU2-5M
Finisar-LR (FTLX1471D3BCL)	10-GB- LR-SFP+ Module for MMF
Finisar-SR (FTLX8574D3BC)	10-GB-SR SFP+ Module for MMF

For more information about the supported SFP+ transceivers, see the datasheet at https://www.cisco.com/c/en/us/products/collateral/wireless/catalyst-9800-series-wireless-controllers/nb-06-cat9800-wirel-cont-data-sheet-ctp-en.html

Power Supplies

The Cisco Catalyst CW9800M Wireless Controller supports one AC power supply always with a blank cover, or two AC power supplies. The modular chassis configurations support the installation of two power supplies for redundancy. When a power supply fails or is removed, the other power supply provides power requirements for the chassis. This allows you to hot-swap the power supply without impacting the functionality of the controller.

The power supplies are used in a 1 + 1 redundant configuration. There is no input switch on the faceplate of the power supplies. A power supply is switched from Standby to On by way of a system chassis power switch.

The following table lists the power supplies that you can order:

Part Number	Power Supply
PWR-CH1-750WACR	Cisco Catalyst CW9800M Wireless Controller power supply module 750W AC Power

Note Platform related information can be obtained through a programmable interface using openconfig-platform model. However, power auditing per component is not supported.

Power Supply LEDs

The following table describes the power supply LEDs:

Table 7: AC/DC Power Supply LEDs

Power Supply Condition	Green (OK) LED Status	Amber (FAIL) LED Status
No AC power to all power supplies	OFF	OFF
Power Supply Failure (includes over voltage, over current, over temperature and fan failure)	OFF	ON
Power Supply Warning events where the power supply continues to operate (high temperature, high power and slow fan)	OFF	1 Hz Blinking
AC Present/12VSB on (PSU OFF)	1 Hz Blinking	OFF
Power Supply ON and OK	ON	OFF

Power Supply Fans

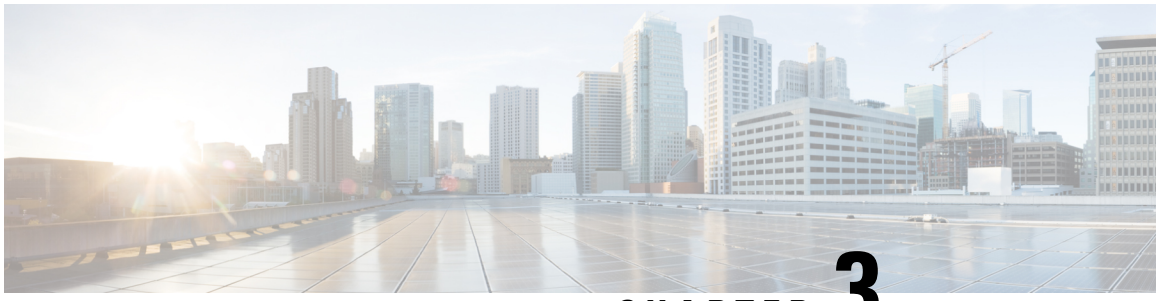
The fans in the power supply module are used for cooling the power supply module itself while a system-level cooling is provided by fans within the chassis. The power supplies do not depend on the system-level fans for cooling. Fan-rotation sensors determine the fan failures

Note The fans in the Cisco Catalyst CW9800M Wireless Controller power supplies have plug-side exhaust airflow.

Caution The chassis has a front-to-rear airflow. All power supplies and fan modules in the same chassis must use the same airflow direction or an error will occur with possible overheating and shut down of the controller.

If you power up the controller with more than one airflow direction, you must power down the controller and replace the modules with the wrong airflow direction before powering up the controller.

Note The fans in the power supply modules run when the power supply is plugged in, even if the power switch is in the standby position.



CHAPTER 3

Preparing Your Site for Installation

This chapter contains important safety information you should know before working with the controller, and guides you through the process of preparing your site for wireless controller installation.

- Prerequisites and Preparation, on page 19
- Safety Guidelines, on page 20
- Standard Warning Statements, on page 21
- Site Planning, on page 25
- Site Cabling Guidelines, on page 29
- Rack-Mounting Guidelines, on page 31
- Preventing Electrostatic Discharge Damage, on page 34
- Electrical Safety, on page 35
- Chassis-Lifting Guidelines, on page 35
- Tools and Equipment, on page 36
- Unpacking and Verifying Shipping Contents, on page 36
- Installation Checklist, on page 37

Prerequisites and Preparation

Before you perform the procedures in this guide, we recommend that you:

- Read the safety guidelines in the next section and review the electrical safety and ESD-prevention guidelines in this guide.
- Ensure that you have all of the necessary tools and equipment (see the **Tools and Equipment** section).
- Ensure that you have access to the *Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide* (an online document that is available for viewing or download at Cisco.com) during the installation.
- Ensure that the power and cabling requirements are in place at your installation site.
- Ensure that the equipment required to install the controller is available.
- Ensure that your installation site meets the environmental conditions to maintain normal operation.

Before installing the controller, you must consider power and cabling requirements that must be in place at your installation site, special equipment for installing the controller, and the environmental conditions your installation site must meet to maintain normal operation.

The shipping package for the controller is engineered to reduce the chances of product damage associated with routine material handling experienced during shipment:

- Controller should always be transported or stored in its shipping package in the upright position.
- Keep the controller in the shipping container until you have determined the installation site.

Note Inspect all items for shipping damage. If an item appears damaged, contact a Cisco customer service representative immediately

Site Planning Checklist

Use the following checklist to perform and account for all the site-planning tasks described in this chapter:

- The site air conditioning system can compensate for the heat dissipation of the controller.
- Electrical service to the site complies with the requirements.
- The electrical circuit servicing the controller complies with the requirements.
- Consideration has been given to console port wiring and limitations of the cabling involved, according to TIA/EIA-232F.
- The Ethernet cabling distances are within limitations.
- The equipment rack in which you plan to install the controller chassis complies with requirements. Careful consideration has been given for safety, ease of maintenance, and proper airflow in selecting the location of the rack.

Safety Guidelines

Before you begin the installation or replacement procedure, review the safety guidelines in this section to avoid injuring yourself or damaging the equipment.

Note This section contains guidelines, and do not include every potentially hazardous situation. When you install a controller, always use common sense and caution.

Safety Warnings

Safety warnings appear throughout this publication in procedures that, if performed incorrectly, might harm you. A warning symbol precedes each warning statement.

Before you install, configure, or perform maintenance on the controller, review the documentation for the procedure you are about to perform, paying special attention to the safety warnings.

Note Do not unpack the system until you are ready to install it. Keep the chassis in the shipping container to prevent accidental damage until you determine an installation site. Use the appropriate unpacking documentation included with the system.

Read the installation instructions in this document before you connect the system to its power source. Failure to read and follow these guidelines could lead to an unsuccessful installation and possibly damage the system and components.

Safety Recommendations

The following guidelines will help to ensure your own safety and protect your Cisco equipment. This list does not cover all potentially hazardous situations, so *be alert*.

- Review the safety warnings listed in Regulatory Compliance and Safety Information - and (available online at Cisco.com) before installing, configuring, or maintaining the controller.
- Always unplug the power cable before installing or removing a chassis.
- Keep the chassis area clear and dust free during and after installation.
- The controller operates safely when it is used in accordance with its marked electrical ratings and product-usage instructions.

Standard Warning Statements

Note The English warnings in this document are preceded by a statement number. To see the translations of a warning in other languages, look up its statement number in the *Regulatory Compliance and Safety Information - Cisco Catalyst CW9800M Wireless Controller*.

This section describes the warning definition and then lists core safety warnings grouped by topic.

Warning **IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS. Statement 1071

General Safety Warnings

Warning **Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Read the installation instructions before using, installing, or connecting the system to the power source. Use the statement number at the beginning of each warning statement to locate its translation in the translated safety warnings for this device.**



Statement 1071

Note **You are strongly advised to read the safety instruction before using the product.**

https://www.cisco.com/web/JP/techdoc/pldoc/pldoc.html

When installing the product, use the provided or designated connection cables/power cables/AC

製品仕様における安全上の注意〉
ww.cisco.com/web/JP/techdoc/index.html

接続ケーブル、電源コードセット、ACアダプタ、バッテリなどの部品は、必ず添付品または
指定品をご使用ください。添付品・指定品以外をご使用になると故障や動作不良、火災の
原因となります。また、電源コードセットは弊社が指定する製品以外の電気機器には使用
できないためご注意ください。

Statement 407

Warning **To reduce risk of electric shock or personal injury, disconnect DC power before removing or replacing components or performing upgrades.**

Statement 1003

Warning **Read the installation instructions before using, installing or connecting the system to the power source.**

Statement 1004

Warning **Class 1 Laser.**

Statement 1008

Warning **Pluggable optical modules comply with IEC 60825-1 Ed. 3 and 21 CFR 1040.10 and 1040.11 with or without exception for conformance with IEC 60825-1 Ed. 3 as described in Laser Notice No. 56, dated May 8, 2019.**

Statement 1255

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.**

Statement 1040

Warning **Warning – Invisible Laser Radiation. Do not expose users of telescopic optics. Class 1/1M Laser Products.**

Statement 1055



Warning **No user-serviceable parts inside. Do not open.**

Statement 1073

Warning **Installation of the equipment must comply with local and national electrical codes.**

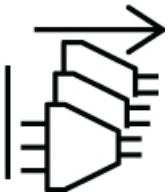
Statement 1074

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

Statement 1030

Warning **This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.**

Statement 1028



Warning **This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.**

Statement 1017

Warning **Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard.**

Statement 1056

Fiber type and Core diameter (μm)	Wavelength (nm)	Max. Power (mW)	Beam Divergence (rad)
SM 11	1200-1400	39-50	0.1-0.11
MM 62.5	1200-1400	150	0.18 NA
MM 50	1200-1400	135	0.17 NA
SM 11	1200-1600	112-145	0.11-0.13



Warning **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place**

Statement 1029



Warning **An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.**

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Statement 1089



Warning **Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed or skilled person.**

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Statement 1091

Site Planning

This section contains site-planning information, and will help you plan for the installation of the controller.

General Precautions

Observe the following general precautions when using and working with the controller:

- Keep your system components away from radiators and heat sources and do not block cooling vents.
- Do not spill food or liquids on your system components and never operate the product in a wet environment.
- Do not push any objects into the openings of your system components. Doing so can cause fire or electric shock by shorting out interior components.
- Position system cables and power supply cable carefully. Route system cables and power supply cable and plug such that they cannot be stepped on or tripped over. Be sure that nothing else rests on your system component cables or power cable.
- Do not modify power cables or plugs. Consult a licensed electrician or your power company for site modifications. Always follow your local and national wiring rules.

- If you turn off your system, wait at least 30 seconds before turning it on again to avoid system component damage.

Site Selection Guidelines

The Cisco Catalyst CW9800M Wireless Controller requires specific environmental operating conditions. Temperature, humidity, altitude, and vibration can affect the performance and reliability of the controller. The following sections provide specific information to help you plan for a proper operating environment.

The Cisco Catalyst CW9800M Wireless Controller is designed to meet the industry EMC, safety, and environmental standards described in the *Regulatory Compliance and Safety Information - Cisco Catalyst CW9800M Wireless Controller* document.

Site Environmental Requirements

Environmental monitoring protects the system and components from damage caused by excessive voltage and temperature conditions. To ensure normal operation and avoid unnecessary maintenance, plan and prepare your site configuration before installation. After installation, make sure the site maintains the environmental characteristics, as shown in the following table.

Table 8: Cisco Catalyst CW9800M Wireless Controller Environmental Tolerance

Environmental Characteristic	Minimum	Maximum
Operating temperature (nominal)	41° F (5° C)	104° F (40° C) (40° C up to 10,000 feet)
Operating temperature (short term)	41° F (5° C)	122° F (50° C)
Storage temperature	–4° F (–20° C)	158° F (70° C)
Operative humidity (nominal) (relative humidity)	5%	85%
Operative humidity (short term)	5%	90%
Storage humidity (relative humidity)	5%	95%
Altitude, operating: over allowable temperature range (0° to 50° C)	0 feet (0 meters)	10,000 feet (3000 meters)
Altitude, nonoperating: over allowable temperature range	–1000 feet (–304.8 meters)	50,000 feet (15240 meters)
Thermal shock nonoperating with change over time of 3 minutes	–13° F (–25° C)	158° F (70° C)
Thermal Shock - Operating at 2.5° C per minute	32° F (0° C)	122° F (50° C)

Physical Characteristics

Be familiar with the physical characteristics of the Cisco Catalyst CW9800M Wireless Controller to assist you in placing the system at a proper location.

Note For information regarding rack widths supported for the controller, see the following sections:

- **General Rack-Selection Guidelines**
- **Guidelines for 23-in. (Telco) Racks**

The following table shows the weight and dimensions of the Cisco Catalyst CW9800M Wireless Controller:

Table 9: Physical Characteristics of the Cisco Catalyst CW9800M Wireless Controller

Characteristic	Cisco Catalyst CW9800M Wireless Controller
Height	Height—1.73 in. (43.94 mm)—1RU; rack-mount per EIA RS-310
Width	Width—17.5 in. (444.5 mm)
Depth	Depth—24.02 in. (610.11 mm) including card handles, cable-management brackets, and power supply handles.
Weight	20.5 lb (9.32 kg) fully loaded

The following list describes additional characteristics:

- Chassis height meets EIA-310 rack spacing, universal rack mount
  - Cisco Catalyst CW9800M Wireless Controller—1RU (1.73 in or 43.94 mm)
- Chassis width meets EIA-310 19 in. (17.5 in. or 444.5 mm) wide with rack brackets
- Cable-management brackets allow a bend radius of 1.5 in. (38.1 mm) for cables
- Ships with forward rack-mount brackets installed and an extra set included in the accessory kit

Site Power Guidelines

The Cisco Catalyst CW9800M Wireless Controller has specific power and electrical wiring requirements. Adhering to these requirements ensures reliable operation of the system. Follow these precautions and recommendations when planning your site for the controller:

- The redundant power option provides a second, identical power supply to ensure that power to the chassis continues uninterrupted if one power supply fails or input power on one line fails.
- In systems configured with the redundant power option, connect each of the two power supplies to a separate input power source. If you fail to do this, your system might be susceptible to total power failure due to a fault in the external wiring or a tripped circuit breaker.

- To prevent a loss of input power, be sure the total maximum load on each circuit supplying the power supplies is within the current ratings of the wiring and breakers.
- Check the power at your site before installation, and periodically after installation, to ensure that you are receiving clean power. Install a power conditioner if necessary.
- Provide proper grounding to avoid personal injury and damage to the equipment due to lightning striking power lines or due to power surges. The chassis ground must be attached to a central office or other interior ground system.

Electrical Circuit Requirements

The Cisco Catalyst CW9800M Wireless Controller requires a dedicated electrical circuit. If you equip it with dual-power feeds, you must provide a separate circuit for each power supply to avoid compromising the power redundancy feature.

The Cisco Catalyst CW9800M Wireless Controller can be powered by AC power supplies. Ensure that equipment grounding is present and observe power-strip ratings. Make sure that the total ampere rating of all the products plugged into the power strip does not exceed 80 percent of the rating.

AC Power Supplies

Warning **This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than:**

AC: 20A U.S. maximum

Statement 1005

DC Power Supplies

Warning **A readily accessible two-poled disconnect device must be incorporated in the fixed wiring**

Statement 1022

Warning **This product requires short-circuit (overcurrent) protection to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.**

Statement 1045

The following table lists the power supply system rating requirements for the Cisco Catalyst CW9800M Wireless Controller .

Table 10: AC and DC Power Supply System Rating Specifications

Description	Specification
Power supply declared ratings	AC = 85 to 264 VAC DC = - 40.5 to -72 VDC
Line frequency rating	50/60 Hz for AC power supplies

Site Cabling Guidelines

This section contains guidelines for wiring and cabling at your site. When preparing your site for network connections to the Cisco Catalyst CW9800M Wireless Controller, consider the type of cable required for each component, and the cable limitations. Consider the distance limitations for signaling, EMI, and connector compatibility. Possible cable types are fiber, thick or thin coaxial, foil twisted-pair cabling, or unshielded twisted-pair cabling.

Also consider any additional interface equipment you need, such as transceivers, hubs, switches, modems, channel service units (CSUs), or data service units (DSUs).

Before you install the controller, have all the additional external equipment and cables at hand. For ordering information, contact a Cisco customer service representative.

The extent of your network and the distances between network interface connections depend in part on the following factors:

- Signal type
- Signal speed
- Transmission medium

The distance and rate limits referenced in the following sections are the IEEE-recommended maximum speeds and distances for signaling purposes. Use this information as guidelines when planning your network connections prior to installing the Cisco Catalyst CW9800M Wireless Controller.

If wires exceed recommended distances, or if wires pass between buildings, give special consideration to the effect of a lightning strike in your vicinity. The electromagnetic pulse caused by lightning or other high-energy phenomena can easily couple enough energy into unshielded conductors to destroy electronic devices. If you have had problems of this sort in the past, you may want to consult experts in electrical surge suppression and shielding.

Note If you are using a copper cable to connect the Redundancy Ports (RPs) back-to-back, the maximum length of the cable can be 30 meters. If you want to use a longer cable, you will need to switchover to fiber optic cables.

Console Port Connections

The Cisco Catalyst CW9800M Wireless Controller provides console ports to connect a terminal or computer for local console access.

The RJ-45 connectors support RS-232 asynchronous data, and have distance recommendations specified in the IEEE RS-232 standard.

USB Serial Console

The USB serial console port connects directly to the USB connector of a PC using any USB form type to 5-pin micro USB Type-B cable. The USB Console supports full speed (12Mbps) operation. The console port does not support hardware flow control.

Note

- Always use shielded USB cables with a properly terminated shield. The USB serial console interface cable must not exceed 3 meters in length.
- Only one console port can be active at a time. When a cable is plugged into the USB console port, the RJ-45 port becomes inactive. Conversely, when the USB cable is removed from the USB port, the RJ-45 port becomes active.
- 4-pin micro USB Type-B connectors are easily confused with 5-pin micro USB Type-B connectors. Only 5-pin micro USB Type-B is supported.

Interference Considerations

When wires are run for a significant distance, there is a risk that stray signals will be induced on the wires as interference. If interference signals are strong, they can cause data errors or damage to the equipment.

The following sections describe sources of interference and how to minimize its effects on Cisco Catalyst CW9800M Wireless Controller.

Electromagnetic Interference

All the equipment powered by AC current can propagate electrical energy that can cause electromagnetic interference (EMI) and possibly affect the operation of other equipment. The typical sources of EMI are equipment power cords and power service cables from electric utility companies.

Strong EMI can destroy the signal drivers and receivers in the controller and even create an electrical hazard by causing power surges through power lines into installed equipment. These problems are rare, but could be catastrophic.

To resolve these problems, you need specialized knowledge and equipment, which could consume substantial time and money. However, you should ensure that you have a properly grounded and shielded electrical environment, paying special attention to the need for electrical surge suppression.

The following table lists electrode magnetic compliance standards for the controller.

Table 11: EMC and Safety Standards

EMC Standards	FCC 47 CFR Part 15 Class A VCCI Class A AS/NSZ Class A ICES-003 Class A EN55022/CISPR 22 Information Technology Equipment (Emissions) EN55024/CISPR 24 Information Technology Equipment (Immunity) EN300 386 Telecommunications Network Equipment (EMC) EN50082-1/EN61000-6-1 Generic Immunity Standard
Safety Standards	UL62368-1 CSA C22.2 No. 62368-1 EN 60825-1:2014 EN 62368-1 IEC 60825-1:2014 IEC 62368-1 AS/NZS 62368-.1

Radio Frequency Interference

When electromagnetic fields act over a long distance, radio frequency interference (RFI) can be propagated. Building wiring can often act as an antenna, receiving the RFI signals and creating more EMI on the wiring.

If you use twisted-pair cable in your plant wiring with a good distribution of grounding conductors, the plant wiring is unlikely to emit radio interference. If you exceed the recommended distances, use a high-quality twisted-pair cable with one ground conductor for each data signal.

Lightning and AC Power Fault Interference

As this product is safety certified for indoor connection only, if signal wires exceed recommended cabling distances, you should consider the effect that a lightning strike in your vicinity might have on the controller.

The electromagnetic pulse (EMP) generated by lightning or other high-energy phenomena can couple enough energy into unshielded conductors to damage or destroy electronic equipment. If you have previously experienced such problems, you should consult with RFI/EMI experts to ensure that you have adequate electrical surge suppression and shielding of signal cables in your controller operating environment.

Rack-Mounting Guidelines

This section describes guidelines on rack-mounting.

Precautions for Rack-Mounting

The following rack-mounting guidelines are provided to ensure your safety:

Warning **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable.**

The following guidelines are provided to ensure your safety:

- **This unit should be mounted at the bottom of the rack if it is the only unit in the rack.**
- **When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.**
- **If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.**

Statement 1006

- Do not move large racks by yourself. Due to the height and weight of a rack, a minimum of two people are required to accomplish this task.
- Ensure that the rack is level and stable before extending a component from the rack.
- Ensure that proper airflow is provided to the components in the rack.
- Do not step or stand on any component or system when servicing other systems or components in a rack.

General Rack-Selection Guidelines

The Cisco Catalyst CW9800M Wireless Controller can be mounted in most two-post or four-post, 19-in. equipment racks that comply with the Electronics Industries Association (EIA) standard for equipment racks (EIA-310-D 19-in.). The rack must have at least two posts with mounting flanges to mount the chassis.

Warning **To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 104°F (40°C).**

Statement 1047

The distance between the center lines of the mounting holes on the two mounting posts must be 18.31 in. ± 0.06 in. (46.50 cm ± 0.15 cm). The rack-mounting hardware included with the chassis is suitable for most 19-in. (48.3-cm) equipment racks.

Consider installing the Cisco Catalyst CW9800M Wireless Controller in a rack with the following features:

- EIA or ETSI hole patterns in the mounting rails. Required mounting hardware is shipped with the controller. If the rack that you plan to install the system in has metric-threaded rails, you must provide your own metric-mounting hardware.
- Perforated top and open bottom for ventilation to prevent overheating.

- Leveling feet for stability.

Note If you use an enclosed rack, make certain that there are air vents on all sides of the rack and there is proper ventilation. Installing the controller in any type of enclosed rack—even with the front and back doors removed—could disrupt the air flow, trap heat next to the chassis, and cause an over temperature condition inside the controller.

Guidelines for 23-in. (Telco) Racks

If needed, you can also install the Cisco Catalyst CW9800M Wireless Controller in 23-in. (Telco) racks. For information on the adapters needed for 23 in. racks, contact the Newton Instrument Company:

```
http://www.enewton.com
111 East A Street, Butner NC, USA, 27509
919 575-6426
```

Equipment Rack Guidelines

The placement of racks can affect personnel safety, system maintenance, and the system's ability to operate within the environmental characteristics described in **Table: Cisco Catalyst CW9800M Wireless Controller Environmental Tolerance**. Choose a proper location for the controller by following the guidelines below.

Locating for Safety

If the Cisco Catalyst CW9800M Wireless Controller is the heaviest or the only piece of equipment in the rack, consider installing it at or near the bottom to ensure that the rack's center of gravity is as low as possible.

Locating for Easy Maintenance

Keep at least 3 feet of clear space in front of and behind the rack. This space ensures that you can remove the Cisco Catalyst CW9800M Wireless Controller components and perform routine maintenance and upgrades easily.

Avoid installing the controller in a congested rack and consider how the routing of cables from other pieces of equipment in the same rack might affect access to the controller's cards.

The front and top of the chassis must remain unobstructed to ensure adequate airflow and prevent overheating inside the chassis.

Allow the following clearances for normal system maintenance:

- At the top of the chassis—At least 3 in. (7.6 cm)
- In front of the chassis—3 to 4 ft (91.44 cm to 121.92 cm)

To avoid problems during installation and ongoing operation, follow these general precautions when you plan the equipment locations and connections:

- Use the **show environment all** and the **show facility-alarm status** commands regularly to check the internal system status. The environmental monitor continually checks the interior chassis environment; it provides warnings for high temperature and creates reports on any occurrences. If warning messages

are displayed, take immediate action to identify the cause and correct the problem. For more information on these commands, see the **Environmental Monitoring and Reporting Functions** section.

- Keep the Cisco Catalyst CW9800M Wireless Controller off the floor and out of the areas that collect dust.
- Follow ESD-prevention procedures to avoid damage to equipment. Damage from static discharge can cause immediate or intermittent equipment failure.

Locating for Proper Airflow

Ensure that the location of the Cisco Catalyst CW9800M Wireless Controller has enough airflow to keep the system operating within the environmental characteristics, and the air temperature is sufficient to compensate for the heat dissipated by the system.

Avoid locating the Cisco Catalyst CW9800M Wireless Controller in a location in which the chassis air intake vents could draw in the exhaust air from adjacent equipment. Consider how the air flows through the controller. The airflow direction is front to back with ambient air drawn in from the vent located on the chassis' front sides.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) damage occurs when electronic cards or components are improperly handled resulting in complete or intermittent failures. Static electricity can harm delicate components inside your system. To prevent static damage, discharge static electricity from your body before you touch any of your system components, such as a microprocessor. As you continue to work on your system, periodically touch an unpainted metal surface on the computer chassis.

The following are guidelines for preventing ESD damage:

- Always use an ESD-preventive wrist or ankle strap and ensure that it makes good skin contact. Before removing a card from the chassis, connect the equipment end of the strap to the ESD plug at the bottom of the chassis below the power entry modules.
- When removing a module, place the removed module component-side-up on an antistatic surface or in a static-shielding bag. If the module is to be returned to the factory, immediately place it in a static-shielding bag.
- Avoid contact between the modules and clothing. The wrist strap protects the card from ESD voltages only on the body; ESD voltages on clothing can still cause damage.
- When transporting a sensitive component, place it in an antistatic container or packaging.
- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.



Caution For safety, periodically check the resistance value of the antistatic strap. The measurement should be between 1 and 10 ohms.

Caution Always tighten the captive installation screws on all the system components when you are installing them. These screws prevent accidental removal of the module, provide proper grounding for the system, and help ensure that the bus connectors are properly seated in the backplane.

Electrical Safety

All the system components are hot-swappable. They are designed to be removed and replaced while the system is operating, without presenting an electrical hazard or damage to the system.

Follow these basic guidelines when you are working with any electrical equipment:

- Before beginning any procedures requiring access to the chassis interior, locate the emergency power-off switch for the room in which you are working.
- Disconnect all power and external cables before installing or removing a chassis.
- Never assume that power has been disconnected from a circuit; always check.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe. Never install equipment that appears damaged.
- Carefully examine your work area for possible hazards such as moist floors, ungrounded power extension cables, and missing safety grounds.

Chassis-Lifting Guidelines

The chassis is not intended to be moved frequently. Before you install the system, ensure that your site is properly prepared so that you can avoid having to move the chassis later to accommodate power sources and network connections.

Warning **To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules (such as power supplies, fans, or cards); these types of handles are not designed to support the weight of the unit.**

Statement 1032

Each time you lift the chassis or any heavy object, follow these guidelines:

- Ensure that your footing is solid, and balance the weight of the chassis between your feet.
- Lift the chassis slowly; never move suddenly or twist your body as you lift.
- Keep your back straight and lift with your legs, not your back. If you must bend down to lift the chassis, bend at the knees, not at the waist, to reduce the strain on your back muscles.
- Do not remove installed components from the chassis.
- Always disconnect all external cables before lifting or moving the chassis.

Tools and Equipment

The following tools and equipment are recommended as the minimum necessary equipment to install the Cisco Catalyst CW9800M Wireless Controller. You may need additional tools and equipment to install associated equipment and cables. You may also require test equipment to check electronic and optical signal levels, power levels, and communications links.

- Philips hand screwdriver
- 3.5-mm flat-blade screwdriver
- Tape measure (optional)
- Level (optional)
- 8-gauge wire
- Rack-mount brackets
- Cable-management brackets

Unpacking and Verifying Shipping Contents

When you receive your chassis, perform the following steps and use the shipping contents checklist in the following section.

Procedure

Step 1 Inspect the box for any shipping damage. (If there is damage, contact your Cisco service representative).

Step 2 Unpack the Cisco Catalyst CW9800M Wireless Controller .

Step 3 Perform a visual inspection of the chassis.

Step 4 After you have unpacked the system, verify that you have received all of the required components, including all the accessory items. Using the packing list as a guide, verify that you have received all the equipment listed in your order, and ensure that the configuration matches the packing list.

Checking the Shipping Container Contents

Use the components list shown in the following table to check the contents of the Cisco Catalyst CW9800M Wireless Controller shipping container. Do not discard the shipping container. You need the container, if you move or have to ship the controller in the future.

Table 12: Cisco Catalyst CW9800M Wireless Controller Shipping Container Contents

Component	Description
Chassis	Cisco Catalyst CW9800M Wireless Controller is configured with an AC power supply and fixed EPAs.
Accessories Kit **Note** You must order the Accessories Kit separately if you order the Cisco Catalyst CW9800M Wireless Controller chassis as a spare.	Front and rear chassis rack-mount brackets that you will attach to the chassis with the respective screws.
	Three sets of screws, one each for: • Front rack-mount brackets (use the black screws) • Rear rack-mount brackets (use the package with the 5 screws) • Cable-management brackets (use the package with the 4 screws)
	One cable-management bracket with U-feature design devices attached.
Documentation	Pointer Doc
Optional Equipment	Powercord if an AC power supply is shipped.

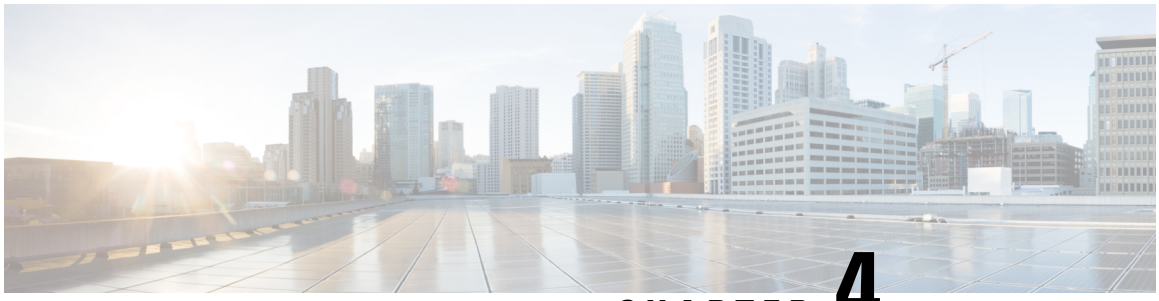
Installation Checklist

To assist you with your installation and to provide a historical record of what was done by whom, print or photocopy the installation checklist below. Use this to record when each procedure or verification is completed. When the checklist is completed, place it in your site log along with the other records for your new controller.

Table 13: Installation Checklist

Task	Verified By	Date
Date chassis received		
Chassis and all accessories unpacked		
Types and numbers of interfaces verified		
Safety recommendations and guidelines reviewed		
Installation Checklist copied		
Site log established and background information entered		
Site power voltages verified		

Task	Verified By	Date
Site environmental specifications verified		
Required passwords, IP addresses, device names, and so on, available		
Required tools available		
Network connection equipment available		
Cable-management brackets installed (optional, but recommended)		
AC power cable(s) connected to AC source(s) and controller		
Network interface cables and devices connected		
System power turned on		
System boot complete (STATUS LED is on)		
Ethernet port adapters and NIMs (where applicable) are operational		
Correct hardware configuration displayed after system banner appears		
Correct licenses installed on the controller		



CHAPTER 4

Installing the Controller

This chapter provides procedures for installing the controller on an equipment shelf, tabletop, or in an equipment rack.

- Installation Methods, on page 39
- Guidelines for a Standalone Equipment Shelf or Tabletop Installation, on page 40
- Installing the Controller on a Standalone Equipment Shelf or Tabletop, on page 40
- Guidelines for Rack Installation, on page 41
- Attaching Front Rack-Mount Brackets, on page 43
- Attaching Rear Rack-Mount Brackets, on page 43
- Mounting the Controller in the Rack, on page 44
- Attaching the Cable Management Bracket, on page 46
- Chassis Ground Connection, on page 47
- Connecting Cables, on page 49
- Management Ethernet Port Cable Connection, on page 50

Installation Methods

The controller is designed for standalone, 2-rail 19-inch rack-mount (front rail only), and 4-rail 19-inch rack-mount (front and rear rail) installations.

Although rack-mounting is the preferred method of installation, you can mount the chassis on an equipment shelf or tabletop.

Warning **Read the installation instructions before using, installing or connecting the system to the power source.**

Statement 1004

Note Proceed with the installation, if you have already unpacked your chassis and read all the site requirements for your new equipment.

Guidelines for a Standalone Equipment Shelf or Tabletop Installation

The chassis should already be in the area where you want to install it. If you have not determined where to install your chassis, see the **Preparing Your Site for Installation** section for information about site considerations.

When installing the controller on a sturdy equipment shelf or tabletop, ensure that the surface is clean and that you have considered the following:

- The controller requires at least 3 inches (7.62 cm) of clearance at the inlet and exhaust vents (the front and rear sides of the chassis).
- The chassis should be installed off the floor. Dust that accumulates on the floor is drawn into the interior of the controller by the cooling fans. Excessive dust inside the controller can cause over temperature conditions and component failures.
- The chassis needs adequate ventilation. Do not install it in an enclosed cabinet where ventilation is inadequate.
- Keep the cable-management bracket ready, if you plan to install it on the front of the chassis.
- Ensure that an adequate chassis ground (earth) connection exists for your controller chassis (see the **Attaching a Chassis Ground Connection** section).

Installing the Controller on a Standalone Equipment Shelf or Tabletop

Procedure

Step 1 Remove any debris and dust from the tabletop or platform, as well as the surrounding area.

Step 2 Lift the chassis into position on the equipment shelf or tabletop.

Note
Step 3 to **Step 9** are optional, if you are installing the controller on a rack shelf. The chassis rack-mount brackets must be installed prior to installing the cable-management brackets. See the **Attaching the Front Rack-Mount Brackets** section.

Step 3 Attach the front rack-mount brackets. Locate the threaded holes in the front sides of the chassis (first holes beyond the vent holes) and use the package of black screws that is shipped with the chassis.

Step 4 Align the front rack-mount bracket to one side of the chassis.

Step 5 Insert and tighten the screws on one side.

Step 6 Repeat **Step 3** to **Step 5** on the other side of the chassis. Use all the screws to secure the rack-mount brackets to the chassis.

Step 7 Gather the two cable-management brackets and screws shipped with your chassis. See the **Attaching Cable Management Bracket** section.

Step 8 Screw a cable-management bracket to each side of the rack-mount brackets that are attached to the chassis. Use two screws for each cable-management bracket. Use a screw from the package of four screws.

Note
Ensure that the cable-management U feature device has the open end pointing outwards when you attach it to the chassis.

Step 9 Check that all the screws are securely tightened.

What to do next

Go to the **Attaching a Chassis Ground Connection** section for instructions about continuing the installation.

Guidelines for Rack Installation

The controller can be installed in the following rack types:

- Two-post rack, either 19 inch or 23 inch inner clearance (the width between the inner sides of the two posts or rails) must be at least 19 inches (48.26 cm). Airflow through the chassis is from front to back.
- Four-post, 19 inch equipment rack. Inner clearance (the width between the inner sides of the two posts or rails) must be at least 19 inches (48.26 cm). Airflow through the chassis is from front to back.

The controller can be installed with both front or rear rack-mount brackets.

When planning your rack installation, consider the following guidelines:

- The controller requires a minimum of 1.75 inches or 4.45 cm rack units of vertical rack space. Measure the proposed rack location before mounting the chassis in the rack.
- Before using a particular rack, check for obstructions (such as a power strip) that could impair the rack-mount installation. If a power strip does impair a rack-mount installation, remove the power strip before installing the chassis, and then replace it after the chassis is installed.
- Allow sufficient clearance around the rack for maintenance. If the rack is mobile, you can push it back near a wall or cabinet for normal operation and pull it out for maintenance (installing or moving cards, connecting cables, or replacing or upgrading components).
- Maintain a minimum clearance of 3 inches on the front and back sides of the chassis for the cooling air inlet and exhaust ports, respectively. Avoid placing the chassis in an overly congested rack or directly next to another equipment rack; the heated exhaust air from other equipment can enter the inlet air vents and cause an over temperature condition inside the controller.
- Always install heavier equipment in the lower half of a rack to maintain a low center of gravity to prevent the rack from falling over.
- Install and use the cable-management brackets included with the controller to keep cables organized and out of the way of cards and processors. Ensure that cables from other equipment already installed in the rack do not impair access to the cards or require you to disconnect cables unnecessarily to perform equipment maintenance or upgrades.
- Provide an adequate chassis ground (earth) connection for your controller chassis.

In addition to the preceding guidelines, review the precautions for avoiding excessive temperature conditions in the **Physical Characteristics** section and the **Site Environmental Requirements** section.

Warning **To reduce risk of electric shock and fire, take care when connecting units to the supply circuit so that wiring is not overloaded.**

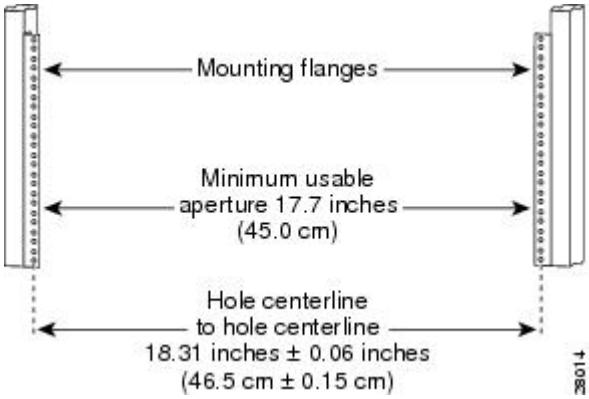
Statement 1018

Verifying Rack Dimensions

Before you begin

Before you install the chassis, measure the space between the vertical mounting flanges (rails) on your equipment rack to verify that the rack conforms to the measurements shown in the following figure.

Figure 7: Verifying Equipment Rack Dimensions



Procedure

Step 1 Mark and measure the distance between two holes on the left and right mounting rails. The distance should measure 18.31 inches ± 0.06 inches (46.5 cm ± 0.15 cm)

Note
Measure for pairs of holes near the bottom, middle, and top of the equipment rack to ensure that the rack posts are parallel.

Step 2 Measure the space between the inner edges of the left front and right front mounting flanges on the equipment rack. The space must be at least 17.7 inches (45 cm) to accommodate the chassis that is 17.25 inches (43.8 cm) wide and fits between the mounting posts on the rack.

Attaching Front Rack-Mount Brackets

Before you begin

Before installing the chassis in the rack, you must install the rack-mount brackets on each side of the chassis.

Determine where in the rack you want the chassis to be mounted. If you are mounting more than one chassis in the rack, then start from the bottom up or the center of the rack. The following figure shows the brackets attached to the chassis. Depending on the bracket holes you use, the chassis may protrude in the rack

Note The cable-management brackets are attached to the chassis after you install the chassis rack-mount brackets on the chassis and mount the chassis in the rack

Procedure

Step 1 Locate the threaded holes on the side of the chassis. Ensure that you hold the front rack-mount bracket with the ear and holes facing outward and towards the front of the chassis. The following figure shows where to attach the front rack-mount brackets to the controller.

Step 2 Position the front rack-mount bracket top hole with the chassis, first top hole behind the side vent holes.

Step 3 Insert and tighten the black screws on one side.

Step 4 Repeat **Step 1** to **Step 3** on the other side of the chassis. Use black screws to secure the rack-mount brackets to the chassis.

Attaching Rear Rack-Mount Brackets

Before you begin

Note This procedure is not required if you are installing the chassis in a two-post rack.

Before installing the chassis in a four-post rack, you must install the rear rack-mount brackets on each side of the chassis.

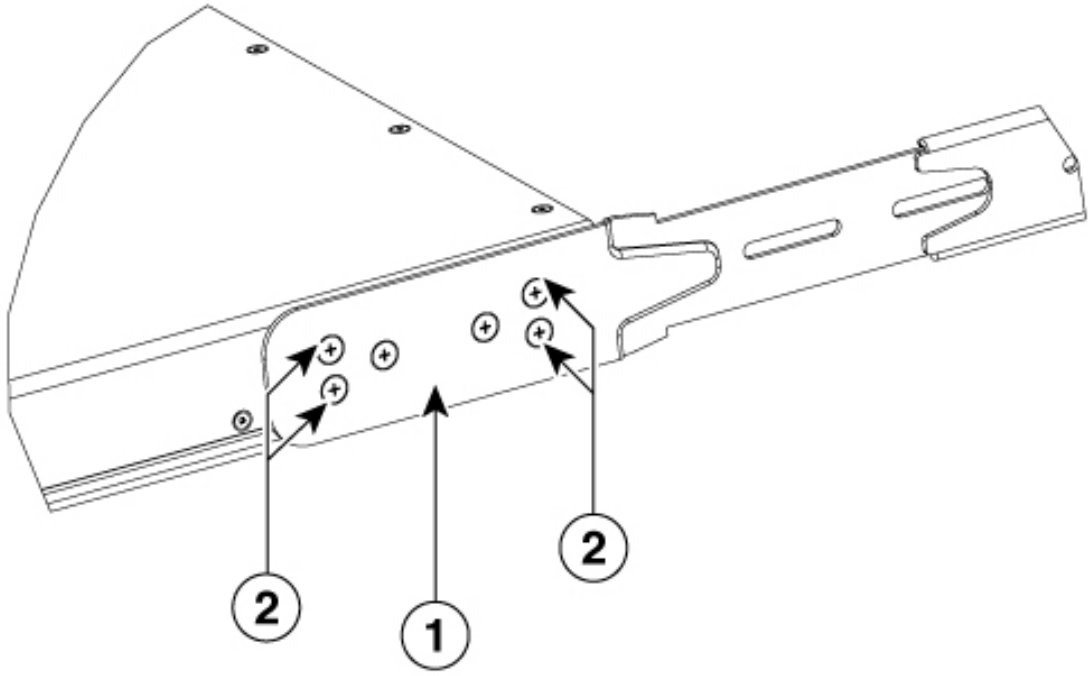
Determine where in the rack you want the chassis to be mounted. If you are mounting more than one chassis in the rack, then start from the bottom up or the center of the rack. The following figure shows the brackets attached to the chassis

Procedure

Step 1 Locate the threaded holes on the side of the chassis. Ensure that you hold the rear rack-mount bracket with the ear and holes facing outward and towards the rear of the chassis.

The following figure shows where to attach the rear rack-mount brackets to the Cisco Catalyst CW9800M Wireless Controller.

Figure 8: Attaching the Rear Rack-Mount Brackets to the Cisco Catalyst CW9800M Wireless Controller



1	Rear rack-mount bracket
2	Rear rack-mount bracket screws

Step 2 Position the rear rack-mount bracket with the chassis.

Step 3 Insert the black screws on one side. Do not fully tighten the screws. The rear bracket holes are slotted to allow for adjustment. Do not fully tighten the screws until the chassis is installed in the four-post rack.

Step 4 Repeat **Step 1** to **Step 3** on the other side of the chassis. Use black screws to secure the rack-mount brackets to the chassis.

Mounting the Controller in the Rack

After installing the rack-mount brackets on the chassis, mount the chassis by securing the rack-mount brackets to two posts or mounting strips in the rack using the screws provided. Because the rack-mount brackets support

the weight of the entire chassis, ensure that you use all the screws to fasten the two rack-mount brackets to the rack posts.

Two-Post Rack Installation

Before you begin

The controller can be installed on a two-post rack, either 19 inch or 23 inch. We recommend that you allow at least 1 or 2 inches (2.54 or 5.08 cm) of vertical clearance between the controller and any equipment directly above and below it.

Procedure

Step 1 On the chassis, ensure that all the screw fasteners on the installed components are securely tightened.

Step 2 Make sure that your path to the rack is unobstructed. If the rack is on wheels, ensure that the brakes are engaged or that the rack is otherwise stabilized

Step 3 (Optional) Install a shelf in the rack to support the controller. If you use a shelf, it helps support the chassis while you secure it to the rack.

Note
If you are using a shelf, place the chassis on the shelf and slightly raise the front of the chassis to align the mounting bracket holes with the rack post holes while allowing the bottom of the chassis to rest on the shelf.

Step 4 With two people, lift the chassis into position between the rack posts.

Step 5 Align the mounting bracket holes with the rack post holes and attach the chassis to the rack.

Step 6 Position the chassis until the rack-mounting flanges are flush against the mounting rails on the rack.

Tip
To allow space to attach the cable-management brackets to the chassis in the rack easily, use the rack-mount bracket ear holes mentioned in Steps 7 and 8.

Step 7 Hold the chassis in position against the mounting rails in the equipment rack and follow these steps:

a. Insert the bottom screw into the second hole up from the bottom of the rack-mount ear and use a hand-held screwdriver to tighten the screw to the rack rail.

Tip
To make installation easier, insert one screw at the bottom of the chassis and the next screw at the top of the chassis diagonally from the first screw

b. Insert the top screw into the second hole from the top of the rack-mount ear diagonally from the bottom screw and tighten the screw to the rack rail.

c. Insert the rest of the screws to secure the chassis to the rack equipment.

Step 8 Tighten all the screws on each side to secure the chassis to the equipment rack.

What to do next

This completes the procedure for installing the chassis on a two-post rack. Proceed to the **Attaching a Chassis Ground Connection** section to continue with the installation.

Four-Post Rack Installation

Procedure

Step 1 (Optional) Install a shelf in the rack to support the . If you use a shelf, it helps support the chassis while you secure it to the rack.

Note
If you are using a shelf, place the chassis on the shelf and slightly raise the front of the chassis to align the mounting bracket holes with the rack post holes while allowing the bottom of the chassis to rest on the shelf.

Step 2 With two people, lift the chassis into position between the rack posts.

Step 3 Position the chassis until the rack-mounting flanges are flush against the mounting rails on the rack.

Note
Use the second hole up from the bottom of the rack-mount bracket and the second hole down from the top of the rack-mount bracket. This will make it easier to attach the cable-management bracket to the chassis in the equipment rack.

Step 4 Hold the chassis in position against the mounting rails while the second person finger-tightens a screw to the rack rails on each side of the chassis.

Step 5 Finger-tighten screws to the rack rails on each side of the chassis.

Step 6 Tighten all the screws on each side to secure the chassis to the equipment rack. The following figure shows the on a four-post equipment rack.

Step 7 Use a level to verify that the tops of the two brackets are level, or use a measuring tape to verify that both brackets are the same distance from the top of the rack rails.

What to do next

This completes the procedure for installing the chassis in the rack. Proceed to the **Attaching a Chassis Ground Connection** section to continue the installation.

Attaching the Cable Management Bracket

Before you begin

The cable management brackets should be mounted to each rack-mount bracket on the chassis to provide cable management to both sides of the chassis. These brackets are screw-mounted to the rack-mount brackets to allow easy installation and removal of cables.

The cable-management brackets for the controller contains one independent cable-management U-type feature with two screws for each bracket.

Note Make certain that the cable-management bracket "U" feature is facing upwards when you attach it to the chassis.

Procedure

Step 1 Align the cable-management bracket to the rack-mount bracket on one side of the controller.

The cable-management bracket aligns to the top hole of the chassis rack-mount bracket.

Step 2 Using a Phillips screwdriver, insert one screw through the top screw hole of the cable-management bracket and into the chassis rack-mount bracket and tighten the screw

Note
Use the package of screws that came with your chassis containing four screws.

The following figure shows where to attach the cable-management brackets to the controller.

Figure 9: Attaching the Cable-Management Brackets to the Controller

1	Cable-management bracket	3	Chassis front rack-mount bracket
2	Cable-management bracket screw		

Note
Use the package of screws that came with your chassis containing four screws.

Step 3 Insert the cable management screw into the screw hole of the cable-management bracket and into the chassis rack-mount bracket and tighten the screw using a Philips screwdriver.

Step 4 Repeat **step 1** to **step 3** for the other side of the chassis.

Chassis Ground Connection

Warning **This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available**

Statement 1024

Before you connect power or turn on power to your chassis, you must provide an adequate chassis ground (earth) connection for the chassis. A chassis ground connector is provided on each Cisco Catalyst CW9800M Wireless Controller. There is a stud on the rear left side of the chassis.

Warning **When installing or replacing the unit, the ground connection must always be made first and disconnected last**

Statement 1046

Have the recommended tools and supplies available before you begin this procedure.

Recommended Tools and Supplies

The following tools, equipment, and supplies are necessary to connect the system ground to the chassis:

- Philips screwdriver
- 3.5-mm flat blade screwdriver (Phoenix # 1205053 or equivalent 3.5-mm flat blade)
- Dual-lug chassis ground component
- Grounding wire

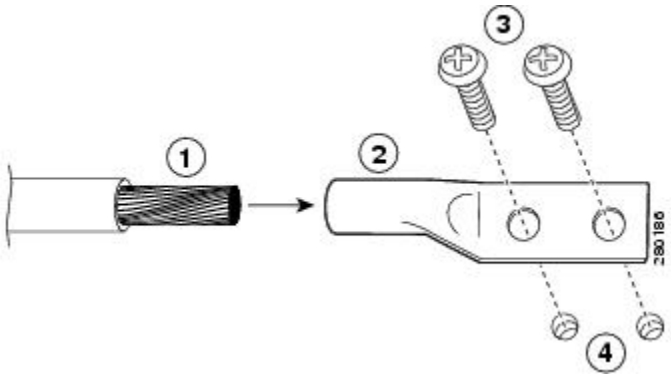
Attaching a Chassis Ground Connection

Procedure

Step 1 Use the wire stripper to strip one end of the AWG #6 wire approximately 0.75 inches (19.05 mm).

Step 2 Insert the AWG #6 wire into the open end of the grounding lug.

Figure 10: Attaching a Grounding Lug to the Chassis Ground Connector



1	Chassis ground lead wire	3	Ground screws
2	Grounding lug	4	Chassis ground connector holes

Step 3 Use the crimping tool to carefully crimp the wire receptacle around the wire. This step is required to ensure a proper mechanical connection.

Step 4 Locate the chassis ground connector on the side of your chassis.

Step 5 Insert the two screws through the holes in the grounding lug.

Step 6 Use the Number 2 Philips screwdriver to carefully tighten the screws until the grounding lug is held firmly to the chassis. Do not over tighten the screws.

Step 7 Connect the opposite end of the grounding wire to the appropriate grounding point at your site to ensure an adequate chassis ground.

Connecting Cables

Keep the following guidelines in mind when connecting any external cable to the controller:

- To reduce the chance of interference, avoid crossing high-power lines with any interface cables.
- Verify all the cabling limitations (particularly distance) before powering on the system.

Connecting the Console Port Cable

The controller uses RJ-45 port for console port to attach a console terminal. The controller has an asynchronous serial (EIA/TIA-232) RJ-45 console port labeled CON on its front panel. You can connect this port to most types of video terminals with a console cable kit that is included with your controller.

The crossover cable reverses pin connections from one end to the other. In other words, it connects pin 1 (at one end) to pin 8 (at the other end), pin 2 to pin 7, pin 3 to pin 6, and so on. You can identify a crossover cable by comparing the two modular ends of the cable. Hold the cable ends in your hand, side-by-side, with the tabs at the back. Ensure that the wire connected to the outside (left) pin of the left plug (pin 1) is the same color as the wire connected to the outside (right) pin of the right plug (pin 8).

The console port is an asynchronous serial port; devices connected to this port must be capable of asynchronous transmission.

Procedure for Connecting the Console Port Cable

Before you begin

Before connecting to the console interface on the controller using a terminal or PC, perform the following steps:

Procedure

Step 1 Before connecting a terminal to the console port, configure the terminal to match the chassis console port as follows: 9600 baud, 8 data bits, no parity, 1 stop bits (9600 8N1).

Step 2 Connect one end of the RJ-45 cable to the serial RJ-45 console port (CON) on the controller. Connect the RJ-45 port to the terminal equipment.

Note
For information about how to change the default settings to meet the requirements of your terminal or host, see the *Cisco IOS Terminal Services Configuration Guide*.

Step 3 After you establish normal controller operation, you can disconnect the terminal. Follow the same procedure to connect a video terminal to the console port.

What to do next

Go to the **Connecting to the Micro USB Console Port** section to continue the installation.

Connecting to the Micro USB Console Port

The USB serial console port connects directly to the USB connector of a PC using any USB form type to 5-pin micro USB Type-B cable. The USB Console supports full speed (12Mbps) operation. The console port does not support hardware flow control.

Note

- Always use shielded USB cables with a properly terminated shield. The USB serial console interface cable must not exceed 3 meters in length.
- Only one console port can be active at a time. When a cable is plugged into the USB console port, the RJ-45 port becomes inactive. Conversely, when the USB cable is removed from the USB port, the RJ-45 port becomes active.
- 4-pin micro USB Type-B connectors are easily confused with 5-pin micro USB Type-B connectors. Note that only the 5-pin micro USB Type-B is supported

The default parameters for the console port are 9600 baud, 8 data bits, no parity, and 1 stop bit.

For operation with a Microsoft Windows OS version older than Windows 7, the Cisco Windows USB Console Driver must be installed on any PC connected to the console port. If the driver is not installed, the prompts guide you through a simple installation process.

The Cisco Windows USB Console Driver allows plugging and unplugging the USB cable from the console port without affecting Windows HyperTerminal operations. No special drivers are needed for Mac OS X or Linux.

Baud rates for the USB console port are 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 bps.

Management Ethernet Port Cable Connection

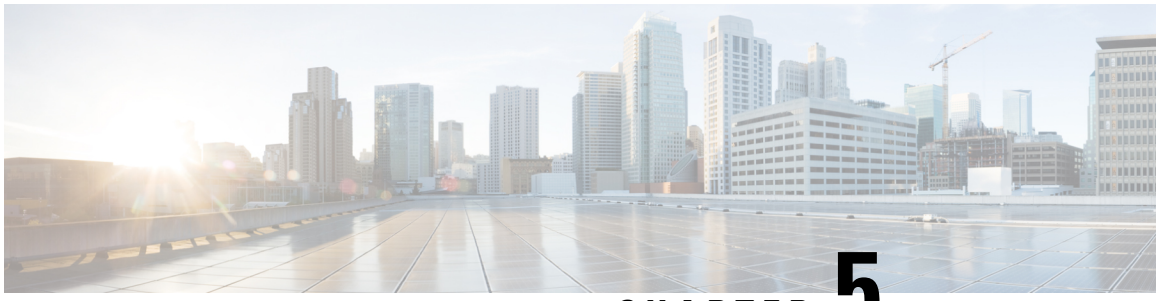
Before you begin

Caution To comply with Class A emission requirements, a shielded Ethernet cable must be used for the connection

Procedure

Step 1 Insert an Ethernet RJ-45 cable into the MGMT port.

Step 2 Insert the other end of the RJ-45 cable to your management device or network.



CHAPTER 5

Power Up and Initial Configuration

This chapter guides you through a basic controller configuration, which is sufficient for you to access your network. Complex configuration procedures are beyond the scope of this publication and can be found in the modular configuration and command reference publications in the Cisco IOS software configuration documentation set that corresponds to the software release installed on your Cisco hardware.

- Checking Conditions Prior to System Startup, on page 53
- Powering Up the Controller, on page 54
- Performing the Initial Configuration on the Controller, on page 55
- Saving Your Controller Configuration, on page 66
- Verifying the Initial Configuration, on page 66
- Powering Off the Controller Safely, on page 67
- Environmental Monitoring and Reporting Functions, on page 68

Checking Conditions Prior to System Startup

Ensure that all the card slots and compartments are closed. Install blank faceplates on empty slots. Always have power supply slots filled. If you leave a power supply slot uncovered, then you risk exposure to hazardous voltages on the power pins on the midplane.

Warning **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.**

Statement 1029

Note To view the boot sequence, you must have a console connection to the controller before it powers up.

Ensure that the following conditions are addressed before starting up the controller:

- The network interface cable or the optional Management port cable is connected.
- The chassis is securely mounted and grounded.

- The power and interface cables are connected.
- Your PC with terminal emulation program (Putty or equivalent) is connected to the console port, powered up, and is configured for 9600 baud, 8 data bits, 1 stop bit, no parity, with flow control set to none.
- You have selected passwords for access control.
- Captive installation screws are tight on all removable components.
- The console terminal is turned on.
- You have determined the IP addresses for the network interfaces.

Powering Up the Controller

Before you begin

Before you power on, make sure that:

- The power supply cord is plugged into the power supply inlet.
- All cables are connected.
- Your computer is powered up and connected.

You are now ready to power on the system for the first time.

Procedure

Step 1 Move the chassis power switch to the ON position.

Listen for the fans; you should immediately hear them operating. Ensure that the power supply LED OK is green and the FAIL LED is not illuminated. The front-panel indicator LEDs provide power, activity, and status information useful during bootup. For more detailed information about the LEDs, see the **LEDs** section.

Step 2 Observe the initialization process.

When the system boot is complete (the process takes a few seconds), the controller begins to initialize.

Loading from ROMMON with a System Image in Bootflash

The following is an example of what is displayed during the system boot process:

Performing the Initial Configuration on the Controller

Using the Cisco IOS-XE CLI - Cisco Setup Command Facility

The **setup** command facility prompts you to enter the information that is needed to configure a controller quickly. The facility takes you through an initial configuration, including wireless configurations.

Note The setup command facility is entered automatically if there is no configuration on the controller when it is booted into Cisco IOS-XE.

You will be prompted for wireless configuration after the Day 0 banner.

For information on modifying the configuration after you create it, see the Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide and the Cisco Catalyst 9800 Series Wireless Controller Command Reference Guide.

Note Presently, there is no direct method to get back to your previous configuration. Press **Ctrl-C** to restart the configuration and return to the setup without saving the configuration.

Procedure

Step 1 Navigate to the Day 0 setup wizard using the **write erase** command or directly on the Day 0 device.

Step 2 Configure the device management or service port in the deveice management interface set up. This interface enables the basic configuration to access the device using the GUI. This is an optional configuration where you can opt to configure only the wireless management interface and not the device management.

```
Configure device management interface?[yes]:
```

Step 3 Configure the device management IP to access the device using the GUI.

```
 Configure static IP address? [yes]:
    Enter the interface IP [GigabitEthernet0]: 192.168.1.10
    Enter the subnet mask [GigabitEthernet0] [255.0.0.0]: 255.255.255.0
```

Step 4 Configure a static route to access the device using the GUI.

```
Interface belongs to VRF "Mgmt-intf". Please configure a static route on the VRF
Enter the destination prefix: 0.0.0.0
Enter the destination mask: 0.0.0.0
Enter the forwarding router IP: 10.104.170.1
```

Step 5 Enter the management username and password.

```
Enter the management username: cisco
```

```
  Enter the password: ********
  Reenter the password: ********
```

Step 6 Configure the wireless management if you haven't configured a device management interface.

```
Basic management setup is now complete. At this point, it is possible to save the above and
continue wireless setup using the webUI (for this, choose 'no' below)

Would you like to continue with the wireless setup? [yes]: yes
```

Note
If you have not configured the device management, the setup moves to **Step 8** before displaying the above banner.

You will be allowed to exit the wizard after configuring at least one of the interfaces, that is, device or wireless management.

If you select **Yes**, you need to follow the upcoming steps. Also, you can access the device using the IP configured in **Step 4**.

Step 7 Configure the Wireless management interface:

```
Configuring wireless management interface
  Select interface to be used for wireless management
   1. TenGigabitEthernet0/0/1 [Up]
   2.  [Up]
   3. TenGigabitEthernet0/0/3 [Up]
  Choose the interface to config [1]:
```

Step 8 Enter a VLAN ID:

```
Enter the vlan ID (1-4094): 112
```

Step 9 Configure an IPv4 or IPv6 address:

```
  Configure IPv4 address? [yes]:
    Enter the interface IP [TenGigabitEthernet0/0/1]: 9.11.112.40
    Enter the subnet mask [TenGigabitEthernet0/0/1] [255.0.0.0]: 255.255.255.0
  Configure IPv6 address? [yes]: no
```

Step 10 Configure a VLAN DHCP server and IP address:

```
 Do you want to configure a VLAN DHCP Server? [yes]: yes
   Enter the VLAN DHCP Server IP [TenGigabitEthernet0/0/1]: 9.11.112.45
```

Step 11 (Optional) Setting a static route to attach an AP client to the controller. The default options for static route prompts you to configure a default route. However, you can specify a different route as well.

```
 Configure static route? [yes/no]: yes
  Enter the destination prefix [0.0.0.0]:
  Enter the destination mask [0.0.0.0]:
  Enter the forwarding router IP: 9.11.112.1
```

Note
If you configure the device as HA RMI and you haven't configured a default route (that is, source and destination as 0.0.0.0), the wizard asks for the default route information.

```
Basic management setup is now complete. At this point, it is possible to save the above and
continue wireless setup using the webUI(for this, choose 'no' below)
```

```
Would you like to continue with the wireless setup? [yes]
```

Step 12 Choose the deployment mode:

```
 Choose the deployment mode
    1. Standalone
    2. Active
    3. Standby
 Enter your selection [1]:
```

Note
You can choose from one of the following deployment modes:

- **Standalone**: In this mode, you do not get to view any high availability pairing information.
- **Active**: In this mode, the controller needs to be configured with all the Day 0 information.
- **Standby**: In this mode, the configuration proceeds to the **High Availability** configuration.

Step 13 Configure the system name or hostname:

```
Enter the hostname [WLC]: ciscowlc
```

Note
This is a mandatory step. The hostname needs to confirm to the RFC standards.

Step 14 (Optional) Configure the login credentials for an AP.

```
Configure credentials for management access on Access Points? [yes]:
  Enter the management username: cisco
  Enter the management password: ****
    Reenter the password: ****
  Enter the privileged mode access password: ****
    Reenter the password: ****
```

Step 15 Configure the country code. You can specify multiple country codes by separating them with a comma.

```
Configure country code for wireless operation in ISO format ? [US]:
```

Step 16 Configure the date and NTP to allow access points to join the controller. You can configure time using an NTP server or manually.

Note
You need to enter time in the following format:

DAY-MONTH-YEAR

```
Configure NTP server ? [yes/no]: no
Enter the day:
Enter the month:
Enter the year:

Configure a NTP server now? [yes]:
Enter ntp server address : 9.11.112.45
Enter a polling interval between 16 and 131072 secs which is power of 2: 16
```

Step 17 (Optional) Configure a timezone:

```
Configure timezone? [yes]:
 Enter name of timezone: ind
 Enter hours offset from UTC (-23,23): 5
 Enter mins offset from UTC (0,59) [0]: 30
```

Step 18 (Optional) Configure the expected client density:

```
Configure Wireless client density? [yes]:
 Choose the client density
   1. Low
   2. Typical
   3. High
 Enter your selection [2]: 3
```

Step 19 (Optional) Configure AAA servers:

Note
You can configure a maximum of 6 servers during Day 0 configuration.

```
Configure AAA servers? [yes]:
 Enter the AAA server address: 9.11.112.46
 Enter the AAA key: ***
Do you want to add more AAA servers? [yes]:
 Enter the AAA server address: 9.11.112.47
 Enter the AAA key: ***
Do you want to add more AAA servers? [yes]: no
```

Note
The AAA servers are required for WPA2 Enterprise. You need to configure AAA only in one place. If you follow **Step 21**, WPA2 Enterprise will not ask for AAA servers in **Step 22**.

Step 20 (Optional) Configure the wireless network settings to configure WLAN information for an AP and client join:

```
Configure Wireless network settings? [yes]:
```

Step 21 (Optional) Configure an SSID for client join:

```
Enter the network name or service set identifier (SSID):
Choose the network type
    1. Employee
    2. Guest
```

If you choose **Employee** as the network type, the following options are displayed:

```
Choose the security type
    1. WPA Personal
    2. WPA Enterprise
   Enter your selection [2]:
```

If you choose **WPA2 Personal**, you will need to enter a pre-shared key (ASCII).

```
Enter the pre-shared key (ASCII):
```

If you choose **WPA2 Enterprise**, you will be able to add multiple AAA servers.

```
Enter the AAA server address:
Enter the AAA key:
Enter more AAA server details? [yes]
```

If you choose **Guest**, you get to view the following options:

```
Please choose the security type:
1. Webauth
2. Authbypass
3. Consent
4. Webconsent
Enter the security type:
```

Step 22 (Optional) Configure a virtual IP address. The recommended virtual IP address is 192.0.2.1.

```
Configure virtual IP? [yes]:
 Enter the virtual IP [192.0.6.1]:
```

Step 23 (Optional) Configure an RF network name.

```
Configure RF-Network Name? [yes]:
 Enter the RF-Network Name: ciscorf
```

Step 24 (Optional) Configure high availability.

Irrespective of the deployment mode; Active or Standby, the default HA pairing type is RMI

Note
For information on HA pairing types, see **Part: High Availability (High Availability > Information About Redundancy Management Interface)** in *Cisco Catalyst CW9800M Wireless Controller Software Configuration Guide*.

Note
If you have not configured a default route earlier, you need to enter the gateway IP of the last resort.

If you choose the deployment mode as Standby, you need to specify the VLAN ID for completing the pairing:

```
Enter the RMI IP for local chassis: 9.11.112.51
Enter the RMI IP for remote chassis: 9.11.112.50
Enter the wireless management VLAN: 112
```

Completing the Configuration

When using the Cisco setup command facility, and after you have provided all the information requested by the facility as described in **Using the Cisco setup Command Facility** section, the final configuration appears.

To complete your controller configuration, follow these steps.

Procedure

Step 1 The facility prompts you to save the configuration.

- If you answer no, the configuration information you entered is not saved, and you return to the controller enable prompt (**WLC#**). Enter **setup** to return to the System Configuration dialog box.
- If you answer yes, the configuration is saved, and you are returned to the user EXEC prompt (`WLC>`).

```
Use this configuration? {yes/no} : yes
Building configuration...
Use the enabled mode 'configure' command to modify this configuration.

%LINK-3-UPDOWN: Interface GigabitEthernet0/1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1/0, changed state to up

<Additional messages omitted.>
```

Step 2 When messages stop appearing on your screen, press Return to get the `WLC>` prompt.

Step 3 The `WLC>` prompt indicates that you are now at the command-line interface (CLI).

You have just completed an initial controller configuration. Note that this is not a complete configuration. At this point, you have two choices:

- Run the setup command facility again, and create another configuration:

```
Device> enable
Password: password
Device# setup
```

- Modify the existing configuration or configure additional features by using the CLI:

```
Device> enable
Password:  password
Device# configure terminal
Device(config)#
```

Using the Cisco IOS-XE CLI—Manual Configuration

This section shows you how to access the CLI to perform the initial configuration on the controller

If the system configuration message does not appear, it means a default configuration file was installed on the controller prior to shipping.

Follow these steps to configure the controller.

Procedure

Step 1 Enter **no** when the following system message appears on the controller.

```
--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: no
```

Step 2 Press **Return** and continue with the manual configuration:

Several log messages are displayed.

Step 3 Press **Return** to bring up the `WLC>` prompt

Step 4 Type **enable** to enter privileged EXEC mode.

```
Device> enable
Device#
```

Configuring the Controller Hostname

Note The provides a simplified first time out-of-box installation and configuration interface for all series of wireless controllers.

To learn more about the Day 0 Express setup on the , please refer https://www.cisco.com/c/en/us/td/docs/wireless/controller/technotes/8-8/b_c9800_wireless_controller_series_web_dg.html

Note If you prefer to configure the device manually, you need to configure the following to terminate the Day0 Wizard:

- Wireless management interface
- AP country code must be set

The hostname used in CLI prompts the default configuration filenames. If you do not configure the controller hostname, the controller uses the factory-assigned default hostname **WLC**.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. **Note** Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**hostname** *name* **Example:** `Device(config)# hostname myWLC`	Specifies or modifies the hostname for the network server.
Step 4	**end** **Example:** `Device(config)# end`	(Optional) Returns to privileged EXEC mode.

Configuring the Enable and Enable Secret Passwords

To provide an additional layer of security, particularly for passwords that cross the network or are stored on a TFTP server, you can use either the **enable password** command or **enable secret** command. Both commands accomplish the same thing—they allow you to establish an encrypted password that users must enter to access privileged EXEC (enable) mode.

We recommend that you use the **enable secret** command because it uses an improved encryption algorithm.

Note If you configure the enable secret command, it takes precedence over the enable password command; the two commands cannot be in effect simultaneously.

For more information, see the **Configuring Passwords and Privileges** chapter in the *Cisco IOS Security Configuration Guide*. Also see the **Cisco IOS Password Encryption Facts** tech note and the **Cisco Guide to Harden Cisco IOS Devices** tech note.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. **Note** Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**enable secret** *password* **Example:** `Device(config)# enable secret greentree`	Specifies an additional layer of security over the **enable password** command.
Step 4	**end** **Example:** `Device(config)# end`	Returns to privileged EXEC mode.
Step 5	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Verify that your new enable or enable secret password works.
Step 6	**end** **Example:** `Device(config)# end`	(Optional) Returns to privileged EXEC mode.

Configuring the Console Idle Privileged EXEC Timeout

By default, the privileged EXEC command interpreter waits 10 minutes to detect user input before timing out.

When you configure the console line, you can also set communication parameters, specify autobaud connections, and configure terminal operating parameters for the terminal that you are using. For more information on configuring the console line, see the *Cisco IOS Configuration Fundamentals and Network Management Configuration Guide*. In particular, see the *Configuring Operating Characteristics for Terminals* and *Troubleshooting and Fault Management* chapters.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. **Note** Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**line console 0** **Example:** `Device(config)# line console 0`	Configures the console line and starts the line configuration command collection mode.
Step 4	**exec-timeout** *minutes* [*seconds*] **Example:** `Device(config)# exec-timeout 0 0`	Sets the idle privileged EXEC timeout, which is the interval that the privileged EXEC command interpreter waits until user input is detected. The example shows how to specify no timeout. Setting the exec-timeout value to 0 will cause the controller to never log out once logged in. This could have security implications if you leave the console without manually logging out using the disable command.
Step 5	**end** **Example:** `Device(config)# end`	Returns to privileged EXEC mode.
Step 6	**show running-config** **Example:** `Device# show running-config`	Displays the running configuration file. Verify that you have configured the idle privileged EXEC timeout correctly.

Example

The following example shows how to set the console idle privileged EXEC timeout to 2 minutes 30 seconds:

```
line console
exec-timeout 2 30
```

The following example shows how to set the console idle privileged EXEC timeout to 30 seconds:

```
line console
exec-timeout 0 30
```

Gigabit Ethernet Management Interface Overview

The controller provides an Ethernet management port named GigabitEthernet0.

The purpose of this interface is to allow users to perform management tasks on the controller; it is an interface that should not, and often cannot, forward network traffic, but can be used to access the controller through Telnet and SSH to perform management tasks on the controller. The interface is most useful in troubleshooting scenarios when other forwarding interfaces are inactive.

The following aspects of the management Ethernet interface should be noted:

- The controller has one management Ethernet interface named GigabitEthernet0.
- IPv4, IPv6, and ARP are the only routed protocols supported for the interface.
- The interface provides a way to access the controller even if forwarding interfaces are not functional, or the Cisco IOS is down.
- The management Ethernet interface is part of its own VRF. See the *Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide* for more details.

Default Gigabit Ethernet Configuration

By default, a forwarding VRF is configured for the interface with a special group named Mgmt-intf. This cannot be changed. This isolates the traffic on the management interface away from the forwarding plane. Otherwise, the interface can be configured like other Gigabit Ethernet interfaces for most functions.

For example, the default configuration is as follows:

```
interface GigabitEthernet0
vrf forwarding Mgmt-intf
ip address 200.165.200.225 255.255.255.224
negotiation auto
```

Note The controller does not support front-panel networking. You can enter the guest shell commands with in the controller's terminal, but you cannot configure NAT on the controller. Therefore, this type of networking does not work. Only management mode (Mgmt-intf VRF) is supported.

Configuring Gigabit Ethernet Interfaces

This section shows how to assign an IP address and interface description to an Ethernet interface on your controller.

For comprehensive configuration information on Gigabit Ethernet interfaces, see the **Configuring LAN Interfaces** chapter of the *Cisco IOS Interface and Hardware Component Configuration Guide*.

For information on the interface numbering, see the .

Note For comprehensive configuration information about IP routing and IP routing protocols, see the **Configuring IP Routing Protocol-Independent Feature** on **cisco.com**.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. **Note** Enter your password if prompted.
Step 2	**show ip interface brief** **Example:** `Device# show ip interface brief`	Displays a brief status of the interfaces that are configured for IP. Learn which type of Ethernet interface is on your controller.
Step 3	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 4	**interface gigabitethernet 0** **Example:** `Device(config)# interface gigabitethernet 0`	Specifies the Ethernet interface and enters the interface configuration mode.
Step 5	**ip address** *ip-address mask* **Example:** `Device(config-if)# ip address 209.165.200.240 255.255.255.224`	Sets a primary IP address for an interface.
Step 6	**no shutdown** **Example:** `Device(config-if)# no shutdown`	Enables an interface.
Step 7	**end** **Example:** `Device(config-if)# end`	Returns to privileged EXEC mode.
Step 8	**show ip interface brief** **Example:** `Device# show ip interface brief`	Displays a brief status of the interfaces that are configured for IP. Verify that the interfaces are up and configured correctly.

Saving Your Controller Configuration

This section describes how to avoid losing your configuration at the next system reload or power cycle by saving the running configuration to the startup configuration in NVRAM. The NVRAM provides 32 MB of storage on the controller.

Note To aid file recovery and minimize downtime in case of file corruption, we recommend that you save backup copies of the startup configuration file and the Cisco IOS-XE software system image file on a server

Note To avoid losing work you have completed, be sure to save your configuration occasionally as you proceed. Use the **copy running-config startup-config** command to save the configuration to NVRAM.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. **Note** Enter your password if prompted.
Step 2	**copy running-config startup-config** **Example:** `Device# copy running-config startup-config`	Saves the running configuration to the startup configuration.

Verifying the Initial Configuration

Enter the following commands in Cisco IOS-XE to verify the initial configuration on the controller:

- **show version**—Displays the system hardware version, the installed software version, the names and sources of configuration files, the boot images, and the amount of installed DRAM, NVRAM, and flash memory.
- **show diag**—Lists and displays the chassis, slot location, and subslot location details.
- **show interfaces**— Shows if interfaces are operating correctly and if interfaces and line protocols are in the correct state, either up or down.
- **show ip interface brief**—Displays a summary of the interfaces configured for IP protocol.
- **show configuration**—Helps verify if you have configured the correct hostname and password.

After you have completed and verified the initial configuration, the specific features and functions are ready to be configured. See the .

Powering Off the Controller Safely

Before you begin

We recommend that before turning off all power to the chassis, you issue the reload command. This ensures that the operating system cleans up all the file systems.

Procedure

Step 1 Slip on the ESD-preventive wrist strap included in the accessory kit.

Step 2 Change the controller **config-register** by issuing the following commands:

```
wlc#
wlc# conf t
wlc(config)# config-register 0x2100
```

Step 3 Save the controller configuration using the following command:

```
wlc# write memory
```

Step 4 Enter the **reload** command.

Step 5 Confirm the reload command:

```
wlc# reload

Reload command is being issued on Active unit, this will reload the whole stack
Proceed with reload? [confirm]
Chassis 1 reloading, reason - Reload command
Feb  6 19:50:38.556: %PMAN-5-EXITACTION: F0/0: pvp: Process manager is exiting:
Feb  6 19:5
Initializing Hardware ...
System integrity status: 90170200 21030107
```

Step 6 After confirming the reload command, wait until the system bootstrap message is displayed before powering off the system:

```
System Bootstrap, Version 12.2(20170919:091604)
[pand16_7_v2 101], DEVELOPMENT SOFTWARE
Copyright (c) 1994-2017  by cisco Systems, Inc.
Compiled Tue 09/19/2017  2:21:10.32 by pand
Current image running: Boot ROM0
Last reset cause: LocalSoft
QWLC-1GL platform with 33554432 Kbytes of main memory
rommon 1 >
```

Step 7 Move the chassis power switch to the Standby position.

Note
The fans in the power supply modules will continue to run even if the chassis power switch is in the Standby position.

Note
After powering off the controller, wait for a minimum of 30 seconds before powering it on again.

Environmental Monitoring and Reporting Functions

Environmental monitoring and reporting functions allow you to maintain normal system operation by identifying and resolving adverse conditions prior to loss of operation.

Caution To prevent overheating of the chassis, ensure that your system is drawing cool inlet air. Over temperature conditions may occur if the system is drawing in the exhaust air of other equipment. Ensure adequate clearance around the sides of the chassis so that cooling air can flow through the chassis interior unimpeded and exhaust air exits the chassis and is not drawn into the inlet vent of another device.

Alarm Monitoring

The controller displays the CRIT, MAJ, and MIN alarm indicator LEDs. These LEDs indicate controller status at all times, but you must directly observe these LEDs to become aware of a controller alarm condition. Additionally, you can use the **show facility-alarm status** command to view the alarms.

Note To clear the the alarm LED, you need to shutdown the ports which are not connected.

To clear a visual alarm, you must resolve the alarm condition. The **clear facility-alarm** command does not clear an alarm LED on the controller.

Environmental Monitoring

The environmental monitoring functions use sensors to monitor the temperature of the cooling air as it moves through the chassis.

The local power supplies provide the ability to monitor:

- Input and output voltage
- Output current
- Outlet temperature

The controller is expected to meet the following environmental operating conditions:

- Operating Temperature Nominal: 41° to 104° F (5° to 40° C)
- Operating Temperature Short Term: 41° to 122° F (5° to 50° C)
- Operating Humidity Nominal (relative humidity): 5 to 85% non-condensing
- Operating Humidity Short Term: 5 to 90% non-condensing
- Operating Altitude: 0 to 10,000 feet (0 to 3000 meters)
- AC Input Range: 85 to 264 VAC with AC PEM
- DC Input Range: -40.5 to -72 VDC with 48V DC PEM

In addition, the power supplies monitor internal power supply temperatures and voltages. A power supply is either within tolerance (normal) or out of tolerance (critical). If an internal power supply temperature or voltage reaches a critical level, the power supply shuts down without any interaction with the system processor.

The environmental monitoring functions use the following levels of status conditions to monitor the system:

- **Normal**—All monitored parameters are within normal tolerances.
- **Warning**—The system has exceeded a specified threshold. The system continues to operate, but operator action is recommended to bring the system back to a normal state.
- **Critical**—An out-of-tolerance temperature or voltage condition exists. The system continues to operate, but the system is approaching shutdown. Immediate operator action is required.
- **Shutdown**—Before any shutdown, the system logs the status of monitored parameters in NVRAM so that you can retrieve it later to help determine the cause of the problem.
- **Power supply shutdown**—The power supply detected an internal out-of-tolerance overvoltage, overcurrent, or temperature condition and shut itself down. All DC power remains disabled until you toggle the chassis power switch.

Fan Failures

Six internal fans draw cooling air in through the front of the chassis and across internal components to maintain an acceptable operating temperature. The fans are located at the rear of the chassis. The fans in the controller are numbered from 0 to 5, right to left.

When the system power is on, all fans should be operational. However, the system continues to operate even if a fan fails.

Use the **show platform hardware slot p2 fan status** command to view the status of the fans, for example:

```
Device# show platform hardware slot p2 fan status

Fan group 1 speed: 60%
Fan 0: Normal
Fan 1: Normal
Fan 2: Normal
Fan 3: Normal
Fan 4: Normal
Fan 5: Normal
```

Reporting Functions

The chassis manager on the forwarding engine control processor manages the local resources of the forwarding processor. The controller displays warning messages on the console, if the chassis interface-monitored parameters exceed a threshold. You can also retrieve and display environmental status reports with the following commands:

- **show environment all**
- **show version**
- **show inventory**
- **show platform**
- **show platform software status control-processor**

- **show diag**

Parameters are measured and reporting functions are updated every 60 seconds. A brief description of each of these commands follows.

show environment all command

The **show environment all** command displays temperature, voltage, fan, and power supply information.

show version Command

The **show version** command displays the system hardware configuration, software version, and names and sources of configuration files and boot images.

show inventory Command

The **show inventory** command displays an extended report that includes the product inventory listing of all the Cisco products installed in the networking device.

show platform Command

The **show platform** command displays platform information.

show platform software status control-processor Command

The **show platform software status control-processor** command displays the average load, memory usage, and CPU utilization levels at which the controller is running. The output also specifies whether the levels of these system health parameters are within defined thresholds.

show diag chassis eeprom detail Command

The **show diag chassis eeprom detail** command displays the configuration hardware information, including power or fan module P0 and P1 EPPROM data.

Note To reset the device to its factory defaults, perform the following:

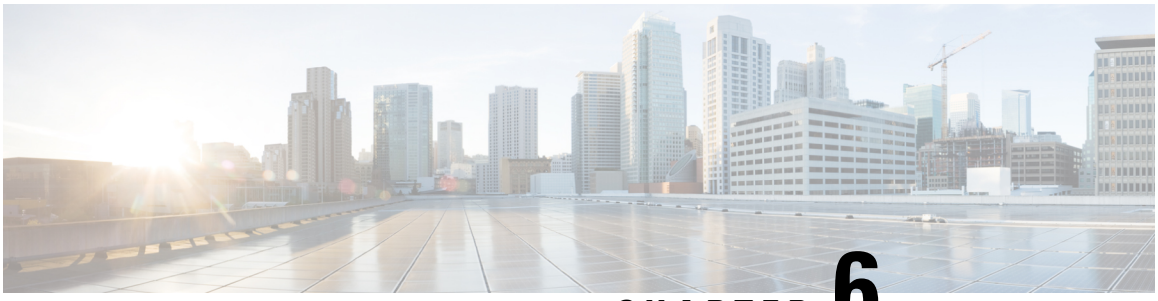
1. Open the controller console on PUTTY and reload the controller.
2. When you get ################## while the image loads, right-click on the top ribbon and select **special command** and **break** to get the ROMMON prompt.
3. Issue the following command:

   ```
   rommon 1 > confreg 0x8000
   ```

4. Boot the image.

   You will be able to view the write erased configuration and load the image thereafter.

5. After the image loads, you get to view the configuration back to 0x2102.



CHAPTER 6

License Verification

This chapter provides information about verifying the Cisco IOS license level and viewing the controller license.

- Viewing the Cisco IOS License Level, on page 71
- Viewing License Information, on page 72
- Evaluation License Features, on page 72

Viewing the Cisco IOS License Level

Use the **show version** command to determine the Cisco IOS license level in the controller.

Example:

```
Device# show version | section License

licensed under the GNU General Public License ("GPL") Version 2.0.  The
documentation or "License Notice" file accompanying the IOS-XE software,
License Type: Smart License is permanent
License Level: adventerprise
AIR License Level: AIR DNA Advantage
Smart Licensing Status: Smart Licensing Using Policy
```

Table 14: Show version Command Output Description

Field Name	Description
License Level: adventerprise	Indicates the current Cisco IOS license code level.
License Type: Smart License is permanent	Indicates the type of license that is used. This example shows that the Cisco Smart license is used that provides floating licenses for your user account. Other license types could be: Permanent (purchased) license or an Evaluation 60-day license.
AIR License Level: AIR DNA Advantage	Indicates the AIR network advantage license level.

Use the **show running-config** command or the **show startup-config** command to view the license-level information. The following example displays sample output from the **show running-config** command:

```
Device# show running-config
.
.
.
license boot level adventerprise
```

Table 15: show running-config Command Output Description

Field Name	Description
license boot level adventerprise	Indicates the current requested Cisco lOS license level to boot.

Viewing License Information

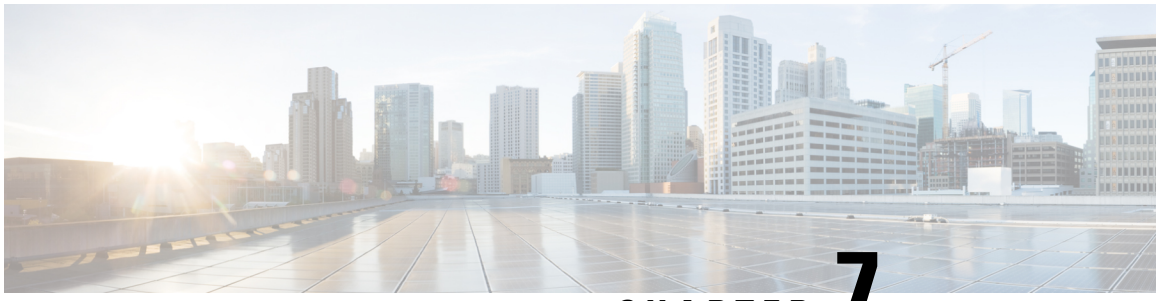
Use the **show license udi** command to determine the Universal Device Identifier (UDI) information of your chassis. This may be required at the time of purchasing a new license.

The following example displays sample output from the **show license udi** command:

Evaluation License Features

The wireless controller operates on evaluation mode when the device is not registered. The evaluation mode is for 90 days. After the expiry of the evaluation period, if the wireless controller is not registered to a smart account, the wireless controller will start displaying syslog evaluation expiration messages. These error messages are purely for informational purpose only and will not affect the functionality of the wireless controller.

The number of APs supported on the wireless controller when the wireless controller is on EVAL mode will be equal to the capacity of the wireless controller and the wireless controller will be fully operational. No other license is required to use the wireless controller in evaluation mode.



CHAPTER 7

Factory Reset

- Information About Factory Reset, on page 73
- Prerequisites for Performing Factory Reset, on page 73
- Performing Factory Reset, on page 74
- Performing Secure Erase, on page 74

Information About Factory Reset

Factory reset removes all the customer-specific data that has been added to a device since the time of its shipping. The erased data includes configurations, log files, boot variables, core files, and credentials such as Federal Information Processing Standard-related (FIPS-related) keys.

The device returns to its default license configuration after a factory reset.

Note Factory reset is performed using the use **factory-reset all secure 3-pass** IOS CLI. A copy of the running image is backed up and restored after the reset.

Prerequisites for Performing Factory Reset

- Ensure that all the software images, configurations, and personal data are backed up.
- Ensure that there is uninterrupted power supply when the factory reset is in progress.
- Ensure that you take a backup of the current image.

Performing Factory Reset

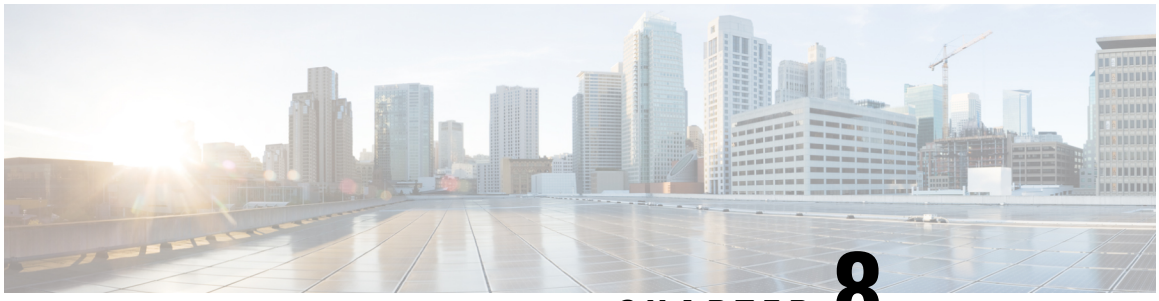
Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**factory-reset all secure 3-pass** **Example:** `Device# factory-reset all secure 3-pass`	Removes sensitive data from all the partitions that are currently being cleaned up by the **factory-reset all** command. The following are the three passes to erase data in disk partitions: • Write 0s • Write 1s • Write a random byte **Note** The factory reset takes 3 to 6 hours to be completed.

Performing Secure Erase

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**factory-reset all secure** **Example:** `Device# factory-reset all secure`	Erases all user data and metadata from bootflash and harddisk. The erase is compliant with the National Institute of Standards and Technology (NIST) standards. **Note** The erase takes around 5 to10 minutes. You need to boot a new image from TFTP post the secure erase as the image gets deleted.



CHAPTER 8

Removing and Replacing FRUs

This chapter describes procedures for removing and replacing the field-replaceable units (FRUs) from the controller.

- Installing AC Power Supplies, on page 75
- Removing AC Power Supplies, on page 76
- Removing DC Input Power Supplies, on page 76
- Installing DC Input Power Supplies, on page 77
- Wiring the DC Input Power Source, on page 78
- Removing and Replacing USB Flash Memory Stick, on page 81
- Remove and replace the battery, on page 81
- Repacking the Controller, on page 84

Installing AC Power Supplies

Note Do not install the power supplies with the chassis cover off.

Procedure

Step 1 Ensure that the chassis power switch on the chassis is in the Standby position.

It is not required to place the chassis power switch in the Standby position, if you want to hot-swap a single power supply.

Step 2 Insert the power supply module into the appropriate slot(s).

Note
Make sure that the retention latch is firmly placed. You can verify that the power supply module is firmly latched by gently pulling the power supply handle.

Step 3 Insert the power supply cables firmly into the power supplies.

Note
Ensure that both power supplies are inserted firmly and the power cords are in place.

Step 4 If you have changed the chassis power switch to the Standby position in **Step 1**, press the power switch to the **On** position. The power supply LEDs are illuminated (green).

Removing AC Power Supplies

Procedure

Step 1 Ensure that the chassis power switch is in the Standby position.

Note
It is not required to place the chassis power switch in the Standby position, if you want to hot-swap a single power supply.

Step 2 Unplug the power cable from the power supply.

Step 3 Press the retaining latch toward the pull handle.

Grasp the handle with one hand, and pull the power supply out of the slot while supporting the weight of the power supply with the other hand.

Step 4 Repeat **Step 1** to **Step 3**, to remove the other AC power supply.

Removing DC Input Power Supplies

The DC power supply has a terminal block that is installed into the power supply terminal block header.



Warning **Before performing any of the following procedures, ensure that power is removed from the DC circuit.**

Statement 1003



Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

Statement 1030

Procedure

Step 1 Turn off the circuit breaker from the power source.

Step 2 Ensure that the chassis power switch is in the Standby position.

Note
It is not required to place the chassis power switch in the Standby position if you want to hot-swap a single power supply.

Step 3 Remove the plastic cover from the terminal block.

Step 4 Unscrew the two terminal block screws on the unit and remove the wires from the power supply.

Step 5 Press the power supply retaining latch towards the pull handle.

Grasp the handle with one hand, and pull the power supply out of the slot while supporting the weight of the power supply with the other hand.

Installing DC Input Power Supplies

Warning **Before performing any of the following procedures, ensure that power is removed from the DC circuit.**

Statement 1003

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

Statement 1030

Note Do not install the power supplies with the chassis cover off.

This section describes how to install the DC power supply input power leads to the DC input power supply. Before you begin, read these important notices:

The color coding of the DC input power supply leads depends on the color coding of the DC power source at your site. Ensure that the lead color coding you choose for the DC input power supply matches the lead color coding used at the DC power source and verify that the power source is connected to the negative (–) terminal and to the positive (+) terminal on the power supply.

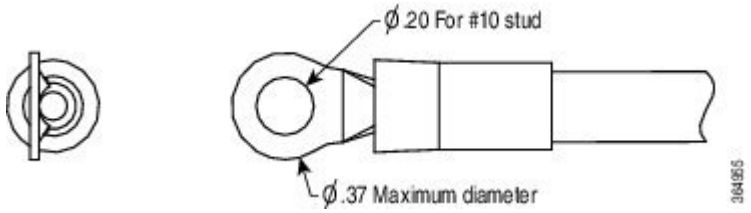
- Ensure that the chassis ground is connected on the chassis before you begin installing the DC power supply. Follow the steps provided in the **Chassis Ground Connection** section.
- For DC input power cables, the wire gauge is based on the National Electrical Code (NEC) and local codes for 26 amp service at nominal DC input voltage (– 40/– 72 VDC). One pair of cable leads, source DC (–) and source DC return (+), are required for each power distribution unit (PDU). These cables are available from any commercial cable vendor. All DC input power cables for the chassis should be 10 gauge wire and cable lengths should match within 10 percent of deviation.
- Each DC input power cable is terminated at the PDU by a cable lug, as shown in the following figure.

Warning **Use copper conductors only.**

Statement 1025

Note DC input power cables must be connected to the PDU terminal studs in the proper positive (+) and negative (–) polarity. In some cases, the DC cable leads are labeled, which is a relatively safe indication of the polarity. However, you must verify the polarity by measuring the voltage between the DC cable leads. When making the measurement, the positive (+) lead and the negative (–) lead must always match the (+) and (–) labels on the power distribution unit.

Figure 11: DC Input Power Cable Lug



Note To avoid hazardous conditions, all components in the area where DC input power is accessible must be properly insulated. Therefore, before installing the DC cable lugs, be sure to insulate the lugs according to the manufacturer's instructions.

Wiring the DC Input Power Source

Warning **Before performing any of the following procedures, ensure that power is removed from the DC circuit.**

Statement 1003

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

Statement 1030



Warning **When installing or replacing the unit, always connect the ground connection first and disconnected last.**

Statement 1046



Warning **Hazardous voltage or energy may be present on power terminals. Always replace cover when terminals are not in service. Be sure uninsulated conductors are not accessible when cover is in place.**

Statement 1086

Procedure

Step 1 Turn off the circuit breaker from the power source.

Step 2 Ensure that the chassis power switch is in the Standby position.

Note
It is not required to place the chassis power switch in the Standby position, if you want to hot-swap a single power supply.

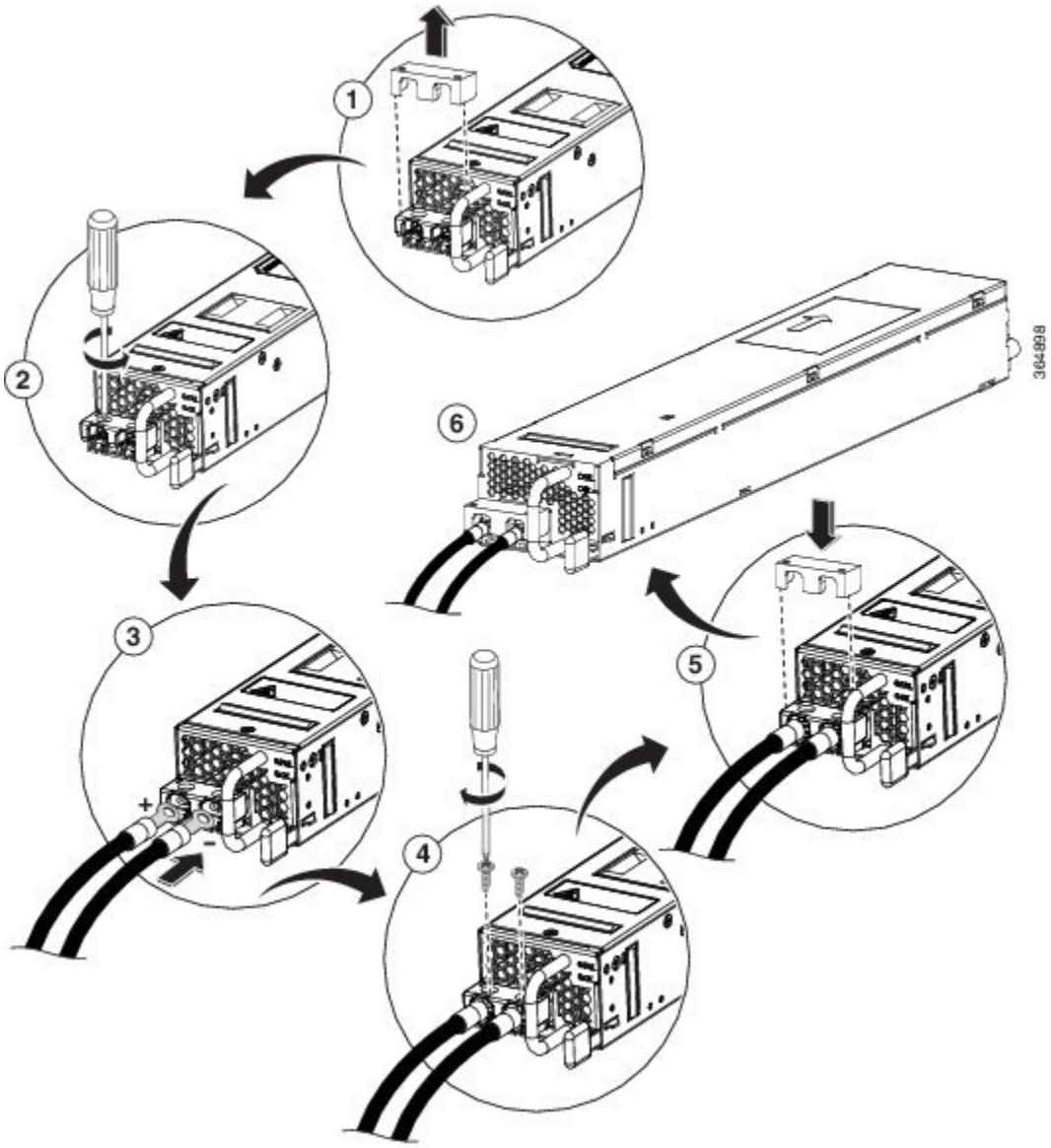
Step 3 Remove the plastic cover from the terminal block.

Caution
Before you continue to install the terminal block ground wires, stop and perform Step 4.

Step 4 Prevent any contact with metal lead on the ground wire and the plastic cover.

Wrap the positive and negative lead cables with sleeving. Insulate the lug with shrink sleeving for each lead wire if using noninsulated crimp terminals. Sleeving is not required for insulated terminals.

Figure 12: DC Power Supply Terminal Block Ground Cable Lugs



Note
This illustration shows the DC power supply for the s.

Step 5 For easier cable-management, insert the negative lead cable first.

Replace the ground lug with a cable in the following order:

- Wire terminal
- Screw with captive washer

Step 6 Tighten the M3 Screw with captive washer to recommended torque of 5 in-lbs for the positive stud and wire.

Note

Secure the wires coming in from the terminal block so that casual contact does not disturb the wire connections.

Step 7 Replace the terminal block plastic cover.

The plastic cover is slotted and keyed to fit correctly over the terminal block.

Step 8 Turn on the circuit breaker at the power source.

Step 9 If you have changed the chassis power switch to the Standby position in step 2.

Turn the power switch to the On position.

The power supply LEDs illuminate green.

Removing and Replacing USB Flash Memory Stick

The contains the USB ports for a flash memory stick to store configurations or Cisco IOS XE consolidated packages.



Caution Do not remove a USB flash memory stick when issuing a file access command or a read/write operation to the flash memory stick when it is processing. The controller might reload or the USB flash memory stick may get damaged.

To remove and then replace a USB flash memory stick, follow these steps:

Procedure

Step 1 Pull the flash memory stick from the USB port.

Step 2 To replace a Cisco USB flash memory stick, insert the module into USB port 0 or 1.

The flash memory stick can be inserted only in one way, and can be inserted or removed regardless of whether the controller is powered up or not.

Remove and replace the battery

This information supports compliance with the European Union requirement for replaceable batteries.

- The product was not designed specifically to have its battery replaced at the installation site.
- When practical, use the normal repair or product-return process to resolve battery problems.

Caution When removing or installing an internal module, wear an ESD-protective wrist strap that contacts your skin securely. Attach the equipment end of the strap to an unpainted metal surface on the chassis.

Note To gain access to battery, remove the 22X screws (12X top, 5X each side).

Remove the battery

Use this procedure to remove the battery safely from the router chassis.

Note Take appropriate electrostatic-discharge precautions before touching the battery or the device.

Wear an ESD-protective wrist strap that maintains firm skin contact. Connect its clip to an unpainted part of the chassis frame so unwanted static voltage can travel safely to ground. Verify that the strap and cord work correctly to protect against static damage and electrical shock.

Warning Statement 1015—Battery handling

To lower the possibility of fire, explosion, or the escape of flammable liquid or gas:

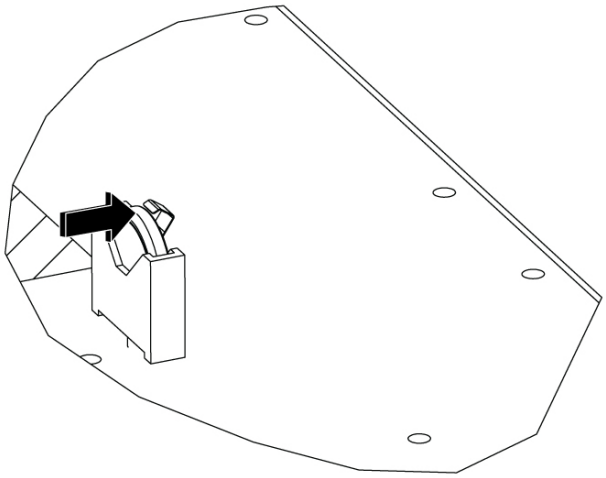
- Install only the same battery type or a manufacturer-approved equivalent.
- Do not disassemble, crush, or puncture the battery; do not use a sharp object to extract it; do not short its external terminals; and do not place it in a fire.
- Do not use a battery that is distorted or swollen.

Procedure

Step 1 Review the safety warnings and disconnect the power supplies before replacing any module.

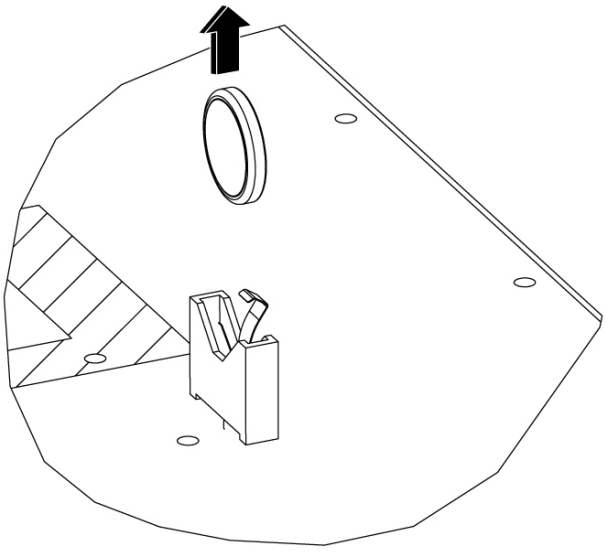
Step 2 Pull the battery-retention arm away from the battery.

Figure 13: Pull back the latch arm



Step 3 Lift the battery out of its holder.

Figure 14: Remove the battery



The battery is removed from the chassis.

Replace the battery

Use this procedure to install the replacement battery and restore normal device operation.

Before you begin

Observe the appropriate electrostatic-discharge precautions before handling the device or battery.

Use a CR2032 battery. Install the same battery type or a manufacturer-approved equivalent, such as one of these parts:

- RENATA 100272
- VARTA MICROBATTERY INC 06032 101 501
- Panasonic CR-2032L/BN

Position and seat the approved replacement battery in its chassis holder.

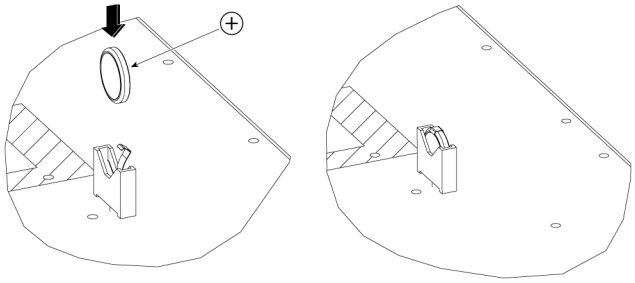
Procedure

Step 1 Review the safety warnings and disconnect the power supplies before replacing any module.

Step 2 Position the battery so that its positive side matches the illustrated orientation.

Step 3 Press the battery into the holder until the latch returns over the battery and secures it.

Figure 15: Install the battery

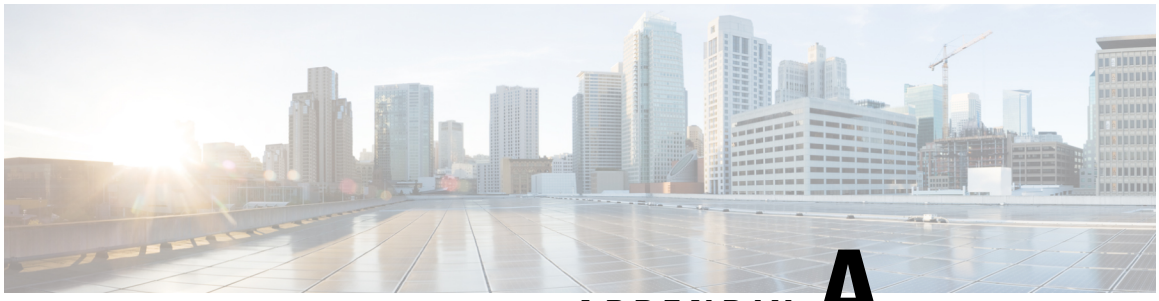


The replacement battery is seated in the holder and retained by the latch.

Repacking the Controller

If your system is damaged, you must repack it for return shipment.

Before you return the controller or move it to a different location, repack the system using the original packaging material.



APPENDIX A

Technical Specifications

This appendix provides technical specifications for both the Cisco Catalyst CW9800H1 Wireless Controllers and the Cisco Catalyst CW9800H2 Wireless Controllers.

- Cisco Catalyst CW9800M Wireless Controller Technical Specifications, on page 85

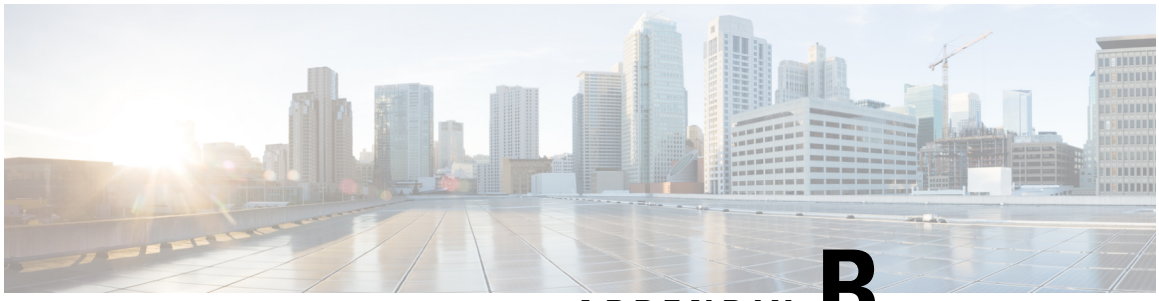
Cisco Catalyst CW9800M Wireless Controller Technical Specifications

Description	Specification
Dimensions (H x W x D)	Height—1.73 in. (43.94 mm) Width—17.5 in. (444.5 mm) Depth—24.02 in. (610.11 mm) including card handles, cable-management brackets, and power supply handles.
Weight	20.5 lb (9.32 kg) fully loaded
Nominal operating temperature	41° to 104° F (5° to 40° C)
Short-term operating temperature	41° to 131° F (5° to 55° C)
Nominal operating humidity	5 to 85% non-condensing
Short-term operating humidity	5 to 90% non-condensing
Storage temperature	–4° to 158° F (–20° to +70° C)
Power consumption	• Maximum (AC): 750 W

Table 16: Ambient Temperature and Fan Speed

Temperature/Fan Speed	Sound Pressure Level	Sound Power Level
-40° to 24° C (50% fans)[1]	59.5	73.5
25° to 39° C (60% fans)[2]	61.5	75.5
40° to 50° C (80% fans)	66.7	80.7
51° C and above (100% fans)	67.7	81.7

1 fan speed at typical room ambient temperature.
2 fan speed at system boot.



APPENDIX B

Port Signals and Pinouts

This appendix provides the port signals and pinout specifications.

- Management Ethernet Port Signals and Pinouts, on page 87
- Console Port Signals and Pinouts, on page 87

Management Ethernet Port Signals and Pinouts

The following table lists the Management Ethernet 10/100/1000 RJ-45 port pinouts.

Pin	Signal	Direction	Description
1	TX/RX AData +	I/O	T/R data +
2	TX/RX AData -	I/O	T/R data –
3	TX/RX BData +	I/O	T/R Data +
4	TX/RX CData +	I/O	T/R Data + (Unused for 10/100)
5	TX/RX CData -	I/O	T/R Data – (Unused for 10/100)
6	TX/RX BData -	I/O	T/R data –
7	TX/RX DData +	I/O	T/R Data + (Unused for 10/100)
8	TX/RX DData -	I/O	T/R Data – (Unused for 10/100)

Console Port Signals and Pinouts

The following table lists the pinouts of the RJ-45 console port.

Pin	Signal	Direction	Description
1	RTS	Output	Request to Send (tied directly to CTS)
2	DTR	Output	Data Terminal Ready (always On)
3	TXD	Output	Transmit Data
4	GND	—	—
5	GND	—	—
6	RXD	Input	Receive Data
7	DSR	Input	Unused
8	CTS	Input	Clear to Send (tied to RTS)