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Preface

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

- About this Guide, on page v
- Conventions, on page v
- Related Documentation, on page vi

About this Guide

This guide is designed to help experienced network administrators install and minimally configure Cisco Catalyst 9800-L Wireless Controller.

Conventions

This document uses the following conventions for notes, cautions, and safety warnings. Notes and cautions contain important information that you should know.

Note

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

Caution

Means reader be careful. Cautions contain information about something you might do that could result in equipment damage or loss of data.

Warning

Safety warnings appear throughout this guide in procedures that, if performed incorrectly, can cause physical injuries. A warning symbol precedes each warning statement.
Related Documentation

- For information about the Cisco Catalyst 9800-L Series Wireless Controllers, see:

- For information about the Regulatory Compliance and Safety Information—Cisco Catalyst 9800-L Wireless Controller, see:
Overview of Cisco Catalyst 9800-L Wireless Controller

Cisco Catalyst 9800-L Wireless Controller is the first low-end controller that provides a significant boost in performance and features from Cisco 3504 Wireless Controller. The following are the two variations of the controller:

- Cisco Catalyst 9800-L Copper Series Wireless Controller (9800-L-C RJ45).

For more information about features and benefits, see the Cisco Catalyst 9800-L Wireless Controller datasheet.

Figure 1: Cisco Catalyst 9800-L Copper Series Wireless Controller (9800-L-C RJ45)

Figure 2: Cisco Catalyst 9800-L Fiber Series Wireless Controller (9800-L-F SFP)

- Summary of Cisco Catalyst 9800-L Wireless Controller Features, on page 2
- Platform Components, on page 3
# Summary of Cisco Catalyst 9800-L Wireless Controller Features

Table 1: Cisco Catalyst 9800-L Wireless Controller Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chassis Height</td>
<td>One rack-unit (1RU)</td>
</tr>
<tr>
<td>Throughput</td>
<td>5 Gbps</td>
</tr>
<tr>
<td>Number of APs supported</td>
<td>250</td>
</tr>
<tr>
<td>Number of clients supported</td>
<td>5000</td>
</tr>
<tr>
<td>Processor</td>
<td>Intel Broadwell-NE DE—8-core, 2 GHz</td>
</tr>
<tr>
<td>Memory Options</td>
<td>• Control/Data Plane Memory—16GB DDR4</td>
</tr>
<tr>
<td></td>
<td>• Boot Flash—8MB</td>
</tr>
<tr>
<td></td>
<td>• Bulk Flash—32GB eMMC</td>
</tr>
<tr>
<td>Redundancy, Service Ports</td>
<td>2x 1GE Cu</td>
</tr>
<tr>
<td>Data Ports</td>
<td>2x 1G/2.5G/5G/10G Cu (or) 2x 1G/10G Fiber, 4x 1G/2.5G Cu</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>–13°F to 158°F (–25°C to 70°C)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F to 104°F (0°C to 40°C)</td>
</tr>
<tr>
<td></td>
<td>Note: The maximum temperature is derated by 1.0°F for every 1000 ft (305 m) of altitude above sea level.</td>
</tr>
<tr>
<td>Storage Humidity</td>
<td>0% to 95% RH non-condensing</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>10% to 95% RH non-condensing</td>
</tr>
<tr>
<td>Operational Altitude</td>
<td>0 to 10,000 ft (3048m)</td>
</tr>
<tr>
<td>Power Adapter</td>
<td>110W single 12V output adapter (C9800-AC-110W)</td>
</tr>
</tbody>
</table>
Platform Components

Cisco Catalyst 9800-L Wireless Controller Front Panel

Figure 3: Cisco Catalyst 9800-L Wireless Controller Front Panel View

Table 2: Cisco Catalyst 9800-L Wireless Controller Front Panel Components

<table>
<thead>
<tr>
<th></th>
<th>Service Port LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Redundancy Port LED</td>
</tr>
<tr>
<td>3</td>
<td>Service Port (SP) (RJ-45) for out-of-band management</td>
</tr>
<tr>
<td>4</td>
<td>Redundancy Port (RP) (RJ-45).</td>
</tr>
</tbody>
</table>

**Note**  The redundancy ports can be connected back to back or via an L2 switch.
| 5 | CPU console port, which is an RJ-45 RS-232 and micro-B USB serial console port. The default RJ-45 serial port settings are 9600, N, 8, 1. The boot-loader supports baud rates of 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200. A default baud-rate recovery mechanism is not available; however, the bootloader ensures that the stored baud rate setting matches one of the allowed values before setting the baud rate. If a nonstandard value is detected, the baud rate will default to 9600. Micro-B USB serial connection takes precedence over RJ-45 when both connections are made. **Note** If the Micro-B USB console port is used, the CPU console port that supports RJ-45 connector is ignored. That is, only one of the two ports are ever active. |
| 6 | Micro USB Type-B console port that can be used to perform software updates in addition to the already available transfer modes, namely HTTP, TFTP, FTP, and SFTP. **Note** If the Micro USB Type-B console port is used, the CPU console port that supports RJ-45 connector is ignored. That is, only one of the two ports are ever active. If you connect to both Micro USB Type-B port and the CPU console port, then the USB port takes precedence. |
| 7 | Type A 3.0 USB port used to perform software updates in addition to already available transfer mode, namely HTTP, TFTP, FTP, and SFTP. |
| 8 | 2x 10 G/mGig ports. This mGig port supports speeds of 10G, 5G, 2.5G, and 1G. **Note** In a High Availability environment, it is not possible to change the configured port speed. |
mGig ports. These mGig ports support only 2.5G and 1G speeds.
Gigabit Ethernet ports 1, 2, 3, and 4 are RJ-45 connector form-factors. These ports are designed so that 1500 VAC rms isolation (per the 802.3 specification) is met between chassis ground and any Ethernet signal.

**Note** The ports can be used for infra-switch connection using multiple an AP-Manager or data interface.

### Front Panel LEDs: Definitions of States

**Table 3: System LED Indicators**

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>System not receiving power. System crash</td>
</tr>
<tr>
<td></td>
<td>Firmware upgrade</td>
</tr>
<tr>
<td></td>
<td>Temperature error</td>
</tr>
<tr>
<td>Blinking Green</td>
<td>System boot</td>
</tr>
<tr>
<td>Red</td>
<td>Controller error. For example, an internal voltage error exists.</td>
</tr>
</tbody>
</table>

13
Reset button

- Pushing the Reset button for less than 10 seconds will reload the controller.
- Pushing the Reset button for more than 10 seconds will erase the startup configuration in NVRAM of the controller.

14
System LED that determines if the system is powered up and booted.

15
Alarm LED that determines a status or error occurred. The status or error is posted on the console screen.

16
High Availability LED
Table 4: Alarm LED Indicators

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blinking Green</td>
<td>Controller image upgrade</td>
</tr>
<tr>
<td>Amber</td>
<td>Controller status activity, such as firmware upgrade</td>
</tr>
<tr>
<td>Red</td>
<td>Controller error. For example, a temperature error exists.</td>
</tr>
</tbody>
</table>

Table 5: High Availability LED Indicators

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>HA disabled</td>
</tr>
<tr>
<td>On</td>
<td>HA active</td>
</tr>
<tr>
<td>Slow Blink</td>
<td>HA Hot Standby</td>
</tr>
</tbody>
</table>

Cisco Catalyst 9800-L Wireless Controller Rear Panel

Figure 4: Cisco Catalyst 9800-L Wireless Controller Rear Panel View

Table 6: Cisco Catalyst 9800-L Wireless Controller Rear Panel Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>External 110W, single output 12VDC power adapter (C9800-AC-110W).</td>
</tr>
<tr>
<td>2</td>
<td>Kensington security slot</td>
</tr>
</tbody>
</table>
Preparing Your Site for Installation

This section describes how to prepare your site for installation:

• Installation Guidelines and Safety Warnings, on page 7
• Unpacking and Inspecting the Controller, on page 8
• Package Contents, on page 9
• Requirements Tools and Information, on page 9
• Choosing a Physical Location, on page 10

Installation Guidelines and Safety Warnings

This section includes the basic installation guidelines and safety warning statements. Read this section before you start the installation procedure. Translations of the warning statements appear in the RCSI guide on Cisco.com.

• The operating environment must be within the ranges listed in the "Environmental Specifications" section.
• Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures. Make sure that the cabling is safely away from other devices that might damage the cables.
• Airflow around the device and through the vents is unrestricted
• Humidity around the device does not exceed 95 percent.
• Altitude at the installation site is not greater than 10,000 feet.
• Do not place any items on the top of the device.
• For 10/100/1000 fixed ports, the cable length from a switch to a connected device cannot exceed 328 feet (100 meters).
• Clearance to the front and rear panel meets these conditions:
  • Front-panel LEDs can be easily read.
  • Access to ports is sufficient for unrestricted cabling.
Unpacking and Inspecting the Controller

Follow these steps to unpack the Cisco Catalyst 9800-L Wireless Controller and prepare it for operation:
Procedure

Step 1  Remove the controller from its container and save all the packaging material.
Step 2  Compare the shipment to the equipment list provided by your Cisco customer service representative. Verify that you have all the items.
Step 3  Check for damage and report discrepancies or damage, if any, to your Cisco customer service representative. Before speaking to the representative, have the following information ready:
  • Invoice number of shipper (see the packing slip)
  • Model and serial number of the damaged unit
  • Description of damage
  • Effect of damage on the installation

Package Contents

Each Cisco Catalyst 9800-L Wireless Controller package contains the following items:
  • One Cisco Catalyst 9800-L Wireless Controller
  • One Power supply and power cord (power cord option configurable)
  • Optional licenses will be pre-installed on controller at factory, if selected
  • Cisco Catalyst 9800-L Wireless Controller software pre-loaded on the controller (software option configurable)
  • Two Number 6 Phillips pan-head screws for mounting the controller on a wall
  • Two wall anchors
  • Four adhesive rubber feet pieces

Requirements Tools and Information

You will need the following tools and information before you can install the controller:
  • Wireless controller hardware
    • Controller with factory-supplied power cord and mounting hardware
    • Network, operating system service network, access point cables, and adapter are required
  • Command-line interface (CLI) console
    • Serial terminal emulator on CLI console (PC or laptop)
    • Use either RJ-45 console cable or Micro USB Type-B cable to connect CLI console and controller
Choosing a Physical Location

You can install the controller almost anywhere, but it is more secure and reliable if you install it in a secure equipment room or wiring closet. For maximum reliability, mount the controller while following these guidelines:

- Make sure you can reach the controller and all cables attached to it.
- Make sure that water or excessive moisture cannot get into the controller.
- To prevent airflow restriction, allow clearance around the ventilation openings to be at least 50 mm (5 cm).
- Verify that the ambient temperature remains between 32°F to 104°F (0°C to 40°C).
- Make sure that the controller is within 328 ft. (100 m) of equipment connected to the 10/100/1000 Mbps Ethernet ports.
- Make sure that the power supply adapter and the power cord can reach a 100 to 240 VAC grounded electrical outlet.
- Make sure that at least two rack-units space is available for rack tray kit, if you are installing the controller in a rack.

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.

Warning

This product relies on the building’s installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than 20A. Statement 1005.
Installing the Cisco Catalyst 9800-L Wireless Controller

This chapter describes how to install the Cisco Catalyst 9800-L Wireless Controller.

**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.

Statement 1071

**Warning**

SAVE THESE INSTRUCTIONS

- Mounting the Controller, on page 11
- Connecting the Controller Console Port, on page 22
- Management Ethernet Port Cable Connection, on page 22
- Installing a Security Lock, on page 23

**Mounting the Controller**

This section describes the various mounting options for the controller:

**Mounting the Controller on Desktop or Shelf**

Before mounting the controller on a desktop or shelf, install the rubber feet located in accessory kit shipped with the controller.

To install the rubber feet to the controller, follow these steps:

**Procedure**

**Step 1** Locate the rubber feet on the black adhesive strip that is shipped with the controller.
Step 2
Place the controller upside down, on a smooth, flat surface.

Step 3
Peel off the rubber feet from the black adhesive strip and press them adhesive-side down onto the bottom four corners of the controller, see the figure below:

Step 4
Place the controller right-side up on a flat, smooth, secure surface.
Mounting the Controller on a Wall (Mounting Screws)

Step 5
Connect the interface cables.

Note
Do not wall-mount the device with its front panel facing up. Following safety regulations, wall-mount the device with its front panel facing down or to the side to prevent airflow restriction and to provide easier access to the cables.

Warning
Read the wall-mounting carefully before beginning installation. Failure to use the correct hardware or to follow the correct procedures could result in a hazardous situation to people and damage to the system.
Statement 378.

To mount the controller on a wall using mounting screws, follow these steps:

Procedure

Step 1
Mark the location of the mounting screws on the wall. Use the mount hole locations on the back of the controller for placement of the mounting screws.

Step 2
Use a 0.107-inch (2.7mm) or #32 drill bit to drill a 3/4 inch (19mm) hole for the two mounting screws.

Step 3
Insert two screws into the screw holes and tighten until the top of the screws are 1/8 inch from the wall (leaving enough room for the back panel to slide onto the screws firmly).

Step 4
Place the controller onto the mounting screws and slide it down until it lock into place, as shown in figure below:

Note
The front panel of the controller should be facing down.
Step 5  After the controller is mounted on the wall, perform the following tasks to complete the installation
  • Connecting the Controller Console Port
  • Securing the Power Adapter Cable
  • Connecting to the Network

Step 6  For configuration instructions about using the CLI setup program, see the (Link to Running the Bootup script section).
Rack Mounting the Controller

**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

---

**Warning**

Take care when connecting units to the supply circuit so that wiring is not overloaded. Statement 1018.

To mount the controller in a 19-inch equipment rack, you can order an optional Optional Rack Mount kit (C9800-RMNT= Cisco Catalyst 9800-L Wireless Controller Rack Mount Tray).

The rack-mount tray is designed for 19 racks and uses two rack-units spaces. To rack-mount the controller, perform the following steps:

**Procedure**

**Step 1**

Remove the four rubber feet if previously installed.

**Step 2**

Slide the Cisco Catalyst 9800-L Wireless Controller in position such that the 4-tray tabs align and latch into the bottom of the unit as it is pushed in place. The front of the Cisco Catalyst 9800-L Wireless Controller should be flush against the front edge of the tray. A nylon latch in the center of the tray snaps into and locks the Cisco Catalyst 9800-L Wireless Controller in place.
Figure 8: Placing the Controller on the Rack Mount Tray
Figure 9: Close-up View of Center Latch Securing Controllers in a Rack

Step 3  Remove power supply baffle in rear tray. Baffles secure with tabs circled.
Figure 10: Power Supply Baffle

Step 4 Place the power adapters between either of the two tabs in the rear of the tray and use the provided velcro straps to secure them.

Step 5 Route the AC wiring through the cable management clips.

Step 6 Re-install and secure tabs on power supply baffle, coil extra cables, and locate them under the baffle.

Note This is an hot air baffle.

Step 7 Attach the rack mount tray to the rack using the supplied screws and brackets, as shown in figures below:
Figure 11: Attaching the Rack Mount Tray to a Front Post Rack
Figure 12: Installing the Rack Mount Tray to a Center Post Rack

Note: Install the center mount brackets to both sides of the tray.
To remove the chassis from the rack, remove the screws that attach the chassis to the rack, and then remove the chassis.

**Step 8** (optional): If required install the rear rack mount bracket for additional stability on four-post racks.
Include optional orderable rear rack mount adapter kit: C4948E-BKT-KIT= C49xxE front and rear mount brackets.
Connecting the Controller Console Port

Note
Install the USB device driver before establishing a physical connection between the router and the PC using the USB Console cable plugged into the USB serial port, otherwise the connection will fail.

Procedure

Step 1
Perform either one of the following tasks:

- Connect the end of the console cable with the RJ-45 connector to the console port on the controller.
- Connect a Micro USB Type-B cable to the Micro USB console port. If you are using the USB serial port for the first time on a Windows-based computer, ensure that you have installed the USB driver.

Note
It is not possible to use both the Micro USB console port and the CPU console port concurrently. If both the ports are connected, the USB port takes precedence over the CPU console port.

Step 2
If you are using a standard Cisco DB-9 console cable, connect the end of the cable with the DB-9 connector (or USB Type-A) to the terminal or PC. If your terminal or PC has a console port that does not accommodate a DB-9 connector, you must provide an appropriate adapter for that port.

Step 3
To communicate with the controller, start a terminal emulator application. This software should be configured with the following parameters:

- 9600 baud
- 8 data bits
- No parity
- No flow control
- 1 stop bit

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.

Installing a Security Lock

The controller has a security slot on the back panel. You can install an optional customer-supplied Kensington lock, such as the type that is used to secure a laptop computer, to secure the controller. See the "Cisco Catalyst 9800-L Wireless Controller Rear Panel" section for the location of the security lock.
Installing the Power Supply

This chapter describes how to install the power supply. The controller can be powered using one power supply unit. The power supply do not have an on/off switch and can only be powered down by removing AC input.

• Overview on Power Supply, on page 25
• Installation Guidelines, on page 27
• Installing an AC Power Supply, on page 28
• Finding the Power Supply Serial Number, on page 28

Overview on Power Supply

The following table describes the external power supply.

Table 7: Power Supply Adapter Part Number and Description

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C9800-AC-110W</td>
<td>110W AC power supply</td>
</tr>
</tbody>
</table>

The 110W AC power supply is an autoranging unit that supports input voltages between 100 and 240 VAC. The power supply adapter uses an 18- AWG power cord for connection to an AC power outlet.
Overview on Power Supply

Figure 14: 110W AC Power Cord

A 6-pin latching DC connector supplies power to the controller.

Figure 15: 6-Pin Latching DC Connector
Verifying Connections

To verify if the power supply adapter is connected to the power outlet, first turn on the power, then check the LED status.

The following table describes the LED status of the power supply adapter.

<table>
<thead>
<tr>
<th>Power Supply Adapter LED</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off (LED is off)</td>
<td>No input power.</td>
</tr>
<tr>
<td>Green</td>
<td>Input power present.</td>
</tr>
</tbody>
</table>

Installation Guidelines

This section includes the basic installation guidelines for installing a power supply. Read this section before you start the installation procedure. Translations of the warning statements appear in the RCSI guide on Cisco.com.

Observe these guidelines when installing a power supply:

- A power supply that is only partially connected to the controller can disrupt the system operation.
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.

Installing an AC Power Supply

Procedure

Step 1
Connect the power cord to the power supply and to an AC power outlet. Turn on the power at the power source.

Step 2
Plug the DC cord into the controller.

Step 3
Confirm that the power supply PS OK LED is green.

Finding the Power Supply Serial Number

If you contact Cisco Technical Assistance regarding a power supply, you need to know the serial number.

Note
You can find the serial number printed on the external power adapter.
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.

- Powering Up the Controller, on page 29
- Performing the Initial Configuration on the Controller, on page 30
- Using the Cisco IOS-XE CLI—Manual Configuration, on page 31
- Gigabit Ethernet Management Interface Overview, on page 34
- Saving Your Controller Configuration, on page 36
- Verifying the Initial Configuration, on page 37
- Powering Off the Controller Safely, on page 37

Powering Up the Controller

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.

---

**Note**

Your controller automatically powers UP from the pre-installed image in the factory settings.

---

**Note**

The Cisco Catalyst 9800-L Wireless Controller has an external power adapter. The Alarm Bell LED is illuminated red, if the the 10-G uplink ports are not connected to the switch. This does not mean a system or hardware failure. For more detailed information about the LEDs, see the LEDs section.
Performing the Initial Configuration on the Controller

Using the 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 LAN and WAN interfaces.

Note

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

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.

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:

  WLC> enable
  Password: password
  WLC# setup
• Modify the existing configuration or configure additional features by using the CLI:

```
WLC> enable
Password: password
WLC# configure terminal
WLC(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.

```
WLC> enable
WLC#
```

---

**Day 0 Web UI Wizard for the Controller**

For information on the Day 0 Web UI, see the Day 0 Express Setup using WebUI section of the *Cisco Catalyst 9800 Wireless Controller Series Web UI Deployment Guide*.

**Configuring the Controller Hostname**

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.
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.

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

<table>
<thead>
<tr>
<th>Step</th>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><code>enable</code></td>
<td>Enables privileged EXEC mode.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>WLC&gt; enable</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong></td>
<td>Enter your password if prompted.</td>
</tr>
<tr>
<td>2</td>
<td><code>configure terminal</code></td>
<td>Enters global configuration mode.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>WLC# configure terminal</code></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td><code>hostname name</code></td>
<td>Specifies or modifies the hostname for the</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td>network server.</td>
</tr>
<tr>
<td></td>
<td><code>WLC(config)# hostname myWLC</code></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td><code>end</code></td>
<td>(Optional) Returns to privileged EXEC mode.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>myWLC(config)# end</code></td>
<td></td>
</tr>
</tbody>
</table>
### 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**

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong> enable</td>
<td>Enables privileged EXEC mode.</td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td>Device&gt; enable</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong> configure terminal</td>
<td>Enters global configuration mode.</td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td>Device# configure terminal</td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong> line console 0</td>
<td>Configures the console line and starts the line configuration command collection mode.</td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td>Device(config)# line console 0</td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong> exec-timeout minutes [seconds]</td>
<td>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.</td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td>Device(config-line)# exec-timeout 0 0</td>
<td></td>
</tr>
<tr>
<td>Command or Action</td>
<td>Purpose</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
</tr>
<tr>
<td>This could have security implications if you leave the console without manually logging out using the disable command.</td>
<td></td>
</tr>
</tbody>
</table>

**Step 5**

**Example:**

Device(config-line)# end

Returns to privileged EXEC mode.

**Step 6**

**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:

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

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 Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide.

Procedure

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong> enable</td>
<td>Enables privileged EXEC mode.</td>
</tr>
<tr>
<td>Example: WLC&gt; enable</td>
<td>Note Enter your password if prompted.</td>
</tr>
<tr>
<td><strong>Step 2</strong> show ip interface brief</td>
<td>Displays a brief status of the interfaces that are configured for IP.</td>
</tr>
<tr>
<td>Example: WLC# show ip interface brief</td>
<td>Learn which type of Ethernet interface is on your controller.</td>
</tr>
<tr>
<td><strong>Step 3</strong> configure terminal</td>
<td>Enters global configuration mode.</td>
</tr>
<tr>
<td>Example: WLC# configure terminal</td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong> interface GigabitEthernet 0</td>
<td>Specifies the Ethernet interface and enters the interface configuration mode.</td>
</tr>
<tr>
<td>Example: WLC(config)# interface GigabitEthernet 0</td>
<td></td>
</tr>
<tr>
<td><strong>Step 5</strong> ip address ip-address mask</td>
<td>Sets a primary IP address for an interface.</td>
</tr>
<tr>
<td>Example: WLC(config-if)# ip address 172.16.74.3 255.255.255.0</td>
<td></td>
</tr>
</tbody>
</table>
### 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.

#### Procedure

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
</tr>
<tr>
<td>enable</td>
<td>Enables privileged EXEC mode.</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td></td>
</tr>
<tr>
<td>Enter your password if prompted.</td>
<td></td>
</tr>
</tbody>
</table>

**Command or Action**

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 6</strong></td>
<td></td>
</tr>
<tr>
<td>no shutdown</td>
<td>Enables an interface.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>WLC(config-if)# no shutdown</td>
<td></td>
</tr>
<tr>
<td><strong>Step 7</strong></td>
<td></td>
</tr>
<tr>
<td>end</td>
<td>Returns to privileged EXEC mode.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>WLC(config)# end</td>
<td></td>
</tr>
<tr>
<td><strong>Step 8</strong></td>
<td></td>
</tr>
<tr>
<td>show ip interface brief</td>
<td>Displays a brief status of the interfaces that are configured for IP.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td>Verify that the interfaces are up and configured correctly.</td>
</tr>
<tr>
<td>WLC# show ip interface brief</td>
<td></td>
</tr>
</tbody>
</table>

**Note**

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

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Cisco Catalyst 9800-L Wireless Controller Hardware Installation Guide

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### Power Up and Initial 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 all eeprom**—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 *Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide*.

### 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

<table>
<thead>
<tr>
<th>Step</th>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Slip on the ESD-preventive wrist strap included in the accessory kit.</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>Change the controller <strong>config-register</strong> by issuing the following commands:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>wlc#</td>
<td></td>
</tr>
<tr>
<td></td>
<td>wlc# conf t</td>
<td></td>
</tr>
<tr>
<td></td>
<td>wlc(config)# config-register &lt;config-register-number&gt;</td>
<td>config-register-number refers to the config register number. The valid range is from 0x0 to 0xFFFF. You can use config register number 0x2102 as the best case for initial deployment.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Save the controller configuration using the following command:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>wlc# write memory</td>
<td></td>
</tr>
</tbody>
</table>
**Step 4** Enter the `reload` command.

**Step 5** Confirm the reload command:

```bash
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($v)
[copy_name 101], DEVELOPMENT SOFTWARE
Copyright (c) 1994-2019 by cisco Systems, Inc.
Compiled Mon 04/15/2019 6:19:54.88 by arcmaitr

Current image running: Boot ROM
Last reset cause: LocalSoft

The values of MSR 0x198h = 00001400 and MSR 0x199h = 00001400 for KATAR
ME is in reserved state
C9800-L-X-K9 platform with 16777216 Kbytes of main memory
Controller Specifications

This appendix lists the technical specifications for the controller.

- Physical Specifications, on page 39
- Environmental Specifications, on page 39
- Power Specifications, on page 40

Physical Specifications

Table 8: Physical Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>8.5 in. (215.9 mm)</td>
</tr>
<tr>
<td>Depth</td>
<td>9 in. (228.6 mm)</td>
</tr>
<tr>
<td>Height</td>
<td>1.73 in. (43.94 mm)</td>
</tr>
<tr>
<td>Weight</td>
<td>4.4 lbs (2 kg)</td>
</tr>
</tbody>
</table>

Environmental Specifications

Table 10: Environmental Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature</td>
<td>–13°F to 158°F (~–25°C to 70°C)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F to 104°F (0°C to 40°C)</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong></td>
</tr>
<tr>
<td></td>
<td>The maximum temperature is derated by 1.0°C for</td>
</tr>
<tr>
<td></td>
<td>every 1000 ft (305 m) of altitude above sea level.</td>
</tr>
<tr>
<td>Storage Humidity</td>
<td>0% to 95% RH non-condensing</td>
</tr>
<tr>
<td>Description</td>
<td>Specification</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>5% to 95% RH non-condensing</td>
</tr>
<tr>
<td>Operational Altitude</td>
<td>0 to 10,000 ft (3048m)</td>
</tr>
</tbody>
</table>

**Power Specifications**

*Table 11: AC Power Supply Specifications*

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC input voltage</td>
<td>100 to 240 VAC</td>
</tr>
<tr>
<td>Frequency</td>
<td>50 to 60 Hz</td>
</tr>
<tr>
<td>Maximum output power</td>
<td>110 W</td>
</tr>
<tr>
<td></td>
<td>This is calculated as follows:</td>
</tr>
<tr>
<td></td>
<td>• 110W@12V</td>
</tr>
<tr>
<td>Adapter</td>
<td>C9800-AC-110W</td>
</tr>
</tbody>
</table>

*Table 12: Heat Dissipation and Power Consumption Specifications*

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum heat dissipation (with 2-ports .3at)</td>
<td>48 W</td>
</tr>
<tr>
<td>Maximum power consumption (with 2-ports .3at)</td>
<td>98 W</td>
</tr>
</tbody>
</table>