Lightweight Access Point Command Reference, Cisco IOS XE Release 3SE (Catalyst 3650 Switches)

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Preface

Document Conventions

This document uses the following conventions:

Convention	Description
^ or Ctrl	Both the ^ symbol and Ctrl represent the Control (Ctrl) key on a keyboard. For example, the key combination **^D** or **Ctrl-D** means that you hold down the Control key while you press the D key. (Keys are indicated in capital letters but are not case sensitive.)
bold font	Commands and keywords and user-entered text appear in **bold** font.
Italic font	Document titles, new or emphasized terms, and arguments for which you supply values are in *italic* font.
`Courier` font	Terminal sessions and information the system displays appear in `courier` font.
`Bold Courier` font	**`Bold Courier`** font indicates text that the user must enter.
[x]	Elements in square brackets are optional.
...	An ellipsis (three consecutive nonbolded periods without spaces) after a syntax element indicates that the element can be repeated.
|	A vertical line, called a pipe, indicates a choice within a set of keywords or arguments.
[x | y]	Optional alternative keywords are grouped in brackets and separated by vertical bars.

Convention	Description
{x | y}	Required alternative keywords are grouped in braces and separated by vertical bars.
[x {y | z}]	Nested set of square brackets or braces indicate optional or required choices within optional or required elements. Braces and a vertical bar within square brackets indicate a required choice within an optional element.
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.

Reader Alert Conventions

This document may use the following conventions for reader alerts:

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

Tip Means *the following information will help you solve a problem.*

Caution Means *reader be careful*. In this situation, you might do something 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. Statement 1071

SAVE THESE INSTRUCTIONS

Related Documentation

Note Before installing or upgrading the switch, refer to the switch release notes.

- Cisco Catalyst 3650 Switch documentation, located at:

  http://www.cisco.com/go/cat3650_docs

- Cisco SFP and SFP+ modules documentation, including compatibility matrixes, located at:

  http://www.cisco.com/en/US/products/hw/modules/ps5455/tsd_products_support_series_home.html

- Error Message Decoder, located at:

  https://www.cisco.com/cgi-bin/Support/Errordecoder/index.cgi

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

Using the Command-Line Interface

Information About Using the Command-Line Interface

Command Modes

The Cisco IOS user interface is divided into many different modes. The commands available to you depend on which mode you are currently in. Enter a question mark (?) at the system prompt to obtain a list of commands available for each command mode.

You can start a CLI session through a console connection, through Telnet, a SSH, or by using the browser.

When you start a session, you begin in user mode, often called user EXEC mode. Only a limited subset of the commands are available in user EXEC mode. For example, most of the user EXEC commands are one-time commands, such as **show** commands, which show the current configuration status, and **clear** commands, which clear counters or interfaces. The user EXEC commands are not saved when the switch reboots.

To have access to all commands, you must enter privileged EXEC mode. Normally, you must enter a password to enter privileged EXEC mode. From this mode, you can enter any privileged EXEC command or enter global configuration mode.

Using the configuration modes (global, interface, and line), you can make changes to the running configuration. If you save the configuration, these commands are stored and used when the switch reboots. To access the various configuration modes, you must start at global configuration mode. From global configuration mode, you can enter interface configuration mode and line configuration mode.

This table describes the main command modes, how to access each one, the prompt you see in that mode, and how to exit the mode.

Table 1: Command Mode Summary

Mode	Access Method	Prompt	Exit Method	About This Mode
User EXEC	Begin a session using Telnet, SSH, or console.	`Switch>`	Enter **logout** or **quit**.	Use this mode to • Change terminal settings. • Perform basic tests. • Display system information.
Privileged EXEC	While in user EXEC mode, enter the **enable** command.	`Switch#`	Enter **disable** to exit.	Use this mode to verify commands that you have entered. Use a password to protect access to this mode.
Global configuration	While in privileged EXEC mode, enter the **configure** command.	`Switch(config)#`	To exit to privileged EXEC mode, enter **exit** or **end**, or press **Ctrl-Z**.	Use this mode to configure parameters that apply to the entire switch.
VLAN configuration	While in global configuration mode, enter the **vlan** *vlan-id* command.	`Switch(config-vlan)#`	To exit to global configuration mode, enter the **exit** command. To return to privileged EXEC mode, press **Ctrl-Z** or enter **end**.	Use this mode to configure VLAN parameters. When VTP mode is transparent, you can create extended-range VLANs (VLAN IDs greater than 1005) and save configurations in the switch startup configuration file.
Interface configuration	While in global configuration mode, enter the **interface** command (with a specific interface).	`Switch(config-if)#`		Use this mode to configure parameters for the Ethernet ports.

Mode	Access Method	Prompt	Exit Method	About This Mode
			To exit to global configuration mode, enter **exit**. To return to privileged EXEC mode, press **Ctrl-Z** or enter **end**.	
Line configuration	While in global configuration mode, specify a line with the **line vty** or **line console** command.	`Switch(config-line)#`	To exit to global configuration mode, enter **exit**. To return to privileged EXEC mode, press **Ctrl-Z** or enter **end**.	Use this mode to configure parameters for the terminal line.

Using the Help System

You can enter a question mark (?) at the system prompt to display a list of commands available for each command mode. You can also obtain a list of associated keywords and arguments for any command.

SUMMARY STEPS

1. **help**
2. *abbreviated-command-entry* **?**
3. *abbreviated-command-entry* <Tab>
4. **?**
5. *command* **?**
6. *command keyword* **?**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**help** **Example:** `Switch# help`	Obtains a brief description of the help system in any command mode.

Step 2	*abbreviated-command-entry* **?**
	
	Example:
	`Switch# di?`
	`dir disable disconnect`
		Obtains a list of commands that begin with a particular character string.

Step 3	*abbreviated-command-entry* <Tab>
	
	Example:
	`Switch# sh conf<tab>`
	`Switch# show configuration`
		Completes a partial command name.

Step 4	**?** **Example:** `Switch> ?`	Lists all commands available for a particular command mode.
Step 5	*command* **?** **Example:** `Switch> show ?`	Lists the associated keywords for a command.

Step 6	*command keyword* **?**
	
	Example:
	`Switch(config)# cdp holdtime ?`
	`<10-255> Length of time (in sec) that receiver must keep this packet`
		Lists the associated arguments for a keyword.

Understanding Abbreviated Commands

You need to enter only enough characters for the switch to recognize the command as unique.

This example shows how to enter the **show configuration** privileged EXEC command in an abbreviated form:

```
Switch# show conf
```

No and Default Forms of Commands

Almost every configuration command also has a **no** form. In general, use the **no** form to disable a feature or function or reverse the action of a command. For example, the **no shutdown** interface configuration command reverses the shutdown of an interface. Use the command without the keyword **no** to reenable a disabled feature or to enable a feature that is disabled by default.

Configuration commands can also have a **default** form. The **default** form of a command returns the command setting to its default. Most commands are disabled by default, so the **default** form is the same as the **no** form. However, some commands are enabled by default and have variables set to certain default values. In these cases, the **default** command enables the command and sets variables to their default values.

CLI Error Messages

This table lists some error messages that you might encounter while using the CLI to configure your switch.

Table 2: Common CLI Error Messages

Error Message	Meaning	How to Get Help
`% Ambiguous command: "show con"`	You did not enter enough characters for your switch to recognize the command.	Reenter the command followed by a question mark (?) without any space between the command and the question mark. The possible keywords that you can enter with the command appear.
`% Incomplete command.`	You did not enter all of the keywords or values required by this command.	Reenter the command followed by a question mark (?) with a space between the command and the question mark. The possible keywords that you can enter with the command appear.
`% Invalid input detected at '^' marker.`	You entered the command incorrectly. The caret (^) marks the point of the error.	Enter a question mark (?) to display all of the commands that are available in this command mode. The possible keywords that you can enter with the command appear.

Configuration Logging

You can log and view changes to the switch configuration. You can use the Configuration Change Logging and Notification feature to track changes on a per-session and per-user basis. The logger tracks each configuration command that is applied, the user who entered the command, the time that the command was entered, and the parser return code for the command. This feature includes a mechanism for asynchronous

notification to registered applications whenever the configuration changes. You can choose to have the notifications sent to the syslog.

Note Only CLI or HTTP changes are logged.

How to Use the CLI to Configure Features

Configuring the Command History

The software provides a history or record of commands that you have entered. The command history feature is particularly useful for recalling long or complex commands or entries, including access lists. You can customize this feature to suit your needs.

Changing the Command History Buffer Size

By default, the switch records ten command lines in its history buffer. You can alter this number for a current terminal session or for all sessions on a particular line. This procedure is optional.

SUMMARY STEPS

1. **terminal history** [**size** *number-of-lines*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	**terminal history** [**size** *number-of-lines*] **Example:** `Switch# terminal history size 200`	Changes the number of command lines that the switch records during the current terminal session in privileged EXEC mode. You can configure the size from 0 to 256.

Recalling Commands

To recall commands from the history buffer, perform one of the actions listed in this table. These actions are optional.

Note The arrow keys function only on ANSI-compatible terminals such as VT100s.

SUMMARY STEPS

1. **Ctrl-P** or use the **up arrow** key
2. **Ctrl-N** or use the **down arrow** key
3. **show history**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**Ctrl-P** or use the **up arrow** key	Recalls commands in the history buffer, beginning with the most recent command. Repeat the key sequence to recall successively older commands.
Step 2	**Ctrl-N** or use the **down arrow** key	Returns to more recent commands in the history buffer after recalling commands with **Ctrl-P** or the up arrow key. Repeat the key sequence to recall successively more recent commands.
Step 3	**show history** **Example:** `Switch# show history`	Lists the last several commands that you just entered in privileged EXEC mode. The number of commands that appear is controlled by the setting of the **terminal history** global configuration command and the **history** line configuration command.

Disabling the Command History Feature

The command history feature is automatically enabled. You can disable it for the current terminal session or for the command line. This procedure is optional.

SUMMARY STEPS

1. **terminal no history**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**terminal no history** **Example:** `Switch# terminal no history`	Disables the feature during the current terminal session in privileged EXEC mode.

Enabling and Disabling Editing Features

Although enhanced editing mode is automatically enabled, you can disable it and reenable it.

SUMMARY STEPS

1. terminal editing
2. terminal no editing

DETAILED STEPS

	Command or Action	Purpose
Step 1	terminal editing Example: `Switch# terminal editing`	Reenables the enhanced editing mode for the current terminal session in privileged EXEC mode.
Step 2	terminal no editing Example: `Switch# terminal no editing`	Disables the enhanced editing mode for the current terminal session in privileged EXEC mode.

Editing Commands Through Keystrokes

The keystrokes help you to edit the command lines. These keystrokes are optional.

Note The arrow keys function only on ANSI-compatible terminals such as VT100s.

Table 3: Editing Commands

Editing Commands	Description
Ctrl-B or use the **left arrow** key	Moves the cursor back one character.
Ctrl-F or use the **right arrow** key	Moves the cursor forward one character.
Ctrl-A	Moves the cursor to the beginning of the command line.
Ctrl-E	Moves the cursor to the end of the command line.
Esc B	Moves the cursor back one word.
Esc F	Moves the cursor forward one word.
Ctrl-T	Transposes the character to the left of the cursor with the character located at the cursor.
Delete or **Backspace** key	Erases the character to the left of the cursor.
Ctrl-D	Deletes the character at the cursor.
Ctrl-K	Deletes all characters from the cursor to the end of the command line.
Ctrl-U or **Ctrl-X**	Deletes all characters from the cursor to the beginning of the command line.
Ctrl-W	Deletes the word to the left of the cursor.
Esc D	Deletes from the cursor to the end of the word.
Esc C	Capitalizes at the cursor.
Esc L	Changes the word at the cursor to lowercase.
Esc U	Capitalizes letters from the cursor to the end of the word.

Ctrl-V or **Esc Q**	Designates a particular keystroke as an executable command, perhaps as a shortcut.
Return key	Scrolls down a line or screen on displays that are longer than the terminal screen can display. **Note** The More prompt is used for any output that has more lines than can be displayed on the terminal screen, including **show** command output. You can use the **Return** and **Space** bar keystrokes whenever you see the More prompt.
Space bar	Scrolls down one screen.
Ctrl-L or **Ctrl-R**	Redisplays the current command line if the switch suddenly sends a message to your screen.

Editing Command Lines That Wrap

You can use a wraparound feature for commands that extend beyond a single line on the screen. When the cursor reaches the right margin, the command line shifts ten spaces to the left. You cannot see the first ten characters of the line, but you can scroll back and check the syntax at the beginning of the command. The keystroke actions are optional.

To scroll back to the beginning of the command entry, press **Ctrl-B** or the left arrow key repeatedly. You can also press **Ctrl-A** to immediately move to the beginning of the line.

Note The arrow keys function only on ANSI-compatible terminals such as VT100s.

The following example shows how to wrap a command line that extends beyond a single line on the screen.

SUMMARY STEPS

1. **access-list**
2. **Ctrl-A**
3. **Return** key

DETAILED STEPS

	Command or Action	Purpose
Step 1	**access-list** **Example:** `Switch(config)# access-list 101 permit tcp`	Displays the global configuration command entry that extends beyond one line. When the cursor first reaches the end of the line, the line is shifted ten spaces to the left and redisplayed. The dollar sign ($) shows that the

	Command or Action	Purpose
	10.15.22.25 255.255.255.0 10.15.22.35 Switch(config)# $ 101 permit tcp 10.15.22.25 255.255.255.0 10.15.22.35 255.25 Switch(config)# $t tcp 10.15.22.25 255.255.255.0 131.108.1.20 255.255.255.0 eq Switch(config)# $15.22.25 255.255.255.0 10.15.22.35 255.255.255.0 eq 45	line has been scrolled to the left. Each time the cursor reaches the end of the line, the line is again shifted ten spaces to the left.
Step 2	**Ctrl-A** **Example:** Switch(config)# access-list 101 permit tcp 10.15.22.25 255.255.255.0 10.15.2$	Checks the complete syntax. The dollar sign ($) appears at the end of the line to show that the line has been scrolled to the right.
Step 3	**Return** key	Execute the commands. The software assumes that you have a terminal screen that is 80 columns wide. If you have a different width, use the **terminal width** privileged EXEC command to set the width of your terminal. Use line wrapping with the command history feature to recall and modify previous complex command entries.

Searching and Filtering Output of show and more Commands

You can search and filter the output for **show** and **more** commands. This is useful when you need to sort through large amounts of output or if you want to exclude output that you do not need to see. Using these commands is optional.

SUMMARY STEPS

1. {**show** | **more**} *command* | {**begin** | **include** | **exclude**} *regular-expression*

DETAILED STEPS

	Command or Action	Purpose
Step 1	{**show**	**more**} *command*	{**begin**	**include**	**exclude**} *regular-expression* **Example:** Switch# show interfaces	include protocol Vlan1 is up, line protocol is up Vlan10 is up, line protocol is down GigabitEthernet1/0/1 is up, line protocol is down GigabitEthernet1/0/2 is up, line protocol is up	Searches and filters the output. Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain **output** are not displayed, but the lines that contain **output** appear.

Accessing the CLI on a Switch Stack

You can access the CLI through a console connection, through Telnet, a SSH, or by using the browser.

You manage the switch stack and the stack member interfaces through the . You cannot manage stack members on an individual switch basis. You can connect to the through the console port or the Ethernet management port of one or more stack members. Be careful with using multiple CLI sessions on the . Commands that you enter in one session are not displayed in the other sessions. Therefore, it is possible to lose track of the session from which you entered commands.

Note We recommend using one CLI session when managing the switch stack.

If you want to configure a specific stack member port, you must include the stack member number in the CLI command interface notation.

Accessing the CLI Through a Console Connection or Through Telnet

Before you can access the CLI, you must connect a terminal or a PC to the switch console or connect a PC to the Ethernet management port and then power on the switch, as described in the hardware installation guide that shipped with your switch.

If your switch is already configured, you can access the CLI through a local console connection or through a remote Telnet session, but your switch must first be configured for this type of access.

You can use one of these methods to establish a connection with the switch:

- Connect the switch console port to a management station or dial-up modem, or connect the Ethernet management port to a PC. For information about connecting to the console or Ethernet management port, see the switch hardware installation guide.
- Use any Telnet TCP/IP or encrypted Secure Shell (SSH) package from a remote management station. The switch must have network connectivity with the Telnet or SSH client, and the switch must have an enable secret password configured.
    - The switch supports up to 16 simultaneous Telnet sessions. Changes made by one Telnet user are reflected in all other Telnet sessions.
    - The switch supports up to five simultaneous secure SSH sessions.

  After you connect through the console port, through the Ethernet management port, through a Telnet session or through an SSH session, the user EXEC prompt appears on the management station.

Cisco Lightweight Access Point Commands

ap auth-list ap-policy

To configure authorization policy for all Cisco lightweight access points joined to the switch, use the **ap auth-list ap-policy** command. To disable authorization policy for all Cisco lightweight access points joined to the switch, use the **no** form of this command.

ap auth-list ap-policy {**authorize-ap| lsc| mic| ssc**}

no ap auth-list ap-policy {**authorize-ap| lsc| mic| ssc**}

Syntax Description

authorize-ap	Enables the authorization policy.
lsc	Enables access points with locally significant certificates to connect.
mic	Enables access points with manufacture-installed certificates to connect.
ssc	Enables access points with self signed certificates to connect.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable the access point authorization policy:

```
Switch(config)# ap auth-list ap-policy authorize-ap
```

This example shows how to enable access points with locally significant certificates to connect:

```
Switch(config)# ap auth-list ap-policy lsc
```

This example shows how to enable access points with manufacture-installed certificates to connect:

```
Switch(config)# ap auth-list ap-policy mic
```

This example shows how to enable access points with self-signed certificates to connect:

```
Switch(config)# ap auth-list ap-policy ssc
```

ap bridging

To enable Ethernet to 802.11 bridging on a Cisco lightweight access point, use the **ap bridging** command. To disable Ethernet to 802.11 bridging on a Cisco lightweight access point, use the **no** form of this command.

ap bridging

no ap bridging

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable Ethernet-to-Ethernet bridging on a lightweight access point:

```
Switch(config)# ap bridging
```

This example shows how to disable Ethernet-to-Ethernet bridging on a lightweight access point:

```
Switch(config)# no ap bridging
```

ap capwap multicast

To configure the multicast address used by all access points to receive multicast traffic when multicast forwarding is enabled and to configure the outer Quality of Service (QoS) level of those multicast packets sent to the access points, use the **ap capwap multicast** command.

ap capwap multicast {*multicast-ip-address*| **service-policy output** *pollicymap-name*}

Syntax Description

multicast-ip-address	Multicast IP address.
service-policy	Specifies the tunnel QoS policy for multicast access points.
output	Assigns a policy map name to the output.
policymap-name	Service policy map name.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure a multicast address used by all access points to receive multicast traffic when multicast forwarding is enabled:

```
Switch(config)# ap capwap multicast 239.2.2.2
```

This example shows how to configure a tunnel multicast QoS service policy for multicast access points:

```
Switch(config)# ap capwap multicast service-policy output tunnmulpolicy
```

Related Commands

Command	Description
ap capwap retransmit	Configures the CAPWAP control packet retransmit count and interval.
ap capwap timers	Configures advanced timer settings.

ap capwap retransmit

To configure Control and Provisioning of Wireless Access Points (CAPWAP) control packet retransmit count and control packet retransmit interval, use the **ap capwap retransmit** command.

ap capwap retransmit {**count** *retransmit-count*| **interval** *retransmit-interval*}

Syntax Description

count *retransmit-count*	Specifies the access point CAPWAP control packet retransmit count. **Note** The count is from 3 to 8 seconds.
interval *retransmit-interval*	Specifies the access point CAPWAP control packet retransmit interval. **Note** The interval is from 2 to 5 seconds.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure the CAPWAP control packet retransmit count for an access point:

```
Switch# ap capwap retransmit count 3
```

This example shows how to configure the CAPWAP control packet retransmit interval for an access point:

```
Switch# ap capwap retransmit interval 5
```

ap capwap timers

To configure advanced timer settings, use the **ap capwap timers** command.

ap capwap timers {**discovery-timeout** *seconds*| **fast-heartbeat-timeout local** *seconds*| **heartbeat-timeout** *seconds*| **primary-discovery-timeout** *seconds*| **primed-join-timeout** *seconds*}

Syntax Description

discovery-timeout	Specifies the Cisco lightweight access point discovery timeout. **Note** The Cisco lightweight access point discovery timeout is how long a Cisco switch waits for an unresponsive access point to answer before considering that the access point failed to respond.
seconds	Cisco lightweight access point discovery timeout from 1 to 10 seconds. **Note** The default is 10 seconds.
fast-heartbeat-timeout local	Enables the fast heartbeat timer that reduces the amount of time it takes to detect a switch failure for local or all access points.
seconds	Small heartbeat interval (from 1 to 10 seconds) that reduces the amount of time it takes to detect a switch failure. **Note** The fast heartbeat time-out interval is disabled by default.
heartbeat-timeout	Specifies the Cisco lightweight access point heartbeat timeout. **Note** The Cisco lightweight access point heartbeat timeout controls how often the Cisco lightweight access point sends a heartbeat keep-alive signal to the Cisco switch. This value should be at least three times larger than the fast heartbeat timer.
seconds	Cisco lightweight access point heartbeat timeout value from 1 to 30 seconds. **Note** The default is 30 seconds.
primary-discovery-timeout	Specifies the access point primary discovery request timer. The timer determines the amount of time taken by an access point to discovery the configured primary, secondary, or tertiary switch.
seconds	Access point primary discovery request timer from 30 to 3600 seconds. **Note** The default is 120 seconds.
primed-join-timeout	Specifies the authentication timeout. Determines the time taken by an access point to determine that the primary switch has become unresponsive. The access point makes no further attempts to join the switch until the connection to the switch is restored.

seconds	Authentication response timeout from 120 to 43200 seconds. **Note** The default is 120 seconds.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure an access point discovery timeout with the timeout value of 7:

```
Switch(config)# ap capwap timers discovery-timeout 7
```

This example shows how to enable the fast heartbeat interval for all access points:

```
Switch(config)# ap capwap timers fast-heartbeat-timeout 6
```

This example shows how to configure an access point heartbeat timeout to 20:

```
Switch(config)# ap capwap timers heartbeat-timeout 20
```

This example shows how to configure the access point primary discovery request timer to 1200 seconds:

```
Switch(config)# ap capwap timers primary-discovery-timeout 1200
```

This example shows how to configure the authentication timeout to 360 seconds:

```
Switch(config)# ap capwap timers primed-join-timeout 360
```

Related Commands

Command	Description
ap capwap multicast	Configures the multicast address used by all access points.
ap capwap retransmit	Configures the CAPWAP control packet retransmit count and interval.

ap cdp

To enable the Cisco Discovery Protocol (CDP) on a Cisco lightweight access point, use the **ap cdp** command. To disable the Cisco Discovery Protocol (CDP) on a Cisco lightweight access point, use the **no** form of this command.

ap cdp [**interface** {**ethernet** *ethernet-id*| **radio** *radio-id*}]

no ap cdp [**interface** {**ethernet** *ethernet-id*| **radio** *radio-id*}]

Syntax Description

interface	(Optional) Specifies CDP in a specific interface.
ethernet	Specifies CDP for an Ethernet interface.
ethernet-id	Ethernet interface number from 0 to 3.
radio	Specifies CDP for a radio interface.
radio-id	Radio number from 0 to 3.

Command Default

Disabled on all access points.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The **no ap cdp** command disables CDP on all access points that are joined to the switch and all access points that join in the future. CDP remains disabled on both current and future access points even after the switch or access point reboots. To enable CDP, enter the **ap cdp** command.

Note CDP over Ethernet/radio interfaces is available only when CDP is enabled. After you enable CDP on all access points joined to the switch, you can disable and then reenable CDP on individual access points using the **ap name** *Cisco-AP* **cdp** command. After you disable CDP on all access points joined to the switch, you can enable and then disable CDP on individual access points.

Examples

This example shows how to enable CDP on all access points:

```
Switch(config)# ap cdp
```

This example shows how to enable CDP for Ethernet interface number 0 on all access points:

```
Switch(config)# ap cdp ethernet 0
```

Related Commands

Command	Description
show ap cdp	Displays the CDP information for all access points.

ap core-dump

To enable a Cisco lightweight access point's memory core dump settings, use the **ap core-dump** command. To disable a Cisco lightweight access point's memory core dump settings, use the **no** form of this command.

ap core-dump *tftp-ip-addr filename* {**compress**| **uncompress**}

no ap core-dump

Syntax Description

tftp-ip-addr	IP address of the TFTP server to which the access point sends core dump files.
filename	Name that the access point uses to label the core file.
compress	Compresses the core dump file.
uncompress	Uncompresses the core dump file.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The access point must be able to reach the TFTP server.

Examples

This example shows how to configure and compress the core dump file:

```
Switch(config)# ap core-dump 192.0.2.51 log compress
```

Related Commands

Command	Description
ap crash-file	Deletes crash and radio core dump files.
ap name crash-file	Manages crash data and radio core files for an access point.

ap country

To configure one or more country codes for a switch, use the **ap country** command.

ap country *country-code*

Syntax Description

country-code	Two-letter or three-letter country code or several country codes separated by a comma.

Command Default

US (country code of the United States of America).

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The Cisco switch must be installed by a network administrator or qualified IT professional and the installer must select the proper country code. Following installation, access to the unit should be password protected by the installer to maintain compliance with regulatory requirements and to ensure proper unit functionality. See the related product guide for the most recent country codes and regulatory domains.

Examples

This example shows how to configure country codes on the switch to IN (India) and FR (France):

```
Switch(config)# ap country IN,FR
```

Related Commands

Command	Description
ap name country	Configures the country of operation for an access point.

ap crash-file

To delete crash and radio core dump files, use the **ap crash-file** command.

ap crash-file {**clear-all**| **delete** *filename*}

Syntax Description

clear-all	Deletes all the crash and radio core dump files.
delete	Deletes a single crash and radio core dump file.
filename	Name of the file to delete.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to delete all crash files:

```
Switch# ap crash-file clear-all
```

This example shows how to delete crash file 1:

```
Switch# ap crash-file delete crash-file-1
```

Related Commands

Command	Description
ap name crash-file	Manages crash data and radio core files for an access point.
ap name core-dump	Configures an access point's memory core dump.

ap dot11 24ghz preamble

To enable only a short preamble as defined in subclause 17.2.2.2 , use the **ap dot11 24ghz preamble** command. To enable long preambles (for backward compatibility with pre-802.11b devices, if these devices are still present in your network) or short preambles (recommended unless legacy pre-802.11b devices are present in the network), use the **no** form of this command.

ap dot11 24ghz preamble short

no ap dot11 24ghz preamble short

Syntax Description

short	Specifies the short 802.11b preamble.

Command Default

short preambles

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Note You must reboot the Cisco switch (reset system) with the **Save** command before you can use the **ap dot11 24ghz preamble** command.

This parameter may need to be set to long to optimize this Cisco switch for some legacy clients, including SpectraLink NetLink telephones.

This command can be used any time that the CLI interface is active.

Examples

This example shows how to enable both long and short preamblest:

```
Switch(config)# no ap dot11 24ghz preamble short
```

ap dot11 24ghz dot11g

To enable the Cisco wireless LAN solution 802.11g network, use the **ap dot11 24ghz dot11g** command. To disable the Cisco wireless LAN solution 802.11g network, use the **no** form of this command.

ap dot11 24ghz dot11g

no ap dot11 24ghz dot11g

Syntax Description

This command has no keywords and arguments.

Command Default

Enabled

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Before you enter the **ap dot11 24ghz dot11g** command, disable the 802.11 Cisco radio with the **ap dot11 24ghz shutdown** command.

After you configure the support for the 802.11g network, use the **no ap dot11 24ghz shutdown** command to enable the 802.11 2.4 Ghz radio.

Examples

This example shows how to enable the 802.11g network:

```
Switch(config)# ap dot11 24ghz dot11g
```

Related Commands

Command	Description
show ap dot11	Displays the 802.11a and 802.11b configuration information.

ap dot11 5ghz channelswitch mode

To configure a 802.11h channel switch announcement, use the **ap dot11 5ghz channelswitch mode** command. To disable a 802.11h channel switch announcement, use the **no** form of this command.

ap dot11 5ghz channelswitch mode *value*

no ap dot11 5ghz channelswitch mode

Syntax Description

value	802.11h channel announcement value. **Note** You can specify anyone of the following two values: • 0—Indicates that the channel switch announcement is disabled. • 1—Indicates that the channel switch announcement is enabled.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable the 802.11h switch announcement:

```
Switch(config)# ap dot11 5ghz channelswitch mode 1
```

ap dot11 5ghz power-constraint

To configure the 802.11h power constraint value, use the **ap dot11 5ghz power-constraint** command. To remove the 802.11h power constraint value, use the **no** form of this command.

ap dot11 5ghz power-constraint *value*

no ap dot11 5ghz power-constraint

Syntax Description

value	802.11h power constraint value. **Note** The range is from 0 to 30 dBm.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure the 802.11h power constraint to 5 dBm:

```
Switch(config)# ap dot11 5ghz power-constraint 5
```

ap dot11 beaconperiod

To change the beacon period globally for 2.4 GHz or 5 GHz bands, use the **ap dot11 beaconperiod** command.

Note Disable the 802.11 network before using this command. See the "Usage Guidelines" section.

ap dot11 {**24ghz**| **5ghz**} **beaconperiod** *time*

Syntax Description

24ghz	Specifies the settings for 2.4 GHz band.
5ghz	Specifies the settings for 5 GHz band.
beaconperiod	Specifies the beacon for a network globally.
time	Beacon interval in time units (TU). One TU is 1024 microseconds. The range is from 20 to 1000.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

In Cisco wireless LAN 802.11 networks, all Cisco lightweight access point wireless LANs broadcast a beacon at regular intervals. This beacon notifies clients that the wireless service is available and allows the clients to synchronize with the lightweight access point.

Before you change the beacon period, make sure that you have disabled the 802.11 network by using the **ap dot11** {**24ghz | 5ghz**} **shutdown** command. After changing the beacon period, enable the 802.11 network by using the **no ap dot11** {**24ghz | 5ghz**} **shutdown** command.

Examples

This example shows how to configure the 5 GHZ band for a beacon period of 120 time units:

```
Switch(config)# ap dot11 5ghz beaconperiod 120
```

ap dot11 beamforming

To enable beamforming on the network or on individual radios, use the **ap dot11 beamforming** command.

ap dot11 {**24ghz**| **5ghz**} **beamforming**

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
beamforming	Specifies beamforming on the network.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

When you enable beamforming on the network, it is automatically enabled for all the radios applicable to that network type.

Follow these guidelines for using beamforming:

- Beamforming is supported for legacy orthogonal frequency-division multiplexing (OFDM) data rates (6, 9, 12, 18, 24, 36, 48, and 54 Mbps).

  Note Beamforming is not supported for Direct Sequence Spread Spectrum data rates (1 and 2 Mbps) and Complementary-Code Key (CCK) data rates (5.5 and 11 Mbps).

- Beamforming is supported only on access points that support 802.11n (AP1260, AP3500, and AP3600).
- Two or more antennas must be enabled for transmission.
- All three antennas must be enabled for reception.
- OFDM rates must be enabled.

  If the antenna configuration restricts operation to a single transmit antenna, or if OFDM rates are disabled, beamforming is not used.

Examples This example shows how to enable beamforming on the 5 GHz band:

```
Switch(config)# ap dot11 5ghz beamforming
```

ap dot11 cac media-stream

To configure media stream Call Admission Control (CAC) voice and video quality parameters for 2.4 GHz and 5 GHz bands, use the **ap dot11 cac media-stream** command.

ap dot11 {**24ghz**| **5ghz**} **cac media-stream multicast-direct** {**max-retry-percent** *retryPercent*| **min-client-rate**{**eighteen**| **eleven**| **fiftyFour**| **fivePointFive**| **fortyEight**| **nine**| **oneFifty**| **oneFortyFourPointFour**| **oneThirty**| **oneThirtyFive**| **seventyTwoPointTwo**| **six**| **sixtyFive**| **thirtySix**| **threeHundred**| **twelve**| **twentyFour**| **two**| **twoSeventy**}}

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
multicast-direct	Specifies CAC parameters for multicast-direct media streams.
max-retry-percent	Specifies the percentage of maximum retries that are allowed for multicast-direct media streams.
retryPercent	Percentage of maximum retries that are allowed for multicast-direct media streams. **Note** The range is from 0 to 100.
min-client-rate	Specifies the minimum transmission data rate to the client for multicast-direct media streams (rate at which the client must transmit in order to receive multicast-direct unicast streams). If the transmission rate is below this rate, either the video will not start or the client may be classified as a bad client. The bad client video can be demoted for better effort QoS or subject to denial.

min-client-rate	You can choose the following rates: • **eighteen** • **eleven** • **fiftyFour** • **fivePointFive** • **fortyEight** • **nine** • **one** • **oneFifty** • **oneFortyFourPointFour** • **oneThirty** • **oneThirtyFive** • **seventyTwoPointTwo** • **six** • **sixtyFive** • **thirtySix** • **threeHundred** • **twelve** • **twentyFour** • **two** • **twoSeventy**

Command Default

The default value for the maximum retry percent is 80. If it exceeds 80, either the video will not start or the client might be classified as a bad client. The bad client video will be demoted for better effort QoS or is subject to denial.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

CAC commands require that the WLAN you are planning to modify is configured for the Wi-Fi Multimedia (WMM) protocol.

Before you can configure CAC parameters on a network, you must complete the following prerequisites:

- Disable all WLANs with WMM enabled by entering the **wlan** *wlan_name* **shutdown** command.
- Disable the radio network you want to configure by entering the **ap dot11** {**24ghz | 5ghz**} **shutdown** command.
- Save the new configuration.
- Enable voice or video CAC for the network you want to configure by entering the **ap dot11** {**24ghz | 5ghz**} **cac voice acm** or **ap dot11** {**24ghz | 5ghz**} **cac video acm** commands.

Examples

This example shows how to configure the maximum retry percent for multicast-direct media streams as 90 on a 802.11a network:

```
Switch(config)# ap dot11 5ghz cac media-stream multicast max-retry-percent 90
```

Related Commands

Command	Description
ap dot11 cac multimedia	Configures multimedia CAC voice and video quality parameters.
ap dot11 cac video	Configures CAC parameters for the video category.
ap dot11 cac voice	Configures CAC parameters for the voice category.

ap dot11 cac multimedia

To configure multimedia Call Admission Control (CAC) voice and video quality parameters for 2.4 GHz and 5 GHz bands, use the **ap dot11 cac multimedia** command.

ap dot11 {**24ghz**| **5ghz**} **cac multimedia max-bandwidth** *bandwidth*

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
max-bandwidth	Specifies the percentage of maximum bandwidth allocated to Wi-Fi Multimedia (WMM) clients for voice and video applications on the 2.4 GHz or 5 GHz band.
bandwidth	Percentage of the maximum bandwidth allocated to WMM clients for voice and video applications on the 802.11a or 802.11b/g network. Once the client reaches the specified value, the access point rejects new multimedia flows this radio band. The range is from 5 to 85%.

Command Default

The default value is 75%.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

CAC commands require that the WLAN you are planning to modify is configured for the Wi-Fi Multimedia (WMM) protocol.

Before you can configure CAC parameters on a network, you must complete the following prerequisites:

- Disable all WLANs with WMM enabled by entering the **wlan** *wlan_name* **shutdown** command.
- Disable the radio network you want to configure by entering the **ap dot11** {**24ghz | 5ghz**} **shutdown** command.
- Save the new configuration.
- Enable voice or video CAC for the network you want to configure by entering the **ap dot11** {**24ghz | 5ghz**} **cac voice acm** or **ap dot11** {**24ghz | 5ghz**} **cac video acm** commands.

Examples

This example shows how to configure the percentage of the maximum bandwidth allocated to WMM clients for voice and video applications on the 5 GHz band:

```
Switch(config)# ap dot11 5ghz cac multimedia max-bandwidth 5
```

Related Commands

Command	Description
ap dot11 cac media-stream	Configures media stream CAC voice and video quality parameters.
ap dot11 cac video	Configures CAC parameters for the video category.
ap dot11 cac voice	Configures CAC parameters for the voice category.

ap dot11 cac video

To configure Call Admission Control (CAC) parameters for the video category, use the **ap dot11 cac video** command. To disable the CAC parameters for video category, use the **no** form of this command.

ap dot11 {**24ghz**| **5ghz**} **cac video** {**acm**| **max-bandwidth** *value*| **roam-bandwidth** *value*}

no ap dot11 {**24ghz**| **5ghz**} **cac video** {**acm**| **max-bandwidth** *value*| **roam-bandwidth** *value*}

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
acm	Enables bandwidth-based video CAC for the 2.4 GHz or 5 GHz band. **Note** To disable bandwidth-based video CAC for the 2.4 GHz or 5 GHz band, use the **no ap dot11** {**24ghz	5ghz**} **cac video acm** command.
max-bandwidth	Sets the percentage of the maximum bandwidth allocated to clients for video applications on the 2.4 GHz or 5 GHz band.
value	Bandwidth percentage value from 5 to 85%.
roam-bandwidth	Sets the percentage of the CAC maximum allocated bandwidth reserved for roaming video clients on the 2.4 GHz or 5 GHz band.
value	Bandwidth percentage value from 0 to 85%.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

CAC commands require that the WLAN you are planning to modify is configured for the Wi-Fi Multimedia (WMM) protocol.

Before you can configure CAC parameters on a network, you must complete the following prerequisites:

- Disable all WLANs with WMM enabled by entering the **wlan** *wlan_name* **shutdown** command.
- Disable the radio network you want to configure by entering the **ap dot11** {**24ghz | 5ghz**} **shutdown** command.

- Save the new configuration.
- Enable voice or video CAC for the network you want to configure by entering the **ap dot11** {**24ghz** | **5ghz**} **cac voice acm** or **ap dot11** {**24ghz** | **5ghz**} **cac video acm** command.

Examples

This example shows how to enable the bandwidth-based CAC:

```
Switch(config)# ap dot11 24ghz cac video acm
```

This example shows how to specify the percentage of the maximum allocated bandwidth for video applications on the selected radio band:

```
Switch(config)# ap dot11 24ghz cac video max-bandwidth 50
```

This example shows how to configure the percentage of the maximum allocated bandwidth reserved for roaming video clients on the selected radio band:

```
Switch(config)# ap dot11 24ghz cac video roam-bandwidth 10
```

Related Commands

Command	Description
ap dot11 cac media-stream	Configures media stream CAC voice and video quality parameters.
ap dot11 cac multimedia	Configures multimedia CAC voice and video quality parameters.
ap dot11 cac voice	Configures CAC parameters for the voice category.

ap dot11 cac voice

To configure Call Admission Control (CAC) parameters for the voice category, use the **ap dot11 cac voice** command.

ap dot11 {**24ghz**| **5ghz**} **cac voice**{**acm**| **load-based**| **max-bandwidth** *value*| **roam-bandwidth** *value*| **sip** [**bandwidth** *bw*] **sample-interval** *value*| **stream-size** *x* **max-streams** *y*| **tspec-inactivity-timeout**{**enable**| **ignore**}}

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
acm	Enables bandwidth-based voice CAC for the 2.4 GHz or 5 GHz band. **Note** To disable bandwidth-based voice CAC for the 2.4 GHz or 5 GHz band, use the **no ap dot11** {**24ghz | 5ghz**} **cac voice acm** command.
load-based	Enable load-based CAC on voice access category. **Note** To disable load-based CAC on voice access category for the 2.4 GHz or 5 GHz band, use the **no ap dot11** {**24ghz | 5ghz**} **cac voice load-based** command.
max-bandwidth	Sets the percentage of the maximum bandwidth allocated to clients for voice applications on the 2.4 GHz or 5 GHz band.
value	Bandwidth percentage value from 5 to 85%.
roam-bandwidth	Sets the percentage of the CAC maximum allocated bandwidth reserved for roaming voice clients on the 2.4 GHz or 5 GHz band.
value	Bandwidth percentage value from 0 to 85%.
sip	Specifies the CAC codec name and sample interval as parameters and calculates the required bandwidth per call for the 802.11 networks.
bandwidth	(Optional) Specifies bandwidth for a SIP-based call.

bw	Bandwidth in kbps. The following bandwidth values specify parameters for the SIP codecs: • 64kbps—Specifies CAC parameters for the SIP G711 codec. • 8kbps—Specifies CAC parameters for the SIP G729 codec. **Note** The default value is 64 Kbps.
sample-interval	Specifies the packetization interval for SIP codec.
value	Packetization interval in msecs. The sample interval for SIP codec value is 20 seconds.
stream-size	Specifies the number of aggregated voice Wi-Fi Multimedia (WMM) traffic specification (TSPEC) streams at a specified data rate for the 2.4 GHz or 5 GHz band.
x	Stream size. The range of the stream size is from 84000 to 92100.
max-streams	Specifies the maximum number of streams per TSPEC.
y	Number (1 to 5) of voice streams. **Note** The default number of streams is 2 and the mean data rate of a stream is 84 kbps.
tspec-inactivity-timeout	Specifies TSPEC inactivity timeout processing mode. **Note** Use this keyword to process or ignore the Wi-Fi Multimedia (WMM) traffic specifications (TSPEC) inactivity timeout received from an access point. When the inactivity timeout is ignored, a client TSPEC is not deleted even if the access point reports an inactivity timeout for that client.
enable	Processes the TSPEC inactivity timeout messages.
ignore	Ignores the TSPEC inactivity timeout messages. **Note** The default is **ignore** (disabled).

Command Default None

Command Modes Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

CAC commands require that the WLAN you are planning to modify is configured for the Wi-Fi Multimedia (WMM) protocol and the quality of service (QoS) level be set to Platinum.

Before you can configure CAC parameters on a network, you must complete the following prerequisites:

- Disable all WLANs with WMM enabled by entering the **wlan** *wlan_name* **shutdown** command.
- Disable the radio network you want to configure by entering the **ap dot11** {**24ghz | 5ghz**} **shutdown** command.
- Save the new configuration.
- Enable voice or video CAC for the network you want to configure by entering the **ap dot11** {**24ghz | 5ghz**} **cac voice acm** or **ap dot11** {**24ghz | 5ghz**} **cac video acm** commands.

Examples

This example shows how to enable the bandwidth-based CAC:

```
Switch(config)# ap dot11 24ghz cac voice acm
```

This example shows how to enable the load-based CAC on the voice access category:

```
Switch(config)# ap dot11 24ghz cac voice load-based
```

This example shows how to specify the percentage of the maximum allocated bandwidth for voice applications on the selected radio band:

```
Switch(config)# ap dot11 24ghz cac voice max-bandwidth 50
```

This example shows how to configure the percentage of the maximum allocated bandwidth reserved for roaming voice clients on the selected radio band:

```
Switch(config)# ap dot11 24ghz cac voice roam-bandwidth 10
```

This example shows how to configure the bandwidth and voice packetization interval for the G729 SIP codec on a 2.4 GHz band:

```
Switch(config)# ap dot11 24ghz cac voice sip bandwidth 8 sample-interval 40
```

This example shows how to configure the number of aggregated voice traffic specifications stream with a stream size of 85000 and with a maximum of 5 streams:

```
Switch(config)# ap dot11 24ghz cac voice stream-size 85000 max-streams 5
```

This example shows how to enable the voice TSPEC inactivity timeout messages received from an access point:

```
Switch(config)# ap dot11 24ghz cac voice tspec-inactivity-timeout enable
```

Related Commands

Command	Description
ap dot11 cac media-stream	Configures media stream CAC voice and video quality parameters.
ap dot11 cac multimedia	Configures multimedia CAC voice and video quality parameters.
ap dot11 cac video	Configures CAC parameters for the video category.

ap dot11 cleanair

To configure CleanAir on 802.11 networks, use the **ap dot11 cleanair** command. To disable CleanAir on 802.11 networks, use the **no** form of this command.

ap dot11 {**24ghz**| **5ghz**} **cleanair**

no ap dot11 {**24ghz**| **5ghz**} **cleanair**

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
cleanair	Specifies CleanAir on the 2.4 GHz or 5 GHz band.

Command Default

Disabled

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable the CleanAir settings on the 2.4 GHz band:

```
Switch(config)# ap dot11 24ghz cleanair
```

Related Commands

Command	Description
ap dot11 cleanair alarm air-quality	Configures CleanAir air-quality alarms for access points.
ap dot11 cleanair alarm device	Configures CleanAir interference device alarms.
ap dot11 cleanair device	Configures CleanAir interference device types.
ap name dot11 dual-band cleanair	Configures CleanAir for a dual band radio.
ap name dot11 dual-band shutdown	Disables dual band radio on a Cisco AP.

ap dot11 cleanair alarm air-quality

To configure CleanAir air-quality alarms for Cisco lightweight access points, use the **ap dot11 cleanair alarm air-quality** command.

ap dot11 {**24ghz**| **5ghz**} **cleanair alarm air-quality** [**threshold** *value*]

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
threshold	Specifies the air-quality alarm threshold.
value	Air quality alarm threshold (1 is bad air quality, and 100 is good air quality).

Command Default

Disabled

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure the CleanAir 2.4 GHz air-quality threshold to 90:

```
Switch(config)# ap dot11 24ghz cleanair air-quality threshold 90
```

Related Commands

Command	Description
ap dot11 cleanair	Configures CleanAir on 802.11 networks.
ap dot11 cleanair alarm device	Configures CleanAir interference device alarms.
ap dot11 cleanair device	Configures CleanAir interference device types.

ap dot11 cleanair alarm device

To configure the CleanAir interference devices alarms on the 2.4 GHz or 5 GHz bands, use the **ap dot11 cleanair alarm device** command. To disable the CleanAir interference devices alarms on the 802.11 networks, use the **no** form of this command.

ap dot11 {**24ghz**| **5ghz**} **cleanair alarm device**{**all**| **bt-discovery**| **bt-link**| **canopy**| **cont-tx**| **dect-like**| **fh**| **inv**| **jammer**| **mw-oven**| **nonstd**| **superag**| **tdd-tx**| **video**| **wimax-fixed**| **wimax-mobile**| **xbox**| **zigbee**}

no ap dot11 {**24ghz**| **5ghz**} **cleanair**

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
all	Specifies all the device types at once.
bt-discovery	Specifies the Bluetooth device in discovery mode.
bt-link	Specifies the Bluetooth active link.
canopy	Specifies the Canopy devices.
cont-tx	Specifies the continuous transmitter.
dect-like	Specifies a Digital Enhanced Cordless Communication (DECT)-like phone.
fh	Specifies the frequency hopping devices.
inv	Specifies the devices using spectrally inverted Wi-Fi signals.
jammer	Specifies the jammer.
mw-oven	Specifies the microwave oven devices.
nonstd	Specifies the devices using nonstandard Wi-Fi channels.
superag	Specifies 802.11 SuperAG devices.
tdd-tx	Specifies the TDD transmitter.
video	Specifies video cameras.
wimax-fixed	Specifies a WiMax fixed device.
wimax-mobile	Specifies a WiMax mobile device.
xbox	Specifies the Xbox device.

zigbee	Specifies the ZigBee device.

Command Default

Disabled

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to disable alarms for ZigBee interference detection:

```
Switch(config)# no ap dot11 24ghz cleanair alarm device zigbee
```

This example shows how to enable alarms for detection of Bluetooth links:

```
Switch(config)# ap dot11 24ghz cleanair alarm device bt-link
```

Related Commands

Command	Description
ap dot11 cleanair alarm air-quality	Configures CleanAir air-quality alarms for access points.
ap dot11 cleanair	Configures CleanAir on 802.11 networks.
ap dot11 cleanair device	Configures CleanAir interference device types.

ap dot11 cleanair device

To configure CleanAir interference device types, use the **ap dot11 cleanair device** command.

ap dot11 24ghz cleanair device [**all**| **bt-discovery**| **bt-link**| **canopy**| **cont-tx**| **dect-like**| **fh**| **inv**| **jammer**| **mw-oven**| **nonstd**| **superag**| **tdd-tx**| **video**| **wimax-fixed**| **wimax-mobile**| **xbox**| **zigbee**]

Syntax Description

all	Specifies all device types.
device	Specifies the CleanAir interference device type.
bt-discovery	Specifies the Bluetooth device in discovery mode.
bt-link	Specifies the Bluetooth active link.
canopy	Specifies the Canopy devices.
cont-tx	Specifies the continuous transmitter.
dect-like	Specifies a Digital Enhanced Cordless Communication (DECT)-like phone.
fh	Specifies the 802.11 frequency hopping devices.
inv	Specifies the devices using spectrally inverted Wi-Fi signals.
jammer	Specifies the jammer.
mw-oven	Specifies the microwave oven devices.
nonstd	Specifies the devices using nonstandard Wi-Fi channels.
superag	Specifies 802.11 SuperAG devices.
tdd-tx	Specifies the TDD transmitter.
video	Specifies video cameras.
wimax-fixed	Specifies a WiMax fixed device.
wimax-mobile	Specifies a WiMax mobile device.
xbox	Specifies the Xbox device.
zigbee	Specifies the ZigBee device.

Command Default

None

Command Modes Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples This example shows how to configure the switch to monitor ZigBee interferences:

```
Switch(config)# ap dot11 24ghz cleanair device zigbee
```

Related Commands

Command	Description
ap dot11 cleanair alarm air-quality	Configures CleanAir air-quality alarms for access points.
ap dot11 cleanair	Configures CleanAir on 802.11 networks.
ap dot11 cleanair alarm device	Configures CleanAir interference device alarms.

ap dot11 dot11n

To configure settings for an 802.11n network, use the **ap dot11 dot11n** command.

ap dot11 {**24ghz**| **5ghz**} **dot11n** {**a-mpdu tx priority** {*priority_value* **all** }| **scheduler timeout rt** *scheduler_value*}| **a-msdu tx priority** {*priority_value*| **all**}| **guard-interval** {**any**| **long**}| **mcs tx** *rate*| **rifs rx**}

Syntax Description

24ghz	Specifies the 2.4-GHz band.
5ghz	Specifies the 5-GHz band.
dot11n	Enables 802.11n support.
a-mpdu tx priority	Specifies the traffic that is associated with the priority level that uses Aggregated MAC Protocol Data Unit (A-MPDU) transmission.
priority_value	Aggregated MAC protocol data unit priority level from 0 to 7.
all	Specifies all of the priority levels at once.
a-msdu tx priority	Specifies the traffic that is associated with the priority level that uses Aggregated MAC Service Data Unit (A-MSDU) transmission.
priority_value	Aggregated MAC protocol data unit priority level from 0 to 7.
all	Specifies all of the priority levels at once.
scheduler timeout rt	Configures the 802.11n A-MPDU transmit aggregation scheduler timeout value in milliseconds.
scheduler_value	The 802.11n A-MPDU transmit aggregation scheduler timeout value from 1 to 10000 milliseconds.
guard-interval	Specifies the guard interval.
any	Enables either a short or a long guard interval.
long	Enables only a long guard interval.
mcs tx *rate*	Specifies the modulation and coding scheme (MCS) rates at which data can be transmitted between the access point and the client.

rate	Specifies the modulation and coding scheme data rates. **Note** The range is from 0 to 23.
rifs rx	Specifies the Reduced Interframe Space (RIFS) between data frames.

Command Default By default, priority 0 is enabled.

Command Modes Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines Aggregation is the process of grouping packet data frames together rather than transmitting them separately. The two aggregation methods available are:

- A-MPDU—This aggregation is performed in the software.
- A-MSDU—This aggregation is performed in the hardware

Aggregated MAC Protocol Data Unit priority levels assigned per traffic type are as follows:

- 0—Best effort
- 1—Background
- 2—Spare
- 3—Excellent effort
- 4—Controlled load
- 5—Video, less than 100-ms latency and jitter
- 6—Voice, less than 10-ms latency and jitter
- 7—Network control
- all—Configure all of the priority levels at once.

Note Configure the priority levels to match the aggregation method used by the clients.

Examples

This example shows how to enable 802.11n support on a 2.4-GHz band:

```
Switch(config)# ap dot11 24ghz dot11n
```

This example shows how to configure all the priority levels at once so that the traffic that is associated with the priority level uses A-MSDU transmission:

```
Switch(config)# ap dot11 24ghz dot11n a-msdu tx priority all
```

This example shows how to enable only long guard intervals:

```
Switch(config)# ap dot11 24ghz dot11n guard-interval long
```

This example shows how to specify MCS rates:

```
Switch(config)# ap dot11 24ghz dot11n mcs tx 5
```

This example shows how to enable RIFS:

```
Switch(config)# ap dot11 24ghz dot11n rifs rx
```

Related Commands

Command	Description
ap dot11 dtpc	Configures DTPC settings.

ap dot11 dtpc

To configure Dynamic Transmit Power Control (DTPC) settings, Cisco Client eXtension (CCX) version 5 expedited bandwidth request feature, and the fragmentation threshold on an 802.11 network, use the **ap dot11 dtpc** command.

ap dot11 {**24ghz**| **5ghz**} {**dtpc**| **exp-bwreq**| **fragmentation** *threshold*}

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
dtpc	Specifies Dynamic Transport Power Control (DTPC) settings. **Note** This option is enabled by default.
exp-bwreq	Specifies Cisco Client eXtension (CCX) version 5 expedited bandwidth request feature. **Note** The expedited bandwidth request feature is disabled by default.
fragmentation *threshold*	Specifies the fragmentation threshold. **Note** This option can only used be when the network is disabled using the **ap dot11** {**24ghz | 5ghz**} **shutdown** command.
threshold	Threshold. The range is from 256 to 2346 bytes (inclusive).

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

When the CCX version 5 expedited bandwidth request feature is enabled, the switch configures all joining access points for this feature.

Examples

This example shows how to enable DTPC for the 5 GHz band:

```
Switch(config)# ap dot11 5ghz dtpc
```

This example shows how to enable the CCX expedited bandwidth settings:

```
Switch(config)# ap dot11 5ghz exp-bwrep
```

This example shows how to configure the fragmentation threshold on the 5 GHz band with the threshold number of 1500 bytes:

```
Switch(config)# ap dot11 5ghz fragmentation 1500
```

Related Commands

Command	Description
ap dot11 beaconperiod	Changes the beacon period globally for 2.4 GHz or 5 GHz bands.

ap dot11 edca-parameters

To enable a specific enhanced distributed channel access (EDCA) profile on the 2.4 GHz or 5 GHz bands, use the **ap dot11 edca-parameters** command. To disable an EDCA profile on the 2.4 GHz or 5 GHz bands, use the **no** form of this command.

ap dot11 {**24ghz**| **5ghz**} **edca-parameters** {**custom-voice**| **optimized-video-voice**| **optimized-voice**| **svp-voice**| **wmm-default**}

no ap dot11 {**24ghz**| **5ghz**} **edca-parameters** {**custom-voice**| **optimized-video-voice**| **optimized-voice**| **svp-voice**| **wmm-default**}

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
edca-parameters	Specifies a specific enhanced distributed channel access (EDCA) profile on the 802.11 networks.
custom-voice	Enables custom voice EDCA parameters.
optimized-video-voice	Enables EDCA voice- and video-optimized profile parameters. Choose this option when both voice and video services are deployed on your network.
optimized-voice	Enables EDCA voice-optimized profile parameters. Choose this option when voice services other than SpectraLink are deployed on your network.
svp-voice	Enables SpectraLink voice priority parameters. Choose this option if SpectraLink phones are deployed on your network to improve the quality of calls.
wmm-default	Enables the Wi-Fi Multimedia (WMM) default parameters. Choose this option when voice or video services are not deployed on your network.

Command Default

wmm-default

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples This example shows how to enable SpectraLink voice priority parameters:

```
Switch(config)# ap dot11 24ghz edca-parameters svp-voice
```

ap dot11 rrm group-mode

To set the 802.11 automatic RF group selection mode on, use the **ap dot11 rrm group-mode** command. To set the 802.11 automatic RF group selection mode off, use the **no** form of this command.

ap dot11 {**5ghz**| **24ghz**} **rrm group-mode** {**auto**| **leader**| **off**| **restart**}

no ap dot11 {**5ghz**| **24ghz**} **rrm group-mode**

Syntax Description

5ghz	Specifies the 2.4 GHz band.
24ghz	Specifies the 5 GHz band.
auto	Sets the 802.11 RF group selection to automatic update mode.
leader	Sets the 802.11 RF group selection to static mode, and sets this switch as the group leader.
off	Sets the 802.11 RF group selection to off.
restart	Restarts the 802.11 RF group selection.

Command Default

auto

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to turn the auto RF group selection mode on the 5 GHz band:

```
Switch(config)# ap dot11 5ghz rrm group-mode auto
```

Related Commands

Command	Description
ap dot11 rrm ccx location-measurement	Configures CCX client location measurements.
ap dot11 rrm channel cleanair-event	Configures CleanAir event-driven RRM parameters.
ap dot11 rrm channel dca	Configures DCA algorithm parameters.

Command	Description
ap dot11 rrm group-member	Configures or removes members in an 802.11 static RF group.
ap dot11 rrm logging	Configures report log settings on supported 802.11 networks.
ap dot11 rrm monitor	Configures monitor settings on 802.11 networks.
ap dot11 rrm ndp-type	Configures the 802.11 access point radio resource management neighbor discovery protocol type.

ap dot11 rrm channel cleanair-event

To configure CleanAir event-driven Radio Resource Management (RRM) parameters for all 802.11 Cisco lightweight access points, use the **ap dot11 rrm channel cleanair-event** command. When this parameter is configured, CleanAir access points can change their channel when a source of interference degrades the operations, even if the RRM interval has not expired yet.

ap dot11 {**24ghz**| **5ghz**} **rrm channel** {**cleanair-event sensitivity** *value*}

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
sensitivity	Sets the sensitivity for CleanAir event-driven RRM.
value	Sensitivity value. You can specify any one of the following three optional sensitivity values: • **low—**Specifies low sensitivity. • **medium—**Specifies medium sensitivity. • **high—**Specifies high sensitivity.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to set the high sensitivity for CleanAir event-driven RRM:

```
Switch(config)# ap dot11 24ghz rrm channel cleanair-event sensitivity high
```

Related Commands

Command	Description
ap dot11 rrm ccx location-measurement	Configures CCX client location measurements.
ap dot11 rrm group-mode	Sets on or off the 802.11 automatic RF group selection mode.

Command	Description
ap dot11 rrm channel dca	Configures DCA algorithm parameters.
ap dot11 rrm group-member	Configures or removes members in an 802.11 static RF group.
ap dot11 rrm logging	Configures report log settings on supported 802.11 networks.
ap dot11 rrm monitor	Configures monitor settings on 802.11 networks.
ap dot11 rrm ndp-type	Configures the 802.11 access point radio resource management neighbor discovery protocol type.

ap dot11 l2roam rf-params

To configure the 2.4 GHz or 5 GHz Layer 2 client roaming parameters, use the **ap dot11 l2roam rf-params** command.

ap dot11 {**24ghz**| **5ghz**} **l2roam rf-params custom** *min-rssi roam-hyst scan-thresh trans-time*

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
custom	Specifies custom Layer 2 client roaming RF parameters.
min-rssi	Minimum received signal strength indicator (RSSI) that is required for the client to associate to the access point. If the client's average received signal power dips below this threshold, reliable communication is usually impossible. Clients must already have found and roamed to another access point with a stronger signal before the minimum RSSI value is reached. The valid range is –80 to –90 dBm, and the default value is –85 dBm.
roam-hyst	How much greater the signal strength of a neighboring access point must be in order for the client to roam to it. This parameter is intended to reduce the amount of roaming between access points if the client is physically located on or near the border between the two access points. The valid range is 2 to 4 dB, and the default value is 2 dB.
scan-thresh	Minimum RSSI that is allowed before the client should roam to a better access point. When the RSSI drops below the specified value, the client must be able to roam to a better access point within the specified transition time. This parameter also provides a power-save method to minimize the time that the client spends in active or passive scanning. For example, the client can scan slowly when the RSSI is above the threshold and scan more rapidly when the RSSI is below the threshold. The valid range is –70 to –77 dBm, and the default value is –72 dBm.
trans-time	Maximum time allowed for the client to detect a suitable neighboring access point to roam to and to complete the roam, whenever the RSSI from the client's associated access point is below the scan threshold. The valid range is 1 to 10 seconds, and the default value is 5 seconds.

Command Default

min-rssi	-85
roam-hyst	2
scan-thresh	-72
trans-time	5

Command Modes Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples This example shows how to configure custom Layer 2 client roaming parameters on an 802.11a network:

```
Switch(config)# ap dot11 5ghz l2roam rf-params custom -80 2 -70 7
```

ap dot11 media-stream

To configure media stream multicast-direct and video-direct settings on an 802.11 network, use the **ap dot11 media-stream** command.

ap dot11 {**24ghz**| **5ghz**} **media-stream** {**multicast-direct** {**admission-besteffort**| **client-maximum** *value*| **radio-maximum** *value*}| **video-redirect**}

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
multicast-direct	Specifies the multicast-direct for the 2.4 GHz or a 5 GHz band.
admission-besteffort	Admits the media stream to the best-effort queue.
client-maximum *value*	Specifies the maximum number of streams allowed on a client.
radio-maximum *value*	Specifies the maximum number of streams allowed on a 2.4 GHz or a 5 GHz band.
video-redirect	Specifies the media stream video-redirect for the 2.4 GHz or a 5 GHz band.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Before you configure the media stream multicast-direct or video-redirect on a 802.11 network, ensure that the network is nonoperational.

Examples

This example shows how to enable media stream multicast-direct settings on the 5 GHz band:

```
Switch(config)# ap dot11 5ghz media-stream multicast-direct
```

This example shows how to admit the media stream to the best-effort queue if there is not enough bandwidth to prioritize the flow:

```
Switch(config)# ap dot11 5ghz media-stream multicast-direct admission-besteffort
```

This example shows how to set the maximum number of streams allowed on a client:

```
Switch(config)# ap dot11 5ghz media-stream multicast-direct client-maximum 10
```

This example shows how to enable media stream traffic redirection on the 5 GHz band:

```
Switch(config)# ap dot11 5ghz media-stream video-redirect
```

ap dot11 rrm ccx location-measurement

To configure cisco client Extensions (CCX) client location measurements for 2.4 GHz and 5 GHz bands, use the **ap dot11 rrm ccx location-measurement** command.

ap dot11 {**24ghz**| **5ghz**} **rrm ccx location-measurement** {**disable**| *interval*}

Syntax Description

24ghz	Specifies the 2.4-GHz band.
5ghz	Specifies the 5-GHz band.
disable	Disables support for CCX client location measurements.
interval	Interval from 10 to 32400.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to disable support for 2.4 GHz CCX client location measurements:

```
Switch(config)# no ap dot11 24ghz rrm ccx location-measurement
```

Related Commands

Command	Description
ap dot11 rrm group-mode	Sets on or off the 802.11 automatic RF group selection mode.
ap dot11 rrm channel cleanair-event	Configures CleanAir event-driven RRM parameters.
ap dot11 rrm channel dca	Configures DCA algorithm parameters.
ap dot11 rrm group-member	Configures or removes members in an 802.11 static RF group.
ap dot11 rrm logging	Configures report log settings on supported 802.11 networks.
ap dot11 rrm monitor	Configures monitor settings on 802.11 networks.

Command	Description
ap dot11 rrm ndp-type	Configures the 802.11 access point radio resource management neighbor discovery protocol type.

ap dot11 rrm channel dca

To configure Dynamic Channel Assignment (DCA) algorithm parameters on 802.11 networks, use the **ap dot11 rrm channel dca** command.

ap dot11 {**24ghz**| **5ghz**} **rrm channel dca**{*channel_number*| **anchor-time** *value*| **global**{**auto**| **once**}| **interval** *value*| **min-metric** *value*| **sensitivity**{**high**| **low**| **medium**}}

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
channel_number	Channel number to be added to the DCA list. **Note** The range is from 1 to 14.
anchor-time	Specifies the anchor time for DCA.
value	Hour of time between 0 and 23. These values represent the hour from 12:00 a.m. to 11:00 p.m.
global	Specifies the global DCA mode for the access points in the 802.11 networks.
auto	Enables auto-RF.
once	Enables one-time auto-RF.
interval	Specifies how often the DCA is allowed to run.
value	Interval between the times when DCA is allowed to run. Valid values are 0, 1, 2, 3, 4, 6, 8, 12, or 24 hours. 0 is 10 minutes (600 seconds). Default value is 0 (10 minutes).
min-metric	Specifies the DCA minimum RSSI energy metric.
value	Minimum RSSI energy metric value from –100 to –60.
sensitivity	Specifies how sensitive the DCA algorithm is to environmental changes (for example, signal, load, noise, and interference) when determining whether or not to change channels.
high	Specifies that the DCA algorithm is not particularly sensitive to environmental changes. See the “Usage Guidelines” section for more information.
low	Specifies that the DCA algorithm is moderately sensitive to environmental changes. See the “Usage Guidelines” section for more information.
medium	Specifies that the DCA algorithm is highly sensitive to environmental changes. See the “Usage Guidelines” section for more information.

Command Default None

Command Modes Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The DCA sensitivity thresholds vary by radio band as shown in the table below.

To aid in troubleshooting, the output of this command shows an error code for any failed calls. The table below explains the possible error codes for failed calls.

Table 4: DCA Sensitivity Threshold

Sensitivity	2.4 Ghz DCA Sensitivity Threshold	5 Ghz DCA Sensitivity Threshold
High	5 dB	5 dB
Medium	15 dB	20 dB
Low	30 dB	35 dB

Examples

This example shows how to configure the switch to start running DCA at 5 pm for the 2.4 GHz band:

```
Switch(config)# ap dot11 24ghz rrm channel dca anchor-time 17
```

This example shows how to set the DCA algorithm to run every 10 minutes for the 2.4 GHz band:

```
Switch(config)# ap dot11 24ghz rrm channel dca interval 0
```

This example shows how to configure the value of DCA algorithm's sensitivity to low on the 2.4 GHz band:

```
Switch(config)# ap dot11 24ghz rrm channel dca sensitivity low
```

Related Commands

Command	Description
ap dot11 rrm ccx location-measurement	Configures CCX client location measurements.
ap dot11 rrm channel cleanair-event	Configures CleanAir event-driven RRM parameters.
ap dot11 rrm group-mode	Sets on or off the 802.11 automatic RF group selection mode.

Command	Description
ap dot11 rrm group-member	Configures or removes members in an 802.11 static RF group.
ap dot11 rrm logging	Configures report log settings on supported 802.11 networks.
ap dot11 rrm monitor	Configures monitor settings on 802.11 networks.
ap dot11 rrm ndp-type	Configures the 802.11 access point radio resource management neighbor discovery protocol type.

ap dot11 rrm group-member

To configure members in an 802.11 static RF group, use the **ap dot11 rrm group-member** command. To remove members from 802.11 RF group, use the **no** form of this command.

ap dot11 {**24ghz**| **5ghz**} **rrm group-member** *controller-name controller-ip*

no ap dot11 {**24ghz**| **5ghz**} **rrm group-member** *controller-name controller-ip*

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
controller-name	Name of the switch to be added.
controller-ip	IP address of the switch to be added.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to add a switch in the 5 GHz band RF group:

```
Switch(config)# ap dot11 5ghz rrm group-member cisco-controller 192.0.2.54
```

Related Commands

Command	Description
ap dot11 rrm ccx location-measurement	Configures CCX client location measurements.
ap dot11 rrm channel cleanair-event	Configures CleanAir event-driven RRM parameters.
ap dot11 rrm channel dca	Configures DCA algorithm parameters.
ap dot11 rrm group-mode	Sets on or off the 802.11 automatic RF group selection mode.
ap dot11 rrm logging	Configures report log settings on supported 802.11 networks.

Command	Description
ap dot11 rrm monitor	Configures monitor settings on 802.11 networks.
ap dot11 rrm ndp-type	Configures the 802.11 access point radio resource management neighbor discovery protocol type.

ap dot11 rrm logging

To configure report log settings on supported 802.11 networks, use the **ap dot11 rrm logging** command.

ap dot11 {**24ghz**| **5ghz**} **rrm logging** {**channel**| **coverage**| **foreign**| **load**| **noise**| **performance**| **txpower**}

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
channel	Turns the channel change logging mode on or off. The default mode is off (Disabled).
coverage	Turns the coverage profile logging mode on or off. The default mode is off (Disabled).
foreign	Turns the foreign interference profile logging mode on or off. The default mode is off (Disabled).
load	Turns the load profile logging mode on or off. The default mode is off (Disabled).
noise	Turns the noise profile logging mode on or off. The default mode is off (Disabled).
performance	Turns the performance profile logging mode on or off. The default mode is off (Disabled).
txpower	Turns the transit power change logging mode on or off. The default mode is off (Disabled).

Command Default

Disabled

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to turn the 5 GHz logging channel selection mode on:

```
Switch(config)# ap dot11 5ghz rrm logging channel
```

This example shows how to turn the 5 GHz coverage profile violation logging selection mode on:

```
Switch(config)# ap dot11 5ghz rrm logging coverage
```

This example shows how to turn the 5 GHz foreign interference profile violation logging selection mode on:

```
Switch(config)# ap dot11 5ghz rrm logging foreign
```

This example shows how to turn the 5 GHz load profile logging mode on:

```
Switch(config)# ap dot11 5ghz rrm logging load
```

This example shows how to turn the 5 GHz noise profile logging mode on:

```
Switch(config)# ap dot11 5ghz rrm logging noise
```

This example shows how to turn the 5 GHz performance profile logging mode on:

```
Switch(config)# ap dot11 5ghz rrm logging performance
```

This example shows how to turn the 5 GHz transmit power change mode on:

```
Switch(config)# ap dot11 5ghz rrm logging txpower
```

Related Commands

Command	Description
ap dot11 rrm ccx location-measurement	Configures CCX client location measurements.
ap dot11 rrm channel cleanair-event	Configures CleanAir event-driven RRM parameters.
ap dot11 rrm channel dca	Configures DCA algorithm parameters.
ap dot11 rrm group-member	Configures or removes members in an 802.11 static RF group.
ap dot11 rrm group-mode	Sets on or off the 802.11 automatic RF group selection mode.
ap dot11 rrm monitor	Configures monitor settings on 802.11 networks.
ap dot11 rrm ndp-type	Configures the 802.11 access point radio resource management neighbor discovery protocol type.

ap dot11 rrm monitor

To Configure monitor settings on the 802.11 networks, use the **ap dot11 rrm monitor** command.

ap dot11 {**24ghz**| **5ghz**} **rrm monitor**{**channel-list**| {**all**| **country**| **dca**}| **coverage**| **load**| **noise**| **signal**} *seconds*

Syntax Description

24ghz	Specifies the 802.11b parameters.
5ghz	Specifies the 802.11a parameters.
channel-list all	Monitors the noise, interference, and rogue monitoring channel list for all channels.
channel-list country	Monitors the noise, interference, and rogue monitoring channel list for the channels used in the configured country code.
channel-list dca	Monitors the noise, interference, and rogue monitoring channel list for the channels used by automatic channel assignment.
coverage	Specifies the coverage measurement interval.
load	Specifies the load measurement interval.
noise	Specifies the noise measurement interval.
signal	Specifies the signal measurement interval.
rssi-normalization	Configure RRM Neighbor Discovery RSSI Normalization.
seconds	Measurement interval time from 60 to 3600 seconds.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to monitor the channels used in the configured country:

```
Switch(config)# ap dot11 24ghz rrm monitor channel-list country
```

This example shows how to set the coverage measurement interval to 60 seconds:

```
Switch(config)# ap dot11 24ghz rrm monitor coverage 60
```

Related Commands

Command	Description
ap dot11 rrm ccx location-measurement	Configures CCX client location measurements.
ap dot11 rrm channel cleanair-event	Configures CleanAir event-driven RRM parameters.
ap dot11 rrm channel dca	Configures DCA algorithm parameters.
ap dot11 rrm group-member	Configures or removes members in an 802.11 static RF group.
ap dot11 rrm logging	Configures report log settings on supported 802.11 networks.
ap dot11 rrm group-mode	Sets on or off the 802.11 automatic RF group selection mode.
ap dot11 rrm ndp-type	Configures the 802.11 access point radio resource management neighbor discovery protocol type.

ap dot11 rrm ndp-type

To configure the 802.11 access point radio resource management neighbor discovery protocol type, use the **ap dot11 rrm ndp-type** command.

ap dot11 {**24ghz**| **5ghz**} **rrm ndp-type** {**protected**| **transparent**}

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
protected	Specifies the Tx RRM protected (encrypted) neighbor discovery protocol.
transparent	Specifies the Tx RRM transparent (not encrypted) neighbor discovery protocol.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Before you configure the 802.11 access point RRM neighbor discovery protocol type, ensure that you have disabled the network by entering the **ap dot11** {**24ghz | 5ghz**} **shutdown** command.

Examples

This example shows how to enable the 802.11a access point RRM neighbor discovery protocol type as protected:

```
Switch(config)# ap dot11 5ghz rrm ndp-type protected
```

Related Commands

Command	Description
ap dot11 rrm ccx location-measurement	Configures CCX client location measurements.
ap dot11 rrm channel cleanair-event	Configures CleanAir event-driven RRM parameters.
ap dot11 rrm channel dca	Configures DCA algorithm parameters.

Command	Description
ap dot11 rrm group-member	Configures or removes members in an 802.11 static RF group.
ap dot11 rrm logging	Configures report log settings on supported 802.11 networks.
ap dot11 rrm group-mode	Sets on or off the 802.11 automatic RF group selection mode.
ap dot11 rrm monitor	Configures monitor settings on 802.11 networks.

ap dot11 5ghz dot11ac frame-burst

To configure the 802.11ac Frame Burst use the **apdot115ghzdot11acframe-burst** command. Use the **no** forms to disable the bursting of 802.11ac A-MPDUs.

ap dot115ghzdot11acframe-burst

noap dot115ghzdot11acframe-burst

ap dot115ghzdot11acframe-burstautomatic

noap dot115ghzdot11acframe-burstautomatic

Syntax Description

5ghz	Configures the 802.11a parameters.
frame-burst	Configures the bursting of 802.11ac A-MPDUs.

Command Default

No

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3E	This command was introduced.

Examples

This is the example shows how to configure the bursting of 802.11ac A-MPDUs.

```
Switchap dot11 5ghz
  dot11ac frame-burst
```

ap dot1x max-sessions

To configure the maximum number of simultaneous 802.1X sessions allowed per access point, use the **ap dot1x max-sessions** command.

ap dot1x max-sessions *num-of-sessions*

Syntax Description

num-of-sessions	Number of maximum 802.1X sessions initiated per AP at a time. The range is from 0 to 255, where 0 indicates unlimited.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

It is required to limit the number of simultaneous 802.1X sessions initiated per access point to protect against flooding attacks caused by using 802.1X messages.

Examples

This example shows how to configure the maximum number of simultaneous 802.1X sessions:

```
Switch(config)# ap dot1x max-sessions 100
```

ap dot1x username

To configure the 802.1X username and password for all access points that are currently joined to the switch and any access points that join the switch in the future, use the **ap dot1x username** command. To disable the 802.1X username and password for all access points that are currently joined to the switch, use the **no** form of this command.

ap dot1x username *user-id* **password** {**0**| **8**} *password-string*

no ap dot1x username *user-id***password** {**0**| **8**} *password-string*

Syntax Description

user-id	Username.
password	Specifies an 802.1X password for all access points.
0	Specifies an unencrypted password.
8	Specifies an AES encrypted password.
password_string	Password.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

You should enter a strong password. Strong passwords have the following characteristics:

- They are at least eight characters long.
- They contain a combination of uppercase and lowercase letters, numbers, and symbols.
- They are not words in any language.

You can set the values for a specific access point.

Examples

This example shows how to configure the global authentication username and password for all access points:

```
Switch(config)# ap dot1x username cisco123 password 0 cisco2020
```

Related Commands

Command	Description
show ap summary	Displays the status summary of all access points.

ap ethernet duplex

To configure the Ethernet port duplex and speed settings of the lightweight access points, use the **ap ethernet duplex** command. To disable the Ethernet port duplex and speed settings of lightweight access points, use the **no** form of this command.

ap ethernet duplex *duplex* **speed** *speed*

no ap ethernet

Syntax Description

duplex	Ethernet port duplex settings. You can specify the following options to configure the duplex settings: • **auto—**Specifies the Ethernet port duplex auto settings. • **half—**Specifies the Ethernet port duplex half settings. • **full—**Specifies the Ethernet port duplex full settings.
speed	Specifies the Ethernet port speed settings.
speed	Ethernet port speed settings. You can specify the following options to configure the speed settings: • **auto—**Specifies the Ethernet port speed to auto. • **10—**Specifies the Ethernet port speed to 10 Mbps. • **100—**Specifies the Ethernet port speed to 100 Mbps. • **1000—**Specifies the Ethernet port speed to 1000 Mbps.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure the Ethernet port duplex full settings as 1000 Mbps for all access points:

```
Switch(config)# ap ethernet duplex full speed 1000
```

Related Commands

Command	Description
show ap summary	Displays the status summary of all access points.

ap group

To create a new access point group, use the **ap group** command. To remove an access point group, use the **no** form of this command.

ap group *group-name*

no ap group *group-name*

Syntax Description

group-name	Access point group name.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

An error message appears if you try to delete an access point group that is used by at least one access point. Before you can delete an AP group, move all APs in this group to another group. The access points are not moved to the default-group access point group automatically. To see the APs, enter the **show ap summary** command. To move access points, enter the **ap name** *Cisco-AP* **ap-groupname** *Group-Name* command.

Examples

This example shows how to create a new access point group:

```
Switch(config)# ap group sampleapgroup
```

Related Commands

Command	Description
ap name ap-groupname	Adds an access point to a specific access point group.

ap image

To configure an image on all access points that are associated to the switch, use the **ap image** command.

ap image {**predownload**| **reset**| **swap**}

Syntax Description

predownload	Instructs all the access points to start predownloading an image.
reset	Instructs all the access points to reboot.
swap	Instructs all the access points to swap the image.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to predownload an image to all access points:

```
Switch# ap image predownload
```

This example shows how to reboot all access points:

```
Switch# ap image reset
```

This example shows how to swap the access point's primary and secondary images:

```
Switch# ap image swap
```

Related Commands

Command	Description
show ap image	Displays the images present on access points.

ap ipv6 tcp adjust-mss

To configure IPv6 TCP maximum segment size (MSS) value for all Cisco APs, use the **ap ipv6 tcp adjust-mss** command.

ap ipv6 tcp adjust-mss *size*

no ap ipv6 tcp adjust-mss *size*

Syntax Description

adjust-mss	Configures IPv6 TCP MSS settings for all Cisco APs.
size	MSS value in the range of 500 to 1440.

Command Default

None

Command Modes

Global configuration.

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The MSS value must be in the range of 500 to 1440.

Examples

This example shows how to configure the IPv6 TCP MSS value to 600 for all Cisco APs:

```
Switch(config)# ap ipv6 tcp adjust-mss 600
```

ap led

To enable the LED state for an access point, use the **ap led** command. To disable the LED state for an access point, use the **no** form of this command.

ap led

no ap led

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable the LED state for an access point:

```
Switch(config)# ap led
```

ap link-encryption

To enable Datagram Transport Layer Security (DTLS) data encryption for access points, use the **ap link-encryption** command. To disable the DTLS data encryption for access points, use the **no** form of this command.

ap link-encryption

no ap link-encryption

Syntax Description

This command has no keywords and arguments.

Command Default

Disabled

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable data encryption for all the access points that are joined to the controller:

```
Switch(config)# ap link-encryption
```

Related Commands

Command	Description
ap link-latency	Enables or disables link latency for access points.

ap link-latency

To enable link latency for all access points that are currently associated to the switch, use the **ap link-latency** command. To disable link latency all access points that are currently associated to the switch, use the **no** form of this command.

ap link-latency [**reset**]

no ap link-latency

Syntax Description

reset	(Optional) Resets all link latency for all access points.

Command Default

Link latency is disabled by default.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

This command enables or disables link latency only for those access points that are currently joined to the switch. It does not apply to access points that join in the future.

Examples

This example shows how to enable the link latency for all access points:

```
Switch(config)# ap link-latency
```

Related Commands

Command	Description
ap link-encryption	Enables or disables DTLS data encryption for access points.

ap mgmtuser username

To configure the username, password, and secret password for access point management, use the **ap mgmtuser username** command.

ap mgmtuser username *username* **password** *password_type password* **secret** *secret_type secret*

Syntax Description

username	Specifies the username for access point management.
password	Specifies the password for access point management.
password_type	Password type. You can specify any one of the following two password types: • **0**—Specifies that an unencrypted password will follow. • **8**—Specifies that an AES encrypted password will follow.
password	Access point management password. **Note** The password does not get encrypted by service-password encryption.
secret	Specifies the secret password for privileged access point management.
secret_type	Secret type. You can specify any one of the following two secret types: • **0**—Specifies that an unencrypted secret password will follow. • **8**—Specifies that an AES encrypted secret password will follow.
secret	Access point management secret password.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

To specify a strong password, the following password requirements should be met:

- The password should contain characters from at least three of the following classes: lowercase letters, uppercase letters, digits, and special characters.
- No character in the password can be repeated more than three times consecutively.
- The password should not contain a management username or the reverse of a username.
- The password should not contain words such as Cisco, oscic, admin, nimda or any variant obtained by changing the capitalization of letters by substituting 1, |, or ! or substituting 0 for o or substituting $ for s.

To specify a strong secret password, the following requirement should be met:

- The secret password should contain characters from at least three of the following classes: lowercase letters, uppercase letters, digits, or special characters.

Examples

This example shows how to add a username, password, and secret password for access point management:

```
Switch(config)# ap mgmtuser username glbusr password 0 Arc_1234 secret 0 Mid_1234
```

ap name ap-groupname

To add a Cisco lightweight access point to a specific access point group, use the **ap name ap-groupname** command.

ap name *ap-name* **ap-groupname** *group-name*

Syntax Description

ap-name	Name of the Cisco lightweight access point.
group-name	Descriptive name for the access point group.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The Cisco lightweight access point must be disabled before changing this parameter.

Examples

This example shows how to add the access point AP01 to the access point group superusers:

```
Switch# ap name AP01 ap-groupname superusers
```

Related Commands

Command	Description
ap group	Creates a new access point group.
show ap summary	Displays the status summary of all access points.

ap name antenna band mode

To configure the antenna mode, use the **ap name<AP name> antenna-band-mode{ single | dual }** command.

ap name*ap-name* **antenna-band-mode**{**single| dual**}

Syntax Description

ap- name	Name of the Cisco lightweight access point.
antenna-band-mode	Instructs the access point to enable the band mode of antenna.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3E Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure the antenna band mode of access point.

```
Switchap name <ap-name> antenna-band-mode single
```

ap name bhrate

To configure the Cisco bridge backhaul Tx rate, use the **ap name bhrate** command.

ap name *ap-name* **bhrate** *kbps*

Syntax Description

ap-name	Name of the Cisco access point.
kbps	Cisco bridge backhaul Tx rate in kbps. The valid values are 6000, 12000, 18000, 24000, 36000, 48000, and 54000.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure the Cisco bridge backhaul Tx rate to 54000 kbps:

```
Switch# ap name AP02 bhrate 54000
```

ap name bridgegroupname

To set a bridge group name on a Cisco lightweight access point, use the **ap name bridgegroupname** command. To delete a bridge group name on a Cisco lightweight access point, use the **no** form of this command.

ap name *ap-name* **bridgegroupname** *bridge_group_name*

ap name *ap-name* **no bridgegroupname**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Only access points with the same bridge group name can connect to each other. Changing the access point bridgegroupname may strand the bridge access point.

Examples

This example shows how to set a bridge group name on Cisco access point's bridge group name AP02:

```
Switch# ap name AP02 bridgegroupname West
```

This example shows how to delete a bridge group name on Cisco access point's bridge group name AP02:

```
Switch# ap name AP02 no bridgegroupname
```

ap name bridging

To enable Ethernet-to-Ethernet bridging on a Cisco lightweight access point, use the **ap name bridging** command. To disable Ethernet-to-Ethernet bridging on a Cisco lightweight access point, use the **no** form of this command.

ap name *ap-name* **bridging**

ap name *ap-name* **no bridging**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable Ethernet-to-Ethernet bridging on an access point:

```
Switch# ap name TSIM_AP2 bridging
```

Related Commands

Command	Description
ap bridging	Enables or disables Ethernet to 802.11 bridging on access points.

ap name cdp interface

To enable the Cisco Discovery Protocol (CDP) on a Cisco lightweight access point, use the **ap name** command. To disable the Cisco Discovery Protocol (CDP) on a Cisco lightweight access point, use the **no** form of this command.

ap name *ap-name* **cdp interface** {**ethernet** *ethernet-id*| **radio** *radio-id*}

ap name *ap-name* [**no**] **cdp interface** {**ethernet** *ethernet-id*| **radio** *radio-id*}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
ethernet	Enables CDP on an Ethernet interface.
ethernet-id	Ethernet interface number from 0 to 3.
radio	Enables CDP for a radio interface.
radio-id	Radio ID slot number from 0 to 3.

Command Default

Disabled on all access points.

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

CDP over Ethernet/radio interfaces is available only when CDP is enabled. After you enable CDP on all access points that are joined to the switch, you can disable and then reenable CDP on individual access points by using the **ap name** *ap-name* **cdp interface ethernet** *ethernet-id* cisco_ap command. After you disable CDP on all access points that are joined to the switch, you cannot enable and then disable CDP on individual access points.

Examples

This example shows how to enable CDP for Ethernet interface number 0 on an access point:

```
Switch# ap name TSIM_AP2 cdp interface ethernet 0
```

ap name console-redirect

To redirect the remote debug output of a Cisco lightweight access point to the console, use the **ap name console-redirect** command. To disable the redirection of the remote debug output of a Cisco lightweight access point to the console, use the **no** form of this command.

ap name *ap-name* **console-redirect**

ap name *ap-name* [**no**] **console-redirect**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable redirecting remote debug output of a Cisco access point named AP02 to the console:

```
Switch# ap name AP02 console-redirect
```

ap name capwap retransmit

To configure the access point control packet retransmission interval and control packet retransmission count, use the **ap name capwap retransmit** command.

ap name *ap-name* **capwap retransmit** {**count** *count-value*| **interval** *interval-time*}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
count	Sets the number of times control packet will be retransmitted.
count-value	Number of times that the control packet will be retransmitted from 3 to 8.
interval	Sets the control packet retransmission timeout interval.
interval-time	Control packet retransmission timeout from 2 to 5 seconds.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure the retransmission interval for an access point:

```
Switch# ap name AP01 capwap retransmit interval 5
```

This example shows how to configure the retransmission retry count for a specific access point:

```
Switch# ap name AP01 capwap retransmit count 5
```

ap name command

To execute a command remotely on a specific Cisco access point, use the **ap name command** command.

ap name *ap-name* **command** "*command* "

Syntax Description

ap-name	Name of the Cisco access point.
command	Command to be executed on a Cisco access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to remotely enter the **show ip interface brief** command on the Cisco access point named TSIM_AP2:

```
Switch# ap name AP2 command "show ip interface brief"
```

ap name core-dump

To configure a Cisco lightweight access point's memory core dump, use the **ap name core-dump** command. To disable a Cisco lightweight access point's memory core dump, use the **no** form of this command.

ap name *ap-name* **core-dump** *tftp-ip-addr filename* {**compress**| **uncompress**}

ap name *ap-name* [**no**]**core-dump**

Syntax Description

ap-name	Name of the access point.
tftp-ip-addr	IP address of the TFTP server to which the access point sends core dump files.
filename	Name that the access point used to label the core file.
compress	Compresses the core dump file.
uncompress	Uncompresses the core dump file.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The access point must be able to reach the TFTP server before you can use this command.

Examples

This example shows how to configure and compress the core dump file:

```
Switch# ap name AP2 core-dump 192.1.1.1 log compress
```

Related Commands

Command	Description
ap core-dump	Enables access point memory core dump settings.

ap name country

To configure the country of operation for a Cisco lightweight access point, use the **ap name country** command.

ap name *ap-name* **country** *country-code*

Syntax Description

ap-name	Name of the Cisco lightweight access point.
country-code	Two-letter or three-letter country code.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Cisco switchs must be installed by a network administrator or qualified IT professional and the installer must select the proper country code. Following installation, access to the unit should be password protected by the installer to maintain compliance with regulatory requirements and to ensure proper unit functionality. See the related product guide for the most recent country codes and regulatory domains. Also, access point regulatory domains are defined during the access point manufacturing process. You can change the access point country code if the new country code matches a country that is valid within the access point regulatory domain. If you try to enter a country that is not valid to the access point regulatory domain, the command fails.

Examples

This example shows how to configure the Cisco lightweight access point's country code to DE:

```
Switch# ap name AP2 country JP
```

Related Commands

Command	Description
ap country	Configures country codes for a switch.

ap name crash-file

To manage crash data and radio core files for the Cisco access point, use the **ap name crash-file** command.

ap name *ap-name* **crash-file** {**get-crash-data**| **get-radio-core-dump** {**slot 0**| **slot 1**}}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
get-crash-data	Collects the latest crash data for a Cisco lightweight access point.
get-radio-core-dump	Gets a Cisco lightweight access point's radio core dump
slot	Slot ID for Cisco access point.
0	Specifies Slot 0.
1	Specifies Slot 1.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to collect the latest crash data for access point AP3:

```
Switch# ap name AP3 crash-file get-crash-data
```

This example shows how to collect the radio core dump for access point AP02 and slot 0:

```
Switch# ap name AP02 crash-file get-radio-core-dump slot 0
```

Related Commands

Command	Description
ap crash-file	Deletes crash and radio core dump files.

ap name dot11 24ghz rrm coverage

To configure coverage hole detection settings on the 2.4 GHz band, use the **ap name dot11 24ghz rrm coverage** command.

ap name *ap-name* **dot11 24ghz rrm coverage** {**exception** *value*| **level** *value*}

Syntax Description

ap-name	Name of the Cisco access point.
exception	Specifies the percentage of clients on an access point that are experiencing a low signal level but cannot roam to another access point.
value	Percentage of clients. Valid values are from 0 to 100%. **Note** The default is 25%.
level	Specifies the minimum number of clients on an access point with a received signal strength indication (RSSI) value at or below the data or voice RSSI threshold.
value	Minimum number of clients. Valid values are from 1 to 75. **Note** The default is 3.

Command Default

The default for the *exception* parameter is 25% and the default for the *level* parameter is 3.

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

If you enable coverage hole detection, the switch automatically determines, based on data that is received from the access points, whether any access points have clients that are potentially located in areas with poor coverage.

If both the number and percentage of failed packets exceed the values that you entered in the **ap dot11 24ghz rrm coverage data packet-count** *count* and **ap dot11 24ghz rrm coverage data fail-percentage** *percentage* commands for a 5-second period, the client is considered to be in a pre-alarm condition. The switch uses this information to distinguish between real and false coverage holes and excludes clients with poor roaming logic. A coverage hole is detected if both the number and percentage of failed clients meet or exceed the values entered in the **ap dot11 24ghz rrm coverage exception** and **ap dot11 24ghz rrm coverage level** commands

over a 90-second period. The switch determines whether the coverage hole can be corrected and, if appropriate, mitigates the coverage hole by increasing the transmit power level for that specific access point.

Examples

This example shows how to specify the percentage of clients for an access point 2.4 GHz radio that is experiencing a low signal level:

```
Switch# ap name AP2 dot11 24ghz rrm coverage exception 25%
```

This example shows how to specify the minimum number of clients on an 802.11b access point with an RSSI value at or below the RSSI threshold:

```
Switch# ap name AP2 dot11 24ghz rrm coverage level 60
```

Related Commands

Command	Description
ap name dot11 49ghz rrm profile	Configures RRM performance profile settings.
ap name dot11 5ghz rrm channel	Configures a new channel using an 802.11h channel announcement.

ap name dot11 49ghz rrm profile

To configure Radio Resource Management (RRM) performance profile settings for a Cisco lightweight access point on a 4.9 GHz public safety channel, use the **ap name dot11 49ghz rrm profile** command.

ap name *ap-name* **dot11 49ghz rrm profile** {**clients** *value*| **customize**| **exception** *value*| **foreign** *value*| **level** *value*| **noise** *value*| **throughput** *vaue*| **utilization** *value*}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
clients	Sets the access point client threshold.
value	Access point client threshold from 1 to 75 clients. **Note** The default client threshold is 12.
customize	Turns on performance profile customization for an access point. **Note** Performance profile customization is off by default.
exception *value*	Sets the 802.11a Cisco access point coverage exception level from 0 to100 percent.
foreign	Sets the foreign 802.11 transmitter interference threshold.
value	Foreign 802.11 transmitter interference threshold from 0 to 100 percent. **Note** The default is 10 percent.
level *value*	Sets the 802.11a Cisco access point client minimum exception level from 1 to 75 clients.
noise	Sets the 802.11 foreign noise threshold.
value	802.11 foreign noise threshold from –127 to 0 dBm. **Note** The default is –70 dBm.
throughput	Sets the data-rate throughput threshold.
value	802.11 throughput threshold from 1000 to 10000000 bytes per second. **Note** The default is 1,000,000 bytes per second.
utilization	Sets the RF utilization threshold. **Note** The operating system generates a trap when this threshold is exceeded.

value	802.11 RF utilization threshold from 0 to 100 percent. **Note** The default is 80 percent.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to set the AP1 clients threshold to 75 clients:

```
Switch# ap name AP1 dot11 49ghz rrm profile clients 75
```

This example shows how to turn performance on profile customization for Cisco lightweight access point AP1 on the 4.9 GHz channel:

```
Switch# ap name AP1 dot11 49ghz rrm profile customize
```

This example shows how to set the foreign transmitter interference threshold for AP1 to 0 percent:

```
Switch# ap name AP1 dot11 49ghz rrm profile foreign 0
```

This example shows how to set the foreign noise threshold for AP1 to 0 dBm:

```
Switch# ap name AP1 dot11 49ghz rrm profile noise 0
```

This example shows how to set the AP1 data-rate threshold to 10000000 bytes per second:

```
Switch# ap name AP1 dot11 49ghz rrm profile throughput 10000000
```

This example shows how to set the RF utilization threshold for AP1 to 100 percent:

```
Switch# ap name AP1 dot11 49ghz rrm profile utilization 100
```

Related Commands

Command	Description
ap name dot11 24ghz rrm coverage	Configures coverage hole detection settings.
ap name dot11 5ghz rrm channel	Configures a new channel using an 802.11h channel announcement.

ap name dot11 5ghz rrm channel

To configure a new channel using an 802.11h channel announcement, use the **ap name dot11 5ghz rrm channel** command.

ap name *ap-name* **dot11 5ghz rrm channel** *channel*

Syntax Description

ap-name	Name of the Cisco lightweight access point.
channel	New channel.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure a new channel using the 802.11h channel:

```
Switch# ap name AP01 dot11 5ghz rrm channel 140
```

Related Commands

Command	Description
ap name dot11 24ghz rrm coverage	Configures coverage hole detection settings.
ap name dot11 49ghz rrm profile	Configures RRM performance profile settings.

ap name dot11 antenna

To configure radio antenna settings for Cisco lightweight access points on different 802.11 networks, use the **ap name dot11 antenna** command.

ap name *ap-name* **dot11** {**24ghz**| **5ghz**} **antenna** {**ext-ant-gain** *gain*| **mode** {**omni**| **sectorA**| **sectorB**}| **selection** {**external**| **internal**}}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
ext-ant-gain	Specifies the external antenna gain for an 802.11 network. **Note** Before you enter this command, disable the Cisco radio by using the **ap dot11** {**24ghz** | **5ghz**} **shutdown** command. After you enter this command, reenable the Cisco radio by using the **no ap dot11** {**24ghz** | **5ghz**} **shutdown** command.
gain	Antenna gain in 0.5 dBm units (for example, 2.5 dBm = 5).
mode	Specifies that the Cisco lightweight access point is to use one internal antenna for an 802.11 sectorized 180-degree coverage pattern or both internal antennas for an 802.11 360-degree omnidirectional pattern.
omni	Specifies to use both internal antennas.
sectorA	Specifies to use only the side A internal antenna.
sectorB	Specifies to use only the side B internal antenna.
selection	Selects the internal or external antenna selection for a Cisco lightweight access point on an 802.11 network.
external	Specifies the external antenna.
internal	Specifies the internal antenna.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure a 5 GHz external antenna gain of 0.5 dBm for AP1:

```
Switch# ap name AP1 dot11 5ghz antenna ext-ant-gain 0.5
```

This example shows how to configure access point AP01 antennas for a 360-degree omnidirectional pattern on a 2.4 GHz band:

```
Switch# ap name AP01 dot11 24ghz antenna mode omni
```

This example shows how to configure access point AP02 on a 2.4 GHz band to use the internal antenna:

```
Switch# ap name AP02 dot11 24ghz antenna selection interval
```

Related Commands

Command	Description
ap name dot11 antenna extantgain	Configures radio antenna settings on 4.9 GHz and 5.8 GHz public safety chaannels.

ap name dot11 antenna extantgain

To configure radio antenna settings for Cisco lightweight access points on 4.9 GHz and 5.8 GHz public safety channels, use the **ap name dot11 antenna extantgain** command.

ap name *ap-name* **dot11** {**49ghz**| **58ghz**} {**antenna extantgain** *gain*}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
49ghz	Specifies 4.9 GHz public safety channel settings.
58ghz	Specifies 5.8 GHz public safety channel settings.
gain	Antenna gain in 0.5 dBm units (for example, 2.5 dBm = 5).

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Before you enter this command, disable the Cisco radio by using the **ap dot11** {**24ghz | 5ghz**} **shutdown** command. After you enter this command, reenable the Cisco radio by using the **no ap dot11** {**24ghz | 5ghz**} **shutdown** command.

Examples

This example shows how to configure an external antenna gain of 0.5 dBm for AP1 on a 4.9 GHz public safety channel:

```
Switch# ap name AP1 dot11 49ghz antenna extantgain 0.5
```

Related Commands

Command	Description
ap name dot11 antenna	Configures radio antenna settings on different 802.11 networks.

ap name dot11 cleanair

To configure CleanAir settings for a specific Cisco lightweight access point on 802.11 networks, use the **ap name dot11 cleanair** command.

ap name *ap-name* **dot11** {**24ghz**| **5ghz**} **cleanair**

Syntax Description

ap-name	Name of the Cisco lightweight access point.
24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.

Command Default

Disabled.

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable CleanAir on the 2.4 GHz band:

```
Switch# ap name AP01 dot11 24ghz cleanair
```

ap name dot11 dot11n antenna

To configure an access point to use a specific antenna, use the **ap name dot11 dot11n antenna** command.

ap name *ap-name* **dot11** {**24ghz**| **5ghz**} **dot11n antenna** {**A**| **B**| **C**| **D**}

Syntax Description

ap-name	Access point name.
24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
A	Specifies antenna port A.
B	Specifies antenna port B.
C	Specifies antenna port C.
D	Specifies antenna port D.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable antenna B on access point AP02:

```
Switch# ap name AP02 dot11 5ghz dot11n antenna B
```

This example shows how to disable antenna C on access point AP02:

```
Switch# ap name AP02 no dot11 5ghz dot11n C
```

ap name dot11 dual-band cleanair

To configure CleanAir for a dual band radio, use the **ap name dot11 dual-band cleanair** command.

ap name *ap-name* **dot11 dual-band cleanair**

ap name *ap-name* **no dot11 dual-band cleanair**

Syntax Description

ap-name	Name of the Cisco AP.
cleanair	Specifies the CleanAir feature.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable CleanAir for a dual band radio of the access point AP01:

```
Switch# ap name AP01 dot11 dual-band cleanair
```

Related Commands

Command	Description
ap name dot11 dual-band shutdown	Disables dual band radio on a Cisco AP.
show ap dot11 cleanair config	Displays the CleanAir configuration for 802.11 networks.
show ap name config dot11	Displays 802.11 configuration information that corresponds to a specific access point.

ap name dot11 dual-band shutdown

To disable dual band radio on a Cisco AP, use the **ap name dot11 dual-band shutdown** command.

ap name *ap-name* **dot11 dual-band shutdown**

ap name *ap-name* **no dot11 dual-band shutdown**

Syntax Description

ap-name	Name of the Cisco AP.
shutdown	Disables the dual band radio on the Cisco AP.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to disable dual band radio on the Cisco access point AP01:

```
Switch# ap name AP01 dot11 dual-band shutdown
```

ap name dot11 rrm ccx

To configure Cisco Client eXtension (CCX) Radio Resource Management (RRM) settings for specific Cisco lightweight access points on 802.11 networks, use the **ap name dot11 rrm ccx** command.

ap name *ap-name* **dot11** {**24ghz**| **5ghz**} **rrm ccx** {**customize**| **location-measurement** *interval*}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
customize	Enables 802.11 CCX options.
location-measurement	Configures the CCX client location measurements.
interval	Interval from 10 to 32400.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure CCX client location measurements for an access point in the 2.4 GHz band:

```
Switch# ap name AP01 dot11 24ghz rrm ccx location-measurement 3200
```

Related Commands

Command	Description
ap name dot11 rrm profile	Configures RRM performance profile settings for a specific access point.

ap name dot11 rrm profile

To configure Radio Resource Management (RRM) performance profile settings for a Cisco lightweight access point, use the **ap name dot11 rrm profile** command.

ap name *ap-name* **dot11** {**24ghz**| **5ghz**} **rrm profile** {**clients** *value*| **customize**| **foreign** *value*| **noise** *value*| **throughput** *value*| **utilization** *value*}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
clients	Sets the access point client threshold.
value	Access point client threshold from 1 to 75 clients. **Note** The default client threshold is 12.
customize	Turns on performance profile customization for an access point. **Note** Performance profile customization is off by default.
foreign	Sets the foreign 802.11 transmitter interference threshold.
value	Foreign 802.11 transmitter interference threshold from 0 to 100 percent. **Note** The default is 10 percent.
noise	Sets the 802.11 foreign noise threshold.
value	802.11 foreign noise threshold between –127 and 0 dBm. **Note** The default is —70 dBm.
throughput	Sets the data-rate throughput threshold.
value	802.11 throughput threshold from 1000 to 10000000 bytes per second. **Note** The default is 1,000,000 bytes per second.
utilization	Sets the RF utilization threshold. **Note** The operating system generates a trap when this threshold is exceeded.
value	802.11 RF utilization threshold from 0 to 100 percent. **Note** The default is 80 percent.

Command Default None

Command Modes Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to set the AP1 clients threshold to 75 clients:

```
Switch# ap name AP1 dot11 24ghz rrm profile clients 75
```

This example shows how to turn performance profile customization on for 802.11a Cisco lightweight access point AP1:

```
Switch# ap name AP1 dot11 5ghz rrm profile customize
```

This example shows how to set the foreign 802.11a transmitter interference threshold for AP1 to 0 percent:

```
Switch# ap name AP1 dot11 5ghz rrm profile foreign 0
```

This example shows how to set the 802.11a foreign noise threshold for AP1 to 0 dBm:

```
Switch# ap name AP1 dot11 5ghz rrm profile noise 0
```

This example shows how to set the AP1 data-rate threshold to 10000000 bytes per second:

```
Switch# ap name AP1 dot11 5ghz rrm profile throughput 10000000
```

This example shows how to set the RF utilization threshold for AP1 to 100 percent:

```
Switch# ap name AP1 dot11 5ghz rrm profile utilization 100
```

Related Commands

Command	Description
ap name dot11 rrm ccx	Configures CCX RRM settings for a specific access point.

ap name dot11 txpower

To configure the transmit power level for a single access point in an 802.11 network, use the **ap name dot11 txpower** command.

ap name *ap-name* **dot11** {**24ghz**| **5ghz**} {**shutdown**| **txpower** {**auto**| *power-level*}}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
shutdown	Disables the 802.11 networks.
auto	Specifies the power level is automatically set by Radio Resource Management (RRM) for the 802.11 Cisco radio.
power-level	Manual transmit power level number for the access point.

Command Default

The command default (txpower auto) is for automatic configuration by RRM.

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to automatically set the 2.4 GHz radio transmit power for access point AP1:

```
Switch# ap name AP1 dot11 24ghz txpower auto
```

Related Commands

Command	Description
show ap config dot11	Displays the detailed configuration of 802.11-58G radios on access points.

ap name dot1x-user

To configure the global authentication username and password for an access point that is currently joined to the switch, use the **ap name dot1x-user** command. To disable 802.1X authentication for a specific access point, use the **no** form of this command.

ap name *ap-name* **dot1x-user** {**global-override**| **username** *user-id* **password** *passwd*}

ap name *ap-name* [**no**] **dot1x-user**

Syntax Description

ap-name	Name of the access point.
global-override	Forces the access point to use the switch's global authentication settings.
username	Specifies to add a username.
user-id	Username.
password	Specifies to add a password.
passwd	Password.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

You should enter a strong password. Strong passwords have the following characteristics:

- They are at least eight characters long.
- They contain a combination of uppercase and lowercase letters, numbers, and symbols.
- They are not words in any language.

  You can set the values for a specific access point.

You can disable 802.1X authentication for a specific access point only if global 802.1X authentication is not enabled. If global 802.1X authentication is enabled, you can disable 802.1X for all access points only.

Examples

This example shows how to configure a specific username and password for dot1x authentication:

```
Switch# ap name AP02 dot1x-user username Cisco123 password Cisco2020
```

This example shows how to disable the authentication for access point cisco_ap1:

```
Switch# ap name cisco_ap1 no dot1x-user
```

Related Commands

Command	Description
show ap summary	Displays the status summary of all access points.

ap name ethernet

To configure ethernet port settings of a Cisco lightweight access point, use the **ap name ethernet** command. To remove configured port settings or set of defaults, use the **no** form of this command.

ap name *ap-name* **ethernet** *intf-number* **mode** {**access** *vlan-id*| **trunk** [**add**| **delete**]} **native-vlan** *vlan-id*

ap name *ap-name* **no ethernet** *intf-number* **mode** {**access**| **trunk native-vlan**}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
intf-number	Ethernet interface number from 0 to 3.
mode	Configures access or trunk mode.
access	Configures the port in access mode.
vlan-id	VLAN identifier.
trunk	Specifies the port in trunk mode.
add	(Optional) Adds a VLAN or trunk mode.
delete	(Optional) Deletes a VLAN or trunk mode.
native-vlan	Specifies a native VLAN.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure access mode for a Cisco access point.

```
Switch# ap name AP2 ethernet 0 mode access 1
```

ap name ethernet duplex

To configure the Ethernet port duplex and speed settings of the lightweight access points, use the **ap name ethernet duplex** command.

ap name *ap-name* **ethernet duplex** {**auto**| **full**| **half**} **speed**{**10**| **100**| **1000**| **auto**}

Syntax Description

ap-name	Name of the Cisco access point.
auto	Specifies the Ethernet port duplex auto settings.
full	Specifies the Ethernet port duplex full settings.
half	Specifies the Ethernet port duplex half settings.
speed	Specifies the Ethernet port speed settings.
10	Specifies the Ethernet port speed to 10 Mbps.
100	Specifies the Ethernet port speed to 100 Mbps.
1000	Specifies the Ethernet port speed to 1000 Mbps.
auto	Specifies the Ethernet port setting for all connected access points.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure the Ethernet port to full duplex and 1 Gbps for an access point:

```
Switch# ap name AP2 ethernet duplex full 1000
```

Related Commands

Command	Description
show ap summary	Displays the status summary of all access points.

ap name key-zeroize

To enable the FIPS key-zeroization on an Access Point, use the **ap name<AP name> key-zeroize**command.

ap name*ap-name* **key-zeroize**

Syntax Description

ap- name	Name of the Cisco lightweight access point.
key-zeroize	Instructs the access point to enable the FIPS key-zeroization on AP.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3ECisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable FIPS key-zeroization.

```
Switchap name <AP Name> key-zeroize
```

ap name image

To configure an image on a specific access point, use the **ap name image** command.

ap name *ap-name* **image** {**predownload**| **swap**}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
predownload	Instructs the access point to start the image predownload.
swap	Instructs the access point to swap the image.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to predownload an image to an access point:

```
Switch# ap name AP2 image predownload
```

This example shows how to swap an access point's primary and secondary images:

```
Switch# ap name AP2 image swap
```

Related Commands

Command	Description
show ap image	Displays the images present on access points.
ap image	Configures an image on access points.

ap name ipv6 tcp adjust-mss

To configure IPv6 TCP maximum segment size (MSS) value for a Cisco AP, use the **ap name ipv6 tcp adjust-mss** command.

ap name *ap-name* **ipv6 tcp adjust-mss** *size*

ap name *ap-name* **no ipv6 tcp adjust-mss**

Syntax Description

ap-name	Name of the Cisco AP.
adjust-mss	Configures IPv6 TCP MSS settings for all Cisco APs.
size	MSS value in the range of 500 to 1440.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The MSS value must be in the range of 500 to 1440.

Examples

This example shows how to configure the IPv6 TCP MSS value to 600 for a Cisco access point AP01:

```
Switch# ap name AP01 ipv6 tcp adjust-mss 600
```

ap name jumbo mtu

To configure the Jumbo MTU support, use the **ap name<AP name>jumbo-mtu**command.

ap name*ap-name* {**jumbo-mtu| no jumbo-mtu**}

Syntax Description

ap- name	Name of the Cisco lightweight access point.
jumbo-mtu	Instructs the access point to enable the Jumbo MTU support.
no jumbo-mtu	Instructs the access point to disable the Jumbo MTU support.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3ECisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure the Jumbo MTU support.

```
Switchap name <AP Name> jumbo-mtu
```

ap name led

To enable the LED state for an access point, use the **ap name led** command. To disable the LED state for an access point, use the **no** form of this command.

ap name *ap-name* **led**

no ap name *ap-name* [**led**] **led**

Syntax Description

ap-name	Name of the Cisco lightweight access point.
led	Enables the access point's LED state.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable the LED state for an access point:

```
Switch# ap name AP2 led
```

This example shows how to disable the LED state for an access point:

```
Switch# ap name AP2 no led
```

ap name link-encryption

To enable Datagram Transport Layer Security (DTLS) data encryption for specific Cisco lightweight access points, use the **ap name link-encryption** command. To disable DTLS data encryption for specific Cisco lightweight access points, use the **no** form of this command.

ap name *ap-name* **link-encryption**

ap name *ap-name* **no link-encryption**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
	This command was introduced.

Examples

This example shows how to enable data encryption for an access point:

```
Switch# ap name AP02 link-encryption
```

ap name link-latency

To enable link latency for a specific Cisco lightweight access point that is currently associated to the switch, use the **ap name link-latency** command. To disable link latency for a specific Cisco lightweight access point that is currently associated to the switch, use the **no** form of this command.

ap name *ap-name* **link-latency**

ap name *ap-name* **no link-latency**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

Link latency is disabled by default.

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

This command enables or disables link latency only for access points that are currently joined to the switch. It does not apply to access points that join in the future.

Examples

This example shows how to enable link latency on access points:

```
Switch# ap name AP2 link-latency
```

ap name location

To modify the descriptive location of a Cisco lightweight access point, use the **ap name location** command.

ap name *ap-name* **location** *location*

Syntax Description

ap-name	Name of the Cisco lightweight access point.
location	Location name of the access point (enclosed by double quotation marks).

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The Cisco lightweight access point must be disabled before changing this parameter.

Examples

This example shows how to configure the descriptive location for access point AP1:

```
Switch# ap name AP1 location Building1
```

Related Commands

Command	Description
show ap summary	Displays the status summary of all access points.

ap name mgmtuser

To configure the username, password, and secret password for access point management, use the **ap name mgmtuser** command. To force a specific access point to use the switch's global credentials, use the **no** form of this command.

ap name *ap-name* **mgmtuser username** *username* **password** *password* **secret** *secret*

ap name *ap-name* **no mgmtuser**

Syntax Description

ap-name	Name of the Cisco lightweight access point.
username	Specifies the username for access point management.
username	Management username.
password	Specifies the password for access point management.
password	Access point management password.
secret	Specifies the secret password for privileged access point management.
secret	Access point management secret password.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

To specify a strong password, you should adhere to the following requirements:

- The password should contain characters from at least three of the following classes: lowercase letters, uppercase letters, digits, and special characters.
- No character in the password can be repeated more than three times consecutively.
- The password cannot contain a management username or the reverse of a username.
- The password cannot contain words such as Cisco, oscic, admin, nimda or any variant obtained by changing the capitalization of letters by substituting 1, |, or ! or substituting 0 for o or substituting $ for s.

The following requirement is enforced on the secret password:

- The secret password cannot contain characters from at least three of the following classes: lowercase letters, uppercase letters, digits, or special characters.

Examples

This example shows how to add a username, password, and secret password for access point management:

```
Switch# ap name AP01 mgmtuser username acd password Arc_1234 secret Mid_1234
```

ap name mode

To change a Cisco switch communication option for an individual Cisco lightweight access point, use the **ap name mode** command.

ap name *ap-name* **mode**{**local submode**{**none**| **wips**}| **monitor submode**{**none**| **wips**}| **rogue**| **se-connect**| **sniffer**}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
local	Converts from an indoor mesh access point (MAP or RAP) to a nonmesh lightweight access point (local mode).
submode	Specifies wIPS submode on an access point.
none	Disables the wIPS on an access point.
monitor	Specifies monitor mode settings.
wips	Enables the wIPS submode on an access point.
rogue	Enables wired rogue detector mode on an access point.
se-connect	Enables spectrum expert mode on an access point.
sniffer	Enables wireless sniffer mode on an access point.

Command Default

Local

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The sniffer mode captures and forwards all the packets from the clients on that channel to a remote machine that runs AiroPeek or other supported packet analyzer software. It includes information on the timestamp, signal strength, packet size and so on.

Examples

This example shows how to set the switch to communicate with access point AP01 in local mode:

```
Switch# ap name AP01 mode local submode none
```

This example shows how to set the switch to communicate with access point AP01 in a wired rogue access point detector mode:

```
Switch# ap name AP01 mode rogue
```

This example shows how to set the switch to communicate with access point AP02 in wireless sniffer mode:

```
Switch# ap name AP02 mode sniffer
```

Related Commands

Command	Description
show ap monitor-mode summary	Displays the current channel-optimized monitor mode settings.

ap name monitor-mode

To configure Cisco lightweight access point channel optimization, use the **ap name monitor-mode** command.

ap name *ap-name* **monitor-mode** {**no-optimization| tracking-opt| wips-optimized**}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
no-optimization	Specifies no channel scanning optimization for the access point.
tracking-opt	Enables tracking optimized channel scanning for the access point.
wips-optimized	Enables wIPS optimized channel scanning for the access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure a Cisco wireless intrusion prevention system (wIPS) monitor mode on access point AP01:

```
Switch# ap name AP01 monitor-mode wips
```

Related Commands

Command	Description
show ap monitor-mode summary	Displays the current channel-optimized monitor mode settings.
show ap config	Displays the global syslog server settings for access points.

ap name monitor-mode dot11b

To configures 802.11b scanning channels for a monitor-mode access point, use the **ap name monitor-mode dot11b** command.

ap name *ap-name* **monitor-mode dot11b fast-channel** *channel1* [*channel2*] [*channel3*] [*channel4*]

Syntax Description

ap-name	Name of the access point.
fast-channel	Specifies the 2.4 GHz band scanning channel (or channels) for a monitor-mode access point.
channel1	Scanning channel1.
channel2	(Optional) Scanning channel2.
channel3	(Optional) Scanning channel3.
channel4	(Optional) Scanning channel4.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure an access point in tracking optimized mode to listen to channels 1, 6, and 11:

```
Switch# ap name AP01 monitor-mode dot11b fast-channel 1 6 11
```

Related Commands

Command	Description
show ap monitor-mode summary	Displays the current channel-optimized monitor mode settings.

ap name name

To modify the name of a Cisco lightweight access point, use the **ap name name** command.

ap name *ap-name* **name** *new-name*

Syntax Description

ap-name	Current Cisco lightweight access point name.
new-name	Desired Cisco lightweight access point name.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to modify the name of access point AP1 to AP2:

```
Switch# ap name AP1 name AP2
```

Related Commands

Command	Description
show ap config	Displays the global syslog server settings for access points.

ap name no dot11 shutdown

To enable radio transmission for an individual Cisco radio on an 802.11 network, use the **ap name no dot11 shutdown** command.

ap name *ap-name* **no dot11** {**24ghz**| **5ghz**} **shutdown**

Syntax Description

ap-name	Name of the Cisco lightweight access point.
24ghz	Specifies the 2.4 GHz radios.
5ghz	Specifies the 5 GHz radios.

Command Default

The transmission is enabled for the entire network by default.

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Note Use this command with the **ap name** *Cisco-AP* **dot11 5ghz shutdown** command when configuring 802.11 settings.

This command can be used any time that the CLI interface is active.

Examples

This example shows how to enable radio transmission on the 5 GHz band for access point AP1:

```
Switch# ap name AP1 no dot11 5ghz shutdown
```

ap name power

To enable the Cisco Power over Ethernet (PoE) feature for access points, use the **ap name power** command. To disable the Cisco PoE feature for access points, use the **no** form of this command.

ap name *ap-name* **power** {**injector**| **pre-standard**}

ap name *ap-name* **no power** {**injector**| **pre-standard**}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
injector	Specifies the power injector state for an access point.
pre-standard	Enables the inline power Cisco prestandard switch state for an access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable the power injector state for all access points:

```
Switch# ap name AP01 power injector
```

This example shows how to enable the inline power Cisco prestandard switch state for access point AP02:

```
Switch# ap name AP02 power pre-standard
```

ap name shutdown

To disable a Cisco lightweight access point, use the **ap name shutdown** command. To enable a Cisco lightweight access point, use the **no** form of this command.

ap name *ap-name* **shutdown**

ap name *ap-name* **no shutdown**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example how to disable a specific Cisco lightweight access point:

```
Switch# ap name AP2 shutdown
```

ap name slot shutdown

To disable a slot on a Cisco lightweight access point, use the **ap name slot shutdown** command. To enable a slot on a Cisco lightweight access point, use the **no** form of the command.

ap name *ap-name* **slot** {**0**| **1**| **2**| **3**} **shutdown**

ap name *ap-name* **no slot** {**0**| **1**| **2**| **3**} **shutdown**

Syntax Description

ap-name	Name of the Cisco lightweight access point.
0	Enables slot number 0 on a Cisco lightweight access point.
1	Enables slot number 1 on a Cisco lightweight access point.
2	Enables slot number 2 on a Cisco lightweight access point.
3	Enables slot number 3 on a Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable slot 0 on a Cisco access point named TSIM_AP2:

```
Switch# ap name TSIM_AP2 no slot 0 shutdown
```

ap name sniff

To enable sniffing on an access point, use the **ap name sniff** command. To disable sniffing on an access point, use the **no** form of this command.

ap name *ap-name* **sniff** {**dot11a**| **dot11b**}

ap name *ap-name* **no sniff** {**dot11a**| **dot11b**}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
dot11a	Specifies the 2.4 GHz band.
dot11b	Specifies the 5 GHz band.
channel	Valid channel to be sniffed. For the 5 GHz band, the range is 36 to 165. For the 2.4 GHz band, the range is 1 to 14.
server-ip-address	IP address of the remote machine running Omnipeek, Airopeek, AirMagnet, or Wireshark software.

Command Default

Channel 36

Command Modes

Any command mode

Command History

Release	Modification
	This command was introduced.

Usage Guidelines

When the sniffer feature is enabled on an access point, it starts sniffing the signal on the given channel. It captures and forwards all the packets to the remote computer that runs Omnipeek, Airopeek, AirMagnet, or Wireshark software. It includes information about the timestamp, signal strength, packet size and so on.

Before an access point can act as a sniffer, a remote computer that runs one of the listed packet analyzers must be set up so that it can receive packets that are sent by the access point.

Examples

This example shows how to enable the sniffing on the 5 GHz band for an access point on the primary wireless LAN controller:

```
Switch# ap name AP2 sniff dot11a 36 192.0.2.54
```

ap name ssh

To enable Secure Shell (SSH) connectivity on a specific Cisco lightweight access point, use the **ap name ssh** command. To disable SSH connectivity on a specific Cisco lightweight access point, use the **no** form of this command.

ap name *ap-name* **ssh**

ap name *ap-name* **no ssh**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The Cisco lightweight access point associates with this Cisco switch for all network operations and in the event of a hardware reset.

Examples

This example shows how to enable SSH connectivity on access point Cisco_ap2:

```
Switch# ap name Cisco_ap2 ssh
```

ap name telnet

To enable Telnet connectivity on an access point, use the **ap name telnet** command. To disable Telnet connectivity on an access point, use the **no** form of this command.

ap name *ap-name* **telnet**

ap name *ap-name* **no telnet**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to disable Telnet connectivity on access point cisco_ap1:

```
Switch# ap name cisco_ap1 no telnet
```

ap name power injector

To configure the power injector state for an access point, use the **ap name power injector** command. To disable the Cisco Power over Ethernet (PoE) feature for access points, use the **no** form of this command.

ap name *ap-name* **power injector** {**installed**| **override**| **switch-mac-address** *switch-MAC-address*}

ap name *ap-name* **no power injector**

Syntax Description

ap-name	Name of he Cisco lightweight access point.
installed	Detects the MAC address of the current switch port that has a power injector.
override	Overrides the safety checks and assumes a power injector is always installed.
switch-mac-address	Specifies the MAC address of the switch port with an installed power injector.
switch-MAC-address	MAC address of the switch port with an installed power injector.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable the power injector state for an access point:

```
Switch# ap name AP01 power injector switch-mac-address aaaa.bbbb.cccc
```

ap name power pre-standard

To enable the inline power Cisco prestandard switch state for an access point, use the **ap name power pre-standard** command. To disable the inline power Cisco prestandard switch state for an access point, use the **no** form of this command.

ap name *ap-name* **power pre-standard**

ap name *ap-name* **no power pre-standard**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable the inline power Cisco prestandard switch state for access point AP02:

```
Switch# ap name AP02 power pre-standard
```

This example shows how to disable the inline power Cisco prestandard switch state for access point AP02:

```
Switch# ap name AP02 no power pre-standard
```

ap name reset-button

To configure the Reset button for an access point, use the **ap name reset-button** command.

ap name *ap-name* **reset-button**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable the Reset button for access point AP03:

```
Switch# ap name AP03 reset-button
```

ap name reset

To reset a specific Cisco lightweight access point, use the **ap name reset** command.

ap name *ap-name* **reset**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to reset a Cisco lightweight access point named AP2:

```
Switch# ap name AP2 reset
```

Related Commands

Command	Description
show ap config	Displays the global syslog server settings for access points.

ap name slot

To configure various slot parameters, use the **ap name slot** command. To disable a slot on a Cisco lightweight access point, use the **no** form of this command.

ap name *ap-name* **slot** *slot-number* {**channel** {**global**| **number** *channel-number*| **width** *channel-width*}| **rtsthreshold** *value*| **shutdown**| **txpower** {**global**| *channel-level*}}

ap name *ap-name* **no slot** {**0**| **1**| **2**| **3**} **shutdown**

Syntax Description

ap-name	Name of the Cisco access point.
slot-number	Slot downlink radio to which the channel is assigned. You can specify the following slot numbers: • **0—**Enables slot number 0 on a Cisco lightweight access point. • **1—**Enables slot number 1 on a Cisco lightweight access point. • **2—**Enables slot number 2 on a Cisco lightweight access point. • **3—**Enables slot number 3 on a Cisco lightweight access point.
channel	Specifies the channel for the slot.
global	Specifies channel global properties for the slot.
number	Specifies the channel number for the slot.
channel-number	Channel number from 1 to 169.
width	Specifies the channel width for the slot.
channel-width	Channel width from 20 to 40.
rtsthreshold	Specifies the RTS/CTS threshold for an access point.
value	RTS/CTS threshold value from 0 to 65535.
shutdown	Shuts down the slot.
txpower	Specifies Tx power for the slot.
global	Specifies auto-RF for the slot.
channel-level	Transmit power level for the slot from 1 to 7.

Command Default

None

Command Modes Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples This example shows how to enable slot 3 for the access point abc:

```
Switch# ap name abc slot 3
```

This example shows how to configure RTS for the access point abc:

```
Switch# ap name abc slot 3 rtsthreshold 54
```

ap name static-ip

To configure lightweight access point static IP settings, use the **ap name static-ip** command. To disable the Cisco lightweight access point static IP address, use the **no** form of this command.

ap name *ap-name* **static-ip** {**domain** *domain-name*| **ip-address** *ip-address* **netmask** *netmask* **gateway** *gateway*| **nameserver** *ip-address*}

ap name *ap-name* **no static-ip**

Syntax Description

ap-name	Name of the access point.
domain	Specifies the Cisco access point domain name.
domain-name	Domain to which a specific access point belongs.
ip-address	Specifies the Cisco access point static IP address.
ip-address	Cisco access point static IP address.
netmask	Specifies the Cisco access point static IP netmask.
netmask	Cisco access point static IP netmask.
gateway	Specifies the Cisco access point gateway.
gateway	IP address of the Cisco access point gateway.
nameserver	Specifies a DNS server so that a specific access point can discover the switch using DNS resolution.
ip-address	IP address of the DNS server.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

An access point cannot discover the switch using Domain Name System (DNS) resolution if a static IP address is configured for the access point unless you specify a DNS server and the domain to which the access point belongs.

Examples

This example shows how to configure an access point static IP address:

```
Switch# ap name AP2 static-ip ip-address 192.0.2.54 netmask 255.255.255.0 gateway 192.0.2.1
```

ap name stats-timer

To set the time in seconds that the Cisco lightweight access point sends its DOT11 statistics to the Cisco switch, use the **ap name stats-timer** command.

ap name *ap-name* **stats-timer** *timer-value*

Syntax Description

ap-name	Name of the Cisco lightweight access point.
timer-value	Time in seconds from 0 to 65535. A zero value disables the timer.

Command Default

0 (Disabled).

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

A value of 0 (zero) means that the Cisco lightweight access point does not send any DOT11 statistics. The acceptable range for the timer is from 0 to 65535 seconds, and the Cisco lightweight access point must be disabled to set this value.

Examples

This example shows how to set the stats timer to 600 seconds for access point AP2:

```
Switch# ap name AP2 stats-timer 600
```

ap name syslog host

To configure a syslog server for a specific Cisco lightweight access point, use the **ap name syslog host** command.

ap name *ap-name* **syslog host** *syslog-host-ip-address*

Syntax Description

ap-name	Name of the Cisco lightweight access point.
syslog-host-ip-address	IP address of the syslog server.

Command Default

255.255.255.255

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

By default, the syslog server IP address for each access point is 255.255.255.255, which indicates that it is not yet set. When the default value is used, the global access point syslog server IP address is pushed to the access point.

Examples

This example shows how to configure a syslog server:

```
Switch# ap name AP2 syslog host 192.0.2.54
```

Related Commands

Command	Description
ap syslog	Configures the system logging settings for access points.
show ap config	Displays the global syslog server settings for access points.
show ap name config	Displays common information and Ethernet VLAN tagging information for a specific access point.

ap name syslog level

To configure the system logging level, use the **ap name syslog level** command.

ap name *ap-name* **syslog level** {**alert| critical| debug| emergency| errors| information| notification| warning**}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
alert	Specifies alert level system logging.
critical	Specifies critical level system logging.
debug	Specifies debug level system logging.
emergency	Specifies emergency level system logging.
errors	Specifies error level system logging.
information	Specifies information level system logging.
notification	Specifies notification level system logging.
warning	Specifies warning level system logging.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure alert level system logging:

```
Switch# ap name AP2 syslog level alert
```

ap name tcp-adjust-mss

To enable or disable the TCP maximum segment size (MSS) on a particular access point, use the **ap name tcp-adjust-mss** command. To disable the TCP maximum segment size (MSS) on a particular access point, use the **no** form of this command.

ap name *ap-name* **tcp-adjust-mss size** *size*

ap name *ap-name* **no tcp-adjust-mss**

Syntax Description

ap-name	Name of the access point.
size	Maximum segment size, from 536 to 1363 bytes.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

When you enable this feature, the access point checks for TCP packets to and from wireless clients in its data path. If the MSS of these packets is greater than the value that you configured or greater than the default value for the Control and Provisioning of Wireless Access Points (CAPWAP) tunnel, the access point changes the MSS to the new configured value. If the MSS of these packets is greater than the value that you have configured or greater than the default value for the CAPWAP tunnel, the access point changes the MSS to the newly configured value.

Examples

This example shows how to enable the TCP MSS on access point Cisco_ap1:

```
Switch# ap name ciscoap tcp-adjust-mss size 1200
```

Related Commands

Command	Description
show ap name tcp-adjust-mss	Displays tcp-adjust-mss for an access point.

ap name tftp-downgrade

To configure the settings used for downgrading a lightweight access point to an autonomous access point, use the **ap name tftp-downgrade** command.

ap name *ap-name* **tftp-downgrade** *tftp-server-ip filename*

Syntax Description

ap-name	Name of the Cisco lightweight access point.
tftp-server-ip	IP address of the TFTP server.
filename	Filename of the access point image file on the TFTP server.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure the settings for downgrading access point AP1:

```
Switch# ap name Ap01 tftp-downgrade 172.21.12.45 ap3g1-k9w7-tar.124-25d.JA.tar
```

ap power injector

To configure the power injector state for all the Cisco lightweight access points that are joined to the switch, use the **ap power injector** command. To delete the power injector state for all access points, use the **no** form of this command.

ap power injector {**installed**| **override**| **switch-mac-address** *switch-MAC-addr*}

no ap power injector

Syntax Description

installed	Detects the MAC address of the current switch port that has a power injector.
override	Overrides the safety checks and assumes a power injector is always installed.
switch-mac-address	Specifies the MAC address of the switch port with an installed power injector.
switch-MAC-address	Specifies the MAC address of the switch port with an installed power injector.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable the power injector state for all the Cisco lightweight access points that are joined to the switch:

```
Switch(config)# ap power injector switch-mac-address aaaa.bbbb.cccc
```

ap power pre-standard

To set the Cisco lightweight access points that are joined to the switch to be powered by a high-power Cisco switch, use the **ap power pre-standard** command. To disable the pre standard power for all access points, use the **no** form of this command.

ap power pre-standard

no ap power pre-standard

Syntax Description

This command has no keywords and arguments.

Command Default

Disabled

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to enable the inline power Cisco prestandard switch state for access point AP02:

```
Controller(config)# ap power pre-standard
```

ap reporting-period

To configure the access point rogue/error reporting period, use the **ap reporting-period** command. To disable the access point rogue/error reporting period, use the **no** form of this command.

ap reporting-period *value*

no ap reporting-period

Syntax Description

value	Time period in seconds from 10 to 120.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example show how to configure the access point rogue/error reporting:

```
Switch(config)# ap reporting-period 100
```

This example show how to disable the access point rogue/error reporting:

```
Switch(config)# no ap reporting-period 100
```

ap reset-button

To configure the Reset button for all Cisco lightweight access points that are joined to the switch, use the **ap reset-button** command. To disable the Reset button for all access points, use the **no** form of this command.

ap reset-button

no ap reset-button

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure the Reset button for all access points that are joined to the controller:

```
Switch(config)# ap reset-button
```

service-policy type control subscriber

To apply the global subscriber control policy, use the **service-policy type control subscriber** <*subscriber-policy-name*>command.

service-policytypecontrolsubscriber<*subscriber-policy-name*>

Syntax Description

service-policy	Instructs the access point to apply global subscriber control policy.
<*subscriber-policy-name*>	Name of the subscriber policy.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3E Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to disable the global subscriber control policy.

```
Switchno service-policy type control subscriber
```

ap static-ip

To configure Cisco lightweight access point static IP address settings, use the **ap static-ip** command. To disable access point static IP settings, use the **no** form of this command.

ap static-ip {**domain** *domain-name*| **name-server** *ip-address*}

no ap static-ip {**domain**| **name-server**}

Syntax Description

domain	Specifies the domain to which a specific access point or all access points belong.
domain-name	Domain name.
name-server	Specifies a DNS server so that a specific access point or all access points can discover the switch using DNS resolution.
ip-address	DNS server IP address.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

An access point cannot discover the switch using Domain Name System (DNS) resolution if a static IP address is configured for the access point, unless you specify a DNS server and the domain to which the access point belongs.

Examples

This example shows how to configure a static IP address for all access points:

```
Switch(config)# ap static-ip domain cisco.com
```

ap syslog

To configure the system logging settings for all Cisco lightweight access points that are joined to the switch, use the **ap syslog** command.

ap syslog {**host** *ipaddress*| **level**{**alert**| **critical**| **debug**| **emergency**| **errors**| **information**| **notification**| **warning**}}

Syntax Description

host	Specifies a global syslog server for all access points that join the switch.
ipaddress	IP address of the syslog server.
level	Specifies the system logging level for all the access points joined to the switch.
alert	Specifies alert level system logging for all Cisco access points.
critical	Specifies critical level system logging for all Cisco access points.
debug	Specifies debug level system logging for all Cisco access points.
emergency	Specifies emergency level system logging for all Cisco access points.
errors	Specifies errors level system logging for all Cisco access points.
information	Specifies information level system logging for all Cisco access points.
notification	Specifies notification level system logging for all Cisco access points.
warning	Specifies warning level system logging for all Cisco access points.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

By default, the global syslog server IP address for all access points is 255.255.255.255. Make sure that the access points can reach the subnet on which the syslog server resides before configuring the syslog server on the switch. If the access points cannot reach this subnet, the access points are unable to send out syslog messages.

Examples This example shows how to configure a global syslog server for all access points:

```
Switch(config)# ap syslog host 172.21.34.45
```

ap name no controller

To change the order of configured primary, secondary and tertiary wireless LAN controllers use the following commands.

ap name*ap-name* **no controller primary**

ap name*ap-name* **no controller secondary**

ap name*ap-name* **no controller tertiary**

Syntax Description

ap- name	Name of the Cisco lightweight access point.
no controller primary	Instructs the access point to unconfigure the primary controller.
no controller secondary	Instructs the access point to unconfigure the secondary controller.
no controller tertiary	Instructs the access point to unconfigure the tertiary controller.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3ECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

If you have the primary, secondary, and tertiary wireless LAN controllers configured for an access point and you require swap the controller names and the corresponding IP addresses you can uncofigure the primary and configure the secondary controller.

Examples

This example shows how to unconfigure the primary controller.

```
Switchap name <AP Name> no controller primary.
```

ap tcp-adjust-mss size

To enable the TCP maximum segment size (MSS) on all Cisco lightweight access points, use the **ap tcp-adjust-mss size** command. To disable the TCP maximum segment size (MSS) on all Cisco lightweight access points **no** form of this command.

ap tcp-adjust-mss size *size*

no ap tcp-adjust-mss

Syntax Description

size	Maximum segment size, from 536 to 1363 bytes.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

When you enable this feature, the access point checks for TCP packets to and from wireless clients in its data path. If the MSS of these packets is greater than the value that you configured or greater than the default value for the Control and Provisioning of Wireless Access Points (CAPWAP) tunnel, the access point changes the MSS to the new configured value.

Examples

This example shows how to enable the TCP MSS on all access points with a segment size of 1200:

```
Switch(config)# ap tcp-adjust-mss 1200
```

Related Commands

Command	Description
show ap name tcp-adjust-mss	Displays tcp-adjust-mss for an access point.

ap tftp-downgrade

To configure the settings used for downgrading a lightweight access point to an autonomous access point, use the **ap tftp-downgrade** command. To disable the settings used for downgrading a lightweight access point to an autonomous access point, use the **no** form of this command.

ap tftp-downgrade *tftp-server-ip filename*

no ap tftp-downgrade

Syntax Description

tftp-server-ip	IP address of the TFTP server.
filename	Filename of the access point image file on the TFTP server.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure the settings for downgrading all access points:

```
Switch(config)# ap tftp-downgrade 172.21.23.45 ap3g1-k9w7-tar.124-25d.JA.tar
```

config wireless wps rogue client mse

To configure a rogue MSE client, use **wirelesswps rogueclientmse**command.

To view the summary of the wireless client statistics, use **show wirelessclientclient-statisticssummary** command.

wirelesswpsrogueclientmse

showwirelessclientclient-statisticssummary

Syntax Description

rogueclient mse	Instructs the access point to enable configuring a rogue MSE client.
nowireless wps	Instructs the access point to disable the configuring a rogue MSE client.
client-statisticssummary	Instructs to view the summary of the wireless client statistics.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3ECisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to configure a rogue MSE client.

```
Switchwireless wps rogue client mse
```

clear ap name tsm dot11 all

To clear the traffic stream metrics (TSM) statistics for a particular access point or all the access points, use the **clear ap name tsm dot11 all** command.

clear ap name *ap-name* **tsm dot11** {**24ghz**| **5ghz**} **all**

Syntax Description

ap-name	Name of the Cisco lightweight access point.
24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
all	Specifies all access points.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to clear the TSM statistics for an access point on the 2.4 GHz band:

```
Switch# clear ap name AP1 tsm dot11 24ghz all
```

clear ap config

To clear (reset to the default values) a lightweight access point's configuration settings, use the **clear ap config** command.

clear ap config *ap-name* [**eventlog**| **keep-ip-config**]

Syntax Description

ap-name	Name of the Cisco lightweight access point.
eventlog	(Optional) Deletes the existing event log and creates an empty event log file for a specific access point or for all access points joined to the switch.
keep-ip-config	(Optional) Specifies not to erase the static IP configuration of the Cisco access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Entering this command does not clear the static IP address of the access point.

Examples

This example shows how to clear the access point's configuration settings for the access point named AP01:

```
Switch# clear ap config AP01
```

Related Commands

Command	Description
show ap config	Displays the global syslog server settings for access points.

clear ap eventlog-all

To delete the existing event log and create an empty event log file for all access points, use the **clear ap eventlog-all** command.

clear ap eventlog-all

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to delete the event log for all access points:

```
Switch# clear ap eventlog-all
```

clear ap join statistics

To clear the join statistics for all access points or for a specific access point, use the **clear ap join statistics** command.

clear ap join statistics

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to clear the join statistics of all the access points:

```
Switch# clear ap join statistics
```

clear ap mac-address

To clear the MAC address for the join statistics for a specific Cisco lightweight access point, use the **clear ap mac-address** command.

clear ap mac-address *mac* **join statistics**

Syntax Description

mac	Access point MAC address.
join statistics	Clears join statistics.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to clear the join statistics of an access point:

```
Switch# clear ap mac-address aaaa.bbbb.cccc join statistics
```

clear ap name wlan statistics

To clear WLAN statistics, use the **clear ap name wlan statistics** command.

clear ap name *ap-name* **wlan statistics**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to clear the WLAN configuration elements of the access point cisco_ap:

```
Switch# clear ap name cisco_ap wlan statistics
```

show ap cac voice

To display the list of all access points with brief voice statistics, which include bandwidth used, maximum bandwidth available, and the call information, use the **show ap cac voice** command.

show ap cac voice

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display voice CAC details that correspond to Cisco lightweight access points:

```
controller# show ap cac voice

1) AP Name: AP01
============================

  Wireless Bandwidth (In MeanTime mt)

       Slot#  Radio         Calls  BW-Max  BW-Alloc  Bw-InUse (%age)
  ------------------------------------------------------------------
  1    0      802.11b/g     0      23437   0         0
  2    1      802.11a       0      23437   0         0

  Wired Bandwidth (in Kbps)

       Slot#  Wlan-ID  Wlan-Name             BW-Config   BW-Avail
  ------------------------------------------------------------------
  1    0      1        maria-open            0           0
  2    0      12       24                    0           0
  3    1      1        maria-open            0           0
  4    1      12       24                    0           0


2) AP Name: AP02
============================

  Wireless Bandwidth (In MeanTime mt)

       Slot#  Radio         Calls  BW-Max  BW-Alloc  Bw-InUse (%age)
  ------------------------------------------------------------------
  1    0      802.11b/g     0      23437   0         0
  2    1      802.11a       0      23437   0         0

  Wired Bandwidth (in Kbps)
```

```
     Slot#  Wlan-ID  Wlan-Name             BW-Config   BW-Avail
-------------------------------------------------------------------
1    0      1        maria-open            0           0
2    0      12       24                    0           0
3    1      1        maria-open            0           0
4    1      12       24                    0           0
```

show ap capwap

To display the Control and Provisioning of Wireless Access Points (CAPWAP) configuration that is applied to all access points, use the **show ap capwap** command.

show ap capwap {**retransmit**| **timers**| **summary**}

Syntax Description

retransmit	Displays the access point CAPWAP retransmit parameters.
timers	Displays the rogue access point entry timers.
summary	Displays the network configuration of the Cisco switch.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display the access point CAPWAP retransmit parameters:

```
Controller# show ap capwap retransmit

Global control packet retransmit interval : 3
Global control packet retransmit count : 5

AP Name                          Retransmit Interval            Retransmit Count
-----------------------------------------------------------------------------------
AP01                              3                               5

AP02                              3                               5

AP03                              3                               5

AP04                              3                               5

AP05                              3                               5

AP07                              3                               5

AP08                              3                               5

AP09                              3                               5

AP10                              3                               5

AP11                              3                               5
```

```
AP12                              3                                 5
```

This example shows how to display the rogue access point entry timers:

```
Controller# show ap capwap timers

AP Discovery timer       : 10
AP Heart Beat timeout    : 30
Primary Discovery timer  : 120
Primed Join timeout      : 0
Fast Heartbeat           : Disabled
Fast Heartbeat timeout   : 1
```

This example shows how to display the the network configuration of the Cisco switch:

```
Controller# show ap capwap summary

AP Fallback                     : Enabled
AP Join Priority                : Disabled
AP Master                       : Disabled
Primary backup Controller Name  :
Primary backup Controller IP    : 0.0.0.0
Secondary backup Controller Name :
Secondary backup Controller IP  : 0.0.0.0
```

show ap cdp

To display the Cisco Discovery Protocol (CDP) information for all Cisco lightweight access points that are joined to the switch, use the **show ap cdp** command.

show ap cdp [**neighbors** [**detail**]]

Syntax Description

neighbors	(Optional) Displays neighbors using CDP.
detail	(Optional) Displays details about a specific access point neighbor that is using CDP.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display the CDP status of all access points:

```
Switch# show ap cdp
```

This example shows how to display details about all neighbors that are using CDP:

```
Switch# show ap cdp neighbors
```

Related Commands

Command	Description
ap cdp	Enables the CDP on an access point.

show ap config dot11

To display the detailed configuration of 802.11-58G radios on Cisco lightweight access points, use the **show ap config dot11** command.

show ap config dot11 58ghz summary

Syntax Description

58ghz	Displays the 802.11-58G radios.
summary	Displays a summary of the radios on the access points.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display the detailed configuration of 802.11a-58G radios on access points:

```
Switch# show ap config dot11 58ghz summary
```

show ap config dot11 dual-band summary

To view a summary of configuration settings for dual band radios of Cisco APs, use the **show ap config dot11 dual-band summary** command.

show ap config dot11 dual-band summary

Syntax Description

dual-band	Specifies the dual band radio.
summary	Displays a summary of configuration settings for dual band radios of Cisco APs.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

show ap config fnf

To view Netflow input and output monitors for all Cisco APs, use the **show ap config fnf** command.

show ap config fnf

Syntax Description

fnf	Netflow input and output monitors for all Cisco APs.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

show ap config

To display configuration settings for all access points that join the switch, use the **show ap config** command.

show ap config {**ethernet| general| global**}

Syntax Description

ethernet	Displays ethernet VLAN tagging information for all Cisco APs.
general	Displays common information for all Cisco APs.
global	Displays global settings for all Cisco APs.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display global syslog server settings:

```
Switch# show ap config global
AP global system logging host                   : 255.255.255.255
```

show ap crash-file

To display the list of both crash and radio core dump files generated by lightweight access points, use the **show ap crash-file** command.

show ap crash-file

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display the crash file generated by the access point:

```
Switch# show ap crash-file
```

Related Commands

Command	Description
ap crash-file	Deletes crash and radio core dump files.

show ap data-plane

To display the data plane status, use the **show ap data-plane** command.

show ap data-plane

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example show how to display the data plane status for all access points:

```
Switch# show ap data-plane
```

show ap dot11 l2roam

To display 802.11a or 802.11b/g Layer 2 client roaming information, use the **show ap dot11 l2roam** command.

show ap dot11 {**24ghz**| **5ghz**} **l2roam** {**mac-address** *mac-address* **statistics**| **rf-param**| **statistics**}

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
mac-address *mac-address* **statistics**	Specifies the MAC address of a Cisco lightweight access point.
rf-param	Specifies the Layer 2 frequency parameters.
statistics	Specifies the Layer 2 client roaming statistics.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display 802.11b Layer 2 client roaming information:

```
Switch# show ap dot11 24ghz l2roam rf-param

L2Roam 802.11bg RF Parameters
  Config Mode          : Default
  Minimum RSSI         : -85
  Roam Hysteresis      : 2
  Scan Threshold       : -72
  Transition time      : 5
```

show ap dot11 cleanair air-quality

To display the air-quality summary information and air-quality worst information for the 802.11 networks, use the **show ap dot11 cleanair air-quality** command.

show ap dot11 {**24ghz**| **5ghz**} **cleanair air-quality** {**summary**| **worst**}

Syntax Description

24ghz	Displays the 2.4 GHz band.
5ghz	Displays the 5 GHz band.
summary	Displays a summary of 802.11 radio band air-quality information.
worst	Displays the worst air-quality information for 802.11 networks.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display the worst air-quality information for the 5 GHz band:

```
Switch# show ap dot11 5ghz cleanair air-quality worst

AQ = Air Quality
DFS = Dynamic Frequency Selection
AP Name      Channel Avg AQ Min AQ Interferers DFS
------------ ------- ------ ------ ----------- -----
CISCO_AP3500 36      95     70     0           40
```

This example shows how to display the worst air-quality information for the 2.4 GHz band:

```
Switch# show ap dot11 24ghz cleanair air-quality worst

AQ = Air Quality
DFS = Dynamic Frequency Selection
AP Name      Channel Avg AQ Min AQ Interferers DFS
------------ ------- ------ ------ ----------- -----
CISCO_AP3500 1       83     57     3           5
```

show ap dot11 cleanair config

To display the CleanAir configuration for the 802.11 networks, use the **show ap dot11 cleanair config** command.

show ap dot11 {**24ghz**| **5ghz**} **cleanair config**

Syntax Description

24ghz	Displays the 2.4 GHz band.
5ghz	Displays the 5 GHz band.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display the CleanAir configuration for the 2.4 GHz band:

```
Switch# show ap dot11 24ghz cleanair config
Clean Air Solution................................ : Disabled
Air Quality Settings:
    Air Quality Reporting......................... : Disabled
    Air Quality Reporting Period (min)............ : 15
    Air Quality Alarms............................ : Enabled
    Air Quality Alarm Threshold................... : 10
Interference Device Settings:
    Interference Device Reporting................. : Enabled
        Bluetooth Link............................ : Enabled
        Microwave Oven............................ : Enabled
        802.11 FH................................. : Enabled
        Bluetooth Discovery....................... : Enabled
        TDD Transmitter........................... : Enabled
        Jammer.................................... : Enabled
        Continuous Transmitter.................... : Enabled
        DECT-like Phone........................... : Enabled
        Video Camera.............................. : Enabled
        802.15.4.................................. : Enabled
        WiFi Inverted............................. : Enabled
        WiFi Invalid Channel...................... : Enabled
        SuperAG................................... : Enabled
        Canopy.................................... : Enabled
        Microsoft Device.......................... : Enabled
        WiMax Mobile.............................. : Enabled
        WiMax Fixed............................... : Enabled
    Interference Device Types Triggering Alarms:
        Bluetooth Link............................ : Disabled
        Microwave Oven............................ : Disabled
        802.11 FH................................. : Disabled
```

```
        Bluetooth Discovery..................... : Disabled
        TDD Transmitter......................... : Disabled
        Jammer.................................. : Disabled
        Continuous Transmitter.................. : Disabled
        DECT-like Phone......................... : Disabled
        Video Camera............................ : Disabled
        802.15.4................................ : Disabled
        WiFi Inverted........................... : Enabled
        WiFi Invalid Channel.................... : Enabled
        SuperAG................................. : Disabled
        Canopy.................................. : Disabled
        Microsoft Device........................ : Disabled
        WiMax Mobile............................ : Disabled
        WiMax Fixed............................. : Disabled
    Interference Device Alarms.................. : Enabled
Additional Clean Air Settings:
    CleanAir Event-driven RRM State............. : Disabled
    CleanAir Driven RRM Sensitivity............. : LOW
    CleanAir Persistent Devices state........... : Disabled
```

show ap dot11 cleanair summary

To view CleanAir configurations for all 802.11a Cisco APs, use the **show ap dot11 cleanair summary** command.

show ap dot11{**24ghz**| **5ghz**} **cleanair summary**

Syntax Description

24ghz	Specifies the 2.4-GHz band
5ghz	Specifies the 5-GHz band
cleanair summary	Summary of CleanAir configurations for all 802.11a Cisco APs

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

show ap dot11

To view 802.11a or 802.11b configuration information, use the **show ap dot11** command.

show ap dot11 {**24ghz**| **5ghz**} {**channel**| **coverage**| **group**| **load-info**| **logging**| **media-stream**| **monitor**| **network**| **profile**| **receiver**| **service-policy**| **summary**| **txpower**| **ccx global**}

Syntax Description

24ghz	Specifies the 2.4 GHz band.
5ghz	Specifies the 5 GHz band.
channel	Displays the automatic channel assignment configuration and statistics.
coverage	Displays the configuration and statistics for coverage hole detection.
group	Displays 802.11a or 802.11b Cisco radio RF grouping.
load-info	Displays channel utilization and client count information for all Cisco APs.
logging	Displays 802.11a or 802.11b RF event and performance logging.
media-stream	Display 802.11a or 802.11b Media Resource Reservation Control configurations.
monitor	Displays the 802.11a or 802.11b default Cisco radio monitoring.
network	Displays the 802.11a or 802.11b network configuration.
profile	Displays the 802.11a or 802.11b lightweight access point performance profiles.
receiver	Displays the configuration and statistics of the 802.11a or 802.11b receiver.
service-policy	Displays the Quality of Service (QoS) service policies for 802.11a or 802.11b radio for all Cisco access points.
summary	Displays the 802.11a or 802.11b Cisco lightweight access point name, channel, and transmit level summary.
txpower	Displays the 802.11a or 802.11b automatic transmit power assignment.

ccx global	Displays 802.11a or 802.11b Cisco Client eXtensions (CCX) information for all Cisco access points that are joined to the switch.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.
Cisco IOS XE 3.3SE	The **load-info** parameter was added.

Examples

This example shows how to display the automatic channel assignment configuration and statistics:

```
Switch# show ap dot11 5ghz channel
Automatic Channel Assignment
  Channel Assignment Mode                  : AUTO
  Channel Update Interval                  : 12 Hours
  Anchor time (Hour of the day)            : 20
  Channel Update Contribution              : SNI.
  Channel Assignment Leader                : web (9.9.9.2)
  Last Run                                 : 13105 seconds ago
  DCA Sensitivity Level                    : MEDIUM (15 dB)
  DCA 802.11n Channel Width                : 40 Mhz
  Channel Energy Levels
      Minimum                              : unknown
      Average                              : unknown
      Maximum                              : unknown
  Channel Dwell Times
      Minimum                              : unknown
      Average                              : unknown
      Maximum                              : unknown
  802.11a 5 GHz Auto-RF Channel List
  Allowed Channel List                     : 36,40,44,48,52,56,60,64,149,153,1
57,161
  Unused Channel List                      : 100,104,108,112,116,132,136,140,1
65
  802.11a 4.9 GHz Auto-RF Channel List
  Allowed Channel List                     :
  Unused Channel List                      : 1,2,3,4,5,6,7,8,9,10,11,12,13,14,
15,16,17,18,19,20,21,22,23,24,25,26
  DCA Outdoor AP option                    : Disabled
```

This example shows how to display the statistics for coverage hole detection:

```
Switch# show ap dot11 5ghz coverage
Coverage Hole Detection
  802.11a Coverage Hole Detection Mode          : Enabled
  802.11a Coverage Voice Packet Count           : 100 packet(s)
  802.11a Coverage Voice Packet Percentage      : 50 %
  802.11a Coverage Voice RSSI Threshold         : -80dBm
  802.11a Coverage Data Packet Count            : 50 packet(s)
  802.11a Coverage Data Packet Percentage       : 50 %
  802.11a Coverage Data RSSI Threshold          : -80dBm
  802.11a Global coverage exception level       : 25
```

```
  802.11a Global client minimum exception level   : 3 clients
```

This example shows how to display Cisco radio RF group settings:

```
Switch# show ap dot11 5ghz group
Radio RF Grouping

  802.11a Group Mode                : STATIC
  802.11a Group Update Interval     : 600 seconds
  802.11a Group Leader              : web (10.10.10.1)
  802.11a Group Member              : web(10.10.10.1)
                                      nb1(172.13.21.45) (*Unreachable)
  802.11a Last Run                  : 438 seconds ago


  Mobility Agents RF membership information
  ------------------------------------------------------------
  No of 802.11a MA RF-members : 0
```

This example shows how to display 802.11a RF event and performance logging:

```
Switch# show ap dot11 5ghz logging
RF Event and Performance Logging

  Channel Update Logging             : Off
  Coverage Profile Logging           : Off
  Foreign Profile Logging            : Off
  Load Profile Logging               : Off
  Noise Profile Logging              : Off
  Performance Profile Logging        : Off
  TxPower Update Logging             : Off
```

This example shows how to display the 802.11a media stream configuration:

```
Switch# show ap dot11 5ghz media-stream
Multicast-direct                : Disabled
Best Effort                     : Disabled
Video Re-Direct                 : Disabled
Max Allowed Streams Per Radio     : Auto
Max Allowed Streams Per Client    : Auto
Max Video Bandwidth              : 0
Max Voice Bandwidth              : 75
Max Media Bandwidth              : 85
Min PHY Rate (Kbps)              : 6000
Max Retry Percentage             : 80
```

This example shows how to display the radio monitoring for the 802.11b network:

```
Switch# show ap dot11 5ghz monitor
Default 802.11a AP monitoring

  802.11a Monitor Mode                          : Enabled
  802.11a Monitor Mode for Mesh AP Backhaul     : disabled
  802.11a Monitor Channels                      : Country channels
  802.11a RRM Neighbor Discover Type            : Transparent
  802.11a AP Coverage Interval                  : 180 seconds
  802.11a AP Load Interval                      : 60 seconds
  802.11a AP Noise Interval                     : 180 seconds
  802.11a AP Signal Strength Interval           : 60 seconds
```

This example shows how to display the global configuration and statistics of an 802.11a profile:

```
Switch# show ap dot11 5ghz profile
Default 802.11a AP performance profiles
802.11a Global Interference threshold.............. 10%
802.11a Global noise threshold..................... -70 dBm
802.11a Global RF utilization threshold............ 80%
802.11a Global throughput threshold................ 1000000 bps
802.11a Global clients threshold................... 12 clients
802.11a Global coverage threshold.................. 12 dB
802.11a Global coverage exception level............ 80%
802.11a Global client minimum exception lev........ 3 clients
```

This example shows how to display the network configuration of an 802.11a profile:

```
Switch# show ap dot11 5ghz network
802.11a Network : Enabled
11nSupport : Enabled
  802.11a Low Band : Enabled
  802.11a Mid Band : Enabled
  802.11a High Band : Enabled

802.11a Operational Rates
  802.11a 6M : Mandatory
  802.11a 9M : Supported
  802.11a 12M : Mandatory
  802.11a 18M : Supported
  802.11a 24M : Mandatory
  802.11a 36M : Supported
  802.11a 48M : Supported
  802.11a 54M : Supported
802.11n MCS Settings:
  MCS 0 : Supported
  MCS 1 : Supported
  MCS 2 : Supported
  MCS 3 : Supported
  MCS 4 : Supported
  MCS 5 : Supported
  MCS 6 : Supported
  MCS 7 : Supported
  MCS 8 : Supported
  MCS 9 : Supported
  MCS 10 : Supported
  MCS 11 : Supported
  MCS 12 : Supported
  MCS 13 : Supported
  MCS 14 : Supported
  MCS 15 : Supported
  MCS 16 : Supported
  MCS 17 : Supported
  MCS 18 : Supported
  MCS 19 : Supported
  MCS 20 : Supported
  MCS 21 : Supported
  MCS 22 : Supported
  MCS 23 : Supported
802.11n Status:
  A-MPDU Tx:
    Priority 0 : Enabled
    Priority 1 : Disabled
    Priority 2 : Disabled
    Priority 3 : Disabled
    Priority 4 : Enabled
    Priority 5 : Enabled
    Priority 6 : Disabled
    Priority 7 : Disabled
  A-MSDU Tx:
    Priority 0 : Enabled
    Priority 1 : Enabled
    Priority 2 : Enabled
    Priority 3 : Enabled
    Priority 4 : Enabled
    Priority 5 : Enabled
    Priority 6 : Disabled
    Priority 7 : Disabled
  Guard Interval : Any
  Rifs Rx : Enabled
Beacon Interval : 100
CF Pollable mandatory : Disabled
CF Poll Request Mandatory : Disabled
CFP Period : 4
CFP Maximum Duration : 60
Default Channel : 36
Default Tx Power Level : 1
DTPC Status : Enabled
Fragmentation Threshold : 2346
```

```
Pico-Cell Status : Disabled
Pico-Cell-V2 Status : Disabled
TI Threshold : 0
Legacy Tx Beamforming setting : Disabled
Traffic Stream Metrics Status : Disabled
Expedited BW Request Status : Disabled
EDCA profile type check : default-wmm
Call Admision Control (CAC) configuration
Voice AC
  Voice AC - Admission control (ACM) : Disabled
  Voice Stream-Size : 84000
  Voice Max-Streams : 2
  Voice Max RF Bandwidth : 75
  Voice Reserved Roaming Bandwidth : 6
  Voice Load-Based CAC mode : Enabled
  Voice tspec inactivity timeout : Enabled
CAC SIP-Voice configuration
  SIP based CAC : Disabled
  SIP call bandwidth : 64
  SIP call bandwith sample-size : 20
Video AC
  Video AC - Admission control (ACM) : Disabled
  Video max RF bandwidth : Infinite
  Video reserved roaming bandwidth : 0
```

This example shows how to display the global configuration and statistics of an 802.11a profile:

```
Switch# show ap dot11 5ghz receiver
Default 802.11a AP performance profiles
802.11a Global Interference threshold.............. 10%
802.11a Global noise threshold..................... -70 dBm
802.11a Global RF utilization threshold............. 80%
802.11a Global throughput threshold................ 1000000 bps
802.11a Global clients threshold................... 12 clients
802.11a Global coverage threshold.................. 12 dB
802.11a Global coverage exception level............ 80%
802.11a Global client minimum exception lev........ 3 clients
```

This example shows how to display the global configuration and statistics of an 802.11a profile:

```
Switch# show ap dot11 5ghz service-policy
```

This example shows how to display a summary of the 802.11b access point settings:

```
Switch# show ap dot11 5ghz summary
AP Name MAC Address       Admin State Operation State Channel TxPower
------- ----------------- ----------- --------------- ------- -------
CJ-1240 00:21:1b:ea:36:60 ENABLED     UP              161     1( )
CJ-1130 00:1f:ca:cf:b6:60 ENABLED     UP              56*     1(*)
```

This example shows how to display the configuration and statistics of the 802.11a transmit power cost:

```
Switch# show ap dot11 5ghz txpower
Automatic Transmit Power Assignment

Transmit Power Assignment Mode          : AUTO
Transmit Power Update Interval          : 600 seconds
Transmit Power Threshold                : -70 dBm
Transmit Power Neighbor Count           : 3 APs
Min Transmit Power                      : -10 dBm
Max Transmit Power                      : 30 dBm
Transmit Power Update Contribution      : SNI.
Transmit Power Assignment Leader        : web (10.10.10.1)
Last Run                                : 437 seconds ago
```

This example shows how to display the configuration and statistics of the 802.11a transmit power cost:

```
Switch# show ap dot11 5ghz ccx global
 802.11a Client Beacon Measurements:
     disabled
```

Related Commands

Command	Description
ap dot11 rrm channel dca	Configures DCA algorithm parameters.

show ap ethernet statistics

To display Ethernet statistics for all Cisco lightweight access points, use the **show ap ethernet statistics** command.

show ap ethernet statistics

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display Ethernet statistics for all access points:

```
Switch# show ap ethernet statistics
```

show ap groups

To display information about all access point groups that are defined in the system, use the **show ap groups** command.

show ap groups

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display information about all access point groups:

```
Switch# show ap groups
```

show ap groups extended

To view information about all AP groups defined in the system in detail, use the **show ap groups extended** command.

show ap groups extended

Syntax Description

extended	Displays information about all AP groups defined in the system in detail.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

show ap image

To display the images present on Cisco lightweight access points, use the **show ap image** command.

show ap image

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display images on the access points:

```
Switch# show ap image
```

show ap join stats summary

To display the last join error detail for a specific access point, use the **show ap join stats summary** command.

show ap join stats summary

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

To obtain the MAC address of the 802.11 radio interface, enter the **show interface** command on the access point.

Examples

This example shows how to display specific join information for an access point:

```
Switch# show ap join stats summary
Number of APs : 1

Base MAC        Ethernet MAC    AP Name               IP Address       Status

--------------- --------------- --------------------- ---------------- -------------
-
c8f9.f91a.aa80  0000.0000.0000  N A                   0.0.0.0          Not Joined
```

show ap link-encryption

To display the link encryption status, use the **show ap link-encryption** command.

show ap link-encryption

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example show how to display the link-encryption status:

```
Switch# show ap link-encryption
```

show ap mac-address

To display join-related statistics collected and last join error details for access points, use the **show ap mac-address** command.

show ap mac-address *mac-address* **join stats** {**detailed**| **summary**}

Syntax Description

mac-address	Access point Ethernet MAC address or the MAC address of the 802.11 radio interface.
join stats	Displays join information and statistics for Cisco access points.
detailed	Displays all join-related statistics collected.
summary	Displays the last join error detail.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display join information for a specific access point that is trying to join the switch:

```
Switch# show ap mac-address d0c2.8267.8b00 join stats detailed

Discovery phase statistics
  Discovery requests received                          : 6
  Successful discovery responses sent                  : 6
  Unsuccessful discovery request processing            : 0
  Reason for last unsuccessful discovery attempt       : Not applicable
  Time at last successful discovery attempt            : Nov 20 17:25:10.841
  Time at last unsuccessful discovery attempt          : Not applicable

Join phase statistics
  Join requests received                               : 3
  Successful join responses sent                       : 3
  Unsuccessful join request processing                 : 0
  Reason for last unsuccessful join attempt            : Not applicable
  Time at last successful join attempt                 : Nov 20 17:25:20.998
  Time at last unsuccessful join attempt               : Not applicable

Configuration phase statistics
  Configuration requests received                      : 8
  Successful configuration responses sent              : 3
  Unsuccessful configuration request processing        : 0
  Reason for last unsuccessful configuration attempt   : Not applicable
```

```
  Time at last successful configuration attempt           : Nov 20 17:25:21.177
  Time at last unsuccessful configuration attempt         : Not applicable

Last AP message decryption failure details
  Reason for last message decryption failure              : Not applicable

Last AP disconnect details
  Reason for last AP connection failure                  : Number of message retransmission
 to the AP has reached maximum

Last join error summary
  Type of error that occurred last                        : AP got or has been disconnected

  Reason for error that occurred last                    : Number of message retransmission
 to the AP has reached maximum
  Time at which the last join error occurred              : Nov 20 17:22:36.438
```

This example shows how to display specific join information for an access point:

```
Switch# show ap mac-address d0c2.8267.8b00 join stats detailed

Is the AP currently connected to controller..... No
Time at which the AP joined this controller last time..... Aug 21 12:50:36:061
Type of error that occurred last..... Lwapp join request
rejected
Reason for error that occurred last..... RADIUS authorization
is pending for the AP
Time at which the last join error occurred..... Aug 21 12:50:34:374
```

show ap monitor-mode summary

To display the current channel-optimized monitor mode settings, use the **show ap monitor-mode summary** command.

show ap monitor-mode summary

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
	This command was introduced.

Examples

This example shows how to display current channel-optimized monitor mode settings:

```
Switch# show ap monitor-mode summary

AP Name Ethernet MAC      Status   Scanning Channel List
------- -------------     -------- -------- ----------------
AP_004  xx:xx:xx:xx:xx:xx Tracking 1,6,11,  4
```

show ap name auto-rf

To display the auto-RF settings for a Cisco lightweight access point, use the **show ap name auto-rf** command.

show ap name *ap-name* **auto-rf dot11** {**24ghz**| **5ghz**}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
24ghz	Displays the 2.4 GHz band.
5ghz	Displays the 5 GHz band.

Command Default

None

Command Modes

Privileged EXEC.

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display auto-RF information for an access point:

```
Switch# show ap name AP01 auto-rf dot11 24ghz

Number of Slots                                 : 2
AP Name                                         : TSIM_AP-1
MAC Address                                     : 0000.2000.02f0
Slot ID                                         : 0
Radio Type                                      : 802.11b/g
Subband Type                                    : All

Noise Information
  Noise Profile                                 : Failed
  Channel   1                                    :   24 dBm
  Channel   2                                    :   48 dBm
  Channel   3                                    :   72 dBm
  Channel   4                                    :   96 dBm
  Channel   5                                    :  120 dBm
  Channel   6                                    : -112 dBm
  Channel   7                                    :  -88 dBm
  Channel   8                                    :  -64 dBm
  Channel   9                                    :  -40 dBm
  Channel  10                                    :  -16 dBm
  Channel  11                                    :    8 dBm

Interference Information
  Interference Profile                          : Passed
  Channel   1                                    : -128 dBm @  0% busy
  Channel   2                                    :  -71 dBm @  1% busy
  Channel   3                                    :  -72 dBm @  1% busy
```

```
  Channel   4                                     :  -73 dBm @  2% busy
  Channel   5                                     :  -74 dBm @  3% busy
  Channel   6                                     :  -75 dBm @  4% busy
  Channel   7                                     :  -76 dBm @  5% busy
  Channel   8                                     :  -77 dBm @  5% busy
  Channel   9                                     :  -78 dBm @  6% busy
  Channel  10                                     :  -79 dBm @  7% busy
  Channel  11                                     :  -80 dBm @  8% busy

Rogue Histogram (20/40_ABOVE/40_BELOW)
    Channel  36                                   : 27/ 4/ 0
    Channel  40                                   : 13/ 0/ 0
    Channel  44                                   :  5/ 0/ 0
    Channel  48                                   :  6/ 0/ 1
    Channel  52                                   :  4/ 0/ 0
    Channel  56                                   :  5/ 0/ 0
    Channel  60                                   :  1/ 3/ 0
    Channel  64                                   :  3/ 0/ 0
    Channel 100                                   :  0/ 0/ 0
    Channel 104                                   :  0/ 0/ 0
    Channel 108                                   :  0/ 1/ 0

Load Information
  Load Profile                                  : Passed
  Receive Utilization                           : 10%
  Transmit Utilization                          : 20%
  Channel Utilization                           : 50%
  Attached Clients                              : 0 clients

Coverage Information
  Coverage Profile                              : Passed
  Failed Clients                                : 0 clients

Client Signal Strengths
  RSSI -100 dBm                                 : 0 clients
  RSSI  -92 dBm                                 : 0 clients
  RSSI  -84 dBm                                 : 0 clients
  RSSI  -76 dBm                                 : 0 clients
  RSSI  -68 dBm                                 : 0 clients
  RSSI  -60 dBm                                 : 0 clients
  RSSI  -52 dBm                                 : 0 clients

Client Signal to Noise Ratios
  SNR    0 dB                                   : 0 clients
  SNR    5 dB                                   : 0 clients
  SNR   10 dB                                   : 0 clients
  SNR   15 dB                                   : 0 clients
  SNR   20 dB                                   : 0 clients
  SNR   25 dB                                   : 0 clients
  SNR   30 dB                                   : 0 clients
  SNR   35 dB                                   : 0 clients
  SNR   40 dB                                   : 0 clients
  SNR   45 dB                                   : 0 clients

Nearby APs
  AP 0000.2000.0300 slot 0                      : -68 dBm on  11 (10.10.10.1)
  AP 0000.2000.0400 slot 0                      : -68 dBm on  11 (10.10.10.1)
  AP 0000.2000.0600 slot 0                      : -68 dBm on  11 (10.10.10.1)

Radar Information

Channel Assignment Information
  Current Channel Average Energy                : 0 dBm
  Previous Channel Average Energy               : 0 dBm
  Channel Change Count                          : 0
  Last Channel Change Time                      : Wed Oct 17 08:13:36 2012
  Recommended Best Channel                      : 11

RF Parameter Recommendations
  Power Level                                   : 1
  RTS/CTS Threshold                             : 2347
  Fragmentation Threshold                       : 2346
  Antenna Pattern                               : 0
```

```
Persistent Interference Devices
```

show ap name bhmode

To display Cisco bridge backhaul mode, use the **show ap name bhmode** command.

show ap name *ap-name* **bhmode**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display Cisco bridge backhaul mode of an access point:

```
Switch# show ap name TSIM_AP-1 bhmode
```

show ap name bhrate

To display the Cisco bridge backhaul rate, use the **show ap name bhrate** command.

show ap name *ap-name* **bhrate**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display the Cisco bridge backhaul rate for an access point:

```
Switch# show ap name AP01 bhrate
```

show ap name cac voice

To display voice call admission control details for a specific Cisco lightweight access point, use the **show ap name cac voice** command.

show ap name *ap-name* **cac voice**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display voice call admission control details for an access point:

```
Switch# show ap name AP01 cac voice
1) AP Name: AP01
============================

  Wireless Bandwidth (In MeanTime mt)

       Slot#  Radio         Calls  BW-Max  BW-Alloc  Bw-InUse (%age)
  ------------------------------------------------------------------
  1    0      802.11b/g     0      23437   0         0
  2    1      802.11a       0      23437   0         0

  Wired Bandwidth (in Kbps)

       Slot#  Wlan-ID  Wlan-Name             BW-Config   BW-Avail
  ------------------------------------------------------------------
  1    0      1        maria-open            0           0
  2    0      12       24                    0           0
  3    1      1        maria-open            0           0
  4    1      12       24                    0           0
```

show ap name config fnf

To view the Netflow input and output monitors for a Cisco AP, use the **show ap name config fnf** command.

show ap name *ap-name* **config fnf**

Syntax Description

ap-name	Name of the Cisco lightweight access point
fnf	Netflow input and output monitors for a Cisco AP

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

show ap name dot11 call-control

To display call control information and the metrics for successful calls, use the **show ap name dot11 call-control** command.

show ap name *ap-name* **dot11** {**24ghz**| **5ghz**} **call-control** {**call-info**| **metrics**}

Syntax Description

ap-name	Name of the Cisco lightweight access point
24ghz	Displays the 2.4 GHz band.
5ghz	Displays the 5 GHz band.
call-info	Displays call information.
metrics	Displays call metrics.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display metrics for successful calls for an access point:

```
Switch# show ap name AP01 dot11 24ghz call-control metrics

Slot#   Call Count      Call Duration
---------------------------------
0       0               0
```

show ap name capwap retransmit

To display Control and Provisioning of Wireless Access Points (CAPWAP) retransmit settings, use the **show ap name capwap retransmit** command.

show ap name *ap-name* **capwap retransmit**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display CAPWAP retransmit settings of an access point:

```
Switch# show ap name AP01 capwap retransmit

AP Name   Retransmit Interval Retransmit Count
--------  ------------------- ----------------
AP01      3                   5
```

show ap name ccx rm

To display an access point's Cisco Client eXtensions (CCX) radio management status information, use the **show ap name ccx rm** command.

show ap name *ap-name* **ccx rm status**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display CCX radio management information for an access point:

```
Switch# show ap name AP01 ccx rm status

802.11b/g Radio
  Beacon Request                                : Disabled
  Channel Load Request                          : Disabled
  Frame Request                                 : Disabled
  Noise Histogram Request                       : Disabled
  Path Loss Request                             : Disabled
  Interval                                      : 60
  Iteration                                     : 0

802.11a Radio
  Beacon Request                                : Disabled
  Channel Load Request                          : Disabled
  Frame Request                                 : Disabled
  Noise Histogram Request                       : Disabled
  Path Loss Request                             : Disabled
  Interval                                      : 60
  Iteration                                     : 0
```

show ap name cdp

To display the Cisco Discovery Protocol (CDP) information for an access point, use the **show ap name cdp** command.

show ap name *ap-name* **cdp** [**neighbors** [**detail**]]

Syntax Description

ap-name	Name of the Cisco lightweight access point.
neighbors	(Optional) Displays neighbors that are using CDP.
detail	(Optional) Displays details about a specific access point neighbor that is using CDP.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display CDP information for an access point:

```
Switch# show ap name AP01 cdp neighbors detail
```

show ap name channel

To display the available channels for a specific mesh access point, use the **show ap name channel** command.

show ap name *ap-name* **channel**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display the available channels for a particular access point:

```
Switch# show ap name AP01 channel

Slot ID                                          : 0
Allowed Channel List                             : 1, 2, 3, 4, 5, 6, 7, 8, 9
                                                   10, 11
Slot ID                                          : 1
Allowed Channel List                             : 36, 40, 44, 48, 52, 56, 60, 64, 100
                                                   104, 108, 112, 116, 132, 136, 140, 149,
 153
                                                   157, 161
```

show ap name config

To display common information and Ethernet VLAN tagging information for a specific Cisco lightweight access point, use the **show ap name config** command.

show ap name *ap-name* **config** {**ethernet**| **general**}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
ethernet	Displays Ethernet tagging configuration information for an access point.
general	Displays common information for an access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display Ethernet tagging information for an access point:

```
Switch# show ap name AP01 config ethernet

VLAN Tagging Information for AP01
```

This example shows how to display common information for an access point:

```
Switch# show ap name AP01 config general

Cisco AP Name                                   : AP01
Cisco AP Identifier                             : 5
Country Code                                    : US  - United States
Regulatory Domain Allowed by Country            : 802.11bg:-A     802.11a:-A
AP Country Code                                 : US  - United States
AP Regulatory Domain                            : Unconfigured
Switch Port Number                              : Te1/0/1
MAC Address                                     : 0000.2000.02f0
IP Address Configuration                        : Static IP assigned
IP Address                                      : 10.10.10.12
IP Netmask                                      : 255.255.0.0
Gateway IP Address                              : 10.10.10.1
Fallback IP Address Being Used                  : 10.10.10.12
Domain                                          : Cisco
Name Server                                     : 0.0.0.0
CAPWAP Path MTU                                 : 1485
Telnet State                                    : Enabled
SSH State                                       : Disabled
Cisco AP Location                               : sanjose
```

```
Cisco AP Group Name                             : default-group
Primary Cisco Controller Name                   : CAPWAP Controller
Primary Cisco Controller IP Address             : 10.10.10.1
Secondary Cisco Controller Name                 :
Secondary Cisco Controller IP Address           : Not Configured
Tertiary Cisco Controller Name                  :
Tertiary Cisco Controller IP Address            : Not Configured
Administrative State                            : Enabled
Operation State                                 : Registered
AP Mode                                         : Local
AP Submode                                      : Not Configured
Remote AP Debug                                 : Disabled
Logging Trap Severity Level                     : informational
Software Version                                : 7.4.0.5
Boot Version                                    : 7.4.0.5
Stats Reporting Period                          : 180
LED State                                       : Enabled
PoE Pre-Standard Switch                         : Disabled
PoE Power Injector MAC Address                  : Disabled
Power Type/Mode                                 : Power Injector/Normal Mode
Number of Slots                                 : 2
AP Model                                        : 1140AG
AP Image                                        : C1140-K9W8-M
IOS Version                                     :
Reset Button                                    :
AP Serial Number                                : SIM1140K001
AP Certificate Type                             : Manufacture Installed
Management Frame Protection Validation          : Disabled
AP User Mode                                    : Customized
AP User Name                                    : cisco
AP 802.1X User Mode                             : Not Configured
AP 802.1X User Name                             : Not Configured
Cisco AP System Logging Host                    : 255.255.255.255
AP Up Time                                      : 15 days 16 hours 19 minutes 57
 seconds
AP CAPWAP Up Time                               : 4 minutes 56 seconds
Join Date and Time                              : 10/18/2012 04:48:56
Join Taken Time                                 : 15 days 16 hours 15 minutes 0
seconds
Join Priority                                   : 1
Ethernet Port Duplex                            : Auto
Ethernet Port Speed                             : Auto
AP Link Latency                                 : Disabled
Rogue Detection                                 : Disabled
AP TCP MSS Adjust                               : Disabled
AP TCP MSS Size                                 : 6146
```

show ap name config dot11

To display 802.11 configuration information that corresponds to specific Cisco lightweight access points, use the **show ap name config dot11** command.

show ap name *ap-name* **config dot11** {**24ghz**| **49ghz**| **58ghz**| **5hgz**| **dual-band**}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
24ghz	Displays the 2.4 GHz band.
49ghz	Displays 802.11-4.9G network settings.
58ghz	Displays 802.11-5.8G network settings.
5hgz	Displays the 5 GHz band settings.
dual-band	Displays the dual band radio settings.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.
Cisco IOS XE 3.3SE	The **dual-band** parameter was added.

Examples

This example shows how to display 802.11b configuration information that corresponds to a specific Cisco lightweight access point:

```
Switch# show ap name AP01 config dot11 24ghz

Cisco AP Identifier                             : 5
Cisco AP Name                                   : AP01
Country Code                                    : US  - United States
Regulatory Domain Allowed by Country            : 802.11bg:-A     802.11a:-A
AP Country Code                                 : US  - United States
AP Regulatory Domain                            : -A
Switch Port Number                              : Te1/0/1
MAC Address                                     : 0000.2000.02f0
IP Address Configuration                        : Static IP assigned
IP Address                                      : 10.10.10.12
IP Netmask                                      : 255.255.0.0
Gateway IP Address                              : 10.10.10.1
Fallback IP Address Being Used                  : 10.10.10.12
```

```
Domain                                          : Cisco
Name Server                                     : 0.0.0.0
CAPWAP Path MTU                                 : 1485
Telnet State                                    : Enabled
SSH State                                       : Disabled
Cisco AP Location                               : sanjose
Cisco AP Group Name                             : default-group
Administrative State                            : Enabled
Operation State                                 : Registered
AP Mode                                         : Local
AP Submode                                      : Not Configured
Remote AP Debug                                 : Disabled
Logging Trap Severity Level                     : informational
Software Version                                : 7.4.0.5
Boot Version                                    : 7.4.0.5
Mini IOS Version                                : 3.0.51.0
Stats Reporting Period                          : 180
LED State                                       : Enabled
PoE Pre-Standard Switch                         : Disabled
PoE Power Injector MAC Address                  : Disabled
Power Type/Mode                                 : Power Injector/Normal Mode
Number of Slots                                 : 2
AP Model                                        : 1140AG
AP Image                                        : C1140-K9W8-M
IOS Version                                     :
Reset Button                                    :
AP Serial Number                                : SIM1140K001
AP Certificate Type                             : Manufacture Installed
Management Frame Protection Validation          : Disabled
AP User Mode                                    : Customized
AP User Name                                    : cisco
AP 802.1X User Mode                             : Not Configured
AP 802.1X User Name                             : Not Configured
Cisco AP System Logging Host                    : 255.255.255.255
AP Up Time                                      : 15 days 17 hours 9 minutes 41
seconds
AP CAPWAP Up Time                               : 54 minutes 40 seconds
Join Date and Time                              : 10/18/2012 04:48:56
Join Taken Time                                 : 15 days 16 hours 15 minutes 0
seconds

Attributes for Slot 0
  Radio Type                                    : 802.11n - 2.4 GHz
  Administrative State                          : Enabled
  Operation State                               : Up
  Cell ID                                       : 0

  Station Configuration
    Configuration                               : Automatic
    Number of WLANs                             : 1
    Medium Occupancy Limit                      : 100
    CFP Period                                  : 4
    CFP Maximum Duration                        : 60
    BSSID                                       : 000020000200

    Operation Rate Set
       1000 Kbps                                : MANDATORY
       2000 Kbps                                : MANDATORY
       5500 Kbps                                : MANDATORY
      11000 Kbps                                : MANDATORY
       6000 Kbps                                : SUPPORTED
       9000 Kbps                                : SUPPORTED
      12000 Kbps                                : SUPPORTED
      18000 Kbps                                : SUPPORTED
      24000 Kbps                                : SUPPORTED
      36000 Kbps                                : SUPPORTED
      48000 Kbps                                : SUPPORTED
      54000 Kbps                                : SUPPORTED

    MCS Set
      MCS  0                                    : SUPPORTED
      MCS  1                                    : SUPPORTED
      MCS  2                                    : SUPPORTED
```

```
    MCS  3                                    : SUPPORTED
    MCS  4                                    : SUPPORTED
    MCS  5                                    : SUPPORTED
    MCS  6                                    : SUPPORTED
    MCS  7                                    : SUPPORTED
    MCS  8                                    : SUPPORTED
    MCS  9                                    : SUPPORTED
    MCS 10                                    : SUPPORTED
    MCS 11                                    : SUPPORTED
    MCS 12                                    : SUPPORTED
    MCS 13                                    : SUPPORTED
    MCS 14                                    : SUPPORTED
    MCS 15                                    : SUPPORTED
    MCS 16                                    : DISABLED
    MCS 17                                    : DISABLED
    MCS 18                                    : DISABLED
    MCS 19                                    : DISABLED
    MCS 20                                    : DISABLED
    MCS 21                                    : DISABLED
    MCS 22                                    : DISABLED
    MCS 23                                    : DISABLED

  Beacon Period                               : 100
  Fragmentation Threshold                     : 2346
  Multi Domain Capability Implemented         : True
  Multi Domain Capability Enabled             : True
  Country String                              : US

Multi Domain Capability
  Configuration                               : Automatic
  First Channel                               : 0
  Number of Channels                          : 0
  Country String                              : US

MAC Operation Parameters
  Configuration                               : Automatic
  Fragmentation Threshold                     : 2346
  Packet Retry Limit                          : 64
  Legacy Tx Beamforming Setting               : Disabled

Tx Power
  Number of Supported Power Levels            : 8
  Tx Power Level 1                            : 20 dBm
  Tx Power Level 2                            : 17 dBm
  Tx Power Level 3                            : 14 dBm
  Tx Power Level 4                            : 11 dBm
  Tx Power Level 5                            : 8 dBm
  Tx Power Level 6                            : 5 dBm
  Tx Power Level 7                            : 2 dBm
  Tx Power Level 8                            : -1 dBm
  Tx Power Configuration                      : Automatic
  Current Tx Power Level                      : 1

Phy OFDM Parameters
  Configuration                               : Automatic
  Current Channel                             : 11
  Extension Channel                           : None
  Channel Width                               : 20 MHz
  Allowed Channel List                        : 1, 2, 3, 4, 5, 6, 7, 8, 9
                                                10, 11
  TI Threshold                                : 0
  Antenna Type                                : Internal
  Internal Antenna Gain (in .5 dBi units)     : 0
  Diversity                                   : Diversity enabled

  802.11n Antennas
    Tx                                        : A, B, C
    Rx                                        : A, B, C

Performance Profile Parameters
  Configuration                               : Automatic
  Interference Threshold                      : 10%
  Noise Threshold                             : -70 dBm
```

```
    RF Utilization Threshold                    : 80%
    Data Rate Threshold                         : 1000000 bps
    Client Threshold                            : 12 clients
    Coverage SNR Threshold                      : 15 dB
    Coverage Exception Level                    : 25%
    Client Minimum Exception Level              : 3 clients
    RTS/CTS Threshold                             : 2347
    Short Retry Limit                             : 7
    Long Retry Limit                              : 4
    Max Tx MSDU Lifetime                          : 512
    Max Rx Lifetime                               : 512

  CleanAir Management Information
    CleanAir Capable                            : Yes
    CleanAir Management Admin State             : Enabled
    CleanAir Management Operation State         : Up
    Rapid Udpate Mode                           : Disabled
    Spectrum Expert connection                  : Disabled
    CleanAir NSI Key                            : 377313C8F290E246E640C4EF177BED
88
    Spectrum Expert connections counter         : 0
    CleanAir Sensor State                       : Configured

  Rogue Containment Information
    Containment Count                           : 0
```

show ap name config slot

To display configuration information for slots on a specific Cisco lightweight access point, use the **show ap name config slot** command.

show ap name *ap-name* **config slot** {**0**| **1**| **2**| **3**}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
0	Displays slot number 0.
1	Displays slot number 1.
2	Displays slot number 2.
3	Displays slot number 3.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display configuration information for slots on an access point:

```
Switch# show ap name AP01 config slot 0

Cisco AP Identifier                             : 3
Cisco AP Name                                   : AP01
Country Code                                    : US  - United States
Regulatory Domain Allowed by Country            : 802.11bg:-A     802.11a:-A
AP Country Code                                 : US  - United States
AP Regulatory Domain                            : -A
Switch Port Number                              : Te1/0/1
MAC Address                                     : 0000.2000.02f0
IP Address Configuration                        : Static IP assigned
IP Address                                      : 10.10.10.12
IP Netmask                                      : 255.255.0.0
Gateway IP Address                              : 10.10.10.1
Fallback IP Address Being Used                  : 10.10.10.12
Domain                                          : Cisco
Name Server                                     : 0.0.0.0
CAPWAP Path MTU                                 : 1485
Telnet State                                    : Enabled
SSH State                                       : Disabled
Cisco AP Location                               : sanjose
Cisco AP Group Name                             : default-group
```

```
Administrative State                                : Enabled
Operation State                                     : Registered
AP Mode                                             : Local
AP Submode                                          : Not Configured
Remote AP Debug                                     : Disabled
Logging Trap Severity Level                         : informational
Software Version                                    : 7.4.0.5
Boot Version                                        : 7.4.0.5
Mini IOS Version                                    : 3.0.51.0
Stats Reporting Period                              : 180
LED State                                           : Enabled
PoE Pre-Standard Switch                             : Disabled
PoE Power Injector MAC Address                      : Disabled
Power Type/Mode                                     : Power Injector/Normal Mode
Number of Slots                                     : 2
AP Model                                            : 1140AG
AP Image                                            : C1140-K9W8-M
IOS Version                                         :
Reset Button                                        :
AP Serial Number                                    : SIM1140K001
AP Certificate Type                                 : Manufacture Installed
Management Frame Protection Validation              : Disabled
AP User Mode                                        : Customized
AP User Name                                        : cisco
AP 802.1X User Mode                                 : Not Configured
AP 802.1X User Name                                 : Not Configured
Cisco AP System Logging Host                        : 255.255.255.255
AP Up Time                                          : 15 days 16 hours 1 minute 19 s
econds
AP CAPWAP Up Time                                   : 20 hours 21 minutes 37 seconds

Join Date and Time                                  : 10/17/2012 08:13:36
Join Taken Time                                     : 14 days 19 hours 39 minutes 41
 seconds

Attributes for Slot 0
  Radio Type                                        : 802.11n - 2.4 GHz
  Administrative State                              : Enabled
  Operation State                                   : Up
  Cell ID                                           : 0

  Station Configuration
    Configuration                                   : Automatic
    Number of WLANs                                 : 1
    Medium Occupancy Limit                          : 100
    CFP Period                                      : 4
    CFP Maximum Duration                            : 60
    BSSID                                           : 000020000200

    Operation Rate Set
       1000 Kbps                                    : MANDATORY
       2000 Kbps                                    : MANDATORY
       5500 Kbps                                    : MANDATORY
      11000 Kbps                                    : MANDATORY
       6000 Kbps                                    : SUPPORTED
       9000 Kbps                                    : SUPPORTED
      12000 Kbps                                    : SUPPORTED
      18000 Kbps                                    : SUPPORTED
      24000 Kbps                                    : SUPPORTED
      36000 Kbps                                    : SUPPORTED
      48000 Kbps                                    : SUPPORTED
      54000 Kbps                                    : SUPPORTED

    MCS Set
      MCS  0                                        : SUPPORTED
      MCS  1                                        : SUPPORTED
      MCS  2                                        : SUPPORTED
      MCS  3                                        : SUPPORTED
      MCS  4                                        : SUPPORTED
      MCS  5                                        : SUPPORTED
      MCS  6                                        : SUPPORTED
      MCS  7                                        : SUPPORTED
      MCS  8                                        : SUPPORTED
```

```
    MCS  9                                    : SUPPORTED
    MCS 10                                    : SUPPORTED
    MCS 11                                    : SUPPORTED
    MCS 12                                    : SUPPORTED
    MCS 13                                    : SUPPORTED
    MCS 14                                    : SUPPORTED
    MCS 15                                    : SUPPORTED
    MCS 16                                    : DISABLED
    MCS 17                                    : DISABLED
    MCS 18                                    : DISABLED
    MCS 19                                    : DISABLED
    MCS 20                                    : DISABLED
    MCS 21                                    : DISABLED
    MCS 22                                    : DISABLED
    MCS 23                                    : DISABLED

  Beacon Period                               : 100
  Fragmentation Threshold                     : 2346
  Multi Domain Capability Implemented         : True
  Multi Domain Capability Enabled             : True
  Country String                              : US

Multi Domain Capability
  Configuration                               : Automatic
  First Channel                               : 0
  Number of Channels                          : 0
  Country String                              : US

MAC Operation Parameters
  Configuration                               : Automatic
  Fragmentation Threshold                     : 2346
  Packet Retry Limit                          : 64

Tx Power
  Number of Supported Power Levels            : 8
  Tx Power Level 1                            : 20 dBm
  Tx Power Level 2                            : 17 dBm
  Tx Power Level 3                            : 14 dBm
  Tx Power Level 4                            : 11 dBm
  Tx Power Level 5                            : 8 dBm
  Tx Power Level 6                            : 5 dBm
  Tx Power Level 7                            : 2 dBm
  Tx Power Level 8                            : -1 dBm
  Tx Power Configuration                      : Automatic
  Current Tx Power Level                      : 1

Phy OFDM Parameters
  Configuration                               : Automatic
  Current Channel                             : 11
  Extension Channel                           : None
  Channel Width                               : 20 MHz
  Allowed Channel List                        : 1, 2, 3, 4, 5, 6, 7, 8, 9
                                                10, 11
  TI Threshold                                : 0
  Antenna Type                                : Internal
  Internal Antenna Gain (in .5 dBi units)     : 0
  Diversity                                   : Diversity enabled

  802.11n Antennas
    Tx                                        : A, B, C
    Rx                                        : A, B, C

Performance Profile Parameters
  Configuration                               : Automatic
  Interference Threshold                      : 10%
  Noise Threshold                             : -70 dBm
  RF Utilization Threshold                    : 80%
  Data Rate Threshold                         : 1000000 bps
  Client Threshold                            : 12 clients
  Coverage SNR Threshold                      : 15 dB
  Coverage Exception Level                    : 25%
  Client Minimum Exception Level              : 3 clients
```

```
Rogue Containment Information
  Containment Count                          : 0
```

show ap name core-dump

To display the memory core dump information for a lightweight access point, use the **show ap name core-dump** command.

show ap name *ap-name* **core-dump**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display the memory core dump information:

```
Switch# show ap name 3602a core-dump

TFTP server IP : 172.31.25.21
Memory core dump file : 3602a.dump
Memory core dump file compressed : Disabled
```

Related Commands

Command	Description
ap name core-dump	Configures an access point's memory core dump.

show ap name data-plane

To display the data plane status of a specific Cisco lightweight access point, use the **show ap name data-plane** command.

show ap name *ap-name* **data-plane**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display the data plane status of an access point:

```
Switch# show ap name AP01 data-plane

                      Min Data          Data          Max Data     Last
AP Name              Round Trip     Round Trip     Round Trip    Update
------------------  -------------  -------------  ------------- --------
AP01                   0.000s         0.000s        0.000s       00:00:00
```

show ap name dot11

To display 802.11a or 802.11b configuration information that corresponds to specific Cisco lightweight access points, use the **show ap name dot11** command.

show ap name *ap-name* **dot11** {**24ghz**| **5ghz**} {**ccx**| **cdp**| **profile**| **service-poicy output**| **stats**| **tsm** {**all**| *client-mac*}}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
24ghz	Displays the 2.4 GHz band.
5ghz	Displays the 5 GHz band.
ccx	Displays the Cisco Client eXtensions (CCX) radio management status information.
cdp	Displays Cisco Discovery Protocol (CDP) information.
profile	Displays configuration and statistics of 802.11 profiling.
service-policy output	Displays downstream service policy information.
stats	Displays Cisco lightweight access point statistics.
tsm	Displays 802.11 traffic stream metrics statistics.
all	Displays the list of all access points to which the client has associations.
client-mac	MAC address of the client.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display the service policy that is associated with the access point:

```
Switch# show ap name test-ap dot11 24ghz service-policy output
```

```
Policy Name  : test-ap1
Policy State : Installed
```

This example shows how to display the CCX RRM 802.11 configuration for a specific access point:

```
Switch# show ap name AP01 dot11 24ghz ccx
```

This example show how to display CDP information for a specific access point:

```
Switch# show ap name AP01 dot11 24ghz cdp

AP Name               AP CDP State
--------------------- --------------
AP03                  Disabled
```

This example show how to display the configuration and statistics of 802.11b profiling for a specific access point:

```
Switch# show ap name AP01 dot11 24ghz profile

 802.11b Cisco AP performance profile mode             : GLOBAL
 802.11b Cisco AP Interference threshold               : 10 %
 802.11b Cisco AP noise threshold                      : -70 dBm
 802.11b Cisco AP RF utilization threshold             : 80 %
 802.11b Cisco AP throughput threshold                 : 1000000 bps
 802.11b Cisco AP clients threshold                    : 12 clients
```

This example show how to display downstream service policy information for a specific access point:

```
Switch# show ap name AP01 dot11 24ghz service-policy output

Policy Name  : def-11gn
Policy State : Installed
```

This example show how to display statistics for a specific access point:

```
Switch# show ap name AP01 dot11 24ghz stats

Number of Users................................: 0
TxFragmentCount................................: 0
MulticastTxFrameCnt............................: 0
FailedCount....................................: 0
RetryCount.....................................: 0
MultipleRetryCount.............................: 0
FrameDuplicateCount............................: 0
RtsSuccessCount................................: 0
RtsFailureCount................................: 0
AckFailureCount................................: 0
RxIncompleteFragment...........................: 0
MulticastRxFrameCnt............................: 0
FcsErrorCount..................................: 0
TxFrameCount...................................: 0
WepUndecryptableCount..........................: 0
TxFramesDropped................................: 0

Call Admission Control (CAC) Stats
  Voice Bandwidth in use(% of config bw).....: 0
  Video Bandwidth in use(% of config bw).....: 0
  Total BW in use for Voice(%)...............: 0
  Total BW in use for SIP Preferred call(%)..: 0

Load based Voice Call Stats
  Total channel MT free......................: 0
  Total voice MT free........................: 0
  Na Direct..................................: 0
  Na Roam....................................: 0

WMM TSPEC CAC Call Stats
  Total num of voice calls in progress.......: 0
  Num of roaming voice calls in progress.....: 0
  Total Num of voice calls since AP joined...: 0
```

```
  Total Num of roaming calls since AP joined.....: 0
  Total Num of exp bw requests received..........: 0
  Total Num of exp bw requests admitted..........: 0
  Num of voice calls rejected since AP joined....: 0
  Num of roam calls rejected since AP joined.....: 0
  Num of calls rejected due to insufficent bw....: 0
  Num of calls rejected due to invalid params....: 0
  Num of calls rejected due to PHY rate..........: 0
  Num of calls rejected due to QoS policy........: 0

SIP CAC Call Stats
  Total Num of calls in progress.................: 0
  Num of roaming calls in progress...............: 0
  Total Num of calls since AP joined.............: 0
  Total Num of roaming calls since AP joined.....: 0
  Total Num of Preferred calls received..........: 0
  Total Num of Preferred calls accepted..........: 0
  Total Num of ongoing Preferred calls...........: 0
  Total Num of calls rejected(Insuff BW).........: 0
  Total Num of roam calls rejected(Insuff BW)....: 0

Band Select Stats
  Num of dual band client .......................: 0
  Num of dual band client added..................: 0
  Num of dual band client expired ...............: 0
  Num of dual band client replaced...............: 0
  Num of dual band client detected ..............: 0
  Num of suppressed client ......................: 0
  Num of suppressed client expired...............: 0
  Num of suppressed client replaced..............: 0
```

This example show how to display the traffic stream configuration for all clients that correspond to a specific access point:

```
Switch# show ap name AP01 dot11 24ghz tsm all
```

show ap name dot11 cleanair

To display CleanAir configuration information that corresponds to an access point, use the **show ap name dot11 cleanair** command.

show ap name *ap-name* **dot11** {**24ghz**| **5ghz**} **cleanair** {**air-quality**| **device**}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
24ghz	Displays the 2.4 GHz band.
5ghz	Displays the 5 GHz band.
cleanair	Displays CleanAir configuration information.
air-quality	Displays CleanAir air-quality (AQ) data.
device	Displays CleanAir interferers for an access point on the 5 GHz band.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display CleanAir air-quality information for an access point in the 802.11b network:

```
Switch# show ap name AP01 dot11 24ghz cleanair air-quality

AQ = Air Quality
DFS = Dynamic Frequency Selection
```

This example shows how to display CleanAir interferers information for an access point in the 802.11b network:

```
Switch# show ap name AP01 dot11 24ghz cleanair device

DC    = Duty Cycle (%)
ISI   = Interference Severity Index (1-Low Interference, 100-High Interference)
RSSI  = Received Signal Strength Index (dBm)
DevID = Device ID

No ClusterID DevID Type AP Name ISI RSSI DC Channel
-- --------- ----- ---- ------- --- ---- ----------
```

show ap name ethernet statistics

To display the Ethernet statistics of a specific Cisco lightweight access point, use the **show ap name ethernet statistics** command.

show ap name *ap-name* **ethernet statistics**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display the Ethernet statistics of an access point:

```
Switch# show ap name 3602a ethernet statistics

Ethernet Stats for AP 3602a

Interface Name      Status   Speed       Rx Packets    Tx Packets    Discarded Packets

-------------------------------------------------------------------------------------
GigabitEthernet0    UP       1000 Mbps   3793          5036          0
```

show ap name eventlog

To download and display the event log of a specific Cisco lightweight access point, use the **show ap name eventlog** command.

show ap name *ap-name* **eventlog**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display the event log for a specific access point:

```
Switch# show ap name AP01 eventlog
```

show ap name image

To display the detailed information about the predownloaded image for specified access points, use the **show ap name image** command.

show ap name *ap-name* **image**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display images present on all access points:

```
Switch# show ap name 3602a image

Total number of APs  : 1

Number of APs
        Initiated                   : 0
        Predownloading              : 0
        Completed predownloading    : 0
        Not Supported               : 1
        Failed to Predownload       : 0

AP Name      Primary Image   Backup Image    Predownload Status    Predownload Ver...  Next
 Retry Time    Retry Count
-------------------------------------------------------------------------------------------
3602a        10.0.1.234      0.0.0.0         Not supported         None                NA
                         0
```

show ap name inventory

To display inventory information for an access point, use the **show ap name inventory** command.

show ap name *ap-name* **inventory**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display inventory information for an access point:

```
Switch# show ap name 3502b inventory

NAME: Cisco AP    , DESCR: Cisco Wireless Access Point
PID: 1140AG  ,  VID: V01,  SN: SIM1140K001


NAME:     , DESCR:
PID: ,  VID: ,  SN:


NAME:     , DESCR:
PID: ,  VID: ,  SN:
NAME: Cisco AP    , DESCR: Cisco Wireless Access Point
PID: 3502I  ,  VID: V01,  SN: FTX1525E94A


NAME: Dot11Radio0    , DESCR: 802.11N 2.4GHz Radio
PID: UNKNOWN,  VID:  ,  SN: FOC1522BLNA


NAME: Dot11Radio1    , DESCR: 802.11N 5GHz Radio
PID: UNKNOWN,  VID:  ,  SN: FOC1522BLNA
```

show ap name link-encryption

To display the link-encryption status for a specific Cisco lightweight access point, use the **show ap name link-encryption** command.

show ap name *ap-name* **link-encryption**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display the link-encryption status for a specific Cisco lightweight access point:

```
Switch# show ap name AP01 link-encryption

                      Encryption  Dnstream  Upstream    Last
AP Name                    State     Count     Count  Update
------------------  ----------  --------  --------  ------
AP01                 Disabled         0         0   Never
```

show ap name service-policy

To display service-policy information for a specific Cisco lightweight access point, use the **show ap name service-policy** command.

show ap name *ap-name* **service-policy**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display service-policy information for a specific Cisco lightweight access point:

```
Switch# show ap name 3502b service-policy

NAME: Cisco AP    , DESCR: Cisco Wireless Access Point
PID: 3502I  ,  VID: V01,  SN: FTX1525E94A


NAME: Dot11Radio0    , DESCR: 802.11N 2.4GHz Radio
PID: UNKNOWN,  VID:  ,  SN: FOC1522BLNA


NAME: Dot11Radio1    , DESCR: 802.11N 5GHz Radio
PID: UNKNOWN,  VID:  ,  SN: FOC1522BLNA
```

show ap name tcp-adjust-mss

To display TCP maximum segment size (MSS) for an access point, use the **show ap name tcp-adjust-mss** command.

show ap name *ap-name* **tcp-adjust-mss**

Syntax Description

ap-name	Name of the Cisco lightweight access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display TCP MSS for an access point:

```
Switch# show ap name AP01 tcp-adjust-mss

AP Name                     TCP State        MSS Size
-------------------------------------------------------
AP01                        Disabled         6146
```

show ap name wlan

To display the Basic Service Set Identifier (BSSID) value for each WLAN defined on an access point and to display WLAN statistics, use the **show ap name wlan** command.

show ap name *ap-name* **wlan** {**dot11** {**24ghz**| **5ghz**}| **statistic**}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
dot11	Displays 802.11 parameters.
24ghz	Displays 802.11b network settings.
5ghz	Displays 802.11a network settings.
statistic	Displays WLAN statistics.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display BSSID information of an access point in an 802.11b network:

```
Switch# show ap name AP01 wlan dot11 24ghz

Site Name                                       : default-group
Site Description                                :

WLAN ID  Interface  BSSID
------------------------------------
1        default    00:00:20:00:02:00
12       default    00:00:20:00:02:0b
```

This example shows how to display WLAN statistics for an access point:

```
Switch# show ap name AP01 wlan statistic

WLAN ID  : 1
WLAN Profile Name  : maria-open

   EAP Id Request Msg Timeouts           : 0
   EAP Id Request Msg Timeouts Failures  : 0
   EAP Request Msg Timeouts              : 0
   EAP Request Msg Timeouts Failures     : 0
```

```
   EAP Key Msg Timeouts                  : 0
   EAP Key Msg Timeouts Failures         : 0


WLAN ID  : 12
WLAN Profile Name  : 24

   EAP Id Request Msg Timeouts           : 0
   EAP Id Request Msg Timeouts Failures  : 0
   EAP Request Msg Timeouts              : 0
   EAP Request Msg Timeouts Failures     : 0
   EAP Key Msg Timeouts                  : 0
   EAP Key Msg Timeouts Failures         : 0
```

show ap name wlandot11 service policy

To display the QoS policies for each Basic Service Set Identifier (BSSID) for an access point use commands

show apname*ap -name***wlan dot1124ghzservice-policy**

show apname*ap -name***wlan dot115ghzservice-policy**

Syntax Description

ap- name	Name of the Cisco lightweight access point.
service-policy	Service policy information for access point.

Command Default

None

Command History

Release	Modification
Cisco IOS XE 3E Cisco IOS XE 3.3SE	This command was introduced.

Examples

The following example shows how to display QoS policies for each BSSID.

```
Switchshow ap name <ap-name> wlan dot11 24ghz service-policy
```

show ap slots

To display a slot summary of all connected Cisco lightweight access points, use the **show ap slots** command.

show ap slots

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display a slot summary of all connected Cisco lightweight access points:

```
Controller# show ap slots

AP Name    Slots  AP Model    Slot0       Slot1      Slot2     Slot3
---------- ------ ----------- ----------- ---------- --------- --------
3602a      2      3502I       802.11b/g   802.11a    Unknown   Unknown
```

show ap summary

To display the status summary of all Cisco lightweight access points attached to the switch, use the **show ap summary** command.

show ap summary

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Use this command to display a list that contains each lightweight access point name, number of slots, manufacturer, MAC address, location, and the switch port number.

Examples

This example shows how to display a summary of all connected access points:

```
Controller# show ap summary

Number of APs: 1

Global AP User Name: Cisco
Global AP Dot1x User Name: Not configured

AP Name                          AP Model  Ethernet MAC    Radio MAC       State
-----------------------------------------------------------------------------------
3602a                            3502I     003a.99eb.3fa8  d0c2.8267.8b00  Registered
```

show ap tcp-adjust-mss

To display information about the Cisco lightweight access point TCP Maximum Segment Size (MSS), use the **show ap tcp-adjust-mss** command.

show ap tcp-adjust-mss

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to display information about the access point TCP MSS information:

```
Controller# show ap tcp-adjust-mss

AP Name                    TCP State        MSS Size
-----------------------------------------------------
3602a                      Disabled         0
```

show ap uptime

To display the up time of all connected Cisco lightweight access points, use the **show ap uptime** command.

show ap uptime

Syntax Description

This command has no keywords and arguments.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to the display up time of all connected access points:

```
Controller# show ap uptime

Number of APs : 1

Global AP User Name : Cisco
Global AP Dot1x User Name : Not configured

AP Name Ethernet MAC    AP Up Time                      Association Up Time

------- --------------- ------------------------------ ------------------------------
3602a   003a.99eb.3fa8  5 hours 13 minutes 40 seconds  5 hours 12 minutes 15 seconds
```

show wireless client ap

To display the clients on a Cisco lightweight access point, use the **show wireless client ap** command.

show wireless client ap [**name** *ap-name*] **dot11** {**24ghz**| **5ghz**}

Syntax Description

name *ap-name*	(Optional) Displays the name of the Cisco lightweight access point.
dot11	Displays 802.11 parameters.
24ghz	Displays the 2.4 GHz band.
5ghz	Displays the 5 GHz band.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The **show client ap** command might list the status of automatically disabled clients. Use the **show exclusionlist** command to view clients on the exclusion list (blacklisted).

Examples

This example shows how to display client information on a specific Cisco lightweight access point in the 2.4 GHz band:

```
Switch# show wireless client ap name AP01 dot11 24ghz

MAC Address       AP Id  Status     WLAN Id Authenticated
----------------- ------ ---------- ------- -------------
xx:xx:xx:xx:xx:xx 1      Associated 1       No
```

test ap name

To enable automatic testing of the path Maximum Transmit Unit (MTU) between the access point and the switch, use the **test ap name** command.

test ap name *ap-name* **pmtu** {**disable size** *size*| **enable**}

Syntax Description

ap-name	Name of the target Cisco lightweight access point.
pmtu	Tests the MTU configuration for the access point.
disable	Disables path MTU testing and manually configures the MTU value in bytes.
size *size*	Specifies the path MTU size. **Note** The range is from 576 to 1700.
enable	Enables the path MTU testing for the access point.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to disable the path MTU configuration for all access points associated to the switch:

```
Controller# test ap name 3602a pmtu enable
```

test capwap ap name

To test Control and Provisioning of Wireless Access Points (CAPWAP) parameters for a specific Cisco lightweight access points, use the **test capwap ap name** command.

test capwap ap name *ap-name* {**encryption** {**enable| disable**}| **message** *token*}

Syntax Description

ap-name	Name of the Cisco lightweight access point.
encryption	Tests the Datagram Transport Layer Security (DTLS) encryption.
enable	Tests if DTLS encryption is enabled.
disable	Tests if DTLS encryption is disabled.
message *token*	Specifies an RRM neighbor message to send.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to test if DTLS encryption is enabled for a specific access point:

```
Controller# test capwap ap name 3602a encryption enable
```

This example shows how to test if DTLS encryption is disabled for a specific access point:

```
Controller# test capwap ap name 3602a encryption disable
```

trapflags ap

To enable the sending of specific Cisco lightweight access point traps, use the **trapflags ap** command. To disable the sending of Cisco lightweight access point traps, use the **no** form of this command.

trapflags ap {**register**| **interfaceup**}

no trapflags ap {**register**| **interfaceup**}

Syntax Description

register	Enables sending a trap when a Cisco lightweight access point registers with a Cisco switch.
interfaceup	Enables sending a trap when a Cisco lightweight access point interface (A or B) comes up.

Command Default

Enabled

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

Examples

This example shows how to prevent traps from sending access point-related traps:

```
Switch(config)# no trapflags ap register
```

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