Preface

This preface describes the audience, organization, and conventions of the *Cisco Wireless LAN Command Reference Guide, Release 7.0*. It also provides information on how to obtain other documentation. This chapter includes the following sections:

- Audience, page 3
- Organization, page 4
- Conventions, page 4
- Related Documentation, page 5
- Obtaining Documentation and Submitting a Service Request, page 5

Audience

This publication is for experienced network administrators who configure and maintain Cisco wireless LAN controllers and Cisco lightweight access points.

Purpose

This guide describes the tasks and commands available to configure and maintain Cisco wireless LAN controllers.

**Note**

This version of the *Cisco Wireless LAN Controller Command Reference* pertains specifically to controller software release 7.0.
Organization

This guide is organized into these chapters:

<table>
<thead>
<tr>
<th>Chapter Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1, “Using the Command-Line Interface”</td>
<td>Describes how to use the command-line interface (CLI) on the controller.</td>
</tr>
<tr>
<td>Chapter 2, “CLI Commands”</td>
<td>Provides detailed information about the CLI commands for the controller 7.0 release.</td>
</tr>
</tbody>
</table>

Conventions

This document uses the following conventions:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>bold</strong> font</td>
<td>Commands and keywords and user-entered text appear in <strong>bold</strong> font.</td>
</tr>
<tr>
<td><em>italic</em> font</td>
<td>Document titles, new or emphasized terms, and arguments for which you supply values are in <em>italic</em> font.</td>
</tr>
<tr>
<td>[ ]</td>
<td>Elements in square brackets are optional.</td>
</tr>
<tr>
<td>[x</td>
<td>y</td>
</tr>
<tr>
<td>[x</td>
<td>y</td>
</tr>
<tr>
<td>string</td>
<td>A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.</td>
</tr>
<tr>
<td><strong>courier</strong> font</td>
<td>Terminal sessions and information the system displays appear in <strong>courier</strong> font.</td>
</tr>
<tr>
<td>&lt; &gt;</td>
<td>Nonprinting characters such as passwords are in angle brackets.</td>
</tr>
<tr>
<td>[ ]</td>
<td>Default responses to system prompts are in square brackets.</td>
</tr>
<tr>
<td>!, #</td>
<td>An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.</td>
</tr>
</tbody>
</table>

**Note** means reader take note.

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

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

These documents provide complete information about the Cisco Unified Wireless Network solution:

- Quick Start Guide: Cisco 2100 Series Wireless LAN Controllers
- Quick Start Guide: Cisco 4400 Series Wireless LAN Controllers
- Cisco 5500 Series Wireless Controller Installation Guide
- Cisco Wireless LAN Controller Command Reference
- Cisco Wireless Control System Configuration Guide
- Release Noted for Cisco Wireless LAN Controllers and Lightweight Access Points, Release 7.0
- Quick Start Guide: Cisco Wireless Control System
- Quick start guide and hardware installation guide for your specific lightweight access point

Click this link to browse to user documentation for the Cisco Unified Wireless Network solution:


Obtaining Documentation and Submitting a Service Request

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


Subscribe to the What’s New in Cisco Product Documentation as an 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

The command-line interface (CLI) is a line-oriented user interface that provides commands for configuring, managing, and monitoring the Cisco wireless LAN controller. This chapter contains the following topics:

- CLI Command Keyboard Shortcuts, page 1-2
- Using the Interactive Help Feature, page 1-3
## CLI Command Keyboard Shortcuts

Table 1-1 lists CLI keyboard shortcuts to help you enter and edit command lines on the controller.

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
<th>Keyboard Shortcut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change</td>
<td>The word at the cursor to lowercase.</td>
<td>Esc I</td>
</tr>
<tr>
<td></td>
<td>The word at the cursor to uppercase.</td>
<td>Esc u</td>
</tr>
<tr>
<td>Delete</td>
<td>A character to the left of the cursor.</td>
<td>Ctrl-h, Delete, or Backspace</td>
</tr>
<tr>
<td></td>
<td>All characters from the cursor to the beginning of the line.</td>
<td>Ctrl-u</td>
</tr>
<tr>
<td></td>
<td>All characters from the cursor to the end of the line.</td>
<td>Ctrl-k</td>
</tr>
<tr>
<td></td>
<td>All characters from the cursor to the end of the word.</td>
<td>Esc d</td>
</tr>
<tr>
<td></td>
<td>The word to the left of the cursor.</td>
<td>Ctrl-w or Esc Backspace</td>
</tr>
<tr>
<td>Display MORE output</td>
<td>Exit from MORE output.</td>
<td>q, Q, or Ctrl-C</td>
</tr>
<tr>
<td></td>
<td>Next additional screen. The default is one screen. To display more than one screen, enter a number before pressing the Spacebar key.</td>
<td>Spacebar</td>
</tr>
<tr>
<td></td>
<td>Next line. The default is one line. To display more than one line, enter the number before pressing the Enter key.</td>
<td>Enter</td>
</tr>
<tr>
<td>Enter an Enter or Return key character.</td>
<td></td>
<td>Ctrl-m</td>
</tr>
<tr>
<td>Expand the command or abbreviation.</td>
<td></td>
<td>Ctrl-t or Tab</td>
</tr>
<tr>
<td>Move the cursor</td>
<td>One character to the left (back).</td>
<td>Ctrl-b or Left Arrow</td>
</tr>
<tr>
<td></td>
<td>One character to the right (forward).</td>
<td>Ctrl-f or Right Arrow</td>
</tr>
<tr>
<td></td>
<td>One word to the left (back), to the beginning of the current or previous word.</td>
<td>Esc b</td>
</tr>
<tr>
<td></td>
<td>One word to the right (forward), to the end of the current or next word.</td>
<td>Esc f</td>
</tr>
<tr>
<td></td>
<td>To the beginning of the line.</td>
<td>Ctrl-a</td>
</tr>
<tr>
<td></td>
<td>To the end of the line.</td>
<td>Ctrl-e</td>
</tr>
<tr>
<td>Redraw the screen at the prompt.</td>
<td></td>
<td>Ctrl-l or Ctrl-r</td>
</tr>
<tr>
<td>Return to the EXEC mode from any configuration mode</td>
<td></td>
<td>Ctrl-z</td>
</tr>
<tr>
<td>Return to the previous mode or exit from the CLI from Exec mode.</td>
<td></td>
<td>exit command</td>
</tr>
<tr>
<td>Transpose a character at the cursor with a character to the left of the cursor.</td>
<td></td>
<td>Ctrl-t</td>
</tr>
</tbody>
</table>
Using the Interactive Help Feature

The question mark (?) character allows you to get the following type of help about the command at the command line. Table 1-2 lists the interactive help feature list.

Table 1-2 Interactive Help Feature List

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>help</td>
<td>Provides a brief description of the Help feature in any command mode.</td>
</tr>
<tr>
<td>? at the command prompt</td>
<td>Lists all commands available for a particular command mode.</td>
</tr>
<tr>
<td>partial command?</td>
<td>Provides a list of commands that begin with the character string.</td>
</tr>
<tr>
<td>partial command&lt;Tab&gt;</td>
<td>Completes a partial command name.</td>
</tr>
<tr>
<td>command ?</td>
<td>Lists the keywords, arguments, or both associated with a command.</td>
</tr>
<tr>
<td>command keyword ?</td>
<td>Lists the arguments that are associated with the keyword.</td>
</tr>
</tbody>
</table>

Using the Help Command

To look up keyboard commands, use the help command at the root level.

```
help
```

Usage Guidelines

Help may be requested at any point in a command by entering a question mark ‘?’. If nothing matches, the help list will be empty and you must back up until entering a ‘?’ shows the available options. Two types of help are available

1. Full help is available when you are ready to enter a command argument (for example show ?) and describes each possible argument.

2. Partial help is provided when an abbreviated argument is entered and you want to know what arguments match the input (for example show pr?).

Examples

```
> help
HELP:
   Special keys:
   DEL, BS... delete previous character
   Ctrl-A .... go to beginning of line
   Ctrl-E .... go to end of line
   Ctrl-F .... go forward one character
   Ctrl-B .... go backward one character
   Ctrl-D .... delete current character
   Ctrl-U, X. delete to beginning of line
   Ctrl-K .... delete to end of line
   Ctrl-W .... delete previous word
   Ctrl-T .... transpose previous character
   Ctrl-P .... go to previous line in history buffer
   Ctrl-N .... go to next line in history buffer
   Ctrl-Z .... return to root command prompt
   Tab, <SPACE> command-line completion
```
Using the Interactive Help Feature

Chapter 1      Using the Command-Line Interface

Using the ? command

To display all of the commands in your current level of the command tree, or to display more information about a particular command, use the ? command.

command name ?

Usage Guidelines

Usage Guidelines
When you enter a command information request, put a space between the command name and ?.

Examples

This command shows you all the commands and levels available from the root level.

> ?
clear Clear selected configuration elements.
cfg Configure switch options and settings.
dev debug Manages system debug options.
help Help
linktest Perform a link test to a specified MAC address.
logout Exit this session. Any unsaved changes are lost.
ping Send ICMP echo packets to a specified IP address.
reset Reset options.
save Save switch configurations.
show Display switch options and settings.
transfer Transfer a file to or from the switch.

Using the partial? command

To provide a list of commands that begin with the character string, use the partial command ?.

partial command?

Usage Guidelines

Usage Guidelines
There should be no space between the command and the question mark.

Examples

This example shows how to provide a command that begin with the character string “ad”:

> controller> config>ad?
The command that matches with the string “ad” is as follows:

advanced
Using the partial command<tab>

To complete a partial command name, use the **partial command<tab>** command.

```
partial command<tab>
```

**Usage Guidelines**

There should be no space between the command and <tab>.

**Examples**

This example shows how to complete a partial command name that begin with the character string “ad”:

```
> Controller>config>cert<tab> certificate
```

Using the command ?

To list the keywords, arguments, or both associated with the command, use the **command ?**.

```
command ?
```

**Usage Guidelines**

There should be space between the command and the question mark.

**Examples**

This example shows how to list the arguments and keyword for the command `acl`:

```
> Controller >config acl ?
```

Information similar to the following appears:

```
apply          Applies the ACL to the data path.
counter        Start/Stop the ACL Counters.
create         Create a new ACL.
delete         Delete an ACL.
rule           Configure rules in the ACL.
cpu            Configure the CPU Acl Information
```
command keyword ?

To list the arguments that are associated with the keyword, use the command keyword ?

command keyword ?

Usage Guidelines
There should be space between the keyword and the question mark.

Examples
This example shows how to display the arguments associated with the keyword cpu:

> controller>config acl cpu ?

Information similar to the following appears:

none          None - Disable the CPU ACL
=name>         <name> - Name of the CPU ACL
CLI Commands

The Cisco Wireless LAN solution command-line interface (CLI) enables operators to connect an ASCII console to the Cisco wireless LAN controller and configure the controller and its associated access points.

This chapter contains the commands available in the Cisco CLI release 7.0. The controllers currently covered are as follows:
- Cisco 2100, 4400, and 5500 Series Wireless LAN Controllers
- Cisco Wireless Services Modules (WiSMs)
- Cisco wireless LAN controller Network Modules
- Catalyst 3750G Integrated Wireless LAN Controller Switches

This document contains the following sections:
- Show Commands for Viewing the Configuration, page 2-2
- Configuring Controller Settings, page 2-293
- Saving Configurations, page 2-932
- Clearing Configurations, Logfiles, and Other Actions, page 2-934
- Uploading and Downloading Files and Configurations, page 2-970
- Installing and Modifying Licenses, page 2-994
- Troubleshooting Commands, page 2-1002
Show Commands for Viewing the Configuration

To display Cisco wireless LAN controller options and settings, use the `show` commands.
Show 802.11 Commands

Use the **show 802.11** commands to display more detailed 802.11a, 802.11b/g, or other supported 802.11 network settings.
show 802.11

To display basic 802.11a, 802.11b/g, or 802.11h network settings, use the show 802.11 command.

`show 802.11{a | b | h}`

Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>h</td>
<td>Specifies the 802.11h network.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows to display basic 802.11a network settings:

```
> show 802.11a

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 Rate.............................. Mandatory
  802.11a 9M Rate.............................. Supported
  802.11a 12M Rate............................. Mandatory
  802.11a 18M Rate............................. Mandatory
  802.11a 24M Rate............................. Mandatory
  802.11a 36M Rate............................. Supported
  802.11a 48M Rate............................. Supported
  802.11a 54M Rate............................. Supported
802.11n MCS Settings:
  MCS 0........................................ Supported
  MCS 1........................................ Supported
  MCS 2........................................ Supported
  MCS 3........................................ Supported
  MCS 4........................................ Supported
  MCS 5........................................ Supported
--More-- or (q)uit
  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
802.11n Status:
  A-MPDU Tx:
    Priority 0............................... Enabled
    Priority 1............................... Disabled
    Priority 2............................... Disabled
    Priority 3............................... Disabled
```
show 802.11h

802.11h ........................................ powerconstraint : 0
802.11h ........................................ channelswitch : Disable
802.11h ........................................ channelswitch mode : 0

Related Commands
show ap stats
show ap summary
show client summary
show interface
show network
show network summary
show port
show wlan
show 802.11 cleanair

To display the multicast-direct configuration state, use the `show 802.11 cleanair` command.

```
show 802.11{a | b | h} cleanair config
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>h</td>
<td>Specifies the 802.11h network.</td>
</tr>
<tr>
<td>config</td>
<td>Displays the network cleanair configuration.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to display the 802.11a cleanair configuration:

```
> show 802.11a cleanair config
Clean Air Solution............................... Enabled
Air Quality Settings:
  Air Quality Reporting........................ Enabled
  Air Quality Reporting Period (min)........... 15
  Air Quality Alarms......................... Enabled
  Air Quality Alarm Threshold................ 35 Interference Device Settings:
  Interference Device Reporting............... Enabled
  Interference Device Types:
    TDD Transmitter.......................... Disabled
    Jammer................................. Disabled
    Continuous Transmitter.................. Disabled
    DECT-like Phone........................ Disabled
    Video Camera........................... Disabled
    WiFi Inverted.......................... Disabled
    WiFi Invalid Channel................... Disabled
    SuperAG............................... Disabled
    Radar.................................. Disabled
    Canopy................................ Disabled
    WiMax Mobile........................... Disabled
    WiMax Fixed............................ Disabled

Interference Device Alarms.................... Enabled
  Interference Device Types Triggering Alarms:
    TDD Transmitter.......................... Disabled
    Jammer................................. Disabled
    Continuous Transmitter.................. Disabled
    DECT-like Phone........................ Disabled
    Video Camera........................... Disabled
    WiFi Inverted.......................... Disabled
    WiFi Invalid Channel................... Disabled
    SuperAG............................... Disabled
    Radar.................................. Disabled
    Canopy................................ Disabled
    WiMax Mobile........................... Disabled
    WiMax Fixed............................ Disabled

Additional Clean Air Settings:
  CleanAir Event-driven RRM State............ Enabled
  CleanAir Driven RRM Sensitivity............. Medium
  CleanAir Persistent Devices state......... Disabled
```
show 802.11 cleanair

Related Commands

- config 802.11 cleanair alarm
- config 802.11 cleanair device
- show 802.11 cleanair air-quality summary
- show 802.11 cleanair device ap
- show 802.11 cleanair device type
show 802.11 cleanair air-quality summary

To display the air quality summary information for the 802.11 networks, use the show 802.11 cleanair air-quality summary command.

show 802.11{a | b | h} cleanair air-quality summary

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>h</td>
<td>Specifies the 802.11h network.</td>
</tr>
<tr>
<td>summary</td>
<td>Displays a summary of 802.11 radio band air quality information.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to display a summary of the air quality information for the 802.11a network:

> show 802.11a cleanair air-quality summary

AQ = Air Quality
DFS = Dynamic Frequency Selection

<table>
<thead>
<tr>
<th>AP Name</th>
<th>Channel</th>
<th>Avg AQ</th>
<th>Min AQ</th>
<th>Interferers</th>
<th>DFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CISCO_AP3500</td>
<td>36</td>
<td>95</td>
<td>70</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>CISCO_AP3500</td>
<td>40</td>
<td>93</td>
<td>75</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Related Commands

config 802.11 cleanair alarm
config 802.11 cleanair device
show 802.11 cleanair
show 802.11 cleanair device ap
show 802.11 cleanair device type
show 802.11 cleanair air-quality worst

To display the worst air quality information for the 802.11 networks, use the show 802.11 cleanair air-quality worst command.

show 802.11(a | b | h) cleanair air-quality worst

Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>h</td>
<td>Specifies the 802.11h network.</td>
</tr>
<tr>
<td>worst</td>
<td>Displays the worst air quality information for 802.11 networks.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to display worst air quality information for the 802.11a network:

```
> show 802.11a 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
```

Related Commands

- config 802.11 cleanair alarm
- config 802.11 cleanair device
- show 802.11 cleanair
- show 802.11 cleanair device ap
- show 802.11 cleanair device type
show 802.11 cleanair device ap

To display the information of the device access point on the 802.11 radio band, use the `show 802.11 cleanair device ap` command.

```
show 802.11{a | b | h} cleanair device ap cisco_ap
```

**Syntax Description**

- **a** Specifies the 802.11a network.
- **b** Specifies the 802.11b/g network.
- **h** Specifies the 802.11h network.
- **cisco_ap** Specified access point name.

**Defaults**

None.

**Examples**

This example shows how to display the device access point for the 802.11a network:

```
> show 802.11a cleanair device ap AP_3500
```

<table>
<thead>
<tr>
<th>No</th>
<th>ClusterID</th>
<th>DevID</th>
<th>Type</th>
<th>AP Name</th>
<th>ISI</th>
<th>RSSI</th>
<th>DC</th>
<th>Channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>c2:f7:40:00:00:03</td>
<td>0x8001</td>
<td>DECT phone</td>
<td>CISCO_AP3500</td>
<td>1</td>
<td>-43</td>
<td>3</td>
<td>149,153,157,161</td>
</tr>
<tr>
<td>2</td>
<td>c2:f7:40:00:00:51</td>
<td>0x8002</td>
<td>Radar</td>
<td>CISCO_AP3500</td>
<td>1</td>
<td>-81</td>
<td>2</td>
<td>153,157,161,165</td>
</tr>
<tr>
<td>3</td>
<td>c2:f7:40:00:00:03</td>
<td>0x8005</td>
<td>Canopy</td>
<td>CISCO_AP3500</td>
<td>2</td>
<td>-62</td>
<td>2</td>
<td>153,157,161,165</td>
</tr>
</tbody>
</table>

**Related Commands**

- `config 802.11 cleanair alarm`
- `config 802.11 cleanair device`
- `show 802.11 cleanair`
- `show 802.11 cleanair air-quality summary`
- `show 802.11 cleanair device type`
show 802.11 cleanair device type

To display the information of all the interferers device type detected by a specific access point on the 802.11 radio band, use the `show 802.11 cleanair device type` command.

```
show 802.11{a | b | h} cleanair device type device_type
```

### Syntax Description

| a | Specifies the 802.11a network. |
| b | Specifies the 802.11b/g network. |
| h | Specifies the 802.11h network. |

**device_type**

Interferer device type for a specified radio band. The device type is one of the following:

- `tdd-tx`—Tdd-transmitter device information.
- `jammer`—Jammer device information.
- `cont-tx`—Continuous-transmitter devices information.
- `dect-like`—Dect-like phone devices information.
- `video`—Video devices information.
- `802.11-inv`—WiFi inverted devices information.
- `802.11-nonstd`—Nonstandard WiFi devices information.
- `superag`—Superag devices information.
- `canopy`—Canopy devices information.
- `wimax-mobile`—WiMax mobile devices information.
- `wimax-fixed`—WiMax fixed devices information.

### Defaults

None.

### Examples

This example shows how to display the information of all the interferers detected by a specified access point for the 802.11a network:

```
> show 802.11a cleanair device type Canopy
```

<table>
<thead>
<tr>
<th>DC</th>
<th>ISI</th>
<th>RSSI</th>
<th>DC Channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>153,157,161,165</td>
<td>-62</td>
<td></td>
</tr>
</tbody>
</table>
show 802.11 media-stream

To display the multicast-direct configuration state, use the show 802.11 media-stream command.

    show 802.11 {a | b | h} media-stream media-stream name

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>h</td>
<td>Specifies the 802.11h network.</td>
</tr>
<tr>
<td>media_stream_name</td>
<td>Specified media stream name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display the media-stream configuration:

```
> show 802.11a media-stream rrc

Multicast-direct................................. Enabled
Best Effort...................................... Disabled
Video Re-Direct.................................. Enabled
Max Allowed Streams............................. Auto
Max Video Bandwidth.............................. 0
Max Voice Bandwidth.............................. 75
Max Media Bandwidth.............................. 85
Min PHY Rate..................................... 6000
```

**Related Commands**

- show 802.11 media-stream
- Show Mesh Commands
- show media-stream group summary
show aaa auth

To display the configuration settings for the AAA authentication server database, use the `show aaa auth` command.

```
show aaa auth
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display the configuration settings for the AAA authentication server database:

```
> show aaa auth

Management authentication server order:
1. ............................................ local
2. ............................................ tacacs
```

**Related Commands**
- `config aaa auth`
- `config aaa auth mgmt`
show acl

To display the access control lists (ACLs) that are configured on the controller, use the `show acl` command.

```
show acl { summary | detailed acl_name }
```

**Syntax Description**
- **summary**: Displays a summary of all ACLs configured on the controller.
- **detailed**: Displays detailed information about a specific ACL.
- **acl_name**: ACL name. The name can be up to 32 alphanumeric characters.

**Defaults**
None.

**Examples**
This example shows how to display a summary of the access control lists:

```
> show acl summary
ACL Counter Status  Enabled
------------------- ---------
ACL Name  Applied
----------  --------
acl1      Yes
acl2      Yes
acl3      Yes
```

This example shows how to display the detailed information of the access control lists:

```
> show acl detailed acl_name

<table>
<thead>
<tr>
<th>Source</th>
<th>Destination</th>
<th>Source Port</th>
<th>Dest Port</th>
<th>DSCP</th>
<th>Action</th>
<th>Counter</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Dir</td>
<td>IP Address/Netmask</td>
<td>Prot</td>
<td>Range</td>
<td>Range</td>
<td>DSCP</td>
<td>Action</td>
</tr>
<tr>
<td>1</td>
<td>Any 0.0.0.0/0.0.0.0</td>
<td>0-65535</td>
<td>0-65535</td>
<td>0</td>
<td>Deny</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>In 0.0.0.0/0.0.0.0</td>
<td>6</td>
<td>80-80</td>
<td>0-65535</td>
<td>Any</td>
<td>Permit</td>
</tr>
</tbody>
</table>

DenyCounter: 0
```

**Note** The Counter field increments each time a packet matches an ACL rule, and the DenyCounter field increments each time a packet does not match any of the rules.

**Related Commands**
- clear acl counters
- config acl apply
- config acl counter
- config acl cpu
- config acl create
- config acl delete
config interface acl
config acl rule
show acl cpu
show acl cpu

To display the access control lists (ACLs) configured on the central processing unit (CPU), use the `show acl cpu` command.

```
show acl cpu
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display the access control lists on the CPU:
```
> show acl cpu
CPU Acl Name.............................
Wireless Traffic......................... Disabled
Wired Traffic............................. Disabled
Applied to NPU........................... No
```

**Related Commands**
clear acl counters
cfg acl apply
cfg acl counter
cfg acl cpu
cfg acl create
cfg acl delete
cfg acl rule
cfg interface acl
show acl
Show Advanced 802.11 Commands

Use the `show advanced 802.11` commands to display more detailed or advanced 802.11a, 802.11b/g, or other supported 802.11 network settings.
show advanced 802.11 channel

To display the automatic channel assignment configuration and statistics, use the show advanced 802.11 channel command.

show advanced 802.11\{a \mid b\} channel

Syntax Description

| a | Specifies the 802.11a network. |
| b | Specifies the 802.11b/g network. |

Defaults

None.

Examples

This example shows how to display the automatic channel assignment configuration and statistics:

> show advanced 802.11a channel

Automatic Channel Assignment
Channel Assignment Mode:......................... AUTO
Channel Update Interval:......................... 600 seconds [startup]
Anchor time (Hour of the day):................. 0
Channel Update Contribution:................. SN1.
Channel Assignment Leader:.................... 00:1a:6d:dd:1e:40
Last Run:....................................... 129 seconds ago

DCA Sensitivity Level: ......................... STARTUP (5 dB)
Channel Energy Levels
Minimum:......................................... unknown
Average:........................................ unknown
Maximum:........................................ unknown
Channel Dwell Times
Minimum:......................................... unknown
Average:........................................ unknown
Maximum:........................................ unknown
Auto-RF Allowed Channel List:................. 36,40,44,48,52,56,60,64,149,
............................................. ,153,157,161
Auto-RF Unused Channel List:..................... 100,104,108,112,116,132,136,
............................................. ,140,165,190,196

DCA Outdoor AP option:......................... Enabled

Related Commands

config advanced 802.11 channel add
config advanced 802.11 channel cleanair-event
config advanced 802.11 channel dca anchor-time
config advanced 802.11 channel dca chan-width-11n
config advanced 802.11 channel dca interval
config advanced 802.11 channel dca sensitivity
config advanced 802.11 channel foreign
config advanced 802.11 channel load
config advanced 802.11 channel noise
config advanced 802.11 channel update
show advanced 802.11 channel
show advanced 802.11 coverage

To display the configuration and statistics for coverage hole detection, use the show advanced 802.11 coverage command.

show advanced 802.11{a | b} coverage

Syntax Description

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to display the statistics for coverage hole detection:

> show advanced 802.11a coverage

Coverage Hole Detection
  802.11a Coverage Hole Detection Mode........... Enabled
  802.11a Coverage Voice Packet Count............ 100 packets
  802.11a Coverage Voice Packet Percentage..... 50%
  802.11a Coverage Voice RSSI Threshold......... -80 dBm
  802.11a Coverage Data Packet Count............ 50 packets
  802.11a Coverage Data Packet Percentage...... 50%
  802.11a Coverage Data RSSI Threshold......... -80 dBm
  802.11a Global coverage exception level....... 25%
  802.11a Global client minimum exception lev... 3 clients

Related Commands

config advanced 802.11 coverage
config advanced 802.11 coverage exception global
config advanced 802.11 coverage fail-rate
config advanced 802.11 coverage level global
config advanced 802.11 coverage packet-count
config advanced 802.11 coverage rssi-threshold
show advanced 802.11 coverage
show advanced 802.11 group

To display 802.11a or 802.11b Cisco radio RF grouping, use the **show advanced 802.11 group** command.

```
show advanced 802.11{a | b} group
```

**Syntax Description**

- `a` Specifies the 802.11a network.
- `b` Specifies the 802.11b/g network.

**Defaults**

None.

**Examples**

This example shows how to display Cisco radio RF group settings:

```
> show advanced 802.11a group

Radio RF Grouping
  802.11a Group Mode................................. AUTO
  802.11a Group Update Interval.................... 600 seconds
  802.11a Group Member............................. xx:xx:xx:xx:xx:xx
  802.11a Last Run................................. 133 seconds ago
```

**Related Commands**

- `config advanced 802.11 group-mode`
show advanced 802.11 l2roam

To display 802.11a or 802.11b/g Layer 2 client roaming information, use the **show advanced 802.11 l2roam** command.

```
show advanced 802.11{a | b} l2roam {rf-param | statistics mac_address}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
<td></td>
</tr>
<tr>
<td>rf-param</td>
<td>Specifies the Layer 2 frequency parameters.</td>
<td></td>
</tr>
<tr>
<td>statistics</td>
<td>Specifies the Layer 2 client roaming statistics.</td>
<td></td>
</tr>
<tr>
<td>mac_address</td>
<td>MAC address of the client.</td>
<td></td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display 802.11b Layer 2 client roaming information, enter this command:

```
> show advanced 802.11b l2roam rf-param
```

L2Roam 802.11bg RF Parameters....................
  Config Mode.................................. Default
  Minimum RSSI.................................. -85
  Roam Hysteresis................................ 2
  Scan Threshold................................ -72
  Transition time.............................. 5

**Related Commands**

`config 802.11 l2roam rf-params`
show advanced 802.11 logging

To display 802.11a or 802.11b RF event and performance logging, use the show advanced 802.11 logging command.

```
show advanced 802.11{a | b} logging
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display 802.11b RF event and performance logging:

```
> show advanced 802.11b 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
```

**Related Commands**

- config advanced 802.11 logging channel
- config advanced 802.11 logging coverage
- config advanced 802.11 logging foreign
- config advanced 802.11 logging load
- config advanced 802.11 logging noise
- config advanced 802.11 logging performance
- config advanced 802.11 logging txpower
- show advanced 802.11 channel
show advanced 802.11 monitor

To display the 802.11a or 802.11b default Cisco radio monitoring, use the `show advanced 802.11 monitor` command.

```
show advanced 802.11{a | b} monitor
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>a</th>
<th>Specifies the 802.11a network.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display the radio monitoring for the 802.11b network:

```
> show advanced 802.11b monitor

Default 802.11b AP monitoring
  802.11b Monitor Mode....................... enable
  802.11b Monitor Channels................... Country channels
  802.11b AP Coverage Interval............. 180 seconds
  802.11b AP Load Interval.................. 60 seconds
  802.11b AP Noise Interval................. 180 seconds
  802.11b AP Signal Strength Interval...... 60 seconds
```

**Related Commands**

- `config advanced 802.11 monitor load`
- `config advanced 802.11 monitor mode`
- `config advanced 802.11 monitor noise`
- `config advanced 802.11 monitor signal`
show advanced 802.11 profile

To display the 802.11a or 802.11b lightweight access point performance profiles, use the show advanced 802.11 profile command.

```
show advanced 802.11{a | b} profile {global | cisco_ap}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>global</td>
<td>Specifies all Cisco lightweight access points.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Name of a specific Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to display the global configuration and statistics of an 802.11a profile:

```
> show advanced 802.11a profile global
```

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

This example shows how to display the configuration and statistics of a specific access point profile:

```
> show advanced 802.11a profile AP1
```

Cisco AP performance profile not customized

This response indicates that the performance profile for this lightweight access point is using the global defaults and has not been individually configured.

Related Commands

- config advanced 802.11 profile clients
- config advanced 802.11 profile customize
- config advanced 802.11 profile foreign
- config advanced 802.11 profile noise
show advanced 802.11 receiver

To display the configuration and statistics of the 802.11a or 802.11b receiver, use the **show advanced 802.11 receiver** command.

**show advanced 802.11\{a \mid b\} receiver**

<table>
<thead>
<tr>
<th>Syntax/Description</th>
<th>a</th>
<th>Specifies the 802.11a network.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
</tbody>
</table>

**Defaults**
None.

**Examples**
This example shows how to display the configuration and statistics of the 802.11a network settings:

```
> show advanced 802.11a receiver

802.11a Receiver Settings
  RxStart : Signal Threshold......................... 15
  RxStart : Signal Lamp Threshold..................... 5
  RxStart : Preamble Power Threshold.................. 2
  RxReStart : Signal Jump Status....................... Enabled
  RxReStart : Signal Jump Threshold................... 10
  TxStomp : Low RSSI Status.......................... Enabled
  TxStomp : Low RSSI Threshold......................... 30
  TxStomp : Wrong BSSID Status........................ Enabled
  TxStomp : Wrong BSSID Data Only Status............. Enabled
  RxAbort : Raw Power Drop Status..................... Disabled
  RxAbort : Raw Power Drop Threshold.................. 10
  RxAbort : Low RSSI Status........................... Disabled
  RxAbort : Low RSSI Threshold......................... 0
  RxAbort : Wrong BSSID Status......................... Disabled
  RxAbort : Wrong BSSID Data Only Status............ Disabled
```

**Related Commands**
config advanced 802.11 profile clients
**show advanced 802.11 summary**

To display the 802.11a or 802.11b Cisco lightweight access point name, channel, and transmit level summary, use the `show advanced 802.11 summary` command.

```
show advanced 802.11[a | b] summary
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display a summary of the 802.11b access point settings:

```
> show advanced 802.11b summary
```

<table>
<thead>
<tr>
<th>AP Name</th>
<th>MAC Address</th>
<th>Admin State</th>
<th>Operation State</th>
<th>Channel</th>
<th>TxPower</th>
</tr>
</thead>
<tbody>
<tr>
<td>CJ-1240</td>
<td>00:21:1b:ea:36:60</td>
<td>ENABLED</td>
<td>UP</td>
<td>161</td>
<td>1( )</td>
</tr>
<tr>
<td>CJ-1130</td>
<td>00:1f:ca:cf:b6:60</td>
<td>ENABLED</td>
<td>UP</td>
<td>56*</td>
<td>1(*)</td>
</tr>
</tbody>
</table>

**Note**

An asterisk (*) next to a channel number or power level indicates that it is being controlled by the global algorithm settings.

**Related Commands**

- `config advanced 802.11 7920VSIEConfig`
- `config advanced 802.11 channel add`
- `show advanced 802.11 channel`
show advanced 802.11 txpower

To display the 802.11a or 802.11b automatic transmit power assignment, use the show advanced 802.11 txpower command.

show advanced 802.11{a | b} txpower

<table>
<thead>
<tr>
<th>Syntax/Description</th>
<th>a</th>
<th>Specifies the 802.11a network.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to display the configuration and statistics of the 802.11b transmit power cost:

> show advanced 802.11b txpower

Automatic Transmit Power Assignment

Transmit Power Assignment Mode................. AUTO
Transmit Power Update Interval.................. 600 seconds
Transmit Power Threshold....................... -65 dBm
Transmit Power Neighbor Count.................. 3 APs
Transmit Power Update Contribution............ SN.
Last Run........................................ 384 seconds ago

Related Commands

config advanced 802.11 txpower-update
show advanced backup-controller

To display a list of primary and secondary backup controllers, use the `show advanced backup-controller` command.

```
show advanced backup-controller
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the backup controller information:

```
> show advanced backup-controller

AP primary Backup Controller ................. controller 10.10.10.10
AP secondary Backup Controller ............... 0.0.0.0
```

**Related Commands**

- `config advanced backup-controller primary`
- `config advanced backup-controller secondary`
show advanced client-handoff

To display the number of automatic client handoffs after retries, use the `show advanced client-handoff` command.

```
  show advanced client-handoff
```

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to display the client auto handoff mode after excessive retries:

```
  > show advanced client-handoff
  
  Client auto handoff after retries.................  130
```

Related Commands

- `config advanced client-handoff`
- `show advanced 802.11 summary`
show advanced dot11-padding

To display the state of over-the-air frame padding on a wireless LAN controller, use the show advanced dot11-padding command.

show advanced dot11-padding

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to view the state of over-the-air frame padding:

> show advanced dot11-padding

dot11-padding........................................ Disabled

Related Commands
config advanced dot11-padding
debug dot11
debug dot11 mgmt interface
debug dot11 mgmt msg
debug dot11 mgmt ssid
debug dot11 mgmt state-machine
debug dot11 mgmt station
show advanced eap

To display Extensible Authentication Protocol (EAP) settings, use the show advanced eap command.

show advanced eap

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to display the EAP settings:

> show advanced eap

EAP-Identity-Request Timeout (seconds) ........... 1
EAP-Identity-Request Max Retries ................. 20
EAP Key-Index for Dynamic WEP .................... 0
EAP Max-Login Ignore Identity Response .......... enable
EAP-Request Timeout (seconds) .................... 1
EAP-Request Max Retries ......................... 20
EAPOL-Key Timeout (milliseconds) ................. 1000
EAPOL-Key Max Retries ......................... 2

Related Commands
config advanced eap
config advanced timers eap-identity-request-delay
config advanced timers eap-timeout
show advanced max-1x-sessions

To display the maximum number of simultaneous 802.1X sessions allowed per access point, use the show advanced max-1x-sessions command.

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to display the maximum 802.1X sessions per access point:

```
> show advanced max-1x-sessions
Max 802.1x session per AP at a given time........ 0
```

Related Commands
show advanced statistics
show advanced probe

To display the number of probes sent to the WLAN controller per access point per client and the probe interval in milliseconds, use the `show advanced probe` command.

```
show advanced probe
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the probe settings for the WLAN controller:

```
> show advanced probe

Probe request filtering......................... Enabled
Probes fwd to controller per client per radio.... 12
Probe request rate-limiting interval............ 100 msec
```

**Related Commands**

- `config advanced probe filter`
- `config advanced probe limit`
show advanced rate

To display whether control path rate limiting is enabled or disabled, use the `show advanced rate` command.

show advanced rate

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the switch control path rate limiting mode:

```
> show advanced rate
Control Path Rate Limiting....................... Disabled
```

**Related Commands**

- `config advanced rate`
- `config advanced eap`
show advanced send-disassoc-on-handoff

To display whether the WLAN controller disassociates clients after a handoff, use the **show advanced send-disassoc-on-handoff** command.

```
show advanced send-disassoc-on-handoff
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>This command has no arguments or keywords.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defaults</td>
<td>None.</td>
</tr>
</tbody>
</table>

| Examples           | This example shows how to display the disassociated clients after a handoff: |
|--------------------|> show advanced send-disassoc-on-handoff |
|                    | Send Disassociate on Handoff................. Disabled |
show advanced statistics

To display whether or not the Cisco wireless LAN controller port statistics are enabled or disabled, use the `show advanced statistics` command.

```
show advanced statistics
```

**Syntax Description**  This command has no arguments or keywords.

**Defaults**  None.

**Examples**  This example shows how to display switch port statistics mode:

```
> show advanced statistics
Switch port statistics......................... Enabled
```

**Related Commands**  `config advanced statistics`
show advanced timers

To display the mobility anchor, authentication response, and rogue access point entry timers, use the show advanced timers command.

show advanced timers

Syntax Description
This command has no arguments or keywords.

Defaults
The defaults are shown in the “Examples” section.

Examples
This example shows how to display the system timers setting:

> show advanced timers

  Authentication Response Timeout (seconds) ........ 10
  Rogue Entry Timeout (seconds) .................... 1200
  AP Heart Beat Timeout (seconds) .................. 30
  AP Discovery Timeout (seconds) ................... 10
  AP Local mode Fast Heartbeat (seconds) .......... disable
  AP Hreap mode Fast Heartbeat (seconds) .......... disable
  AP Primary Discovery Timeout (seconds) .......... 120

Related Commands
  config advanced timers ap-discovery-timeout
  config advanced timers ap-fast-heartbeat
  config advanced timers ap-heartbeat-timeout
  config advanced timers ap-primary-discovery-timeout
  config advanced timers auth-timeout
  config advanced timers eap-identity-request-delay
  config advanced timers eap-timeout
Show Access Point Commands

Use the **show ap** commands to show access point settings.
show ap auto-rf

To display the auto-RF settings for a Cisco lightweight access point, use the `show ap auto-rf` command.

```plaintext
show ap auto-rf 802.11{a | b} cisco_ap
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Cisco lightweight access point name.</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to display auto-RF information for an access point:

```plaintext
> show ap auto-rf 802.11a AP1
```

- **Number Of Slots**: 2
- **AP Name**: AP03
- **MAC Address**: 00:0b:85:01:18:b7
- **Radio Type**: RADIO_TYPE_80211a
- **Noise Information**
  - **Noise Profile**: PASSED
  - **Channel 36**: -88 dBm
  - **Channel 40**: -86 dBm
  - **Channel 44**: -87 dBm
  - **Channel 48**: -85 dBm
  - **Channel 52**: -84 dBm
  - **Channel 56**: -83 dBm
  - **Channel 60**: -84 dBm
  - **Channel 64**: -85 dBm
- **Interference Information**
  - **Interference Profile**: PASSED
  - **Channel 36**: -66 dBm @ 1% busy
  - **Channel 40**: -128 dBm @ 0% busy
  - **Channel 44**: -128 dBm @ 0% busy
  - **Channel 48**: -128 dBm @ 0% busy
  - **Channel 52**: -73 dBm @ 1% busy
  - **Channel 56**: -55 dBm @ 1% busy
  - **Channel 60**: -69 dBm @ 1% busy
  - **Channel 64**: -69 dBm @ 1% busy
- **Rogue Histogram (20/40_ABOVE/40_BELOW)**
  - **Channel 36**: 16/ 0/ 0
  - **Channel 40**:  9/ 0/ 0
  - **Channel 44**:  3/ 0/ 0
  - **Channel 48**:  4/ 0/ 0
  - **Channel 52**:  7/ 1/ 0
  - **Channel 56**:  2/ 0/ 0
- **Load Information**
  - **Load Profile**: PASSED
  - **Receive Utilization**: 0%
  - **Transmit Utilization**: 0%
  - **Channel Utilization**: 1%
  - **Attached Clients**: 1 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 dBm................................ 0 clients
  SNR  5 dBm................................ 0 clients
  SNR  10 dBm.............................. 0 clients
  SNR  15 dBm.............................. 0 clients
  SNR  20 dBm.............................. 0 clients
  SNR  25 dBm.............................. 0 clients
  SNR  30 dBm.............................. 0 clients
  SNR  35 dBm.............................. 0 clients
  SNR  40 dBm.............................. 0 clients
  SNR  45 dBm.............................. 0 clients

Nearby RADs
  RAD 00:0b:85:01:05:08 slot 0................. -46 dBm on 10.1.30.170
  RAD 00:0b:85:01:12:65 slot 0................. -24 dBm on 10.1.30.170

Channel Assignment Information
  Current Channel Average Energy.............. -86 dBm
  Previous Channel Average Energy............. -75 dBm
  Channel Change Count........................ 109
  Last Channel Change Time.................... Wed Sep 29 12:53e:34 2004
  Recommended Best Channel.................... 44

RF Parameter Recommendations
  Power Level.............................. 1
  RTS/CTS Threshold ......................... 2347
  Fragmentation Threshold .................... 2346
  Antenna Pattern........................... 0
show ap ccx rm

To display an access point’s Cisco Client eXtensions (CCX) radio management status information, use the `show ap ccx rm` command.

```
show ap ccx rm ap_name status
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>ap_name</code></td>
<td>Specified access point name.</td>
</tr>
<tr>
<td><code>status</code></td>
<td>Displays the CCX radio management status information for an access point.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display the status of the CCX radio management:

```
> show ap ccx rm AP1240-21ac status

A Radio
    Channel Load Request .................. Disabled
    Noise Histogram Request ............... Disabled
    Beacon Request ......................... Disabled
    Frame Request ......................... Disabled
    Interval ................................ 60
    Iteration .............................. 10

G Radio
    Channel Load Request .................. Disabled
    Noise Histogram Request ............... Disabled
    Beacon Request ......................... Disabled
    Frame Request ......................... Disabled
    Interval ................................ 60
    Iteration .............................. 10
```

**Related Commands**

- `config ap`
- `show ap ccx rm`
show ap cdp

To display the Cisco Discovery Protocol (CDP) information for an access point, use the `show ap cdp` commands.

```
show ap cdp [all | ap-name cisco_ap | neighbors [all | ap-name cisco_ap | detail cisco_ap]]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Displays the CDP status on all access points.</td>
</tr>
<tr>
<td>ap-name</td>
<td>Displays the CDP status for a specified access point.</td>
</tr>
<tr>
<td>neighbors</td>
<td>Displays neighbors using CDP.</td>
</tr>
<tr>
<td>detail</td>
<td>Displays details about a specific access point neighbor using CDP.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Specified access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display the CDP status of all access points:

```
> show ap cdp all

AP CDP State
AP Name        AP CDP State
----------------- -------------
SB_RAP1         enable
SB_MAP1         enable
SB_MAP2         enable
SB_MAP3         enable
```

This example shows how to display the CDP status of a specified access point:

```
> show ap cdp ap-name SB_RAP1

AP CDP State
AP Name        AP CDP State
----------------- -------------
SB_RAP1         enable
```

This example shows how to display details about all neighbors using CDP:

```
> show ap cdp neighbors all

AP Name  AP IP            Neighbor Name       Neighbor IP      Neighbor Port
---------  ---------------  ------------------  --------------  -------------  
SB_RAP1   192.168.102.154 sje14-41a-sw2     192.168.102.2    GigabitEthernet1/0/13  
SB_RAP1   192.168.102.154 SB_MAP1           192.168.102.137  Virtual-Dot11Radio0  
SB_MAP1   192.168.102.137 SB_RAP1           192.168.102.154  Virtual-Dot11Radio0  
SB_MAP2   192.168.102.138 SB_MAP1           192.168.102.137  Virtual-Dot11Radio0  
SB_MAP2   192.168.102.138 SB_MAP3           192.168.102.139  Virtual-Dot11Radio0  
SB_MAP3   192.168.102.139 SB_MAP2           192.168.102.138  Virtual-Dot11Radio1
```

This example shows how to display details about a specific neighbor with a specified access point using CDP:
This example shows how to display details about neighbors using CDP:

```plaintext
show ap cdp neighbors detail SB_MAP2
```

---

### Related Commands

- `config ap cdp`
- `config cdp timer`
show ap channel

To display the available channels for a specific mesh access point, use the show ap channel command.

show ap channel ap_name

Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>ap_name</th>
<th>Name of the mesh access point.</th>
</tr>
</thead>
</table>

Defaults

None.

Examples

This example shows how to display the available channels for a particular access point:

```
> show ap channel AP47

  802.11b/g Current Channel ...........1
  Allowed Channel List.....................1,2,3,4,5,6,7,8,9,10,11
  802.11a Current Channel .................161
  Allowed Channel List.....................36,40,44,48,52,56,60,64,100,
  .........................................104,108,112,116,132,136,140,
  .........................................149,153,157,161
```

Related Commands

- config 802.11-a channel ap
- config 802.11h channelswitch
- config 802.11h setchannel
show ap config

To display the detailed configuration for a lightweight access point, use the `show ap config` command.

```
show ap config {802.11a | b | general} cisco_ap
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>802.11a</th>
<th>Specifies the 802.11a or 802.11b/g network.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>802.11b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td></td>
<td>general</td>
<td>Displays general access point settings.</td>
</tr>
<tr>
<td></td>
<td>cisco_ap</td>
<td>Lightweight access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display the detailed configuration for an access point:

```
> show ap config 802.11a AP02

Cisco AP Identifier.............................. 0
Cisco AP Name.................................... AP02
AP Regulatory Domain............................. Unconfigured
Switch Port Number .............................. 1
MAC Address...................................... 00:0b:85:18:b6:50
IP Address Configuration......................... DHCP
IP Address....................................... 1.100.49.240
IP NetMask....................................... 255.255.255.0
Gateway IP Addr. ................................ 1.100.49.1
Cisco AP Location................................ default-location
Cisco AP Group Name.............................. default-group
Primary Cisco Switch............................. Cisco_32:ab:63
Secondary Cisco Switch...........................
Tertiary Cisco Switch............................
Administrative State ............................ ADMIN_ENABLED
Operation State ................................. REGISTERED
Mirroring Mode .................................... Disabled
AP Mode .......................................... Sniffer
Public Safety ..................................... Global: Disabled, Local: Disabled
Sniffing .......................................... No
Remote AP Debug ................................... Disabled
S/W Version ....................................... 3.1.61.0
Boot Version ..................................... 1.2.59.6
Stats Re--More-- or (q)uit
porting Period ................................... 180
LED State .......................................... Enabled
ILP Pre Standard Switch........................... Disabled
ILP Power Injector ................................ Disabled
Number Of Slots................................. 2
AP Model ......................................... AS-1200
AP Serial Number................................. 044110223A
AP Certificate Type.............................. Manufacture Installed

Attributes for Slot  0
Radio Type................................. RADIO_TYPE_80211a
Administrative State ................... ADMIN_ENABLED
Operation State ......................... UP
```
CellId ........................................ 0

Station Configuration
  Configuration ................................ AUTOMATIC
  Number Of WLANs .............................. 1
  Medium Occupancy Limit .................... 100
  CFP Period .................................. 4
  CFP MaxDuration ................................... 60
  BSSID ........................................ 00:0b:85:18:b6:50

Operation Rate Set
  6000 Kilo Bits .................... MANDATORY
  9000 Kilo Bits .................... SUPPORTED
  12000 Kilo Bits ................... MANDATORY
  18000 Kilo Bits ................... SUPPORTED
  24000 Kilo Bits ................... MANDATORY
  36000 Kilo Bits ................... SUPPORTED
  48000 Kilo Bits ................... SUPPORTED
  54000 Kilo Bits ................... SUPPORTED
  Beacon Period ............................. 100
  DTIM Period ................................ 1
  Fragmentation Threshold ................. 2346
  Multi Domain Capability Implemented ...... TRUE
  Multi Domain Capability Enabled .......... TRUE
  Country String ............................. US

Multi Domain Capability
  Configuration ................................ AUTOMATIC
  First Chan Num ............................. 36
  Number Of Channels ......................... 4

MAC Operation Parameters
  Configuration ................................ AUTOMATIC
  RTS Threshold .............................. 2347
  Short Retry Limit ......................... 7
  Long Retry Limit ............................ 4
  Fragmentation Threshold ................. 2346
  Maximum Tx MSDU Life Time ............... 512
  Maximum Rx Life Time ....................... 512

Tx Power
  Num Of Supported Power Levels ........... 5
  Tx Power Level 1 .......................... 18 dBm
  Tx Power Level 2 .......................... 15 dBm
  Tx Power Level 3 .......................... 12 dBm
  Tx Power Level 4 .......................... 9 dBm
  Tx Power Level 5 .......................... 6 dBm
  Tx Power Configuration ................... CUSTOMIZED
  Current Tx Power Level .................... 5

Phy OFDM parameters
  Configuration ................................ AUTOMATIC
  Current Channel ........................... 36
  TI Threshold ................................... -50
  Legacy Tx Beamforming Configuration ...... CUSTOMIZED
  Legacy Tx Beamforming ..................... ENABLED
  Antenna Type ................................. INTERNAL_ANTENNA
  Internal Antenna Gain (in .5 dBm units) .... 11
  AntennaMode ................................. ANTENNA_OMNI

Performance Profile Parameters
  Configuration ................................ AUTOMATIC
  Interference threshold .................... 10%
  Noise threshold ............................ -70 dBm
  RF utilization threshold ................. 80%
This example shows how to display the detailed configuration for another access point:

```
> show ap config 802.11b AP02
```

Cisco AP Identifier.............................. 0
Cisco AP Name.................................... AP02
AP Regulatory Domain............................. Unconfigured
Switch Port Number .............................. 1
MAC Address...................................... 00:0b:85:18:b6:50
IP Address Configuration......................... DHCP
IP Address....................................... 1.100.49.240
IP NetMask....................................... 255.255.255.0
Gateway IP Addr.................................. 1.100.49.1
Cisco AP Location................................ default-location
Cisco AP Group Name.............................. default-group
Primary Cisco Switch............................. Cisco_32:ab:63
Secondary Cisco Switch...........................
Tertiary Cisco Switch.............................
Administrative State ............................ ADMIN_ENABLED
Operation State ................................. REGISTERED
Mirroring Mode .................................. Disabled
AP Mode ......................................... Local
Remote AP Debug ................................ Disabled
S/W Version .................................... 3.1.61.0
Boot Version..................................... 1.2.59.6
Stats Reporting Period .......................... 180
LED State........................................ Enabled
ILP Pre Standard Switch.......................... Disabled
ILP Power Injector............................... Disabled
Number Of Slots.................................. 2
AP Model......................................... AS-1200
AP Serial Number................................. 044110223A
AP Certificate Type.............................. Manufacture Installed

Attributes for Slot 1

Radio Type................................... RADIO_TYPE_80211g
Administrative State .......................... ADMIN_ENABLED
Operation State ................................. UP
CellId .......................................... 0

Station Configuration

Configuration ................................. AUTOMATIC
Number Of WLANs ............................... 1
Medium Occupancy Limit ....................... 100
CFP Period ................................. 4
CFP MaxDuration ............................. 60
BSSID ......................................... 00:0b:85:18:b6:50

Operation Rate Set

1000 Kilo Bits........................... MANDATORY
2000 Kilo Bits........................... MANDATORY
5500 Kilo Bits........................... MANDATORY
11000 Kilo Bits........................ MANDATORY
6000 Kilo Bits........................ SUPPORTED
9000 Kilo Bits........................ SUPPORTED
12000 Kilo Bits......................... SUPPORTED
18000 Kilo Bits......................... SUPPORTED
This example shows how to display the general configuration of a Cisco access point:

> show ap config general cisco-ap

Cisco AP Identifier.............................. 9
Cisco AP Name................................. cisco-ap
show ap config

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......................... 802.11bg:-A 802.11a:-A
Switch Port Number.......................... 1
MAC Address.................................. 12:12:12:12:12:12
IP Address Configuration..................... DHCP
IP Address................................... 10.10.10.21
IP NetMask................................... 255.255.255.0
CAPWAP Path MTU............................. 1485
Domain........................................
Name Server...................................
Telnet State................................. Disabled
Ssh State..................................... Disabled
Cisco AP Location............................ default location
Cisco AP Group Name........................ default-group
Primary Cisco Switch Name.................... 4404
Primary Cisco Switch IP Address............. 10.10.10.32
Secondary Cisco Switch Name............... Not Configured
Secondary Cisco Switch IP Address......... Not Configured
Tertiary Cisco Switch Name.................. 4404
Tertiary Cisco Switch IP Address........... 3.3.3.3
Administrative State......................... ADMIN_ENABLED
Operation State............................. REGISTERED
Mirroring Mode.............................. Disabled
AP Mode...................................... Local
Public Safety.................................... Global: Disabled, Local: Disabled
AP subMode................................... WIPS
Remote AP Debug............................. Disabled
S/W Version.................................. 12.4.10.0
Boot Version................................ 0.0.0.0
Mini IOS Version............................ 12.4.10.0
Stats Reporting Period....................... 180
LED State.................................. Enabled
PoE Pre-Standard Switch..................... Enabled
PoE Power Injector MAC Addr................ Disabled
Power Type/Mode............................ PoE/Low Power (degraded mode)
Number Of Slots............................. 2
AP Model.................................... AIR-LAP1252AG-A-K9
IOS Version................................ 12.4(10:0)
Reset Button................................. Enabled
AP Serial Number............................ serial_number
AP Certificate Type........................ Manufacture Installed
Management Frame Protection Validation... Enabled (Global MFP Disabled)
AP User Mode............................... CUSTOMIZED
AP username................................ maria
AP Dot1x User Mode.......................... Not Configured
AP Dot1x username........................... Not Configured
Cisco AP system logging host................. 255.255.255.255
AP Up Time.................................. 4 days, 06 h 17 m 22 s
AP LWAPP Up Time......................... 4 days, 06 h 15 m 00 s
Join Date and Time......................... Mon Mar 3 06:19:47 2008
Ethernet Port Duplex......................... Auto
Ethernet Port Speed.......................... Auto
AP Link Latency............................. Enabled
Current Delay............................... 0 ms
Maximum Delay............................. 240 ms
Minimum Delay............................. 0 ms
Last updated (based on AP Up Time)........ 4 days, 06 h 17 m 20 s
show ap config

Note
As of Controller Release 5.2 the 4400 series controllers can only run with the speed and duplex set to auto.

Related Commands
config ap
show ap config global
show ap config global

To display the global syslog server settings for all access points that join the controller, use the **show ap config global** command.

```
show ap config global
```

### Syntax Description
The command has no arguments and keywords.

### Defaults
None.

### Examples
This example shows how to display global syslog server settings:
```
> show ap config global

AP global system logging host......................... 255.255.255.255
```

### Related Commands
- **config ap**
- **show ap config**
show ap core-dump

To display the memory core dump information for a lightweight access point, use the **show ap core-dump** command.

```
show ap core-dump cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cisco_ap</td>
<td>Cisco lightweight access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display memory core dump information:

```
> show ap core-dump AP02

Memory core dump is disabled.
```

**Related Commands**

- `config ap core-dump`
- `show ap crash-file`
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 arguments or keywords.

Defaults

None.

Examples

This example shows how to display the crash file generated by the access point:

    > show ap crash-file

Related Commands

config ap crash-file clear-all
config ap crash-file delete
config ap crash-file get-crash-file
config ap crash-file get-radio-core-dump
show ap data-plane

To display the data plane status for all access points or a specific access point, use the show ap data-plane command.

    show ap data-plane {all | Cisco_AP}

Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Specifies all Cisco lightweight access points.</td>
</tr>
<tr>
<td>Cisco_AP</td>
<td>Cisco lightweight access point name.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to display the data plane status of all access points:

> show ap data-plane all

<table>
<thead>
<tr>
<th>AP Name</th>
<th>Min Data Round Trip</th>
<th>Data Round Trip</th>
<th>Max Data Round Trip</th>
<th>Last Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>1130</td>
<td>0.000s</td>
<td>0.000s</td>
<td>0.002s</td>
<td>18:51:23</td>
</tr>
<tr>
<td>1240</td>
<td>0.000s</td>
<td>0.000s</td>
<td>0.000s</td>
<td>18:50:45</td>
</tr>
</tbody>
</table>
show ap eventlog

To display the contents of the event log file for an access point that is joined to the controller, use the `show ap eventlog` command.

```
show ap eventlog ap_name
```

**Syntax Description**

<table>
<thead>
<tr>
<th>ap_name</th>
<th>Event log for the specified access point.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

This example shows how to display the event log of an access point:

```
> show ap eventlog CiscoAP
AP event log download has been initiated
Waiting for download to complete

AP event log download completed.
================================= AP Event log Contents =======================
*Feb 13 11:54:17.146: %CAPWAP-3-CLIENTEVENTLOG: AP event log has been cleared from the
  controller 'admin'
*Mar 1 00:00:39.134: %CDP_PD-4-POWER_OK: Full power - NEGOTIATED inline power source
*Mar 1 00:00:39.174: %LINK-3-UPDOWN: Interface Dot11Radio1, changed state to up
*Mar 1 00:00:39.211: %LINK-3-UPDOWN: Interface Dot11Radio0, changed state to up
*Mar 1 00:00:49.947: %CAPWAP-3-CLIENTEVENTLOG: Did not get vendor specific options from
  DHCP.
...
```
show ap image

To display the detailed information about the predownloaded image for specified access points, use the `show ap image` command.

```
show ap image {cisco_ap | all}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>cisco_ap</th>
<th>Name of the lightweight access point.</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Specifies all access points.</td>
</tr>
</tbody>
</table>

**Note**

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Defaults**

None.

**Examples**

This example shows how to display images present on all access points:

```
> show ap image all

Total number of APs.............................. 7
Number of APs
Initiated....................................... 4
Predownloading................................. 0
Completed predownloading...................... 3
Not Supported................................... 0
Failed to Predownload......................... 0

AP Name Primary Image Backup Image   Status      Version Next Retry Time  Retry Count
------------------ -------------- -------------- --------------- -------------- ----------
API140-1 7.0.56.0       6.0.183.38 Complete        6.0.183.38 NA  NA
API140-2 7.0.56.0       6.0.183.58 Initiated       6.0.183.38 23:46:43     1
API130-2 7.0.56.0       6.0.183.38 Complete        6.0.183.38 NA  NA
API130-3 7.0.56.0       6.0.183.58 Initiated       6.0.183.38 23:43:25     1
API130-4 7.0.56.0       6.0.183.38 Complete        6.0.183.38 NA  NA
API130-5 7.0.56.0       6.0.183.58 Initiated       6.0.183.38 23:43:00     1
API130-6 7.0.56.0       6.0.183.58 Initiated       6.0.183.38 23:41:33     1
```

**Related Commands**

- config ap image predownload
- config ap image swap
show ap inventory

To display inventory information for an access point, use the `show ap inventory` command.

```
show ap inventory ap_name
```

**Syntax Description**

```
ap_name
```

Specifies the inventory for the specified access point.

**Defaults**

None.

**Examples**

This example shows how to display the inventory of an access point:

```
> show ap inventory test101

NAME: "test101"   , DESCr: "Cisco Wireless Access Point"
PID: AIR-LAP1131AG-A-K9  , VID: V01, SN: FTX1123T2XX
```
show ap join stats detailed

To display all join-related statistics collected for a specific access point, use the show ap join stats detailed command.

```
show ap join stats detailed ap_mac
```

**Syntax Description**

<table>
<thead>
<tr>
<th>ap_mac</th>
<th>Access point Ethernet MAC address or the MAC address of the 802.11 radio interface.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

This example shows how to display join information for a specific access point trying to join the controller:

```
> show ap join stats detailed 00:0b:85:02:0d:20
Discovery phase statistics
- Discovery requests received......................... 2
- Successful discovery responses sent............... 2
- Unsuccessful discovery request processing........ 0
- Reason for last unsuccessful discovery attempt... Not applicable
- Time at last successful discovery attempt......... Aug 21 12:50:23:335
- Time at last unsuccessful discovery attempt....... Not applicable

Join phase statistics
- Join requests received................................ 1
- Successful join responses sent..................... 1
- Unsuccessful join request processing............... 1
- Reason for last unsuccessful join attempt......... RADIUS authorization is pending for the AP
- Time at last successful join attempt.............. Aug 21 12:50:34:481
- Time at last unsuccessful join attempt............ Aug 21 12:50:34:374

Configuration phase statistics
- Configuration requests received.................... 1
- Successful configuration responses sent........... 1
- Unsuccessful configuration request processing.... 0
- Reason for last unsuccessful configuration attempt Not applicable
- Time at last successful configuration attempt..... Aug 21 12:50:34:374
- 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.............. Not applicable

Last join error summary
- 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 join stats detailed

Related Commands

- show ap join stats detailed
- show ap join stats summary
- show ap join stats summary all
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 ap_mac
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ap_mac</strong></td>
<td>Access point Ethernet MAC address or the MAC address of the 802.11 radio interface.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### 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:

```
> show ap join stats summary 00:0b:85:02:0d:20

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
```

### Related Commands

- `show ap join stats detailed`
- `show ap join stats summary all`
show ap join stats summary all

To display the MAC addresses of all the access points that are joined to the controller or that have tried to join, use the `show ap join stats summary all` command.

```
show ap join stats summary all
```

### Syntax Description

This command has no arguments or keywords.

### Defaults

None.

### Examples

This example shows how to display a summary of join information for all access points:

```
> show ap join stats summary all
Number of APs.............................................. 4
Base Mac             AP EthernetMac         AP Name         IP Address         Status
00:0b:85:57:bc:c0     00:0b:85:57:bc:c0     AP1130         10.10.163.217     Joined
00:1c:0f:81:db:80     00:1c:63:23:ac:a0     AP1140         10.10.163.216     Not joined
00:1c:0f:81:fc:20     00:1b:d5:9f:7d:b2     AP1             10.10.163.215     Joined
00:21:1b:ea:36:60     00:0c:d4:8a:6b:c1     AP2             10.10.163.214     Not joined
```

### Related Commands

- `show ap join stats detailed`
- `show ap join stats summary`
show ap link-encryption

To display the MAC addresses of all the access points that are joined to the controller or that have tried to join, use the `show ap link-encryption` command.

```
show ap link-encryption {all | Cisco_AP}
```

**Syntax Description**

- **all**: Specifies all access points.
- **Cisco_AP**: Name of the lightweight access point.

**Defaults**

None.

**Examples**

This example shows how to display the link encryption status of all access points:

```
> show ap link-encryption all

<table>
<thead>
<tr>
<th>AP Name</th>
<th>Encryption</th>
<th>Dnstream Count</th>
<th>Upstream Count</th>
<th>Last Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>1240</td>
<td>Dis</td>
<td>4406</td>
<td>237553</td>
<td>Never</td>
</tr>
<tr>
<td>1130</td>
<td>En</td>
<td>2484</td>
<td>276308</td>
<td>19:31</td>
</tr>
</tbody>
</table>
```

**Related Commands**

- `config ap link-encryption`
- `config ap link-latency`
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 arguments or keywords.

Defaults

None.

Examples

This example shows how to display current channel-optimized monitor mode settings:

```
> 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
```

Related Commands

config ap mode
config ap monitor-mode
show ap stats

To display the statistics for a Cisco lightweight access point, use the **show ap stats** command.

```
show ap stats {802.11\{a | b\} | wlan} cisco_ap [tsm \{client_mac | all\}]
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>802.11a</code></td>
<td>Specifies the 802.11a network</td>
</tr>
<tr>
<td><code>802.11b</code></td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td><code>wlan</code></td>
<td>Specifies WLAN statistics.</td>
</tr>
<tr>
<td><code>cisco_ap</code></td>
<td>Specifies the name of the lightweight access point.</td>
</tr>
<tr>
<td><code>tsm</code></td>
<td>Specifies the traffic stream metrics.</td>
</tr>
<tr>
<td><code>client_mac</code></td>
<td>Specified MAC address of the client.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Specifies all access points.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to display statistics of an access point for the 802.11b network:

```
> show ap stats 802.11b AP02
```

```
Number Of Slots.......................... 2
AP Name..................................... 1140_LAP_1
MAC Address.................................. c4:7d:4f:3a:35:53
Radio Type.................................. RADIO_TYPE_80211b/g
Stats Information
  Number of Users............................ 3
  TxFragmentCount.......................... 232095
  MulticastTxFrameCnt........................ 3834
  FailedCount.................................. 347196
  RetryCount.................................. 683429
  MultipleRetryCount.......................... 21416
  FrameDuplicateCount.......................... 0
  RtsSuccessCount........................... 20
  RtsFailureCount............................ 0
  AckFailureCount............................ 439834
  RxIncompleteFragment....................... 0
  MulticastRxFrameCnt....................... 0
  FcsErrorCount............................. 5845734
  TxFrameCount.............................. 232095
  WepUndecryptableCount..................... 0
  TxFramesDropped........................... 22
Call Admission Control (CAC) Stats
  Voice Bandwidth in use(% of config bw).... 50
    Total channel MT free..................... 0
    Total voice MT free....................... 0
    Na Direct.................................. 0
    Na Roam.................................... 0
  Video Bandwidth in use(% of config bw).... 0
WMMP TSPEC CAC Call Stats
  Total num of voice calls in progress..... 1
  Num of roaming voice calls in progress.... 1
  Total Num of voice calls since AP joined.. 13
  Total Num of roaming calls since AP joined.. 13
```
show ap stats

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..... 1
Num of calls rejected due to insufficient 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................ 1
  Num of roaming calls in progress............. 0
  Total Num of calls since AP joined........... 29
  Total Num of roaming calls since AP joined... 2
  Total Num of calls rejected(Insuff BW)........ 0
  Total Num of roam calls rejected(Insuff BW).... 0
  Total Num of calls rejected(Max call limit).... 9
  Total Num of roam calls rejected(Max call l.... 0
  Total Num of calls rejected(QoS Policy)....... 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

Related Commands
  config ap static-ip
  config ap stats-timer
show ap summary

To display a summary of all lightweight access points attached to the controller, use the `show ap summary` command.

```
show ap summary
```

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Usage Guidelines

A list that contains each lightweight access point name, number of slots, manufacturer, MAC address, location, and the controller port number appears.

Examples

This example shows how to display a summary of all connected access points:

```
> show ap summary
Number of APs................................. 2
Global AP username............................ user
Global AP Dot1x username..................... Not Configured

Number of APs................................. 2
Global AP username............................ user
Global AP Dot1x username..................... Not Configured

AP Name   Slots   AP Model         Ethernet MAC   Location       Port Country Priority
---------- ----- ------------------ ----------------- ---------- ---- ------- --------
ap:1120    1  AIR-LAP1121G-A-K9  00:1b:d5:a9:ad:08 Hall 235 1 US 1
```

Related Commands

`config ap`
show ap tcp-mss-adjust

To display the Basic Service Set Identifier (BSSID) value for each WLAN defined on an access point, use the `show ap tcp-mss-adjust` command.

```
show ap tcp-mss-adjust {cisco_ap | all}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><code>cisco_ap</code></td>
<td>Specified lightweight access point name.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Specifies all access points.</td>
</tr>
</tbody>
</table>

**Note**

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Defaults**

None.

**Examples**

This example shows how to display Transmission Control Protocol (TCP) maximum segment size (MSS) information of all access points:

```
> show ap tcp-mss-adjust all

<table>
<thead>
<tr>
<th>AP Name</th>
<th>TCP State</th>
<th>MSS Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP-1140</td>
<td>enabled</td>
<td>536</td>
</tr>
<tr>
<td>AP-1240</td>
<td>disabled</td>
<td>-</td>
</tr>
<tr>
<td>AP-1130</td>
<td>disabled</td>
<td>-</td>
</tr>
</tbody>
</table>
```

**Related Commands**

`config ap tcp-adjust-mss`
show ap wlan

To display the Basic Service Set Identifier (BSSID) value for each WLAN defined on an access point, use the `show ap wlan` command.

```plaintext
show ap wlan 802.11{a | b} cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>802.11a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>802.11b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>ap_name</td>
<td>Specifies the lightweight access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display BSSIDs of an access point for the 802.11b network:

```plaintext
> show ap wlan 802.11b AP01

Site Name............................... MY_AP_GROUP1
Site Description......................... MY_AP_GROUP1

WLAN ID          Interface          BSSID
-------         -----------        --------------------------
1               management           00:1c:0f:81:fc:20
2               dynamic              00:1c:0f:81:fc:21
```

**Related Commands**

`config ap wlan`
show arp switch

To display the Cisco wireless LAN controller MAC addresses, IP addresses, and port types, use the `show arp switch` command.

```
show arp switch
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display Address Resolution Protocol (ARP) cache information for the switch:

```
> show arp switch
MAC Address IP Address Port VLAN Type
------------------- ---------------- ------------ ---- -------------------
```

**Related Commands**

clear arp
debug arp
**show auth-list**

To display the access point authorization list, use the `show auth-list` command.

```
show auth-list
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the access point authorization list:

```
> show auth-list
Authorize APs against AAA.......................... disabled
Allow APs with Self-signed Certificate (SSC)... disabled

<table>
<thead>
<tr>
<th>Mac Addr</th>
<th>Cert Type</th>
<th>Key Hash</th>
</tr>
</thead>
<tbody>
<tr>
<td>xx:xx:xx:xx:xx</td>
<td>MIC</td>
<td></td>
</tr>
</tbody>
</table>
```

**Related Commands**

- `clear tacacs auth statistics`
- `clear stats local-auth`
- `config auth-list add`
- `config auth-list ap-policy`
- `config auth-list delete`
show boot

To display the primary and backup software build numbers with an indication of which is active, use the show boot command.

```
show boot
```

**Syntax Description**  This command has no arguments or keywords.

**Defaults**  None.

**Usage Guidelines**  Each Cisco wireless LAN controller retains one primary and one backup operating system software load in nonvolatile RAM to allow controllers to boot off the primary load (default) or revert to the backup load when desired.

**Examples**  This example shows how to display the default boot image information:

```
> show boot

Primary Boot Image............................... 3.2.13.0 (active)
Backup Boot Image............................... 3.2.15.0
```

**Related Commands**  config boot
show call-control ap

Note
The `show call-control ap` command is applicable only for SIP based calls.

To see the metrics for successful calls or the traps generated for failed calls, use the `show call-control ap` command.

```
show call-control ap {802.11a | 802.11b} Cisco_ap {metrics | traps}
```

Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>802.11a</strong></td>
<td>Specifies the 802.11a network</td>
</tr>
<tr>
<td><strong>802.11b</strong></td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td><strong>Cisco_ap</strong></td>
<td>Cisco access point name.</td>
</tr>
<tr>
<td><strong>metrics</strong></td>
<td>Specifies the call metrics information.</td>
</tr>
<tr>
<td><strong>traps</strong></td>
<td>Specifies the trap information for call control.</td>
</tr>
</tbody>
</table>

Defaults
None.

Examples

This example shows how to display the metrics for successful calls generated for an access point:

```
> show call-control ap 802.11a Cisco_AP metrics
Total Call Duration in Seconds................... 120
Number of Calls................................. 10
Number of calls for given client is............. 1
```

This example shows how to display the metrics for the traps generated for an access point:

```
> show call-control ap 802.11a Cisco_AP traps
Number of traps sent in one min.................. 2
Last SIP error code............................. 404
Last sent trap timestamp......................... Jun 20 10:05:06
```

Usage Guidelines

To aid in troubleshooting, the output of this command shows an error code for any failed calls. Table 2-1 explains the possible error codes for failed calls.

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Integer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>unknown</td>
<td>Unknown error.</td>
</tr>
<tr>
<td>400</td>
<td>badRequest</td>
<td>The request could not be understood because of malformed syntax.</td>
</tr>
<tr>
<td>401</td>
<td>unauthorized</td>
<td>The request requires user authentication.</td>
</tr>
<tr>
<td>402</td>
<td>paymentRequired</td>
<td>Reserved for future use.</td>
</tr>
</tbody>
</table>
### Table 2-1 Error Codes for Failed VoIP Calls (continued)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Integer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>403</td>
<td>forbidden</td>
<td>The server understood the request but refuses to fulfill it.</td>
</tr>
<tr>
<td>404</td>
<td>notFound</td>
<td>The server has information that the user does not exist at the domain specified in the Request-URI.</td>
</tr>
<tr>
<td>405</td>
<td>methodNotAllowed</td>
<td>The method specified in the Request-Line is understood but not allowed for the address identified by the Request-URI.</td>
</tr>
<tr>
<td>406</td>
<td>notAcceptable</td>
<td>The resource identified by the request is only capable of generating response entities with content characteristics that are not acceptable according to the Accept header field sent in the request.</td>
</tr>
<tr>
<td>407</td>
<td>proxyAuthenticationRequired</td>
<td>The client must first authenticate with the proxy.</td>
</tr>
<tr>
<td>408</td>
<td>requestTimeout</td>
<td>The server could not produce a response within a suitable amount of time.</td>
</tr>
<tr>
<td>409</td>
<td>conflict</td>
<td>The request could not be completed due to a conflict with the current state of the resource.</td>
</tr>
<tr>
<td>410</td>
<td>gone</td>
<td>The requested resource is no longer available at the server, and no forwarding address is known.</td>
</tr>
<tr>
<td>411</td>
<td>lengthRequired</td>
<td>The server is refusing to process a request because the request entity-body is larger than the server is willing or able to process.</td>
</tr>
<tr>
<td>413</td>
<td>requestEntityTooLarge</td>
<td>The server is refusing to process a request because the request entity-body is larger than the server is willing or able to process.</td>
</tr>
<tr>
<td>414</td>
<td>requestURITooLarge</td>
<td>The server is refusing to service the request because the Request-URI is longer than the server is willing to interpret.</td>
</tr>
<tr>
<td>415</td>
<td>unsupportedMediaType</td>
<td>The server is refusing to service the request because the message body of the request is in a format not supported by the server for the requested method.</td>
</tr>
<tr>
<td>420</td>
<td>badExtension</td>
<td>The server did not understand the protocol extension specified in a Proxy-Require or Require header field.</td>
</tr>
<tr>
<td>480</td>
<td>temporarilyNotAvailable</td>
<td>The callee’s end system was contacted successfully, but the callee is currently unavailable.</td>
</tr>
<tr>
<td>481</td>
<td>callLegDoesNotExist</td>
<td>The UAS received a request that does not match any existing dialog or transaction.</td>
</tr>
<tr>
<td>482</td>
<td>loopDetected</td>
<td>The server has detected a loop.</td>
</tr>
<tr>
<td>483</td>
<td>tooManyHops</td>
<td>The server received a request that contains a Max-Forwards header field with the value zero.</td>
</tr>
<tr>
<td>484</td>
<td>addressIncomplete</td>
<td>The server received a request with a Request-URI that was incomplete.</td>
</tr>
<tr>
<td>485</td>
<td>ambiguous</td>
<td>The Request-URI was ambiguous.</td>
</tr>
</tbody>
</table>
Table 2-1  Error Codes for Failed VoIP Calls (continued)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Integer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>486</td>
<td>busy</td>
<td>The callee’s end system was contacted successfully, but the callee is currently not willing or able to take additional calls at this end system.</td>
</tr>
<tr>
<td>500</td>
<td>internalServerError</td>
<td>The server encountered an unexpected condition that prevented it from fulfilling the request.</td>
</tr>
<tr>
<td>501</td>
<td>notImplemented</td>
<td>The server does not support the functionality required to fulfill the request.</td>
</tr>
<tr>
<td>502</td>
<td>badGateway</td>
<td>The server, while acting as a gateway or proxy, received an invalid response from the downstream server it accessed in attempting to fulfill the request.</td>
</tr>
<tr>
<td>503</td>
<td>serviceUnavailable</td>
<td>The server is temporarily unable to process the request because of a temporary overloading or maintenance of the server.</td>
</tr>
<tr>
<td>504</td>
<td>serverTimeout</td>
<td>The server did not receive a timely response from an external server it accessed in attempting to process the request.</td>
</tr>
<tr>
<td>505</td>
<td>versionNotSupported</td>
<td>The server does not support or refuses to support the SIP protocol version that was used in the request.</td>
</tr>
<tr>
<td>600</td>
<td>busyEverywhere</td>
<td>The callee’s end system was contacted successfully, but the callee is busy or does not want to take the call at this time.</td>
</tr>
<tr>
<td>603</td>
<td>decline</td>
<td>The callee’s machine was contacted successfully, but the user does not want to or cannot participate.</td>
</tr>
<tr>
<td>604</td>
<td>doesNotExistAnywhere</td>
<td>The server has information that the user indicated in the Request-URI does not exist anywhere.</td>
</tr>
<tr>
<td>606</td>
<td>notAcceptable</td>
<td>The user’s agent was contacted successfully, but some aspects of the session description (such as the requested media, bandwidth, or addressing style) were not acceptable.</td>
</tr>
</tbody>
</table>
show call-control client

To see call information for a call-aware client when Voice-over-IP (VoIP) snooping is enabled and the call is active, use the show call-control client command

```
show call-control client callInfo client_MAC_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>callInfo</strong></td>
<td>Specifies the call-control information.</td>
</tr>
<tr>
<td><strong>client_MAC_address</strong></td>
<td>Client MAC address.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display the call information such as the IP port for calls related to the client:

```
> show call-control client callInfo 10.10.10.10.10

Uplink IP/port................................... 0.0.0.0 / 0
Downlink IP/port................................. 9.47.96.107 / 5006
UP............................................... 6
Calling Party..................................... sip:1021
Called Party..................................... sip:1000
Call ID........................................... 38423970c3fca477
Call on hold: .................................. FALSE
Number of calls for given client is............. 1
```

**Related Commands**

- `show call-control ap`
**show capwap client config**

To display the list of clients associated with the capwap access point, use the `show capwap client` command.

```
show capwap client config
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display clients associated with capwap access point:

```
> show capwap client config
configMagicMark         0xF1E2D3C4
chkSumV2                23845
chkSumV1                43434
swVer                   4.2.37.156
adminState              ADMIN_ENABLED(1)
name                    AP001b.0cfc.3f80
location                default location
group name
mwarName                WLC1
mwarIPAddress           9.41.80.67
mwarName
mwarIPAddress           0.0.0.0
mwarName
mwarIPAddress           0.0.0.0
ssh status              Disabled
Telnet status           Disabled
numOfSlots              2
spamRebootOnAssert      1
spamStatTimer           180
randSeed                0x0
transport               SPAM_TRANSPORT_L3(2)
transportCfg            SPAM_TRANSPORT_DEFAULT(0)
initialisation          SPAM_PRODUCTION_DISCOVERY(1)
```

**Related Commands**

- `capwap ap ip address`
- `capwap ap ip default-gateway`
- `show capwap client ip config`
show capwap client ip config

To display the capwap static IP configuration, use the `show capwap client ip config` command.

```
show capwap client ip config
```

### Syntax Description
This command has no arguments or keywords.

### Defaults
None.

### Examples
This example shows how to display the capwap static IP information:
```
> show capwap client config
LWAPP Static IP Configuration
Primary Controller 9.41.80.88
```

### Related Commands
- `capwap ap controller ip address`
- `capwap ap ip address`
- `show capwap client config`
**show capwap reap association**

To display the list of clients associated to an access point and their Service Set Identifiers (SSIDs), use the `show capwap reap association` command.

```
show capwap reap association
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display clients associated to an access point and their SSIDs:

```
> show capwap reap association
```

**Related Commands**

- `config hreap group`
- `show capwap reap status`
show capwap reap status

To display the status of the hybrid-REAP access point (connected or standalone), use the `show capwap reap status` command.

**show capwap reap status**

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display the status of the hybrid-REAP access point:

```
> show capwap reap status
```

**Related Commands**
- `config hreap group`
- `show capwap reap association`
show certificate compatibility

To display whether or not certificates are verified as compatible in the Cisco wireless LAN controller, use the show certificate compatibility command.

`show certificate compatibility`

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display the status of the compatibility mode:

```
> show certificate compatibility
Certificate compatibility mode:................. off
```

**Related Commands**
config certificate
cfg certificate lsc
show certificate lsc
show certificate summary
show local-auth certificates
show certificate lsc

To verify that the controller has generated a Locally Significant Certificate (LSC), use the show certificate lsc summary command.

```
show certificate lsc {summary | ap-provision}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>summary</td>
<td>Displays summary of LSC certificate settings and certificates.</td>
</tr>
<tr>
<td>ap-provision</td>
<td>Displays details about the access points that are provisioned using the LSC.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display a summary of the LSC:

```
> show certificate lsc summary

LSC Enabled...................................... Yes
LSC CA-Server.................................... http://10.0.0.1:8080/caserver
LSC AP-Provisioning.............................. Yes
Provision-List................................... Not Configured
LSC Revert Count in AP reboots................. 3
LSC Params:
Country...................................... 4
State........................................ ca
City........................................... ss
Orgn......................................... org
Dept.......................................... dep
E-mail......................................... dep@co.com
KeySize...................................... 390
LSC Certs:
CA Cert...................................... Not Configured
RA Cert...................................... Not Configured
```

This example shows how to display the details about the access points that are provisioned using the LSC:

```
> show certificate lsc ap-provision

LSC AP-Provisioning.............................. Yes
Provision-List................................... Present

Idx  Mac Address
--- -------------
1  00:18:74:c7:c0:90
```

**Related Commands**

- config certificate
- config certificate lsc
- show certificate compatibility
- show certificate summary
- show local-auth certificates
show certificate summary

To verify that the controller has generated a certificate, use the show certificate summary command.

show certificate summary

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to display a summary of the certificate:

> show certificate summary

Web Administration Certificate............... Locally Generated
Web Authentication Certificate............... Locally Generated
Certificate compatibility mode............... off

Related Commands
config certificate
config certificate lsc
show certificate compatibility
show certificate lsc
show local-auth certificates
Show Client Commands

Use the `show client` commands to display client settings.
show client ap

To display the clients on a Cisco lightweight access point, use the `show client ap` command.

```
show client ap 802.11{a | b} cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>802.11a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>802.11b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Cisco lightweight access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

The `show client ap` command may 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 an access point:

```
> show client ap 802.11b AP1

MAC Address | AP Id | Status   | WLAN Id | Authenticated |
-------------|-------|----------|---------|---------------|
xx:xx:xx:xx:xx:xx | 1     | Associated | 1       | No            |
```

**Related Commands**

- show client detail
- show client summary
- show client username
- show country
- show exclusionlist
show client ccx client-capability

To display the client’s capability information, use the `show client ccx client-capability` command.

```
show client ccx client-capability client_mac_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th><code>client_mac_address</code></th>
<th>MAC address of the client.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Usage Guidelines**

This command displays the client’s available capabilities, not the current settings for the capabilities.

**Examples**

This example shows how to display the client’s capability:

```
> show client ccx client-capability 00:40:96:a8:f7:98
Service Capability................................. Voice, Streaming(uni-directional)
Video, Interactive(bi-directional) Video
Radio Type........................................... DSSS OFDM(802.11a) HRDSSS(802.11b)
ERP(802.11g)

Radio Type........................................... DSSS
Radio Channels.................................... 1 2 3 4 5 6 7 8 9 10 11
Tx Power Mode..................................... Automatic
Rate List(MB)...................................... 1.0 2.0

Radio Type........................................... HRDSSS(802.11b)
Radio Channels.................................... 1 2 3 4 5 6 7 8 9 10 11
Tx Power Mode..................................... Automatic
Rate List(MB)...................................... 5.5 11.0

Radio Type........................................... ERP(802.11g)
Radio Channels.................................... 1 2 3 4 5 6 7 8 9 10 11
Tx Power Mode..................................... Automatic
Rate List(MB)...................................... 6.0 9.0 12.0 18.0 24.0 36.0 48.0 54.0

Are you sure you want to start? (y/N)y Are you sure you want to start? (y/N)
```

**Related Commands**

- `config client ccx get-client-capability`
- `config client ccx get-operating-parameters`
- `config client ccx get-profiles`
- `config client ccx stats-request`
- `show client ccx operating-parameters`
- `show client ccx profiles`
- `show client ccx stats-report`
show client ccx frame-data

To display the data frames sent from the client for the last test, use the `show client ccx frame-data` command.

```
show client ccx frame-data client_mac_address
```

**Syntax Description**

| `client_mac_address` | MAC address of the client. |

**Defaults**

None.

**Examples**

This example shows how to display the data frame sent from the client for the last test:

```
```
show client ccx last-response-status

To display the status of the last test response, use the `show client ccx last-response-status` command.

```
show client ccx last-response-status client_mac_address
```

### Syntax Description

- `client_mac_address`: MAC address of the client.

### Defaults

None.

### Examples

This example shows how to display the status of the last test response:

```
> show client ccx last-response-status
Test Status ......................... Success
Response Dialog Token.............. 87
Response Status.................... Successful
Response Test Type.................. 802.1x Authentication Test
Response Time....................... 3476 seconds since system boot
```

### Related Commands

- `config client ccx clear-reports`
- `config client ccx clear-results`
- `config client ccx default-gw-ping`
- `config client ccx dhcp-test`
- `config client ccx log-request`
- `show client ccx last-response-status`
- `show client ccx last-test-status`
show client ccx last-test-status

To display the status of the last test, use the `show client ccx last-test-status` command.

```
show client ccx last-test-status client_mac_address
```

**Syntax Description**

- `client_mac_address` MAC address of the client.

**Defaults**

None.

**Examples**

This example shows how to display the status of the last test of the client:

```
> show client ccx last-test-status

Test Type ......................... Gateway Ping Test
Test Status ....................... Pending/Success/Timeout
Dialog Token ...................... 15
Timeout .......................... 15000 ms
Request Time ..................... 1329 seconds since system boot
```

**Related Commands**

- `config client ccx clear-reports`
- `config client ccx clear-results`
- `config client ccx default-gw-ping`
- `config client ccx dhcp-test`
- `config client ccx log-request`
- `show client ccx last-response-status`
show client ccx log-response

To display a log response, use the `show client ccx log-response` command.

```plaintext
show client ccx log-response {roam | rsna | syslog} client_mac_address
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>roam</td>
<td>(Optional) Displays the CCX client roaming log response.</td>
</tr>
<tr>
<td>rsna</td>
<td>(Optional) Displays the CCX client RSNA log response.</td>
</tr>
<tr>
<td>syslog</td>
<td>(Optional) Displays the CCX client system log response.</td>
</tr>
<tr>
<td>client_mac_address</td>
<td>Inventory for the specified access point.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to display the system log response:

```plaintext
> show client ccx log-response syslog 00:40:96:a8:f7:98
Tue Jun 26 18:07:48 2007  Syslog Response LogID=131: Status=Successful
   Event Timestamp=0d 00h 19m 42s 278987us
   Client SysLog = '<11> Jun 19 11:49:47 unraval13777 Mandatory elements missing in the OID response'
   Event Timestamp=0d 00h 19m 42s 278990us
   Client SysLog = '<11> Jun 19 11:49:47 unraval13777 Mandatory elements missing in the OID response'
Tue Jun 26 18:07:48 2007  Syslog Response LogID=131: Status=Successful
   Event Timestamp=0d 00h 19m 42s 278987us
   Client SysLog = '<11> Jun 19 11:49:47 unraval13777 Mandatory elements missing in the OID response'
   Event Timestamp=0d 00h 19m 42s 278990us
   Client SysLog = '<11> Jun 19 11:49:47 unraval13777 Mandatory elements missing in the OID response'
```

This example shows how to display the client roaming log response:

```plaintext
> show client ccx log-response roam 00:40:96:a8:f7:98
   Event Timestamp=0d 00h 00m 13s 322396us
   Source BSSID=00:40:96:a8:f7:98, Target BSSID=00:0b:85:23:60:70, Transition Time=100(ms)
   Transition Reason: Normal roam, poor link
   Transition Result: Success
   Event Timestamp=0d 00h 00m 16s 599006us
   Source BSSID=00:0b:85:81:06:c2, Target BSSID=00:0b:85:81:06:c2, Transition Time=3235(ms)
   Transition Reason: Normal roam, poor link
   Transition Result: Success
   Event Timestamp=0d 00h 00m 16s 599006us
   Source BSSID=00:0b:85:81:06:c2, Target BSSID=00:0b:85:81:06:c2, Transition Time=3235(ms)
   Transition Reason: First association to WLAN
   Transition Result: Success
```
show client ccx log-response

**Related Commands**

- config client ccx log-request
show client ccx manufacturer-info

To display the client manufacturing information, use the `show client ccx manufacturer-info` command.

```
show client ccx manufacturer-info client_mac_address
```

**Syntax Description**

- `client_mac_address`  
  MAC address of the client.

**Defaults**

None.

**Examples**

This example shows how to display the client manufacturing information:

```
> show client ccx manufacturer-info 00:40:96:a8:f7:98
  Manufacturer OUI .............................. 00:40:96
  Manufacturer ID ............................... Cisco
  Manufacturer Model ............................ Cisco Aironet 802.11a/b/g Wireless Adapter
  Manufacturer Serial .......................... FOC1046N3SX
  Mac Address ................................... 00:40:96:b2:8d:5e
  Radio Type .................................... DSSS OFDM(802.11a) HRDSSS(802.11b)
  Antenna Type .................................. Omni-directional diversity
  Antenna Gain .................................. 2 dBi

  Rx Sensitivity:
  Radio Type .................................... DSSS
  Rx Sensitivity .................................. Rate:1.0 Mbps, MinRssi:-95, MaxRss1:-30
  Rx Sensitivity .................................. Rate:2.0 Mbps, MinRssi:-95, MaxRss1:-30
  Radio Type .................................... HRDSSS(802.11b)
  Rx Sensitivity .................................. Rate:5.5 Mbps, MinRssi:-95, MaxRss1:-30
  Rx Sensitivity .................................. Rate:11.0 Mbps, MinRssi:-95, MaxRss1:-30
  Radio Type .................................... ERP(802.11g)
  Rx Sensitivity .................................. Rate:6.0 Mbps, MinRssi:-95, MaxRss1:-30
  Rx Sensitivity .................................. Rate:9.0 Mbps, MinRssi:-95, MaxRss1:-30
  Rx Sensitivity .................................. Rate:12.0 Mbps, MinRssi:-95, MaxRss1:-30
  Rx Sensitivity .................................. Rate:18.0 Mbps, MinRssi:-95, MaxRss1:-30
```

**Related Commands**

- `config client ccx get-client-capability`
- `config client ccx get-manufacturer-info`
- `config client ccx get-operating-parameters`
- `config client ccx get-profiles`
show client ccx operating-parameters

To display the client operating-parameters, use the `show client ccx operating-parameters` command.

```
show client ccx operating-parameters client_mac_address
```

### Syntax Description

| **client_mac_address** | MAC address of the client. |

### Defaults

None.

### Examples

This example shows how to display the client operating parameters:

```
> show client ccx operating-parameters 00:40:96:a8:f7:98

Client Mac ................................. 00:40:96:b2:8d:5e
Radio Type .................................. OFDM(802.11a)
Radio Type .................................. OFDM(802.11a)
Radio Channels ............................ 36 40 44 48 52 56 60 64 100 104 108
112 116 120 124 128 132 136 140 149 153 157 161 165
Tx Power Mode ................................ Automatic
Rate List(MB) ................................ 6.0 9.0 12.0 18.0 24.0 36.0 48.0 54.0
Power Save Mode ............................ Normal Power Save
SSID .......................................... wifi
Security Parameters[EAP Method, Credential] .......... None
Auth Method ................................... None
Key Management ................................ None
Encryption .................................... None
Device Name .................................. Wireless Network Connection 15
Device Type .................................... 0
OS Id ........................................... Windows XP
OS Version .................................... 5.1.6.2600 Service Pack 2
IP Type ........................................ DHCP address
IPV4 Address .................................. Available
IP Address .................................... 70.0.4.66
Subnet Mask .................................... 255.0.0.0
Default Gateway ................................ 70.1.0.1
IPv6 Address .................................. Not Available
IPv6 Address .................................. 0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:
IPv6 Subnet Mask .............................. 0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:
DNS Servers .................................... 103.0.48.0
WINS Servers ................................... URAVAL3777
System Name ................................... WirelessNetworkConnection15
Firmware Version ............................. 4.0.0.187
Driver Version ............................... 4.0.0.187
```

### Related Commands

- `config client ccx get-client-capability`
- `config client ccx get-manufacturer-info`
- `config client ccx get-operating-parameters`
- `config client ccx get-profiles`
show client ccx profiles

To display the client profiles, use the `show client ccx profiles` command.

```
show client ccx profiles client_mac_address
```

### Syntax Description

| `client_mac_address` | MAC address of the client. |

### Defaults

None.

### Examples

This example shows how to display the client profiles:

```
> show client ccx profiles 00:40:96:a8:f7:98
Number of Profiles .......................... 1
Current Profile .............................. 1

Profile ID .................................. 1
Profile Name ................................. wifiEAP
SSID .............................. wifiEAP
Security Parameters [EAP Method, Credential]  EAP-TLS, Host OS Login Credentials
Auth Method ................................ EAP
Key Management ............................. WPA2+CCM
Encryption ................................. AES-CCMP
Power Save Mode ........................... Constantly Awake

Radio Configuration:
  Radio Type ................................. DSSS
  Preamble Type ............................... Long preamble
  CCA Method ................................ Energy Detect + Carrier

Detect/Correlation
  Data Retries ................................ 6
  Fragment Threshold ......................... 2342
  Radio Channels ............................ 1 2 3 4 5 6 7 8 9 10 11
  Tx Power Mode ............................. Automatic
  Rate List (MB) ......................... 1.0 2.0

Radio Type ................................. HRDSSS(802.11b)
  Preamble Type ............................... Long preamble
  CCA Method ................................ Energy Detect + Carrier

Detect/Correlation
  Data Retries ................................ 6
  Fragment Threshold ......................... 2342
  Radio Channels ............................ 1 2 3 4 5 6 7 8 9 10 11
  Tx Power Mode ............................. Automatic
  Rate List (MB) ......................... 5.5 11.0

Radio Type ................................. ERP(802.11g)
  Preamble Type ............................... Long preamble
  CCA Method ................................ Energy Detect + Carrier

Detect/Correlation
  Data Retries ................................ 6
  Fragment Threshold ......................... 2342
  Radio Channels ............................ 1 2 3 4 5 6 7 8 9 10 11
  Tx Power Mode ............................. Automatic
  Rate List (MB) ......................... 6.0 9.0 12.0 18.0 24.0 36.0 48.0 54.0
```
Radio Type........................................... OFDM(802.11a)
Preamble Type..................................... Long preamble
CCA Method...................................... Energy Detect + Carrier

Detect/Correlation
Data Retries......................................... 6
Fragment Threshold.................................. 2342
Radio Channels.................................. 36 40 44 48 52 56 60 64 149 153 157 161 165
Tx Power Mode..................................... Automatic
Rate List (MB)..................................... 6.0 9.0 12.0 18.0 24.0 36.0 48.0 54.0

**Related Commands**
- `config client ccx get-client-capability`
- `config client ccx get-manufacturer-info`
- `config client ccx get-operating-parameters`
- `config client ccx get-profiles`
**show client ccx results**

To display the results from the last successful diagnostic test, use the `show client ccx results` command.

```
show client ccx results client_mac_address
```

**Syntax Description**

```
client_mac_address   MAC address of the client.
```

**Defaults**

None.

**Examples**

This example shows how to display the results from last successful diagnostic test:

```
> show client ccx results xx.xx.xx.xx

dot1x Complete.......................... Success
EAP Method................................ *1,Host OS Login Credentials
dot1x Status............................. 255
```

**Related Commands**

- `config client ccx test-abort`
- `config client ccx test-association`
- `config client ccx test-dot1x`
- `config client ccx test-profile`
- `config client ccx clear-reports`
- `config client ccx clear-results`
show client ccx rm

To display Cisco Client eXtension (CCX) client radio management report information, use the `show client ccx rm` commands.

```
show client ccx rm client_MAC {status | report (chan-load | noise-hist | frame request | beacon | frame)}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Client MAC address.</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>client_MAC</code></td>
<td>Mac address.</td>
</tr>
<tr>
<td><code>status</code></td>
<td>Displays the client CCX radio management status information.</td>
</tr>
<tr>
<td><code>report</code></td>
<td>Displays the client CCX radio management report.</td>
</tr>
<tr>
<td><code>chan-load</code></td>
<td>Displays radio management channel load reports.</td>
</tr>
<tr>
<td><code>noise-hist</code></td>
<td>Displays radio management noise histogram reports.</td>
</tr>
<tr>
<td><code>beacon</code></td>
<td>Displays radio management beacon load reports.</td>
</tr>
<tr>
<td><code>frame</code></td>
<td>Displays radio management frame reports.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display the client radio management status information:

```
> show client ccx rm 00:40:96:15:21:ac status

Client Mac Address............................... 00:40:96:15:21:ac
Channel Load Request............................ Enabled
Noise Histogram Request.......................... Enabled
Beacon Request.................................... Enabled
Frame Request..................................... Enabled
Interval........................................... 30
Iteration.......................................... 10
```

This example shows how to display the client radio management load reports:

```
> show client ccx rm 00:40:96:15:21:ac report chan-load

Channel Load Report
Client Mac Address............................... 00:40:96:ae:53:bc
Timestamp.......................................... 788751121
Incapable Flag................................... On
Refused Flag...................................... On
Chan CCA Busy Fraction
----------
1  194
2  86
3 103
4  0
5 178
6  82
7 103
8  95
9  13
10 222
11 75
```
This example shows how to display the client radio management noise histogram reports:

```plaintext
> show client ccx rm 00:40:96:15:21:ac report noise-hist
Noise Histogram Report
Client Mac Address............................... 00:40:96:15:21:ac
Timestamp........................................ 4294967295
Incapable Flag................................... Off
Refused Flag....................................... Off
Chan RPI0 RPI1 RPI2 RPI3 RPI4 RPI5 RPI6 RPI7
```

**Related Commands**
- `config client ccx default-gw-ping`
- `config client ccx dhcp-test`
show client ccx stats-report

To display the Cisco Client eXtensions (CCX) statistics report from a specified client device, use the `show client ccx stats-report` command.

`show client ccx stats-report client_mac_address`

**Syntax Description**

| `client_mac_address` | Client MAC address. |

**Defaults**

None.

**Examples**

This example shows how to displays the statistics report:

```bash
> show client ccx stats-report 00:40:96:a8:f7:98
Measurement duration = 1

dot11TransmittedFragmentCount       = 1
dot11MulticastTransmittedFrameCount = 2
dot11FailedCount                    = 3
dot11RetryCount                     = 4
dot11MultipleRetryCount             = 5
dot11FrameDuplicateCount            = 6
dot11RTSSuccessCount                = 7
dot11RTSFailureCount                = 8
dot11ACKFailureCount                = 9
dot11ReceivedFragmentCount          = 10
dot11MulticastReceivedFrameCount    = 11
dot11FCSErrorCount                  = 12
dot11TransmittedFrameCount          = 13
```

**Related Commands**

- config client ccx default-gw-ping
- config client ccx dhcp-test
- config client ccx dns-ping
show client detail

To display detailed information for a client on a Cisco lightweight access point, use the `show client detail` command.

```plaintext
show client detail mac_address
```

**Syntax Description**

```
mac_address
```
Client MAC address.

**Defaults**

None.

**Usage Guidelines**

The `show client ap` command may list the status of automatically disabled clients. Use the `show exclusionlist` command to display clients on the exclusion list (blacklisted).

**Note**

The WLAN indexes displayed through the `show capwap reap assoc` command can be different when compared to the WLAN IDs on the controllers. The SSID-to-VLAN mappings are correctly preserved and the functionality is not impacted.

**Examples**

This example shows how to display the client detailed information:

```plaintext
> show client detail 00:0c:41:07:33:a6
```

Client MAC Address............................... 00:16:36:40:ac:58
Client Username.................................. N/A
Client State..................................... Associated
Client NAC OOB State............................. QUARANTINE
Guest LAN Id.................................... 1
IP Address....................................... Unknown
Session Timeout.................................. 0
QoS Level........................................ Gold
Diff Serv Code Point (DSPC)...................... disabled
Mobility State................................... Local
Internal Mobility State......................... apfMsMmInitial
Security Policy Completed...................... No
Policy Manager Rule Created...................... Yes
NPU Fast Fast Notified......................... Yes
Last Policy Manager State....................... WEBAUTH_REQD
Client Entry Create Time....................... 460 seconds
Interface........................................ wired-guest
VLAN............................................. 236
Quarantine VLAN................................. 0
\nClient Statistics:
    Number of Bytes Received..................... 0
    Number of Bytes Sent.......................... 0
    Number of Packets Received................... 0
    Number of Packets Sent........................ 0
    Number of EAP Id Request Msg Timeouts........ 0
    Number of EAP Id Request Msg Failures........ 0
    Number of EAP Request Msg Timeouts........... 2
Number of EAP Request Msg Failures........... 1
Number of EAP Key Msg Timeouts............... 0
Number of EAP Key Msg Failures............... 0
Number of Policy Errors...................... 0
Radio Signal Strength Indicator............. Unavailable
Signal to Noise Ratio......................... Unavailable

Related Commands  show client summary
show client location-calibration summary

To display client location calibration summary information, use the show client location-calibration summary command.

```
show client location-calibration summary
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the location calibration summary information:

```
> show client location-calibration summary

MAC Address  Interval
-------------  --------
10:10:10:10:10:10  60
```

**Related Commands**

- show client summary
- show client summary guest-lan
show client probing

To display the number of probing clients, use the `show client probing` command.

```
show client probing
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the number of probing clients:

```
> show client probing
Number of Probing Clients....................... 0
```

**Related Commands**

- `show client summary`
- `show client summary guest-lan`
show client roam-history

To display the roaming history of a specified client, use the `show client roam-history` command.

```
show client roam-history mac_address
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>mac_address</th>
<th>Client MAC address.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

This example shows how to display the roaming history of a specified client:

```
> show client roam-history 00:14:6c:0a:57:77
```
show client summary

To display a summary of clients associated with a Cisco lightweight access point, use the `show client summary` command.

**show client summary**

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Usage Guidelines**
The `show client ap` command may list the status of automatically disabled clients. Use the `show exclusionlist` command to display clients on the exclusion list (blacklisted).

**Examples**
This example shows how to display a summary of the active clients:

```
> show client summary

Number of Clients......................... 24

<table>
<thead>
<tr>
<th>MAC Address</th>
<th>AP Name</th>
<th>Status</th>
<th>WLAN</th>
<th>Auth</th>
<th>Protocol</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>AP02</td>
<td>Probing</td>
<td>N/A</td>
<td>No</td>
<td>802.11a</td>
<td>1</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>AP02</td>
<td>Probing</td>
<td>N/A</td>
<td>No</td>
<td>802.11a</td>
<td>1</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>AP02</td>
<td>Probing</td>
<td>N/A</td>
<td>No</td>
<td>802.11b</td>
<td>1</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>AP02</td>
<td>Probing</td>
<td>N/A</td>
<td>No</td>
<td>802.11a</td>
<td>1</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>AP02</td>
<td>Probing</td>
<td>N/A</td>
<td>No</td>
<td>802.11b</td>
<td>1</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>AP02</td>
<td>Probing</td>
<td>N/A</td>
<td>No</td>
<td>802.11b</td>
<td>1</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>AP02</td>
<td>Probing</td>
<td>N/A</td>
<td>No</td>
<td>802.11b</td>
<td>1</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>AP02</td>
<td>Probing</td>
<td>N/A</td>
<td>No</td>
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<td>1</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
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<td>Probing</td>
<td>N/A</td>
<td>No</td>
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<td>1</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>AP02</td>
<td>Probing</td>
<td>N/A</td>
<td>No</td>
<td>802.11a</td>
<td>1</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>AP02</td>
<td>Probing</td>
<td>N/A</td>
<td>No</td>
<td>802.11b</td>
<td>1</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>AP02</td>
<td>Probing</td>
<td>N/A</td>
<td>No</td>
<td>802.11b</td>
<td>1</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>AP02</td>
<td>Probing</td>
<td>N/A</td>
<td>No</td>
<td>802.11a</td>
<td>1</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>AP02</td>
<td>Probing</td>
<td>N/A</td>
<td>No</td>
<td>802.11a</td>
<td>1</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>AP02</td>
<td>Probing</td>
<td>N/A</td>
<td>No</td>
<td>802.11a</td>
<td>1</td>
</tr>
</tbody>
</table>

Number of Clients......................... 2

**Related Commands**
`show client summary guest-lan`
show client summary guest-lan

To display the active wired guest LAN clients, use the `show client summary guest-lan` command.

```plaintext
show client summary guest-lan
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display a summary of the active wired guest LAN clients:

```
> show client summary guest-lan

Number of Clients................................ 1

MAC Address     AP Name  Status     WLAN Auth  Protocol  Port Wired
----------  --------  --------  -------  --------  ------  -----
00:16:36:40:ac:58  N/A      Associated  1   No  802.3  1   Yes
```

**Related Commands**

`show client summary`
show client tsm

To display the client traffic stream metrics (TSM) statistics, use the **show client tsm** command.

```
show client tsm 802.11 {a | b} client_mac {ap_mac | all}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>802.11a</th>
<th>Specifies the 802.11a network.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>802.11b</td>
<td>Specifies the 802.11 b/g network.</td>
</tr>
<tr>
<td></td>
<td>client_mac</td>
<td>Specifies the MAC address of the client.</td>
</tr>
<tr>
<td></td>
<td>ap_mac</td>
<td>MAC address of the tsm access point.</td>
</tr>
<tr>
<td></td>
<td>all</td>
<td>Specifies the list of all access points to which the client has associations.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display the client’s TSM for the 802.11a network:

```
> show client tsm 802.11a xx:xx:xx:xx:xx:xx all
AP Interface MAC: 00:0b:85:01:02:03
Client Interface Mac: 00:01:02:03:04:05
Measurement Duration: 90 seconds
Timestamp 1st Jan 2006, 06:35:80
Uplink Stats
=====             ================
Average Delay (5sec intervals)............................35
Delay less than 10 ms......................................20
Delay bet 10 - 20 ms......................................20
Delay bet 20 - 40 ms......................................20
Delay greater than 40 ms..................................20
Total packet Count.........................................80
Total packet lost count (5sec).............................10
Maximum Lost Packet count(5sec)............................5
Average Lost Packet count(5secs)...........................2
DownLink Stats
====             ================
Average Delay (5sec intervals)............................35
Delay less than 10 ms......................................20
Delay bet 10 - 20 ms......................................20
Delay bet 20 - 40 ms......................................20
Delay greater than 40 ms..................................20
Total packet Count.........................................80
Total packet lost count (5sec).............................10
Maximum Lost Packet count(5sec)............................5
Average Lost Packet count(5secs)...........................2
```

**Related Commands**

- show client ap
- show client detail
- show client summary
show client username

To display the client data by the username, use the `show client username` command.

```
show client username username
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>username</th>
<th>Client’s username.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defaults</td>
<td>None.</td>
<td></td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to display the detailed information for a client by name:

```
> show client username IT_007
```

<table>
<thead>
<tr>
<th>MAC Address</th>
<th>AP ID</th>
<th>Status</th>
<th>WLAN Id</th>
<th>Authenticated</th>
</tr>
</thead>
<tbody>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>1</td>
<td>Associated</td>
<td>1</td>
<td>No</td>
</tr>
</tbody>
</table>

**Related Commands**

- `show client ap`
- `show client detail`
- `show client summary`
show country

To display the configured country and the radio types supported, use the show country command.

```
show country
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display the configured countries and supported radio types:
```
> show country
Configured Country............................. United States
Configured Country Codes
    US  - United States......................... 802.11a / 802.11b / 802.11g
```

**Related Commands**
- config country
- show country channels
- show country supported
show country channels

To display the radio channels supported in the configured country, use the `show country channels` command.

```
show country channels
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display the auto-RF channels for the configured countries:

```
> show country channels

Configured Country......................... United States
  KEY: * = Channel is legal in this country and may be configured manually.
  A = Channel is the Auto-RF default in this country.
  . = Channel is not legal in this country.
  C = Channel has been configured for use by Auto-RF.
  x = Channel is available to be configured for use by Auto-RF.

----------:+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
  802.11BG :
  Channels :                   1 1 1 1 1
          : 1 2 3 4 5 6 7 8 9 0 1 2 3 4

----------:+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
  US   : A * * * * A * * * A . .

----------:+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
  802.11A :  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
  Channels : 3 3 3 4 4 4 4 4 5 6 6 6 6 0 0 0 1 1 2 2 2 3 3 4 4 4 5 5 6 6
          : 4 6 8 0 2 4 6 8 2 6 0 4 0 4 8 2 6 0 4 8 2 6 0 9 3 7 1 5

----------:+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
  US   : . A . A . A . A A A A A A A A * * * . . . * * A A A A A

----------:+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

**Related Commands**
- config country
- show country
- show country supported
show country supported

To display a list of the supported country options, use the \texttt{show country supported} command.

\texttt{show country supported}

\textbf{Syntax Description}
This command has no arguments or keywords.

\textbf{Defaults}
None.

\textbf{Examples}
This example shows how to display a list of all the supported countries:

\begin{verbatim}
> show country supported
Configured Country............................. United States
Supported Country Codes
  AR - Argentina........................................ 802.11a / 802.11b / 802.11g
  AT - Austria........................................ 802.11a / 802.11b / 802.11g
  AU - Australia...................................... 802.11a / 802.11b / 802.11g
  BR - Brazil.......................................... 802.11a / 802.11b / 802.11g
  BE - Belgium........................................ 802.11a / 802.11b / 802.11g
  BG - Bulgaria....................................... 802.11a / 802.11b / 802.11g
  CA - Canada......................................... 802.11a / 802.11b / 802.11g
  CH - Switzerland..................................... 802.11a / 802.11b / 802.11g
  CL - Chile............................................ 802.11b / 802.11g
  CN - China............................................ 802.11a / 802.11b / 802.11g
  CO - Colombia....................................... 802.11b / 802.11g
  CY - Cyprus.......................................... 802.11a / 802.11b / 802.11g
  CZ - Czech Republic............................... 802.11a / 802.11b / 802.11g
  DE - Germany........................................ 802.11a / 802.11b / 802.11g
  DK - Denmark........................................ 802.11a / 802.11b / 802.11g
  EE - Estonia......................................... 802.11a / 802.11b / 802.11g
  ES - Spain............................................ 802.11a / 802.11b / 802.11g
  FI - Finland......................................... 802.11a / 802.11b / 802.11g
  FR - France.......................................... 802.11a / 802.11b / 802.11g
  GB - United Kingdom................................ 802.11a / 802.11b / 802.11g
  GI - Gibraltar....................................... 802.11a / 802.11b / 802.11g
  GR - Greece.......................................... 802.11a / 802.11b / 802.11g
  HK - Hong Kong...................................... 802.11a / 802.11b / 802.11g
  HU - Hungary......................................... 802.11a / 802.11b / 802.11g
  ID - Indonesia...................................... 802.11b / 802.11g
  IE - Ireland......................................... 802.11a / 802.11b / 802.11g
  IN - India............................................ 802.11a / 802.11b / 802.11g
  IL - Israel.......................................... 802.11a / 802.11b / 802.11g
  ILO - Israel (outdoor)............................. 802.11b / 802.11g
  IS - Iceland.......................................... 802.11a / 802.11b / 802.11g
  IT - Italy............................................. 802.11a / 802.11b / 802.11g
  JP - Japan (J)....................................... 802.11a / 802.11b / 802.11g
  J2 - Japan 2 (P)..................................... 802.11a / 802.11b / 802.11g
  J3 - Japan 3 (U)..................................... 802.11a / 802.11b / 802.11g
  KR - Korea Republic (C)............................ 802.11a / 802.11b / 802.11g
  KE - Korea Extended (K)............................ 802.11a / 802.11b / 802.11g
  LI - Liechtenstein................................ 802.11a / 802.11b / 802.11g
  LT - Lithuania....................................... 802.11a / 802.11b / 802.11g
  LU - Luxembourg..................................... 802.11a / 802.11b / 802.11g
  LV - Latvia.......................................... 802.11a / 802.11b / 802.11g
  MC - Monaco.......................................... 802.11a / 802.11b / 802.11g
\end{verbatim}
show country supported

MT - Malta......................................... 802.11a / 802.11b / 802.11g
MX - Mexico..................................... 802.11a / 802.11b / 802.11g
MY - Malaysia.................................... 802.11a / 802.11b / 802.11g
NL - Netherlands................................ 802.11a / 802.11b / 802.11g
NZ - New Zealand............................... 802.11a / 802.11b / 802.11g
NO - Norway..................................... 802.11a / 802.11b / 802.11g
PA - Panama..................................... 802.11b / 802.11g
PE - Peru......................................... 802.11b / 802.11g
PH - Philippines................................ 802.11a / 802.11b / 802.11g
PL - Poland....................................... 802.11a / 802.11b / 802.11g
PT - Portugal.................................... 802.11a / 802.11b / 802.11g
RU - Russian Federation......................... 802.11a / 802.11b / 802.11g
RO - Romania................................... 802.11a / 802.11b / 802.11g
SA - Saudi Arabia................................ 802.11a / 802.11b / 802.11g
SE - Sweden...................................... 802.11a / 802.11b / 802.11g
SG - Singapore.................................. 802.11a / 802.11b / 802.11g
SI - Slovenia.................................... 802.11a / 802.11b / 802.11g
SK - Slovak Republic............................ 802.11a / 802.11b / 802.11g
TH - Thailand.................................... 802.11b / 802.11g
TR - Turkey...................................... 802.11b / 802.11g
TW - Taiwan...................................... 802.11a / 802.11b / 802.11g
UA - Ukraine..................................... 802.11a / 802.11b / 802.11g
US - United States.............................. 802.11a / 802.11b / 802.11g
USL - United States (Legacy)..................... 802.11a / 802.11b / 802.11g
USX - United States (US + chan165)............. 802.11a / 802.11b / 802.11g
VE - Venezuela................................... 802.11b / 802.11g
ZA - South Africa................................ 802.11a / 802.11b / 802.11g

Related Commands
config country
show country
show country channels
show coredump summary

To display a summary of the controller’s core dump file, use the `show coredump summary` command.

```
> show coredump summary
Core Dump is enabled
FTP Server IP.............................. 10.10.10.17
FTP Filename............................... file1
FTP Username............................... ftpuser
FTP Password.............................. *********
```

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to display the core dump summary:

```
> show coredump summary
Core Dump is enabled
FTP Server IP.............................. 10.10.10.17
FTP Filename............................... file1
FTP Username............................... ftpuser
FTP Password.............................. *********
```

Related Commands
- `config coredump`
- `config coredump ftp`
- `config coredump username`
show cpu

To display current WLAN controller CPU usage information, use the `show cpu` command.

```
show cpu
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>This command has no arguments or keywords.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defaults</td>
<td>None.</td>
</tr>
<tr>
<td>Examples</td>
<td>This example shows how to display the current CPU usage information:</td>
</tr>
<tr>
<td></td>
<td>&gt; show cpu</td>
</tr>
<tr>
<td></td>
<td>Current CPU load: 2.50%</td>
</tr>
</tbody>
</table>
show custom-web

To display web authentication customization information, use the `show custom-web` command.

```
show custom-web
```

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to display the web authentication customization information:

```
> show custom-web

Radius Authentication Method..................... PAP
Cisco Logo....................................... Enabled
CustomLogo....................................... None
Custom Title..................................... None
Custom Message................................... None
Custom Redirect URL.............................. None
External web authentication Mode............... Disabled
External web authentication URL............... None
```

Related Commands

- `config custom-web ext-webauth-mode`
- `config custom-web ext-webauth-url`
- `config custom-web ext-webserver`
- `config custom-web redirectUrl`
- `config custom-web webauth-type`
- `config custom-web weblogo`
- `config custom-web webmessage`
- `config custom-web webtitle`
show database summary

To display the maximum number of entries in the database, use the `show database summary` command.

```
show database summary
```

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to display a summary of the local database configuration:
```
> show database summary
Maximum Database Entries......................... 2048
Maximum Database Entries On Next Reboot........ 2048
Database Contents
  MAC Filter Entries........................... 2
  Exclusion List Entries....................... 0
  AP Authorization List Entries................ 1
  Management Users............................ 1
  Local Network Users......................... 1
  Local Users.................................. 1
  Guest Users.................................. 0
  Total....................................... 5
```

Related Commands
`config database size`
show debug

To determine if the MAC address and other flag debugging is enabled or disabled, use the show debug command.

show debug [packet]

### Syntax Description

| packet | Displays information about packet debugging. |

### Defaults

None.

### Examples

This example shows how to display if debugging is enabled:

```shell
> show debug
MAC debugging............................... disabled

Debug Flags Enabled:
  arp error enabled.
  bcast error enabled.

This example shows how to display if debugging is enabled:

```shell
> show debug

Status........................................... disabled
Number of packets to display..................... 0
Bytes/packet to display.......................... 0
Packet display format......................... text2pcap

Driver ACL:
  [1]: disabled
  [2]: disabled
  [3]: disabled
  [4]: disabled
  [5]: disabled
  [6]: disabled
Ethernet ACL:
  [1]: disabled
  [2]: disabled
  [3]: disabled
  [4]: disabled
  [5]: disabled
  [6]: disabled
IP ACL:
  [1]: disabled
  [2]: disabled
  [3]: disabled
  [4]: disabled
  [5]: disabled
  [6]: disabled
EoIP-Ethernet ACL:
  [1]: disabled
  [2]: disabled
  [3]: disabled
  [4]: disabled
show debug

[5]: disabled
[6]: disabled
EoIP-IP ACL:
[1]: disabled
[2]: disabled
[3]: disabled
[4]: disabled
[5]: disabled
[6]: disabled
LWAPP-Dot11 ACL:
[1]: disabled
[2]: disabled
[3]: disabled
[4]: disabled
[5]: disabled
[6]: disabled
LWAPP-IP ACL:
[1]: disabled
[2]: disabled
[3]: disabled
[4]: disabled
[5]: disabled
[6]: disabled

Related Commands  debug mac
show dhcp

To display the internal Dynamic Host Configuration Protocol (DHCP) server configuration, use the **show dhcp** command.

```
show dhcp {detailed | leases | opt-82 | proxy | stats | summary | timeout | scope}
```

### Syntax Description

- **show**: Displaysettings.
- **dhcp**: Dynamic Host Configuration Protocol settings.
- **detailed**: Enter `detailed` to display DHCP information for a particular scope. DHCP scope name allows space by using double quote like “scope 003”.
- **leases**: Enter `leases` to display allocated DHCP leases.
- **proxy**: Enter `proxy` to display the status if DHCP proxy.
- **stats**: Enter `stats` to display the DHCP proxy statistics.
- **summary**: Enter `summary` to display DHCP summary information.
- **timeout**: Enter `timeout` to display the DHCP timeout information.
- **scope**: Enter the name of a scope to display the DHCP information for that scope.

### Defaults

None.

### Examples

This example shows how to display the allocated DHCP leases:

```
> show dhcp leases
No leases allocated.
```

This example shows how to display the DHCP summary information:

```
> show dhcp summary
Scope Name     Enabled    Address Range
  003          No          0.0.0.0 -> 0.0.0.0
```

This example shows how to display the DHCP information for the scope 003:

```
> show dhcp 003
Enabled................................. No
Lease Time.......................... 0
Pool Start............................ 0.0.0.0
Pool End............................. 0.0.0.0
Network............................... 0.0.0.0
Netmask............................... 0.0.0.0
Default Routers...................... 0.0.0.0 0.0.0.0 0.0.0.0
DNS Domain...........................
DNS........................................
DNS........................................
Netbios Name Servers................ 0.0.0.0 0.0.0.0 0.0.0.0
<
```

```
> show dhcp detailed "scope 003"
Enabled................................. No
Lease Time.......................... 86400 (1 day )
Pool Start............................ 0.0.0.0
```
show dhcp

Pool End......................................... 0.0.0.0
Network.......................................... 0.0.0.0
Netmask.......................................... 0.0.0.0
Default Routers................................. 0.0.0.0 0.0.0.0 0.0.0.0
DNS Domain......................................
DNS.............................................. 0.0.0.0 0.0.0.0 0.0.0.0
Netbios Name Servers............................ 0.0.0.0 0.0.0.0 0.0.0.0

Related Commands
config dhcp
config dhcp proxy
config interface dhcp
config wlan dhcp_server
debug dhcp
debug dhcp service-port
debug disable-all
show dhcp proxy
show dtls connections

To display the Datagram Transport Layer Security (DTLS) server status, use the `show dtls connections` command.

```plaintext
show dtls connections

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to display the established dtls connections:

```plaintext
> show dtls connections

<table>
<thead>
<tr>
<th>AP Name</th>
<th>Local Port</th>
<th>Peer IP</th>
<th>Peer Port</th>
<th>Ciphersuite</th>
</tr>
</thead>
<tbody>
<tr>
<td>1130 Capwap_Ctrl</td>
<td>1.100.163.210</td>
<td>23678</td>
<td>TLS_RSA_WITH_AES_128_CBC_SHA</td>
<td></td>
</tr>
<tr>
<td>1130 Capwap_Data</td>
<td>1.100.163.210</td>
<td>23678</td>
<td>TLS_RSA_WITH_AES_128_CBC_SHA</td>
<td></td>
</tr>
<tr>
<td>1240 Capwap_Ctrl</td>
<td>1.100.163.209</td>
<td>59674</td>
<td>TLS_RSA_WITH_AES_128_CBC_SHA</td>
<td></td>
</tr>
</tbody>
</table>
show dhcp proxy

To display the status of DHCP proxy handling, use the show dhcp proxy command.

```
show dhcp proxy
```

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to display the status of dhcp proxy information:
```
> show dhcp proxy

DHCP Proxy Behavior: enabled
```

Related Commands
config dhcp
config dhcp proxy
config interface dhcp
config wlan dhcp_server
debug dhcp
debug dhcp service-port
debug disable-all
show dhcp
show eventlog

To display the event log, use the show eventlog command.

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to display the event log entries:

```
> show eventlog

<table>
<thead>
<tr>
<th>File</th>
<th>Line</th>
<th>TaskID</th>
<th>Code</th>
<th>d</th>
<th>h</th>
<th>m</th>
<th>s</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVENT&gt; bootos.c</td>
<td>788</td>
<td>125CEBCC</td>
<td>AAAAAAA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>EVENT&gt; bootos.c</td>
<td>788</td>
<td>125CEBCC</td>
<td>AAAAAAA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>EVENT&gt; bootos.c</td>
<td>788</td>
<td>125C597C</td>
<td>AAAAAAA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>EVENT&gt; bootos.c</td>
<td>788</td>
<td>125C597C</td>
<td>AAAAAAA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>EVENT&gt; bootos.c</td>
<td>788</td>
<td>125C597C</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
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<td>EVENT&gt; bootos.c</td>
<td>788</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>EVENT&gt; bootos.c</td>
<td>788</td>
<td>125C597C</td>
<td>AAAAAAA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>EVENT&gt; bootos.c</td>
<td>788</td>
<td>1216C36C</td>
<td>AAAAAAA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>EVENT&gt; bootos.c</td>
<td>788</td>
<td>1216C36C</td>
<td>AAAAAAA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>EVENT&gt; bootos.c</td>
<td>788</td>
<td>1216C36C</td>
<td>AAAAAAA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>EVENT&gt; bootos.c</td>
<td>788</td>
<td>1216C36C</td>
<td>AAAAAAA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>11</td>
</tr>
</tbody>
</table>
```
show exclusionlist

To display a summary of all clients on the manual exclusion list (blacklisted) from associating with this Cisco wireless LAN controller, use the `show exclusionlist` command.

```plaintext
show exclusionlist
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Usage Guidelines**
This command displays all manually excluded MAC addresses.

**Examples**
This example shows how to display the exclusion list

```plaintext
> show exclusionlist

  MAC Address       Description
  ------------------- -------------------
```

**Related Commands**
`config exclusionlist`
show guest-lan

To display the configuration of a specific wired guest LAN, use the `show guest-lan` command.

```
show guest-lan guest_lan_id
```

## Syntax Description

| `guest_lan_id` | ID of selected wired guest LAN. |

## Defaults

None.

## Usage Guidelines

To display all wired guest LANs configured on the controller, use the `show guest-lan summary` command.

## Examples

This example shows how to display the guest LAN configuration:

```
> show guest-lan 2

Guest LAN Identifier........................... 1
Profile Name................................... guestlan
Network Name (SSID)............................ guestlan
Status......................................... Enabled
AAA Policy Override............................ Disabled
Number of Active Clients....................... 1
Exclusionlist Timeout......................... 60 seconds
Session Timeout............................... Infinity
Interface...................................... wired
Ingress Interface.............................. wired-guest
WLAN ACL....................................... unconfigured
DHCP Server.................................... 10.20.236.90
DHCP Address Assignment Required............. Disabled
Quality of Service............................. Silver (best effort)
Security
  Web Based Authentication................... Enabled
  ACL........................................ Unconfigured
  Web-Passthrough............................ Disabled
  Conditional Web Redirect.................... Disabled
  Auto Anchor................................ Disabled
Mobility Anchor List
GLAN ID IP Address Status
```

## Related Commands

- `config guest-lan`
- `config guest-lan custom-web ext-webauth-url`
- `config guest-lan custom-web global disable`
- `config guest-lan custom-web login_page`
- `config guest-lan nac`
- `config guest-lan security`
show hreap group detail

To display the details for a specific hybrid-REAP group, use the show hreap group detail command.

`show hreap group detail group_name`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th><code>group_name</code></th>
<th>IP address of hybrid-REAP group.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

This example shows how to display the detailed information for a specific hybrid-REAP group:

```
> show hreap group detail 192.12.1.2

Number of Ap's in Group: 1
00:0a:b8:3b:0b:c2  AP1200  Joined

Group Radius Auth Servers:
  Primary Server Index ..................... Disabled
  Secondary Server Index ................... Disabled
```

**Related Commands**

- `config hreap group`
- `show hreap group summary`
show hreap group summary

To display the current list of hybrid-REAP groups, use the show hreap group summary command.

**show hreap group summary**

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the current list of hybrid-REAP groups:

```
> show hreap group summary
HREAP Group Summary: Count 1

<table>
<thead>
<tr>
<th>Group Name</th>
<th># APs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>1</td>
</tr>
</tbody>
</table>
```

**Related Commands**

config hreap group
show hreap group detail
show hreap office-extend

To display hybrid-REAP OfficeExtend access point information, use the `show hreap office-extend` command.

`show hreap office-extend {summary | latency}`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>summary</code></td>
<td>Displays a list of all OfficeExtend access points.</td>
</tr>
<tr>
<td><code>latency</code></td>
<td>Displays the link delay for OfficeExtend access points.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display information about the list of hybrid-REAP officeExtend access points:

```plaintext
> show hreap office-extend summary
Summary of OfficeExtend AP
AP Name            Ethernet MAC  Encryption  Join-Mode   Join-Time
------------------ -----------------  ----------  ----------- ----------
```

This example shows how to display the hybrid-REAP officeExtend access point’s link delay:

```plaintext
> show hreap office-extend latency
Summary of OfficeExtend AP link latency
AP Name              Status  Current   Maximum   Minimum
--------------------------------------------------------------------------
AP1130 Enabled 15 ms  45 ms  12 ms
AP1140 Enabled 14 ms 179 ms 12 ms
```

**Related Commands**

- `config hreap group`
- `show hreap group detail`
show ike

To display active Internet Key Exchange (IKE) security associations (SAs), use the `show ike` command.

```
show ike {brief | detailed} IP_or_MAC_address
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>brief</th>
<th>detailed</th>
<th>IP_or_MAC_address</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Displays a brief summary of all active IKE SAs.</td>
<td>Displays a detailed summary of all active IKE SAs.</td>
<td>IP or MAC address of active IKE SA.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display the active Internet Key Exchange security associations:

```
> show ike brief 10.10.10.10
```
show interface

To display details of the system interfaces, use the `show interface` command:

```
show interface {summary | detailed interface_name}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>summary</td>
<td>Displays a summary of the local interfaces.</td>
</tr>
<tr>
<td>detailed</td>
<td>Displays detailed interface information.</td>
</tr>
<tr>
<td>interface_name</td>
<td>Interface name for detailed display.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

The interface name of the wired guest LAN in the following example is management and its VLAN ID is 149.

**Examples**

This example shows how to display a summary of the local interfaces:

```
> show interface summary

Interface Name          Port Vlan Id     IP Address      Type   Ap Mgr Guest
----------------------- -------- ---------- ---------------- ------ ------ ------
ap-manager             1   untagged    xxx.xxx.xxx.xxx Static Yes No
management              1   untagged    xxx.xxx.xxx.xxx Static No  No
service-port N/A N/A    xxx.xxx.xxx.xxx Static No  No
virtual                 N/A N/A        xxx.xxx.xxx.xxx Static No  No
```

This example shows how to display the detailed interface information:

```
> show interface detailed management

Interface Name.................................... management
MAC Address.................................... 00:0b:85:32:ab:60
IP Address..................................... 1.100.49.30
IP Netmask..................................... 255.255.255.0
IP Gateway..................................... 1.100.49.1
VLAN........................................... 149
Active Physical Port......................... 1
Primary Physical Port....................... 1
Backup Physical Port........................ Unconfigured
Primary DHCP Server......................... 1.100.2.15
Secondary DHCP Server....................... Unconfigured
ACL........................................... Unconfigured
AP Manager.................................... No
```

**Note**

Some WLAN controllers may have only one physical port listed because they have only one physical port.
**show invalid-config**

To see any ignored commands or invalid configuration values in an edited configuration file, use the `show invalid-config` command.

```
show invalid-config
```

**Syntax Description**  This command has no arguments or keywords.

**Defaults**  None.

**Usage Guidelines**  You can execute this command only before the `clear config` or `save config` command.

**Examples**  This example shows how to display a list of any ignored commands or invalid configuration values in a configuration file:

```
> show invalid-config

config wlan peer-blocking drop 3
config wlan dhcp_server 3 192.168.0.44 required
```
show inventory

To display a physical inventory of the Cisco wireless LAN controller, use the `show inventory` command.

**show inventory**

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Usage Guidelines**
Some wireless LAN controllers may have no crypto accelerator (VPN termination module) or power supplies listed because they have no provisions for VPN termination modules or power supplies.

**Examples**
This example shows how to display a physical inventory of the controller:

```
> show inventory

Switch Description............................... Cisco Controller
Machine Model.................................... WLC4404-100
Serial Number.................................... FLS0923003B
Burned-in MAC Address............................ 00:0B:85:32:AB:60
Crypto Accelerator 1............................. Absent
Crypto Accelerator 2............................. Absent
Power Supply 1................................... Absent
Power Supply 2................................... Present, OK
```

**Related Commands**
`show ap inventory`
show IPsec

To display active Internet Protocol Security (IPsec) security associations (SAs), use the **show IPsec** commands.

```
show IPsec {brief | detailed} IP_or_MAC_address
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>brief</th>
<th>detailed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Displays a brief summary of active IPsec SAs.</td>
<td>Displays a detailed summary of active IPsec SAs.</td>
</tr>
</tbody>
</table>

| IP_or_MAC_address | IP address or MAC address of a device. |

**Defaults**

None.

**Examples**

This example shows how to display brief information about the active Internet Protocol Security (IPsec) security associations (SAs):

```
> show IPsec brief 10.10.10.10
```

**Related Commands**

- config radius acct IPsec authentication
- config radius acct IPsec disable
- config radius acct IPsec enable
- config radius acct IPsec encryption
- config radius acct IPsec ike
- config radius auth IPsec authentication
- config radius auth IPsec disable
- config radius auth IPsec encryption
- config radius auth IPsec ike
- config trapflags IPsec
- config wlan security IPsec disable
- config wlan security IPsec enable
- config wlan security IPsec authentication
- config wlan security IPsec encryption
- config wlan security IPsec config
- config wlan security IPsec ike authentication
- config wlan security IPsec ike dh-group
- config wlan security IPsec ike lifetime
- config wlan security IPsec ike phase1
- config wlan security IPsec ike contivity
show known ap

To display known Cisco lightweight access point information, use the `show known ap` command.

```
show known ap [summary | detailed MAC]
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>summary</th>
<th>Displays a list of all known access points.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>detailed</td>
<td>Provides detailed information for all known access points.</td>
</tr>
<tr>
<td></td>
<td>MAC</td>
<td>MAC address of the known AP.</td>
</tr>
</tbody>
</table>

| Defaults | None. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to display a summary of all known access points:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; show known ap summary</td>
</tr>
<tr>
<td></td>
<td>+-----------------+---------+-------+-----------+------------------</td>
</tr>
<tr>
<td></td>
<td>MAC Address</td>
</tr>
<tr>
<td></td>
<td>-----------------+---------+-------+-----------+------------------</td>
</tr>
<tr>
<td></td>
<td>-----------------+---------+-------+-----------+------------------</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>config ap</th>
</tr>
</thead>
</table>
show l2tp

To display Layer 2 Tunneling Protocol (L2TP) sessions, use the show l2tp command.

```
show l2tp [summary | ip_address]
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>summary</td>
<td>Displays all L2TP sessions.</td>
</tr>
<tr>
<td>ip_address</td>
<td>IP address.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display a summary of all L2TP sessions:

```
> show l2tp summary

LAC_IPaddr LTid LSid RTid RSid ATid ASid State
---------- ---- ---- ---- ---- ---- ----- ----- ----- -----
```
show lag summary

To display the current link aggregation (LAG) status, use the `show lag summary` command.

```
show lag summary
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display the current status of the LAG configuration:
```
> show lag summary
LAG Enabled
```

**Related Commands**
`config lag`
show ldap

To display the Lightweight Directory Access Protocol (LDAP) server information for a particular LDAP server, use the `show ldap` command.

```
show ldap index
```

**Syntax Description**

```
index
```

LDAP server index. Valid values are from 1 to 17.

**Defaults**

None.

**Examples**

This example shows how to display the detailed LDAP server information:

```
> show ldap 1
Server Index................................. 1
Address....................................... 2.3.1.4
Port........................................... 389
Enabled......................................... Yes
User DN......................................... name1
User Attribute................................ attr1
User Type....................................... username1
Retransmit Timeout........................... 3 seconds
Bind Method................................... Anonymous
```

**Related Commands**

- `config ldap`
- `config ldap add`
- `config ldap simple-bind`
- `show ldap statistics`
- `show ldap summary`
show ldap statistics

To display all Lightweight Directory Access Protocol (LDAP) server information, use the **show ldap statistics** command.

```plaintext
show ldap statistics
```

**Syntax Description**

This command has no arguments or keywords:

**Examples**

This example shows how to display the LDAP server statistics:

```plaintext
> show ldap statistics

Server Index: 1
Server statistics:
  Initialized OK: 0
  Initialization failed: 0
  Initialization retries: 0
  Closed OK: 0
Request statistics:
  Received: 0
  Sent: 0
  OK: 0
  Success: 0
  Authentication failed: 0
  Server not found: 0
  No received attributes: 0
  No passed username: 0
  Not connected to server: 0
  Internal error: 0
  Retries: 0

Server Index: 2
```

**Related Commands**

- `config ldap`
- `config ldap add`
- `config ldap simple-bind`
- `show ldap`
- `show ldap summary`
show ldap summary

To display the current Lightweight Directory Access Protocol (LDAP) server status, use the **show ldap summary** command.

```
show ldap summary
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display a summary of configured LDAP servers:

```
> show ldap summary

Idx  Server Address   Port  Enabled
---  ---------------  ----  -------
1    2.3.1.4          389   Yes
2    10.10.20.22      389   Yes
```

**Related Commands**

- `config ldap`
- `config ldap add`
- `config ldap simple-bind`
- `show ldap`
- `show ldap statistics`
show license agent

To display the license agent counter and session information on the Cisco 5500 Series Controller, use the show license agent command.

show license agent { counters | sessions }

Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>counters</td>
<td>Displays license agent counter information.</td>
</tr>
<tr>
<td>sessions</td>
<td>Display session information.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to display the license agent counters information:

```
> show license agent counters
License Agent Counters
Request Messages Received:0: Messages with Errors:0
Request Operations Received:0: Operations with Errors:0
Notification Messages Sent:0: Transmission Errors:0: Soap Errors:0
```

This example shows how to display the license agent sessions information:

```
> show license agent sessions
License Agent Sessions: 0 open, maximum is 9
```

Related Commands

- config license agent
- clear license agent
- show license all
- show license detail
- show license feature
- show license image-level
- show license summary
show license all

To display information for all licenses on the Cisco 5500 Series Controller, use the `show license all` command.

```
show license all
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display all the licenses:

```
> show license all
License Store: Primary License Storage
StoreIndex: 0 Feature: wplus-ap-count Version: 1.0
  License Type: Permanent
  License State: Inactive
  License Count: 12/0/0
  License Priority: Medium
StoreIndex: 1 Feature: base Version: 1.0
  License Type: Permanent
  License State: Active, Not in Use
  License Count: Non-Counted
  License Priority: Medium
StoreIndex: 2 Feature: wplus Version: 1.0
  License Type: Permanent
  License State: Active, In Use
  License Count: Non-Counted
  License Priority: Medium
License Store: Evaluation License Storage
StoreIndex: 0 Feature: wplus Version: 1.0
  License Type: Evaluation
  License State: Inactive
  Evaluation total period: 8 weeks 4 days
  Evaluation period left: 6 weeks 6 days
  License Count: Non-Counted
  License Priority: Low
StoreIndex: 1 Feature: wplus-ap-count Version: 1.0
  License Type: Evaluation
  License State: Active, In Use
  Evaluation total period: 8 weeks 4 days
  Evaluation period left: 2 weeks 3 days
  Expiry date: Thu Jun 25 18:09:43 2009
  License Count: 250/250/0
  License Priority: High
StoreIndex: 2 Feature: base Version: 1.0
  License Type: Evaluation
  License State: Inactive
  Evaluation total period: 8 weeks 4 days
  Evaluation period left: 8 weeks 4 days
  License Count: Non-Counted
  License Priority: Low
```
show license all

StoreIndex:  3  Feature: base-ap-count   Version: 1.0
License Type: Evaluation
License State: Active, Not in Use, EULA accepted
  Evaluation total period:  8 weeks  4 days
  Evaluation period left:  8 weeks  3 days
License Count: 250/0/0
License Priority: Low

Related Commands
  license install
  license modify priority
  show license agent
  show license detail
  show license feature
  show license image-level
  show license summary
show license capacity

To display the maximum number of access points allowed for this license on the Cisco 5500 Series Controller, the number of access points currently joined to the controller, and the number of access points that can still join the controller, use the show license capacity command.

```
show license capacity
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display the license capacity:

```
> show license capacity
Licensed Feature    Max Count         Current Count     Remaining Count
-----------------------------------------------------------------------
    AP Count            250 47 203
```

**Related Commands**
license install
license modify priority
show license agent
show license all
show license detail
show license feature
show license image-level
show license summary
show license detail

To display details of a specific license on the Cisco 5500 Series Controller, use the show license detail command.

```
show license detail license_name
```

**Syntax Description**

<table>
<thead>
<tr>
<th>license-name</th>
<th>Name of a specific license.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

This example shows how to display the license details:

```
> show license detail wplus
Feature: wplus               Period left: Life time
Index:  1       Feature: wplus   Version: 1.0
      License Type: Permanent
      License State: Active, In Use
      License Count: Non-Counted
      License Priority: Medium
      Store Index: 2
      Store Name: Primary License Storage
Index:  2       Feature: wplus   Version: 1.0
      License Type: Evaluation
      License State: Inactive
            Evaluation total period:  8 weeks  4 days
            Evaluation period left:  6 weeks  6 days
      License Count: Non-Counted
      License Priority: Low
      Store Index: 0
```

**Related Commands**

license install
license modify priority
show license agent
show license all
show license feature
show license image-level
show license summary
show license expiring

To display details of expiring licenses on the Cisco 5500 Series Controller, use the `show license expiring` command.

```
show license expiring
```

### Syntax Description

This command has no arguments or keywords.

### Defaults

None.

### Examples

This example shows how to display the details of the expiring licenses:

```
> show license expiring
StoreIndex:  0  Feature: wplus  Version: 1.0
  License Type: Evaluation
  License State: Inactive
    Evaluation total period: 8 weeks 4 days
    Evaluation period left: 6 weeks 6 days
  License Count: Non-Counted
  License Priority: Low

StoreIndex:  1  Feature: wplus-ap-count  Version: 1.0
  License Type: Evaluation
  License State: Active, In Use
    Evaluation total period: 8 weeks 4 days
    Evaluation period left: 2 weeks 3 days
    Expiry date: Thu Jun 25 18:09:43 2009
  License Count: 250/250/0
  License Priority: High

StoreIndex:  2  Feature: base  Version: 1.0
  License Type: Evaluation
  License State: Inactive
    Evaluation total period: 8 weeks 4 days
    Evaluation period left: 8 weeks 4 days
  License Count: Non-Counted
  License Priority: Low

StoreIndex:  3  Feature: base-ap-count  Version: 1.0
  License Type: Evaluation
  License State: Active, Not in Use, EULA accepted
    Evaluation total period: 8 weeks 4 days
    Evaluation period left: 8 weeks 3 days
  License Count: 250/0/0
  License Priority: Low
```

### Related Commands

- `license install`
- `license modify priority`
- `show license all`
- `show license detail`
- `show license evaluation`
- `show license in-use`
- `show license summary`
show license evaluation

To display details of evaluation licenses on the Cisco 5500 Series Controller, use the show license evaluation command.

```
show license evaluation
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the details of the evaluation licenses:

```
> show license evaluation
StoreIndex: 0 Feature: wplus  Version: 1.0
  License Type: Evaluation
  License State: Inactive
    Evaluation total period: 8 weeks 4 days
    Evaluation period left: 6 weeks 6 days
  License Count: Non-Counted
  License Priority: Low

StoreIndex: 1 Feature: wplus-ap-count  Version: 1.0
  License Type: Evaluation
  License State: Active, In Use
    Evaluation total period: 8 weeks 4 days
    Evaluation period left: 2 weeks 3 days
    Expiry date: Thu Jun 25 18:09:43 2009
  License Count: 250/250/0
  License Priority: High

StoreIndex: 2 Feature: base  Version: 1.0
  License Type: Evaluation
  License State: Inactive
    Evaluation total period: 8 weeks 4 days
    Evaluation period left: 8 weeks 4 days
  License Count: Non-Counted
  License Priority: Low

StoreIndex: 3 Feature: base-ap-count  Version: 1.0
  License Type: Evaluation
  License State: Active, Not in Use, EULA accepted
    Evaluation total period: 8 weeks 4 days
    Evaluation period left: 8 weeks 3 days
  License Count: 250/0/0
  License Priority: Low
```

**Related Commands**

license install
license modify priority
show license all
show license detail
show license expiring
show license in-use
show license summary
show license feature

To display a summary of license-enabled features on the Cisco 5500 Series Controller, use the show license feature command.

```
show license feature
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the license-enabled features:

```bash
> show license feature
Feature name Enforcement Evaluation Clear Allowed Enabled
  wplus             yes        yes        yes     yes     yes
  wplus-ap-count    yes        yes        yes     yes     yes
  base             no         yes        yes      no      
  base-ap-count    yes        yes        yes      no      
```

**Related Commands**

license install
license modify priority
show license all
show license detail
show license expiring
show license evaluation
show license image-level
show license in-use
show license summary
show license file

To display a summary of license-enabled features on the Cisco 5500 Series Controller, use the show license file command.

```
show license file
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>show</td>
<td>Display settings.</td>
</tr>
<tr>
<td>license</td>
<td>License settings.</td>
</tr>
<tr>
<td>file</td>
<td>Display all the license files.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to display the license files:

```
> show license file
License Store: Primary License Storage
  Store Index: 0
    License: 11 wplus-ap-count 1.0 LONG NORMAL STANDALONE EXCL 12_KEYS INFINIT
      E_KEYS NEVER NEVER NEVER NIL SLM_CODE CL ND LCK NIL *1AR5SNS7MSAD8PPU0400
      NIL Nil NIL 5_MINS <UDI>=P1D>AIR-CT5508-K9</P1D><SN>RFD000F2D27<
      /SN></UDI> Pe0L7tv8KDUqo:z1Pe4235wawgM8G,tTe0l,7zLyA3Vfxhn1e5a3a
      mE3181&yM30Pkr402OD43iL1Kn7jomo3RF11LjMRqlkKhiL2tOyuftQ3g2bCA0
      nR3w1b38xK1t5<s<WLC>AQERIQ<AB//++mCzRUbOhw28v0czAY0iAm7ocDLJMB9ER0
      +BD3w2PhNEYweBN/T3X8BqJqfc+oKRqWInX03s+nsL71z0txo1XaYzA03LynUJ+M
      Fzsq1hKoJV1pEvQ8H21MNJuVbhoN0gyINwsiJaM8AQ1kVBQF2he10GYolVzdzfJf
      EPQix6tZ++/Vtc/g3SIF/5o8XYC =~WLC>
    Comment:
    Hash: iOGjuLxgLhcTB113ohIzxVioHA=
```

### Related Commands

- license install
- show license all
- show license detail
- show license expiring
- show license feature
- show license image-level
- show license in-use
- show license summary
show license handle

To display the license handles on the Cisco 5500 Series Controller, use the `show license handle` command.

```
show license handle
```

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to display the license handles:

```
> show license handle

Feature: wplus                          , Handle Count: 1
  Units: 01( 0), ID: 0x5e000001, NotifyPC: 0x1001e8f4 LS-Handle (0x00000001),
  Units: ( 1)

  Registered clients: 1
  Context 0x1051b610, epID 0x10029378

Feature: base                            , Handle Count: 0
  Registered clients: 1
  Context 0x1053ace0, epID 0x10029378

Feature: wplus-ap-count                  , Handle Count: 1
  Units: 250( 0), ID: 0xd4000002, NotifyPC: 0x1001e8f4 LS-Handle (0x00000002), Units: (250)

  Registered clients: None

Feature: base-ap-count                   , Handle Count: 0
  Registered clients: None

Global Registered clients: 2
  Context 0x10546270, epID 0x100294cc
  Context 0x1053bae8, epID 0x100294cc
```

Related Commands

license install
show license all
show license detail
show license expiring
show license feature
show license image-level
show license in-use
show license summary
show license image-level

To display the license image level that is in use on the Cisco 5500 Series Controller, use the **show license image-level** command.

```
show license image-level
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the image level license settings:

```
show license image-level

Module name  Image level  Priority  Configured  Valid license
wnbu         wplus        1         YES         wplus
base         2         NO

NOTE: wplus includes two additional features: Office Extend AP, Mesh AP.
```

**Related Commands**

- license install
- license modify priority
- show license all
- show license detail
- show license expiring
- show license feature
- show license in-use
- show license summary
show license in-use

To display the licenses that are in use on the Cisco 5500 Series Controller, use the show license in-use command.

show license in-use

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to display the licenses that are in use:

```bash
> show license in-use
StoreIndex: 2 Feature: wplus Version: 1.0
  License Type: Permanent
  License State: Active, In Use
  License Count: Non-Counted
  License Priority: Medium
StoreIndex: 1 Feature: wplus-ap-count Version: 1.0
  License Type: Evaluation
  License State: Active, In Use
  Evaluation total period: 8 weeks 4 days
  Evaluation period left: 2 weeks 3 days
  Expiry date: Thu Jun 25 18:09:43 2009
  License Count: 250/250/0
  License Priority: High
```

Related Commands

license install
license modify priority
show license all
show license detail
show license evaluation
show license expiring
show license feature
show license image-level
show license permanent
show license summary
show license permanent

To display the permanent licenses on the Cisco 5500 Series Controller, use the `show license permanent` command.

```
show license permanent
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the permanent license's information:

```
> show license permanent
StoreIndex: 0 Feature: wplus-ap-count Version: 1.0
  License Type: Permanent
  License State: Inactive
  License Count: 12/0/0
  License Priority: Medium
StoreIndex: 1 Feature: base Version: 1.0
  License Type: Permanent
  License State: Active, Not in Use
  License Count: Non-Counted
  License Priority: Medium
StoreIndex: 2 Feature: wplus Version: 1.0
  License Type: Permanent
  License State: Active, In Use
  License Count: Non-Counted
  License Priority: Medium
```

**Related Commands**

- `license install`
- `license modify priority`
- `show license all`
- `show license detail`
- `show license evaluation`
- `show license expiring`
- `show license feature`
- `show license image-level`
- `show license in-use`
- `show license summary`
show license status

To display the license status on the Cisco 5500 Series Controller, use the show license status command.

```plaintext
show license status
```

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to display the license status:

```plaintext
> show license status
License Type Supported
  permanent  Non-expiring node locked license
  extension  Expiring node locked license
  evaluation Expiring non node locked license

License Operation Supported
  install    Install license
  clear      Clear license
  annotate   Comment license
  save       Save license
  revoke     Revoke license

Device status
  Device Credential type: DEVICE
  Device Credential Verification: PASS
  Rehost Type: DC_OR_IC
```

Related Commands

- license install
- license modify priority
- show license all
- show license detail
- show license evaluation
- show license expiring
- show license feature
- show license image-level
- show license permanent
- show license summary
show license statistics

To display license statistics on the Cisco 5500 Series Controller, use the show license statistics command.

```
show license statistics
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the license statistics:

```
> show license statistics
Administrative statistics
Install success count:       0
Install failure count:       0
Install duplicate count:     0
Comment add count:           0
Comment delete count:        0
Clear count:                 0
Save count:                  0
Save cred count:             0

Client status
Request success count 2
Request failure count 0
Release count 0
Global Notify count 0
```

**Related Commands**

license install  
license modify priority  
show license all  
show license detail  
show license evaluation  
show license expiring  
show license feature  
show license image-level  
show license permanent  
show license summary
show license summary

To display a brief summary of all licenses on the Cisco 5500 Series Controller, use the show license summary command.

show license summary

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to display a brief summary of all licenses:

```
> show license summary
Index 1 Feature: wplus
   Period left: Life time
   License Type: Permanent
   License State: Active, In Use
   License Count: Non-Counted
   License Priority: Medium
Index 2 Feature: wplus-ap-count
   Period left: 2 weeks 3 days
   License Type: Evaluation
   License State: Active, In Use
   License Count: 250/250/0
   License Priority: High
Index 3 Feature: base
   Period left: Life time
   License Type: Permanent
   License State: Active, Not in Use
   License Count: Non-Counted
   License Priority: Medium
Index 4 Feature: base-ap-count
   Period left: 8 weeks 3 days
   License Type: Evaluation
   License State: Active, Not in Use, EULA accepted
   License Count: 250/0/0
   License Priority: Low
```

Related Commands
license install
license modify priority
show license all
show license detail
show license evaluation
show license expiring
show license feature
show license image-level
show license permanent
show license summary
show license udi

To display unique device identifier (UDI) values for licenses on the Cisco 5500 Series Controller, use the `show license udi` command.

```
show license udi
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display the UDI values for licenses:

```
> show license udi
Device# PID SN UDI
--- --- ---- ----
*0 AIR-CT5508-K9 RFD000PD27 AIR-CT5508-K9:RFD000PD27
```

**Related Commands**
- license install
- license modify priority
- show license all
- show license detail
- show license evaluation
- show license expiring
- show license feature
- show license image-level
- show license permanent
- show license summary
**show load-balancing**

To display the status of the load-balancing feature, use the `show load-balancing` command.

```
show load-balancing
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the load-balancing status:

```
> show load-balancing

Aggressive Load Balancing......................... Enabled
Aggressive Load Balancing Window............... 0 clients
Aggressive Load Balancing Denial Count........ 3
Statistics
Total Denied Count.............................. 10 clients
Total Denial Sent................................. 20 messages
Exceeded Denial Max Limit Count............... 0 times
None 5G Candidate Count......................... 0 times
None 2.4G Candidate Count....................... 0 times
```

**Related Commands**

`config load-balancing`
show local-auth certificates

To display local authentication certificate information, use the `show local-auth certificates` command:

```
show local-auth certificates
```

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to display the authentication certificate information stored locally:

```
> show local-auth certificates

Certificates available for Local EAP authentication:

Certificate issuer .................................. vendor
   CA certificate:
     Subject: C=AU, ST=NSW, L=Sydney, O=Cisco Systems
     OU=WNBV Sydney, CN=wmbu-syd-acs-a.cisco.com
     Issuer: C=AU, ST=NSW, L=Sydney, O=Cisco Systems
     OU=WNBV Sydney, CN=wmbu-syd-acs-a.cisco.com
     Valid: 2005 Jun 15th, 04:53:49 GMT to 2008 Jun 15th, 05:03:34 GMT
     Device certificate:
     Subject: MAILTO=test@test.net, C=AU, ST=NSW, L=Sydney
     O=Cisco Systems, OU=WNBV Sydney, CN=concannon
     Issuer: C=AU, ST=NSW, L=Sydney, O=Cisco Systems
     OU=WNBV Sydney, CN=wmbu-syd-acs-a.cisco.com

Certificate issuer .................................. cisco
   CA certificate:
     Subject: C=US, ST=California, L=San Jose, O=airespace Inc
     OU=none, CN=ca, MAILTO=support@airespace.com
     Issuer: C=US, ST=California, L=San Jose, O=airespace Inc
     OU=none, CN=ca, MAILTO=support@airespace.com
     Device certificate:
     Subject: C=US, ST=California, L=San Jose, O=airespace Inc
     C=US, ST=California, L=San Jose, O=airespace Inc
     Valid: 2005 Feb 22nd, 10:52:58 GMT to 2014 Nov 22nd, 10:52:58 GMT

Certificate issuer .................................. legacy
   CA certificate:
     Subject: C=US, ST=California, L=San Jose, O=airespace Inc
     OU=none, CN=ca, MAILTO=support@airespace.com
     Issuer: C=US, ST=California, L=San Jose, O=airespace Inc
     OU=none, CN=ca, MAILTO=support@airespace.com
     Device certificate:
     Subject: C=US, ST=California, L=San Jose, O=airespace Inc
     CN=000b85335340, MAILTO=support@airespace.com
```
show local-auth certificates

Issuer: C=US, ST=California, L=San Jose, O=airespace Inc
OU=none, CN=ca, MAILTO=support@airespace.com
Valid: 2005 Feb 22nd, 10:52:58 GMT to 2014 Nov 22nd, 10:52:58 GMT

Related Commands
- clear stats local-auth
- config local-auth active-timeout
- config local-auth eap-profile
- config local-auth method fast
- config local-auth user-credentials
- debug aaa local-auth
- show local-auth config
- show local-auth statistics
show local-auth config

To display local authentication configuration information, use the `show local-auth config` command.

```
show local-auth config
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the local authentication configuration information:

```
> show local-auth config

User credentials database search order:
  Primary ................................... Local DB

Configured EAP profiles:
  Name ...................................... fast-test
    Certificate issuer .................... default
    Enabled methods ....................... fast
    Configured on WLANs ................... 2

EAP Method configuration:
  EAP-TLS:
    Certificate issuer used ............... cisco
    Peer verification options:
      Check against CA certificates ..... disabled
      Verify certificate CN identity .... disabled
      Check certificate date validity ... disabled
  EAP-FAST:
    TTL for the PAC ....................... 3 600
    Initial client message ............... <none>
    Local certificate required .......... No
    Client certificate required .......... No
    Vendor certificate required .......... No
    Anonymous provision allowed ........ Yes
    Authenticator ID ........................ 7b7fffffff000000000000000000000000
    Authority Information ................. Test

EAP Profile.................................... tls-prof
  Enabled methods for this profile ...... tls
  Active on WLANs ......................... 1 3

EAP Method configuration:
  EAP-TLS:
    Certificate issuer used ............... cisco
    Peer verification options:
      Check against CA certificates ..... disabled
      Verify certificate CN identity .... disabled
      Check certificate date validity ... disabled
```
Related Commands

- clear stats local-auth
- config local-auth active-timeout
- config local-auth eap-profile
- config local-auth method fast
- config local-auth user-credentials
- debug aaa local-auth
- show local-auth certificates
- show local-auth statistics
show local-auth statistics

To display local Extensible Authentication Protocol (EAP) authentication statistics, use the `show local-auth statistics` command:

```
show local-auth statistics
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the local authentication certificate statistics:

```
> show local-auth statistics

Local EAP authentication DB statistics:
Requests received ......................... 14
Responses returned ........................ 14
Requests dropped (no EAP AVP) ............ 0
Requests dropped (other reasons) .......... 0
Authentication timeouts ................... 0

Authentication statistics:
Method          Success         Fail
---------------------             ------------
Unknown               0            0
LEAP                  0            0
EAP-FAST              2      0
EAP-TLS               0            0
PEAP                  0            0

Local EAP credential request statistics:
Requests sent to LDAP DB .................. 0
Requests sent to File DB .................. 2
Requests failed (unable to send) ........ 0
Authentication results received:
   Success .................................. 2
   Fail ................................... 0
Certificate operations:
Local device certificate load failures .... 0
Total peer certificates checked .......... 0
Failures:
   CA issuer check ......................... 0
   CN name not equal to identity .......... 0
   Dates not valid or expired ............ 0
```

**Related Commands**

- `clear stats local-auth`
- `config local-auth active-timeout`
- `config local-auth eap-profile`
- `config local-auth method fast`
- `config local-auth user-credentials`
debug aaa local-auth
show local-auth certificates
show local-auth config
show location

To display location system information, use the `show location` command.

```plaintext
show location [detail mac_address | summary]
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>(Optional) Displays detailed location information.</td>
</tr>
<tr>
<td>mac_address</td>
<td>MAC address of a client.</td>
</tr>
<tr>
<td>summary</td>
<td>(Optional) Displays summary location information.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to display the location summary information:

```plaintext
> show location summary
Location Summary

Algorithm used: Average
Client
  RSSI expiry timeout: 5 sec
  Half life: 0 sec
  Notify Threshold: 0 db
Calibrating Client
  RSSI expiry timeout: 5 sec
  Half life: 0 sec
Rogue AP
  RSSI expiry timeout: 5 sec
  Half life: 0 sec
  Notify Threshold: 0 db
RFID Tag
  RSSI expiry timeout: 5 sec
  Half life: 0 sec
  Notify Threshold: 0 db
```

### Related Commands

- `clear location rfid`
- `clear location statistics rfid`
- `config location`
- `show location statistics rfid`
show location statistics rfid

To see any radio frequency identification (RFID)-related errors, use the `show location statistics rfid` command.

```
show location statistics rfid
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the detailed location RFID statistics:

```
> show location statistics rfid

RFID Statistics

Database Full : 0  Failed Delete: 0
Null Bufhandle: 0  Bad Packet: 0
Bad LWAPP Data: 0  Bad LWAPP Encap: 0
Off Channel: 0  Bad CCX Version: 0
Bad AP Info : 0
Above Max RSSI: 0  Below Max RSSI: 0
Invalid RSSI: 0  Add RSSI Failed: 0
Oldest Expired RSSI: 0  Smallest Overwrite: 0
```

**Related Commands**

- clear location rfid
- clear location statistics rfid
- config location
- show location
show logging

To display the syslog facility logging parameters and buffer contents, use the show logging command.

show logging

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to display the current settings and buffer content details:

> show logging

Logging to buffer:
  - Logging of system messages to buffer:
    - Logging filter level.......................... errors
    - Number of system messages logged.............. 67227
    - Number of system messages dropped............. 21136
    - Logging of debug messages to buffer ........... Disabled
    - Number of debug messages logged.............. 0
    - Number of debug messages dropped............. 0

Logging to console:
  - Logging of system messages to console:
    - Logging filter level.......................... errors
    - Number of system messages logged.............. 0
    - Number of system messages dropped............. 88363
    - Logging of debug messages to console .......... Enabled
    - Number of debug messages logged.............. 0
    - Number of debug messages dropped............. 0

Logging to syslog:
  - Syslog facility............................... local0
  - Logging of system messages to syslog:
    - Logging filter level.......................... errors
    - Number of system messages logged.............. 67227
  - More-- or (q)uit
    - Number of system messages dropped............. 21136
  - Logging of debug messages to syslog .......... Disabled
    - Number of debug messages logged.............. 0
    - Number of debug messages dropped............. 0
  - Number of remote syslog hosts................. 0
    - Host 0...................................... Not Configured
    - Host 1...................................... Not Configured
    - Host 2...................................... Not Configured

Logging of traceback............................. Disabled
Logging of process information................... Disabled
Logging of source file informational............. Enabled
Timestamping of messages........................
  - Timestamping of system messages................. Enabled
  - Timestamp format.............................. Date and Time
  - Timestamping of debug messages............... Enabled
  - Timestamp format.............................. Date and Time

Logging buffer (67227 logged, 21136 dropped)

*Apr 03 09:48:01.728: %MM-3-INVALID_PKT_RECV: mm_listen.c:5508 Received an invalid
show logging

packet from 1.100.163.51. Source member:0.0.0.0. source member unknown.
*Apr 03 09:47:34.194: %LWAPP-3-DECODE_ERR: spam_lrad.c:1271 Error decoding discovery request from AP 00:13:5f:0e:d4:20
*Apr 03 09:47:34.194: %LWAPP-3-DISC_OTAP_ERR: spam_lrad.c:5554 Ignoring OTAP discovery request from AP 00:13:5f:0e:d4:20, OTAP is disabled
Previous message occurred 2 times.

Related Commands
config logging syslog host
config logging syslog facility
config logging syslog level
show loginsession

To display the existing sessions, use the **show loginsession** command.

```
show loginsession
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display the current session details:
```
> show loginsession

ID  username  Connection From  Idle Time  Session Time
  00 admin    EIA-232        00:00:00  00:19:04
```

**Related Commands**
config loginsession close
show macfilter

To display the MAC filter parameters, use the `show macfilter` command.

```
show macfilter {summary | detail MAC}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>summary</td>
<td>Displays a summary of all MAC filter entries.</td>
</tr>
<tr>
<td>detail MAC</td>
<td>Detailed display of a MAC filter entry.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

The MAC delimiter (none, colon, or hyphen) for MAC addresses sent to RADIUS servers is displayed.

The MAC filter table lists the clients that are always allowed to associate with a wireless LAN.

**Examples**

This example shows how to display the detailed display of a MAC filter entry:

```
```

WLAN Identifier.................................. Any
Interface Name................................... management
Description...................................... RAP

This example shows how to display a summary of the MAC filter parameters:

```
> show macfilter summary
```

MAC Filter RADIUS Compatibility mode............. Cisco ACS
MAC Filter Delimiter............................. None

Local Mac Filter Table

<table>
<thead>
<tr>
<th>MAC Address</th>
<th>WLAN Id</th>
<th>Description</th>
</tr>
</thead>
</table>

**Related Commands**

- `config macfilter`
- `config macfilter description`
- `config macfilter interface`
- `config macfilter ip-address`
- `config macfilter mac-delimiter`
- `config macfilter radius-compat`
- `config macfilter wlan-id`
show memory monitor

To display a summary of memory analysis settings and any discovered memory issues, enter this command:

```
show memory monitor [detail]
```

| Syntax Description | detail | (Optional) Displays details of any memory leaks or corruption. |

| Defaults | None. |

**Usage Guidelines**

Be careful when changing the defaults for the `config memory monitor` command unless you know what you are doing, you have detected a problem, or you are collecting troubleshooting information.

**Examples**

This example shows how to display a summary of memory monitoring settings and a summary of test results:

```
> show memory monitor

Memory Leak Monitor Status:
low_threshold(10000), high_threshold(30000), current status(disabled)
-------------------------------------------
Memory Error Monitor Status:
Crash-on-error flag currently set to (disabled)
No memory error detected.
```

This example shows how to display the monitor test results:

```
> show memory monitor detail

Memory error detected. Details:
------------------------------------------------
- Corruption detected at pmalloc entry address: 0x179a7ec0
- Corrupt entry:headerMagic(0xdeadf00d), trailer(0xabcd), poison(0xreadceef), entrysize(128), bytes(100), thread(Unknown task name, task id = (332096592)), file(pmalloc.c), line(1736), time(1027)

Previous 1K memory dump from error location.
------------------------------------------------
{179a7ac0}: 00000000 00000000 00000000 ceeff0d readf00d 00000080 00000000 00000000 179a7be0: 17958b20 00000000 1175608c 00000078 00000000 readceef 179a7afc 00000001
{179a7b00}: 00000003 00000006 00000001 00000004 00000001 00000009 00000009 0000020d
{179a7b20}: 00000001 00000002 00000002 00000001 00000001 00000004 00000000 00000000 00000000 00000000 00000002 0d7b9aba
{179a7b40}: cbddf004 192f465e 7791acc8 e5032242 5365788c a1b7cee6 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
{179a7b60}: 00000000 00000000 00000000 00000000 00000000 00000000 ceeff0d readf00d 00000080 00000000 00000000
{179a7b80}: 00000000 00000000 17958dc0 00000000 1175608c 00000078 00000000 readceef
{179a7ba0}: 179a7ba4 00000001 00000003 00000006 00000001 00000004 00000001 000003763
{179a7c00}: 17222246c 17222246c 00000000 00000000 00000000 00000000 00000000 00000000 ceeff0d
{179a7c20}: readf00d 00000080 00000000 00000000 00000000 00000000 00000000 00000000 ...
show memory monitor

Related Commands

- config memory monitor errors
- config memory monitor leaks
- debug memory
**show reset**

To display the scheduled system reset parameters, use the `show reset` command.

```
show reset
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display the scheduled system reset parameters:

```
> show reset
System reset is scheduled for Mar 27 01:01:01 2010
Current local time and date is Mar 24 02:57:44 2010
A trap will be generated 10 minutes before each scheduled system reset.
Use ‘reset system cancel’ to cancel the reset.
Configuration will be saved before the system reset.
```

**Related Commands**

- `reset system at`
- `reset system in`
- `reset system cancel`
- `reset system notify-time`
Show media-stream commands

Use the `show media-stream` commands to display the multicast-direct configuration state.
To display the details for a specific media-stream group, use the `show media-stream group detail` command.

**show media-stream group detail media-stream_name**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>media-stream_name</th>
<th>Name of the media-stream group.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defaults</td>
<td>None.</td>
<td></td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to display media-stream group configuration details:

```plaintext
> show media-stream group detail abc

Media Stream Name................................. abc
Start IP Address................................. 227.8.8.8
End IP Address................................... 227.9.9.9
RRC Parameters
Avg Packet Size(Bytes).......................... 1200
Expected Bandwidth(Kbps)........................ 300
Policy.......................................... Admit
RRC re-evaluation............................... periodic
QoS............................................. Video
Status.......................................... Multicast-direct
Usage Priority.................................. 5
Violation....................................... drop
```

**Related Commands**  
`show media-stream group summary`
show media-stream group summary

To display the summary of the media stream and client information, use the **show media-stream group summary** command.

```
show media-stream group summary
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display a summary of the media-stream group:
```
> show media-stream group summary
```

```
Stream Name   Start IP       End IP         Operation Status
------------- -------------- -------------- ----------------
abc           227.8.8.8      227.9.9.9      Multicast-direct
```

**Related Commands**
Show Mesh Commands
Show Mesh Commands

To display settings for outdoor and indoor mesh access points, use the `show mesh` commands.
show mesh ap

To display settings for mesh access points, use the show mesh commands.

    show mesh ap {summary | tree}

Syntax Description

    summary          Displays a summary of mesh access point information including the name, model, bridge virtual interface (BVI) MAC address, United States Computer Emergency Response Team (US-CERT) MAC address, hop, and bridge group name.

    tree             Displays a summary of mesh access point information in a tree configuration, including the name, hop counter, link signal-to-noise ratio (SNR), and bridge group name.

Defaults

None.

Examples

This example shows how to display a summary format:

    > show mesh ap summary

            AP Name  AP Model    BVI MAC       CERT MAC       Hop    Bridge Group Name
            ------------------  -----------------  ------------------ -----  --
            SB_RAP1 AIR-LAP1522AG-A-K9 00:1d:71:0e:d0:00 00:1d:71:0e:d0:00 0     sbox
            SB_MAP1 AIR-LAP1522AG-A-K9 00:1d:71:0e:85:00 00:1d:71:0e:85:00 1     sbox
            SB_MAP2 AIR-LAP1522AG-A-K9 00:1b:d4:a7:8b:00 00:1b:d4:a7:8b:00 2     sbox
            SB_MAP3 AIR-LAP1522AG-A-K9 00:1d:71:0d:ee:00 00:1d:71:0d:ee:00 3     sbox

            Number of Mesh APs............................... 4
            Number of RAPs................................... 1
            Number of MAPs................................... 3

This example shows how to display settings in a hierarchical (tree) format:

    > show mesh ap tree

            ------------------------
            || AP Name [Hop Counter, Link SNR, Bridge Group Name] ||
            ------------------------

            [Sector 1]
            ---------
            SB_RAP1[0,0,sbox]
            | -SB_MAP1[1,32,sbox]
            | | -SB_MAP2[2,27,sbox]
            | | | -SB_MAP3[3,30,sbox]

            Number of Mesh APs............................... 4
            Number of RAPs................................... 1
            Number of MAPs................................... 3
show mesh ap

Related Commands

- config mesh alarm
- config mesh astools
- config mesh background-scanning
- config mesh battery-state
show mesh astools stats

To display anti-stranding statistics for outdoor mesh access points, use the `show mesh astools stats` command.

```
show mesh astools stats [cisco_ap]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>cisco_ap</code></td>
<td>(Optional) Anti-stranding feature statistics for a designated mesh access point.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display anti-stranding statistics on all outdoor mesh access points:

```
> show mesh astools stats
Total No of Aps stranded : 0
```

This example shows how to display anti-stranding statistics for access point sb_map1:

```
> show mesh astools stats sb_map1
Total No of Aps stranded : 0
```

**Related Commands**

- `config mesh astools`
- `show mesh config`
- `show mesh stats`
show mesh background-scanning

To display whether or not the background-scanning feature is enabled on a mesh network, use the `show mesh background-scanning` command.

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Usage Guidelines

The secondary backhaul access feature is not supported by Cisco 1520 and 1524 indoor mesh access points in the 5.2 release.

Examples

This example shows how to display the state of the background-scanning feature:

```
> show mesh background-scanning
Background Scanning State: enabled
```

Related Commands

- `config mesh background-scanning`
- `show mesh config`
- `show mesh stats`
show mesh backhaul rate-adapt

To display whether or not clients on a mesh network have access to the backhaul channel, and at what level of service, use the `show mesh backhaul rate-adapt` command.

```
show mesh backhaul rate-adapt {all | bronze | silver | gold | platinum}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Allows clients universal access privileges.</td>
</tr>
<tr>
<td>bronze</td>
<td>Allows background-level client access privileges.</td>
</tr>
<tr>
<td>silver</td>
<td>Allows best effort-level client access privileges.</td>
</tr>
<tr>
<td>gold</td>
<td>Allows video-level client access privileges.</td>
</tr>
<tr>
<td>platinum</td>
<td>Allows voice-level client access privileges.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to display the state of the backhaul rate-adaption feature:

```
> show mesh backhaul rate-adapt

 Bronze Queue......................... Disabled
 Gold Queue............................ Enabled
 Platinum Queue........................ Disabled
 Silver Queue.......................... Disabled
```

### Related Commands

- `config mesh battery-state`
- `show mesh config`
- `show mesh stats`
show mesh cac

To display call admission control (CAC) topology and the bandwidth used or available in a mesh network, use the show mesh cac command.

```
show mesh cac [summary | {bwused {voice | video} | access | callpath | rejected} cisco_ap]
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>summary</td>
<td>Displays the total number of voice calls and voice bandwidth used for each mesh access point.</td>
</tr>
<tr>
<td>bwused</td>
<td>Displays the bandwidth for a selected access point in a tree topology.</td>
</tr>
<tr>
<td>voice</td>
<td>Displays the mesh topology and the voice bandwidth used or available.</td>
</tr>
<tr>
<td>video</td>
<td>Displays the mesh topology and the video bandwidth used or available.</td>
</tr>
<tr>
<td>access</td>
<td>Displays access voice calls in progress in a tree topology.</td>
</tr>
<tr>
<td>callpath</td>
<td>Displays the call bandwidth distributed across the mesh tree.</td>
</tr>
<tr>
<td>rejected</td>
<td>Displays voice calls rejected for insufficient bandwidth in a tree topology.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Mesh access point name.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to display a summary of the call admission control settings:

```
> show mesh cac summary

<table>
<thead>
<tr>
<th>AP Name</th>
<th>Slot#</th>
<th>Radio</th>
<th>BW Used/Max</th>
<th>Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB_RAP1</td>
<td>0</td>
<td>11b/g</td>
<td>0/23437</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11a</td>
<td>0/23437</td>
<td>0</td>
</tr>
<tr>
<td>SB_MAP1</td>
<td>0</td>
<td>11b/g</td>
<td>0/23437</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11a</td>
<td>0/23437</td>
<td>0</td>
</tr>
<tr>
<td>SB_MAP2</td>
<td>0</td>
<td>11b/g</td>
<td>0/23437</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11a</td>
<td>0/23437</td>
<td>0</td>
</tr>
<tr>
<td>SB_MAP3</td>
<td>0</td>
<td>11b/g</td>
<td>0/23437</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11a</td>
<td>0/23437</td>
<td>0</td>
</tr>
</tbody>
</table>
```

This example shows how to display the mesh topology and the voice bandwidth used or available:

```
> show mesh cac bwused voice SB_MAP1

<table>
<thead>
<tr>
<th>AP Name</th>
<th>Slot#</th>
<th>Radio</th>
<th>BW Used/Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB_RAP1</td>
<td>0</td>
<td>11b/g</td>
<td>0/23437</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11a</td>
<td>0/23437</td>
</tr>
<tr>
<td>SB_MAP1</td>
<td>0</td>
<td>11b/g</td>
<td>0/23437</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11a</td>
<td>0/23437</td>
</tr>
<tr>
<td>SB_MAP2</td>
<td>0</td>
<td>11b/g</td>
<td>0/23437</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11a</td>
<td>0/23437</td>
</tr>
<tr>
<td>SB_MAP3</td>
<td>0</td>
<td>11b/g</td>
<td>0/23437</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11a</td>
<td>0/23437</td>
</tr>
</tbody>
</table>
This example shows how to display the access voice calls in progress in a tree topology:

```
> show mesh cac access 1524_Map1
```

<table>
<thead>
<tr>
<th>AP Name</th>
<th>Slot#</th>
<th>Radio</th>
<th>Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>1524_Rap</td>
<td>0</td>
<td>11b/g</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11a</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>11a</td>
<td>0</td>
</tr>
<tr>
<td>1524_Map1</td>
<td>0</td>
<td>11b/g</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11a</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>11a</td>
<td>0</td>
</tr>
<tr>
<td>1524_Map2</td>
<td>0</td>
<td>11b/g</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11a</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>11a</td>
<td>0</td>
</tr>
</tbody>
</table>

**Related Commands**

- config 802.11 cac video acm
- config 802.11 cac video max-bandwidth
- config 802.11 cac video roam-bandwidth
- config 802.11 cac video tspec-inactivity-timeout
- config 802.11 cac voice acm
- config 802.11 cac voice max-bandwidth
- config 802.11 cac voice roam-bandwidth
- config 802.11 cac voice tspec-inactivity-timeout
- config 802.11 cac voice load-based
- debug cac
show mesh client-access

To display the backhaul client access configuration setting, use the `show mesh client-access` command.

```
show mesh client-access
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display backhaul client access configuration settings for a mesh access point:

```
> show mesh client-access
Backhaul with client access status: enabled
```

**Related Commands**
`config mesh client-access`
show mesh config

To display mesh configuration settings, use the `show mesh config` command.

```
show mesh config
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display global mesh configuration settings:

```
> show mesh config

Mesh Range................................. 12000
Mesh Statistics update period.............. 3 minutes
Backhaul with client access status............. disabled
Backhaul with extended client access status.... disabled
Background Scanning State..................... enabled
Backhaul Amsdu State........................ disabled

Mesh Security
  Security Mode............................ EAP
  External-Auth............................. disabled
  Use MAC Filter in External AAA server....... disabled
  Force External Authentication............... disabled

Mesh Alarm Criteria
  Max Hop Count............................ 4
  Recommended Max Children for MAP.......... 10
  Recommended Max Children for RAP.......... 20
  Low Link SNR.............................. 12
  High Link SNR............................. 60
  Max Association Number..................... 10
  Association Interval...................... 60 minutes
  Parent Change Numbers..................... 3

Parent Change Interval...................... 60 minutes

Mesh Multicast Mode......................... In-Out
Mesh Full Sector DFS......................... enabled

Mesh Ethernet Bridging VLAN Transparent Mode..... disabled

Mesh DCA channels for serial backhaul APs.......... enabled
```

**Related Commands**

- `show mesh stats`
- `show mgmtuser`
- `config mesh alarm`
# show mesh env

To display global or specific environment summary information for mesh networks, use the `show mesh env` command.

```
show mesh env {summary | cisco_ap}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>summary</th>
<th>Displays global environment summary information.</th>
</tr>
</thead>
<tbody>
<tr>
<td>cisco_ap</td>
<td>Name of access point for which environment summary information is requested.</td>
<td></td>
</tr>
</tbody>
</table>

## Defaults

None.

## Examples

This example shows how to display global environment summary information:

```
> show mesh env summary

 AP Name             Temperature(C)  Heater   Ethernet  Battery
------------------  --------------  ------   --------  -------
ap1130:5f:be:90      N/A             N/A      DOWN     N/A
AP1242:b2.31.ea      N/A             N/A      DOWN     N/A
AP1131:f2.8d.92      N/A             N/A      DOWN     N/A
AP1131:46f2.98ac     N/A             N/A      DOWN     N/A
ap1500:62:39:70      -36             OFF      UP       N/A

This example shows how to display an environment summary for an access point:

```
> show mesh env SB_RAP1

 AP Name.......................................... SB_RAP1
 AP Model......................................... AIR-LAP1522AG-A-K9
 AP Role.......................................... RootAP
 Temperature...................................... 21 C, 69 F
 Heater........................................... OFF
 Backhaul......................................... GigabitEthernet0
 GigabitEthernet0 Status.......................... UP
   Duplex........................................ FULL
   Speed......................................... 100
   Rx Unicast Packets............................ 114754
   Rx Non-Unicast Packets......................... 1464
   Tx Unicast Packets............................. 9630
   Tx Non-Unicast Packets......................... 3331
 GigabitEthernet1 Status.......................... DOWN
   POE Out...................................... OFF
 Battery.......................................... N/A

```

## Note

As of Controller Release 5.2 the 4400 series controllers can only run with the speed and duplex set to auto.
show mesh env

Related Commands  show mesh stats
show mesh neigh

To display summary or detailed information about the mesh neighbors for a specific mesh access point, use the `show mesh neigh` command.

```
show mesh neigh {detail | summary} {cisco_ap | all}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>detail</strong></td>
<td>Displays the channel and signal-to-noise ratio (SNR) details between the designated mesh access point and its neighbor.</td>
</tr>
<tr>
<td><strong>summary</strong></td>
<td>Displays the mesh neighbors for a designated mesh access point.</td>
</tr>
<tr>
<td><strong>cisco_ap</strong></td>
<td>Cisco lightweight access point name.</td>
</tr>
<tr>
<td><strong>all</strong></td>
<td>Displays all access points.</td>
</tr>
</tbody>
</table>

### Note

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

### Examples

This example shows how to display a neighbor summary of an access point:

```
> show mesh neigh summary ap1500:62:39:70

AP Name/Radio Mac Channel Snr-Up Snr-Down Link-Snr Flags  State
-------------------- ------- ------ -------- -------- ------ -------
mesh-45-rap1      165     15     18       16       0x86b  UPDATED NEIGH PARENT BEACON
00:0B:85:80:ED:D0 149     5      6        5        0x1a60 NEED UPDATE BEACON DEFAULT
00:17:94:FE:C3:5F 149     7      0        0        0x860  BEACON
```

This example shows how to display the detailed neighbor statistics of an access point:

```
> show mesh neigh detail ap1500:62:39:70

AP MAC : 00:1E:BD:1A:1A:00 AP Name: HOR1522_MINE06_MAP_S_Dyke
FLAGS : 860 BEACON
worstDv 255, Ant 0, channel 153, biters 0, ppiters 0
Numroutes 0, snr 0, snrUp 8, snrDown 8, linkSnr 8
adjustedEase 0, unadjustedEase 0
txParent 0, rxParent 0
poorSnr 0
lastUpdate 2483353214 (Sun Aug 4 23:51:58 1912)
parentChange 0
Per antenna smoothed snr values: 0 0 0 0
Vector through 00:1E:BD:1A:1A:00
```

Table 2-4 lists the output flags displayed for the `config mesh linktest` command.

<table>
<thead>
<tr>
<th>Output Flag</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AP MAC</strong></td>
<td>MAC address of a mesh neighbor for a designated mesh access point.</td>
</tr>
<tr>
<td><strong>AP Name</strong></td>
<td>Name of the mesh access point.</td>
</tr>
</tbody>
</table>
Table 2-2  
Output Flags for the Config Mesh Linktest Command

<table>
<thead>
<tr>
<th>Output Flag</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLAGS</td>
<td>Describes adjacency. The possible values are:</td>
</tr>
<tr>
<td></td>
<td>• UPDATED—Recently updated neighbor.</td>
</tr>
<tr>
<td></td>
<td>• NEIGH—One of the top neighbors.</td>
</tr>
<tr>
<td></td>
<td>• EXCLUDED—Neighbor is currently excluded.</td>
</tr>
<tr>
<td></td>
<td>• WASEXCLUDED—Neighbor was recently removed from the exclusion list.</td>
</tr>
<tr>
<td></td>
<td>• PERMSNR—Permanent SNR neighbor.</td>
</tr>
<tr>
<td></td>
<td>• CHILD—A child neighbor.</td>
</tr>
<tr>
<td></td>
<td>• PARENT—A parent neighbor.</td>
</tr>
<tr>
<td></td>
<td>• NEEDUPDATE—Not a current neighbor and needs an update.</td>
</tr>
<tr>
<td></td>
<td>• BEACON—Heard a beacon from this neighbor.</td>
</tr>
<tr>
<td></td>
<td>• ETHER—Ethernet neighbor.</td>
</tr>
<tr>
<td>worstDv</td>
<td>Worst distance vector through the neighbor.</td>
</tr>
<tr>
<td>Ant</td>
<td>Antenna on which the route was received.</td>
</tr>
<tr>
<td>channel</td>
<td>Channel of the neighbor.</td>
</tr>
<tr>
<td>biters</td>
<td>Number of black list timeouts left.</td>
</tr>
<tr>
<td>ppiters</td>
<td>Number of potential parent timeouts left.</td>
</tr>
<tr>
<td>Numroutes</td>
<td>Number of distance routes.</td>
</tr>
<tr>
<td>snr</td>
<td>Signal to Noise Ratio.</td>
</tr>
<tr>
<td>snrUp</td>
<td>SNR of the link to the AP.</td>
</tr>
<tr>
<td>snrDown</td>
<td>SNR of the link from the AP.</td>
</tr>
<tr>
<td>linkSnr</td>
<td>Calculated SNR of the link.</td>
</tr>
<tr>
<td>adjustedEase</td>
<td>Ease to the root AP through this AP. It is based on the current SNR and threshold SNR values.</td>
</tr>
<tr>
<td>unadjustedEase</td>
<td>Ease to the root AP through this AP after applying correct for number of hops.</td>
</tr>
<tr>
<td>txParent</td>
<td>Packets sent to this node while it was a parent.</td>
</tr>
<tr>
<td>rxparent</td>
<td>Packets received from this node while it was a parent.</td>
</tr>
<tr>
<td>poorSnr</td>
<td>Packets with poor SNR received from a node.</td>
</tr>
<tr>
<td>lastUpdate</td>
<td>Timestamp of the last received message for this neighbor</td>
</tr>
<tr>
<td>parentChange</td>
<td>When this node last became parent.</td>
</tr>
<tr>
<td>per antenna smoother SNR values</td>
<td>SNR value is populated only for antenna 0.</td>
</tr>
</tbody>
</table>
## show mesh neigh

**Related Commands**
- `show mesh config`
- `show mesh env`
show mesh path

To display the channel and signal-to-noise ratio (SNR) details for a link between a mesh access point and its neighbor, use the show mesh path command.

```
show mesh path cisco_ap
```

**Syntax Description**

- **cisco_ap**
  - Mesh access point name.

**Defaults**

None.

**Examples**

This example shows how to display channel and SNR details for a designated link path:

```
> show mesh path mesh-45-rap1

AP Name/Radio Mac Channel Snr-Up Snr-Down Link-Snr Flags State
------------- ------- ------ -------- -------- ------ -------
mesh-45-rap1 165     15     18       16       0x86b UPDATED NEIGH PARENT BEACON

mesh-45-rap1 is a Root AP.
```

**Related Commands**

- config mesh battery-state
- config mesh client-access
- config mesh linktest
- config mesh range
- show mesh config
- show mesh neigh
- show mesh stats
show mesh per-stats

To display the percentage of packet errors for packets transmitted by the neighbors of a specified mesh access point, use the show mesh per-stats command.

```
show mesh per-stats summary {cisco_ap | all}
```

### Syntax Description

- **summary**: Displays the packet error rate stats summary.
- **cisco_ap**: Name of mesh access point.
- **all**: Displays all mesh access points.

### Note

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

### Defaults

None.

### Usage Guidelines

The packet error rate percentage equals 1, which is the number of successfully transmitted packets divided by the number of total packets transmitted.

### Examples

This example shows how to display the percentage of packet errors for packets transmitted by the neighbors to a mesh access point:

```
> show mesh per-stats summary ap_12

Neighbor MAC Address 00:0B:85:5F:FA:F0
Total Packets transmitted: 104833
Total Packets transmitted successfully: 104833
Total Packets retried for transmission: 33028
Neighbor MAC Address: 00:0B:85:80:ED:D0
Total Packets transmitted: 0
Total Packets transmitted successfully: 0
Total Packets retried for transmission: 0
Neighbor MAC Address: 00:17:94:FE:C3:5F
Total Packets transmitted: 0
Total Packets transmitted successfully: 0
Total Packets retried for transmission: 0
```

### Related Commands

- config mesh linktest
- config mesh range
- show mesh config
- show mesh neigh
- show mesh stats
show mesh queue-stats

To display the number of packets in a client access queue by type for a particular mesh access point, use the show mesh queue-stats command.

```
show mesh queue-stats {cisco_ap | all}
```

**Syntax Description**

| cisco_ap | Name of access point for which you want packet queue statistics. |
| all | Displays all access points. |

**Note**

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Defaults**

None.

**Examples**

This example shows how to display packet queue statistics for access point ap417:

```
> show mesh queue-stats ap417
Queue Type Overflows Peak length Average length
---------- --------- ----------- --------------
Silver 0 1 0.000
Gold 0 4 0.004
Platinum 0 4 0.001
Bronze 0 0 0.000
Management 0 0 0.000
```

**Related Commands**

- config mesh client-access
- config mesh multicast
- config mesh secondary-backhaul
- show mesh client-access
- show mesh config
- show mesh stats
- show mgmtuser
show mesh public-safety

To display 4.8-GHz public safety settings, use the show mesh public-safety command.

```
show mesh public-safety
```

**Syntax Description**  
This command has no arguments or keywords.

**Defaults**  
None.

**Examples**  
This example shows how to view 4.8-GHz public safety settings:

```
> show mesh public-safety
Global Public Safety status: disabled
```

**Related Commands**  
- config 802.11-a
- config 802.11-a antenna extAntGain
- config 802.11-a channel ap
- config 802.11-a txpower ap
- config mesh public-safety
- config mesh security
- show mesh ap
- show mesh security-stats
- show mesh stats
show mesh secbh-stats

To display queue statistics for secondary backhaul access in a mesh network, use the `show mesh secbh-stats` command.

```
show mesh secbh-stats {cisco_ap | all}
```

**Syntax Description**
- `cisco_ap` Mesh access point selected for display statistics.
- `all` Displays all mesh access points.

**Note**
If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Defaults**
None.

**Usage Guidelines**
The secondary backhaul access feature is not supported by Cisco 1520 and 1524 indoor mesh access points in the 5.2 release.

**Examples**
This example shows how to display statistics for secondary backhaul access of access point SB_RAP1:

```
> show mesh secbh-stats SB_RAP1

Radio Type: 802.11BG
  Queue:Silver:
    Packet retries: 0
    Packets dropped after max retries: 0
  Queue:Gold:
    Packet retries: 0
    Packets dropped after max retries: 0
  Queue:Platinum:
    Packet retries: 0
    Packets dropped after max retries: 0

Radio Type: 802.11A
  Queue:Silver:
    Packet retries: 0
    Packets dropped after max retries: 0
  Queue:Gold:
    Packet retries: 0
    Packets dropped after max retries: 0
  Queue:Platinum:
    Packet retries: 0
    Packets dropped after max retries: 0
```

**Related Commands**
- `config mesh secondary-backhaul`
- `show mesh secondary-backhaul`
show mesh secondary-backhaul

To display the current state of mesh secondary backhaul configuration settings, use the `show mesh secondary-backhaul` command.

```
show mesh secondary-backhaul
```

Syntax Description  This command has no arguments or keywords.

Defaults  None.

Usage Guidelines  The secondary backhaul access feature is not supported by Cisco 1520 and 1524 indoor mesh access points in the 5.2 release.

Examples  This example shows how to display secondary backhaul configuration settings for a mesh access point:
```
> show mesh secondary-backhaul
MESH secondary-backhaul: enabled
```

Related Commands  `config mesh secondary-backhaul`
`show mesh secbh-stats`
show mesh security-stats

To display packet error statistics for a specific access point, use the `show mesh security-stats` command.

```
show mesh security-stats {cisco_ap | all}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>cisco_ap</code></td>
<td>Name of access point for which you want packet error statistics.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Displays all access points.</td>
</tr>
</tbody>
</table>

**Note**

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Defaults**

None.

**Usage Guidelines**

This command shows packet error statistics and a count of failures, timeouts, and successes with respect to associations and authentications as well as reassociations and reauthentications for the specified access point and its child.

**Examples**

This example shows how to display packet error statistics for access point ap417:

```
> show mesh security-stats ap417

AP MAC : 00:0B:85:5F:FA:F0
Packet/Error Statistics:
--------------------------
x Packets 14, Rx Packets 19, Rx Error Packets 0
Parent-Side Statistics:
--------------------------
Unknown Association Requests 0
Invalid Association Requests 0
Unknown Re-Authentication Requests 0
Invalid Re-Authentication Requests 0
Unknown Re-Association Requests 0
Invalid Re-Association Requests 0
Unknown Re-Association Requests 0
Invalid Re-Association Requests 0
Child-Side Statistics:
--------------------------
Association Failures 0
Association Timeouts 0
Association Successes 0
Authentication Failures 0
Authentication Timeouts 0
Authentication Successes 0
Re-Association Failures 0
Re-Association Timeouts 0
Re-Association Successes 0
Re-Authentication Failures 0
Re-Authentication Timeouts 0
```
show mesh security-stats

Re-Authentication Successes 0

Related Commands
- config mesh alarm
- config mesh link-data
- config mesh link-test
- config mesh security
show mesh stats

To display the mesh statistics for a Cisco lightweight access point, use the **show mesh stats** command.

```
show mesh stats cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>cisco_ap</th>
<th>Cisco lightweight access point name.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

This example shows how to display statistics of an access point:

```
> show mesh stats RAP_ap1

RAP in state Maint
rxNeighReq 759978, rxNeighRsp 568673
txNeighReq 115433, txNeighRsp 759978
rxNeighUpd 8266447 txNeighUpd 693062
tnextchan 0, nextant 0, downAnt 0, downChan 0, curAnts 0
tnextNeigh 0, malformedNeighPackets 244, poorNeighSnr 27901
blacklistPackets 0, insufficientMemory 0
authenticationFailures 0
Parent Changes 1, Neighbor Timeouts 16625
```

**Related Commands**

- config mesh alarm
- config mesh client-access
- config mesh ethernet-bridging vlan-transparent
- config mesh linkdata
- config mesh linktest
- config mesh security
- show mesh per-stats
- show mesh queue-stats
- show mesh security-stats
**show mgmtuser**

To display the local management user accounts on the Cisco wireless LAN controller, use the `show mgmtuser` command.

```
show mgmtuser
```

**Syntax Description**  
This command has no arguments or keywords.

**Defaults**  
None.

**Examples**  
This example shows how to display a list of management users:

```
> show mgmtuser

username  Permissions  Description
----------------------- ------------ --------------------------------
admin      read-write
```

**Related Commands**  
- `config mgmtuser add`  
- `config mgmtuser delete`  
- `config mgmtuser description`  
- `config mgmtuser password`
Show Mobility Commands

Use the **show mobility** commands to display mobility settings.
**show mobility anchor**

To display the wireless LAN anchor export list for the Cisco wireless LAN controller mobility groups or to display a list and status of controllers configured as mobility anchors for a specific WLAN or wired guest LAN, use the `show mobility anchor` commands.

```
show mobility anchor [wan wlan_id | guest-lan guest_lan_id]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan</td>
<td>(Optional) Displays wireless LAN mobility group settings.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512 (inclusive).</td>
</tr>
<tr>
<td>guest-lan</td>
<td>(Optional) Displays guest LAN mobility group settings.</td>
</tr>
<tr>
<td>guest_lan_id</td>
<td>Guest LAN identifier between 1 and 5 (inclusive).</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

The status field display (see example) shows one of the following values:

- **UP**—The controller is reachable and able to pass data.
- **CNTRL_PATH_DOWN**—The mpings failed. The controller cannot be reached through the control path and is considered failed.
- **DATA_PATH_DOWN**—The epings failed. The controller cannot be reached and is considered failed.
- **CNTRL_DATA_PATH_DOWN**—Both the mpings and epings failed. The controller cannot be reached and is considered failed.

**Examples**

This example shows how to display a mobility wireless LAN anchor list:

```
> show mobility anchor

Mobility Anchor Export List

<table>
<thead>
<tr>
<th>WLAN ID</th>
<th>IP Address</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>192.168.0.15</td>
<td>UP</td>
</tr>
</tbody>
</table>

GLAN ID | IP Address   | Status          |
--------|--------------|-----------------|
1       | 192.168.0.9  | CNTRL_DATA_PATH_DOWN |
```

**Related Commands**

- `config guest-lan mobility anchor`
- `config mobility group domain`
- `config mobility group keepalive count`
- `config mobility group keepalive interval`
- `config mobility group member`
- `config mobility group multicast-addr`
- `config mobility multicast-mode`
config mobility secure-mode
config mobility statistics reset
config wlan mobility anchor
debug mobility
show mobility anchor
show mobility statistics
show mobility summary
show mobility statistics

To display the statistics information for the Cisco wireless LAN controller mobility groups, use the `show mobility statistics` command.

```
show mobility statistics
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display statistics of the mobility manager:

```
> show mobility statistics

Global Mobility Statistics
Rx Errors................................. 0
Tx Errors.................................. 0
Responses Retransmitted.................. 0
Handoff Requests Received................ 0
Handoff End Requests Received............. 0
State Transitions Disallowed.............. 0
Resource Unavailable........................ 0

Mobility Initiator Statistics
Handoff Requests Sent..................... 0
Handoff Replies Received.................. 0
Handoff as Local Received................. 2
Handoff as Foreign Received.............. 0
Handoff Denys Received.................... 0
Anchor Request Sent....................... 0
Anchor Deny Received...................... 0
Anchor Grant Received..................... 0
Anchor Transfer Received.................. 0

Mobility Responder Statistics
Handoff Requests Ignored.................. 0
Ping Pong Handoff Requests Dropped....... 0
Handoff Requests Dropped.................. 0
Handoff Requests Denied................... 0
Client Handoff as Local.................... 0
Client Handoff as Foreign.................. 0
Client Handoff Inter Group............... 0
Anchor Requests Received.................. 0
Anchor Requests Denied.................... 0
Anchor Requests Granted................... 0
Anchor Transferred........................ 0
```

**Related Commands**

- `config mobility group anchor`
- `config mobility group domain`
- `config mobility group keepalive count`
- `config mobility group keepalive interval`
- `config mobility group member`
- `config mobility group multicast-address`
config mobility multicast-mode
config mobility secure-mode
config mobility statistics reset
debug mobility
show mobility anchor
show mobility summary
show mobility summary

To display the summary information for the Cisco wireless LAN controller mobility groups, use the `show mobility summary` command.

```
show mobility summary
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Usage Guidelines**
Some WLAN controllers may list no mobility security mode.

**Examples**
This example shows how to display a summary of the mobility manager:
```
> show mobility summary

Symmetric Mobility Tunneling (current) ........ Disabled
Symmetric Mobility Tunneling (after reboot) ..... Disabled
Mobility Protocol Port.................................. 16666
Mobility Security Mode............................... Disabled
Default Mobility Domain.............................. snmp_gui
Multicast Mode ....................................... Disabled
Mobility Domain ID for 802.11r.................... 0x66bd
Mobility Keepalive Interval..................... 10
Mobility Keepalive Count......................... 3
Mobility Group Members Configured............... 1
Mobility Control Message DSCP Value............ 0

Controllers configured in the Mobility Group
MAC Address        IP Address       Group Name         Multicast IP Status
00:1b:d4:6b:87:20    1.100.163.70     snmp_gui         0.0.0.0 Up
```

**Related Commands**
- `config guest-lan mobility anchor`
- `config mobility group domain`
- `config mobility group keepalive count`
- `config mobility group keepalive interval`
- `config mobility group member`
- `config mobility group multicast-address`
- `config mobility multicast-mode`
- `config mobility secure-mode`
- `config mobility statistics reset`
- `config wlan mobility anchor`
- `debug mobility`
- `show mobility anchor`
- `show mobility statistics`
show msglog

To display the message logs written to the Cisco wireless LAN controller database, use the `show msglog` command.

```
show msglog
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Usage Guidelines**

If there are more than 15 entries, you are prompted to display the messages shown in the example.

**Examples**

This example shows how to display message logs:

```
> show msglog

Message Log Severity Level................. ERROR
AP failure was due to Link Failure
Thu Aug 4 14:30:08 2005 [ERROR] spam_lrad.c 11840: Updating IP info for AP 00:
0b:85:18:b6:50 -- static 0, 1.100.49.240/255.255.255.0, gtw 1.100.49.1
Thu Aug 4 14:29:32 2005 [ERROR] dhcpd.c 78: dhcp server: binding to 0.0.0.0
Thu Aug 4 14:29:32 2005 [ERROR] rrmgroup.c 733: Airewave Director: 802.11a switch group
reset
reset
Thu Aug 4 14:29:22 2005 [ERROR] sim.c 2841: Unable to get link state for primary port 0
of interface ap-manager
Thu Aug 4 14:29:22 2005 [ERROR] dtl_l2_dot1q.c 767: Unable to get USP
Thu Aug 4 14:29:22 2005 [ERROR] dtl_l2_dot1q.c 767: Unable to get USP
NULL pointer: osapi-bsntime.c:927
NULL pointer: osapi-bsntime.c:919
Thu Aug 4 14:29:13 2005 [CRITICAL] bootos.c 791: Starting code...
```
**show nac statistics**

To display detailed Network Access Control (NAC) information about a Cisco wireless LAN controller, use the `show nac statistics` command.

```
show nac statistics
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display detailed statistics of network access control settings:

```
> show nac statistics

Server Index....................................................... 1
Server Address..................................................... xxx.xxx.xxx.xxx
Number of requests sent............................................ 0
Number of retransmissions.......................................... 0
Number of requests received........................................ 0
Number of malformed requests received.............................. 0
Number of bad auth requests received............................... 0
Number of pending requests......................................... 0
Number of timed out requests....................................... 0
Number of misc dropped request received............................ 0
Number of requests sent............................................ 0
```

**Related Commands**

- `show nac summary`
- `config guest-lan nac`
- `config wlan nac`
- `debug nac`
show nac summary

To display NAC summary information for a Cisco wireless LAN controller, use the show nac summary command.

```
show nac summary
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display a summary information of network access control settings:

```
> show nac summary

NAC ACL Name ..............................................
Index Server Address Port State
----- ---------------------------------------- ---- -----
1     xxx.xxx.xxx.xxx 13336 Enabled
```

**Related Commands**

show nac statistics
config guest-lan nac
config wlan nac
debug nac
show netuser

To display the configuration of a particular user in the local user database, use **show netuser** command.

**show netuser summary.**

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display a summary of all users in the local user database:

```plaintext
> show netuser summary

Maximum logins allowed for a given username .......Unlimited
```

This example shows how to display detailed information on the specifies network user:

```plaintext
> show netuser detail john10

username........................................... abc
WLAN Id............................................. Any
Lifetime............................................ Permanent
Description......................................... test user
```

**Related Commands**

- config netuser add
- config netuser delete
- config netuser description
- config netuser guest-role apply
- config netuser wlan-id
- show netuser guest-roles
show netuser guest-roles

To display a list of the current quality of service (QoS) roles and their bandwidth parameters, use the show netuser guest-roles command.

show netuser guest-roles

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to display a QoS role for the guest network user:

> show netuser guest-roles

Role Name.............................. Contractor
  Average Data Rate.................. 10
  Burst Data Rate.................... 10
  Average Realtime Rate............... 100
  Burst Realtime Rate............... 100

Role Name.............................. Vendor
  Average Data Rate.................. unconfigured
  Burst Data Rate.................... unconfigured
  Average Realtime Rate............... unconfigured
  Burst Realtime Rate............... unconfigured

Related Commands
  config netuser add
  config netuser delete
  config netuser description
  config netuser guest-role apply
  config netuser wlan-id
  show netuser guest-roles
  show netuser
show network

To display the current status of 802.3 bridging for all WLANs, use the **show network** command.

```
show network
```

**Syntax Description**  
This command has no arguments or keywords.

**Defaults**  
None.

**Examples**  
This example shows how to display the network details:
```
> show network
```

**Related Commands**  
Configure Network Commands  
show network summary  
show network multicast mgid detail  
show network multicast mgid summary
show network summary

To display the network configuration of the Cisco wireless LAN controller, use the show network summary command.

```
show network summary
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display a summary configuration:

```
> show network summary

RF-Network Name............................. RF
Web Mode.................................... Disable
Secure Web Mode............................ Enable
Secure Web Mode Cipher-Option High........ Disable
Secure Web Mode Cipher-Option SSLv2......... Disable
Secure Shell (ssh).......................... Enable
Telnet...................................... Enable
Ethernet Multicast Mode..................... Disable   Mode: Ucast
Ethernet Broadcast Mode.................... Disable
IGMP snooping................................ Disabled
IGMP timeout................................ 60 seconds
User Idle Timeout......................... 300 seconds
ARP Idle Timeout......................... 300 seconds
ARP Unicast Mode............................ Disabled
Cisco AP Default Master..................... Disable
Mgmt Via Wireless Interface................. Disable
Mgmt Via Dynamic Interface................ Disable
Bridge MAC filter Config.................... Enable
Bridge Security Mode....................... EAP
Over The Air Provisioning of AP's.......... Enable
Apple Talk.................................. Disable
```

**Related Commands**
Configure Network Commands
- show network
- show network multicast mgid detail
- show network multicast mgid summary
show network multicast mgid detail

To display all the clients joined to the multicast group in a specific multicast group identification (MGID), use the `show network multicast mgid detail` command.

```
show network multicast mgid detail mgid_value
```

**Syntax Description**

- **mgid_value**: Number between 550 and 4095.

**Defaults**

None.

**Examples**

This example shows how to display details of the multicast database:

```
> show network multicast mgid detail

Mgid ............................... 550
Multicast Group Address ............ 239.255.255.250
Vlan ............................... 0
Rx Packet Count .................... 807399588
No of clients ...................... 1
Client List .........................
Client MAC  Expire Time (mm:ss)
00:13:02:23:82:ad  0:20
```

**Related Commands**

- `show network`
- `show network summary`
- `show network multicast mgid summary`
show network multicast mgid summary

To display all the multicast groups and their corresponding multicast group identifications (MGIDs), use the show network multicast mgid summary command.

```
show network multicast mgid summary
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display a summary of multicast groups and their MGIDs:

```
> show network multicast mgid summary

Layer2 MGID Mapping:
---------------------
InterfaceName     vlanId  MGID
-------------------- ------ -----
management        0      0
test               0      9
wired              20     8

Layer3 MGID Mapping:
---------------------
Number of Layer3 MGIDs .............. 1

Group address     Vlan  MGID
------------------ ----- -----
239.255.255.250    0    550
```

**Related Commands**

- show network
- show network summary
- show network multicast mgid detail
show nmsp notify-interval summary

To display the Network Mobility Services Protocol (NMSP) configuration settings, use the show nmsp notify-interval summary command.

**Syntax Description**  
This command has no arguments or keywords.

**Defaults**  
None.

**Examples**  
This example shows how to display NMSP configuration settings:

```
> show nmsp notify-interval summary

NMSP Notification Interval Summary

    Client
    Measurement interval: 2 sec
    RFID
    Measurement interval: 8 sec
    Rogue AP
    Measurement interval: 2 sec
    Rogue Client
    Measurement interval: 2 sec
```

**Related Commands**  
- clear locp statistics
- clear nmsp statistics
- config nmsp notify-interval measurement
- show nmsp statistics
- show nmsp status
show nmsp statistics

To display Network Mobility Services Protocol (NMSP) counters, use the **show nmsp statistics** command.

```
show nmsp statistics {summary | connection all}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>summary</strong></td>
<td>Displays common NMSP counters.</td>
</tr>
<tr>
<td><strong>connection all</strong></td>
<td>Displays all connection-specific counters.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display a summary of common NMSP counters:

```
> show nmsp statistics summary

Send RSSI with no entry:               0
Send too big msg:                      0
Failed SSL write:                      0
Partial SSL write:                     0
SSL write attempts to want write:      0
Transmit Q full:0                      0
Max Measure Notify Msg:                0
Max Info Notify Msg:                   0
Max Tx Q Size:                         2
Max Rx Size:                           1
Max Info Notify Q Size:                0
Max Client Info Notify Delay:          0
Max Rogue AP Info Notify Delay:        0
Max Rogue Client Info Notify Delay:    0
Max Client Measure Notify Delay:       0
Max Tag Measure Notify Delay:          0
Max Rogue AP Measure Notify Delay:     0
Max Rogue Client Measure Notify Delay: 0
Max Client Stats Notify Delay:         0
Max Tag Stats Notify Delay:            0
RFID Measurement Periodic :            0
RFID Measurement Immediate :           0
Reconnect Before Conn Timeout:         0
```

This example shows how to display all the connection-specific NMSP counters:

```
> show nmsp statistics connection all

NMSP Connection Counters
Connection 1 :
  Connection status:  UP
  Freed Connection:  0
  Nmsp Subscr Req:   0
  Info Req:          1
  Measure Req:       2
  Stats Req:         2
  Info Notify:       0
  Loc Capability:    2
  Nmsp Subscr Resp:  0
  Info Resp:         1
  Measure Resp:      2
  Stats Resp:        2
  Measure Notify:    0
```

Cisco Wireless LAN Controller Command Reference
### show nmsp statistics

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location Req:</td>
<td>0</td>
</tr>
<tr>
<td>Loc Subscr Req:</td>
<td>0</td>
</tr>
<tr>
<td>Location Rsp:</td>
<td>0</td>
</tr>
<tr>
<td>Loc Subscr Rsp:</td>
<td>0</td>
</tr>
<tr>
<td>Loc Notif:</td>
<td>0</td>
</tr>
<tr>
<td>Loc Unsubscr Req:</td>
<td>0</td>
</tr>
<tr>
<td>IDS Get Req:</td>
<td>0</td>
</tr>
<tr>
<td>Location Rsp:</td>
<td>0</td>
</tr>
<tr>
<td>Loc Subscr Rsp:</td>
<td>0</td>
</tr>
<tr>
<td>Loc Notif:</td>
<td>0</td>
</tr>
<tr>
<td>Loc Unsubscr Rsp:</td>
<td>0</td>
</tr>
<tr>
<td>IDS Get Resp:</td>
<td>0</td>
</tr>
<tr>
<td>IDS Set Req:</td>
<td>0</td>
</tr>
<tr>
<td>IDS Set Resp:</td>
<td>0</td>
</tr>
</tbody>
</table>

### Related Commands
- `clear nmsp statistics`
- `config nmsp notify-interval measurement`
- `show nmsp notify-interval summary`
- `show nmsp status`
show nmsp status

To display the status of active Network Mobility Services Protocol (NMSP) connections, use the show nmsp status command.

```
show nmsp status
```

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to display the status of the active NMSP connections:

```
/show nmsp status
```

```
LocServer IP   TxEchoResp  RxEchoReq TxData  RxData
-------------- ----------- --------- ------- -------
171.71.132.158 21642       21642     51278   21253
```

Related Commands

- clear locp statistics
- clear nmsp statistics
- config nmsp notify-interval measurement
- show nmsp notify-interval summary
- show nmsp statistics
show nmsp subscription

To display the Network Mobility Services Protocol (N MSP) services that are active on the controller, use the `show nmsp subscription` command.

```
show nmsp subscription {summary | detail ip_addr}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>summary</td>
<td>Displays all of the N MSP services to which the controller is subscribed.</td>
</tr>
<tr>
<td>detail</td>
<td>Displays details for all of the N MSP services to which the controller is</td>
</tr>
<tr>
<td></td>
<td>subscribed.</td>
</tr>
<tr>
<td>ip_addr</td>
<td>Details only for the N MSP services subscribed to by a specific IP address.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to display a summary of all the N MSP services to which the controller is subscribed:

```
> show nmsp subscription summary

Mobility Services Subscribed:

Server IP       Services
--------------- --------
10.10.10.31     RSSI, Info, Statistics
```

This example shows how to display details of all the N MSP services:

```
> show nmsp subscription detail 10.10.10.31

Mobility Services Subscribed by 10.10.10.31

Services       Sub-services
--------------- ------------
RSSI           Mobile Station, Tags,
Info           Mobile Station,
Statistics     Mobile Station, Tags,
```

### Related Commands

- `clear locp statistics`
- `clear nmsp statistics`
- `config nmsp notify-interval measurement`
- `show nmsp notify-interval summary`
- `show nmsp statistics`
show pmk-cache

To display information about the pairwise master key (PMK) cache, use the `show pmk-cache` command.

    show pmk-cache {all | MAC}

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Displays information about all entries in the PMK cache.</td>
</tr>
<tr>
<td>MAC</td>
<td>Information about a single entry in the PMK cache.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display information about a single entry in the PMK cache:


This example shows how to display information about all entries in the PMK cache:

> `show pmk-cache all`

<table>
<thead>
<tr>
<th>Station</th>
<th>Entry</th>
<th>VLAN Override</th>
<th>IP Override</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lifetime</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Related Commands**

`config pmk-cache delete`
show port

To display the Cisco wireless LAN controller port settings on an individual or global basis, use the `show port` command.

```
show port {port | summary}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Port Information on the individual ports.</th>
<th>Summary Displays all ports.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

This example shows how to display information about an individual wireless LAN controller port:

```
> show port 1

STP Admin Physical Physical Link Link Mcast
Pr Type Stat Mode Mode Status Status Trap Appliance POE
-- ------- ---- ------- ---------- ---------- ------ ------- --------- -------
1 Normal Disa Enable Auto 1000 Full Down Enable Enable N/A
```

*Note* Some WLAN controllers may not have multicast or Power over Ethernet (PoE) listed because they do not support those features.

This example shows how to display a summary of all ports:

```
> show port summary

STP Admin Physical Physical Link Link Mcast
Pr Type Stat Mode Mode Status Status Trap Appliance POE
-- ------- ---- ------- ---------- ---------- ------ ------- --------- -------
1 Normal Forw Enable Auto 1000 Full Up Enable Enable N/A
2 Normal Disa Enable Auto 1000 Full Down Enable Enable N/A
3 Normal Disa Enable Auto 1000 Full Down Enable Enable N/A
4 Normal Disa Enable Auto 1000 Full Down Enable Enable N/A
```

*Note* Some WLAN controllers may have only one port listed because they have only one physical port.

**Related Commands**

- `clear stats port`
- `config ap port`
- `config interface port`
- `config network web-auth-port`
- `Configure Port Commands`
- `config spanningtree port mode`
- `config spanningtree port pathcost`
- `config spanningtree port priority`
- `show stats port`
show process

To display how various processes in the system are using the CPU at that instant in time, use the show process commands.

show process {cpu | memory}

Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cpu</td>
<td>Displays how various system tasks are using the CPU at that moment.</td>
</tr>
<tr>
<td>memory</td>
<td>Displays the allocation and deallocation of memory from various processes in the system at that moment.</td>
</tr>
</tbody>
</table>

Defaults

None.

Usage Guidelines

This command is helpful in understanding if any single task is monopolizing the CPU and preventing other tasks from being performed.

Examples

This example shows how to display various tasks in the system that are using the CPU at a given moment:

```
> show process cpu

Name          Priority CPU Use Reaper
reaperWatcher ( 3/124) 0 % ( 0/ 0)% I
osapiReaper (10/121) 0 % ( 0/ 0)% I
TempStatus (255/ 1) 0 % ( 0/ 0)% I
tempWeb (255/ 1) 0 % ( 0/ 0)% I
cliWebTask (255/ 1) 0 % ( 0/ 0)% I
UtilTask (255/ 1) 0 % ( 0/ 0)% I
```

This example shows how to display the allocation and deallocation of memory from various processes at a given moment:

```
> show process memory

Name          Priority BytesinUse Reaper
reaperWatcher ( 3/124) 0 ( 0/ 0)% I
osapiReaper (10/121) 0 ( 0/ 0)% I
TempStatus (255/ 1) 308 ( 0/ 0)% I
tempWeb (255/ 1) 294440 ( 0/ 0)% T 300
cliWebTask (255/ 1) 738 ( 0/ 0)% I
UtilTask (255/ 1) 308 ( 0/ 0)% T 300
```

Related Commands

debug memory
transfer upload datatype
show qos queue_length all

To display quality of service (QoS) information (queue length), use the show qos queue-length all command.

```
show qos queue_length all
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display QoS queue length information:
```
> show qos queue_length all

Platinum queue length......................... 255
Gold queue length......................... 255
Silver queue length...................... 150
Bronze queue length.................. 100
```

**Related Commands**
config qos queue_length
Show RADIUS Commands

Use the `show radius` commands to display RADIUS settings.
show radius acct statistics

To display the RADIUS accounting server statistics for the Cisco wireless LAN controller, use the `show radius acct statistics` command.

```
show radius acct statistics
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display RADIUS accounting server statistics:

```
> show radius acct statistics

Accounting Servers:
Server Index......................... 1
Server Address....................... 10.1.17.10
Msg Round Trip Time.................. 0 (1/100 second)
First Requests........................ 0
Retry Requests........................ 0
Accounting Responses.................. 0
Malformed Msgs....................... 0
Bad Authenticator Msgs............... 0
Pending Requests...................... 0
Timeout Requests...................... 0
Unknowntype Msgs..................... 0
Other Drops........................... 0
```

**Related Commands**

- `config radius acct`
- `config radius acct IPsec authentication`
- `config radius acct IPsec disable`
- `config radius acct network`
- `show radius auth statistics`
- `show radius summary`
show radius auth statistics

To display the RADIUS authentication server statistics for the Cisco wireless LAN controller, use the show radius auth statistics command.

show radius auth statistics

Syntax Description  This command has no arguments or keyword.

Defaults  None.

Examples  This example shows how to display RADIUS authentication server statistics:

> show radius auth statistics

Authentication Servers:
  Server Index..................................... 1
  Server Address.................................. 1.1.1.1
  Msg Round Trip Time............................. 0 (1/100 second)
  First Requests.................................. 0
  Retry Requests................................. 0
  Accept Responses............................... 0
  Reject Responses............................... 0
  Challenge Responses............................ 0
  Malformed Msgs................................. 0
  Bad Authenticator Msgs......................... 0
  Pending Requests............................... 0
  Timeout Requests.............................. 0
  Unknowntype Msgs............................... 0
  Other Drops.................................... 0

Related Commands  config radius auth
  config radius auth management
  config radius auth network
  show radius summary
show radius rfc3576 statistics

To display the RADIUS rfc3576 server statistics for the Cisco wireless LAN controller, use the show radius rfc3576 statistics command.

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Usage Guidelines

RFC 3576, an extension to the RADIUS protocol, allows dynamic changes to a user session, which includes support for disconnecting users and changing authorizations applicable to a user session; that is, it provides support for Disconnect and Change-of-Authorization (CoA) messages. Disconnect messages cause a user session to be terminated immediately. CoA messages modify session authorization attributes such as data filters.

Examples

This example shows how to display the RADIUS RFC-3576 server statistics:

```
> show radius rfc3576 statistics
RFC-3576 Servers:
Server Index..................................... 1
Server Address................................... 10.1.17.10
Msg Round Trip Time.............................. 0 (1/100 second)
First Requests................................... 0
Retry Requests................................... 0
Accounting Responses............................. 0
Malformed Msgs................................... 0
Bad Authenticator Msgs........................... 0
Pending Requests................................. 0
Timeout Requests................................. 0
Unknown type Msgs................................. 0
Other Drops...................................... 0
```

Related Commands

- config radius auth rfc3576
- show radius auth statistics
- show radius summary
show radius summary

To display the RADIUS authentication and accounting server summary, use the `show radius summary` command.

```
show radius summary
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display a RADIUS authentication server summary:

```
> show radius summary
Vendor Id Backward Compatibility................. Disabled
Credentials Caching.............................. Disabled
Call Station Id Type............................. IP Address
Administrative Authentication via RADIUS........ Enabled

Authentication Servers

Index  Type  Server Address  Port  State  Tout  RFC-3576  IPsec - AuthMod
-----  ----  ---------------  ----  ------  ------  --------  ------------------
-----  ----  ---------------  ----  ------  ------  --------  ------------------
```

```
Accounting Servers

Index  Type  Server Address  Port  State  Tout  RFC-3576  IPsec - AuthMod
-----  ----  ---------------  ----  ------  ------  --------  ------------------
-----  ----  ---------------  ----  ------  ------  --------  ------------------
```

**Related Commands**

- `show radius acct statistics`
- `show radius auth statistics`
Show Radio Frequency ID Commands

Use the `show rfid` commands to display radio frequency ID settings.
show rfid client

To display the radio frequency identification (RFID) tags that are associated to the controller as clients, use the **show rfid client** command.

```
show rfid client
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Usage Guidelines**

When the RFID tag is not in client mode, the above fields are blank.

**Examples**

This example shows how to display the RFID tag that is associated to the controller as clients:

```
> show rfid client

------------------ -------- --------- ----------------- ------ ----------------
Heard RFID Mac     VENDOR   Sec Ago    Associated AP    Chnl    Client State
------------------ -------- --------- ----------------- ------ ----------------
00:14:7e:00:0b:b1 Pango      35    AP0019.e75c.fef4   1      Probing
```

**Related Commands**

- `config rfid status`
- `config rfid timeout`
- `show rfid config`
- `show rfid detail`
- `show rfid summary`
show rfid config

To display the current radio frequency identification (RFID) configuration settings, use the `show rfid config` command.

```
show rfid config
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display the current RFID configuration settings:
```
> show rfid config
RFID Tag Data Collection ......................... Enabled
RFID Tag Auto-Timeout .......................... Enabled
RFID Client Data Collection ...................... Disabled
RFID Data Timeout ............................... 200 seconds
```

**Related Commands**
- config rfid status
- config rfid timeout
- show rfid client
- show rfid detail
- show rfid summary
show rfid detail

To display detailed radio frequency identification (RFID) information for a specified tag, use the show rfid detail command.

**show rfid detail** *mac_address*

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>mac_address</em></td>
<td>MAC address of an RFID tag.</td>
<td></td>
</tr>
</tbody>
</table>

**Defaults**
None.

**Examples**
This example shows how to display detailed RFID information:

```bash
> show rfid detail 32:21:3a:51:01:02
```

```
RFID address................................. 00:12:b8:00:20:52
Vendor........................................ G2
Last Heard..................................... 51 seconds ago
Packets Received............................... 2
Bytes Received................................ 324
Cisco Type................................. Content Header
                                           ==============
                                           Version......................... 0
                                           Tx Power.......................... 12 dBm
                                           Channel............................ 1
                                           Reg Class.......................... 12
                                           Burst Length........................ 1

CCX Payload
           =========
Last Sequence Control.......................... 0
Payload length................................. 127
Payload Data Hex Dump
               01 09 00 00 00 00 0b 85 52 52 52 02 07 4b ff ff
               7f ff ff ff 03 14 00 12 7b 10 48 53 c1 f7 51 4b
               50 ba 5b 97 27 80 00 67 00 01 03 05 01 42 34 00
               00 03 05 02 42 5c 00 00 03 05 03 03 42 82 00 00 03
               05 04 42 96 00 00 03 05 05 00 00 00 55 03 05 06
               42 be 00 00 03 02 07 05 03 12 08 10 00 01 02 03
               04 05 06 07 08 09 0a 0b 0c 0d 0e 0f 03 0d 09 03
               08 05 07 a8 02 00 30 00 23 b2 4e 03 02 0a 03

Nearby AP Statistics:
   lap1242-2(slot 0, chan 1) 50 seconds ago.... -76 dBm
   lap1242(slot 0, chan 1) 50 seconds ago..... -65 dBm
```
### show rfid detail

**Related Commands**
- `config rfid status`
- `config rfid timeout`
- `show rfid config`
- `show rfid client`
- `show rfid summary`
show rfid summary

To display a summary of the radio frequency identification (RFID) information for a specified tag, use the `show rfid summary` command.

```
show rfid summary
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display a summary of RFID information:
```
> show rfid summary

Total Number of RFID : 5
----------------- -------- ------------------ ------ ---------------------
RFID ID      VENDOR       Closest AP      RSSI  Time Since Last Heard
----------------- -------- ------------------ ------ ---------------------
00:04:f1:00:00:04 Wherenet ap:1120             -51      858 seconds ago
00:0c:cc:5c:06:d3 Aerosct  ap:1120             -51       68 seconds ago
00:0c:cc:5c:08:45 Aerosct  AP_1130             -54      477 seconds ago
00:0c:cc:5c:08:4b Aerosct  wolverine           -54      332 seconds ago
00:0c:cc:5c:08:52 Aerosct  ap:1120             -51      699 seconds ago
```

**Related Commands**

- `config rfid status`
- `config rfid timeout`
- `show rfid client`
- `show rfid config`
- `show rfid detail`
Show Rogue Commands

Use the `show rogue` commands to display unverified (rogue) device settings.
show rogue adhoc detailed

To display details of an ad-hoc rogue access point detected by the Cisco wireless LAN controller, use the `show rogue adhoc client detailed` command.

```
show rogue adhoc detailed MAC
```

**Syntax Description**

```
MAC	Ad-hoc rogue MAC address.
```

**Defaults**

None.

**Examples**

This example shows how to display detailed ad-hoc rogue MAC address information:

```
> show rogue adhoc detailed 02:61:ce:8e:a8:8c

Adhoc Rogue MAC address......................... 02:61:ce:8e:a8:8c
Adhoc Rogue BSSID................................. 02:61:ce:8e:a8:8c
State........................................... Alert
First Time Adhoc Rogue was Reported............. Tue Dec 11 20:45:45 2007
Last Time Adhoc Rogue was Reported.............. Tue Dec 11 20:45:45 2007
Reported By
AP 1
MAC Address...................................... 00:14:1b:58:4a:e0
Name.............................................. AP0014.1ced.2a60
Radio Type........................................ 802.11b
SSID............................................. rf4k3ap
Channel.......................................... 3
RSSI............................................... -56 dBm
SNR............................................... 15 dB
Encryption....................................... Disabled
ShortPreamble................................. Disabled
WPA Support.................................... Disabled
Last reported by this AP....................... Tue Dec 11 20:45:45 2007
```

**Related Commands**

- `config rogue adhoc`
- `config rogue rule`
- `show rogue adhoc summary`
- `show rogue ignore-list`
- `show rogue rule detailed`
- `show rogue rule summary`
show rogue adhoc summary

To display a summary of the ad-hoc rogue access points detected by the Cisco wireless LAN controller, use the **show rogue adhoc summary** command.

```
show rogue adhoc summary
```

### Syntax Description
This command has no arguments or keywords.

### Defaults
None.

### Examples
This example shows how to display a summary of all ad-hoc rogues:

```
> show rogue adhoc summary
Detect and report Ad-Hoc Networks................. Enabled

<table>
<thead>
<tr>
<th>Client MAC Address</th>
<th>Adhoc BSSID</th>
<th>State</th>
<th># APs</th>
<th>Last Heard</th>
</tr>
</thead>
</table>
```

### Related Commands
- `config rogue adhoc`
- `config rogue rule`
- `show rogue adhoc detailed`
- `show rogue ignore-list`
- `show rogue rule detailed`
- `show rogue rule summary`
show rogue ap clients

To display details of rogue access point clients detected by the Cisco wireless LAN controller, use the `show rogue ap clients` command.

```
show rogue ap clients ap_mac_address
```

**Syntax Description**

| ap_mac_address   | Rogue access point MAC address. |

**Defaults**

None.

**Examples**

This example shows how to display details of rogue access point clients:

```
> show rogue ap clients xx:xx:xx:xx:xx
MAC Address State # APs Last Heard
----------------- ------------------ ----- -------------------------
```

**Related Commands**

- config rogue ap classify
- config rogue ap friendly
- config rogue ap rldp
- config rogue ap ssid
- config rogue ap timeout
- config rogue ap valid-client
- config rogue rule
- config trapflags rogueap
- show rogue ap detailed
- show rogue ap summary
- show rogue ap friendly summary
- show rogue ap malicious summary
- show rogue ap unclassified summary
show rogue ap detailed

To display details of a rogue access point detected by the Cisco wireless LAN controller, use the **show rogue-ap detailed** command.

```
show rogue ap detailed ap_mac_address
```

### Syntax Description

**ap_mac_address**

Rogue access point MAC address.

### Defaults

None.

### Examples

This example shows how to display detailed information of a rogue access point:

```

Rogue BSSID............................... 00:0b:85:63:d1:94
Is Rogue on Wired Network............... No
Classification............................ Unclassified
State.................................... Alert
First Time Rogue was Reported............. Fri Nov 30 11:24:56 2007
Last Time Rogue was Reported............... Fri Nov 30 11:24:56 2007
Reported By
    AP 1
        MAC Address........................... 00:12:44:bb:25:d0
        Name................................. HReap
        Radio Type............................ 802.11g
        SSID.................................. edu-eap
        Channel................................ 6
        RSSI.................................. -61 dBm
        SNR.................................. -1 dB
        Encryption............................ Enabled
        ShortPreamble.......................... Enabled
        WPA Support............................ Disabled
Last reported by this AP.................... Fri Nov 30 11:24:56 2007
```

### Related Commands

- config rogue ap classify
- config rogue ap friendly
- config rogue ap rldp
- config rogue ap ssid
- config rogue ap timeout
- config rogue ap valid-client
- config rogue rule
- show rogue ap clients
- show rogue ap summary
- show rogue ap friendly summary
- show rogue ap malicious summary
- show rogue ap unclassified summary
show rogue ap summary

To display a summary of the rogue access points detected by the Cisco wireless LAN controller, use the show rogue-ap summary command.

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to display a summary of all rogue access points:

```bash
> show rogue ap summary

Rogue Location Discovery Protocol................. Disabled
Rogue ap timeout................................. 1200

MAC Address      Classification # APs # Clients Last Heard
----------------- ------------------ ----- --------- -----------------------
xx:xx:xx:xx:xx:xx malicious 1 0 Thu Aug 4 19:00:11 2005
```

Related Commands
config rogue ap classify
config rogue ap friendly
config rogue ap rldp
config rogue ap ssid
config rogue ap timeout
config rogue ap valid-client
config rogue rule
show rogue ap clients
show rogue ap detailed
show rogue ap friendly summary
show rogue ap malicious summary
show rogue ap unclassified summary
show rogue ap friendly summary

To display a list of the friendly rogue access points detected by the controller, use the **show rogue-ap friendly summary** command.

```plaintext
show rogue ap friendly summary
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display a summary of all friendly rogue access points:

```plaintext
> show rogue ap friendly summary

Number of APs................................. 1
MAC Address State # APs # Clients Last Heard
----------------- ------------------ ----- --------- ---------------------------
XX:XX:XX:XX:XX Internal 1 0 Tue Nov 27 13:52:04 2007
```

**Related Commands**
- config rogue ap classify
- config rogue ap friendly
- config rogue ap rldp
- config rogue ap ssid
- config rogue ap timeout
- config rogue ap valid-client
- config rogue rule
- config trapflags rogueap
- show rogue ap clients
- show rogue ap detailed
- show rogue ap summary
- show rogue ap malicious summary
- show rogue ap unclassified summary
show rogue ap malicious summary

To display a list of the malicious rogue access points detected by the controller, use the `show rogue-ap malicious summary` command.

```
show rogue ap malicious summary
```

### Syntax Description
This command has no arguments or keywords.

### Defaults
None.

### Examples
This example shows how to display a summary of all malicious rogue access points:
```
> show rogue ap malicious summary

Number of APs................................. 2
MAC Address          State # APs # Clients Last Heard
----------------- ------------------ ----- --------- ---------------------------
```

### Related Commands
- `config rogue ap classify`
- `config rogue ap friendly`
- `config rogue ap rldp`
- `config rogue ap ssid`
- `config rogue ap timeout`
- `config rogue ap valid-client`
- `config rogue rule`
- `config trapflags rogueap`
- `show rogue ap clients`
- `show rogue ap detailed`
- `show rogue ap summary`
- `show rogue ap friendly summary`
- `show rogue ap unclassified summary`
show rogue ap unclassified summary

To display a list of the unclassified rogue access points detected by the controller, use the `show rogue-ap unclassified summary` command.

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to display a list of all unclassified rogue access points:

```
> show rogue ap unclassified summary

Number of APs.......................... 164
MAC Address     State     # APs # Clients Last Heard
----------------- ------------------ ----- --------- -----------------------
```

Related Commands
- `config rogue ap classify`
- `config rogue ap friendly`
- `config rogue ap rldp`
- `config rogue ap ssid`
- `config rogue ap timeout`
- `config rogue ap valid-client`
- `config rogue rule`
- `config trapflags rogueap`
- `show rogue ap clients`
- `show rogue ap detailed`
- `show rogue ap summary`
- `show rogue ap friendly summary`
- `show rogue ap malicious summary`
show rogue client detailed

To display details of a rogue client detected by a Cisco wireless LAN controller, use the **show rogue client detailed** command.

```
show rogue client detailed MAC
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th><strong>MAC</strong></th>
<th>Rogue client MAC address.</th>
</tr>
</thead>
</table>

| Defaults | None. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to display detailed information for a rogue client:</th>
</tr>
</thead>
</table>

```

Rogue BSSID...................................... 00:0b:85:23:ea:d1
State............................................ Alert
First Time Rogue was Reported.................... Mon Dec 3 21:50:36 2007
Last Time Rogue was Reported..................... Mon Dec 3 21:50:36 2007
Rogue Client IP address.......................... Not known
Reported By
  AP 1
    MAC Address.............................. 00:15:c7:82:b6:b0
    Name..................................... AP0016.47b2.31ea
    Radio Type............................... 802.11a
    RSSI..................................... -71 dBm
    SNR...................................... 23 dB
    Channel.................................. 149
    Last reported by this AP............... Mon Dec 3 21:50:36 2007
```

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>show rogue client summary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>show rogue ignore-list</td>
</tr>
<tr>
<td></td>
<td>config rogue client</td>
</tr>
<tr>
<td></td>
<td>config rogue rule</td>
</tr>
</tbody>
</table>
show rogue client summary

To display a summary of the rogue clients detected by the Cisco wireless LAN controller, use the **show rogue client summary** command.

```
show rogue client summary
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display a list of all rogue clients:
```
> show rogue client summary

<table>
<thead>
<tr>
<th>MAC Address</th>
<th>State</th>
<th># APs</th>
<th>Last Heard</th>
</tr>
</thead>
<tbody>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
<tr>
<td>xx:xx:xx:xx:xx:xx</td>
<td>Alert</td>
<td>1</td>
<td>Thu Aug 4 19:00:08 2005</td>
</tr>
</tbody>
</table>
```

**Related Commands**
- `show rogue client detailed`
- `show rogue ignore-list`
- `config rogue client`
- `config rogue rule`
show rogue ignore-list

To display a list of rogue access points that are configured to be ignored, use the `show rogue ignore-list` command.

```
show rogue ignore-list
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display a list of all rogue access points that are configured to be ignored:

```
> show rogue ignore-list

MAC Address
-------------
XX:XX:XX:XX:XX:XX
```

**Related Commands**
- config rogue adhoc
- config rogue ap classify
- config rogue ap friendly
- config rogue ap rldp
- config rogue ap ssid
- config rogue ap timeout
- config rogue ap valid-client
- config rogue client
- config rogue rule
- config trapflags rogueap
- show rogue ap clients
- show rogue ap detailed
- show rogue ap summary
- show rogue ap friendly summary
- show rogue ap malicious summary
- show rogue ap unclassified summary
- show rogue client detailed
- show rogue client summary
- show rogue ignore-list
- show rogue rule detailed
- show rogue rule summary
# show rogue rule detailed

To display detailed information for a specific rogue classification rule, use the `show rogue rule detailed` command.

```
show rogue rule detailed rule_name
```

## Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Rule Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>rule_name</code></td>
<td>Rogue rule name.</td>
<td></td>
</tr>
</tbody>
</table>

## Defaults

None.

## Examples

This example shows how to display detailed information on a specific rogue classification rule:

```plaintext
> show rogue rule detailed Rule2

Priority......................................... 2
Rule Name........................................ Rule2
State............................................ Enabled
Type............................................. Malicious
Match Operation................................. Any
Hit Count........................................ 352
Total Conditions................................. 2
Condition 1
  type......................................... Client-count
  value........................................ 10
Condition 2
  type......................................... Duration
  value (seconds).............................. 2000
Condition 3
  type......................................... Managed-ssid
  value........................................ Enabled
Condition 4
  type......................................... No-encryption
  value........................................ Enabled
Condition 5
  type......................................... Rssi
  value (dBm).................................. -50
Condition 6
  type......................................... Ssid
  SSID Count................................... 1
  SSID 1.................................... test
```

## Related Commands

- `config rogue rule`
- `show rogue ignore-list`
- `show rogue rule summary`
show rogue rule summary

To display the rogue classification rules that are configured on the controller, use the `show rogue rule summary` command.

```
show rogue rule summary
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display a list of all rogue rules that are configured on the controller:
```
> show rogue rule summary
```

```
  Priority  Rule Name  State    Type       Match Hit Count
  --------  ----------- -------- -------- ------------- ----- ---------
  1        mtest      Enabled  Malicious All   0
  2        asdfasdf   Enabled  Malicious All   0
```

**Related Commands**
- `config rogue rule`
- `show rogue ignore-list`
- `show rogue rule detailed`
show route summary

To display the routes assigned to the Cisco wireless LAN controller service port, use the `show route summary` command.

```
show route summary
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display all the configured routes:

```
> show route summary

Number of Routes......................... 1

Destination Network          Genmask          Gateway
----------------------------- ----------------------------- -----------------------------
xxx.xxx.xxx.xxx               255.255.255.0     xxx.xxx.xxx.xxx
```

**Related Commands**

`config route`
show rules

To display the active internal firewall rules, use the `show rules` command.

```plaintext
show rules
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display active internal firewall rules:

```plaintext
> show rules

-----------------------------------------------
Rule ID.............: 3
Ref count...........: 0
Precedence..........: 99999999
Flags...............: 00000001 ( PASS )
Source IP range:
   (Local stack)
Destination IP range:
   (Local stack)
-----------------------------------------------
Rule ID.............: 25
Ref count...........: 0
Precedence..........: 99999999
Flags...............: 00000001 ( PASS )
Service Info
   Service name........: GDB
   Protocol...............: 6
   Source port low......: 0
   Source port high....: 0
   Dest port low.......: 1000
   Dest port high......: 1000
Source IP range:
IP High............: 0.0.0.0
Interface..........: ANY
Destination IP range:
   (Local stack)
-----------------------------------------------
```
show run-config

To display a comprehensive view of the current Cisco wireless LAN controller configuration, use the show run-config command.

show run-config [no ap | commands]

Syntax Description

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>no-ap</td>
<td>(Optional) Excludes access point configuration settings.</td>
</tr>
<tr>
<td>commands</td>
<td>(Optional) Displays a list of user-configured commands on the controller.</td>
</tr>
</tbody>
</table>

Defaults

None.

Usage Guidelines

These commands have replaced the show running-config command.

Some WLAN controllers may have no Crypto Accelerator (VPN termination module) or power supplies listed because they have no provisions for VPN termination modules or power supplies.

The show run-config command shows only values configured by the user. It does not show system-configured default values.

Examples

This example shows how to display the current controller running configuration:

```bash
> show run-config
Press Enter to continue... System Inventory
Switch Description............................... Cisco Controller
Machine Model....................................
Serial Number.................................... FLS0923003B
Crypto Accelerator 1............................. Absent
Crypto Accelerator 2............................. Absent
Power Supply 1................................... Absent
Power Supply 2................................... Present, OK

Press Enter to continue Or <Ctl Z> to abort...
```

Related Commands

config passwd-cleartext
show serial

To display the serial (console) port configuration, use the show serial command.

```
show serial
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

9600, 8, off, 1, none.

**Examples**

This example shows how to display EIA-232 parameters and the serial port inactivity timeout:

```
> show serial

  Serial Port Login Timeout (minutes)........ 45
  Baud Rate................................... 9600
  Character Size.............................. 8
  Flow Control:............................... Disable
  Stop Bits................................... 1
  Parity Type:................................. none
```

**Related Commands**

- config serial baudrate
- config serial timeout
show sessions

To display the console port login timeout and maximum number of simultaneous command-line interface (CLI) sessions, use the `show sessions` command.

`show sessions`

**Syntax Description**  
This command has no arguments or keywords.

**Defaults**  
5 minutes, 5 sessions.

**Examples**  
This example shows how to display the CLI session configuration setting:

```
> show sessions

CLI Login Timeout (minutes)............ 0
Maximum Number of CLI Sessions........ 5
```

The response indicates that the CLI sessions never time out and that the Cisco wireless LAN controller can host up to five simultaneous CLI sessions.

**Related Commands**  
`config sessions maxsessions`
`config sessions timeout`
show snmpcommunity

To display Simple Network Management Protocol (SNMP) community entries, use the show snmpcommunity command.

show snmpcommunity

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to display SNMP community entries:

```
> show snmpcommunity

SNMP Community Name  Client IP Address  Client IP Mask  Access Mode  Status
--------------------  -----------------  -----------------  -----------  --------
public                0.0.0.0            0.0.0.0          Read Only   Enable
**********            0.0.0.0            0.0.0.0          Read/Write  Enable
```

Related Commands
config snmp community accessmode
config snmp community create
config snmp community delete
config snmp community ipaddr
config snmp community mode
config snmp syscontact
show snmptrap

To display Cisco wireless LAN controller Simple Network Management Protocol (SNMP) trap receivers and their status, use the \texttt{show snmptrap} command.

\texttt{show snmptrap}

\textbf{Syntax Description} \hspace{1cm} This command has no arguments or keywords.

\textbf{Defaults} \hspace{1cm} None.

\textbf{Examples} \hspace{1cm} This example shows how to display SNMP trap receivers and their status:

\begin{verbatim}
> show snmptrap
SNMP Trap Receiver Name  IP Address  Status
------------------------  -----------  --------
xxx.xxx.xxx.xxx           xxx.xxx.xxx.xxx Enable
\end{verbatim}

\textbf{Related Commands} \hspace{1cm} \texttt{config snmp trapreceiver create}
\texttt{config snmp trapreceiver delete}
\texttt{config snmp trapreceiver delete}
show snmpv3user

To display Simple Network Management Protocol (SNMP) version 3 configuration, use the `show snmpv3user` command.

```
show snmpv3user
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display SNMP version 3 configuration information:

```
> show snmpv3user

SNMP v3 username  AccessMode  Authentication  Encryption
----------------- ----------- -------------- ----------
default           Read/Write  HMAC-SHA      CFB-AES
```

**Related Commands**

- config snmp v3user create
- config snmp v3user delete
show snmpversion

To display which versions of Simple Network Management Protocol (SNMP) are enabled or disabled on your controller, use the **show snmpversion** command.

**show snmpversion**

**Syntax Description**  
This command has no arguments or keywords.

**Defaults**  
Enable.

**Examples**  
This example shows how to display the SNMP v1/v2/v3 status:

```
> show snmpversion

SNMP v1 Mode................................. Disable
SNMP v2c Mode................................. Enable
SNMP v3 Mode................................. Enable
```

**Related Commands**  
config snmp version
show spanningtree port

To display the Cisco wireless LAN controller spanning tree port configuration, use the **show spanningtree port** command.

**show spanningtree port**

**Syntax Description**

- **port**: Physical port number:
  - 1 through 4 on Cisco 2100 Series Wireless LAN Controller.
  - 1 or 2 on Cisco 4402 Series Wireless LAN Controller.
  - 1 through 4 on Cisco 4404 Series Wireless LAN Controller.

**Defaults**

- 800C, Disabled, 802.1D, 128, 100, Auto.

**Usage Guidelines**

When the a Cisco 4400 Series wireless LAN controller is configured for port redundancy, the Spanning Tree Protocol (STP) must be disabled for all ports on the Cisco 4400 Series Wireless LAN Controller. STP can remain enabled on the switch connected to the Cisco 4400 Series Wireless LAN Controller.

**Note**

Some WLAN controllers do not support the spanning tree function.

**Examples**

This example shows how to display spanning tree values on a per port basis:

```
> show spanningtree port 3

STP Port ID................................. 800C
STP Port State.............................. Disabled
STP Port Administrative Mode............... 802.1D
STP Port Priority........................... 128
STP Port Path Cost.......................... 100
STP Port Path Cost Mode..................... Auto
```

**Related Commands**

- config spanningtree port mode
- config spanningtree port pathcost
- config spanningtree port priority
- show spanningtree switch
show spanningtree switch

To display the Cisco wireless LAN controller network (DS port) spanning tree configuration, use the show spanningtree switch command.

show spanningtree switch

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Usage Guidelines
Some WLAN controllers do not support the spanning tree function.

Examples
This example shows how to display spanning tree values on a per switch basis:

> show spanningtree switch

STP Specification..................... IEEE 802.1D
STP Base MAC Address............... 00:0B:85:02:0D:20
Spanning Tree Algorithm............. Disable
STP Bridge Priority.................. 32768
STP Bridge Max. Age (seconds)....... 20
STP Bridge Hello Time (seconds)..... 2
STP Bridge Forward Delay (seconds) 15

Related Commands
config spanningtree switch bridgepriority
config spanningtree switch forwarddelay
config spanningtree switch hellotime
config spanningtree switch maxage
config spanningtree switch mode
show stats port

To display physical port receive and transmit statistics, use the show stats port command.

    show stats port {detailed port | summary port}

Syntax Description

| detailed  | Displays detailed port statistics. |
| summary   | Displays port summary statistics.  |
| port      | Physical port number:             |
|           | • 1 through 4 on Cisco 2100 Series Wireless LAN Controllers. |
|           | • 1 or 2 on Cisco 4402 Series Wireless LAN Controllers. |
|           | • 1 through 4 on Cisco 4404 Series Wireless LAN Controllers. |
|           | • 1 on Cisco WLCM Series Wireless LAN Controllers. |

Defaults

None.

Examples

This example shows how to display the port summary information:

    > show stats port summary 1
    
Packets Received Without Error................. 399958
    Packets Received With Error.................... 0
    Broadcast Packets Received...................... 8350
    Packets Transmitted Without Error.............. 106060
    Transmit Packets Errors......................... 0
    Collisions Frames.............................. 0
    Time Since Counters Last Cleared.............. 2 day 11 hr 16 min 23 sec

This example shows how to display the detailed port information:

    > show stats port detailed 1
    
    PACKETS RECEIVED (OCTETS)
    Total Bytes................................... 267799881
    64 byte pkts : 918281
    65-127 byte pkts: 354016
    128-255 byte pkts: 1283092
    256-511 byte pkts: 8406
    512-1023 byte pkts: 3006
    1024-1518 byte pkts: 1184
    1519-1530 byte pkts: 0
    > 1530 byte pkts : 2
    
    PACKETS RECEIVED SUCCESSFULLY
    Total......................................... 2567987
    Unicast Pkts : 2547844
    Multicast Pkts: 0
    Broadcast Pkts: 20143
    
    PACKETS RECEIVED WITH MAC ERRORS
    Total......................................... 0
    Jabbers : 0
    Undersize : 0
    Alignment : 0
    FCS Errors: 0
    Overruns : 0
    
    RECEIVED PACKETS NOT FORWARDED
    Total......................................... 0
<table>
<thead>
<tr>
<th>Traffic Frames</th>
<th>RX Pause Frames</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Traffic Frames: 0</td>
<td>RX Pause Frames : 0</td>
</tr>
<tr>
<td>Unacceptable Frames: 0</td>
<td>VLAN Membership : 0</td>
</tr>
<tr>
<td>VLAN Visible Discards: 0</td>
<td>MulticastTree Visible: 0</td>
</tr>
<tr>
<td>ReserveAddr Discards: 0</td>
<td>Upstream Threshold : 0</td>
</tr>
<tr>
<td>CFI Discards : 0</td>
<td>Upstream Threshold : 0</td>
</tr>
</tbody>
</table>

**PACKETS TRANSMITTED (OCTETS)**

<table>
<thead>
<tr>
<th>Total Bytes</th>
<th>353831</th>
</tr>
</thead>
<tbody>
<tr>
<td>64 byte pkts</td>
<td>0</td>
</tr>
<tr>
<td>65-127 byte pkts</td>
<td>0</td>
</tr>
<tr>
<td>128-255 byte pkts</td>
<td>0</td>
</tr>
<tr>
<td>256-511 byte pkts</td>
<td>0</td>
</tr>
<tr>
<td>512-1023 byte pkts</td>
<td>0</td>
</tr>
<tr>
<td>1024-1518 byte pkts</td>
<td>2</td>
</tr>
<tr>
<td>1519-1530 byte pkts</td>
<td>0</td>
</tr>
<tr>
<td>Max Info</td>
<td>1522</td>
</tr>
</tbody>
</table>

**PACKETS TRANSMITTED SUCCESSFULLY**

<table>
<thead>
<tr>
<th>Total</th>
<th>5875</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unicast Pkts</td>
<td>5868</td>
</tr>
<tr>
<td>Multicast Pkts: 0</td>
<td></td>
</tr>
<tr>
<td>Broadcast Pkts: 7</td>
<td></td>
</tr>
</tbody>
</table>

**TRANSMIT ERRORS**

<table>
<thead>
<tr>
<th>Total Errors</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCS Error</td>
<td>0</td>
</tr>
<tr>
<td>TX Oversized</td>
<td>0</td>
</tr>
<tr>
<td>Underrun Error</td>
<td>0</td>
</tr>
</tbody>
</table>

**TRANSMIT DISCARDS**

<table>
<thead>
<tr>
<th>Total Discards</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Coll Frames</td>
<td>0</td>
</tr>
<tr>
<td>Multiple Coll Frames</td>
<td>0</td>
</tr>
<tr>
<td>Excessive Coll Frame</td>
<td>0</td>
</tr>
<tr>
<td>Port Membership</td>
<td>0</td>
</tr>
<tr>
<td>VLAN Visible Discards</td>
<td>0</td>
</tr>
</tbody>
</table>

**PROTOCOL STATISTICS**

<table>
<thead>
<tr>
<th>BPDUs Received</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPDUs Transmitted</td>
<td>0</td>
</tr>
<tr>
<td>802.3x RX PauseFrame</td>
<td>0</td>
</tr>
</tbody>
</table>

Time Since Counters Last Cleared: 2 day 0 hr 39 min 59 sec

**Related Commands**

- config port adminmode
- config port autoneg
- config port linktrap
- config port power
- config port linkup
show stats switch

To display the network (DS port) receive and transmit statistics, use the `show stats switch` command.

```
show stats switch {detailed | summary}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Detailed</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>detailed</td>
<td>Displays detailed switch statistics.</td>
<td></td>
</tr>
<tr>
<td>summary</td>
<td>Displays switch summary statistics.</td>
<td></td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to display switch summary statistics:

```
> show stats switch summary

Packets Received Without Error.................. 136410
Broadcast Packets Received....................... 18805
Packets Received With Error........................ 0
Packets Transmitted Without Error................ 78002
Broadcast Packets Transmitted.................... 3340
Transmit Packet Errors............................ 2
Address Entries Currently In Use................ 26
VLAN Entries Currently In Use.................... 1
Time Since Counters Last Cleared.................. 2 day 11 hr 22 min 17 sec
```

This example shows how to display detailed switch statistics:

```
> show stats switch detailed

RECEIVE
Octets........................................... 19351718
Total Pkts....................................... 183468
Unicast Pkts..................................... 180230
Multicast Pkts................................... 3219
Broadcast Pkts................................... 19
Pkts Discarded................................... 0

TRANSMIT
Octets........................................... 354251
Total Pkts....................................... 5882
Unicast Pkts..................................... 5875
Multicast Pkts................................... 0
Broadcast Pkts................................... 7
Pkts Discarded................................... 0

ADDRESS ENTRIES
Most Ever Used................................... 1
Currently In Use.................................. 1

VLAN ENTRIES
Maximum.......................................... 128
Most Ever Used................................... 1
Static In Use..................................... 1
Dynamic In Use................................... 0
VLANs Deleted..................................... 0
Time Since Ctrs Last Cleared..................... 2 day 0 hr 43 min 22 sec
```
show stats switch

Related Commands
config switchconfig mode
config switchconfig secret-obfuscation
show switchconfig
show switchconfig

To display parameters that apply to the Cisco wireless LAN controller, use the show switchconfig command.

    show switchconfig

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to display parameters that apply to the Cisco wireless LAN controller:

    > show switchconfig

    802.3x Flow Control Mode....................... Disable
    Current LWAPP Transport Mode................... Layer 3
    LWAPP Transport Mode after next switch reboot.... Layer 3

Related Commands

config switchconfig mode
config switchconfig secret-obfuscation
show stats switch
show sysinfo

To display high-level Cisco wireless LAN controller information, use the `show sysinfo` command.

```
show sysinfo
```

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to display wireless LAN controller information:

```
> show sysinfo

Manufacturer's Name.............................. Cisco Systems Inc.
Product Name..................................... Cisco Controller
Product Version.................................. 6.0.133.0
Build Information................................ Tue Mar 31 11:44:12 PDT 2009
Bootloader Version............................... 0.14.0
Field Recovery Image Version..................... 5.3.38.0-BL-9-16
Firmware Version.................................. FPGA 1.0, Env 0.8, USB console 1.27
Build Type....................................... DATA + WPS

System Name...................................... 5500
System Location..................................
System Contact...................................
System ObjectID................................. 1.3.6.1.4.1.9.1.1
IP Address....................................... 10.10.10.7
Last Reset....................................... Software reset
System Up Time................................... 1 days 15 hrs 17 mins 48 secs
System Timezone Location....................... 
Current Boot License Level...................... wplus
Current Boot License Type....................... Permanent
Next Boot License Level........................ wplus
Next Boot License Type........................ Permanent
Configured Country.............................. US - United States
Operating Environment............................ Commercial (0 to 40 C)
Internal Temp Alarm Limits..................... 0 to 65 C
Internal Temperature........................... +45 C
External Temperature........................... +29 C
Fan Status....................................... OK

State of 802.11b Network......................... Enabled
State of 802.11a Network........................ Disabled
Number of WLANs.................................. 18
3rd Party Access Point Support.................. Disabled
Number of Active Clients....................... 1

Burned-in MAC Address........................... 00:00:1B:EE:12:E0
Power Supply 1................................... Not Available
Power Supply 2................................... Not Available
Maximum number of APs supported.............. 250
```

Related Commands

`config sysname`
Show TACACS Commands

Use the `show tacacs` commands to display Terminal Access Controller Access Control System (TACACS) protocol settings and statistics.
show tacacs acct statistics

To display detailed radio frequency identification (RFID) information for a specified tag, use this command:

   show tacacs acct statistics

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to display detailed RFID information:

   > show tacacs acct statistics
   
   Accounting Servers:

   Server Index..................................... 1
   Server Address................................. 10.0.0.0
   Msg Round Trip Time............................. 0 (1/100 second)
   First Requests.................................. 1
   Retry Requests.................................. 0
   Accounting Response.............................. 0
   Accounting Request Success.................... 0
   Accounting Request Failure.................... 0
   Malformed Msgs.................................. 0
   Bad Authenticator Msgs......................... 0
   Pending Requests............................... -1
   Timeout Requests................................. 1
   Unknowntype Msgs................................ 0
   Other Drops..................................... 0

Related Commands

   config tacacs acct
   config tacacs acct
   config tacacs athr
   config tacacs auth
   show tacacs summary
   show tacacs summary
show tacacs athr statistics

To display TACACS+ server authorization statistics, use the `show tacacs athr statistics` command.

`show tacacs athr statistics`

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display TACACS server authorization statistics:

```
> show tacacs athr statistics

Authorization Servers:

Server Index................................. 3
Server Address............................... 10.0.0.3
Msg Round Trip Time......................... 0 (1/100 second)
First Requests............................... 0
Retry Requests.............................. 0
Received Responses......................... 0
Authorization Success...................... 0
Authorization Failure...................... 0
Challenge Responses....................... 0
Malformed Msgs............................. 0
Bad AuthenticatorMsgs..................... 0
Pending Requests......................... 0
Timeout Requests.......................... 0
UnknownType Msgs.......................... 0
Other Drops............................... 0
```

**Related Commands**

- `config tacacs acct`
- `config tacacs acct`
- `config tacacs auth`
- `show tacacs summary`
- `show tacacs auth statistics`
- `show tacacs summary`
show tacacs auth statistics

To display TACACS+ server authentication statistics, use the `show tacacs auth statistics` command.

```
show tacacs auth statistics
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display TACACS server authentication statistics:

```
> show tacacs auth statistics

Authentication Servers:

<table>
<thead>
<tr>
<th>Server Index</th>
<th>Server Address</th>
<th>Msg Round Trip Time</th>
<th>First Requests</th>
<th>Retry Requests</th>
<th>Accept Responses</th>
<th>Reject Responses</th>
<th>Error Responses</th>
<th>Restart Responses</th>
<th>Follow Responses</th>
<th>GetData Responses</th>
<th>Encrypt no secret Responses</th>
<th>Challenge Responses</th>
<th>Malformed Msgs</th>
<th>Bad Authenticator Msgs</th>
<th>Pending Requests</th>
<th>Timeout Requests</th>
<th>Unknowntype Msgs</th>
<th>Other Drops</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10.0.0.2</td>
<td>0 (msec)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
```

**Related Commands**

- config tacacs acct
- config tacacs acct
- config tacacs athr
- config tacacs auth
- show tacacs summary
- show tacacs summary
show tacacs summary

To display TACACS+ server summary information, use the show tacacs summary command.

show tacacs summary

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to display TACACS server summary information:

> show tacacs summary

Authentication Servers

Idx  Server Address    Port    State     Tout
---  ----------------  ------  --------  ----
2    10.0.0.2          6       Enabled   30

Accounting Servers

Idx  Server Address    Port    State     Tout
---  ----------------  ------  --------  ----
1    10.0.0.0          10      Enabled   2

Authorization Servers

Idx  Server Address    Port    State     Tout
---  ----------------  ------  --------  ----
3    10.0.0.3          4       Enabled   2

Related Commands

config tacacs acct
config tacacs acct
config tacacs athr
config tacacs auth
show tacacs auth
show tacacs athr
show tacacs summary
show tacacs auth
show tacacs auth statistics
show tech-support

To display Cisco wireless LAN controller variables frequently requested by Cisco Technical Assistance Center (TAC), use the show tech-support command.

show tech-support

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to display system resource information:

> show tech-support

Current CPU Load........................................ 0%

System Buffers
Max Free Buffers...................................... 4608
Free Buffers........................................... 4604
Buffers In Use........................................ 4

Web Server Resources
Descriptors Allocated......................... 152
Descriptors Used................................. 3
Segments Allocated............................... 152
Segments Used...................................... 3

System Resources
Uptime.................................................. 747040 Secs
Total Ram.............................................. 127552 Kbytes
Free Ram.............................................. 19540 Kbytes
Shared Ram.......................................... 0 Kbytes
Buffer Ram.......................................... 460 Kbytes
show time

To display the Cisco wireless LAN controller time and date, use the show time command.

show time

Syntax Description  This command has no arguments or keywords.

Defaults  None.

Examples  This example shows how to display the controller time and date:

> show time

Time............................................. Thu Aug 4 19:51:49 2005

Timezone delta................................... 0:0
Daylight savings................................. disabled

NTP Servers
NTP Polling Interval......................... 86400

Index  NTP Server
-------  ------------------------------

Related Commands  config time manual
config time ntp
config time timezone
config time timezone location
config time timezone location
show trapflags

To display the Cisco wireless LAN controller Simple Network Management Protocol (SNMP) trap flags, use the `show trapflags` command.

```
show trapflags
```

**Syntax Description**

This command has no arguments and keywords.

**Defaults**

None.

**Examples**

This example shows how to display controller SNMP trap flags:

```
> show trapflags

Authentication Flag............................ Enable
Link Up/Down Flag.............................. Enable
Multiple Users Flag............................ Enable
Spanning Tree Flag............................. Enable

Client Related Traps
  802.11 Disassociation......................... Disable
  802.11 Deauthenticate......................... Disable
  802.11 Authenticate Failure................... Disable
  802.11 Association Failure.................... Disable
  Excluded...................................... Disable

802.11 Security related traps
  WEP Decrypt Error............................. Enable

Cisco AP
  Register...................................... Enable
  InterfaceUp................................... Enable

Auto-RF Profiles
  Load.......................................... Enable
  Noise......................................... Enable
  Interference.................................. Enable
  Coverage...................................... Enable

Auto-RF Thresholds
  tx-power...................................... Enable
  channel....................................... Enable
  antenna....................................... Enable

AAA
  auth.......................................... Enable
  servers...................................... Enable

rogueap........................................ Enable

wps............................................ Enable

configsave..................................... Enable

IP Security
```
show trapflags

esp-auth...................................... Enable
esp-replay.................................... Enable
invalidSPI..................................... Enable
ike-neg........................................ Enable
suite-neg...................................... Enable
invalid-cookie............................... Enable

Related Commands
config trapflags 802.11-Security
config trapflags aaa
config trapflags ap
config trapflags authentication
config trapflags client
config trapflags configsave
config trapflags IPsec
config trapflags linkmode
show traplog

To display the Cisco wireless LAN controller Simple Network Management Protocol (SNMP) trap log, use the show traplog command.

show traplog

Syntax Description

This command has no arguments and keywords.

Defaults

None.

Examples

This example shows how to display controller SNMP trap log settings:

```
> show traplog

Number of Traps Since Last Reset............ 2447
Number of Traps Since Log Last Displayed... 2447

<table>
<thead>
<tr>
<th>Log System Time</th>
<th>Trap</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Thu Aug 4 19:54:14 2005</td>
<td>Rogue AP : 00:0b:85:52:62:fe detected on Base Rad</td>
</tr>
<tr>
<td></td>
<td>io MAC : 00:0b:85:18:b6:50 Interface no:1(802.11</td>
</tr>
<tr>
<td></td>
<td>b/g) with RSSI: -78 and SNR: 10</td>
</tr>
<tr>
<td>1 Thu Aug 4 19:54:14 2005</td>
<td>Rogue AP : 00:0b:85:52:19:d8 detected on Base Rad</td>
</tr>
<tr>
<td></td>
<td>io MAC : 00:0b:85:18:b6:50 Interface no:1(802.11</td>
</tr>
<tr>
<td></td>
<td>b/g) with RSSI: -72 and SNR: 16</td>
</tr>
<tr>
<td>2 Thu Aug 4 19:54:14 2005</td>
<td>Rogue AP : 00:0b:85:26:a1:8d detected on Base Rad</td>
</tr>
<tr>
<td></td>
<td>io MAC : 00:0b:85:18:b6:50 Interface no:1(802.11</td>
</tr>
<tr>
<td></td>
<td>b/g) with RSSI: -82 and SNR: 6</td>
</tr>
<tr>
<td>3 Thu Aug 4 19:54:14 2005</td>
<td>Rogue AP : 00:0b:85:14:b3:4f detected on Base Rad</td>
</tr>
<tr>
<td></td>
<td>io MAC : 00:0b:85:18:b6:50 Interface no:1(802.11</td>
</tr>
<tr>
<td></td>
<td>b/g) with RSSI: -56 and SNR: 30</td>
</tr>
</tbody>
</table>
```

Would you like to display more entries? (y/n)

Related Commands

show trapflags
show version

To display access point’s software information, use the show version command.

show version

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Usage Guidelines
You can only use this command from the access point console port when not connected to a controller.

Examples
This example shows how to display the access point version number:

```
AP# show version
Cisco IOS Software, C1240 Software (C1240-K9W8-M), Experimental Version
12.3(20060829:081904) [BLD-wnbu_a10_temp_060823.daily 163]
Copyright (c) 1986-2006 by Cisco Systems, Inc.
Compiled Wed 30-Aug-06 03:03 by
ROM: Bootstrap program is C1240 boot loader
BOOTLDR: C1240 Boot Loader (C1240-BOOT-M) Version 12.3(7)JA1, RELEASE SOFTWARE (fc1)
Ap1242-2 uptime is 4 minutes
System returned to ROM by power-on
System image file is "flash:/c1240-k9w8-mx.wnbu_a10_temp_060823.20060830d/c1240-k9w8-
"cisco AIR-LAP1242AG-A-K9 processor (revision B0) with 24566K/8192K bytes of memory.
Processor board ID FTX0944B00B
PowerPCElvis CPU at 266Mhz, revision number 0x0950
Last reset from power-on
LWAPP image version 4.1.69.0
1 FastEthernet interface
2 802.11 Radio(s)
32K bytes of flash-simulated non-volatile configuration memory.
Base ethernet MAC Address: 00:14:1C:ED:47:14
Part Number : 73-9925-03
PCA Assembly Number : 800-26579-03
PCA Revision Number : A0
PCB Serial Number : POC09351EU
Top Assembly Part Number : 800-26804-01
Top Assembly Serial Number : FTX0944B00B
Top Revision Number : A0
Product/Model Number : AIR-LAP1242AG-A-K9
Configuration register is 0xF
```
show watchlist

To display the client watchlist, use the show watchlist command.

    show watchlist

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to display the client watchlist information:

    > show watchlist
    client watchlist state is disabled

Related Commands

    config watchlist add
    config watchlist delete
    config watchlist disable
    config watchlist enable
show wlan

To display configuration information for a specified wireless LAN or a foreign access point, or to display wireless LAN summary information, use the `show wlan` command.

```
show wlan {apgroups | summary | wlan_id | foreignAp}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>apgroups</code></td>
<td>(Optional) Displays access point group information.</td>
</tr>
<tr>
<td><code>summary</code></td>
<td>(Optional) Displays a summary of all wireless LANs.</td>
</tr>
<tr>
<td><code>wlan_id</code></td>
<td>Wireless LAN identifier from 1 to 512.</td>
</tr>
<tr>
<td><code>foreignAp</code></td>
<td>(Optional) Displays the configuration for support of foreign access points.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to display a summary of wireless LANs for `wlan_id` 1:

```
> show wlan 1
WLAN Identifier......................... 1
Profile Name................................ wlan
Network Name (SSID)...................... wlan
Status.................................... Enabled
MAC Filtering............................. Disabled
Broadcast SSID............................ Enabled
AAA Policy Override...................... Disabled
Network Admission Control
   NAC-State................................ Enabled
   Quarantine VLAN.......................... 110
   Number of Active Clients................. 0
   Exclusionlist Timeout.................... 60 seconds
   Session Timeout.......................... 1800 seconds
   CHD per WLAN............................. Enabled
   Webauth DHCP exclusion.................. Disabled
   Interface............................... management
   WLAN ACL................................. unconfigured
   DHCP Server............................. Default
   DHCP Address Assignment Required....... Disabled
   Quality of Service...................... Silver (best effort)
   WMM...................................... Allowed
   CCX - Aironet Support................... Enabled
   CCX - Gratuitous ProbeResponse (GPR).... Disabled
   CCX - Diagnostics Channel Capability.... Disabled
   Dot11-Phone Mode (7920).................. Disabled
   Wired Protocol.......................... None
   IPv6 Support............................ Disabled
   Passive Client Feature................... Enabled
   Peer-to-Peer Blocking Action............. Disabled
   Radio Policy............................. All
   DTIM period for 802.11a radio........... 1
   DTIM period for 802.11b radio........... 1
   Local EAP Authentication................ Disabled
   Security
   802.11 Authentication................... Open System
```
show wlan

Static WEP Keys............................... Disabled
802.1X........................................ Disabled
Wi-Fi Protected Access (WPA/WPA2)......... Enabled
  WPA (SSN IE)................................ Disabled
  WPA2 (RSN IE)............................. Enabled
  TKIP Cipher................................ Disabled
  AES Cipher................................ Enabled
Auth Key Management
  802.1x.................................. Enabled
  PSK..................................... Disabled
  CCKM.................................... Disabled
  FT(802.11r)............................. Disabled
  FT-PSK(802.11r).......................... Disabled
  FT Reassociation Timeout.................... 20
  FT Over-The-Air mode....................... Enabled
  FT Over-The-Ds mode....................... Enabled
  CKIP ......................................... Disabled
  IP Security................................ Disabled
  IP Security Passthru........................ Disabled
  Web Based Authentication..................... Disabled
  Web-Passthrough.............................. Disabled
  Conditional Web Redirect.................... Disabled
  Splash-Page Web Redirect.................... Disabled
  Auto Anchor................................... Disabled
  Cranite Passthru........................... Disabled
  Fortress Passthru........................... Disabled
  H-REAP Local Switching..................... Disabled
  Infrastructure MFP protection............ Enabled (Global Infrastructure MFP Disabled)
  Client MFP.................................. Optional
  TKip MIC Countermeasure Hold-down Timer... 60
Call Snooping.................................. Enabled

Mobility Anchor List
WLAN ID    IP Address        Status
--------    -------------  -----

This example shows how to display a summary of all WLANs:

> show wlan summary

Number of WLANs................................. 2

<table>
<thead>
<tr>
<th>WLAN ID</th>
<th>WLAN Profile Name / SSID</th>
<th>Status</th>
<th>Interface Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>test / test</td>
<td>Disabled</td>
<td>management</td>
</tr>
</tbody>
</table>

This example shows how to display the configuration for support of foreign access points:

> show wlan foreignap

Foreign AP support is not enabled.

Related Commands
  config wlan
  config wlan 7920-support
  config wlan acl
  config wlan interface
  show wlan
Show WPS Commands

Use the `show wps` commands to display Wireless Protection System (WPS) settings.
show wps ap-authentication summary

To display the access point neighbor authentication configuration on the controller, use the `show wps ap-authentication summary` command.

```
show wps ap-authentication summary
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display a summary of the Wireless Protection System (WPS) access point neighbor authentication:

```
> show wps ap-authentication summary

AP neighbor authentication is <disabled>.

Authentication alarm threshold is 1.
RF-Network Name: <B1>
```

**Related Commands**
`config wps ap-authentication`
show wps cids-sensor

To display Intrusion Detection System (IDS) sensor summary information or detailed information on a specified Wireless Protection System (WPS) IDS sensor, use the `show wps cids-sensor` command.

```
show wps cids-sensor {summary | detail index}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>summary</td>
<td>Displays a summary of sensor settings.</td>
</tr>
<tr>
<td>detail</td>
<td>Displays all settings for the selected sensor.</td>
</tr>
<tr>
<td>index</td>
<td>IDS sensor identifier.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display all settings for the selected sensor:

```
> show wps cids-sensor detail 1

IP Address......................... 10.0.0.51
Port................................. 443
Query Interval..................... 60
Username............................ Sensor_user1
Cert Fingerprint.................... SHA1: 00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00
Query State........................ Disabled
Last Query Result.................. Unknown
Number of Queries Sent.............. 0
```

**Related Commands**

`config wps cids-sensor`
show wps mfp

To display Management Frame Protection (MFP) information, use the `show wps mfp` command.

```
show wps mfp {summary | statistics}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>summary</th>
<th>Displays the MFP configuration and status.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>statistics</td>
<td>Displays MFP statistics.</td>
</tr>
</tbody>
</table>

| Defaults | None. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to display a summary of the MFP configuration and status:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>&gt; show wps mfp summary</code></td>
</tr>
<tr>
<td></td>
<td>Global Infrastructure MFP state.................. DISABLED (*all infrastructure settings are overridden)</td>
</tr>
<tr>
<td></td>
<td>Controller Time Source Valid..................... False</td>
</tr>
<tr>
<td></td>
<td>WLAN       Infra.      Client</td>
</tr>
<tr>
<td></td>
<td>WLAN ID  WLAN Name                  Status     Protection  Protection</td>
</tr>
<tr>
<td></td>
<td>-------  -------------------------  ---------  ----------  ----------</td>
</tr>
<tr>
<td></td>
<td>1        homeap                     Disabled   *Enabled    Optional but inactive</td>
</tr>
<tr>
<td></td>
<td>(WPA2 not configured)</td>
</tr>
<tr>
<td></td>
<td>2        7921                       Enabled    *Enabled    Optional but inactive</td>
</tr>
<tr>
<td></td>
<td>(WPA2 not configured)</td>
</tr>
<tr>
<td></td>
<td>3        open1                      Enabled    *Enabled    Optional but inactive</td>
</tr>
<tr>
<td></td>
<td>(WPA2 not configured)</td>
</tr>
<tr>
<td></td>
<td>4        7920                       Enabled    *Enabled    Optional but inactive</td>
</tr>
<tr>
<td></td>
<td>(WPA2 not configured)</td>
</tr>
<tr>
<td></td>
<td>AP Name               Validation  Radio  State           Protection  Validation</td>
</tr>
<tr>
<td></td>
<td>--------------------  ----------  -----  --------------  ----------  ----------</td>
</tr>
<tr>
<td></td>
<td>AP1252AG-EW           *Enabled    b/g    Down            Full        Full</td>
</tr>
<tr>
<td></td>
<td>a      Down            Full        Full</td>
</tr>
<tr>
<td></td>
<td>This example shows how to display the MFP statistics:</td>
</tr>
<tr>
<td></td>
<td><code>&gt; show wps mfp statistics</code></td>
</tr>
<tr>
<td></td>
<td>BSSID             Radio Validator AP         Last Source Addr  Found   Error Type</td>
</tr>
<tr>
<td></td>
<td>Count        Frame Types                -----------------       ------       --------</td>
</tr>
<tr>
<td></td>
<td>------------ ----          -------      ------------       ------       --------</td>
</tr>
<tr>
<td></td>
<td>no errors</td>
</tr>
</tbody>
</table>

| Related Commands | config wps mfp |

Cisco Wireless LAN Controller Command Reference
show wps shun-list

To display the Intrusion Detection System (IDS) sensor shun list, use the **show wps shun-list** command.

```
show wps shun-list
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display the IDS system sensor shun list:

```
> show wps shun-list
```

**Related Commands**
config wps shun-list
show wps signature detail

To display installed signatures, use the `show wps signature detail` command.

```
show wps signature detail sig-id
```

**Syntax Description**

| `sig-id`          | Signature ID of an installed signature. |

**Defaults**

None.

**Examples**

This example shows how to display information on the attacks detected by standard signature 1:

```
> show wps signature detail 1

Signature-ID................................. 1
Precedence.................................... 1
Signature Name.............................. Bcast deauth
Type.......................................... standard
FrameType..................................... management
State.......................................... enabled
Action......................................... report
Tracking........................................ per Signature and Mac
Signature Frequency.......................... 500 pkts/interval
Signature Mac Frequency...................... 300 pkts/interval
Interval....................................... 10 sec
Quiet Time.................................... 300 sec
Description.................................. Broadcast Deauthentication Frame
Patterns:
   0(Header):0x0:0x0
   4(Header):0x0:0x0
```

**Related Commands**

- `config wps signature`
- `config wps signature frequency`
- `config wps signature interval`
- `config wps signature mac-frequency`
- `config wps signature quiet-time`
- `config wps signature reset`
- `show wps signature summary`
- `show wps summary`
show wps signature events

To display more information about the attacks detected by a particular standard or custom signature, use the `show wps signature events` command.

```
show wps signature events { summary | { standard | custom } precedenceID { summary | detailed } }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>summary</td>
<td>Displays all tracking signature summary information.</td>
</tr>
<tr>
<td>standard</td>
<td>Displays Standard Intrusion Detection System (IDS) signature settings.</td>
</tr>
<tr>
<td>custom</td>
<td>Displays custom IDS signature settings.</td>
</tr>
<tr>
<td>precedenceID</td>
<td>Signature precedence identification value.</td>
</tr>
<tr>
<td>detailed</td>
<td>Displays tracking source MAC address details.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to display the number of attacks detected by all enabled signatures:

```
> show wps signature events summary
```

<table>
<thead>
<tr>
<th>Precedence</th>
<th>Signature Name</th>
<th>Type</th>
<th># Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bcast deauth</td>
<td>Standard</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>NULL probe resp 1</td>
<td>Standard</td>
<td>1</td>
</tr>
</tbody>
</table>

This example shows how to display a summary of information on the attacks detected by standard signature 1:

```
> show wps signature events standard 1 summary
```

**Related Commands**

- `config wps signature`
- `config wps signature frequency`
- `config wps signature interval`
- `config wps signature mac-frequency`
- `config wps signature quiet-time`
- `config wps signature reset`
- `show wps signature summary`
- `show wps summary`
show wps signature summary

To see individual summaries of all of the standard and custom signatures installed on the controller, use the `show wps signature summary` command.

```
show wps signature summary
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to display a summary of all of the standard and custom signatures:

```
> show wps signature summary
Signature-ID................................. 1
Precedence.................................. 1
Signature Name.............................. Bcast deauth
Type......................................... standard
FrameType.................................... management
State......................................... enabled
Action........................................ report
Tracking...................................... per Signature and Mac
Signature Frequency........................ 50 pkts/interval
Signature Mac Frequency.................... 30 pkts/interval
Interval..................................... 1 sec
Quiet Time.................................. 300 sec
Description................................ Broadcast Deauthentication Frame
Patterns:
          0(Header):0x00c0:0x00ff
          4(Header):0x01:0x01
...
```

**Related Commands**

- `config wps signature`
- `config wps signature frequency`
- `config wps signature interval`
- `config wps signature mac-frequency`
- `config wps signature quiet-time`
- `config wps signature reset`
- `show wps signature events`
- `show wps summary`
show wps summary

To display Wireless Protection System (WPS) summary information, use the `show wps summary` command.

```
show wps summary
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display WPS summary information:

```
> show wps summary

Auto-Immune
  Auto-Immune......................... Disabled

Client Exclusion Policy
  Excessive 802.11-association failures........ Enabled
  Excessive 802.11-authentication failures....... Enabled
  Excessive 802.1x-authentication................ Enabled
  IP-theft.................................. Enabled
  Excessive Web authentication failure......... Enabled

Trusted AP Policy
  Management Frame Protection.................... Disabled
  Mis-configured AP Action....................... Alarm Only
    Enforced encryption policy............... none
    Enforced preamble policy................ none
    Enforced radio type policy............... none
  Validate SSID................................ Disabled
  Alert if Trusted AP is missing.............. Disabled
  Trusted AP timeout.......................... 120

Untrusted AP Policy
  Rogue Location Discovery Protocol.............. Disabled
    RLDP Action................................ Alarm Only
    Rogue APs
    Rogue AP advertising my SSID............... Alarm Only
    Detect and report Ad-Hoc Networks.......... Enabled
  Rogue Clients
    Validate rogue clients against AAA........ Enabled
    Detect trusted clients on rogue APs....... Alarm Only
  Rogue AP timeout........................... 1300

Signature Policy
  Signature Processing....................... Enabled
```

**Related Commands**
- `config wps signature`
- `config wps signature frequency`
- `config wps signature interval`
show wps summary

config wps signature mac-frequency
config wps signature quiet-time
config wps signature reset
show wps signature events
show wps signature summary
show wps wips statistics

To display the current state of the Cisco Wireless Intrusion Prevention System (wIPS) operation on the controller, use the `show wps wips summary` command.

show wps wips statistics

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to display the statistics of the wIPS operation:

```
> show wps wips statistics
Policy Assignment Requests............. 1
Policy Assignment Responses.......... 1
Policy Update Requests................ 0
Policy Update Responses............... 0
Policy Delete Requests................ 0
Policy Delete Responses................. 0
Alarm Updates.......................... 13572
Device Updates........................ 8376
Device Update Requests................. 0
Device Update Responses................ 0
Forensic Updates....................... 1001
Invalid WIPS Payloads................. 0
Invalid Messages Received.............. 0
NMSP Transmitted Packets.............. 22950
NMSP Transmit Packets Dropped........ 0
NMSP Largest Packet................... 1377
```

Related Commands

- `config 802.11 enable`
- `config ap mode`
- `config ap monitor-mode`
- `show ap config`
- `show ap monitor-mode summary`
- `show wps wips summary`
show wps wips summary

To display the adaptive Cisco Wireless Intrusion Prevention System (wIPS) configuration that the Wireless Control System (WCS) forwards to the controller, use the `show wps wips summary` command.

```
show wps wips summary
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to display a summary of the wIPS configuration:
```
> show wps wips summary

Policy Name...................................... Default
Policy Version................................... 3
```

**Related Commands**
`config 802.11 enable`
`config ap mode`
`config ap monitor-mode`
`show ap config`
`show ap monitor-mode summary`
`show wps wips statistics`
Configuring Controller Settings

Use the `config` commands to configure Cisco wireless LAN (WLAN) controller options and settings.

Configure 802.11 Network Commands

Use the `config 802.11` commands to configure settings and devices on 802.11a, 802.11b/g, 802.11h, or other supported 802.11 networks.

Configure 802.11 Public Safety Commands

Use the `config 802.11-a` commands to configure settings specifically for 4.9-GHz or 5.8-GHz public safety frequencies.
config 802.11-a

To enable or disable the 4.9-GHz and 5.8-GHz public safety channels on an access point, use the config 802.11-a commands.

```
config {802.11-a49 | 802.11-a58} {enable | disable} cisco_ap
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>802.11-a49</td>
<td>Specifies the 4.9-GHz public safety channel.</td>
</tr>
<tr>
<td>802.11-a58</td>
<td>Specifies the 5.8-GHz public safety channel.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the use of this frequency on the designated access point.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the use of this frequency on the designated access point.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Name of the access point to which the command applies.</td>
</tr>
</tbody>
</table>

### Defaults

Disabled.

### Examples

This example shows how to enable the 4.9-GHz public safety channel on ap_24 access point:

```
> config 802.11-a49 enable ap_24
```

### Related Commands

- config 802.11-a antenna extAntGain
- config 802.11-a channel ap
- config 802.11-a txpower ap
- show mesh public-safety
config 802.11-a antenna extAntGain

To configure the external antenna gain for the 4.9-GHz and 5.8-GHz public safety channels on an access point, use the **config 802.11-a antenna extAntGain** commands.

```
config {802.11-a49 | 802.11-a58} antenna extAntGain ant_gain cisco_ap {global | channel_no}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>802.11-a49</th>
<th>Specifies the 4.9-GHz public safety channel.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>802.11-a58</td>
<td>Specifies the 5.8-GHz public safety channel.</td>
</tr>
<tr>
<td>ant_gain</td>
<td></td>
<td>Value in .5-dBi units (for instance, 2.5 dBi = 5).</td>
</tr>
<tr>
<td>cisco_ap</td>
<td></td>
<td>Name of the access point to which the command applies.</td>
</tr>
<tr>
<td>global</td>
<td></td>
<td>Specifies the antenna gain value to all channels.</td>
</tr>
<tr>
<td>channel_no</td>
<td></td>
<td>Antenna gain value for a specific channel.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Usage Guidelines**

Before you enter the **config 802.11-a antenna extAntGain** command, disable the 802.11 Cisco radio with the **config 802.11-a disable** command.

After you configure the external antenna gain, use the **config 802.11-a enable** command to re-enable the 802.11 Cisco radio.

**Examples**

This example shows how to configure an 802.11-a49 external antenna gain of 10 dBi for AP1:

```
> config 802.11-a49 antenna extAntGain 10 AP1
```

**Related Commands**

- config 802.11-a
- config 802.11-a channel ap
- config 802.11-a txpower ap
- Show 802.11 Commands
config 802.11-a channel ap

To configure the channel properties for the 4.9-GHz and 5.8-GHz public safety channels on an access point, use the **config 802.11-a channel ap** command.

```
cfg 802.11-a49 channel ap
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>802.11-a49</td>
<td>Specifies the 4.9-GHz public safety channel.</td>
</tr>
<tr>
<td>802.11-a58</td>
<td>Specifies the 5.8-GHz public safety channel.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Name of the access point to which the command applies.</td>
</tr>
<tr>
<td>global</td>
<td>Enables the Dynamic Channel Assignment (DCA) on all 4.9-GHz and 5.8-GHz subband radios.</td>
</tr>
<tr>
<td>channel_no</td>
<td>Custom channel for a specific mesh access point. The range is 1 through 26, inclusive, for a 4.9-GHz band and 149 through 165, inclusive, for a 5.8-GHz band.</td>
</tr>
</tbody>
</table>

### Defaults

Disabled.

### Examples

This example shows how to set the channel properties:

```
> config 802.11-a49 channel ap
```

### Related Commands

- `config 802.11-a`
- `config 802.11-a antenna extAntGain`
- `config 802.11-a channel ap`
- `config 802.11-a txpower ap`
config 802.11-a txpower ap

To configure the transmission power properties for the 4.9-GHz and 5.8-GHz public safety channels on an access point, use the **config 802.11-a txpower ap** command.

```
config {802.11-a49 | 802.11-a58} txpower ap cisco_ap {global | power_level}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>802.11-a49</td>
<td>Specifies the 4.9-GHz public safety channel.</td>
</tr>
<tr>
<td>802.11-a58</td>
<td>Specifies the 5.8-GHz public safety channel.</td>
</tr>
<tr>
<td>txpower</td>
<td>Configures transmission power properties.</td>
</tr>
<tr>
<td>ap</td>
<td>Configures access point channel settings.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Name of the access point to which the command applies.</td>
</tr>
<tr>
<td>global</td>
<td>Applies the transmission power value to all channels.</td>
</tr>
<tr>
<td>power_level</td>
<td>Transmission power value to the designated mesh access point. Valid values are 1 through 5, inclusive.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Examples**

This example shows how to configure an 802.11-a49 transmission power level of 4 for AP1:

```
> config 802.11-a49 txpower ap 4 AP1
```

**Related Commands**

- `config 802.11-a`
- `config 802.11-a antenna extAntGain`
- `config 802.11-a channel ap`
- `Show 802.11 Commands`
Configure 802.11b Commands

Use the `config 802.11b` commands to configure settings specifically for an 802.11b/g network.
To enable or disable the Cisco wireless LAN solution 802.11g network, use the **config 802.11b 11gSupport** command.

`config 802.11b 11gSupport {enable | disable}`

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables the 802.11g network.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables the 802.11g network.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Usage Guidelines**

Before you enter the `config 802.11b 11gSupport {enable | disable}` command, disable the 802.11 Cisco radio with the `config 802.11 disable` command.

After you configure the support for the 802.11g network, use the `config 802.11 enable` command to enable the 802.11 radio.

**Note**

To disable an 802.11a, 802.11b and/or 802.11g network for an individual wireless LAN, use the `config wlan radio` command.

**Examples**

This example shows how to enable the 802.11g network:

```shell
> config 802.11b 11gSupport enable

Changing the 11gSupport will cause all the APs to reboot when you enable 802.11b network. Are you sure you want to continue? (y/n) n

11gSupport not changed!
```

**Related Commands**

- `show sysinfo`
- `show 802.11b`
- `config 802.11b enable`
- `config wlan radio`
- `config 802.11b disable`
- `config 802.11a disable`
- `config 802.11a enable`
**config 802.11b preamble**

To change the 802.11b preamble as defined in subclause 18.2.2.2 to **long** (slower, but more reliable) or **short** (faster, but less reliable), use the `config 802.11b preamble` command.

```
config 802.11b preamble {long | short}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>long</th>
<th>Specifies the long 802.11b preamble.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>short</td>
<td>Specifies the short 802.11b preamble.</td>
</tr>
</tbody>
</table>

**Defaults**

Short.

**Usage Guidelines**

*Note* You must reboot the Cisco wireless LAN controller (reset system) with save to implement this command.

This parameter must be set to **long** to optimize this Cisco wireless LAN controller for some clients, including SpectraLink NetLink telephones.

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

**Examples**

This example shows how to change the 802.11b preamble to short:

```
> config 802.11b preamble short
>(reset system with save)
```

**Related Commands**

- `show 802.11b`
Configure 802.11h Commands

Use the `config 802.11h` commands to configure settings specifically for an 802.11h network.
To configure a 802.11h channel switch announcement, use the `config 802.11h channelswitch` command.

```
config 802.11h channelswitch {enable mode value | disable}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the 802.11h channel switch announcement.</td>
</tr>
<tr>
<td>mode</td>
<td>802.11h channel switch announcement mode.</td>
</tr>
<tr>
<td>value</td>
<td>802.11h channel announcement value.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the 802.11h channel switch announcement.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

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

```
> config 802.11h channelswitch disable
```

### Related Commands

- `show 802.11h`
**config 802.11h powerconstraint**

To configure the 802.11h power constraint value, use the `config 802.11h powerconstraint` command.

```
config 802.11h powerconstraint value
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>value</th>
<th>802.11h power constraint value.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

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

```
> config 802.11h powerconstraint 5
```

**Related Commands**

`show 802.11h`
config 802.11h setchannel

To configure a new channel using 802.11h channel announcement, use the `config 802.11h setchannel` command.

```
config 802.11h setchannel cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>cisco_ap</code></td>
<td>Cisco lightweight access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

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

```
> config 802.11h setchannel ap02
```

**Related Commands**

`show 802.11h`
Configure 802.11 11n Support Commands

Use the `config 802.11 11nsupport` commands to configure settings for an 802.11n network.
config 802.11 11nsupport

To enable 802.11n support on the network, use the `config 802.11 11nsupport` command.

`config 802.11{a | b} 11nsupport {enable | disable}`

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network settings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network settings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>enable</td>
<td>Enables the 802.11n support.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>disable</td>
<td>Disables the 802.11n support.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the 802.11n support on an 802.11a network:

```
> config 802.11a 11nsupport enable
```

**Related Commands**

`config 802.11 11nsupport mcs tx`
`config 802.11 11nsupport a-mpdu tx priority`
`config 802.11a disable network`
`config 802.11a disable`
`config 802.11a channel ap`
`config 802.11a txpower ap`
`config 802.11a chan_width`
config 802.11 11nsupport a-mpdu tx priority

To specify the aggregation method used for 802.11n packets, use the `config 802.11 11nsupport a-mpdu tx priority` command.

```
config 802.11 {a | b} 11nsupport a-mpdu tx priority {0-7 | all} {enable | disable}
```

**Syntax Description**

- `a`: Specifies the 802.11a network.
- `b`: Specifies the 802.11b/g network.
- `0-7`: Specifies the aggregated MAC protocol data unit priority level between 0 through 7.
- `all`: Configures all of the priority levels at once.
- `enable`: Specifies the traffic associated with the priority level uses A-MPDU transmission.
- `disable`: Specifies the traffic associated with the priority level uses A-MSDU transmission.

**Defaults**

All priorities, except 5 and 6, are enabled by default. Priorities 5 and 6 are disabled by default.

**Usage Guidelines**

Aggregation is the process of grouping packet data frames together rather than transmitting them separately. Two aggregation methods are available: Aggregated MAC Protocol Data Unit (A-MPDU) and Aggregated MAC Service Data Unit (A-MSDU). A-MPDU is performed in the software whereas A-MSDU is performed in the hardware.

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

- 1—Background
- 2—Spare
- 0—Best effort
- 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 configure all the priority levels at once so that the traffic associated with the priority level uses A-MSDU transmission:

```
> config 802.11a 11nsupport a-mpdu tx priority all enable
```
config 802.11 11nsupport a-mpdu tx priority

Related Commands

- config 802.11 11nsupport mcs tx
- config 802.11a disable network
- config 802.11a disable
- config 802.11a channel ap
- config 802.11a txpower ap
config 802.11 11nsupport antenna

To configure an access point to use a specific antenna, use the `config 802.11 11nsupport antenna` command.

```
config 802.11{a | b} 11nsupport antenna {tx | rx} cisco_ap {A | B | C} {enable | disable}
```

**Syntax Description**

- **a**: Specifies the 802.11a network.
- **b**: Specifies the 802.11b/g network.
- **tx**: Enables the antenna to transmit.
- **rx**: Enables the antenna to receive.
- **cisco_ap**: Access point.
- **A**: Specifies the right antenna port.
- **B**: Specifies the left antenna port.
- **C**: Specifies the center antenna port.
- **enable**: Enables the configuration.
- **disable**: Disables the configuration.

**Defaults**

None.

**Examples**

This example shows how to configure access point AP1 to use the antenna tx to transmit:

```
> config 802.11a 11nsupport antenna tx AP1 C enable
```

**Related Commands**

- `config 802.11 11nsupport mcs tx`
- `config 802.11a disable network`
- `config 802.11a disable`
- `config 802.11a channel ap`
- `config 802.11a txpower ap`
- `config 802.11a chan_width`
**config 802.11 11nsupport mcs tx**

To specify the modulation and coding scheme (MCS) rates at which data can be transmitted between the access point and the client, use the **config 802.11 11nsupport mcs tx** command.

```plaintext
config 802.11{a | b} 11nsupport mcs tx {0-15} {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th><code>a</code></th>
<th>Specifies the 802.11a network.</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>b</code></td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td><code>11nsupport</code></td>
<td>Specifies support for 802.11n devices.</td>
</tr>
<tr>
<td><code>mcs tx</code></td>
<td>Specifies the modulation and coding scheme data rates as follows:</td>
</tr>
<tr>
<td></td>
<td>- 0 (7 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 1 (14 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 2 (21 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 3 (29 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 4 (43 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 5 (58 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 6 (65 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 7 (72 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 8 (14 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 9 (29 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 10 (43 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 11 (58 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 12 (87 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 13 (116 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 14 (130 Mbps)</td>
</tr>
<tr>
<td></td>
<td>- 15 (144 Mbps)</td>
</tr>
</tbody>
</table>

**enable** Enables this configuration.

**disable** Disables this configuration.

**Defaults** None.

**Examples**

This example shows how to specify MCS rates:

```plaintext
> config 802.11a 11nsupport mcs tx 5 enable
```

**Related Commands**

- config 802.11 11nsupport
- config wlan wmm required
- config 802.11 11nsupport a-mpdu tx priority
config 802.11a disable network
config 802.11a disable
config 802.11a channel ap
config 802.11a txpower ap
config 802.11a chan_width
Configure 802.11 Antenna Commands

Use the config 802.11 antenna commands to configure radio antenna settings for Cisco lightweight access points on different 802.11 networks.
config 802.11 antenna diversity

To configure the diversity option for 802.11 antennas, use the **config 802.11 antenna diversity** command.

```
config 802.11{a | b} antenna diversity {enable | sideA | sideB} cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>a</code></td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td><code>b</code></td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td><code>enable</code></td>
<td>Enables the diversity.</td>
</tr>
<tr>
<td><code>sideA</code></td>
<td>Specifies the diversity between the internal antennas and an external antenna connected to the Cisco lightweight access point left port.</td>
</tr>
<tr>
<td><code>sideB</code></td>
<td>Specifies the diversity between the internal antennas and an external antenna connected to the Cisco lightweight access point right port.</td>
</tr>
<tr>
<td><code>cisco_ap</code></td>
<td>Cisco lightweight access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable antenna diversity for AP01 on an 802.11b network:

```
> config 802.11b antenna diversity enable AP01
```

This example shows how to enable diversity for AP01 on an 802.11a network, using an external antenna connected to the Cisco lightweight access point left port (sideA):

```
> config 802.11a antenna diversity sideA AP01
```

**Related Commands**

- config 802.11 disable
- config 802.11 enable
- config 802.11 antenna extAntGain
- config 802.11 antenna mode
- config 802.11 antenna selection
- Show 802.11 Commands
config 802.11 antenna extAntGain

To configure external antenna gain for an 802.11 network, use the config 802.11 antenna extAntGain command.

```
config 802.11{a | b} antenna extAntGain antenna_gain cisco_ap
```

**Syntax Description**

- **a**: Specifies the 802.11a network.
- **b**: Specifies the 802.11b/g network.
- **antenna_gain**: Antenna gain in 0.5 dBm units (for example, 2.5 dBm = 5).
- **cisco_ap**: Cisco lightweight access point name.

**Defaults**

None.

**Usage Guidelines**

Before you enter the config 802.11 antenna extAntGain command, disable the 802.11 Cisco radio with the config 802.11 disable command.

After you configure the external antenna gain, use the config 802.11 enable command to enable the 802.11 Cisco radio.

**Examples**

This example shows how to configure an 802.11a external antenna gain of 0.5 dBm for AP1:

```
> config 802.11a antenna extAntGain 1 AP1
```

**Related Commands**

- config 802.11 disable
- config 802.11 enable
- config 802.11 antenna diversity
- config 802.11 antenna mode
- config 802.11 antenna selection
- Show 802.11 Commands
**config 802.11 antenna mode**

To configure the Cisco lightweight access point 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, use the `config 802.11 antenna mode` command.

```
config 802.11{a | b} antenna mode {omni | sectorA | sectorB} cisco_ap
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>omni</td>
<td>Specifies to use both internal antennas.</td>
</tr>
<tr>
<td>sectorA</td>
<td>Specifies to use only the side A internal antenna.</td>
</tr>
<tr>
<td>sectorB</td>
<td>Specifies to use only the side B internal antenna.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Cisco lightweight access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure access point AP01 antennas for a 360-degree omnidirectional pattern on an 802.11b network:

```
> config 802.11b antenna mode omni AP01
```

**Related Commands**

- `config 802.11 disable`
- `config 802.11 enable`
- `config 802.11 antenna diversity`
- `config 802.11 antenna extAntGain`
- `config 802.11 antenna selection`
- `Show 802.11 Commands`
config 802.11 antenna selection

To select the internal or external antenna selection for a Cisco lightweight access point on an 802.11 network, use the `config 802.11 antenna selection` command.

```
config 802.11{a | b} antenna selection {internal | external} cisco_ap
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>internal</td>
<td>Specifies the internal antenna</td>
</tr>
<tr>
<td>external</td>
<td>Specifies the external antenna.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Cisco lightweight access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure access point AP02 on an 802.11b network to use the internal antenna:

```
> config 802.11b antenna selection internal AP02
```

**Related Commands**

- `config 802.11 disable`
- `config 802.11 enable`
- `config 802.11 antenna diversity`
- `config 802.11 antenna extAntGain`
- `config 802.11 antenna mode`
- `config 802.11 antenna selection`
- `Show 802.11 Commands`
config 802.11 beaconperiod

To change the beacon period globally for an 802.11a, 802.11b, or other supported 802.11 network, use the `config 802.11 beaconperiod` command.

```plaintext
config 802.11{a | b} beaconperiod time_units
```

**Note**
Disable the 802.11 network before using this command. See the “Usage Guidelines” section.

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>a</th>
<th>Specifies the 802.11a network.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>time_units</td>
<td></td>
<td>Beacon interval in time units (TU). One TU is 1024 microseconds.</td>
</tr>
</tbody>
</table>

**Defaults**
None.

**Usage Guidelines**
In Cisco wireless LAN solution 802.11 networks, all Cisco lightweight access point wireless LANs broadcast a beacon at regular intervals. This beacon notifies clients that the 802.11a 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 `config 802.11 disable` command. After changing the beacon period, enable the 802.11 network by using the `config 802.11 enable` command.

**Examples**
This example shows how to configure an 802.11a network for a beacon period of 120 time units:
```plaintext
> config 802.11a beaconperiod 120
```

**Related Commands**
- `show 802.11a`
- `config 802.11b beaconperiod`
- `config 802.11a disable`
- `config 802.11a enable`
config 802.11 beamforming

To enable or disable beamforming on the network or on individual radios, enter the `config 802.11 beamforming` command.

```
config 802.11{a | b} beamforming {global | ap ap_name} {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>global</td>
<td>Specifies all lightweight access points.</td>
</tr>
<tr>
<td>ap ap_name</td>
<td>Specifies the Cisco access point name.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables beamforming.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables beamforming.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**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 only 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 complementary-code keying (CCK) data rates (1, 2, 5.5, and 11 Mbps).

- Beamforming is supported only on access points that support 802.11n (AP1250 and AP1140).
- 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 802.11a network:

```
> config 802.11a beamforming global enable
```
Related Commands

- show ap config {802.11a | 802.11b}
- show 802.11a
- config 802.11b beaconperiod
- config 802.11a disable
- config 802.11a enable
Configure 802.11 cleanair commands

Use the `config 802.11 cleanair` commands to configure cleanair settings on different 802.11 networks.
config 802.11 cleanair

To enable or disable cleanair for the 802.11 a or 802.11 b/g network, use the config 802.11 cleanair command.

```
config 802.11 cleanair {enable | disable} {network | cisco_ap}
```

- **enable**: Enables the cleanair settings.
- **disable**: Disables the cleanair settings.
- **network**: Configures all 5-GHz Cisco APs.
- **cisco_ap**: Name of the access point to which the command applies.

**Defaults**
Disabled.

**Examples**
This example shows how to enable the cleanair settings on access point ap_24:

```
> config 802.11a cleanair enable ap_24
```

**Related Commands**
config 802.11 cleanair device
config 802.11 cleanair device

To configure cleanair interference device types, use the `config 802.11 cleanair device` command.

```
config 802.11a cleanair device {enable | disable} device_type
```

<table>
<thead>
<tr>
<th>SyntaxDescription</th>
<th>enable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Enables the CleanAir reporting for the interference device type.</td>
</tr>
<tr>
<td><strong>disable</strong></td>
<td></td>
<td>Disables the CleanAir reporting for the interference device type.</td>
</tr>
<tr>
<td><strong>reporting</strong></td>
<td></td>
<td>Configures CleanAir interference device reporting.</td>
</tr>
</tbody>
</table>

**device_type**

Interference device type. The device type are as follows:

- 802.11-nonstd—Devices using nonstandard WiFi channels.
- 802.11-inv—Devices using spectrally inverted WiFi signals.
- superag—802.11 SuperAG devices.
- all—All interference device types.
- cont-tx—Continuous Transmitter.
- dect-like—Digital Enhanced Cordless Communication (DECT) like phone.
- tdd-tx—TDD Transmitter.
- jammer—Jammer.
- canopy—Canopy devices.
- video—Video cameras.
- wimax-mobile—WiMax Mobile.
- wimax-fixed—WiMax Fixed.

**Defaults**

Disabled.

**Examples**

This example shows how to enable the CleanAir reporting for the device type jammer:

```
> config 802.11a cleanair device enable jammer
```

This example shows how to disable the CleanAir reporting for the device type video:

```
> config 802.11a cleanair device disable video
```

This example shows how to enable the CleanAir interference device reporting:

```
> config 802.11a cleanair device reporting enable
```

**Related Commands**

`config 802.11 cleanair`
config 802.11 cleanair alarm

To configure the triggering of the air quality alarms, use the `config 802.11 cleanair alarm` command.

```plaintext
config 802.11 cleanair alarm
  { air-quality {disable | enable | threshold threshold}
  device {device_type | all} | enable {device_type | all} | reporting [enable | disable] }
```

### Syntax Description

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>air-quality</td>
<td>Configures the 5-GHz air quality alarm.</td>
</tr>
<tr>
<td>device</td>
<td>Configures the 5-GHz cleanair interference devices alarm.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the 5-GHz air quality alarm.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the 5-GHz air quality alarm.</td>
</tr>
<tr>
<td>threshold</td>
<td>Configure the 5-GHz air quality alarm threshold.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the 5-GHz CleanAir alarm for the interference device type.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the 5-GHz CleanAir alarm for the interference device type.</td>
</tr>
<tr>
<td>reporting</td>
<td>Configures the 5-GHz CleanAir interference devices alarm reporting.</td>
</tr>
<tr>
<td>threshold</td>
<td>Air quality alarm threshold (1 is bad air quality, and 100 is good air quality).</td>
</tr>
<tr>
<td>device_type</td>
<td>Device types. The device types are as follows:</td>
</tr>
<tr>
<td></td>
<td>• 802.11-nonstd—Devices using nonstandard WiFi channels.</td>
</tr>
<tr>
<td></td>
<td>• 802.11-inv—Devices using spectrally inverted WiFi signals.</td>
</tr>
<tr>
<td></td>
<td>• superag—802.11 SuperAG devices.</td>
</tr>
<tr>
<td></td>
<td>• all —All interference device types.</td>
</tr>
<tr>
<td></td>
<td>• cont-tx—Continuous Transmitter.</td>
</tr>
<tr>
<td></td>
<td>• dect-like—Digital Enhanced Cordless Communication (DECT) like phone.</td>
</tr>
<tr>
<td></td>
<td>• tdd-tx—TDD Transmitter.</td>
</tr>
<tr>
<td></td>
<td>• jammer—Jammer.</td>
</tr>
<tr>
<td></td>
<td>• canopy—Canopy devices.</td>
</tr>
<tr>
<td></td>
<td>• video—Video cameras.</td>
</tr>
<tr>
<td></td>
<td>• wimax-mobile—WiMax Mobile.</td>
</tr>
<tr>
<td></td>
<td>• wimax-fixed—WiMax Fixed.</td>
</tr>
<tr>
<td>all</td>
<td>Configures all the device types at once.</td>
</tr>
</tbody>
</table>

### Defaults

Enabled.

### Examples

This example shows how to enable the CleanAir alarm to monitor the air quality:

```plaintext
> config 802.11a cleanair alarm air-quality enable
```

This example shows how to enable the CleanAir alarm for the device type video:

```plaintext
> config 802.11a cleanair alarm device_type all reporting enable
```
> config 802.11a cleanair alarm device enable video

This example shows how to enable alarm reporting for the CleanAir interference devices:
> config 802.11a cleanair alarm device reporting enable

**Related Commands**
config 802.11 cleanair
Configure 802.11 CAC Commands

Use the `config 802.11 cac` commands to configure Call Admission Control (CAC) protocol settings.
config 802.11 cac video acm

To enable or disable video Call Admission Control (CAC) for the 802.11a or 802.11b/g network, use the `config 802.11 cac video acm` command.

```
config 802.11{a | b} cac video acm {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables video CAC settings.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables video CAC settings.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Usage Guidelines**

Call Admission Control (CAC) commands require that the WLAN you are planning to modify is configured for 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 `config wlan disable wlan_id` command.
- Disable the radio network you wish to configure by entering the `config 802.11{a | b} disable network` command.
- Save the new configuration by entering `save config` command.
- Enable voice or video CAC for the network you wish to configure by entering the `config 802.11{a | b} cac voice acm enable`, or `config 802.11{a | b} cac video acm enable` commands.

For complete instructions, see the “Configuring Voice and Video Parameters” section in the “Configuring Controller Settings” chapter of the *Cisco wireless LAN controller Configuration Guide* for your release.

**Examples**

This example shows how to enable the video CAC for the 802.11a network:

```
> config 802.11a cac video acm enable
```

This example shows how to disable the video CAC for the 802.11b network:

```
> config 802.11b cac video acm disable
```

**Related Commands**

- `config 802.11 cac video max-bandwidth`
- `config 802.11 cac video roam-bandwidth`
- `config 802.11 cac video tspec-inactivity-timeout`
Chapter 2  CLI Commands

config 802.11 cac video max-bandwidth

To set the percentage of the maximum bandwidth allocated to clients for video applications on the 802.11a or 802.11b/g network, use the `config 802.11 cac video max-bandwidth` command.

```
config 802.11{a | b} cac video max-bandwidth bandwidth
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>a</code></td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td><code>b</code></td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td><code>bandwidth</code></td>
<td>Bandwidth percentage value from 5 to 85%.</td>
</tr>
</tbody>
</table>

**Defaults**

0%.

**Usage Guidelines**

The maximum radio frequency (RF) bandwidth cannot exceed 85% for voice and video. Once the client reaches the value specified, the access point rejects new calls on this network.

*Note*  If this parameter is set to zero (0), the controller assumes that you do not want to allocate any bandwidth and allows all bandwidth requests.

Call Admission Control (CAC) commands require that the WLAN you are planning to modify is configured for 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 `config wlan disable wlan_id` command.
- Disable the radio network you wish to configure by entering the `config 802.11{a | b} disable network` command.
- Save the new configuration by entering the `save config` command.
- Enable voice or video CAC for the network you wish to configure by entering the `config 802.11{a | b} cac voice acm enable`, or `config 802.11{a | b} cac video acm enable` commands.

For complete instructions, see the “Configuring Voice and Video Parameters” section in the “Configuring Controller Settings” chapter of the *Cisco wireless LAN controller Configuration Guide* for your release.

**Examples**

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

```
> config 802.11a cac video max-bandwidth 50
```
config 802.11 cac video max-bandwidth

Related Commands
- config 802.11 cac video acm
- config 802.11 cac video roam-bandwidth
- config 802.11 cac voice stream-size
- config 802.11 cac voice roam-bandwidth
**config 802.11 cac video roam-bandwidth**

To configure the percentage of the maximum allocated bandwidth reserved for roaming video clients on the 802.11a or 802.11b/g network, use the `config 802.11 cac video roam-bandwidth` command.

```
config 802.11{a | b} cac video roam-bandwidth bandwidth
```

**Syntax Description**
- **a** Specifies the 802.11a network.
- **b** Specifies the 802.11b/g network.
- **bandwidth** Bandwidth percentage value from 5 to 85%.

**Defaults**
0%.

**Usage Guidelines**
The controller reserves the specified bandwidth from the maximum allocated bandwidth for roaming video clients.

**Note**
If this parameter is set to zero (0), the controller assumes that you do not want to do any bandwidth allocation and, therefore, allows all bandwidth requests.

Call Admission Control (CAC) commands require that the WLAN you are planning to modify is configured for 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 `config wlan disable wlan_id` command.
- Disable the radio network you wish to configure by entering the `config 802.11{a | b} disable network` command.
- Save the new configuration by entering the `save config` command.
- Enable voice or video CAC for the network you wish to configure by entering the `config 802.11{a | b} cac voice acm enable` or `config 802.11{a | b} cac video acm enable` command.

For complete instructions, see the “Configuring Voice and Video Parameters” section in the “Configuring Controller Settings” chapter of the *Cisco wireless LAN controller Configuration Guide* for your release.

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

```
> config 802.11a cac video roam-bandwidth 10
```
config 802.11 cac video roam-bandwidth

Related Commands

- config 802.11 cac video acm
- config 802.11 cac video max-bandwidth
- config 802.11 cac video tspec-inactivity-timeout
config 802.11 cac video tspec-inactivity-timeout

To process or ignore the Wi-Fi Multimedia (WMM) traffic specifications (TSPEC) inactivity timeout received from an access point, use the `config 802.11 cac video tspec-inactivity-timeout` command.

`config 802.11\{a | b\} cac video tspec-inactivity-timeout \{enable | ignore\}`

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>ab</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>enable</td>
<td>Processes the TSPEC inactivity timeout messages.</td>
</tr>
<tr>
<td>ignore</td>
<td>Ignores the TSPEC inactivity timeout messages.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled (ignore).

**Usage Guidelines**

Call Admission Control (CAC) commands require that the WLAN you are planning to modify is configured for 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 `config wlan disable wlan_id` command.
- Disable the radio network you wish to configure by entering the `config 802.11\{a | b\} disable network` command.
- Save the new configuration by entering the `save config` command.
- Enable voice or video CAC for the network you wish to configure by entering the `config 802.11\{a | b\} cac voice acm enable` or `config 802.11\{a | b\} cac video acm enable` commands.

For complete instructions, see the “Configuring Voice and Video Parameters” section in the “Configuring Controller Settings” chapter of the `Cisco wireless LAN controller Configuration Guide` for your release.

**Examples**

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

`> config 802.11a cac video tspec-inactivity-timeout enable`

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

`> config 802.11b cac video tspec-inactivity-timeout ignore`

**Related Commands**

- `config 802.11 cac video acm`
- `config 802.11 cac video max-bandwidth`
- `config 802.11 cac video roam-bandwidth`
config 802.11 cac voice acm

To enable or disable bandwidth-based voice Call Admission Control (CAC) for the 802.11a or 802.11b/g network, use the `config 802.11 cac voice acm` command.

```
config 802.11{a | b} cac voice acm {enable | disable}
```

**Syntax Description**

- **a**
  - Specifies the 802.11a network.
- **b**
  - Specifies the 802.11b/g network.
- **enable**
  - Enables the bandwidth-based CAC.
- **disable**
  - Disables the bandwidth-based CAC.

**Defaults**

Disabled.

**Usage Guidelines**

Call Admission Control (CAC) commands require that the WLAN you are planning to modify is configured for 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 `config wlan disable wlan_id` command.
- Disable the radio network you wish to configure by entering the `config 802.11{a | b} disable network` command.
- Save the new configuration by entering the `save config` command.
- Enable voice or video CAC for the network you wish to configure by entering the `config 802.11{a | b} cac voice acm enable` or `config 802.11{a | b} cac video acm enable` commands.

For complete instructions, see the “Configuring Voice and Video Parameters” section in the “Configuring Controller Settings” chapter of the Cisco wireless LAN controller Configuration Guide for your release.

**Examples**

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

```
> config 802.11a cac voice acm enable
```

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

```
> config 802.11b cac voice acm disable
```

**Related Commands**

- `config 802.11 cac video acm`
config 802.11 cac voice max-bandwidth

To set the percentage of the maximum bandwidth allocated to clients for voice applications on the 802.11a or 802.11b/g network, use the **config 802.11 cac voice max-bandwidth** command.

```
config 802.11{a | b} cac voice max-bandwidth bandwidth
```

**Syntax Description**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td><strong>bandwidth</strong></td>
<td>Bandwidth percentage value from 5 to 85%.</td>
</tr>
</tbody>
</table>

**Defaults**

0%.

**Usage Guidelines**

The maximum radio frequency (RF) bandwidth cannot exceed 85% for voice and video. Once the client reaches the value specified, the access point rejects new calls on this network.

Call Admission Control (CAC) commands require that the WLAN you are planning to modify is configured for 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 **config wlan disable wlan_id** command.
- Disable the radio network you wish to configure by entering the **config 802.11{a | b} disable network** command.
- Save the new configuration by entering the **save config** command.
- Enable voice or video CAC for the network you wish to configure by entering the **config 802.11{a | b} cac voice acm enable** or **config 802.11{a | b} cac video acm enable** commands.

For complete instructions, see the “Configuring Voice and Video Parameters” section in the “Configuring Controller Settings” chapter of the *Cisco wireless LAN controller Configuration Guide* for your release.

**Examples**

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

```
> config 802.11a cac voice max-bandwidth 50
```

**Related Commands**

- **config 802.11 cac voice acm**
- **config 802.11 cac voice load-based**
- **config 802.11 cac voice roam-bandwidth**
- **config 802.11 cac voice stream-size**
- **config 802.11 cac voice tspec-inactivity-timeout**
- **config 802.11 exp-bwreq**
- **config 802.11 tsm**
config 802.11 cac voice max-bandwidth

config wlan
save config
show wlan
show wlan summary
config 802.11 cac voice roam-bandwidth

To configure the percentage of the maximum allocated bandwidth reserved for roaming voice clients on the 802.11a or 802.11b/g network, use the **config 802.11 cac voice roam-bandwidth** command.

```
config 802.11{a | b} cac voice roam-bandwidth bandwidth
```

**Syntax Description**

- `a`: Specifies the 802.11a network.
- `b`: Specifies the 802.11b/g network.
- `bandwidth`: Bandwidth percentage value from 0 to 85%.

**Defaults**

85%.

**Usage Guidelines**

The maximum radio frequency (RF) bandwidth cannot exceed 85% for voice and video. The controller reserves the specified bandwidth from the maximum allocated bandwidth for roaming voice clients.

- **Note**: If this parameter is set to zero (0), the controller assumes you do not want to allocate any bandwidth and therefore allows all bandwidth requests.

Call Admission Control (CAC) commands require that the WLAN you are planning to modify is configured for 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 **config wlan disable wlan_id** command.
- Disable the radio network you wish to configure by entering the **config 802.11{a | b} disable network** command.
- Save the new configuration by entering the **save config** command.
- Enable voice or video CAC for the network you wish to configure by entering the **config 802.11{a | b} cac voice acm enable** or **config 802.11{a | b} cac video acm enable** commands.

For complete instructions, see the “Configuring Voice and Video Parameters” section in the “Configuring Controller Settings” chapter of the *Cisco wireless LAN controller Configuration Guide* for your release.

**Examples**

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

```
> config 802.11a cac voice roam-bandwidth 10
```
config 802.11 cac voice roam-bandwidth

**Related Commands**

- config 802.11 cac voice acm
- config 802.11 cac voice max-bandwidth
- config 802.11 cac voice stream-size
config 802.11 cac voice tspec-inactivity-timeout

To process or ignore the Wi-Fi Multimedia (WMM) traffic specifications (TSPEC) inactivity timeout received from an access point, use the `config 802.11 cac voice tspec-inactivity-timeout` command.

```
> config 802.11a cac voice tspec-inactivity-timeout enable
> config 802.11b cac voice tspec-inactivity-timeout ignore
```

### Syntax Description

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>enable</td>
<td>Processes the TSPEC inactivity timeout messages.</td>
</tr>
<tr>
<td>ignore</td>
<td>Ignores the TSPEC inactivity timeout messages.</td>
</tr>
</tbody>
</table>

### Usage Guidelines

Call Admission Control (CAC) commands require that the WLAN you are planning to modify is configured for 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 `config wlan disable wlan_id` command.
- Disable the radio network you wish to configure by entering the `config 802.11 {a | b} disable network` command.
- Save the new configuration by entering the `save config` command.
- Enable voice or video CAC for the network you wish to configure by entering the `config 802.11 {a | b} cac voice acm enable` or `config 802.11 {a | b} cac video acm enable` commands.

For complete instructions, see the “Configuring Voice and Video Parameters” section in the “Configuring Controller Settings” chapter of the *Cisco wireless LAN controller Configuration Guide* for your release.

### Examples

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

```
> config 802.11a cac voice tspec-inactivity-timeout enable
```

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

```
> config 802.11b cac voice tspec-inactivity-timeout ignore
```
config 802.11 cac voice tspec-inactivity-timeout

Related Commands

config 802.11 cac voice acm,
config 802.11 cac voice load-based
config 802.11 cac voice max-bandwidth
config 802.11 cac voice roam-bandwidth
config 802.11 cac voice stream-size
config 802.11 cac voice load-based

To enable or disable load-based Call Admission Control (CAC) for the 802.11a or 802.11b/g network, use the `config 802.11 cac voice load-based` command.

```
config 802.11{a | b} cac voice load-based {enable | disable}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables load-based CAC.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables load-based CAC.</td>
</tr>
</tbody>
</table>

### Defaults

Disabled.

### Usage Guidelines

Call Admission Control (CAC) commands require that the WLAN you are planning to modify is configured for 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 `config wlan disable wlan_id` command.
- Disable the radio network you wish to configure by entering the `config 802.11{a | b} disable network` command.
- Save the new configuration by entering the `save config` command.
- Enable voice or video CAC for the network you wish to configure by entering the `config 802.11{a | b} cac voice acm enable` or `config 802.11{a | b} cac video acm enable` commands.

For complete instructions, see the “Configuring Voice and Video Parameters” section in the “Configuring Controller Settings” chapter of the *Cisco wireless LAN controller Configuration Guide* for your release.

### Examples

This example shows how to enable the voice load-based CAC parameters:

```
> config 802.11a cac voice load-based enable
```

This example shows how to disable the voice load-based CAC parameters:

```
> config 802.11b cac voice load-based disable
```

### Related Commands

- `config 802.11 cac voice acm`
- `config 802.11 cac voice max-bandwidth`
- `config 802.11 cac voice roam-bandwidth`
- `config 802.11 cac voice stream-size`
- `config 802.11 cac voice tspec-inactivity-timeout`
config 802.11 cac voice max-calls

**Note**  Do not use the **config 802.11 cac voice max-calls** command if the SIP call snooping feature is disabled and if the SIP based CAC requirements are not met.

To configure the maximum number of voice call supported by the radio, use the **config 802.11 cac voice max-calls** command.

```
config 802.11{a | b} cac voice max-calls number
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
<td></td>
</tr>
<tr>
<td>number</td>
<td>Number of calls to be allowed per radio.</td>
<td></td>
</tr>
</tbody>
</table>

**Defaults**  0, which means that there is no maximum limit check for the number of calls.

**Usage Guidelines**  Call Admission Control (CAC) commands require that the WLAN you are planning to modify is configured for 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 **config wlan disable wlan_id** command.
- Disable the radio network you wish to configure by entering the **config 802.11{a | b} disable network** command.
- Save the new configuration by entering the **save config** command.
- Enable voice or video CAC for the network you wish to configure by entering the **config 802.11{a | b} cac voice acm enable** or **config 802.11{a | b} cac video acm enable** commands.

For complete instructions, see the “Configuring Voice and Video Parameters” section in the “Configuring Controller Settings” chapter of the *Cisco wireless LAN controller Configuration Guide* for your release.

**Examples**  This example shows how to configure the maximum number of voice calls supported by radio:

```
> config 802.11a cac voice max-calls 10
```

**Related Commands**
- **config 802.11 cac voice acm**
- **config 802.11 cac voice load-based**
- **config 802.11 cac voice max-bandwidth**
config 802.11 cac voice roam-bandwidth
config 802.11 cac voice tspec-inactivity-timeout
config 802.11 exp-bwreq
config 802.11 cac voice sip bandwidth

**Note**
SIP bandwidth and sample intervals are used to compute per call bandwidth in case of the SIP based CAC.

To configure the bandwidth that is required per call for the 802.11a or 802.11b/g network, use the `config 802.11 cac voice sip bandwidth` command.

```config 802.11{a | b} cac voice sip bandwidth bw_kbps sample-interval number_msecs```

<table>
<thead>
<tr>
<th><strong>Syntax Description</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><code>bw_kbps</code></td>
<td>Bandwidth in kbps.</td>
</tr>
<tr>
<td><code>sample-interval</code></td>
<td>Specifies the packetization interval for SIP codec.</td>
</tr>
<tr>
<td><code>number_msecs</code></td>
<td>Packetization sample interval in msecs. The sample interval for SIP codec is 20 seconds.</td>
</tr>
</tbody>
</table>

**Defaults**
None.

**Usage Guidelines**
Call Admission Control (CAC) commands require that the WLAN you are planning to modify is configured for 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 `config wlan disable wlan_id` command.
- Disable the radio network you wish to configure by entering the `config 802.11{a | b} disable network` command.
- Save the new configuration by entering the `save config` command.
- Enable voice or video CAC for the network you wish to configure by entering the `config 802.11{a | b} cac voice acm enable` or `config 802.11{a | b} cac video acm enable` commands.

For complete instructions, see the “Configuring Voice and Video Parameters” section in the “Configuring Controller Settings” chapter of the *Cisco wireless LAN controller Configuration Guide* for your release.

**Examples**
This example shows how to configure the bandwidth and voice packetization interval for a SIP codec:

```
> config 802.11a cac voice sip bandwidth 10 sample-interval 40
```
config 802.11 cac voice sip bandwidth

Related Commands

- config 802.11 cac voice acm
- config 802.11 cac voice load-based
- config 802.11 cac voice max-bandwidth
- config 802.11 cac voice roam-bandwidth
- config 802.11 cac voice tspec-inactivity-timeout
- config 802.11 exp-bwreq
config 802.11 cac voice sip codec

To configure the codec name and sample interval as parameters and to calculate the required bandwidth per call for the 802.11a or 802.11b/g network, use the `config 802.11 cac voice sip codec` command.

```
config 802.11{a | b} cac voice sip codec {g711 | g729} sample-interval number_msecs
```

<table>
<thead>
<tr>
<th>Syntax/Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>g711</td>
<td>Specifies CAC parameters for the SIP G711 codec.</td>
</tr>
<tr>
<td>g729</td>
<td>Specifies CAC parameters for the SIP G729 codec.</td>
</tr>
<tr>
<td>sample-interval</td>
<td>Specifies the packetization interval for SIP codec.</td>
</tr>
<tr>
<td>number_msecs</td>
<td>Packetization interval in msecs. The sample interval for SIP codec value is 20 seconds.</td>
</tr>
</tbody>
</table>

**Defaults**

g711.

**Usage Guidelines**

Call Admission Control (CAC) commands require that the WLAN you are planning to modify is configured for 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 `config wlan disable wlan_id` command.
- Disable the radio network you wish to configure by entering the `config 802.11{a | b} disable network` command.
- Save the new configuration by entering the `save config` command.
- Enable voice or video CAC for the network you wish to configure by entering the `config 802.11{a | b} cac voice acm enable` or `config 802.11{a | b} cac video acm enable` commands.

For complete instructions, see the “Configuring Voice and Video Parameters” section in the “Configuring Controller Settings” chapter of the *Cisco wireless LAN controller Configuration Guide* for your release.

**Examples**

This example shows how to configure the codec name and sample interval as parameters for SIP G711 codec:

```
> config 802.11a cac voice sip codec g729 sample-interval 40
```

This example shows how to configure the codec name and sample interval as parameters for SIP G729 codec:

```
> config 802.11b cac voice sip codec 9711 sample-interval 10
```
config 802.11 cac voice sip codec

Related Commands
config 802.11 cac voice acm
config 802.11 cac voice load-based
config 802.11 cac voice max-bandwidth
config 802.11 cac voice roam-bandwidth
config 802.11 cac voice tspec-inactivity-timeout
config 802.11 exp-bwreq
config 802.11 cac voice stream-size

To configure the number of aggregated voice Wi-Fi Multimedia (WMM) traffic specification (TSPEC) streams at a specified data rate for the 802.11a or 802.11b/g network, use the config 802.11 cac voice stream-size command.

```
config 802.11{a | b} cac voice stream-size stream_size number mean_datarate max-streams
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>stream-size</td>
<td>Configures the maximum data rate for the stream.</td>
</tr>
<tr>
<td>stream_size</td>
<td>Range of stream size is between 84000 and 92100.</td>
</tr>
<tr>
<td>number</td>
<td>Number (1 to 5) of voice streams.</td>
</tr>
<tr>
<td>mean_datarate</td>
<td>Configures the mean data rate.</td>
</tr>
<tr>
<td>max-streams</td>
<td>Configures the mean data rate of a voice stream.</td>
</tr>
<tr>
<td>mean_datarate</td>
<td>Mean data rate (84 to 91.2 kbps) of a voice stream.</td>
</tr>
</tbody>
</table>

**Defaults**

The default number of streams is 2 and the mean data rate of a stream is 84 kbps.

**Usage Guidelines**

Call Admission Control (CAC) commands require that the WLAN you are planning to modify is configured for 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 `config wlan disable wlan_id` command.
- Disable the radio network you wish to configure by entering the `config 802.11{a | b} disable network` command.
- Save the new configuration by entering the `save config` command.
- Enable voice or video CAC for the network you wish to configure by entering the `config 802.11{a | b} cac voice acm enable` or `config 802.11{a | b} cac video acm enable` commands.

For complete instructions, see the “Configuring Voice and Video Parameters” section in the “Configuring Controller Settings” chapter of the Cisco wireless LAN controller Configuration Guide for your release.

**Examples**

This example shows how to configure the number of aggregated voice traffic specifications stream with the stream size 5 and the mean data rate of 85000 kbps:

```
> config 802.11a cac voice stream-size 5 max-streams size 85
```
config 802.11 cac voice stream-size

**Related Commands**

- config 802.11 cac voice acm
- config 802.11 cac voice load-based
- config 802.11 cac voice max-bandwidth
- config 802.11 cac voice roam-bandwidth
- config 802.11 cac voice tspec-inactivity-timeout
- config 802.11 exp-bwreq
config 802.11 channel

To configure an 802.11 network or a single access point for automatic or manual channel selection, use the `config 802.11 channel` command.

```
config 802.11{a | b} channel {global [auto | once | off]} | ap {ap_name [global | channel]}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>auto</td>
<td>(Optional) Specifies that the channel is automatically set by Radio Resource Management (RRM) for the 802.11a radio.</td>
</tr>
<tr>
<td>once</td>
<td>(Optional) Specifies that the channel is automatically set once by RRM.</td>
</tr>
<tr>
<td>off</td>
<td>(Optional) Specifies that the automatic channel selection by RRM is disabled.</td>
</tr>
<tr>
<td>ap_name</td>
<td>Access point name.</td>
</tr>
<tr>
<td>global</td>
<td>Specifies the 802.11a operating channel that is automatically set by RRM and overrides the existing configuration setting.</td>
</tr>
<tr>
<td>channel</td>
<td>Manual channel number to be used by the access point. The supported channels depend on the specific access point used and the regulatory region.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

When configuring 802.11 channels for a single lightweight access point, enter the `config 802.11 disable` command to disable the 802.11 network. Enter the `config 802.11 channel` command to set automatic channel selection by Radio Resource Management (RRM) or manually set the channel for the 802.11 radio, and enter the `config 802.11 enable` command to enable the 802.11 network.

**Note**

See the *Channels and Maximum Power Settings for Cisco Aironet Lightweight Access Points* document for the channels supported by your access point. The power levels and available channels are defined by the country code setting and are regulated on a country-by-country basis.

**Examples**

This example shows how to have RRM automatically configure the 802.11a channels for automatic channel configuration based on the availability and interference:

```
> config 802.11a channel global auto
```

This example shows how to configure the 802.11b channels one time based on the availability and interference:

```
> config 802.11b channel global once
```

This example shows how to turn 802.11a automatic channel configuration off:

```
> config 802.11a channel global off
```
This example shows how to configure the 802.11b channels in access point AP01 for automatic channel configuration:

```
> config 802.11b channel AP01 global
```

This example shows how to configure the 802.11a channel 36 in access point AP01 as the default channel:

```
> config 802.11a channel AP01 36
```

**Related Commands**

- `show 802.11a`
- `config 802.11a disable`
- `config 802.11a enable`
- `config 802.11b channel`
- `config country`
**config 802.11 channel ap**

To set the operating radio channel for an access point, use the **config 802.11 channel ap** command.

```
config 802.11{a | b} channel ap cisco_ap {global | channel_no}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Name of the Cisco access point.</td>
</tr>
<tr>
<td>global</td>
<td>Enables auto-RF on the designated access point.</td>
</tr>
<tr>
<td>channel_no</td>
<td>Default channel from 1 to 26, inclusive.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable auto-RF for access point AP01 on an 802.11b network:

```
> config 802.11b channel ap ap01 global
```

**Related Commands**

- show 802.11a
- config 802.11b channel
- config country
config 802.11 chan_width

To configure the channel width for a particular access point, use the `config 802.11 chan_width` command.

```
config 802.11{a | b} chan_width cisco_ap {20 | 40}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>a</code></td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td><code>b</code></td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td><code>cisco_ap</code></td>
<td>Access point.</td>
</tr>
<tr>
<td><code>20</code></td>
<td>Allows the radio to communicate using only 20-MHz channels. Choose this option for legacy 802.11a radios, 20-MHz 802.11n radios, or 40-MHz 802.11n radios that you want to operate using only 20-MHz channels.</td>
</tr>
<tr>
<td><code>40</code></td>
<td>Allows 40-MHz 802.11n radios to communicate using two adjacent 20-MHz channels bonded together.</td>
</tr>
</tbody>
</table>

**Defaults**
The default channel width is **20**.

**Usage Guidelines**
This parameter can be configured only if the primary channel is statically assigned.

⚠️ **Caution**
We recommend that you do not configure 40-MHz channels in the 2.4-GHz radio band because severe co-channel interference can occur.

Statically configuring an access point’s radio for 20- or 40-MHz mode overrides the globally configured DCA channel width setting (configured by using the `config advanced 802.11 channel dca chan-width-11n` command). If you change the static configuration back to global on the access point radio, the global DCA configuration overrides the channel width configuration that the access point was previously using.

**Examples**
This example shows how to configure the channel width for access point AP01 on an 802.11 network using 40-MHz channels:

```
> config 802.11a chan_width AP01 40
```

**Related Commands**
- `config 802.11 11nsupport`
- `config wlan wmm required`
- `config 802.11 11nsupport a-mpdu tx priority`
- `config 802.11a disable network`
- `config 802.11a disable`
- `config 802.11a channel ap`
config 802.11 chan_width
config 802.11b disable
config 802.11b channel ap
config 802.11a txpower ap
config 802.11 disable

To disable radio transmission for an entire 802.11 network or for an individual Cisco radio, use the `config 802.11 disable` command.

```
config 802.11{a | b} disable {network | cisco_ap}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>a</th>
<th>Specifies the 802.11a network.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td></td>
<td>network</td>
<td>Disables transmission for the entire 802.11a network.</td>
</tr>
<tr>
<td></td>
<td>cisco_ap</td>
<td>Individual Cisco lightweight access point radio.</td>
</tr>
</tbody>
</table>

**Defaults**

The transmission is enabled for the entire network by default.

**Usage Guidelines**

Note: You must use this command to disable the network before using many config 802.11 commands.

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

**Examples**

This example shows how to disable the entire 802.11a network:

```
> config 802.11a disable network
```

This example shows how to disable access point AP01 802.11b transmissions:

```
> config 802.11b disable AP01
```

**Related Commands**

- `show sysinfo`
- `show 802.11a`
- `config 802.11a enable`
- `config 802.11a disable`
- `config 802.11b enable`
- `config 802.11b disable`
- `config 802.11a beaconperiod`
config 802.11 dtpc

To enable or disable the Dynamic Transmit Power Control (DTPC) setting for an 802.11 network, use the config 802.11 dtpc command.

```
config 802.11{a | b} dtpc {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specified the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specified the 802.11b/g network.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the support for this command.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the support for this command.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to disable DTPC for an 802.11a network:

```
> config 802.11a dtpc disable
```

**Related Commands**

- show 802.11a
- config 802.11a beaconperiod
- config 802.11a disable
- config 802.11a enable
config 802.11 enable

To enable radio transmission for an entire 802.11 network or for an individual Cisco radio, use the `config 802.11 enable` command.

```
config 802.11{a | b} enable {network | cisco_ap}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>network</td>
<td>Disables transmission for the entire 802.11a network.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Individual Cisco lightweight access point radio.</td>
</tr>
</tbody>
</table>

### Defaults

The transmission is enabled for the entire network by default.

### Usage Guidelines

*Note:* Use this command in conjunction with the `config 802.11 disable` 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 for the entire 802.11a network:

```
> config 802.11a enable network
```

This example shows how to enable radio transmission for AP1 on an 802.11b network:

```
> config 802.11b enable AP1
```

### Related Commands

- `show sysinfo`
- `show 802.11a`
- `config wlan radio`
- `config 802.11a disable`
- `config 802.11b disable`
- `config 802.11b enable`
- `config 802.11b 11gSupport enable`
- `config 802.11b 11gSupport disable`
**config 802.11 exp-bwreq**

To enable or disable the Cisco Client eXtension (CCX) version 5 expedited bandwidth request feature for an 802.11 radio, use the **config 802.11 exp-bwreq** command.

```
config 802.11{a | b} exp-bwreq {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the expedited bandwidth request feature.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the expedited bandwidth request feature.</td>
</tr>
</tbody>
</table>

**Defaults**

The expedited bandwidth request feature is disabled by default.

**Usage Guidelines**

When this command is enabled, the controller configures all joining access points for this feature.

**Examples**

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

```
> config 802.11a exp-bwreq enable
```

```
Cannot change Exp Bw Req mode while 802.11a network is operational.
```

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

```
> config 802.11a exp-bwreq disable
```

**Related Commands**

- show 802.11a
- show ap stats 802.11a
config 802.11 fragmentation

To configure the fragmentation threshold on an 802.11 network, use the `config 802.11 fragmentation` command.

```
config 802.11{a | b} fragmentation threshold
```

**Note** This command can only be used when the network is disabled using the `config 802.11 disable` command.

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>threshold</td>
<td>Number between 256 and 2346 bytes (inclusive).</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the fragmentation threshold on an 802.11a network with the threshold number of 6500 bytes:

```
> config 802.11a fragmentation 6500
```

**Related Commands**

- `config 802.11b fragmentation`
- `show 802.11b, show ap auto-rtf`
**config 802.11 l2roam rf-params**

To configure 802.11a or 802.11b/g Layer 2 client roaming parameters, use the `config 802.11 l2roam rf-params` command.

```
config 802.11{a | b} l2roam rf-params {default | custom min_rssi roam_hyst scan_thresh trans_time}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>default</td>
<td>Restores Layer 2 client roaming RF parameters to default values.</td>
</tr>
<tr>
<td>custom</td>
<td>Configures custom Layer 2 client roaming RF parameters.</td>
</tr>
<tr>
<td>min_rssi</td>
<td>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.</td>
</tr>
<tr>
<td>roam_hyst</td>
<td>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.</td>
</tr>
<tr>
<td>scan_thresh</td>
<td>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.</td>
</tr>
<tr>
<td>trans_time</td>
<td>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.</td>
</tr>
</tbody>
</table>

**Note** For high-speed client roaming applications in outdoor mesh environments, we recommend that you set the transition time to 1 second.

**Defaults**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>min_rssi</td>
<td>–85</td>
</tr>
<tr>
<td>roam_hyst</td>
<td>2</td>
</tr>
<tr>
<td>scan_thresh</td>
<td>–72</td>
</tr>
<tr>
<td>trans_time</td>
<td>5</td>
</tr>
</tbody>
</table>
Usage Guidelines
For high-speed client roaming applications in outdoor mesh environments, we recommend that you set the *trans_time* to 1 second.

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

```
> config 802.11a l2roam rf-params custom -80 2 -70 7
```

Related Commands
- `show advanced 802.11 l2roam`
- `show l2tp`
config 802.11 rate

To set mandatory and supported operational data rates for an 802.11 network, use the **config 802.11 rate** command.

```plaintext
config 802.11(a | b) rate {disabled | mandatory | supported} rate
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>disabled</td>
<td>Disables a specific data rate.</td>
</tr>
<tr>
<td>mandatory</td>
<td>Specifies that a client supports the data rate in order to use the network.</td>
</tr>
<tr>
<td>supported</td>
<td>Specifies to allow any associated client that supports the data rate to use the network.</td>
</tr>
<tr>
<td>rate</td>
<td>Rate value of 6, 9, 12, 18, 24, 36, 48, or 54 Mbps.</td>
</tr>
</tbody>
</table>

**Defaults**
None.

**Usage Guidelines**
The data rates set with this command are negotiated between the client and the Cisco wireless LAN controller. If the data rate is set to **mandatory**, the client must support it in order to use the network. If a data rate is set as **supported** by the Cisco wireless LAN controller, any associated client that also supports that rate may communicate with the Cisco lightweight access point using that rate. It is not required that a client is able to use all the rates marked **supported** in order to associate.

**Examples**
This example shows how to set the 802.11b transmission at a mandatory rate at 12 Mbps:

```plaintext
> config 802.11b rate mandatory 12
```

**Related Commands**
- `show ap config 802.11a`
- `config 802.11b rate`
**config 802.11 tsm**

To enable or disable the video Traffic Stream Metric (TSM) option for the 802.11a or 802.11b/g network, use the `config 802.11 tsm` command.

```
config 802.11{a | b} tsm {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the video TSM settings.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the video TSM settings.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Examples**

This example shows how to enable the video TSM option for the 802.11b/g network:

```
> config 802.11a tsm enable
```

This example shows how to disable the video TSM option for the 802.11b/g network:

```
> config 802.11b tsm disable
```

**Related Commands**

- `show ap stats`
- `show client tsm`
config 802.11 txPower

To configure the transmit power level for all access points or a single access point in an 802.11 network, use the **config 802.11 txPower** command.

```plaintext
config 802.11a txPower {global [auto | once | power_level]}
config 802.11b txPower {ap ap_name [global | power_level]}
```

**Syntax Description**

- **a**
  - Specifies the 802.11a network.
- **b**
  - Specifies the 802.11b/g network.
- **global**
  - Configures the 802.11 transmit power level for all lightweight access points.
- **auto**
  - (Optional) Specifies the power level is automatically set by Radio Resource Management (RRM) for the 802.11 Cisco radio.
- **once**
  - (Optional) Specifies the power level is automatically set once by RRM.
- **power_level**
  - (Optional) Manual Transmit power level number for the access point.
- **ap**
  - Configures the 802.11 transmit power level for a specified lightweight access point.
- **ap_name**
  - Access point name.

**Defaults**

The command default (**global**, **auto**) is for automatic configuration by RRM.

**Usage Guidelines**

The supported power levels depends on the specific access point used and the regulatory region. For example, the 1240 series access point supports eight levels and the 1200 series access point supports six levels. See the *Channels and Maximum Power Settings for Cisco Aironet Lightweight Access Points* document for the maximum transmit power limits for your access point. The power levels and available channels are defined by the country code setting and are regulated on a country-by-country basis.

**Examples**

This example shows how to automatically set the 802.11a radio transmit power level in all lightweight access points:

```
> config 802.11a txPower global auto
```

This example shows how to manually set the 802.11b radio transmit power to level 5 for all lightweight access points:

```
> config 802.11b txPower global 5
```

This example shows how to automatically set the 802.11b radio transmit power for access point AP1:

```
> config 802.11b txPower AP1 global
```

This example shows how to manually set the 802.11a radio transmit power to power level 2 for access point AP1:

```
> config 802.11a txPower AP1 2
```
Related Commands

- show ap config 802.11a
- config 802.11b txPower
- config country
config aaa auth

To configure the AAA authentication search order for management users, use the `config aaa auth` command.

```
config aaa auth mgmt [aaa_server_type]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>mgmt</code></td>
<td>Configure the AAA authentication search order for controller management users by specifying up to three AAA authentication server types. The order that the server types are entered specifies the AAA authentication search order.</td>
</tr>
<tr>
<td><code>aaa_server_type</code></td>
<td>(Optional) AAA authentication server type (<code>local</code>, <code>radius</code>, or <code>tacacs</code>). The <code>local</code> setting specifies the local database, the <code>radius</code> setting specifies the RADIUS server, and the <code>tacacs</code> setting specifies the TACACS+ server.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

You can enter two AAA server types as long as one of the server types is `local`. You cannot enter `radius` and `tacacs` together.

**Examples**

This example shows how to configure the AAA authentication search order for controller management users by the authentication server type `local`:

```
> config aaa auth mgmt radius local
```

**Related Commands**

`show aaa auth`
**config aaa auth mgmt**

To configure the order of authentication when multiple databases are configured, use the `config aaa auth mgmt` command.

```
config aaa auth mgmt [radius | tacacs]
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>radius</th>
<th>(Optional) Configures the order of authentication for RADIUS servers.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>tacacs</td>
<td>(Optional) Configures the order of authentication for TACACS servers.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the order of authentication for the RADIUS server:

```
> config aaa auth mgmt radius
```

This example shows how to configure the order of authentication for the TACACS server:

```
> config aaa auth mgmt tacacs
```

**Related Commands**

`show aaa auth order`
config acl apply

To apply an access control list (ACL) to the data path, use the `config acl apply` command.

```
config acl apply rule_name
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>rule_name</code></td>
<td>ACL name that contains up to 32 alphanumeric characters.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

For a Cisco 2100 Series Wireless LAN Controller, you must configure a preauthentication ACL on the wireless LAN for the external web server. This ACL should then be set as a wireless LAN preauthentication ACL under Web Policy. However, you do not need to configure any preauthentication ACL for Cisco 4400 Series Wireless LAN Controllers.

**Examples**

This example shows how to apply an ACL to the data path:

```
> config acl apply acl01
```

**Related Commands**

- `show acl`
**config acl counter**

To see if packets are hitting any of the access control lists (ACLs) configured on your controller, use the `config acl counter` command.

```
config acl counter {start | stop}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>start</td>
<td>Enables ACL counters on your controller.</td>
</tr>
<tr>
<td>stop</td>
<td>Disables ACL counters on your controller.</td>
</tr>
</tbody>
</table>

**Defaults**

`config acl counter stop`

**Usage Guidelines**

ACL counters are available only on the following controllers: 4400 series, Cisco WiSM, and Catalyst 3750G Integrated Wireless LAN Controller Switch.

**Examples**

This example shows how to enable ACL counters on your controller:

```
> config acl counter start
```

**Related Commands**

- `clear acl counters`
- `show acl detailed`
**config acl create**

To create a new access control list (ACL), use the `config acl create` command.

```
config acl create rule_name
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>rule_name</th>
<th>ACL name that contains up to 32 alphanumeric characters.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Usage Guidelines**

For a Cisco 2100 Series Wireless LAN Controller, you must configure a preauthentication ACL on the wireless LAN for the external web server. This ACL should then be set as a wireless LAN preauthentication ACL under Web Policy. However, you do not need to configure any preauthentication ACL for Cisco 4400 Series Wireless LAN Controllers.

**Examples**

This example shows how to create a new ACL:

```
> config acl create acl01
```

**Related Commands**

`show acl`
config acl cpu

To create a new access control list (ACL) rule that restricts the traffic reaching the CPU, use the `config acl cpu` command.

```
config acl cpu rule_name {wired | wireless | both}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wired</td>
<td>Specifies an ACL on wired traffic.</td>
</tr>
<tr>
<td>wireless</td>
<td>Specifies an ACL on wireless traffic</td>
</tr>
<tr>
<td>both</td>
<td>Specifies an ACL on both wired and wireless traffic.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

This command allows you to control the type of packets reaching the CPU.

**Examples**

This example shows how to create an ACL named acl101 on the CPU and apply it to wired traffic:

```
> config acl cpu acl101 wired
```

**Related Commands**

`show acl cpu`
config acl delete

To delete an access control list (ACL), use the config acl delete command.

config acl delete rule_name

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rule_name</td>
<td>ACL name that contains up to 32 alphanumeric characters.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

For a Cisco 2100 Series Wireless LAN Controller, you must configure a preauthentication ACL on the wireless LAN for the external web server. This ACL should then be set as a wireless LAN preauthentication ACL under Web Policy. However, you do not need to configure any preauthentication ACL for Cisco 4400 Series Wireless LAN Controllers.

**Examples**

This example shows how to delete an ACL named acl101 on the CPU:

```
> config acl delete acl101
```

**Related Commands**

show acl
# config acl rule

To configure ACL rules, use the `config acl rule` command.

```plaintext
config acl rule
    [action rule_name rule_index {permit | deny}] |
    add rule_name rule_index |
    change index rule_name old_index new_index |
    delete rule_name rule_index |
    destination address rule_name rule_index ip_address netmask |
    destination port range rule_name rule_index start_port end_port |
    direction rule_name rule_index [in | out | any] |
    dscp rule_name rule_index dscp |
    protocol rule_name rule_index protocol |
    source address rule_name rule_index ip_address netmask |
    source port range rule_name rule_index start_port end_port |
    swap index rule_name index_1 index_2 |
```

## Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>action</strong></td>
<td>Configures whether to permit or deny access.</td>
</tr>
<tr>
<td><strong>rule_name</strong></td>
<td>ACL name that contains up to 32 alphanumeric characters.</td>
</tr>
<tr>
<td><strong>rule_index</strong></td>
<td>Rule index between 1 and 32.</td>
</tr>
<tr>
<td><strong>permit</strong></td>
<td>Permits the rule action.</td>
</tr>
<tr>
<td><strong>deny</strong></td>
<td>Denies the rule action.</td>
</tr>
<tr>
<td><strong>add</strong></td>
<td>Adds a new rule.</td>
</tr>
<tr>
<td><strong>change</strong></td>
<td>Changes a rule’s index.</td>
</tr>
<tr>
<td><strong>index</strong></td>
<td>Specifies a rule index.</td>
</tr>
<tr>
<td><strong>delete</strong></td>
<td>Deletes a rule.</td>
</tr>
<tr>
<td><strong>destination address</strong></td>
<td>Configures a rule’s destination IP address and netmask.</td>
</tr>
<tr>
<td><strong>ip_address</strong></td>
<td>IP address of the rule.</td>
</tr>
<tr>
<td><strong>netmask</strong></td>
<td>Netmask of the rule.</td>
</tr>
<tr>
<td><strong>start_port</strong></td>
<td>Start port number (between 0 and 65535).</td>
</tr>
<tr>
<td><strong>end_port</strong></td>
<td>End port number (between 0 and 65535).</td>
</tr>
<tr>
<td><strong>direction</strong></td>
<td>Configures a rule’s direction to in, out, or any.</td>
</tr>
<tr>
<td><strong>in</strong></td>
<td>Configures a rule’s direction to in.</td>
</tr>
<tr>
<td><strong>out</strong></td>
<td>Configures a rule’s direction to out.</td>
</tr>
<tr>
<td><strong>any</strong></td>
<td>Configures a rule’s direction to any.</td>
</tr>
<tr>
<td><strong>dscp</strong></td>
<td>Configures a rule’s DSCP.</td>
</tr>
<tr>
<td><strong>protocol</strong></td>
<td>Number between 0 and 63, or any.</td>
</tr>
<tr>
<td><strong>source address</strong></td>
<td>Configures a rule’s source IP address and netmask.</td>
</tr>
<tr>
<td><strong>source port range</strong></td>
<td>Configures a rule’s source port range.</td>
</tr>
<tr>
<td><strong>swap</strong></td>
<td>Swap’s two rules’ indices.</td>
</tr>
</tbody>
</table>
config acl rule

**Defaults**

None.

**Usage Guidelines**

For a Cisco 2100 Series Wireless LAN Controller, you must configure a preauthentication ACL on the wireless LAN for the external web server. This ACL should then be set as a wireless LAN preauthentication ACL under Web Policy. However, you do not need to configure any preauthentication ACL for Cisco 4400 Series Wireless LAN Controllers.

**Examples**

This example shows how to configure an ACL to permit access:

> config acl rule action lab1 4 permit

**Related Commands**

show acl
Configure Advanced 802.11 Commands

Use the `config advanced 802.11` commands to configure advanced settings and devices on 802.11a, 802.11b/g, or other supported 802.11 networks.
To configure the Cisco unified wireless IP phone 7920 VISE parameters, use the `config advanced 802.11 7920VSIEConfig` command.

```
config advanced 802.11{a | b} 7920VSIEConfig {call-admission-limit limit | G711-CU-Quantum quantum}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>call-admission-limit</td>
<td>Configures the call admission limit for the 7920s.</td>
</tr>
<tr>
<td>G711-CU-Quantum</td>
<td>Configures the value supplied by the infrastructure indicating the current number of channel utilization units that would be used by a single G.711-20ms call.</td>
</tr>
<tr>
<td>limit</td>
<td>Call admission limit (from 0 to 255). The default value is 105.</td>
</tr>
<tr>
<td>quantum</td>
<td>G711 quantum value. The default value is 15.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the call admission limit for 7920 VISE parameters:

```
> config advanced 802.11b 7920VSIEConfig call-admission-limit 4
```

**Related Commands**

None.
Configure Advanced 802.11 Channel Commands

Use the `config advanced 802.11 channel` commands to configure Dynamic Channel Assignment (DCA) settings on supported 802.11 networks.
config advanced 802.11 channel add

To add channel to the 802.11 networks auto RF channel list, use the `config advanced 802.11 channel add` command.

```
config advanced 802.11{a | b} channel {add | delete} channel_number
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>a</th>
<th>Specifies the 802.11a network.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>add</td>
<td>Specifies a channel to add to the 802.11 network auto RF channel list.</td>
<td></td>
</tr>
<tr>
<td>delete</td>
<td>Deletes a channel from the 802.11 network auto RF channel list.</td>
<td></td>
</tr>
<tr>
<td>channel_number</td>
<td>Channel number to add to the 802.11 network auto RF channel list.</td>
<td></td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to add a channel to the 802.11a network auto RF channel list:

> `config advanced 802.11a channel add 132`

This example shows how to delete a channel from the 802.11a network auto RF channel list:

> `config advanced 802.11a channel delete 136`

**Related Commands**

- `show advanced 802.11a channel`
- `config advanced 802.11b channel update`
### config advanced 802.11 channel cleanair-event

To configure cleanair event driven Radio Resource Management (RRM) parameters for all 802.11 Cisco lightweight access points, use the `config advanced 802.11 channel cleanair-event` command.

```
config advanced 802.11 {a | b} channel cleanair-event {enable | disable | sensitivity [low | medium | high]}
```

#### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the cleanair event-driven RRM parameters.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the cleanair event-driven RRM parameters.</td>
</tr>
<tr>
<td>sensitivity</td>
<td>Sets the sensitivity for cleanair event-driven RRM.</td>
</tr>
<tr>
<td>low</td>
<td>(Optional) Specifies low sensitivity.</td>
</tr>
<tr>
<td>medium</td>
<td>(Optional) Specifies medium sensitivity</td>
</tr>
<tr>
<td>high</td>
<td>(Optional) Specifies high sensitivity</td>
</tr>
</tbody>
</table>

#### Defaults

None.

#### Examples

This example shows how to enable the cleanair event-driven RRM parameters:

```
> config advanced 802.11a channel cleanair-event enable
```

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

```
> config advanced 802.11a channel cleanair-event sensitivity high
```

#### Related Commands

- `show advanced 802.11a channel`
- `config advanced 802.11b channel update`
config advanced 802.11 channel cleanair-event

To configure cleanair event driven Radio Resource Management (RRM) parameters for all 802.11 Cisco lightweight access points, use the config advanced 802.11 channel cleanair-event command.

```
cfg adv 802.11{a | b} channel cleanair-event {enable | disable | sensitivity {low | medium | high}}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the cleanair event-driven RRM parameters.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the cleanair event-driven RRM parameters.</td>
</tr>
<tr>
<td>sensitivity</td>
<td>Sets the sensitivity for cleanair event-driven RRM.</td>
</tr>
<tr>
<td>low</td>
<td>(Optional) Specifies low sensitivity.</td>
</tr>
<tr>
<td>medium</td>
<td>(Optional) Specifies medium sensitivity</td>
</tr>
<tr>
<td>high</td>
<td>(Optional) Specifies high sensitivity</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the cleanair event-driven RRM parameters:

```
> config advanced 802.11a channel cleanair-event enable
```

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

```
> config advanced 802.11a channel cleanair-event sensitivity high
```

**Related Commands**

show advanced 802.11a channel
config advanced 802.11 channel dca anchor-time

To specify the time of day when the Dynamic Channel Assignment (DCA) algorithm is to start, use the config advanced 802.11 channel dca anchor-time command.

```
config advanced 802.11{a | b} channel dca anchor-time value
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>a</code></td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td><code>b</code></td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td><code>value</code></td>
<td>Hour of the time between 0 and 23. These values represent the hour from 12:00 a.m. to 11:00 p.m.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the time of delay when the dynamic channel assignment algorithm starts:

```
> config advanced 802.11a channel dca anchor-time 17
```

**Related Commands**

- config advanced 802.11 channel dca interval
- config advanced 802.11 channel dca sensitivity
- show advanced 802.11 channel
config advanced 802.11 channel dca chan-width-11n

To configure the Dynamic Channel Assignment (DCA) channel width for all 802.11n radios in the 5-GHz band, use the command.

```
config advanced 802.11{a | b} channel dca chan-width-11n {20 | 40}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td></td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td></td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>Sets the channel width for 802.11n radios to 20 MHz.</td>
</tr>
<tr>
<td>40</td>
<td></td>
<td>Sets the channel width for 802.11n radios to 40 MHz.</td>
</tr>
</tbody>
</table>

**Defaults**

The channel width is 20.

**Usage Guidelines**

If you choose 40, be sure to set at least two adjacent channels in the `config advanced 802.11 channel {add | delete} channel_number` command (for example, a primary channel of 36 and an extension channel of 40). If you set only one channel, that channel is not used for 40-MHz channel width.

To override the globally configured DCA channel width setting, you can statically configure an access point’s radio for 20- or 40-MHz mode using the `config 802.11 chan_width` command. If you then change the static configuration to global on the access point radio, the global DCA configuration overrides the channel width configuration that the access point was previously using.

**Examples**

This example shows how to add a channel to the 802.11a network auto channel list:

```
> config advanced 802.11a channel dca chan-width-11n 40
```

**Related Commands**

- `config 802.11 chan_width`
- `config advanced 802.11 channel dca interval`
- `config advanced 802.11 channel dca sensitivity`
- `show advanced 802.11 channel`
config advanced 802.11 channel dca interval

To specify how often the Dynamic Channel Assignment (DCA) is allowed to run, use the `config advanced 802.11 channel dca interval` command.

```
config advanced 802.11{a | b} channel dca interval value
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>value</td>
<td>Valid values are 0, 1, 2, 3, 4, 6, 8, 12, or 24 hours. 0 is 10 minutes (600 seconds).</td>
</tr>
</tbody>
</table>

**Defaults**

0 (10 minutes).

**Usage Guidelines**

If your controller supports only OfficeExtend access points, we recommend that you set the DCA interval to 6 hours for optimal performance. For deployments with a combination of OfficeExtend access points and local access points, the range of 10 minutes to 24 hours can be used.

**Examples**

This example shows how often the DCA algorithm is allowed to run:

```
> config advanced 802.11a channel dca interval 8
```

**Related Commands**

- `config advanced 802.11 channel dca anchor-time`
- `config advanced 802.11 channel dca sensitivity`
- `show advanced 802.11 channel`
config advanced 802.11 channel dca sensitivity

To specify how sensitive the Dynamic Channel Assignment (DCA) algorithm is to environmental changes (for example, signal, load, noise, and interference) when determining whether or not to change channels, use the config advanced 802.11 channel dca sensitivity command.

```
config advanced 802.11{a | b} channel dca sensitivity {low | medium | high}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>low</td>
<td>Specifies the DCA algorithm is not particularly sensitive to environmental changes. See the “Usage Guidelines” section for more information.</td>
</tr>
<tr>
<td>medium</td>
<td>Specifies the DCA algorithm is moderately sensitive to environmental changes. See the “Usage Guidelines” section for more information.</td>
</tr>
<tr>
<td>high</td>
<td>Specifies the DCA algorithm is highly sensitive to environmental changes. See the “Usage Guidelines” section for more information.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

The DCA sensitivity thresholds vary by radio band as shown in Table 2-3.

To aid in troubleshooting, the output of this command shows an error code for any failed calls. Table 2-1 explains the possible error codes for failed calls.

**Table 2-3 DCA Sensitivity Thresholds**

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>2.4-GHz DCA Sensitivity Threshold</th>
<th>5-GHz DCA Sensitivity Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>5 dB</td>
<td>5 dB</td>
</tr>
<tr>
<td>Medium</td>
<td>15 dB</td>
<td>20 dB</td>
</tr>
<tr>
<td>Low</td>
<td>30 dB</td>
<td>35 dB</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to configure the value of DCA algorithm’s sensitivity to low:

```
> config advanced 802.11a channel dca sensitivity low
```

**Related Commands**

- config advanced 802.11 channel dca anchor-time
- config advanced 802.11 channel dca interval
- show advanced 802.11 channel
config advanced 802.11 channel foreign

To have Radio Resource Management (RRM) consider or ignore foreign 802.11a interference avoidance in making channel selection updates for all 802.11a Cisco lightweight access points, use the `config advanced 802.11 channel foreign` command.

```
config advanced 802.11 a | b channel foreign {enable | disable}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the foreign access point 802.11a interference avoidance in the channel assignment.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the foreign access point 802.11a interference avoidance in the channel assignment.</td>
</tr>
</tbody>
</table>

### Defaults

Enabled.

### Examples

This example shows how to have RRM consider foreign 802.11a interference when making channel selection updates for all 802.11a Cisco lightweight access points:

```
> config advanced 802.11a channel foreign enable
```

### Related Commands

- `show advanced 802.11a channel`
- `config advanced 802.11b channel foreign`
config advanced 802.11 channel load

To have Radio Resource Management (RRM) consider or ignore the traffic load in making channel selection updates for all 802.11a Cisco lightweight access points, use the `config advanced 802.11 channel load` command.

```
config advanced 802.11{a | b} channel load {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the Cisco lightweight access point 802.11a load avoidance in the channel assignment.</td>
</tr>
<tr>
<td>disable</td>
<td>Disable the Cisco lightweight access point 802.11a load avoidance in the channel assignment.</td>
</tr>
</tbody>
</table>

Defaults

Disabled.

Examples

This example shows how to have RRM consider the traffic load when making channel selection updates for all 802.11a Cisco lightweight access points:

```
> config advanced 802.11a channel load enable
```

Related Commands

- `show advanced 802.11a channel`
- `config advanced 802.11b channel load`
config advanced 802.11 channel noise

To have Radio Resource Management (RRM) consider or ignore non-802.11a noise in making channel selection updates for all 802.11a Cisco lightweight access points, use the config advanced 802.11 channel noise command.

```
config advanced 802.11 {a | b} channel noise {enable | disable}
```

**Syntax Description**

- **a**: Specifies the 802.11a network.
- **b**: Specifies the 802.11b/g network.
- **enable**: Enables non-802.11a noise avoidance in the channel assignment. or ignore.
- **disable**: Disables the non-802.11a noise avoidance in the channel assignment.

**Defaults**

Disabled.

**Examples**

This example shows how to have RRM consider non-802.11a noise when making channel selection updates for all 802.11a Cisco lightweight access points:

```
> config advanced 802.11a channel noise enable
```

**Related Commands**

- `show advanced 802.11a channel`
- `config advanced 802.11b channel noise`
config advanced 802.11 channel outdoor-ap-dca

To enable or disable the controller to avoid checking the non-DFS channels, use the `config advanced 802.11 channel outdoor-ap-dca` command.

```
config advanced 802.11{a | b} channel outdoor-ap-dca {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables 802.11 network dca list option for outdoor access point.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables 802.11 network dca list option for outdoor access point.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Usage Guidelines**

The `config advanced 802.11{a | b} channel outdoor-ap-dca {enable | disable}` command is applicable only for deployments having outdoor access points such as 1522 and 1524.

**Examples**

This example shows how to enable the 802.11a dca list option for outdoor access point:

```
> config advanced 802.11a channel outdoor-ap-dca enable
```

**Related Commands**

- `show advanced 802.11a channel`
- `config advanced 802.11b channel noise`
config advanced 802.11 channel update

To have Radio Resource Management (RRM) initiate a channel selection update for all 802.11a Cisco lightweight access points, use the config advanced 802.11 channel update command.

```
config advanced 802.11{a | b} channel update
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to initiate a channel selection update for all 802.11a network access points:

```
> config advanced 802.11a channel update
```

Related Commands

show advanced 802.11a channel
config advanced 802.11b channel update
Configure Advanced 802.11 Coverage Commands

Use the config advanced 802.11 coverage commands to configure coverage hole detection settings on supported 802.11 networks.
**config advanced 802.11 coverage**

To enable or disable coverage hole detection, use the `config advanced 802.11 coverage` command.

```
config advanced 802.11 {a | b} coverage {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the coverage hole detection.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the coverage hole detection.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Usage Guidelines**

If you enable coverage hole detection, the controller 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 `config advanced 802.11 coverage packet-count` and `config advanced 802.11 coverage fail-rate` commands for a 5-second period, the client is considered to be in a pre-alarm condition. The controller 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 `config advanced 802.11 coverage level global` and `config advanced 802.11 coverage exception global` commands over a 90-second period. The controller 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 enable coverage hole detection on 802.11a network:

```
> config advanced 802.11a coverage enable
```

**Related Commands**

- `config advanced 802.11 coverage exception global`
- `config advanced 802.11 coverage fail-rate`
- `config advanced 802.11 coverage level global`
- `config advanced 802.11 coverage packet-count`
- `config advanced 802.11 coverage rssi-threshold`
- `show advanced 802.11 coverage`
config advanced 802.11 coverage exception global

To specify the percentage of clients on an access point that are experiencing a low signal level but cannot roam to another access point, use the **config advanced 802.11 coverage exception global** command.

```plaintext
config advanced 802.11{a | b} coverage exception global percent
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>percent</td>
<td>Percentage of clients. Valid values are from 0 to 100%.</td>
</tr>
</tbody>
</table>

**Defaults**

25%.

**Usage Guidelines**

If both the number and percentage of failed packets exceed the values that you entered in the **config advanced 802.11 coverage packet-count** and **config advanced 802.11 coverage fail-rate** commands for a 5-second period, the client is considered to be in a pre-alarm condition. The controller 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 **config advanced 802.11 coverage level global** and **config advanced 802.11 coverage exception global** commands over a 90-second period. The controller 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 all 802.11a access points that are experiencing a low signal level:

```
> config advanced 802.11a coverage exception global 50
```

**Related Commands**

- config advanced 802.11 coverage
- config advanced 802.11 coverage fail-rate
- config advanced 802.11 coverage level global
- config advanced 802.11 coverage packet-count
- config advanced 802.11 coverage rssi-threshold
- show advanced 802.11 coverage
config advanced 802.11 coverage fail-rate

To specify the failure rate threshold for uplink data or voice packets, use the config advanced 802.11 coverage fail-rate command.

```
config advanced 802.11{a | b} coverage {data | voice} fail-rate percent
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>data</td>
<td>Specifies the threshold for data packets.</td>
</tr>
<tr>
<td>voice</td>
<td>Specifies the threshold for voice packets.</td>
</tr>
<tr>
<td>percent</td>
<td>Failure rate as a percentage. Valid values are from 1 to 100 percent.</td>
</tr>
</tbody>
</table>

**Defaults**

20.

**Usage Guidelines**

If both the number and percentage of failed packets exceed the values that you entered in the config advanced 802.11 coverage packet-count and config advanced 802.11 coverage fail-rate commands for a 5-second period, the client is considered to be in a pre-alarm condition. The controller 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 config advanced 802.11 coverage level global and config advanced 802.11 coverage exception global commands over a 90-second period. The controller 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 configure the threshold count for minimum uplink failures for data packets:

```
> config advanced 802.11a coverage data fail-rate 80
```

**Related Commands**

- config advanced 802.11 coverage
- config advanced 802.11 coverage exception global
- config advanced 802.11 coverage level global
- config advanced 802.11 coverage packet-count
- config advanced 802.11 coverage rssi-threshold
- show advanced 802.11 coverage
**config advanced 802.11 coverage level global**

To specify the minimum number of clients on an access point with an received signal strength indication (RSSI) value at or below the data or voice RSSI threshold, use the **config advanced 802.11 coverage level global** command.

```plaintext
config advanced 802.11{a | b} coverage level global clients
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>clients</td>
<td>Minimum number of clients. Valid values are from 1 to 75.</td>
</tr>
</tbody>
</table>

**Defaults**

3.

**Usage Guidelines**

If both the number and percentage of failed packets exceed the values that you entered in the **config advanced 802.11 coverage packet-count** and **config advanced 802.11 coverage fail-rate** commands for a 5-second period, the client is considered to be in a pre-alarm condition. The controller 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 **config advanced 802.11 coverage level global** and **config advanced 802.11 coverage exception global** commands over a 90-second period. The controller 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 minimum number of clients on all 802.11a access points with an RSSI value at or below the RSSI threshold:

```
> config advanced 802.11a coverage level global 60
```

**Related Commands**

- **config advanced 802.11 coverage**
- **config advanced 802.11 coverage exception global**
- **config advanced 802.11 coverage fail-rate**
- **config advanced 802.11 coverage packet-count**
- **config advanced 802.11 coverage rssi-threshold**
- **show advanced 802.11 coverage**
config advanced 802.11 coverage packet-count

To specify the minimum failure count threshold for uplink data or voice packets, use the config advanced 802.11 coverage packet-count command.

```
config advanced 802.11{a | b} coverage {data | voice} packet-count packets
```

Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>data</td>
<td>Specifies the threshold for data packets.</td>
</tr>
<tr>
<td>voice</td>
<td>Specifies the threshold for voice packets.</td>
</tr>
<tr>
<td>packets</td>
<td>Minimum number of packets. Valid values are from 1 to 255 packets.</td>
</tr>
</tbody>
</table>

Defaults

10.

Usage Guidelines

If both the number and percentage of failed packets exceed the values that you entered in the config advanced 802.11 coverage packet-count and config advanced 802.11 coverage fail-rate commands for a 5-second period, the client is considered to be in a pre-alarm condition. The controller 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 config advanced 802.11 coverage level global and config advanced 802.11 coverage exception global commands over a 90-second period. The controller 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 configure the failure count threshold for uplink data packets:

```
> config advanced 802.11a coverage data packet-count 100
```

Related Commands

- config advanced 802.11 coverage
- config advanced 802.11 coverage exception global
- config advanced 802.11 coverage fail-rate
- config advanced 802.11 coverage level global
- config advanced 802.11 coverage rssi-threshold
- show advanced 802.11 coverage
config advanced 802.11 coverage rssi-threshold

To specify the minimum receive signal strength indication (RSSI) value for packets that are received by an access point, use the `config advanced 802.11 coverage rssi-threshold` command.

```
config advanced 802.11{a | b} coverage {data | voice} rssi-threshold rssi
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>data</td>
<td>Specifies the threshold for data packets.</td>
</tr>
<tr>
<td>voice</td>
<td>Specifies the threshold for voice packets.</td>
</tr>
<tr>
<td>rssi</td>
<td>Valid values are from –60 to –90 dBm.</td>
</tr>
</tbody>
</table>

**Defaults**

- Data packets: –80 dBm.
- Voice packets: –75 dBm.

**Usage Guidelines**

The `rssi` value that you enter is used to identify coverage holes (or areas of poor coverage) within your network. If the access point receives a packet in the data or voice queue with an RSSI value that is below the value that you enter, a potential coverage hole has been detected.

The access point takes RSSI measurements every 5 seconds and reports them to the controller in 90-second intervals.

If both the number and percentage of failed packets exceed the values that you entered in the `config advanced 802.11 coverage packet-count` and `config advanced 802.11 coverage fail-rate` commands for a 5-second period, the client is considered to be in a pre-alarm condition. The controller 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 `config advanced 802.11 coverage level global` and `config advanced 802.11 coverage exception global` commands over a 90-second period. The controller 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 configure the minimum receive signal strength indication threshold value for data packets that are received by an 802.11a access point:

```
> config advanced 802.11a coverage data rssi-threshold -60
```

**Related Commands**

- `config advanced 802.11 coverage`
- `config advanced 802.11 coverage exception global`
- `config advanced 802.11 coverage fail-rate`
- `config advanced 802.11 coverage level global`
- `config advanced 802.11 coverage packet-count`
- `show advanced 802.11 coverage`
config advanced 802.11 edca-parameters

To enable a specific enhanced distributed channel access (EDCA) profile on the 802.11a network, use the `config advanced 802.11 edca-parameters` command.

```
config advanced 802.11\{a | b\} edca-parameters \{ wmm-default | svp-voice | optimized-voice | optimized-video-voice \}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>a</code></td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td><code>b</code></td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>wmm-default</td>
<td>Enables the Wi-Fi Multimedia (WMM) default parameters. Choose this option when voice or video services are not deployed on your network.</td>
</tr>
<tr>
<td>svp-voice</td>
<td>Enables Spectralink voice priority parameters. Choose this option if Spectralink phones are deployed on your network to improve the quality of calls.</td>
</tr>
<tr>
<td>optimized-voice</td>
<td>Enables EDCA voice-optimized profile parameters. Choose this option when voice services other than Spectralink are deployed on your network.</td>
</tr>
<tr>
<td>optimized-video-voice</td>
<td>Enables EDCA voice- and video-optimized profile parameters. Choose this option when both voice and video services are deployed on your network.</td>
</tr>
</tbody>
</table>

**Defaults**

- wmm-default

**Examples**

This example shows how to enable Spectralink voice priority parameters:

```
> config advanced 802.11a edca-parameters svp-voice
```

**Related Commands**

- `show 802.11a`
- `config advanced 802.11b edca-parameters`
**config advanced 802.11 factory**

To reset 802.11a advanced settings back to the factory defaults, use the `config advanced 802.11 factory` command.

```
config advanced 802.11{a | b} factory
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>a</th>
<th>b</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Specifies the 802.11a network.</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to return all the 802.11a advanced settings to their factory defaults:

```
> config advanced 802.11a factory
```

**Related Commands**

`show advanced 802.11a channel`
config advanced 802.11 group-mode

To set the 802.11a automatic RF group selection mode on or off, use the config advanced 802.11 group-mode command.

    config advanced 802.11{a | b} group-mode {auto | off}

**Syntax Description**

| a    | Specifies the 802.11a network. |
| b    | Specifies the 802.11b/g network. |
| auto | Sets the 802.11a RF group selection to automatic update mode. |
| off  | Sets the 802.11a RF group selection to off. |

**Defaults**

Auto.

**Examples**

This example shows how to turn the 802.11a automatic RF group selection mode on:

> config advanced 802.11a group-mode auto

This example shows how to turn the 802.11a automatic RF group selection mode off:

> config advanced 802.11a group-mode off

**Related Commands**

show advanced 802.11a group

config advanced 802.11b group-mode
Configure Advanced 802.11 Logging Commands

Use the `config advanced 802.11 logging` commands to configure report log settings on supported 802.11 networks.
config advanced 802.11 logging channel

To turn the channel change logging mode on or off, use the `config advanced 802.11 logging channel` command.

```
config advanced 802.11{a | b} logging channel {on | off}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>logging channel</td>
<td>Logs channel changes.</td>
</tr>
<tr>
<td>on</td>
<td>Enables the 802.11 channel logging.</td>
</tr>
<tr>
<td>off</td>
<td>Disables 802.11 channel logging.</td>
</tr>
</tbody>
</table>

**Defaults**

Off (disabled).

**Examples**

This example shows how to turn the 802.11a logging channel selection mode on:

```
> config advanced 802.11a logging channel on
```

**Related Commands**

show advanced 802.11a logging
config advanced 802.11b logging channel
config advanced 802.11 logging coverage

To turn the coverage profile logging mode on or off, use the config advanced 802.11 logging coverage command.

`config advanced 802.11{a | b} logging coverage {on | off}`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>on</td>
<td>Enables the 802.11 coverage profile violation logging.</td>
</tr>
<tr>
<td>off</td>
<td>Disables the 802.11 coverage profile violation logging.</td>
</tr>
</tbody>
</table>

**Defaults**

Off (disabled).

**Examples**

This example shows how to turn the 802.11a coverage profile violation logging selection mode on:

```
> config advanced 802.11a logging coverage on
```

**Related Commands**

show advanced 802.11a logging

config advanced 802.11b logging coverage
config advanced 802.11 logging foreign

To turn the foreign interference profile logging mode on or off, use the config advanced 802.11 logging foreign command.

config advanced 802.11\{a | b\} logging foreign \{on | off\}

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>on</td>
<td>Enables the 802.11 foreign interference profile violation logging.</td>
</tr>
<tr>
<td>off</td>
<td>Disables the 802.11 foreign interference profile violation logging.</td>
</tr>
</tbody>
</table>

**Defaults**

Off (disabled).

**Examples**

This example shows how to turn the 802.11a foreign interference profile violation logging selection mode on:

> config advanced 802.11a logging foreign on

**Related Commands**

- show advanced 802.11a logging
- config advanced 802.11b logging foreign
To turn the 802.11a load profile logging mode on or off, use the `config advanced 802.11 logging load` command.

```
config advanced 802.11\{a | b\} logging load \{on | off\}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>on</td>
<td>Enables the 802.11 load profile violation logging.</td>
</tr>
<tr>
<td>off</td>
<td>Disables the 802.11 load profile violation logging.</td>
</tr>
</tbody>
</table>

**Defaults**

Off (disabled).

**Examples**

This example shows how to turn the 802.11a load profile logging mode on:

```
> config advanced 802.11a logging load on
```

**Related Commands**

- `show advanced 802.11a logging`
- `config advanced 802.11b logging load`
config advanced 802.11 logging noise

To turn the 802.11a noise profile logging mode on or off, use the `config advanced 802.11 logging noise` command.

```
config advanced 802.11 {a | b} logging noise {on | off}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>on</td>
<td>Enables the 802.11 noise profile violation logging.</td>
</tr>
<tr>
<td>off</td>
<td>Disables the 802.11 noise profile violation logging.</td>
</tr>
</tbody>
</table>

Defaults

Off (disabled).

Examples

This example shows how to turn the 802.11a noise profile logging mode on:

```
> config advanced 802.11a logging noise on
```

Related Commands

- `show advanced 802.11a logging`
- `config advanced 802.11b logging noise`
config advanced 802.11 logging performance

To turn the 802.11a performance profile logging mode on or off, use the config advanced 802.11 logging performance command.

    config advanced 802.11\{a \| b\} logging performance {on \| off}

Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>on</td>
<td>Enables the 802.11 performance profile violation logging.</td>
</tr>
<tr>
<td>off</td>
<td>Disables the 802.11 performance profile violation logging.</td>
</tr>
</tbody>
</table>

Defaults

Off (disabled).

Examples

This example shows how to turn the 802.11a performance profile logging mode on:

    > config advanced 802.11a logging performance on

Related Commands

    show advanced 802.11a logging
    config advanced 802.11b logging performance
config advanced 802.11 logging txpower

To turn the 802.11a transmit power change logging mode on or off, use the config advanced 802.11 logging txpower command.

    config advanced 802.11 {a | b} logging txpower {on | off}

Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>on</td>
<td>Enables the 802.11 transmit power change logging.</td>
</tr>
<tr>
<td>off</td>
<td>Disables the 802.11 transmit power change logging.</td>
</tr>
</tbody>
</table>

Defaults

Off (disabled).

Examples

This example shows how to turn the 802.11a transmit power change mode on:

    > config advanced 802.11a logging txpower off

Related Commands

show advanced 802.11 logging
config advanced 802.11b logging power
Configure Advanced 802.11 Monitor Commands

Use the config advanced 802.11 monitor commands to configure monitor settings on supported 802.11 networks.
config advanced 802.11 monitor channel-list

To set the 802.11a noise, interference, and rogue monitoring channel list, use the config advanced 802.11 monitor channel-list command.

```
config advanced 802.11\{a | b\} monitor channel-list \{all | country | dca\}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>all</td>
<td>Monitors all channels.</td>
</tr>
<tr>
<td>country</td>
<td>Monitors the channels used in the configured country code.</td>
</tr>
<tr>
<td>dca</td>
<td>Monitors the channels used by the automatic channel assignment.</td>
</tr>
</tbody>
</table>

| Defaults | country. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to monitor the channels used in the configured country:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; config advanced 802.11a monitor channel-list country</td>
</tr>
</tbody>
</table>

| Related Commands | show advanced 802.11a monitor coverage |
config advanced 802.11 monitor coverage

To set the coverage measurement interval between 60 and 3600 seconds, use the `config advanced 802.11 monitor coverage` command.

```
config advanced 802.11{a | b} monitor coverage seconds
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>seconds</td>
<td>Coverage measurement interval between 60 and 3600 seconds.</td>
</tr>
</tbody>
</table>

**Defaults**

180 seconds.

**Examples**

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

```
> config advanced 802.11a monitor coverage 60
```

**Related Commands**

- `show advanced 802.11a monitor`
- `config advanced 802.11b monitor coverage`
config advanced 802.11 monitor load

To set the load measurement interval between 60 and 3600 seconds, use the config advanced 802.11 monitor load command.

```
config advanced 802.11[a | b] monitor load seconds
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>a</th>
<th>Specifies the 802.11a network.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td></td>
<td>seconds</td>
<td>Load measurement interval between 60 and 3600 seconds.</td>
</tr>
</tbody>
</table>

| Defaults | 60 seconds. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to set the load measurement interval to 60 seconds:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; config advanced 802.11a monitor load 60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>show advanced 802.11a monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>config advanced 802.11b monitor load</td>
</tr>
</tbody>
</table>
config advanced 802.11 monitor mode

To enable or disable 802.11a access point monitoring, use the `config advanced 802.11 monitor mode` command.

```plaintext
cfg advanced 802.11{a \ b} monitor mode {enable \ disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the 802.11 access point monitoring.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the 802.11 access point monitoring.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to enable the 802.11a access point monitoring:

```plaintext
> config advanced 802.11a monitor mode enable
```

**Related Commands**

- `show advanced 802.11a monitor`
- `config advanced 802.11b monitor mode`
config advanced 802.11 monitor noise

To set the 802.11a noise measurement interval between 60 and 3600 seconds, use the `config advanced 802.11 monitor noise` command.

```
config advanced 802.11{a | b} monitor noise seconds
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>seconds</td>
<td>Noise measurement interval between 60 and 3600 seconds.</td>
</tr>
</tbody>
</table>

**Defaults**

180 seconds.

**Examples**

This example shows how to set the noise measurement interval to 120 seconds:

```
> config advanced 802.11a monitor noise 120
```

**Related Commands**

- `show advanced 802.11a monitor`
- `config advanced 802.11b monitor noise`
config advanced 802.11 monitor signal

To set the signal measurement interval between 60 and 3600 seconds, use the **config advanced 802.11 monitor signal** command.

```
config advanced 802.11{a | b} monitor signal seconds
```

**Syntax Description**

| a | Specifies the 802.11a network. |
| b | Specifies the 802.11b/g network. |
| seconds | Signal measurement interval between 60 and 3600 seconds. |

**Defaults**

60 seconds.

**Examples**

This example shows how to set the signal measurement interval to 120 seconds:

```
> config advanced 802.11a monitor signal 120
```

**Related Commands**

- `show advanced 802.11a monitor`
- `config advanced 802.11b monitor signal`
Configure Advanced 802.11 Profile Commands

Use the `config advanced 802.11 profile` commands to configure Cisco lightweight access point profile settings on supported 802.11 networks.
config advanced 802.11 profile clients

To set the Cisco lightweight access point clients threshold between 1 and 75 clients, use the config advanced 802.11 profile clients command.

```
config advanced 802.11{a | b} profile clients {global | cisco_ap} clients
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>global</td>
<td>Configures all 802.11a Cisco lightweight access points.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Cisco lightweight access point name.</td>
</tr>
<tr>
<td>clients</td>
<td>802.11a Cisco lightweight access point client threshold between 1 and 75 clients.</td>
</tr>
</tbody>
</table>

**Defaults**

12 clients.

**Examples**

This example shows how to set all Cisco lightweight access point clients thresholds to 25 clients:

```
> config advanced 802.11a profile clients global 25
Global client count profile set.
```

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

```
> config advanced 802.11a profile clients AP1 75
Global client count profile set.
```

**Related Commands**

- show advanced 802.11a profile
- config advanced 802.11b profile clients
config advanced 802.11 profile customize

To turn customizing on or off for an 802.11a Cisco lightweight access point performance profile, use the `config advanced 802.11 profile customize` command.

```
config advanced 802.11{a | b} profile customize cisco_ap {on | off}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td><code>cisco_ap</code></td>
<td>Cisco lightweight access point.</td>
</tr>
<tr>
<td><code>on</code></td>
<td>Customizes performance profiles for this Cisco lightweight access point.</td>
</tr>
<tr>
<td><code>off</code></td>
<td>Uses global default performance profiles for this Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

**Defaults**

Off.

**Examples**

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

```
> config advanced 802.11 profile customize AP1 on
```

**Related Commands**

- `show advanced 802.11 profile`
- `config advanced 802.11b profile customize`
config advanced 802.11 profile foreign

To set the foreign 802.11a transmitter interference threshold between 0 and 100 percent, use the config advanced 802.11 profile foreign command.

```
config advanced 802.11{a | b} profile foreign {global | cisco_ap} percent
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>global</td>
<td>Configures all 802.11a Cisco lightweight access points.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Cisco lightweight access point name.</td>
</tr>
<tr>
<td>percent</td>
<td>802.11a foreign 802.11a interference threshold between 0 and 100 percent.</td>
</tr>
</tbody>
</table>

Defaults

10.

Examples

This example shows how to set the foreign 802.11a transmitter interference threshold for all Cisco lightweight access points to 50 percent:

```
> config advanced 802.11a profile foreign global 50
```

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

```
> config advanced 802.11a profile foreign AP1 0
```

Related Commands

- show advanced 802.11a profile
- config advanced 802.11b profile foreign
config advanced 802.11 profile noise

To set the 802.11a foreign noise threshold between –127 and 0 dBm, use the config advanced 802.11 profile noise command.

```
config advanced 802.11{a | b} profile noise {global | cisco_ap} dBm
```

**Syntax Description**

- `a`: Specifies the 802.11a network.
- `b`: Specifies the 802.11b/g network.
- `global`: Configures all 802.11a Cisco lightweight access point specific profiles.
- `cisco_ap`: Cisco lightweight access point name.
- `dBm`: 802.11a foreign noise threshold between –127 and 0 dBm.

**Defaults**

-70 dBm.

**Examples**

This example shows how to set the 802.11a foreign noise threshold for all Cisco lightweight access points to –127 dBm:

```
> config advanced 802.11 profile noise global -127
```

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

```
> config advanced 802.11 profile noise AP1 0
```

**Related Commands**

- show advanced 802.11 profile
- config advanced 802.11b profile noise
config advanced 802.11 profile throughput

To set the Cisco lightweight access point data-rate throughput threshold between 1000 and 10000000 bytes per second, use the config advanced 802.11 profile throughput command.

```
config advanced 802.11[a | b] profile throughput {global | cisco_ap} value
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a</strong></td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td><strong>b</strong></td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td><strong>global</strong></td>
<td>Configures all 802.11a Cisco lightweight access point specific profiles.</td>
</tr>
<tr>
<td><strong>cisco_ap</strong></td>
<td>Cisco lightweight access point name.</td>
</tr>
<tr>
<td><strong>value</strong></td>
<td>802.11a Cisco lightweight access point throughput threshold between 1000 and 10000000 bytes per second.</td>
</tr>
</tbody>
</table>

**Defaults**

1,000,000 bytes per second.

**Examples**

This example shows how to set all Cisco lightweight access point data-rate thresholds to 1000 bytes per second:

```
> config advanced 802.11 profile data-rate global 1000
```

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

```
> config advanced 802.11 profile data-rate AP1 10000000
```

**Related Commands**

- show advanced 802.11 profile
- config advanced 802.11b profile data-rate
config advanced 802.11 profile utilization

To set the RF utilization threshold between 0 and 100 percent, use the `config advanced 802.11 profile utilization` command. The operating system generates a trap when this threshold is exceeded.

```
config advanced 802.11{a | b} profile utilization {global | cisco_ap} percent
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>global</td>
<td>Configures a global Cisco lightweight access point specific profile.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Specifies Cisco lightweight access point name.</td>
</tr>
<tr>
<td>percent</td>
<td>802.11a RF utilization threshold between 0 and 100 percent.</td>
</tr>
</tbody>
</table>

**Defaults**

80 percent.

**Examples**

This example shows how to set the RF utilization threshold for all Cisco lightweight access points to 0 percent:

```
> config advanced 802.11a profile utilization global 0
```

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

```
> config advanced 802.11a profile utilization AP1 100
```

**Related Commands**

- `show advanced 802.11a profile`
- `config advanced 802.11b profile utilization`
config advanced 802.11 receiver

To set the advanced receiver configuration settings, use the `config advanced 802.11 receiver` command.

```plaintext
config advanced 802.11(a | b) receiver default
config advanced 802.11(a | b) receiver rxstart jumpThreshold value
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
<tr>
<td>receiver</td>
<td>Specifies the receiver configuration</td>
</tr>
<tr>
<td>default</td>
<td>Specifies the default advanced receiver configuration.</td>
</tr>
<tr>
<td>rxstartjumpThreshold</td>
<td>Specifies the receiver start signal.</td>
</tr>
<tr>
<td>value</td>
<td>Jump threshold configuration value between 0 and 127.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to prevent changes to receiver parameters while the network is enabled:

```plaintext
> config advanced 802.11a receiver default
```

**Related Commands**

config advanced 802.11b receiver
config advanced 802.11 txpower-update

To initiate updates of the 802.11a transmit power for every Cisco lightweight access point, use the `config advanced 802.11 txpower-update` command.

```
config advanced 802.11[a | b] txpower-update
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>b</td>
<td>Specifies the 802.11b/g network.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to initiate updates of 802.11a transmit power for an 802.11a access point:

```
> config advanced 802.11a txpower-update
```

**Related Commands**

`config advance 802.11b txpower-update`
config advanced backup-controller primary

To configure a primary backup controller for a specific controller, use the `config advanced backup-controller primary` command.

```
config advanced backup-controller primary backup_controller_name backup_controller_ip_address
```

**Syntax Description**

+ `backup_controller_name` Name of the backup controller.
+ `backup_controller_ip_address` IP address of the backup controller.

**Defaults**

None.

**Usage Guidelines**

To delete a primary backup controller entry, enter 0.0.0.0 for the controller IP address.

**Examples**

This example shows how to configure the primary backup controller:

```
> config advanced backup-controller primary Controller_1 10.10.10.10
```

**Related Commands**

`show advanced backup-controller`
config advanced backup-controller secondary

To configure a secondary backup controller for a specific controller, use the config advanced backup-controller secondary command.

```
config advanced backup-controller secondary backup_controller_name
  backup_controller_ip_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>backup_controller_name</td>
<td>Name of the backup controller.</td>
</tr>
<tr>
<td>backup_controller_ip_address</td>
<td>IP address of the backup controller.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

To delete a secondary backup controller entry, enter 0.0.0.0 for the controller IP address.

**Examples**

This example shows how to configure a secondary backup controller:

```
> config advanced backup-controller secondary Controller_1 10.10.10.10
```

**Related Commands**

show advanced backup-controller
config advanced client-handoff

To set the client handoff to occur after a selected number of 802.11 data packet excessive retries, use the config advanced client-handoff command.

```
config advanced client-handoff num_of_retries
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>num_of_retries</td>
<td>Number of excessive retries before client handoff (from 0 to 255).</td>
</tr>
</tbody>
</table>

| Defaults           | 0 excessive retries (disabled).                   |

| Usage Guidelines   | This command is supported only for the 1000/1510 series access points. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to set the client handoff to 100 excessive retries:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; config advanced client-handoff 100</td>
</tr>
</tbody>
</table>

| Related Commands   | show advanced client-handoff                                         |
config advanced dot11-padding

To enable or disable over-the-air frame padding, use the `config advanced dot11-padding` command.

```
config advanced dot11-padding { enable | disable }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables this command.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables this command.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Examples**

This example shows how to enable over-the-air frame padding:

```
> config advanced dot11-padding enable
```

**Related Commands**

deploy dot11
debug dot11 mgmt interface
deploy dot11 mgmt msg
deploy dot11 mgmt ssid
deploy dot11 mgmt state-machine
deploy dot11 mgmt station
show advanced dot11-padding
config advanced assoc-limit

To configure the rate at which access point radios send association and authentication requests to the controller, use the `config advanced assoc-limit` command.

```
config advanced assoc-limit { enable [number of associations per interval | interval in milliseconds] | disable }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enable this feature.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables this feature.</td>
</tr>
<tr>
<td>number of associations per interval</td>
<td>(Optional) Number of association request per access point slot in a given interval. The valid range is 1 to 100.</td>
</tr>
<tr>
<td>interval in milliseconds</td>
<td>(Optional) Association request limit interval. The valid range is 100 to 10000.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Usage Guidelines**

When 200 or more wireless clients try to associate to a controller at the same time, the clients no longer become stuck in the DHCP_REQD state when you use the `config advanced assoc-limit` command to limit association requests from access points.

**Examples**

This example shows how to configure the number of association requests per access point slot in a given interval of 20 with the association request limit interval of 250:

```
> config advanced assoc-limit enable 20 250
```
config advanced eap

To configure advanced extensible authentication protocol (EAP) settings, use the config advanced eap command.

```
config advanced eap [eapol-key-timeout timeout] eapol-key-retries retries [identity-request-timeout timeout] identity-request-retries retries [key-index index] max-login-ignore-identity-response {enable | disable} request-timeout timeout request-retries retries
```

Syntax Description

- **eapol-key-timeout**
  - **timeout**
  - (Optional) Specifies the amount of time (1 to 5 seconds) in which the controller attempts to send an EAP key over the LAN to wireless clients using local EAP.

- **eapol-key-retries**
  - **retries**
  - (Optional) Specifies the maximum number of times (0 to 4 retries) that the controller attempts to send an EAP key over the LAN to wireless clients using local EAP.

- **identity-request-timeout**
  - **timeout**
  - (Optional) Specifies the amount of time (1 to 120 seconds) in which the controller attempts to send an EAP identity request to wireless clients using local EAP.

- **identity-request-retries**
  - **retries**
  - (Optional) Specifies the maximum number of times (1 to 20 retries) that the controller attempts to retransmit the EAP identity request to wireless clients using local EAP.

- **key-index**
  - **index**
  - (Optional) index—Specifies the key index (0 or 3) used for dynamic wired equivalent privacy (WEP).

- **max-login-ignore-identity-response**
  - (Optional) Specifies that the maximum EAP identity response login count for a user is ignored. When enabled, this command limits the number of devices that can be connected to the controller with the same username.

  - **enable**
  - Ignores the same username reaching the maximum EAP identity response.

  - **disable**
  - Checks the same username reaching the maximum EAP identity response.

- **request-timeout**
  - **timeout**
  - (Optional) Specifies the amount of time (1 to 120 seconds) in which the controller attempts to send an EAP request to wireless clients using local EAP.

- **request-retries**
  - **retries**
  - (Optional) Specifies the maximum number of times (1 to 120 retries) that the controller attempts to retransmit the EAP request to wireless clients using local EAP.

**Defaults**

- Default for **eapol-key-timeout**: 1 second.
- Default for **eapol-key-retries**: 2 retries.

**Examples**

This example shows how to configure the key index used for dynamic wired equivalent privacy (WEP):

```
> config advanced eap key-index 0
```
config advanced eap

Related Commands

- show advanced eap
config advanced rate

To enable or disable switch control path rate limiting, use the `config advanced rate` command.

```
config advanced rate [enable | disable]
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables the switch control path rate limiting feature.</td>
<td>Disables the switch control path rate limiting feature.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to enable switch control path rate limiting:

```
> config advanced rate enable
```
config advanced statistics

To enable or disable the Cisco wireless LAN controller port statistics collection, use the `config advanced statistics` command.

```
config advanced statistics [enable | disable]
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables the switch port statistics collection.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables the switch port statistics collection.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to disable the switch port statistics collection settings:

```
> config advanced statistics disable
```

**Related Commands**

- `show advanced statistics`
- `show stats port`
- `show stats switch`
config advanced probe filter

To enable or disable the filtering of probe requests forwarded from an access point to the controller, use the `config advanced probe filter` command.

```plaintext
cfg adv probe filter {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the filtering of probe requests.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the filtering of probe requests.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the filtering of probe requests forwarded from an access point to the controller:

```
> config advanced probe filter enable
```

**Related Commands**

- `config advanced probe limit`
- `config radius acct IPsec authentication`
- `show advanced probe`
- `show radius acct statistics`
config advanced probe limit

To limit the number of probes sent to the WLAN controller per access point per client in a given interval, use the `config advanced probe limit` command.

```
config advanced probe limit num_probes interval
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>num_probes</td>
<td>Number of probe requests (from 1 to 100) forwarded to the controller per client per access point radio in a given interval.</td>
</tr>
<tr>
<td>interval</td>
<td>Probe limit interval (from 100 to 10000 milliseconds).</td>
</tr>
</tbody>
</table>

**Defaults**

- The default `num_probes` is 2 probe requests.
- The default `interval` is 500 milliseconds.

**Examples**

This example shows how to set the number of probes per access point per client to 5 and the probe interval to 800 milliseconds:

```
> config advanced probe limit 5 800
```

**Related Commands**

- `config advanced probe filter`
- `config radius acct IPsec authentication`
- `show advanced probe`
Configure Advanced Timers Commands

User the **advanced timers** commands to configure advanced 802.11a settings.
config advanced timers ap-discovery-timeout

To configure the Cisco lightweight access point discovery time-out, use the `config advanced timers ap-discovery-timeout` command.

```
config advanced timers ap-discovery-timeout seconds
```

**Syntax Description**

| seconds | Cisco lightweight access point discovery timeout value between 1 and 10 seconds. |

**Defaults**

10 seconds.

**Usage Guidelines**

The Cisco lightweight access point discovery timeout is how often a Cisco wireless LAN controller attempts to discover unconnected Cisco lightweight access points.

**Examples**

This example shows how to configure an access point discovery-timeout with the timeout value of 20:

```
> config advanced timers ap-discovery-timeout 20
```

**Related Commands**

- `show advanced timers`
- `config advanced timers ap-fast-heartbeat`
- `config advanced timers ap-heartbeat-timeout`
- `config advanced timers ap-primary-discovery-timeout`
- `config advanced timers auth-timeout`
**config advanced timers ap-fast-heartbeat**

To enable or disable the fast heartbeat timer which reduces the amount of time it takes to detect a controller failure for local, hybrid-REAP, or all access points, use the `config advanced timers ap-fast-heartbeat` command.

```
config advanced timers ap-fast-heartbeat {local | hreap | all} {enable | disable} interval
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>local</td>
<td>Configures the fast heartbeat interval for access points in local mode only.</td>
</tr>
<tr>
<td>hreap</td>
<td>Configures the fast heartbeat interval for access points in hybrid-REAP mode only.</td>
</tr>
<tr>
<td>all</td>
<td>Configures the fast heartbeat interval for all access points.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the fast heartbeat interval.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the fast heartbeat interval.</td>
</tr>
<tr>
<td>interval</td>
<td>Small heartbeat interval (between 1 and 10 seconds, inclusive), which reduces the amount of time it takes to detect a controller failure.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Examples**

This example shows how to enable the fast heartbeat interval for access point in local mode:

```
> config advanced timers ap-fast-heartbeat local enable 5
```

This example shows how to enable the fast heartbeat interval for access point in hybrid-REAP mode:

```
> config advanced timers ap-fast-heartbeat hreap enable 8
```

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

```
> config advanced timers ap-fast-heartbeat all enable 6
```

This example shows how to disable the fast heartbeat interval for all access point:

```
> config advanced timers ap-fast-heartbeat all disable
```

**Related Commands**

- `show advanced timers`
- `config advanced timers ap-discovery-timeout`
- `config advanced timers ap-heartbeat-timeout`
- `config advanced timers ap-primary-discovery-timeout`
- `config advanced timers auth-timeout`
config advanced timers ap-heartbeat-timeout

To configure the Cisco lightweight access point heartbeat timeout, use the `config advanced timers ap-heartbeat-timeout` command.

```
config advanced timers ap-heartbeat-timeout seconds
```

**Syntax Description**

| `seconds` | Cisco lightweight access point heartbeat timeout value between 1 and 30 seconds. |

**Defaults**

30 seconds.

**Usage Guidelines**

The Cisco lightweight access point heartbeat timeout controls how often the Cisco lightweight access point sends a heartbeat keep-alive signal to the Cisco wireless LAN controller.

This `seconds` value should be at least three times larger than the fast heartbeat timer.

**Examples**

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

```
> config advanced timers ap-heartbeat-timeout 20
```

**Related Commands**

- `show advanced timers`
- `config advanced timers ap-discovery-timeout`
- `config advanced timers ap-fast-heartbeat`
- `config advanced timers ap-primary-discovery-timeout`
- `config advanced timers auth-timeout`
crypto-local

To configure the access point primary discovery request timer, use the config advanced timers ap-primary-discovery-timeout command.

```
config advanced timers ap-primary-discovery-timeout interval
```

**Syntax Description**

<table>
<thead>
<tr>
<th>interval</th>
<th>Access point primary discovery request timer between 30 and 3600 seconds.</th>
</tr>
</thead>
</table>

**Defaults**

120 seconds.

**Examples**

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

```
> config advanced timers ap-primary-discovery-timeout 1200
```

**Related Commands**

- show advanced timers
- config advanced timers ap-discovery-timeout
- config advanced timers ap-fast-heartbeat
- config advanced timers ap-heartbeat-timeout
- config advanced timers auth-timeout
config advanced timers auth-timeout

To configure the authentication timeout, use the config advanced timers auth-timeout command.

config advanced timers auth-timeout seconds

Syntax Description

| seconds         | Authentication response timeout value in seconds between 10 and 600. |

Defaults

10 seconds.

Examples

This example shows how to configure the authentication timeout to 20 seconds:

> config advanced timers auth-timeout 20

Related Commands

show advanced timers
config advanced timers ap-fast-heartbeat
config advanced timers ap-discovery-timeout
config advanced timers ap-heartbeat-timeout
config advanced timers ap-primary-discovery-timeout
To configure the Extensible Authentication Protocol (EAP) expiration timeout, use the `config advanced timers eap-timeout` command.

```
config advanced timers eap-timeout seconds
```

**Syntax Description**

| seconds | EAP timeout value in seconds between 8 and 120. |

**Defaults**

None.

**Examples**

This example shows how to configure the EAP expiration timeout to 10 seconds:

```
> config advanced timers eap-timeout 10
```

**Related Commands**

`show advanced timers`
config advanced timers eap-identity-request-delay

To configure the advanced Extensible Authentication Protocol (EAP) identity request delay in seconds, use the config advanced timers eap-identity-request-delay command.

**config advanced timers eap-identity-request-delay seconds**

| Syntax Description | seconds | Advanced EAP identity request delay in number of seconds between 0 and 10.
|--------------------|---------|---------------------------------------------------------------------

<table>
<thead>
<tr>
<th>Defaults</th>
<th>None.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to configure the advanced EAP identity request delay to 8 seconds:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; config advanced timers eap-identity-request-delay 8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>config advanced timers auth-timeout, config advanced timers rogue-ap, show advanced timers</th>
</tr>
</thead>
</table>
Configure Access Point Commands

Use the `config ap` commands to configure access point settings.
config ap

To enable or disable a Cisco lightweight access point or to add or delete a third-party (foreign) access point, use the `config ap` commands.

```
config ap {{ enable | disable} cisco_ap | { add | delete} MAC port {enable | disable} IP_address}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>Enables the Cisco lightweight access point.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables the Cisco lightweight access point.</td>
</tr>
<tr>
<td><code>cisco_ap</code></td>
<td>Name of the Cisco lightweight access point.</td>
</tr>
<tr>
<td><code>add</code></td>
<td>Adds foreign access points.</td>
</tr>
<tr>
<td><code>delete</code></td>
<td>Deletes foreign access points.</td>
</tr>
<tr>
<td><code>MAC</code></td>
<td>MAC address of a foreign access point.</td>
</tr>
<tr>
<td><code>port</code></td>
<td>Port number through which the foreign access point can be reached.</td>
</tr>
<tr>
<td><code>IP_address</code></td>
<td>IP address of the foreign access point.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to disable lightweight access point AP1:

```
> config ap disable AP1
```

This example shows how to add a foreign access point with MAC address 12:12:12:12:12:12 and IP address 192.12.12.1 from port 2033:

```
> config ap add 12:12:12:12:12:12 2033 enable 192.12.12.1
```

### Related Commands

- Configure Access Point Commands
- Show Access Point Commands
config ap bhrate

To configure the Cisco bridge backhaul Tx rate, use the `config ap bhrate` command.

```
config ap bhrate {rate | auto} cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>rate</code></td>
<td>Cisco bridge backhaul Tx rate in kbps. The valid values are 6000, 12000, 18000, 24000, 36000, 48000, and 54000.</td>
</tr>
<tr>
<td><code>auto</code></td>
<td>Configures the auto data rate.</td>
</tr>
<tr>
<td><code>cisco_ap</code></td>
<td>Name of a Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

**Defaults**

Auto.

**Usage Guidelines**

In previous software releases, the default value for bridge data rate was **24000** (24 Mbps). In controller software release 6.0, the default value for bridge data rate is **auto**. If you configured the default bridge data rate value (24000) in a previous controller software release, the bridge data rate is configured with the new default value (auto) when you upgrade to controller software release 6.0. However, if you configured a non default value (for example, 18000) in a previous controller software release, that configuration setting is preserved when you upgrade to software release 6.0.

When the bridge data rate is set to **auto**, the mesh backhaul chooses the highest rate where the next higher rate cannot be used due to unsuitable conditions for that specific rate (and not because of conditions that affect all rates).

**Examples**

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

```
> config ap bhrate 54000 AP01
```

**Related Commands**

`config ap`
config ap bridgegroupname

To set or delete a bridge group name on a Cisco lightweight access point, use the config ap bridgegroupname command.

```
config ap bridgegroupname {set groupname | delete} cisco_ap
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>set</code></td>
<td>Sets a Cisco lightweight access point’s bridge group name.</td>
</tr>
<tr>
<td><code>groupname</code></td>
<td>Bridge group name.</td>
</tr>
<tr>
<td><code>delete</code></td>
<td>Deletes a Cisco lightweight access point’s bridge group name.</td>
</tr>
<tr>
<td><code>cisco_ap</code></td>
<td>Name of a Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

Only access points with the same bridge group name can connect to each other.

### Examples

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

```
> config ap bridgegroupname delete AP02
```

Changing the AP's bridgegroupname may strand the bridge AP. Please continue with caution. Changing the AP's bridgegroupname will also cause the AP to reboot. Are you sure you want to continue? (y/n)

### Related Commands

config ap
config ap bridging

To enable or disable Ethernet-to-Ethernet bridging on a Cisco lightweight access point, use the `config ap bridging` command.

```
config ap bridging {enable | disable} cisco_ap
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables the Ethernet-to-Ethernet bridging on a Cisco lightweight access point.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables Ethernet-to-Ethernet bridging.</td>
</tr>
<tr>
<td></td>
<td>cisco_ap</td>
<td>Name of a Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

| Defaults | None. |

<table>
<thead>
<tr>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>This example shows how to enable bridging on an access point:</td>
</tr>
<tr>
<td>&gt; config ap bridging enable nyc04-44-1240</td>
</tr>
<tr>
<td>This example shows how to disable bridging on an access point:</td>
</tr>
<tr>
<td>&gt; config ap bridging disable nyc04-44-1240</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>config ap</th>
</tr>
</thead>
</table>
config ap cdp

To enable or disable the Cisco Discovery Protocol (CDP) on a Cisco lightweight access point, use the `config ap cdp` command.

```
config ap cdp {enable | disable} {cisco_ap | all}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the CDP on an access point.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the CDP on an access point.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Name of a Cisco lightweight access point.</td>
</tr>
<tr>
<td>all</td>
<td>Specifies all access points.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Usage Guidelines**

The `config ap cdp disable all` command disables CDP on all access points that are joined to the controller and all access points that join in the future. CDP remains disabled on both current and future access points even after the controller or access point reboots. To enable CDP, enter the `config ap cdp enable all` command.

**Note**

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Examples**

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

```
> config ap cdp enable all
```

This example shows how to disable the CDP on ap02 access point:

```
> config ap cdp disable ap02
```

**Related Commands**

- `config cdp timer`
- `show ap cdp`
config ap core-dump

To configure a Cisco lightweight access point’s memory core dump, use the `config ap core-dump` command.

```
config ap core-dump {disable | enable tftp_server_ipaddress filename {compress | uncompress} {cisco_ap | all}}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>Enables the Cisco lightweight access point’s memory core dump setting.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables the Cisco lightweight access point’s memory core dump setting.</td>
</tr>
<tr>
<td><code>tftp_server_ipaddress</code></td>
<td>IP address of the TFTP server to which the access point sends core dump files.</td>
</tr>
<tr>
<td><code>filename</code></td>
<td>Name the access point uses to label the core file.</td>
</tr>
<tr>
<td><code>compress</code></td>
<td>Compresses the core dump file.</td>
</tr>
<tr>
<td><code>uncompress</code></td>
<td>Uncompresses the core dump file.</td>
</tr>
<tr>
<td><code>cisco_ap</code></td>
<td>Name of a Cisco lightweight access point.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Specifies all access points.</td>
</tr>
</tbody>
</table>

**Note**

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Defaults**

None.

**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:

```
> config ap core-dump enable 192.1.1.1 log compress AP02
```

**Related Commands**

- config ap crash-file clear-all
- config ap crash-file delete
- config ap crash-file get-crash-file
- config ap crash-file get-radio-core-dump
- config ap port
config ap crash-file clear-all

To delete all crash and radio core dump files, use the `config ap crash-file clear-all` command.

```
 config ap crash-file clear-all
```

### Syntax Description
This command has no arguments or keywords.

### Defaults
None.

### Examples
This example shows how to delete all crash files:

```
> config ap crash-file clear-all
```

### Related Commands
- `config ap core-dump`
- `config ap crash-file delete`
- `config ap crash-file get-crash-file`
- `config ap crash-file get-radio-core-dump`
- `config ap port`
config ap crash-file delete

To delete a single crash or radio core dump file, use the config ap crash-file delete command.

```
config ap crash-file delete filename
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>filename</th>
<th>Name of the file to delete.</th>
</tr>
</thead>
</table>

| Defaults | None. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to delete crash file 1:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; config ap crash-file delete crash-file-1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>config ap core-dump</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>config ap crash-file clear-all</td>
</tr>
<tr>
<td></td>
<td>config ap crash-file get-crash-file</td>
</tr>
<tr>
<td></td>
<td>config ap crash-file get-radio-core-dump</td>
</tr>
<tr>
<td></td>
<td>config ap port</td>
</tr>
</tbody>
</table>

config ap crash-file get-crash-file

To collect the latest crash data for a Cisco lightweight access point, use the `config ap crash-file get-crash-file` command.

```
config ap crash-file get-crash-file cisco_ap
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th><code>cisco_ap</code></th>
<th>Name of the Cisco lightweight access point.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Usage Guidelines**

Use the `transfer upload datatype` command to transfer the collected data to the Cisco wireless LAN controller.

**Examples**

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

```
> config ap crash-file get-crash-file AP3
```

**Related Commands**

- `config ap core-dump`
- `config ap crash-file clear-all`
- `config ap crash-file delete`
- `config ap crash-file get-radio-core-dump`
- `config ap port`
**config ap crash-file get-radio-core-dump**

To get a Cisco lightweight access point’s radio core dump, use the `config ap crash-file get-radio-core-dump` command.

```
config ap crash-file get-radio-core-dump Slot_ID cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Slot_ID</th>
<th>Slot ID (either 0 or 1).</th>
</tr>
</thead>
<tbody>
<tr>
<td>cisco_ap</td>
<td>Name of a Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

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

```
> config ap crash-file get-radio-core-dump 0 AP02
```

**Related Commands**

- `config ap core-dump`
- `config ap crash-file clear-all`
- `config ap crash-file delete`
- `config ap crash-file get-crash-file`
- `config ap port`
**config ap dot1xuser**

To configure the global authentication username and password for all access points currently joined to the controller as well as any access points that join the controller in the future, use the `config ap dot1xuser` command.

```
config ap dot1xuser add username user password password { all | cisco_ap }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>add username</td>
<td>Specifies to add a username.</td>
</tr>
<tr>
<td>user</td>
<td>Username.</td>
</tr>
<tr>
<td>password</td>
<td>Specifies to add a password.</td>
</tr>
<tr>
<td>password</td>
<td>Password.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Specific access point.</td>
</tr>
<tr>
<td>all</td>
<td>Specifies all access points.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

You must 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 a word 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:

```
> config ap dot1xuser add username cisco123 password cisco2020 all
```

**Related Commands**

- `config ap dot1xuser delete`
- `config ap dot1xuser disable`
- `show ap dot1xuser disable`
config ap dot1xuser delete

To force a specific access point to use the controller’s global authentication settings, use the `config ap dot1xuser delete` command.

```
config ap dot1xuser delete cisco_ap
```

**Syntax Description**

| cisco_ap | Access point. |

**Defaults**

None.

**Examples**

This example shows how to delete access point AP01 to use the controller’s global authentication settings:

```
> config ap dot1xuser delete AP01
```

**Related Commands**

- `config ap dot1xuser`
- `config ap dot1xuser disable`
- `show ap summary`
config ap dot1xuser disable

To disable authentication for all access points or for a specific access point, use the **config ap dot1xuser disable** command.

```
config ap dot1xuser disable { all | cisco_ap }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>disable</th>
<th>all</th>
<th>cisco_ap</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disables authentication.</td>
<td>Specifies all access points.</td>
<td>Access point.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

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 disable the authentication for access point cisco_ap1:

```
> config ap dot1xuser disable cisco_ap1
```

**Related Commands**

- config ap dot1xuser
- config ap dot1xuser delete
- show ap summary
config ap ethernet

To configure the duplex and speed settings on the wireless LAN and the lightweight access points, use the `config ap ethernet` command.

```
config ap ethernet duplex [auto | half | full] speed [auto | 10 | 100 | 1000] [all | Cisco_ap]
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>duplex</td>
<td>Specifies the ethernet port duplex settings.</td>
</tr>
<tr>
<td>auto</td>
<td>(Optional) Specifies the Ethernet port duplex auto settings.</td>
</tr>
<tr>
<td>half</td>
<td>(Optional) Specifies the Ethernet port duplex half settings.</td>
</tr>
<tr>
<td>full</td>
<td>(Optional) Specifies the Ethernet port duplex full settings.</td>
</tr>
<tr>
<td>speed</td>
<td>Specifies the Ethernet port speed settings.</td>
</tr>
<tr>
<td>auto</td>
<td>(Optional) Specifies the Ethernet port speed to auto.</td>
</tr>
<tr>
<td>10</td>
<td>(Optional) Specifies the Ethernet port speed to 10 Mbps.</td>
</tr>
<tr>
<td>100</td>
<td>(Optional) Specifies the Ethernet port speed to 100 Mbps.</td>
</tr>
<tr>
<td>1000</td>
<td>(Optional) Specifies the Ethernet port speed to 1000 Mbps.</td>
</tr>
<tr>
<td>all</td>
<td>Specifies the ethernet port setting for all connected access points.</td>
</tr>
</tbody>
</table>

### Defaults
None

### Examples

This example shows how to configure the Ethernet port duplex half settings 10 Mbps for all access points:

```plaintext
> config ap ethernet duplex half speed 10 all
```

### Related Commands
- `config ap`
- `show ap summary`
config ap group-name

To specify a descriptive group name for a Cisco lightweight access point, use the `config ap group-name` command.

```
config ap group-name groupname cisco_ap
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>groupname</code></td>
<td>Descriptive name for the access point group.</td>
</tr>
<tr>
<td><code>cisco_ap</code></td>
<td>Name of the Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

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

### Examples

This example shows how to configure a descriptive name for access point AP01:

```
> config ap group-name superusers AP01
```

### Related Commands

- `config ap group-name`
- `config wlan apgroup`
- `show ap summary`
- `show ap wlan`
**config ap h-reap radius auth set**

To configure a primary or secondary RADIUS server for a specific hybrid-REAP access point, use the `config ap h-reap radius auth set` command.

```
config ap h-reap radius auth set {primary | secondary} ip_address auth_port secret
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>primary</code></td>
<td>Specifies the primary RADIUS server for a specific hybrid-REAP access point.</td>
</tr>
<tr>
<td><code>secondary</code></td>
<td>Specifies the secondary RADIUS server for a specific hybrid-REAP access point.</td>
</tr>
<tr>
<td><code>ip_address</code></td>
<td>Name of the Cisco lightweight access point.</td>
</tr>
<tr>
<td><code>auth_port secret</code></td>
<td>Name of the port.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure a primary RADIUS server for a specific access point:

```
> config ap h-reap radius auth set primary 192.12.12.1
```

**Related Commands**

- config ap mode h-reap
- config ap h-reap vlan wlan
- config ap h-reap vlan
- config ap h-reap vlan native
To enable or disable VLAN tagging for a hybrid-REAP access, use the `config ap h-reap vlan` command.

```
config ap h-reap vlan {enable | disable} cisco_ap
```

**Syntax Description**

- **enable**: Enables the access point’s VLAN tagging.
- **disable**: Disables the access point’s VLAN tagging.
- **cisco_ap**: Name of the Cisco lightweight access point.

**Defaults**

Disabled. Once enabled, WLANs enabled for local switching inherit the VLAN assigned at the controller.

**Examples**

This example shows how to enable the access point’s VLAN tagging for a hybrid-REAP access:

```
> config ap h-reap vlan enable AP02
```

**Related Commands**

- `config ap mode h-reap`
- `config ap h-reap radius auth set`
- `config ap h-reap vlan wlan`
- `config ap h-reap vlan native`
**config ap h-reap vlan native**

To configure a native VLAN for a hybrid-REAP access, use the `config ap h-reap vlan native` command.

```
config ap h-reap vlan native vlan-id cisco_ap
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>vlan-id</code></td>
<td>VLAN identifier.</td>
</tr>
<tr>
<td><code>cisco_ap</code></td>
<td>Name of the Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure a native VLAN for a hybrid-REAP access point mode:

```
> config ap h-reap vlan native 6 AP02
```

**Related Commands**

- `config ap mode h-reap`
- `config ap h-reap radius auth set`
- `config ap h-reap vlan wlan`
config ap h-reap vlan wlan

To assign a VLAN ID to a hybrid-REAP access point, use the `config ap h-reap vlan wlan` command.

```
config ap h-reap vlan wlan ip_address vlan-id cisco_ap
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>ip_address</code></td>
<td>Name of the Cisco lightweight access point.</td>
</tr>
<tr>
<td><code>vlan-id</code></td>
<td>VLAN identifier.</td>
</tr>
<tr>
<td><code>cisco_ap</code></td>
<td>Name of the Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

**Defaults**

VLAN ID associated to the WLAN.

**Examples**

This example shows how to assign a VLAN ID to a hybrid-REAP access point:

```
> config ap h-reap vlan wlan 192.12.12.1 6 AP02
```

**Related Commands**

- `config ap mode h-reap`
- `config ap h-reap radius auth set`
- `config ap h-reap vlan`
- `config ap h-reap vlan native`
To configure an image on a specified access point, use the **config ap image predownload** command.

```plaintext
config ap image predownload primary all
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>primary</td>
<td>Predownloads an image to a Cisco access point from the controller's primary image.</td>
</tr>
<tr>
<td>backup</td>
<td>Predownloads an image to a Cisco access point from the controller's backup image.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Name of a Cisco lightweight access point.</td>
</tr>
<tr>
<td>all</td>
<td>Specifies all access points to predownload an image.</td>
</tr>
</tbody>
</table>

**Note**

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Examples**

This example shows how to predownload an image to an access point from the primary image:

```plaintext
> config ap image predownload primary all
```

**Related Commands**

- **config ap image swap**
- **show ap image**
config ap image swap

To swap an access point’s primary and backup images, use the **config ap image swap** command.

```
config ap image swap {cisco_ap | all}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>cisco_ap</code></td>
<td>Name of a Cisco lightweight access point.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Specifies all access points to interchange the boot images.</td>
</tr>
</tbody>
</table>

**Note**

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Defaults**

None.

**Examples**

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

```
> config ap image swap all
```

**Related Commands**

- `config ap image predownload`
- `show ap image`
config ap led-state

To enable or disable the LED-State for an access point, use the **config ap led-state** command.

```
config ap led-state {enable | disable} {cisco_ap | all}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the access point’s LED-State.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the access point’s LED-State.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Name of a Cisco lightweight access point.</td>
</tr>
<tr>
<td>all</td>
<td>Specifies all access points.</td>
</tr>
</tbody>
</table>

**Note**

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Defaults**

None.

**Examples**

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

```
> config ap led-state enable AP02
```

**Related Commands**

`config ap`
**config ap link-encryption**

To enable or disable the Datagram Transport Layer Security (DTLS) data encryption for access points on the 5500 series controller, use the `config ap link-encryption` command.

```
config ap link-encryption {enable | disable} {Cisco_AP | all}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables the DTLS data encryption for access points.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables the DTLS data encryption for access points.</td>
</tr>
<tr>
<td></td>
<td>Cisco_AP</td>
<td>Name of a Cisco lightweight access point.</td>
</tr>
<tr>
<td></td>
<td>all</td>
<td>Specifies all access points.</td>
</tr>
</tbody>
</table>

**Note**

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Defaults**

DTLS data encryption is enabled automatically for OfficeExtend access points but disabled by default for all other access points.

**Usage Guidelines**

Only Cisco 5500 Series Controllers support DTLS data encryption. This feature is not available on other controller platforms. If an access point with data encryption enabled tries to join any other controller, the access point joins the controller, but data packets are sent unencrypted.

Only Cisco 1130, 1140, 1240, and 1250 series access points support DTLS data encryption, and data-encrypted access points can join a Cisco 5500 Series Controller only if the wplus license is installed on the controller. If the wplus license is not installed, the access points cannot join the controller.

**Examples**

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

```
> config ap link-encryption enable AP02
```

**Related Commands**

- `config ap`
- `show dtls connections`
config ap link-latency

To enable or disable link latency for a specific access point or for all access points currently associated to the controller, use the config ap link-latency command:

```
config ap link-latency {enable | disable | reset} {cisco_ap | all}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the link latency for an access point.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the link latency for an access point.</td>
</tr>
<tr>
<td>reset</td>
<td>Resets all link latency for all access points.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Name of the Cisco lightweight access point.</td>
</tr>
<tr>
<td>all</td>
<td>Specifies all access points.</td>
</tr>
</tbody>
</table>

**Note**

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Defaults**

Link latency is disabled by default.

**Usage Guidelines**

This command enables or disables link latency only for access points that are currently joined to the controller. 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:

```
> config ap link-latency enable all
```

**Related Commands**

show ap config
config ap location

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

```
config ap location location cisco_ap
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th><code>location</code></th>
<th>Location name of the access point (enclosed by double quotation marks).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>cisco_ap</code></td>
<td>Name of the Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**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:

```
> config ap location "Building 1" AP1
```
config ap logging syslog level

To set the severity level for filtering syslog messages for a particular access point or for all access points, use the `config ap logging syslog level` command.

```
config ap logging syslog level severity_level {cisco_ap | all}
```

### Syntax Description

- **severity_level**: Severity levels are as follows:
  - emergencies—Severity level 0
  - alerts—Severity level 1
  - critical—Severity level 2
  - errors—Severity level 3
  - warnings—Severity level 4
  - notifications—Severity level 5
  - informational—Severity level 6
  - debugging—Severity level 7

- **cisco_ap**: Cisco access point.
- **all**: Specifies all access points.

### Defaults

None.

### Usage Guidelines

If you set a syslog level, only those messages whose severity is equal to or less than that level are sent to the access point. For example, if you set the syslog level to Warnings (severity level 4), only those messages whose severity is between 0 and 4 are sent to the access point.

### Examples

This example shows how to set the severity for filtering syslog messages to 3:

```
> config ap logging syslog level 3
```

### Related Commands

- `config logging syslog host`
- `config logging syslog facility`
- `show logging`
config ap mgmtuser add

To configure username, password, and secret password for AP management, use the config ap mgmtuser add command.

`config ap mgmtuser add username AP_username password AP_password secret secret {all | Cisco_AP}`

**Syntax Description**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>username</td>
<td>Configures the username for AP management.</td>
</tr>
<tr>
<td>AP_username</td>
<td>Management username.</td>
</tr>
<tr>
<td>password</td>
<td>Configures the password for AP management.</td>
</tr>
<tr>
<td>AP_password</td>
<td>AP management password.</td>
</tr>
<tr>
<td>secret</td>
<td>Configures the secret password for privileged AP management.</td>
</tr>
<tr>
<td>secret</td>
<td>AP management secret password.</td>
</tr>
<tr>
<td>all</td>
<td>Applies configuration to every AP that does not have a specific username.</td>
</tr>
<tr>
<td>Cisco_AP</td>
<td>Cisco access point.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

The following requirements are enforced on the password:

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

The following requirement is enforced on the secret password:

- Secret Password should contain character from at least three of the following classes: lowercase letters, uppercase letters, digits, or special characters.

**Examples**

This example shows how to add username, password, and secret password for AP management:

```plaintext
> config ap mgmtuser add username acd password Arc_1234 secret Mid_45 all
```

**Related Commands**

config ap mgmtuser delete
config ap mgmtuser delete

To force a specific access point to use the controller’s global credentials, use the `config ap mgmtuser delete` command.

```
config ap mgmtuser delete cisco_ap
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>cisco_ap</code></td>
<td>Access point.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to delete the credentials of an access point:

```
> config ap mgmtuser delete cisco_ap1
```

### Related Commands

- `config ap mgmtuser add`
**config ap mode**

To change a Cisco wireless LAN controller communication option for an individual Cisco lightweight access point, use the `config ap mode` command.

```plaintext
config ap mode { bridge | h-reap | local | reap | rogue | sniffer | se-connect
monitor [submode { none | wips ]} } cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>bridge</code></td>
<td>Converts from a lightweight access point to a mesh access point (bridge mode).</td>
</tr>
<tr>
<td><code>h-reap</code></td>
<td>Enables hybrid remote edge access point mode on an access point.</td>
</tr>
<tr>
<td><code>local</code></td>
<td>Converts from an indoor mesh access point (MAP or RAP) to a nonmesh lightweight access point (local mode).</td>
</tr>
<tr>
<td><code>reap</code></td>
<td>Enables remote edge access point mode on an access point.</td>
</tr>
<tr>
<td><code>rogue</code></td>
<td>Enables rogue detector mode on an access point.</td>
</tr>
<tr>
<td><code>sniffer</code></td>
<td>Enables wireless sniffer mode on an access point.</td>
</tr>
<tr>
<td><code>se-connect</code></td>
<td>Enables spectrum expert mode on an access point.</td>
</tr>
<tr>
<td><code>submode</code></td>
<td>(Optional) Configures wIPS submode on an access point.</td>
</tr>
<tr>
<td><code>none</code></td>
<td>Disables the wIPS on an access point.</td>
</tr>
<tr>
<td><code>wips</code></td>
<td>Enables the wIPS submode on an access point.</td>
</tr>
<tr>
<td><code>cisco_ap</code></td>
<td>Name of the Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

**Defaults**

Local.

**Usage Guidelines**

Sniffer mode will capture and forward all the packets from the clients on that channel to a remote machine that runs AiroPeek or other supported packet analyzer software. It will include information on the timestamp, signal strength, packet size and so on.

**Examples**

This example shows how to set the controller to communicate with access point AP91 in bridge mode:

```
> config ap mode bridge AP91
```

This example shows how to set the controller to communicate with access point AP01 in local mode:

```
> config ap mode local AP01
```

This example shows how to set the controller to communicate with access point AP91 in remote office (REAP) mode:

```
> config ap mode reap AP91
```

This example shows how to set the controller to communicate with access point AP91 in remote office (REAP) mode:

```
> config ap mode h-reap AP01
```

This example shows how to set the controller to communicate with access point AP91 in rogue access point detector mode:
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> config ap mode rogue AP01

This example shows how to set the controller to communicate with access point AP02 in wireless sniffer mode:
> config ap mode sniffer AP02

This example shows how to set the controller to communicate with access point AP02 in wIPS submode:
> config ap mode monitor submode wips AP02

Related Commands

- config 802.11 enable
- config ap mode
- config ap monitor-mode
- show ap config
- show ap monitor-mode summary
- show wps wips statistics
config ap monitor-mode

To configure Cisco lightweight access point channel optimization, use the **config ap monitor-mode** command.

```
config ap monitor-mode {802.11b fast-channel | no-optimization | tracking-opt | wips-optimized} cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>802.11b fast-channel</td>
<td>Configures 802.11b scanning channels for a monitor-mode access point.</td>
</tr>
<tr>
<td>no-optimization</td>
<td>Specifies no channel scanning optimization for the access point.</td>
</tr>
<tr>
<td>tracking-opt</td>
<td>Enables tracking optimized channel scanning for the access point.</td>
</tr>
<tr>
<td>wips-optimized</td>
<td>Enables wIPS optimized channel scanning for the access point.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Name of the Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure a Cisco wireless intrusion prevention system (wIPS) monitor mode on access point AP01:

```
> config ap monitor-mode wips-optimized AP01
```

**Related Commands**

- config 802.11 enable
- config ap mode
- show ap mode
- show ap config
- show ap monitor-mode summary
- show wps wips statistics
- show wps wips summary
**config ap name**

To modify the name of a Cisco lightweight access point, use the `config ap name` command.

```
config ap name new_name old_name
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>new_name</td>
<td>Desired Cisco lightweight access point name.</td>
</tr>
<tr>
<td>old_name</td>
<td>Current Cisco lightweight access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to modify the name of access point AP1 to AP2:

```
> config ap name AP1 AP2
```

**Related Commands**

`show ap config`
config ap port

To configure the port for a foreign access point, use the config ap port command.

```
config ap port MAC port
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC</td>
<td>Foreign Access Point MAC address.</td>
</tr>
<tr>
<td>port</td>
<td>Port number for accessing the foreign access point.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to configure the port for a foreign access point MAC address:

```
> config ap port 12:12:12:12:12:12 20
```

Related Commands

config ap
config ap power injector

To configure the power injector state for an access point, use the config ap power injector command.

config ap power injector {enable | disable} {cisco_ap | all} {installed | override | switch_MAC}

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the power injector state for an access point.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the power injector state for an access point.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Name of the Cisco lightweight access point.</td>
</tr>
<tr>
<td>all</td>
<td>Specifies all Cisco lightweight access points connected to the controller.</td>
</tr>
<tr>
<td>installed</td>
<td>Detects the MAC address of the current switch port that has a power injector.</td>
</tr>
<tr>
<td>override</td>
<td>Overrides the safety checks and assumes a power injector is always installed.</td>
</tr>
<tr>
<td>switch_MAC</td>
<td>MAC address of the switch port with an installed power injector.</td>
</tr>
</tbody>
</table>

**Note**

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Defaults**

None.

**Examples**

This example shows how to enable the power injector state for all access points:

> config ap power injector enable all 12:12:12:12:12:12

**Related Commands**

config ap
config ap power pre-standard

To enable or disable the inline power Cisco pre-standard switch state for an access point, use the `config ap power pre-standard` command.

```
config ap power pre-standard {enable | disable} cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>Enables the inline power Cisco pre-standard switch state for an access point.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables the inline power Cisco pre-standard switch state for an access point.</td>
</tr>
<tr>
<td><code>cisco_ap</code></td>
<td>Name of the Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Examples**

This example shows how to enable the inline power Cisco pre-standard switch state for access point AP02:

```
> config ap power pre-standard enable AP02
```

**Related Commands**

`config ap`
config ap primary-base

To set the Cisco lightweight access point primary Cisco wireless LAN controller, use the `config ap primary-base` command.

```
config ap primary-base controller_name cisco_ap [controller_ip_address]
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>controller_name</code></td>
<td>Name of the Cisco wireless LAN controller.</td>
</tr>
<tr>
<td><code>cisco_ap</code></td>
<td>Cisco lightweight access point name.</td>
</tr>
<tr>
<td><code>controller_ip_address</code></td>
<td>(Optional) If the backup controller is outside the mobility group to which the access point is connected, then you need to provide the IP address of the primary, secondary, or tertiary controller.</td>
</tr>
</tbody>
</table>

**Note** For OfficeExtend access points, you must enter both the name and IP address of the controller. Otherwise, the access point cannot join this controller.

**Defaults** None.

**Usage Guidelines** The Cisco lightweight access point associates with this Cisco wireless LAN controller for all network operations and in the event of a hardware reset.

OfficeExtend access points do not use the generic broadcast or over-the-air (OTAP) discovery process to find a controller. You must configure one or more controllers because OfficeExtend access points try to connect only to their configured controllers.

**Examples** This example shows how to set an access point primary Wireless LAN controller:

```
> config ap primary-base SW_1 AP2
```

**Related Commands**
- `show sysinfo`
- `config sysname`
- `config ap secondary-base`
- `config ap tertiary-base`
config ap priority

To assign a priority designation to an access point that allows it to reauthenticate after a controller failure by priority rather than on a first-come-until-full basis, use the `config ap priority` command.

```
config ap priority {1 | 2 | 3 | 4} cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Specifies low priority.</td>
</tr>
<tr>
<td>2</td>
<td>Specifies medium priority.</td>
</tr>
<tr>
<td>3</td>
<td>Specifies high priority.</td>
</tr>
<tr>
<td>4</td>
<td>Specifies the highest (critical) priority.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Cisco lightweight access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

1 - Low priority.

**Usage Guidelines**

In a failover situation, if the backup controller does not have enough ports to allow all the access points in the affected area to reauthenticate, it gives priority to higher-priority access points over lower-priority ones, even if it means replacing lower-priority access points.

**Examples**

This example shows how to assign a priority designation to access point AP02 that allows it to reauthenticate after a controller failure by assigning a reauthentication priority 3:

```
> config ap priority 3 AP02
```

**Related Commands**

- `config network ap-priority`
- `show ap summary`
- `show network summary`
**config ap reporting-period**

To reset a Cisco lightweight access point, use the `config ap reporting-period` command.

```
config ap reporting-period period
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>period</code></td>
<td>Time period in seconds between 10 and 120.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to reset an access point reporting period to 120 seconds:

```
> config ap reporting-period 120
```

**Related Commands**

- `show ap config 802.11a`
- `show ap config 802.11ab`
config ap reset

To reset a Cisco lightweight access point, use the **config ap reset** command.

```
config ap reset cisco_ap
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>cisco_ap</strong></td>
<td>Cisco lightweight access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to reset an access point:

```
> config ap reset AP2
```

**Related Commands**

show ap config
config ap role

To specify the role of an access point in a mesh network, use the **config ap role** command.

```
config ap role {rootAP | meshAP} AP_name
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rootAP</td>
<td>Designates the mesh access point as a root access point (RAP).</td>
</tr>
<tr>
<td>meshAP</td>
<td>Designates the mesh access point as a mesh access point (MAP).</td>
</tr>
<tr>
<td>AP_name</td>
<td>Name of the Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

**Defaults**

meshAP.

**Usage Guidelines**

Use the **meshAP** keyword if the access point has a wireless connection to the controller, or use the **rootAP** keyword if the access point has a wired connection to the controller.

**Examples**

This example shows how to designate mesh access point AP02 as a root access point:

```
> config ap role rootAP AP02
```

Changing the AP’s role will cause the AP to reboot.
Are you sure you want to continue? (y/n)

**Related Commands**

config ap
To configure the Reset button for an access point, use the `config ap rst-button` command.

```
config ap rst-button {enable | disable} cisco_ap
```

**Syntax Description**
- `enable`: Enables the Reset button for an access point.
- `disable`: Disables the Reset button for an access point.
- `cisco_ap`: Name of the Cisco lightweight access point.

**Defaults**
None.

**Examples**
This example shows how to configure the reset button for access point AP03:
```
> config ap rst-button enable AP03
```

**Related Commands**
- `config ap`
config ap secondary-base

To set the Cisco lightweight access point secondary Cisco wireless LAN controller, use the `config ap secondary-base` command.

```
config ap secondary-base controller_name cisco_ap [controller_ip_address]
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>controller_name</td>
<td>Name of the Cisco wireless LAN controller.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Cisco lightweight access point name.</td>
</tr>
<tr>
<td>controller_ip_address</td>
<td>(Optional). If the backup controller is outside the mobility group to which the access point is connected, then you need to provide the IP address of the primary, secondary, or tertiary controller.</td>
</tr>
</tbody>
</table>

**Note** For OfficeExtend access points, you must enter both the name and IP address of the controller. Otherwise, the access point cannot join this controller.

**Defaults** None.

**Usage Guidelines** The Cisco lightweight access point associates with this Cisco wireless LAN controller for all network operations and in the event of a hardware reset.

OfficeExtend access points do not use the generic broadcast or over-the-air (OTAP) discovery process to find a controller. You must configure one or more controllers because OfficeExtend access points try to connect only to their configured controllers.

**Examples** This example shows how to set an access point secondary Cisco wireless controller:

```
> config ap secondary-base SW_1 AP2
```

**Related Commands**
- `show sysinfo`
- `config sysname`
- `config ap primary-base`
- `config ap tertiary-base`
config ap sniff

To enable or disable sniffing on an access point, use the `config ap sniff` command.

```
config ap sniff {802.11a | 802.11b} {enable channel server_ip | disable} cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>802.11a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>802.11b</td>
<td>Specifies the 802.11b network.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables sniffing on an access point.</td>
</tr>
<tr>
<td>channel</td>
<td>Channel to be sniffed.</td>
</tr>
<tr>
<td>server_ip</td>
<td>IP address of the remote machine running Omnipeek, Airopeek, AirMagnet, or Wireshark software.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables sniffing on an access point.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Access point configured as the sniffer.</td>
</tr>
</tbody>
</table>

**Defaults**

Channel 36.

**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 on 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 sent by the access point. After the Airopeek installation, copy the following .dll files to the location where airopeek is installed:

- `socket.dll` file to the `Plug-ins` folder (for example, `C:\Program Files\WildPackets\AiroPeek\Plugins`)
- `socketres.dll` file to the `PluginRes` folder (for example, `C:\Program Files\WildPackets\AiroPeek\1033\PluginRes`)

**Examples**

This example shows how to enable the sniffing on the 802.11a an access point primary Wireless LAN controller:

```
> config ap sniff 80211a enable 23 11.22.44.55 AP01
```

**Related Commands**

- `show ap config`
- `config ap sniff 802.11b`
**config ap ssh**

To enable Secure Shell (SSH) connectivity on an access point, use the `config ap ssh` command.

```
config ap ssh {enable | disable} cisco_ap
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>enable</strong></td>
<td>Enables the SSH connectivity on an access point.</td>
</tr>
<tr>
<td><strong>disable</strong></td>
<td>Disables the SSH connectivity on an access point.</td>
</tr>
<tr>
<td><strong>cisco_ap</strong></td>
<td>Cisco access point name.</td>
</tr>
</tbody>
</table>

**Defaults**
None.

**Usage Guidelines**
The Cisco lightweight access point associates with this Cisco wireless LAN controller for all network operation and in the event of a hardware reset.

**Examples**
This example shows how to enable SSH connectivity on access point Cisco_ap2:
```
> config ap ssh enable cisco_ap2
```

**Related Commands**
- `config ap`
- `config network ssh`
- `show ap stats`
config ap static-ip

To configure Cisco lightweight access point static IP address settings, use the **config ap static-ip** command.

```plaintext
config ap static-ip { enable cisco_ap ip_address net_mask gateway | disable cisco_ap | add { domain {cisco_ap all} domain_name } | { nameserver {cisco_ap all} dns_ip_address } | delete { domain nameserver } {cisco_ap all}}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>enable</strong></td>
<td>Enables the Cisco lightweight access point static IP address.</td>
</tr>
<tr>
<td><strong>disable</strong></td>
<td>Disables the Cisco lightweight access point static IP address. The access</td>
</tr>
<tr>
<td></td>
<td>point uses DHCP to get the IP address.</td>
</tr>
<tr>
<td><strong>cisco_ap</strong></td>
<td>Cisco lightweight access point name.</td>
</tr>
<tr>
<td><strong>ip_address</strong></td>
<td>Cisco lightweight access point IP address</td>
</tr>
<tr>
<td><strong>net_mask</strong></td>
<td>Cisco lightweight access point network mask.</td>
</tr>
<tr>
<td><strong>gateway</strong></td>
<td>IP address of the Cisco lightweight access point gateway.</td>
</tr>
<tr>
<td><strong>add</strong></td>
<td>Adds a domain or DNS server.</td>
</tr>
<tr>
<td><strong>domain</strong></td>
<td>Specifies the domain to which a specific access point or all access points</td>
</tr>
<tr>
<td></td>
<td>belong.</td>
</tr>
<tr>
<td><strong>all</strong></td>
<td>All access points.</td>
</tr>
<tr>
<td><strong>domain_name</strong></td>
<td>Specifies a domain name.</td>
</tr>
<tr>
<td><strong>nameserver</strong></td>
<td>Specifies a DNS server so that a specific access point or all access points</td>
</tr>
<tr>
<td></td>
<td>can discover the controller using DNS resolution.</td>
</tr>
<tr>
<td><strong>dns_ip_address</strong></td>
<td>DNS server IP address.</td>
</tr>
<tr>
<td><strong>delete</strong></td>
<td>Deletes a domain or DNS server.</td>
</tr>
</tbody>
</table>

### Note

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

### Defaults

None.

### Usage Guidelines

An access point cannot discover the controller 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.

After you enter the IP, netmask, and gateway addresses, save your configuration to reboot the access point. After the access point rejoins the controller, you can enter the domain and DNS server information.

### Examples

This example shows how to configure an access point static IP address:

```
> config ap static-ip enable AP2 1.1.1.1 255.255.255.0 10.1.1.1
```
Related Commands

- show sysinfo
- config sysname
- config ap secondary-base
- config ap primary-base
config ap stats-timer

To set the time in seconds that the Cisco lightweight access point sends its DOT11 statistics to the Cisco wireless LAN controller, use the config ap stats-timer command.

```
config ap stats-timer period cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>period</td>
<td>Time in seconds from 0 to 65535. A zero value disables the timer.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Cisco lightweight access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

0 (disabled).

**Usage Guidelines**

A value of 0 (zero) means the Cisco lightweight access point will 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 stat timer to 600 seconds for access point AP2:

```
> config ap stats-timer 600 AP2
```

**Related Commands**

config ap disable
config ap syslog host global

To configure a global syslog server for all access points that join the controller, use the **config ap syslog host global** command.

```
config ap syslog host global syslog_server_IP_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>syslog_server_IP_address</td>
<td>IP address of the syslog server.</td>
</tr>
</tbody>
</table>

**Defaults**

255.255.255.255.

**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 controller. 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:

```
> config ap syslog host global 255.255.255.255
```

**Related Commands**

- config ap syslog host specific
- show ap config global
- show ap config general
config ap syslog host specific

To configure a syslog server for a specific access point, use the **config ap syslog host specific** command.

```
config ap syslog host specific Cisco_ap syslog_server_IP_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco_ap</td>
<td>Cisco lightweight access point.</td>
</tr>
<tr>
<td>syslog_server_IP_address</td>
<td>Specifies the IP address of the syslog server.</td>
</tr>
</tbody>
</table>

**Defaults**

0.0.0.0.

**Usage Guidelines**

By default, the syslog server IP address for each access point is 0.0.0.0, indicating 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:

```
> config ap syslog host specific 0.0.0.0
```

**Related Commands**

- `config ap syslog host global`
- `show ap config global`
- `show ap config general`
config ap tcp-adjust-mss

To enable or disable the TCP maximum segment size (MSS) on a particular access point or on all access points, use the `config ap tcp-adjust-mss` command.

```
config ap tcp-adjust-mss {enable | disable} {Cisco_AP | all} size
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the TCP maximum segment size on an access point.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the TCP maximum segment size on an access point.</td>
</tr>
<tr>
<td>Cisco_AP</td>
<td>Cisco access point name.</td>
</tr>
<tr>
<td>all</td>
<td>Specifies all access points.</td>
</tr>
<tr>
<td>size</td>
<td>Maximum segment size, from 536 to 1363 bytes.</td>
</tr>
</tbody>
</table>

**Note**

If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Defaults**

None.

**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 CAPWAP tunnel, the access point changes the MSS to the new configured value.

**Examples**

This example shows how to enable the TCP MSS on access point Cisco_ap1 with a segment size of 1200 bytes:

```
> config ap tcp-adjust-mss enable cisco_ap1 1200
```

**Related Commands**

`show ap tcp-mss-adjust`
**config ap telnet**

To enable Telnet connectivity on an access point, use the **config ap telnet** command.

```
config ap telnet {enable | disable} cisco_ap
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the Telnet connectivity on an access point.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the Telnet connectivity on an access point.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Cisco access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

The Cisco lightweight access point associates with this Cisco wireless LAN controller for all network operation and in the event of a hardware reset.

**Examples**

This example shows how to enable Telnet connectivity on access point cisco_ap1:

```
> config ap telnet enable cisco_ap1
```

This example shows how to disable Telnet connectivity on access point cisco_ap1:

```
> config ap telnet disable cisco_ap1
```

**Related Commands**

- config ap
- config network telnet
- show ap config
config ap tertiary-base

To set the Cisco lightweight access point tertiary Cisco wireless LAN controller, use the `config ap tertiary-base` command.

```
config ap tertiary-base controller_name cisco_ap [controller_ip_address]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>controller_name</td>
<td>Name of the Cisco wireless LAN controller.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Cisco lightweight access point name.</td>
</tr>
<tr>
<td>controller_ip_address</td>
<td>(Optional) If the backup controller is outside the mobility group to which the access point is connected, then you need to provide the IP address of the primary, secondary, or tertiary controller.</td>
</tr>
</tbody>
</table>

**Note**

For OfficeExtend access points, you must enter both the name and IP address of the controller. Otherwise, the access point cannot join this controller.

**Defaults**

None.

**Usage Guidelines**

OfficeExtend access points do not use the generic broadcast or over-the-air (OTAP) discovery process to find a controller. You must configure one or more controllers because OfficeExtend access points try to connect only to their configured controllers.

The Cisco lightweight access point associates with this Cisco wireless LAN controller for all network operations and in the event of a hardware reset.

**Examples**

This example shows how to set the access point tertiary wireless LAN controller:

```
> config ap tertiary-base SW_1 AP2
```

**Related Commands**

- `show sysinfo`
- `config sysname`
- `config ap secondary-base`
- `config ap primary-base`
config ap tftp-downgrade

To configure the settings used for downgrading a lightweight access point to an autonomous access point, use the config ap ftp-downgrade command.

```
config ap tftp-downgrade {tftp_ip_address | image_filename | ap_name}
```

Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>tftp_ip_address</td>
<td>IP address of the TFTP server.</td>
</tr>
<tr>
<td>image_filename</td>
<td>Filename of the access point image file on the TFTP server.</td>
</tr>
<tr>
<td>ap_name</td>
<td>Access point name.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to configure the settings for downgrading access point ap1240_102301:

```
> config ap tftp-downgrade 10.0.23.8 1238.tar ap1240_102301
```

Related Commands

- show running-config
- show version
config ap username

To assign a username and password to access either a specific access point or all access points, use the `config ap username` command

```
config ap username user_id password passwd [all | ap_name]
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>user_id</code></td>
<td>Administrator username.</td>
</tr>
<tr>
<td><code>passwd</code></td>
<td>Administrator password.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>(Optional) Specifies all access points.</td>
</tr>
<tr>
<td><code>ap_name</code></td>
<td>Name of a specific access point.</td>
</tr>
</tbody>
</table>

| Defaults | None.                                                           |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to assign a username and password to a specific access point:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>config ap username jack password blue la204</code></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to assign the same username and password to a all access points:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>config ap username jack password blue all</code></td>
</tr>
</tbody>
</table>
config ap wlan

To enable or disable wireless LAN override for a Cisco lightweight access point radio, use the **config ap wlan** command.

```
config ap wlan {enable | disable} {802.11a | 802.11b} wlan_id cisco_ap
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the wireless LAN override on an access point.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the wireless LAN override on an access point.</td>
</tr>
<tr>
<td>802.11a</td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td>802.11b</td>
<td>Specifies the 802.11b network.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Cisco wireless LAN controller ID assigned to a wireless LAN.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Cisco lightweight access point name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable wireless LAN override on the AP03 802.11a radio:

```
> config ap wlan enable 802.11a AP03
```

**Related Commands**

`show ap wlan`
config auth-list add

To create an authorized access point entry, use the config auth-list add command.

    config auth-list add {mic | ssc} AP_MAC [AP_key]

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mic</td>
<td>Specifies that the access point has a manufacturer-installed certificate.</td>
</tr>
<tr>
<td>ssc</td>
<td>Specifies that the access point has a self-signed certificate.</td>
</tr>
<tr>
<td>AP_MAC</td>
<td>MAC address of a Cisco lightweight access point.</td>
</tr>
<tr>
<td>AP_key</td>
<td>Key hash value that is equal to 20 bytes or 40 digits.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to create an authorized access point entry with a manufacturer-installed certificate on MAC address 00:0b:85:02:0d:20:

    > config auth-list add mic 00:0b:85:02:0d:20

Related Commands

    config auth-list delete
    config auth-list ap-policy
To configure an access point authorization policy, use the `config auth-list ap-policy` command.

```
config auth-list ap-policy {authorize-ap {enable | disable} | ssc {enable | disable}}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>authorize-ap enable</td>
<td>Enables the authorization policy.</td>
</tr>
<tr>
<td>authorize-ap disable</td>
<td>Disables the AP authorization policy.</td>
</tr>
<tr>
<td>ssc enable</td>
<td>Allows the APs with self-signed certificates to connect.</td>
</tr>
<tr>
<td>ssc disable</td>
<td>Disallows the APs with self-signed certificates to connect.</td>
</tr>
</tbody>
</table>

### Defaults
None.

### Examples

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

```
> config auth-list ap-policy authorize-ap enable
```

This example shows how to enable an access point with a self-signed certificate to connect:

```
> config auth-list ap-policy ssc disable
```

### Related Commands
- `config auth-list add`
- `config auth-list delete`
**config auth-list delete**

To delete an access point entry, use the `config auth-list delete` command.

```
config auth-list delete AP_MAC
```

<table>
<thead>
<tr>
<th><strong>Syntax Description</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><code>AP_MAC</code></td>
<td>MAC address of a Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to delete an access point entry for MAC address 00:0b:85:02:0d:20:

```
> config auth-list delete 00:0b:85:02:0d:20
```

**Related Commands**

- `config auth-list add`
- `config auth-list ap-policy`
Configure band-select commands

Use the `config band-select` command to configure the band selection feature on the controller.
**config band-select cycle-count**

To set the band select probe cycle count, use the **config band-select cycle-count** command.

```
config band-select cycle-count cycle_count
```

**Syntax Description**

<table>
<thead>
<tr>
<th>cycle_count</th>
<th>Enter a value for cycle count between 1 to 10.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

This example shows how to set the probe cycle count for band select to 8:

```
> config band-select cycle-count 8
```

**Related Commands**

- config band-select cycle-threshold
- config band-select expire
- config band-select client-rssi
config band-select cycle-threshold

To set the time threshold for a new scanning cycle, use the config band-select cycle-threshold command.

**config band-select cycle-threshold** *cycle_threshold*

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th><strong>cycle_threshold</strong></th>
<th>Enter a value for cycle threshold between 1 and 1000 milliseconds.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Defaults</strong></td>
<td>None.</td>
<td></td>
</tr>
<tr>
<td><strong>Examples</strong></td>
<td>This example shows how to set the time threshold for a new scanning cycle with threshold value 700 milliseconds:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; config band-select cycle-threshold 700</td>
<td></td>
</tr>
<tr>
<td><strong>Related Commands</strong></td>
<td>config band-select cycle-threshold</td>
<td></td>
</tr>
<tr>
<td></td>
<td>config band-select expire</td>
<td></td>
</tr>
<tr>
<td></td>
<td>config band-select client-rssi</td>
<td></td>
</tr>
</tbody>
</table>
config band-select expire

To set the entry expire for band select, use the **config band-select expire** command.

```
config band-select expire {suppression | dual-band} seconds
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>suppression</td>
<td>Sets the suppression expire to the band select.</td>
</tr>
<tr>
<td>dual-band</td>
<td>Sets the dual band expire to the band select.</td>
</tr>
<tr>
<td>seconds</td>
<td>• Enter a value for suppression between 10 to 200 seconds.</td>
</tr>
<tr>
<td></td>
<td>• Enter a value for dual-band between 10 to 300 seconds.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to set the suppression expire to 70 seconds:

```
> config band-select expire suppression 70
```

### Related Commands

- config band-select cycle-threshold
- config band-select cycle-count
- config band-select client-rssi
config band-select client-rssi

To set the client RSSI threshold for band select, use the config band-select client-rssi command.

```
config band-select client-rssi client_rssi
```

**Syntax Description**

<table>
<thead>
<tr>
<th>client_rssi</th>
<th>Minimum dBM of a client RSSI to respond to probe between 20 and 90.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

This example shows how to set the suppression expire to 70:

```
> config band-select client-rssi 70
```

**Related Commands**

- config band-select cycle-threshold
- config band-select expire
- config band-select cycle-count
config boot

To change a Cisco wireless LAN controller boot option, use the `config boot` command.

```
config boot {primary | backup}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>primary</th>
<th>Sets the primary image as active.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>backup</td>
<td>Sets the backup image as active.</td>
</tr>
</tbody>
</table>

**Defaults**

primary.

**Usage Guidelines**

Each Cisco wireless LAN controller can boot off the primary, last-loaded operating system image (OS) or boot off the backup, earlier-loaded OS image.

**Examples**

This example shows how to set the primary image as active so that the LAN controller can boot off the primary, last loaded image:

```
> config boot primary
```

This example shows how to set the backup image as active so that the LAN controller can boot off the backup, earlier loaded OS image:

```
> config boot backup
```

**Related Commands**

show boot
config cdp timer

To configure the Cisco Discovery Protocol (CDP) maximum hold timer, use the `config cdp timer` command.

```
config cdp timer seconds
```

**Syntax Description**

| seconds | Maximum hold timer value (5 to 254 seconds). |

**Defaults**

None.

**Examples**

This example shows how to configure the CDP maximum hold timer to 150 seconds:

```
> config cdp timer 150
```
config certificate

To configure Secure Sockets Layer (SSL) certificates, use the `config certificate` command.

```
config certificate { generate { webadmin | webauth } | compatibility { on | off } }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>generate</td>
<td>Specifies authentication certificate generation settings.</td>
</tr>
<tr>
<td>webadmin</td>
<td>Generates a new web administration certificate.</td>
</tr>
<tr>
<td>webauth</td>
<td>Generates a new web authentication certificate.</td>
</tr>
<tr>
<td>compatibility</td>
<td>Specifies the compatibility mode for inter-Cisco wireless LAN controller IPsec settings.</td>
</tr>
<tr>
<td>on</td>
<td>Enable the compatibility mode.</td>
</tr>
<tr>
<td>off</td>
<td>Disables the compatibility mode.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to generate a new web administration SSL certificate:

```
> config certificate generate webadmin
```

Creating a certificate may take some time. Do you wish to continue? (y/n)

This example shows how to configure the compatibility mode for inter-Cisco wireless LAN controller IPsec settings:

```
> config certificate compatibility
```

**Related Commands**

- `config certificate lsc`
- `show certificate compatibility`
- `show certificate lsc`
- `show certificate summary`
- `show local-auth certificates`
**config certificate lsc**

To configure Locally Significant Certificate (LSC) certificates, use the `config certificate lsc` commands.

```
config certificate lsc {enable | disable | ca-server http://url:port/path | ca-cert {add | delete} | subject-params country state city orgn dept email | other-params keysize} | ap-provision {auth-list {add | delete} ap_mac | revert-cert retries}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>Enables LSC certificates on the controller.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables LSC certificates on the controller.</td>
</tr>
<tr>
<td><code>ca-server</code></td>
<td>Specifies the Certificate Authority (CA) server settings.</td>
</tr>
<tr>
<td><code>http://url:port/path</code></td>
<td>Domain name or IP address of the CA server.</td>
</tr>
<tr>
<td><code>ca-cert</code></td>
<td>Specifies CA certificate database settings.</td>
</tr>
<tr>
<td><code>add</code></td>
<td>Obtains a CA certificate from the CA server and adds it to the controller’s certificate database.</td>
</tr>
<tr>
<td><code>delete</code></td>
<td>Deletes a CA certificate from the controller’s certificate database.</td>
</tr>
<tr>
<td><code>subject-params</code></td>
<td>Specifies the device certificate settings.</td>
</tr>
<tr>
<td><code>country state city orgn dept email</code></td>
<td>Country, state, city, organization, department, and email of the certificate authority.</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>The common name (CN) is generated automatically on the access point using the current MIC/SSC format $Cxxxx-MacAddr$, where $xxxx$ is the product number.</td>
</tr>
<tr>
<td><code>other-params</code></td>
<td>Specifies the device certificate key size settings.</td>
</tr>
<tr>
<td><code>keysize</code></td>
<td>Value from 384 to 2048 (in bits); the default value is 2048.</td>
</tr>
<tr>
<td><code>ap-provision</code></td>
<td>Specifies the access point provision list settings.</td>
</tr>
<tr>
<td><code>auth-list</code></td>
<td>Specifies the provision list authorization settings.</td>
</tr>
<tr>
<td><code>ap_mac</code></td>
<td>MAC address of access point to be added or deleted from the provision list.</td>
</tr>
<tr>
<td><code>revert-cert</code></td>
<td>Specifies the number of times the access point attempts to join the controller using an LSC before reverting to the default certificate.</td>
</tr>
<tr>
<td><code>retries</code></td>
<td>Value from 0 to 255; the default value is 3.</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>If you set the number of retries to 0 and the access point fails to join the controller using an LSC, the access point does not attempt to join the controller using the default certificate. If you are configuring LSC for the first time, we recommend that you configure a nonzero value.</td>
</tr>
</tbody>
</table>

### Defaults

The default value of `keysize` is 2048 bits.
The default value of `retries` is 3.

### Usage Guidelines

You can configure only one CA server. To configure a different CA server, delete the configured CA server by using the `config certificate lsc ca-server delete` command, and then configure a different CA server.
Chapter 2  CLI Commands

If you configure an access point provision list, only the access points in the provision list are provisioned when you enable AP provisioning (in Step 8). If you do not configure an access point provision list, all access points with an MIC or SSC certificate that join the controller are LSC provisioned.

Examples

This example shows how to enable the LSC settings:

> config certificate lsc enable

This example shows how to enable the LSC settings for Certificate Authority (CA) server settings:

> config certificate lsc ca-server http://10.0.0.1:8080/caserver

This example shows how to add a CA certificate from the CA server and add it to the controller’s certificate database:

> config certificate lsc ca-cert add

This example shows how to configure an LSC certificate with the keysize of 2048 bits:

> config certificate lsc keysize 2048

Related Commands

config certificate
show certificate compatibility
show certificate lsc
show certificate summary
show local-auth certificates
Configure Client Commands

Use the `config client` commands to configure client settings.
config client ccx clear-reports

To clear the client reporting information, use the `config client ccx clear-reports` command.

```
config client ccx clear-reports client_mac_address
```

### Syntax Description

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>client_mac_address</td>
<td>MAC address of the client.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to clear the reporting information of the client MAC address 172.19.28.40:

```
> config client ccx clear-reports 172.19.28.40
```

### Related Commands

- `config client ccx get-profiles`
- `config client ccx get-operating-parameters`
- `config client ccx get-manufacturer-info`
- `config client ccx get-client-capability`
- `show client ccx profiles`
- `show client ccx operating-parameters`
- `show client ccx manufacturer-info`
- `show client ccx client-capability`
- `config client ccx stats-request`
- `show client ccx stats-report`
config client ccx clear-results

To clear the test results on the controller, use the `config client ccx clear-results` command.

```
config client ccx clear-results client_mac_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>client_mac_address</code></td>
<td>MAC address of the client.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to clear the test results of the client MAC address 172.19.28.40:

```
> config client CCX clear-results 172.19.28.40
```

**Related Commands**

- `config client ccx default-gw-ping`
- `config client ccx`
- `config client ccx dns-ping`
- `config client ccx dns-resolve`
- `config client ccx test-association`
- `config client ccx test-dot1x`
- `config client ccx test-profile`
- `config client ccx test-abort`
- `config client ccx send-message`
- `show client ccx last-test-status`
- `show client ccx last-response-status`
- `show client ccx results`
- `show client ccx frame-data`
config client ccx default-gw-ping

To send a request to the client to perform the default gateway ping test, use the `config client ccx default-gw-ping` command.

```
config client ccx default-gw-ping client_mac_address
```

**Syntax Description**  
`client_mac_address`  
MAC address of the client.

**Defaults**  
None.

**Usage Guidelines**  
This test does not require the client to use the diagnostic channel.

**Examples**  
This example shows how to send a request to the client 00:E0:77:31:A3:55 to perform the default gateway ping test:

```
> config client ccx default-gw-ping 00:E0:77:31:A3:55
```

**Related Commands**  
config client ccx dhcp-test  
config client ccx dns-ping  
config client ccx dns-resolve  
config client ccx test-association  
config client ccx test-dot1x  
config client ccx test-profile  
config client ccx test-abort  
config client ccx clear-results  
config client ccx send-message  
show client ccx last-test-status  
show client ccx last-response-status  
show client ccx results  
show client ccx frame-data
config client ccx dhcp-test

To send a request to the client to perform the DHCP test, use the config client ccx dhcp-test command.

```
config client ccx dhcp-test client_mac_address
```

**Syntax Description**
- `client_mac_address` MAC address of the client.

**Defaults**
None.

**Usage Guidelines**
This test does not require the client to use the diagnostic channel.

**Examples**
This example shows how to send a request to the client 00:E0:77:31:A3:55 to perform the DHCP test:

```
> config client ccx dhcp-test 00:E0:77:31:A3:55
```

**Related Commands**
- config client ccx default-gw-ping
- config client ccx dns-ping
- config client ccx dns-resolve
- config client ccx test-association
- config client ccx test-dot1x
- config client ccx test-profile
- config client ccx test-abort
- config client ccx clear-results
- config client ccx send-message
- show client ccx last-test-status
- show client ccx last-response-status
- show client ccx results
- show client ccx frame-data
config client ccx dns-ping

To send a request to the client to perform the Domain Name System (DNS) server IP address ping test, use the `config client ccx dns-ping` command.

```
config client ccx dns-ping client_mac_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th><code>client_mac_address</code></th>
<th>MAC address of the client.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Usage Guidelines**

This test does not require the client to use the diagnostic channel.

**Examples**

This example shows how to send a request to the client 00:E0:77:31:A3:55 to perform the DNS server IP address ping test:

```
> config client ccx dns-ping 00:E0:77:31:A3:55
```

**Related Commands**

- `config client ccx default-gw-ping`
- `config client ccx dhcp`
- `config client ccx dns-resolve`
- `config client ccx test-association`
- `config client ccx test-dot1x`
- `config client ccx test-profile`
- `config client ccx test-abort`
- `config client ccx clear-results`
- `config client ccx send-message`
- `show client ccx last-test-status`
- `show client ccx last-response-status`
- `show client ccx results`
- `show client ccx frame-data`
config client ccx dns-resolve

To send a request to the client to perform the Domain Name System (DNS) resolution test to the specified hostname, use the `config client ccx dns-resolve` command.

```
config client ccx dns-resolve client_mac_address host_name
```

### Syntax Description

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>client_mac_address</td>
<td>MAC address of the client.</td>
</tr>
<tr>
<td>host_name</td>
<td>Hostname of the client.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

This test does not require the client to use the diagnostic channel.

### Examples

This example shows how to send a request to the client 00:E0:77:31:A3:55 to perform the DNS name resolution test to the specified hostname:

```
> config client ccx dns resolve 00:E0:77:31:A3:55 host_name
```

### Related Commands

- `config client ccx default-gw-ping`
- `config client ccx dhcp`
- `config client ccx dns-ping`
- `config client ccx test-association`
- `config client ccx test-dot1x`
- `config client ccx test-profile`
- `config client ccx test-abort`
- `config client ccx clear-results`
- `config client ccx send-message`
- `show client ccx last-test-status`
- `show client ccx last-response-status`
- `show client ccx results`
- `show client ccx frame-data`
config client ccx get-client-capability

To send a request to the client to send its capability information, use the config client ccx get-client-capability command.

```
config client ccx get-client-capability client_mac_address
```

Syntax Description

<table>
<thead>
<tr>
<th>client_mac_address</th>
<th>MAC address of the client.</th>
</tr>
</thead>
</table>

Defaults

None.

Examples

This example shows how to send a request to the client 172.19.28.40 to send its capability information:

```
> config client ccx get-client-capability 172.19.28.40
```

Related Commands

- config client ccx get-profiles
- config client ccx get-operating-parameters
- config client ccx get-manufacturer-info
- config client ccx clear-reports
- show client ccx profiles
- show client ccx operating-parameters
- show client ccx manufacturer-info
- show client ccx client-capability
- config client ccx stats-request
- show client ccx stats-report
config client ccx get-manufacturer-info

To send a request to the client to send the manufacturer’s information, use the `config client ccx get-manufacturer-info` command.

```
config client ccx get-manufacturer-info client_mac_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>client_mac_address</code></td>
<td>MAC address of the client.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to send a request to the client 172.19.28.40 to send the manufacturer's information:

```
> config client ccx get-manufacturer-info 172.19.28.40
```

**Related Commands**

- `config client ccx get-profiles`
- `config client ccx get-operating-parameters`
- `config client ccx get-client-capability`
- `config client ccx clear-reports`
- `show client ccx profiles`
- `show client ccx operating-parameters`
- `show client ccx manufacturer-info`
- `show client ccx client-capability`
- `config client ccx stats-request`
- `show client ccx stats-report`
config client ccx get-operating-parameters

To send a request to the client to send its current operating parameters, use the config client ccx get-operating-parameters command.

```
config client ccx get-operating-parameters client_mac_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>client_mac_address</th>
<th>MAC address of the client.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

This example shows how to send a request to the client 172.19.28.40 to send its current operating parameters:

```
> config client ccx get-operating-parameters 172.19.28.40
```

**Related Commands**

- config client ccx get-profiles
- config client ccx get-manufacturer-info
- config client ccx get-client-capability
- config client ccx clear-reports
- show client ccx profiles
- show client ccx operating-parameters
- show client ccx manufacturer-info
- show client ccx client-capability
- config client ccx stats-request
- show client ccx stats-report
config client ccx get-profiles

To send a request to the client to send its profiles, use the `config client ccx get-profiles` command.

```
config client ccx get-profiles client_mac_address
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>client_mac_address</code></td>
<td>MAC address of the client.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to send a request to the client 172.19.28.40 to send its profile details:

```
> config client ccx get-profiles 172.19.28.40
```

### Related Commands

- config client ccx get-operating-parameters
- config client ccx get-manufacturer-info
- config client ccx get-client-capability
- config client ccx clear-reports
- show client ccx profiles
- show client ccx operating-parameters
- show client ccx manufacturer-info
- show client ccx client-capability
- config client ccx stats-request
- show client ccx stats-report
**config client ccx log-request**

To configure a Cisco client eXtension (CCX) log request for a specified client device, use the `config client ccx log-request` command.

```config
config client ccx log-request log_type \{ roam | rsna | syslog \} client_mac_address
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>roam</td>
<td>(Optional) Specifies the request to specify the client CCX roaming log.</td>
</tr>
<tr>
<td>rsna</td>
<td>(Optional) Specifies the request to specify the client CCX RSNA log.</td>
</tr>
<tr>
<td>syslog</td>
<td>(Optional) Specifies the request to specify the client CCX system log.</td>
</tr>
<tr>
<td>client_mac_address</td>
<td>MAC address of the client.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to specify the request to specify the client CCS system log:

```plaintext
> config client ccx log-request syslog 00:40:96:a8:f7:98
```

Tue Oct 05 13:05:21 2006
SysLog Response LogID=1: Status=Successful
Event Timestamp=121212121212
Client SysLog = 'This is a test syslog 2'
Event Timestamp=121212121212
Client SysLog = 'This is a test syslog 1'

This example shows how to specify the client CCX roaming log:

```plaintext
> config client ccx log-request roam 00:40:96:a8:f7:98
```

Roaming Response LogID=20: Status=Successful
Event Timestamp=121212121212
Source BSSID=00:40:96:a8:f7:98, Target BSSID=00:0b:85:23:26:70,
Transition Time=100(ms)
Transition Reason: Unspecified Transition Result: Success
Thu Jun 22 11:55:04 2006
Roaming Request LogID=20
Thu Jun 22 11:54:54 2006
Roaming Response LogID=19: Status=Successful
Event Timestamp=121212121212
Source BSSID=00:40:96:a8:f7:98, Target BSSID=00:0b:85:23:26:70,
Transition Time=100(ms)
Transition Reason: Unspecified Transition Result: Success
Thu Jun 22 11:54:33 2006 Roaming Request LogID=19

This example shows how to specify the client CCX RSNA log:

```plaintext
> config client ccx log-request rsna 00:40:96:a8:f7:98
```

Tue Oct 05 11:06:48 2006
RSNA Response LogID=2: Status=Successful
Event Timestamp=242424242424
Target BSSID=00:0b:85:23:26:70
config client ccx log-request

RSNA Version=1
Group Cipher Suite=00-0f-ac-01
Pairwise Cipher Suite Count = 2
  Pairwise Cipher Suite 0 = 00-0f-ac-02
  Pairwise Cipher Suite 1 = 00-0f-ac-04
AKM Suite Count = 2
  KM Suite 0 = 00-0f-ac-01
  KM Suite 1 = 00-0f-ac-02
SN Capability = 0x1
PMKID Count = 2
  PMKID 0 = 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16
  PMKID 1 = 0a 0b 0c 0d 0e 0f 17 18 19 20 la lb lc ld le lf
802.11i Auth Type: EAP_FAST
RSNA Result: Success
Tue Oct 05 11:05:48 2006
RSNA Request LogID=2

Related Commands  show client ccx log-response
config client ccx send-message

To send a message to the client, use the **config client ccx send-message** command.

```
config client ccx send-message client_mac_address message_id
```

| Syntax Description | client_mac_address | Message type that involves one of the following:
|--------------------|-------------------|---------------------------------------------------------------|
| message_id          | MAC address of the client. | - 1—The SSID is invalid.  
|                     |                   | - 2—The network settings are invalid.  
|                     |                   | - 3—There is a WLAN credibility mismatch.  
|                     |                   | - 4—The user credentials are incorrect.  
|                     |                   | - 5—Please call support.  
|                     |                   | - 6—The problem is resolved.  
|                     |                   | - 7—The problem has not been resolved.  
|                     |                   | - 8—Please try again later.  
|                     |                   | - 9—Please correct the indicated problem.  
|                     |                   | - 10—Troubleshooting is refused by the network.  
|                     |                   | - 11—Retrieving client reports.  
|                     |                   | - 12—Retrieving client logs.  
|                     |                   | - 13—Retrieval complete.  
|                     |                   | - 14—Beginning association test.  
|                     |                   | - 15—Beginning DHCP test.  
|                     |                   | - 16—Beginning network connectivity test.  
|                     |                   | - 17—Beginning DNS ping test.  
|                     |                   | - 18—Beginning name resolution test.  
|                     |                   | - 19—Beginning 802.1X authentication test.  
|                     |                   | - 20—Redirecting client to a specific profile.  
|                     |                   | - 21—Test complete.  
|                     |                   | - 22—Test passed.  
|                     |                   | - 23—Test failed.  
|                     |                   | - 24—Cancel diagnostic channel operation or select a WLAN profile to resume normal operation.  
|                     |                   | - 25—Log retrieval refused by the client.  
|                     |                   | - 26—Client report retrieval refused by the client.  
|                     |                   | - 27—Test request refused by the client.  
|                     |                   | - 28—Invalid network (IP) setting.  
|                     |                   | - 29—There is a known outage or problem with the network.  
|                     |                   | - 30—Scheduled maintenance period.  

(continued on next page)
config client ccx send-message

message_type (cont.)

- 31—The WLAN security method is not correct.
- 32—The WLAN encryption method is not correct.
- 33—The WLAN authentication method is not correct.

Defaults
None.

Examples
This example shows how to send a message to the client MAC address 172.19.28.40 with the message user-action-required:

> config client ccx send-message 172.19.28.40 user-action-required

Related Commands
config client ccx default-gw-ping
config client ccx dhcp
config client ccx dns-ping
config client ccx dns-resolve
config client ccx test-association
config client ccx test-dot1x
config client ccx test-profile
config client ccx test-abort
config client ccx clear-results
show client ccx last-test-status
show client ccx last-response-status
show client ccx results
show client ccx frame-data
config client ccx stats-request

To send a request for statistics, use the `config client ccx stats-request` command.

```
config client ccx stats-request measurement_duration stats_name {dot11 | security} client_mac_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>measurement_duration</code></td>
<td>Measurement duration in seconds.</td>
</tr>
<tr>
<td><code>stats_name</code></td>
<td>(Optional) Specifies dot11 counters.</td>
</tr>
<tr>
<td><code>dot11</code></td>
<td>(Optional) Specifies security counters.</td>
</tr>
<tr>
<td><code>security</code></td>
<td>MAC address of the client.</td>
</tr>
<tr>
<td><code>client_mac_address</code></td>
<td></td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to specify dot11 counter settings:

```
> config client ccx stats-request 1 dot11 00:40:96:a8:f7:98
Measurement duration = 1

dot11TransmittedFragmentCount = 1
dot11MulticastTransmittedFrameCount = 2
dot11FailedCount = 3
dot11RetryCount = 4
dot11MultipleRetryCount = 5
dot11FrameDuplicateCount = 6
dot11RTSSuccessCount = 7
dot11RTSFailureCount = 8
dot11ACKFailureCount = 9
dot11ReceivedFragmentCount = 10
dot11MulticastReceivedFrameCount = 11
dot11FCSErrorCount = 12
dot11TransmittedFrameCount = 13
```

**Related Commands**

`show client ccx stats-report`
**config client ccx test-abort**

To send a request to the client to abort the current test, use the `config client ccx test-abort` command.

```
config client ccx test-abort client_mac_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>client_mac_address</th>
<th>MAC address of the client.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Usage Guidelines**

Only one test can be pending at a time.

**Examples**

This example shows how to send a request to the client 11:11:11:11:11:11 to abort the correct test settings:

```
> config client ccx test-abort 11:11:11:11:11:11
```

**Related Commands**

- `config client ccx default-gw-ping`
- `config client ccx dhcp`
- `config client ccx dns-ping`
- `config client ccx dns-resolve`
- `config client ccx test-association`
- `config client ccx test-dot1x`
- `config client ccx test-profile`
- `config client ccx clear-results`
- `config client ccx send-message`
- `show client ccx last-test-status`
- `show client ccx last-response-status`
- `show client ccx results`
- `show client ccx frame-data`
config client ccx test-association

To send a request to the client to perform the association test, use the `config client ccx test-association` command.

```
config client ccx test-association client_mac_address ssid bssid 802.11{a | b | g} channel
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>client_mac_address</code></td>
<td>MAC address of the client.</td>
</tr>
<tr>
<td><code>ssid</code></td>
<td>Network name.</td>
</tr>
<tr>
<td><code>bssid</code></td>
<td>Basic SSID.</td>
</tr>
<tr>
<td><code>802.11a</code></td>
<td>Specifies the 802.11a network.</td>
</tr>
<tr>
<td><code>802.11b</code></td>
<td>Specifies the 802.11b network.</td>
</tr>
<tr>
<td><code>802.11g</code></td>
<td>Specifies the 802.11g network.</td>
</tr>
<tr>
<td><code>channel</code></td>
<td>Channel number.</td>
</tr>
</tbody>
</table>

**Defaults**

None

**Examples**

This example shows how to send a request to the client MAC address 00:0E:77:31:A3:55 to perform the basic SSID association test:

```
> config client ccx test-association 00:E0:77:31:A3:55 ssid bssid 802.11a
```

**Related Commands**

- `config client ccx default-gw-ping`
- `config client ccx dhcp`
- `config client ccx dns-ping`
- `config client ccx dns-resolve`
- `config client ccx test-dot1x`
- `config client ccx test-profile`
- `config client ccx test-abort`
- `config client ccx clear-results`
- `config client ccx send-message`
- `show client ccx last-test-status`
- `show client ccx last-response-status`
- `show client ccx results`
- `show client ccx frame-data`
config client ccx test-dot1x

To send a request to the client to perform the 802.1x test, use the `config client ccx test-dot1x` command.

```
cfg r(config): config client ccx test-dot1x client_mac_address profile_id bssid 802.11{a | b | g} channel
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>client_mac_address</code></td>
<td>MAC address of the client.</td>
</tr>
<tr>
<td><code>profile_id</code></td>
<td>Test profile name.</td>
</tr>
<tr>
<td><code>bssid</code></td>
<td>Basic SSID.</td>
</tr>
<tr>
<td>`802.11{a</td>
<td>b</td>
</tr>
<tr>
<td><code>channel</code></td>
<td>Channel number.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to send a request to the client to perform the 802.11b test with the profile name `profile_01`:

```
> config client ccx test-dot1172.19.28.40 profile_01 bssid 802.11b
```

**Related Commands**

- `config client ccx default-gw-ping`
- `config client ccx dhcp`
- `config client ccx dns-ping`
- `config client ccx dns-resolve`
- `config client ccx test-association`
- `config client ccx test-profile`
- `config client ccx test-abort`
- `config client ccx clear-results`
- `config client ccx send-message`
- `show client ccx last-test-status`
- `show client ccx last-response-status`
- `show client ccx results`
- `show client ccx frame-data`
**config client ccx test-profile**

To send a request to the client to perform the profile redirect test, use the **config client ccx test-profile** command.

```
config client ccx test-profile client_mac_address profile_id
```

| Syntax Description |  |
|--------------------|--|---|
| **client_mac_address** | MAC address of the client. | |
| **profile_id** | Test profile name. | |

**Note** The `profile_id` should be from one of the client profiles for which client reporting is enabled.

**Defaults**

None.

**Examples**

This example shows how to send a request to the client to perform the profile redirect test with the profile name `profile_01`:

```
> config client ccx test-profile 11:11:11:11:11:11 profile_01
```

**Related Commands**

- `config client ccx default-gw-ping`
- `config client ccx dhcp`
- `config client ccx dns-ping`
- `config client ccx dns-resolve`
- `config client ccx test-association`
- `config client ccx test-dot1x`
- `config client ccx test-abort`
- `config client ccx clear-results`
- `config client ccx send-message`
- `show client ccx last-test-status`
- `show client ccx last-response-status`
- `show client ccx results`
- `show client ccx frame-data`
To disconnect a client, use the `config client deauthenticate` command.

```
config client deauthenticate MAC
```

### Syntax Description

- **MAC**: Client MAC address.

### Defaults

None.

### Examples

This example shows how to deauthenticate a client:

```
> config client deauthenticate 11:11:11:11:11:11
```

### Related Commands

- `show client summary`
- `show client detail`
config client location-calibration

To configure link aggregation, use the `config client location-calibration` command.

```
config client location-calibration { enable mac_address interval | disable mac_address }
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>(Optional) Specifies that client location calibration is enabled.</td>
</tr>
<tr>
<td><code>mac_address</code></td>
<td>MAC address of the client.</td>
</tr>
<tr>
<td><code>interval</code></td>
<td>Measurement interval in seconds.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>(Optional) Specifies that client location calibration is disabled.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to enable the client location calibration for the client 37:15:85:2a with a measurement interval of 45 seconds:

```
> config client location-calibration enable 37:15:85:2a:Bc:cf 45
```

### Related Commands

- `show client location-calibration summary`
config coredump

To enable or disable the controller to generate a core dump file following a crash, use the `config coredump` command.

```
config coredump {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables the controller to generate a core dump file.</td>
<td>Disables the controller to generate a core dump file.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the controller to generate a core dump file following a crash:

```
> config coredump enable
```

**Related Commands**

- `config coredump ftp`
- `config coredump username`
- `show coredump summary`
**config coredump ftp**

To automatically upload a controller core dump file to an FTP server after experiencing a crash, use the `config coredump ftp` command:

```
config coredump ftp server_ip_address filename
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>server_ip_address</code></td>
<td>IP address of the FTP server to which the controller sends its core dump file.</td>
</tr>
<tr>
<td><code>filename</code></td>
<td>Name given to the controller core dump file.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

The controller must be able to reach the FTP server to use this command.

**Examples**

This example shows how to configure the controller to upload a core dump file named `core_dump_controller` to an FTP server at network address 192.168.0.13:

```
> config coredump ftp 192.168.0.13 core_dump_controller
```

**Related Commands**

- `config coredump`
- `config coredump username`
- `show coredump summary`
config coredump username

To specify the FTP server username and password when uploading a controller core dump file after experiencing a crash, use the `config coredump username` command:

```
config coredump username ftp_username password ftp_password
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ftp_username</td>
<td>FTP server login username.</td>
</tr>
<tr>
<td>ftp_password</td>
<td>FTP server login password.</td>
</tr>
</tbody>
</table>

| Defaults | None.                                  |

| Usage Guidelines | The controller must be able to reach the FTP server to use this command. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to specify a FTP server username of admin and password adminpassword for the core dump file upload:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; config coredump username admin password adminpassword</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>config coredump</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>config coredump ftp</td>
</tr>
<tr>
<td></td>
<td>show coredump summary</td>
</tr>
</tbody>
</table>
config country

To configure the controller’s country code, use the `config country` command.

```
config country country_code
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th><code>country_code</code></th>
<th>Two-letter or three-letter country code.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Defaults</strong></td>
<td></td>
<td>us (country code of the United States of America).</td>
</tr>
<tr>
<td><strong>Usage Guidelines</strong></td>
<td></td>
<td>Cisco wireless LAN controllers 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. You can use the <code>show country</code> command to display a list of supported countries.</td>
</tr>
<tr>
<td><strong>Examples</strong></td>
<td></td>
<td>This example shows how to configure the controller’s country code to DE:</td>
</tr>
<tr>
<td></td>
<td></td>
<td><code>&gt; config country DE</code></td>
</tr>
<tr>
<td><strong>Related Commands</strong></td>
<td></td>
<td><code>show country</code></td>
</tr>
</tbody>
</table>
config custom-web ext-webauth-mode

To configure external URL web-based client authorization for the custom-web authentication page, use the `config custom-web ext-webauth-mode` command.

```
config custom-web ext-webauth-mode {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>Enables the external URL web-based client authorization.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables the external URL web-based client authentication.</td>
</tr>
</tbody>
</table>

| Defaults           | None.                                             |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to enable the external URL web-based client authorization:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>&gt; config custom-web ext-webauth-mode enable</code></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th><code>config custom-web redirectUrl</code></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>config custom-web weblogo</code></td>
</tr>
<tr>
<td></td>
<td><code>config custom-web webmessage</code></td>
</tr>
<tr>
<td></td>
<td><code>config custom-web webtitle</code></td>
</tr>
<tr>
<td></td>
<td><code>config custom-web ext-webauth-url</code></td>
</tr>
<tr>
<td></td>
<td><code>show custom-web</code></td>
</tr>
</tbody>
</table>
config custom-web ext-webauth-url

To configure the complete external web authentication URL for the custom-web authentication page, use the `config custom-web ext-webauth-url` command.

```
config custom-web ext-webauth-url URL
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URL</td>
<td>URL used for web-based client authorization.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the complete external web authentication URL `http://www.AuthorizationURL.com/` for the web-based client authorization:

```
```

**Related Commands**

- `config custom-web redirectUrl`
- `config custom-web weblogo`
- `config custom-web webmessage`
- `config custom-web webtitle`
- `config custom-web ext-webauth-mode`
- `show custom-web`
**config custom-web ext-webserver**

To configure an external web server, use the `config custom-web ext-webserver` command.

`config custom-web ext-webserver {add index IP_address | delete index}`

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>add</th>
<th>Adds an external web server.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>index</td>
<td>Index of the external web server in the list of external web server. The index must be a number between 1 and 20.</td>
</tr>
<tr>
<td></td>
<td>IP_address</td>
<td>IP address of the external web server.</td>
</tr>
<tr>
<td></td>
<td>delete</td>
<td>Deletes an external web server.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to add the index of the external web server 2 to the IP address of the external web server 192.23.32.19:

```plaintext
> config custom-web ext-webserver add 2 192.23.32.19
```

**Related Commands**

- `config custom-web redirectUrl`
- `config custom-web weblogo`
- `config custom-web webmessage`
- `config custom-web webbletitle`
- `config custom-web ext-webauth-mode`
- `config custom-web ext-webauth-url`
- `show custom-web`
config custom-web redirectUrl

To configure the redirect URL for the custom-web authentication page, use the config custom-web redirectUrl command.

```
cfg custom-web redirectUrl URL
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>URL</th>
<th>URL that is redirected to the specified address.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the URL that is redirected to abc.com:

```
> config custom-web redirectUrl abc.com
```

**Related Commands**

- config custom-web weblogo
- config custom-web webmessage
- config custom-web webtitle
- config custom-web ext-webauth-mode
- config custom-web ext-webauth-url
- show custom-web
config custom-web webauth-type

To configure the type of web authentication, use the `config custom-web webauth-type` command.

```plaintext
config custom-web webauth-type {internal | customized | external}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>internal</th>
<th>Sets the web authentication type to internal.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>customized</td>
<td>Sets the web authentication type to customized.</td>
</tr>
<tr>
<td></td>
<td>external</td>
<td>Sets the web authentication type to external.</td>
</tr>
</tbody>
</table>

**Defaults**
The default web authentication type is `internal`.

**Examples**
This example shows how to configure the type of the web authentication type to internal:

```plaintext
> config custom-web webauth-type internal
```

**Related Commands**
- `config custom-web redirectUrl`
- `config custom-web webmessage`
- `config custom-web webtitle`
- `config custom-web ext-webauth-mode`
- `config custom-web ext-webauth-url`
- `show custom-web`
**config custom-web weblogo**

To configure the web authentication logo for the custom-web authentication page, use the `config custom-web weblogo` command.

```
config custom-web weblogo { enable | disable }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables the web authentication logo settings.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Enable or disable the web authentication logo settings.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the web authentication logo:

```
> config custom-web weblogo enable
```

**Related Commands**

- `config custom-web redirectUrl`
- `config custom-web webmessage`
- `config custom-web webtitle`
- `config custom-web ext-webauth-mode`
- `config custom-web ext-webauth-url`
- `show custom-web`
**config custom-web webmessage**

To configure the custom web authentication message text for the custom-web authentication page, use the `config custom-web webmessage` command.

```
config custom-web webmessage message
```

**Syntax Description**

- **message**: Message text for web authentication.

**Defaults**

None.

**Examples**

This example shows how to configure the message text *Thisistheplace* for web authentication:

```
> config custom-web webmessage Thisistheplace
```

**Related Commands**

- `config custom-web redirectUrl`
- `config custom-web weblogo`
- `config custom-web webtitle`
- `config custom-web ext-webauth-mode`
- `config custom-web ext-webauth-url`
- `show custom-web`
To configure the web authentication title text for the custom-web authentication page, use the `config custom-web webtitle` command.

```
config custom-web webtitle title
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>title</code></td>
<td>Custom title text for web authentication.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to set the custom title text Helpdesk for web authentication:

```
> config custom-web webtitle Helpdesk
```

### Related Commands

- `config custom-web redirectUrl`
- `config custom-web weblogo`
- `config custom-web webmessage`
- `config custom-web ext-webauth-mode`
- `config custom-web ext-webauth-url`
- `show custom-web`
config database size

To configure the local database, use the `config database` command.

```
config database size count
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>count</code></td>
<td>Database size value between 512 and 2040</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

Use the `show database` command to display local database configuration.

**Examples**

This example shows how to configure the DHCP lease for scope 003.

```
> config database size 1024
```

**Related Commands**

`show database`
config dhcp

To configure the internal DHCP, use the `config dhcp` command.

```
config dhcp [address-pool scope start end | create-scope scope |
  default-router scope router_1 [router_2] [router_3] | delete-scope scope | disable scope |
  dns-servers scope dns1 [dns2] [dns3] | domain scope domain |
  enable scope | lease scope lease_duration |
  netbios-name-server scope wins1 [wins2] [wins3] |
  network scope network netmask | opt-82 remote-id {ap_mac | ap_mac:ssid}]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>address-pool scope start end</code></td>
<td>Configures an address range to allocate. You must specify the scope name and the first and last addresses of the address range.</td>
</tr>
<tr>
<td><code>create-scope name</code></td>
<td>Creates a new DHCP scope. You must specify the scope name. The DHCP Scope name allows space by using double quotes like “Scope 000”.</td>
</tr>
<tr>
<td><code>default-router scope router_1 [router_2] [router_3]</code></td>
<td>Configures the default routers for the specified scope and specify the IP address of a router. Optionally, you can specify the IP addresses of secondary and tertiary routers.</td>
</tr>
<tr>
<td><code>delete-scope scope</code></td>
<td>Deletes the specified DHCP scope.</td>
</tr>
<tr>
<td><code>disable scope</code></td>
<td>Disables the specified DHCP scope.</td>
</tr>
<tr>
<td><code>dns-servers scope dns1 [dns2] [dns3]</code></td>
<td>Configures the name servers for the given scope. You must also specify at least one name server. Optionally, you can specify secondary and tertiary name servers.</td>
</tr>
<tr>
<td><code>domain scope domain</code></td>
<td>Configures the DNS domain name. You must specify the scope and domain names.</td>
</tr>
<tr>
<td><code>enable scope</code></td>
<td>Enables the specified dhcp scope.</td>
</tr>
<tr>
<td><code>lease scope lease_duration</code></td>
<td>Configures the lease duration (in seconds) for the specified scope.</td>
</tr>
<tr>
<td><code>netbios-name-server scope wins1 [wins2] [wins3]</code></td>
<td>Configures the netbios name servers. You must specify the scope name and the IP address of a name server. Optionally, you can specify the IP addresses of secondary and tertiary name servers.</td>
</tr>
<tr>
<td><code>network scope network netmask</code></td>
<td>Configures the network and netmask. You must specify the scope name, the network address, and the network mask.</td>
</tr>
<tr>
<td><code>opt-82 remote-id</code></td>
<td>Configures the DHCP Option 82 Remote ID Field Format.</td>
</tr>
<tr>
<td><code>ap_mac</code></td>
<td>MAC address of the access point to the DHCP option 82 payload.</td>
</tr>
<tr>
<td><code>ap_mac:ssid</code></td>
<td>MAC address and SSID of the access point to the DHCP option 82 payload.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

Use the `show dhcp` command to display the internal DHCP configuration.

**Examples**

This example shows how to configure the DHCP lease for the scope 003.

```
> config dhcp lease 003
```
Related Commands

- config dhcp proxy
- config interface dhcp
- config wlan dhcp_server
- debug dhcp
- debug dhcp service-port
- debug disable-all
- show dhcp
- show dhcp proxy
**config dhcp proxy**

To specify the level at which DHCP packets are modified, use the `config dhcp proxy` command.

```
config dhcp proxy { enable | disable }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Allows the controller to modify the DHCP packets without a limit.</td>
<td>Reduces the DHCP packet modification to the level of a relay.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Usage Guidelines**

Use the `show dhcp proxy` command to display the status of DHCP proxy handling.

**Examples**

This example shows how to disable the DHCP packet modification:

```
> config dhcp proxy disable
```

**Related Commands**

- `config dhcp`
- `config interface dhcp`
- `config wlan dhcp_server`
- `debug dhcp`
- `debug dhcp service-port`
- `debug disable-all`
- `show dhcp`
- `show dhcp proxy`
Config exclusionlist

To create or delete an exclusion list entry, use the **config exclusionlist** command.

```
cfg exclusionlist { add MAC [description] | delete MAC [description] }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>config exclusionlist</td>
<td>Configures the exclusion list.</td>
</tr>
<tr>
<td>add</td>
<td>Creates a local exclusion-list entry.</td>
</tr>
<tr>
<td>delete</td>
<td>Deletes a local exclusion-list entry.</td>
</tr>
<tr>
<td>description</td>
<td>Specifies the description for an exclusion-list entry.</td>
</tr>
<tr>
<td>MAC</td>
<td>MAC address of the local Excluded entry.</td>
</tr>
<tr>
<td>description</td>
<td>(Optional) The description, up to 32 characters, for an excluded entry.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to create a local exclusion list entry for the MAC address xx:xx:xx:xx:xx:xx:

```
> config exclusionlist add xx:xx:xx:xx:xx:xx lab
```

This example shows how to delete a local exclusion list entry for the MAC address xx:xx:xx:xx:xx:xx:

```
> config exclusionlist delete xx:xx:xx:xx:xx:xx lab
```

**Related Commands**

show exclusionlist
Configure Interface Commands

Use the `config interface` commands to configure interface commands.
config guest-lan

To create, delete, enable or disable a wireless LAN, use the config guest-lan command.

```
cfg guest-lan {create | delete} guest_lan_id interface_name | {enable | disable} guest_lan_id
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>create</th>
<th>Creates a wired LAN settings.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>delete</td>
<td>Deletes a wired LAN settings:</td>
</tr>
<tr>
<td></td>
<td>guest_lan_id</td>
<td>LAN identifier between 1 and 5 (inclusive).</td>
</tr>
<tr>
<td></td>
<td>interface_name</td>
<td>Interface name up to 32 alphanumeric characters.</td>
</tr>
<tr>
<td></td>
<td>enable</td>
<td>Enables a wireless LAN.</td>
</tr>
<tr>
<td></td>
<td>disable</td>
<td>Disables a wireless LAN.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to enable a wireless LAN with the LAN ID 16:

```
> config guest-lan enable 16
```

Related Commands

show wlan
**config guest-lan custom-web ext-webauth-url**

To redirect guest users to an external server before accessing the web login page, use the `config guest-lan custom-web ext-webauth-url` command to specify the URL of the external server.

```
config guest-lan custom-web ext-webauth-url ext_web_url guest_lan_id
```

**Syntax Description**

- `ext_web_url`: URL for the external server.
- `guest_lan_id`: Guest LAN identifier between 1 and 5 (inclusive).

**Defaults**

None.

**Examples**

This example shows how to enable a wireless LAN with the LAN ID 16:

```
> config guest-lan custom-web ext-webauth-url http://www.AuthorizationURL.com/ 1
```

**Related Commands**

- `config guest-lan`
- `config guest-lan create`
- `config guest-lan custom-web login_page`
config guest-lan custom-web global disable

To use a guest-LAN specific custom web configuration rather than a global custom web configuration, use the **config guest-lan custom-web global disable** command.

```
config guest-lan custom-web global disable guest_lan_id
```

**Syntax Description**

<table>
<thead>
<tr>
<th>guest_lan_id</th>
<th>Guest LAN identifier between 1 and 5 (inclusive).</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Usage Guidelines**

If you enter the **config guest-lan custom-web global enable guest_lan_id** command, the custom web authentication configuration at the global level is used.

**Examples**

This example shows how to disable the global web configuration for guest LAN ID 1:

```
> config guest-lan custom-web global disable 1
```

**Related Commands**

- config guest-lan
- config guest-lan create
- config guest-lan custom-web ext-webauth-url
- config guest-lan custom-web login_page
- config guest-lan custom-web webauth-type
config guest-lan custom-web login_page

To enable wired guest users to log into a customized web login page, use the config guest-lan custom-web login_page command.

```
config guest-lan custom-web login_page page_name guest_lan_id
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>page_name</code></td>
<td>Name of the customized web login page.</td>
</tr>
<tr>
<td><code>guest_lan_id</code></td>
<td>Guest LAN identifier between 1 and 5 (inclusive).</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to customize a web login page custompage1 for guest LAN ID 1:

```
> config guest-lan custom-web login_page custompage1 1
```

**Related Commands**

- config guest-lan
- config guest-lan create
- config guest-lan custom-web ext-webauth-url
To define the web login page for wired guest users, use the `config guest-lan custom-web webauth-type` command:

```
config guest-lan custom-web webauth-type {internal | customized | external} guest_lan_id
```

**Syntax Description**
- **internal**: Displays the default web login page for the controller. This is the default value.
- **customized**: Displays the custom web login page that was previously configured.
- **external**: Redirects users to the URL that was previously configured.
- **guest_lan_id**: Guest LAN identifier between 1 and 5 (inclusive).

**Defaults**
- Internal.

**Examples**
This example shows how to configure the guest LAN with the webauth-type as internal for guest LAN ID 1:

```
> config guest-lan custom-web webauth-type internal 1
```

**Related Commands**
- `config guest-lan`
- `config guest-lan create`
- `config guest-lan custom-web ext-webauth-url`
config guest-lan ingress-interface

To configure the wired guest VLAN’s ingress interface which provides a path between the wired guest client and the controller by way of the Layer 2 access switch, use the **config guest-lan ingress-interface** command.

```
config guest-lan ingress-interface guest_lan_id interface_name
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>guest_lan_id</td>
<td>Guest LAN identifier between 1 and 5 (inclusive).</td>
</tr>
<tr>
<td>interface_name</td>
<td>Interface name.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to provide a path between the wired guest client and the controller with guest LAN ID 1 and the interface name guest01:

```
> config interface ingress-interface 1 guest01
```

### Related Commands

- **config interface guest-lan**
- **config guest-lan create**
config guest-lan interface

To configure an egress interface to transmit wired guest traffic out of the controller, use the config guest-lan interface command.

```
config guest-lan interface guest_lan_id interface_name
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>guest_lan_id</td>
<td>Guest LAN identifier between 1 and 5 (inclusive).</td>
</tr>
<tr>
<td>interface_name</td>
<td>Interface name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure an egress interface to transmit guest traffic out of the controller for guest LAN ID 1 and interface name guest01:

```
> config guest-lan interface 1 guest01
```

**Related Commands**

- config ingress-interface guest-lan
- config guest-lan create
**config guest-lan mobility anchor**

To add or delete mobility anchor, use the `config guest-lan mobility anchor` commands.

```
config guest-lan mobility anchor {add | delete} wlan_id anchor_ip
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>add</td>
<td>Adds a mobility anchor.</td>
</tr>
<tr>
<td>delete</td>
<td>Deletes a mobility anchor.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>WLAN identifier.</td>
</tr>
<tr>
<td>anchor_ip</td>
<td>IP address of the mobility anchor.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to delete a mobility anchor for WAN ID 4 and the anchor IP 192.168.0.14:

```
> config guest-lan mobility anchor delete 4 192.168.0.14
```

**Related Commands**

- `config mobility group domain`
- `config mobility group keepalive count`
- `config mobility group keepalive interval`
- `config mobility group member`
- `config mobility group multicast-addres`
- `config mobility multicast-mode`
- `config mobility secure-mode`
- `config mobility statistics reset`
- `config wlan mobility anchor`
- `debug mobility`
- `show mobility anchor`
- `show mobility statistics`
- `show mobility summary`
config guest-lan nac

To enable or disable Network Admission Control (NAC) out-of-band support for a guest LAN, use the `config guest-lan nac` command:

```
config guest-lan nac {enable | disable} guest_lan_id
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the NAC out-of-band support.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the NAC out-of-band support.</td>
</tr>
<tr>
<td>guest_lan_id</td>
<td>Guest LAN identifier between 1 and 5 (inclusive).</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the NAC out-of-band support for guest LAN ID 3:

```
> config guest-lan nac enable 3
```

**Related Commands**

- `show nac statistics`
- `show nac summary`
- `config wlan nac`
- `debug nac`
config guest-lan security

To configure the security policy for the wired guest LAN, use the config guest-lan security command.

```
config guest-lan security {\{web-auth \{enable | disable \acl \server-precedence\} \guest_lan_id \{|web-passthrough \{acl \email-input \disable | enable\} \guest_lan_id\}}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>web-auth</td>
<td>Specifies web authentication.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the web authentication settings.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the web authentication settings.</td>
</tr>
<tr>
<td>acl</td>
<td>Configures an access control list.</td>
</tr>
<tr>
<td>server-precedence</td>
<td>Configures the authentication server precedence order for web authentication users.</td>
</tr>
<tr>
<td>guest_lan_id</td>
<td>LAN identifier between 1 and 5 (inclusive).</td>
</tr>
<tr>
<td>email-input</td>
<td>Configures the web captive portal using an e-mail address.</td>
</tr>
<tr>
<td>web-passthrough</td>
<td>Specifies the web captive portal with no authentication required.</td>
</tr>
</tbody>
</table>

**Defaults**

Web authentication.

**Examples**

This example shows how to configure the security web authentication policy for guest LAN ID 1:

```
> config guest-lan security web-auth enable 1
```

**Related Commands**

- config ingress-interface guest-lan
- config guest-lan create
- config interface guest-lan
config hreap group

To add, delete, or configure a hybrid-REAP group, use the `config hreap group` command.

```
config hreap group group_name { add | delete | ap { add | delete } ap-mac | radius server { add | delete | [ primary | secondary ] server_index } }
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>group_name</code></td>
<td>Group name.</td>
</tr>
<tr>
<td><code>add</code></td>
<td>Adds a hybrid-REAP group.</td>
</tr>
<tr>
<td><code>delete</code></td>
<td>Deletes a hybrid-REAP group.</td>
</tr>
<tr>
<td><code>ap</code></td>
<td>Adds or deletes an access point to a hybrid-REAP group.</td>
</tr>
<tr>
<td><code>ap-mac</code></td>
<td>MAC address of the access point.</td>
</tr>
<tr>
<td><code>radius server</code></td>
<td>Configures a primary or secondary RADIUS server for a hybrid-REAP group.</td>
</tr>
<tr>
<td><code>primary</code></td>
<td>Designates a RADIUS server as primary server.</td>
</tr>
<tr>
<td><code>secondary</code></td>
<td>Designates a RADIUS server as secondary server.</td>
</tr>
<tr>
<td><code>server_index</code></td>
<td>RADIUS server index number.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

You can add up to 100 clients.

### Examples

This example shows how to add a hybrid-REAP group for MAC address 192.12.1.2:

```
> config hreap group 192.12.1.2 add
```

This example shows how to add RADIUS server as a primary server for a hybrid-REAP group with the server index number 1:

```
> config hreap group 192.12.1.2 radius server add primary 1
```

### Related Commands

- `config ap mode`
- `config hreap join min-latency`
- `config hreap office-extend`
- `debug hreap group`
- `show hreap group detail`
- `show hreap group summary`
### config hreap join min-latency

To enable or disable the access point to choose the controller with the least latency when joining, use the `config hreap join min-latency` command.

```
config hreap join min-latency {enable | disable} Cisco_AP
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the access point to choose the controller with the least latency when joining.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the access point to choose the controller with the least latency when joining.</td>
</tr>
<tr>
<td>Cisco_AP</td>
<td>Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

**Defaults**

The default value is disabled.

**Usage Guidelines**

When you enable this feature, the access point calculates the time between the discovery request and discovery response and joins the Cisco 5500, or 2500 Series Controller that responds first. This command is not supported on Cisco 4400 and Cisco Wireless Services Module (WiSM).

**Examples**

This example shows how to enable the access point to choose the controller with the least latency when joining:

```
> config hreap join min-latency enable CISCO_AP
```

**Related Commands**

- `config ap mode`
- `config hreap group`
- `config hreap office-extend`
To configure an OfficeExtend access point, use the `config hreap office-extend` command.

```plaintext
config hreap office-extend {{enable | disable} Cisco_AP | clear-personalssid-config Cisco_AP}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the OfficeExtend mode for an access point.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the OfficeExtend mode for an access point.</td>
</tr>
<tr>
<td>clear-personalssid-config</td>
<td>Clears only the access point’s personal SSID.</td>
</tr>
<tr>
<td>Cisco_AP</td>
<td>Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

### Defaults

OfficeExtend mode is enabled automatically when you enable hybrid REAP mode on the access point.

### Usage Guidelines

Currently, only Cisco Aironet 1130 series and 1140 series access points that are joined to a Cisco 5500 Series Controller with a WPlus license can be configured to operate as OfficeExtend access points.

Rogue detection is disabled automatically when you enable the OfficeExtend mode for an access point. OfficeExtend access points, which are deployed in a home environment, are likely to detect a large number of rogue devices. You can enable or disable rogue detection for a specific access point or for all access points by using the `config rogue detection {enable | disable} {Cisco_AP | all}` command.

DTLS data encryption is enabled automatically when you enable the OfficeExtend mode for an access point. However, you can enable or disable DTLS data encryption for a specific access point or for all access points by using the `config ap link-encryption {enable | disable} {Cisco_AP | all}` command.

Telnet and SSH access are disabled automatically when you enable the OfficeExtend mode for an access point. However, you can enable or disable Telnet or SSH access for a specific access point by using the `config ap telnet {enable | disable} Cisco_AP` or `config ap ssh {enable | disable} Cisco_AP` command.

Link latency is enabled automatically when you enable the OfficeExtend mode for an access point. However, you can enable or disable link latency for a specific access point or for all access points currently associated to the controller by using the `config ap link-latency {enable | disable} {Cisco_AP | all}` command.

### Examples

This example shows how to enable the office-extend mode for the access point Cisco_ap:

```
> config hreap office-extend enable Cisco_ap
```

This example shows how to clear only the access point’s personal SSID for the access point Cisco_ap:

```
> config hreap office-extend clear-personalssid-config Cisco_ap
```

### Related Commands

- `config ap mode`
- `config hreap join min-latency`
- `config hreap group`
- `debug hreap group`
- `show hreap group detail`
- `show hreap group summary`
config interface acl

To configure an interface’s access control list, use the `config interface acl` command.

```
config interface acl {ap-manager | management | interface_name} {ACL | none}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>ap-manager</code></td>
<td>Configures the access point manager interface.</td>
</tr>
<tr>
<td><code>management</code></td>
<td>Configures the management interface.</td>
</tr>
<tr>
<td><code>interface_name</code></td>
<td>Interface name.</td>
</tr>
<tr>
<td><code>ACL</code></td>
<td>ACL name up to 32 alphanumeric characters.</td>
</tr>
<tr>
<td><code>none</code></td>
<td>Specifies none.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

For a Cisco 2100 Series Wireless LAN Controller, you must configure a preauthentication ACL on the wireless LAN for the external web server. This ACL should then be set as a wireless LAN preauthentication ACL under Web Policy. However, you do not need to configure any preauthentication ACL for Cisco 4400 Series Wireless LAN Controllers.

**Examples**

This example shows how to configure an access control list with a value None:
```
  > config interface acl management none
```
config interface address

To configure address information for an interface, use the `config interface address` command.

```
config interface address
    { ap-manager IP_address netmask gateway |
      management IP_address netmask gateway |
      service-port IP_address netmask |
      virtual IP_address |
      interface-name interface-name IP_address netmask gateway }
```

### Syntax Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ap-manager</td>
<td>Specifies the access point manager interface.</td>
</tr>
<tr>
<td>IP_address</td>
<td>IP address.</td>
</tr>
<tr>
<td>netmask</td>
<td>Network mask.</td>
</tr>
<tr>
<td>gateway</td>
<td>IP address of the gateway.</td>
</tr>
<tr>
<td>management</td>
<td>Specifies the management interface.</td>
</tr>
<tr>
<td>service-port</td>
<td>Specifies the out-of-band service port interface.</td>
</tr>
<tr>
<td>virtual</td>
<td>Specifies the virtual gateway interface.</td>
</tr>
<tr>
<td>interface-name</td>
<td>Specifies the interface identified by the interface-name parameter.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

For Cisco 5500 Series Controllers, you are not required to configure an AP-manager interface. The management interface acts like an AP-manager interface by default.

### Examples

This example shows how to configure an access point manager interface with IP address 10.109.15.7, network mask 255.255.0.0, and gateway address 10.109.15.1:

```
> config interface address ap-manager 10.109.15.7 255.255.0.0 10.109.15.1
```

### Related Commands

- `show interface`
config interface ap-manager

To enable or disable access point manager features on the management or dynamic interface, use the config interface ap-manager command.

```
config interface ap-manager {management | interface_name} {enable | disable}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>management</td>
<td>Specifies the management interface.</td>
</tr>
<tr>
<td>interface_name</td>
<td>Dynamic interface name.</td>
</tr>
<tr>
<td>{enable</td>
<td>disable}</td>
</tr>
<tr>
<td>disable</td>
<td>Disables access point manager features on a dynamic interface.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

Use the management option to enable or disable dynamic AP management for the management interface. For Cisco 5500 Series Controllers, the management interface acts like an AP-manager interface by default. If desired, you can disable the management interface as an AP-manager interface and create another dynamic interface as an AP manager.

When you enable this feature for a dynamic interface, the dynamic interface is configured as an AP-manager interface (only one AP-manager interface is allowed per physical port). A dynamic interface that is marked as an AP-manager interface cannot be used as a WLAN interface.

### Examples

This example shows how to disable an access point manager myinterface:

```
> config interface ap-manager myinterface disable
```

### Related Commands

show interface
config interface create

To create a dynamic interface (VLAN) for wired guest user access, use the config interface create command.

    config interface create interface_name vlan-id

Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>argument</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interface_name</td>
<td></td>
<td>Interface name.</td>
</tr>
<tr>
<td>vlan-id</td>
<td></td>
<td>VLAN identifier.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to create a dynamic interface with the interface named lab2 and VLAN ID 6:

    > config interface create lab2 6

Related Commands

show interface
config interface delete

To delete a dynamic interface, use the `config interface delete` command.

```
config interface delete interface-name
```

**Syntax Description**

<table>
<thead>
<tr>
<th><strong>interface-name</strong></th>
<th>Interface name.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

This example shows how to delete a dynamic interface named VLAN501:

```
> config interface delete VLAN501
```

**Related Commands**

show interface
config interface dhcp

To configure DHCP options on an interface, use the **config interface dhcp** command.

```
config interface dhcp
  { ap-manager [primary dhcp_server secondary dhcp_server | option-82 [enable | disable]] |
    management [primary dhcp_server secondary dhcp_server | option-82 [enable | disable] ] |
    service-port { enable | disable } |
    dynamic interface name [primary dhcp_server secondary dhcp_server | option-82 [enable | disable] ]}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ap-manager</td>
<td>Configures the access point manager interface.</td>
</tr>
<tr>
<td>primary</td>
<td>(Optional) Specifies the primary DHCP server.</td>
</tr>
<tr>
<td>dhcp_server</td>
<td>IP address of the server.</td>
</tr>
<tr>
<td>secondary</td>
<td>(Optional) Specifies the secondary DHCP server.</td>
</tr>
<tr>
<td>option-82</td>
<td>(Optional) Configures DHCP Option 82 on the interface.</td>
</tr>
<tr>
<td>enable</td>
<td>(Optional) Enables the feature.</td>
</tr>
<tr>
<td>disable</td>
<td>(Optional) Disables the feature.</td>
</tr>
<tr>
<td>management</td>
<td>Configures the management interface.</td>
</tr>
<tr>
<td>service-port</td>
<td>Specifies the DHCP for the out-of-band service port.</td>
</tr>
<tr>
<td>dynamic interface</td>
<td>Specifies the interface name and the primary DHCP server. Optionally, you can also enter the address of the alternate DHCP server.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to configure ap-manager server with the primary DHCP server 10.21.15.01 and secondary DHCP server 10.21.15.25:

```
> config interface dhcp ap-manager server-1 10.21.15.01 server-2 10.21.15.25
```

This example shows how to configure DHCP option 82 on the ap-manager:

```
> config interface dhcp ap-manager option-82 enable
```

This example shows how to enable the DHCP for the out-of-band service port:

```
> config interface dhcp service-port enable
```

### Related Commands

- config dhcp
- config dhcp proxy
- config interface dhcp
- config wlan dhcp_server
- debug dhcp
- debug dhcp service-port
- debug disable-all
show dhcp
show dhcp proxy
show interface
config interface guest-lan

To enable or disable the guest LAN VLAN, use the `config interface guest-lan` command.

```
config interface guest-lan interface_name {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interface_name</td>
<td>Interface name.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the guest LAN.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the guest LAN.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to enable the guest LAN feature on the interface named myinterface:

```
> config interface guest-lan myinterface enable
```

Related Commands

`config guest-lan create`
config interface hostname

To configure the Domain Name System (DNS) hostname of the virtual gateway interface, use the `config interface hostname` command.

```
config interface hostname virtual DNS_host
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>virtual</td>
<td>Specifies the virtual gateway interface to use the specified virtual address of the fully qualified DNS name. The virtual gateway IP address is any fictitious, unassigned IP address, such as 1.1.1.1, to be used by Layer 3 security and mobility managers.</td>
</tr>
<tr>
<td>DNS_host</td>
<td>DNS hostname.</td>
</tr>
</tbody>
</table>

**Defaults**

This example shows how to configure virtual gateway interface to use the specified virtual address of the fully qualified DNS hostname DNS_Host:

```
> config interface hostname virtual DNS_Host
```

**Related Commands**

`show interface`
config interface nat-address

To deploy your Cisco 5500 Series Controller behind a router or other gateway device that is using one-to-one mapping network address translation (NAT), use the `config interface nat-address` command.

```
config interface nat-address {management | dynamic-interface interface_name} {{enable | disable} | {set public_IP_address}}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>management</td>
<td>Specifies the management interface.</td>
</tr>
<tr>
<td>dynamic-interface</td>
<td>Specifies the dynamic interface name.</td>
</tr>
<tr>
<td>interface_name</td>
<td></td>
</tr>
<tr>
<td>enable</td>
<td>Enables one-to-one mapping NAT on the interface.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables one-to-one mapping NAT on the interface.</td>
</tr>
<tr>
<td>public_IP_address</td>
<td>External NAT IP address.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

These NAT commands can be used only on Cisco 5500 Series Controllers and only if the management interface is configured for dynamic AP management.

These commands are supported for use only with one-to-one-mapping NAT, where each private client has a direct and fixed mapping to a global address. They do not support one-to-many NAT, which uses source port mapping to enable a group of clients to be represented by a single IP address.

**Examples**

This example shows how to enable one-to-one mapping NAT on the management interface:

```
> config interface nat address management enable
```

This example shows how to set the external NAP IP address 10.10.10.10 on the management interface:

```
> config interface nat address management set 10.10.10.10
```

**Related Commands**

`show interface`
config interface port

To map a physical port to the interface (if a link aggregation trunk is not configured), use the `config interface port` command.

```
config interface port {management | interface_name} primary_port {secondary_port}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>management</td>
<td>Specifies the management interface.</td>
</tr>
<tr>
<td>interface_name</td>
<td>Interface name.</td>
</tr>
<tr>
<td>primary_port</td>
<td>Primary physical port number.</td>
</tr>
<tr>
<td>secondary_port</td>
<td>(Optional) Secondary physical port number.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

You can use the `management` option for all controllers except the Cisco 5500 Series Controllers.

**Examples**

This example shows how to configure the LAb02 interface's primary port number to 3:
```
> config interface port lab02 3
```

**Related Commands**

`show interface`
`config interface create`
config interface quarantine vlan

To configure a quarantine VLAN on any dynamic interface, use the config interface quarantine vlan command.

```
config interface quarantine vlan interface-name vlan_id
```

### Syntax Description

<table>
<thead>
<tr>
<th>syntax</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interface-name</td>
<td>Interface’s name.</td>
</tr>
<tr>
<td>vlan_id</td>
<td>VLAN identifier.</td>
</tr>
</tbody>
</table>

**Note** Enter 0 to disable quarantine processing.

### Defaults

None.

### Examples

This example shows how to configure a quarantine VLAN on the quarantine interface with the VLAN ID 10:

```
> config interface quarantine vlan quarantine 10
```

### Related Commands

show interface
config interface vlan

To configure an interface’s VLAN identifier, use the `config interface vlan` command.

```
config interface vlan {ap-manager | management | interface-name} vlan
```

**Syntax Description**
- `ap-manager`: Configures the access point manager interface.
- `management`: Configures the management interface.
- `interface-name`: Interface name.
- `vlan`: VLAN identifier.

**Defaults**
None.

**Examples**
This example shows how to configure VLAN ID 10 on the management interface:

```
> config interface vlan management 01
```

**Related Commands**
- `show interface`
To configure a known Cisco lightweight access point, use the `config known ap` command.

```
config known ap {add | alert | delete} MAC
```

### Syntax Description
- **add**: Adds a new known access point Entry.
- **alert**: Generates a trap upon detection of the access point.
- **delete**: Deletes an existing known access point entry.
- **MAC**: MAC address of the known Cisco lightweight access point.

### Defaults
None.

### Examples
This example shows how to add a new access point entry `ac:10:02:72:2f:bf` on a known access point:

```
> config known ap add ac:10:02:72:2f:bf 12
```

### Related Commands
- `config ap`
config lag

To enable or disable link aggregation (LAG), use the `config lag` command.

```
config lag {enable | disable}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the link aggregation (LAG) settings.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the link aggregation (LAG) settings.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to enable LAG settings:

```
> config lag enable
```

Enabling LAG will map your current interfaces setting to LAG interface,
All dynamic AP Manager interfaces and Untagged interfaces will be deleted
All WLANs will be disabled and mapped to Mgmt interface
Are you sure you want to continue? (y/n)

You must now reboot for the settings to take effect.

This example shows how to disable LAG settings:

```
> config lag disable
```

Disabling LAG will map all existing interfaces to port 1.
Are you sure you want to continue? (y/n)

You must now reboot for the settings to take effect.

### Related Commands

- `show lag summary`
To configure the Lightweight Directory Access Protocol (LDAP) server settings, use the `config ldap` command.

```
config ldap {add | delete | disable | enable | retransmit-timeout} index
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>add</td>
<td>Specifies that an LDAP server is being added.</td>
</tr>
<tr>
<td>delete</td>
<td>Specifies that an LDAP server is being deleted.</td>
</tr>
<tr>
<td>enable</td>
<td>Specifies that an LDAP server is enabled.</td>
</tr>
<tr>
<td>disable</td>
<td>Specifies that an LDAP server is disabled.</td>
</tr>
<tr>
<td>retransmit-timeout</td>
<td>Changes the default retransmit timeout for an LDAP server.</td>
</tr>
<tr>
<td>index</td>
<td>LDAP server index. Valid values are from 1 to 17.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to enable LDAP server index 10:

```
> config ldap enable 10
```

### Related Commands

- `config ldap add`
- `config ldap simple-bind`
- `show ldap summary`
config ldap add

To configure a Lightweight Directory Access Protocol (LDAP) server, use the config ldap add command.

    config ldap add index server_ip_address port user_base user_attr user_type

**Syntax Description**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>index</td>
<td>LDAP server index.</td>
</tr>
<tr>
<td>server_ip_address</td>
<td>IP address of the LDAP server.</td>
</tr>
<tr>
<td>port</td>
<td>Port number.</td>
</tr>
<tr>
<td>user_base</td>
<td>Distinguished name for the subtree that contains all of the users.</td>
</tr>
<tr>
<td>user_attr</td>
<td>Attribute that contains the username.</td>
</tr>
<tr>
<td>user_type</td>
<td>ObjectType that identifies the user.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure a LDAP server with the index10, server IP address 10.31.15.45, port number 2:

```
> config ldap add 10 10.31.15.45 2 base_name attr_name type_name
```

**Related Commands**

- config ldap
- config ldap simple-bind
- show ldap summary
config ldap simple-bind

To configure the local authentication bind method for the Lightweight Directory Access Protocol (LDAP) server, use the **config ldap simple-bind** command.

```
config ldap simple-bind {anonymous index | authenticated index username username password password}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>anonymous</strong></td>
<td>Allows anonymous access to the LDAP server.</td>
</tr>
<tr>
<td><strong>index</strong></td>
<td>LDAP server index.</td>
</tr>
<tr>
<td><strong>authenticated</strong></td>
<td>Specifies that a username and password be entered to secure access to the LDAP server.</td>
</tr>
<tr>
<td><strong>username</strong></td>
<td>Username for the authenticated bind method.</td>
</tr>
<tr>
<td><strong>password</strong></td>
<td>Password for the authenticated bind method.</td>
</tr>
</tbody>
</table>

| Defaults | The default bind method is **anonymous**. |

**Examples**

This example shows how to configure the local authentication bind method that allows anonymous access to the LDAP server:

```
> config ldap simple-bind anonymous
```

**Related Commands**

- config ldap
- config ldap add
- show ldap summary
## config license agent

To configure the license agent on the Cisco 5500 Series Controller, use the `config license agent` command.

```
config license agent {default {disable | authenticate [none]}} {listener http {disable | {plaintext | encrypt} url authenticate [acl acl] [max-message size [none]]} {max-session sessions} {notify {disable | {url} username password}}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>default</td>
<td>Specifies the default license agent.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the feature.</td>
</tr>
<tr>
<td>authenticate</td>
<td>Enables authentication.</td>
</tr>
<tr>
<td>none</td>
<td>(Optional) Disables authentication.</td>
</tr>
<tr>
<td>listener http</td>
<td>Configures the license agent to receive license requests from the CLM.</td>
</tr>
<tr>
<td>plaintext</td>
<td>Disables encryption (HTTP).</td>
</tr>
<tr>
<td>encrypt</td>
<td>Enables encryption (HTTPS).</td>
</tr>
<tr>
<td>url</td>
<td>URL where the license agent receives the requests.</td>
</tr>
<tr>
<td>acl</td>
<td>Specifies the access control list.</td>
</tr>
<tr>
<td>acl</td>
<td>(Optional) Specifies the access control list for license requests.</td>
</tr>
<tr>
<td>max-message</td>
<td>Specifies the maximum message size for license requests.</td>
</tr>
<tr>
<td>size</td>
<td>The maximum message size for license request is from 0 to 65535.</td>
</tr>
<tr>
<td>max-session</td>
<td>Specifies the maximum number of sessions allowed.</td>
</tr>
<tr>
<td>sessions</td>
<td>The maximum number of sessions allowed for the license agent is from 1 to 25.</td>
</tr>
<tr>
<td>notify</td>
<td>Configures the license agent to send license notifications to the CLM.</td>
</tr>
<tr>
<td>username</td>
<td>Username used in license agent notification.</td>
</tr>
<tr>
<td>password</td>
<td>Password used in license agent notification.</td>
</tr>
</tbody>
</table>

### Defaults

The license agent is disabled by default.

The listener is disabled by default.

Notify is disabled by default.

The default maximum number of sessions is 9.

The default maximum message size is 0.

### Usage Guidelines

If your network contains various Cisco licensed devices, you might consider using the CLM to manage all of the licenses using a single application. CLM is a secure client/server application that manages Cisco software licenses network wide.

The license agent is an interface module that runs on the controller and mediates between CLM and the controller’s licensing infrastructure. CLM can communicate with the controller using various channels, such as HTTP, Telnet, and so on. If you want to use HTTP as the communication method, you must enable the license agent on the controller.
The license agent receives requests from the CLM and translates them into license commands. It also sends notifications to the CLM. It uses XML messages over HTTP or HTTPS to receive the requests and send the notifications. For example, if the CLM sends a `license clear` command, the agent notifies the CLM after the license expires.

**Note**
You can download the CLM software and access user documentation at this URL:
http://www.cisco.com/go/clm

**Examples**
This example shows how to authenticate the default license agent settings:

```plaintext
> config license agent default authenticate
```

This example shows how to configure the license agent with the number of maximum sessions allowed as 5:

```plaintext
> config license agent max-session 5
```

**Related Commands**
- `license install`
- `show license agent`
- `clear license agent`
**config license boot**

To specify the license level to be used on the next reboot of the Cisco 5500 Series Controller, use the `config license boot` command.

```config license boot {base | wplus | auto}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>base</td>
<td>Specifies base boot level.</td>
</tr>
<tr>
<td>wplus</td>
<td>Specifies wplus boot level.</td>
</tr>
<tr>
<td>auto</td>
<td>Specifies auto boot level.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

If you enter `auto`, the licensing software automatically chooses the license level to use on the next reboot. It generally chooses permanent licenses over evaluation licenses and wplus licenses over base licenses.

**Note**

If you are considering upgrading from a base license to a wplus license, you can try an evaluation wplus license before upgrading to a permanent wplus license. To activate the evaluation license, you need to set the image level to wplus in order for the controller to use the wplus evaluation license instead of the base permanent license.

**Note**

To prevent disruptions in operation, the controller does not switch licenses when an evaluation license expires. You must reboot the controller in order to return to a permanent license. Following a reboot, the controller defaults to the same feature set level as the expired evaluation license. If no permanent license at the same feature set level is installed, the controller uses a permanent license at another level or an unexpired evaluation license.

**Examples**

This example shows how to set the license boot settings to wplus:

```
> config license boot wplus
```

**Related Commands**

- `license install`
- `license modify priority`
- `show license in-use`
config load-balancing

To globally configure aggressive load balancing on the controller, use the `config load-balancing` command.

```
config load-balancing { window client_count | status [enable | disable] | denial denial_count }
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>window</td>
<td>Specifies the aggressive load balancing client window.</td>
</tr>
<tr>
<td>client_count</td>
<td>Sets the aggressive load balancing client window with the number of clients from 1 to 20.</td>
</tr>
<tr>
<td>status</td>
<td>Sets the load balancing status.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables load balancing feature.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables load balancing feature.</td>
</tr>
<tr>
<td>denial</td>
<td>Specifies the number of association denials during load balancing.</td>
</tr>
<tr>
<td>denial_count</td>
<td>Sets the maximum number of association denials during load balancing, from 0 to 10.</td>
</tr>
</tbody>
</table>

### Defaults

Disabled.

### Usage Guidelines

Load-balancing-enabled WLANs do not support time-sensitive applications like voice and video because of roaming delays.

When you use Cisco 7921 and 7920 Wireless IP Phones with controllers, make sure that aggressive load balancing is disabled on the voice WLANs for each controller. Otherwise, the initial roam attempt by the phone might fail, causing a disruption in the audio path.

### Examples

This example shows how to enable the aggressive load balancing settings:
```
> config load-balancing aggressive enable
```

### Related Commands

`show load-balancing`
config local-auth active-timeout

To specify the amount of time in which the controller attempts to authenticate wireless clients using local Extensible Authentication Protocol (EAP) after any pair of configured RADIUS servers fails, use the `config local-auth active-timeout` command.

```
config local-auth active-timeout timeout
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>timeout</code></td>
<td>Timeout measured in seconds. The valid range is 1 to 3600.</td>
</tr>
</tbody>
</table>

**Defaults**

This command has a default of 100 seconds.

**Examples**

This example shows how to specify the active timeout to authenticate wireless clients using EAP to 500 seconds:

```
> config local-auth active-timeout 500
```

**Related Commands**

- `clear stats local-auth`
- `config local-auth eap-profile`
- `config local-auth method fast`
- `config local-auth user-credentials`
- `debug aaa local-auth`
- `show local-auth certificates`
- `show local-auth config`
- `show local-auth statistics`
config local-auth eap-profile

To configure local Extensible Authentication Protocol (EAP) authentication profiles, use the config local-auth eap-profile command.

```
config local-auth eap-profile {
    [add | delete] profile_name |
    cert-issuer {cisco | vendor} |
    method [add | delete] method profile_name |
    method method local-cert {enable | disable} profile_name |
    method method client-cert {enable | disable} profile_name |
    method method peer-verify ca-issuer {enable | disable} |
    method method peer-verify cn-verify {enable | disable} |
    method method peer-verify date-valid {enable | disable}
}
```

**Syntax Description**

- **add** (Optional) Specifies that an EAP profile or method is being added.
- **delete** (Optional) Specifies that an EAP profile or method is being deleted.
- **profile_name** EAP profile name (up to 63 alphanumeric characters). Do not include spaces within a profile name.
- **cert-issuer** (For use with EAP-TLS, PEAP, or EAP-FAST with certificates) Specifies the issuer of the certificates that will be sent to the client. The supported certificate issuers are Cisco or a third-party vendor.
  - **Cisco** Specifies the Cisco certificate issuer.
  - **Vendor** Specifies the third-party vendor.
- **method** Configures an EAP profile method.
  - **method** EAP profile method name. The supported methods are leap, fast, tls, and peap.
- **local-cert** (For use with EAP-FAST) Specifies whether the device certificate on the controller is required for authentication.
- **enable** Specifies that the parameter is enabled.
- **disable** Specifies that the parameter is disabled.
- **client-cert** (For use with EAP-FAST) Specifies whether wireless clients are required to send their device certificates to the controller in order to authenticate.
- **peer-verify** Configures the peer certificate verification options.
- **ca-issuer** (For use with EAP-TLS or EAP-FAST with certificates) Specifies whether the incoming certificate from the client is to be validated against the Certificate Authority (CA) certificates on the controller.
- **cn-verify** (For use with EAP-TLS or EAP-FAST with certificates) Specifies whether the common name (CN) in the incoming certificate is to be validated against the CA certificates’ CN on the controller.
- **date-valid** (For use with EAP-TLS or EAP-FAST with certificates) Specifies whether the controller is to verify that the incoming device certificate is still valid and has not expired.

**Defaults**

None.
Examples

This example shows how to create a local EAP profile named FAST01:

```bash
> config local-auth eap-profile add FAST01
```

This example shows how to add the EAP-FAST method to a local EAP profile:

```bash
> config local-auth eap-profile method add fast FAST01
```

This example shows how to specify Cisco as the issuer of the certificates that will be sent to the client for an EAP-FAST profile:

```bash
> config local-auth eap-profile method fast cert-issuer cisco
```

This example shows how to specify that the incoming certificate from the client be validated against the CA certificates on the controller:

```bash
> config local-auth eap-profile method fast peer-verify ca-issuer enable
```

Related Commands

- `config local-auth active-timeout`
- `config local-auth method fast`
- `config local-auth user-credentials`
- `show local-auth certificates`
- `show local-auth config`
- `show local-auth statistics`
- `clear stats local-auth`
- `debug aaa local-auth`
config local-auth method fast

To configure an EAP-FAST profile, use the `config local-auth method fast` command.

```
config local-auth method fast {anon-prov [enable | disable] | authority-id auth_id
  pac-ttl days | server-key key_value}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>anon-prov</td>
<td>Configures the controller to allow anonymous provisioning, which allows PACs to be sent automatically to clients that do not have one during Protected Access Credentials (PAC) provisioning.</td>
</tr>
<tr>
<td>enable</td>
<td>(Optional) Specifies that the parameter is enabled.</td>
</tr>
<tr>
<td>disable</td>
<td>(Optional) Specifies that the parameter is disabled.</td>
</tr>
<tr>
<td>authority-id auth_id</td>
<td>Configures the authority identifier of the local EAP-FAST server.</td>
</tr>
<tr>
<td>pac-ttl days</td>
<td>Configures the number of days for the Protected Access Credentials (PAC) to remain viable (also known as the time-to-live [TTL] value).</td>
</tr>
<tr>
<td>server-key key_value</td>
<td>Configures the server key to encrypt or decrypt PACs.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to disable the controller to allow anonymous provisioning:

```
> config local-auth method fast anon-prov disable
```

This example shows how to configure the authority identifier 0125631177 of the local EAP-FAST server:

```
> config local-auth method fast authority-id 0125631177
```

This example shows how to configure the number of days to 10 for the PAC to remain viable:

```
> config local-auth method fast pac-ttl 10
```

**Related Commands**

- config local-auth active-timeout
- config local-auth eap-profile
- config local-auth user-credentials
- show local-auth certificates
- show local-auth config
- show local-auth statistics
- clear stats local-auth
- debug aaa local-auth
config local-auth user-credentials

To configure the local Extensible Authentication Protocol (EAP) authentication database search order for user credentials, use the `config local-auth user credentials` command.

```
config local-auth user-credentials { local [ldap] | ldap [local]}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>local</td>
<td>Specifies that the local database is searched for the user credentials.</td>
</tr>
<tr>
<td>ldap</td>
<td>(Optional) Specifies that the Lightweight Directory Access Protocol (LDAP) database is searched for the user credentials.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

The order of the specified database parameters indicate the database search order.

**Examples**

This example shows how to specify the order in which the local EAP authentication database is searched:

```
> config local-auth user-credentials local ldap
```

In the above example, the local database is searched first and then the LDAP database.

**Related Commands**

- `config local-auth active-timeout`
- `config local-auth eap-profile`
- `config local-auth method fast`
- `show local-auth certificates`
- `show local-auth config`
- `show local-auth statistics`
- `clear stats local-auth`
- `debug aaa local-auth`
config location

To configure a location-based system, use the `config location` command.

```
config location { add location [description] | delete location | enable | disable |
  description location description | algorithm { simple | rssi-average } | |
  { rssi-half-life | expiry } | client | calibrating-client | tags | rogue-aps | seconds |
  notify-threshold [client | tags | rogue-aps] threshold | |
  interface-mapping { add | delete } location wlan_id interface_name | |
  plm { client { enable | disable } burst_interval | calibrating { enable | disable } { uniband | multiband } } }
```

### Syntax Description

<table>
<thead>
<tr>
<th>Description</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>add</strong></td>
<td>Adds a location element.</td>
</tr>
<tr>
<td><strong>location</strong></td>
<td>Location element name.</td>
</tr>
<tr>
<td><strong>description</strong></td>
<td>Element description. Optional with the <code>add</code> command, and required with the <code>description</code> command.</td>
</tr>
<tr>
<td><strong>delete</strong></td>
<td>Deletes a location element.</td>
</tr>
<tr>
<td><strong>enable</strong></td>
<td>Enables the access point location-based overrides.</td>
</tr>
<tr>
<td><strong>disable</strong></td>
<td>Disables the access point location-based overrides.</td>
</tr>
<tr>
<td><strong>algorithm</strong></td>
<td>Note: We recommend that you do not use or modify the <code>config location algorithm</code> command. It is set to optimal default values.</td>
</tr>
<tr>
<td><strong>simple</strong></td>
<td>Specifies a faster algorithm that requires low CPU overhead but provides less accuracy.</td>
</tr>
<tr>
<td><strong>rssi-average</strong></td>
<td>Specifies a more accurate algorithm but requires more CPU overhead.</td>
</tr>
<tr>
<td><strong>rssi-half-life</strong></td>
<td>Note: We recommend that you do not use or modify the <code>config location rssi-half-life</code> command. It is set to optimal default values.</td>
</tr>
<tr>
<td><strong>expiry</strong></td>
<td>Configures the half-life when averaging two RSSI readings.</td>
</tr>
<tr>
<td><strong>notify-threshold</strong></td>
<td>Note: We recommend that you do not use or modify the <code>config location notify-threshold</code> command. It is set to optimal default values.</td>
</tr>
<tr>
<td><strong>client</strong></td>
<td>(Optional) Specifies the parameter applies to client devices.</td>
</tr>
<tr>
<td><strong>calibrating-client</strong></td>
<td>(Optional) Specifies the parameter is used for calibrating client devices.</td>
</tr>
<tr>
<td><strong>tags</strong></td>
<td>(Optional) Specifies the parameter applies to radio frequency identification (RFID) tags.</td>
</tr>
<tr>
<td><strong>rogue-aps</strong></td>
<td>(Optional) Specifies the parameter applies to rogue access points.</td>
</tr>
<tr>
<td><strong>seconds</strong></td>
<td>Time value (0, 1, 2, 5, 10, 20, 30, 60, 90, 120, 180, 300 seconds).</td>
</tr>
<tr>
<td><strong>notify-threshold</strong></td>
<td>Note: We recommend that you do not use or modify the <code>config location notify-threshold</code> command. It is set to optimal default values.</td>
</tr>
<tr>
<td><strong>threshold</strong></td>
<td>NMSP notification threshold for RSSI measurements.</td>
</tr>
<tr>
<td><strong>interface-mapping</strong></td>
<td>Threshold parameter. The range is 0 to 10 dB, and the default value is 0 dB.</td>
</tr>
<tr>
<td><strong>plm</strong></td>
<td>Adds or deletes a new location, wireless LAN, or interface mapping element.</td>
</tr>
</tbody>
</table>
**config location**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>WLAN identification name.</td>
</tr>
<tr>
<td>interface_name</td>
<td>Name of interface to which mapping element applies.</td>
</tr>
<tr>
<td>plm</td>
<td>Specifies the path loss measurement (S60) request for normal clients or calibrating clients.</td>
</tr>
<tr>
<td>client</td>
<td>Specifies normal, noncalibrating clients.</td>
</tr>
<tr>
<td>burst_interval</td>
<td>Burst interval. The range is 1 to 3600 seconds, and the default value is 60 seconds.</td>
</tr>
<tr>
<td>calibrating</td>
<td>Specifies calibrating clients.</td>
</tr>
<tr>
<td>uniband</td>
<td>Specifies the associated 802.11a or 802.11b/g radio (uniband).</td>
</tr>
<tr>
<td>multiband</td>
<td>Specifies the associated 802.11a/b/g radio (multiband).</td>
</tr>
</tbody>
</table>

**Defaults**

See the “Syntax Description” section for default values of individual arguments and keywords.

**Examples**

This example shows how to specify the **simple** algorithm for averaging RSSI and SNR values on a location-based controller:

```
> config location algorithm simple
```

**Related Commands**

- clear location rfid
- clear location statistics rfid
- show location
- show location statistics rfid
**config logging buffered**

To set the severity level for logging messages to the controller buffer, use the `config logging buffered` command.

```
config logging buffered security_level
```

| Syntax Description | security_level | Security level. Choose one of the following:
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• emergencies—Severity level 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• alerts—Severity level 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• critical—Severity level 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• errors—Severity level 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• warnings—Severity level 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• notifications—Severity level 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• informational—Severity level 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• debugging—Severity level 7</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to set the controller buffer severity level for logging messages to 4:

```
> config logging buffered 4
```

**Related Commands**

- `config logging syslog facility`
- `config logging syslog level`
- `show logging`
config logging console

To set the severity level for logging messages to the controller console, use the **config logging console** command.

```
config logging console security_level
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>security_level</th>
<th>Severity level. Choose one of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• emergencies—Severity level 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• alerts—Severity level 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• critical—Severity level 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• errors—Severity level 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• warnings—Severity level 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• notifications—Severity level 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• informational—Severity level 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• debugging—Severity level 7</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to set the controller console severity level for logging messages to 3:

```
> config logging console 3
```

**Related Commands**

- config logging syslog facility
- config logging syslog level
- show logging
config logging debug

To save debug messages to the controller buffer, the controller console, or a syslog server, use the `config logging debug` command.

```
config logging debug {buffered | console | syslog} {enable | disable}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>buffered</th>
<th>Saves debug messages to the controller buffer.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>console</td>
<td>Saves debug messages to the controller console.</td>
</tr>
<tr>
<td></td>
<td>syslog</td>
<td>Saves debug messages to the syslog server.</td>
</tr>
<tr>
<td></td>
<td>enable</td>
<td>Enables logging of debug messages.</td>
</tr>
<tr>
<td></td>
<td>disable</td>
<td>Disables logging of debug messages.</td>
</tr>
</tbody>
</table>

### Command Default

The `console` command is enabled,

The `buffered` and `syslog` commands are disabled.

### Examples

This example shows how to save the debug messages to the controller console:

```
> config logging debug console enable
```

### Related Commands

show logging
To cause the controller to include information about the source file in the message logs or to prevent the controller from displaying this information, use the `config logging fileinfo` command.

```
config logging fileinfo {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Includes information about the source file in the message logs.</td>
</tr>
<tr>
<td>disable</td>
<td>Prevents the controller from displaying information about the source file in the message logs.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the controller to include information about the source file in the message logs:

```
> config logging fileinfo enable
```

**Related Commands**

`show logging`
config logging procinfo

To cause the controller to include process information in the message logs or to prevent the controller from displaying this information, use the `config logging procinfo` command.

```
config logging procinfo {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Includes process information in the message logs.</td>
<td>Prevents the controller from displaying process information in the message logs.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to enable the controller to include the process information in the message logs:

```
> config logging procinfo enable
```

Related Commands

`show logging`
config logging traceinfo

To cause the controller to include traceback information in the message logs or to prevent the controller from displaying this information, use the `config logging traceinfo` command.

```
config logging traceinfo {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Includes traceback information in the message logs.</td>
</tr>
<tr>
<td>disable</td>
<td>Prevents the controller from displaying traceback information in the message logs.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to disable the controller to include the traceback information in the message logs:

```
> config logging traceinfo disable
```

**Related Commands**

`show logging`
config logging syslog host

To configure a remote host for sending syslog messages, use the `config logging syslog host` command.

```
config logging syslog host {host_IP_address}
```

**Syntax Description**

- `host_IP_address` IP address for the remote host.

**Defaults**

None.

**Usage Guidelines**

To remove a remote host that was configured for sending syslog messages, enter the `config logging syslog host host_IP_address delete` command.

**Examples**

This example shows how to configure a remote host 10.92.125.52 for sending the syslog messages:

```
> config logging syslog host 10.92.125.51
```

**Related Commands**

- `config logging syslog facility`
- `config logging syslog level`
- `show logging`
config logging syslog facility

To set the facility for outgoing syslog messages to the remote host, use the `config logging syslog facility` command.

```
config logging syslog facility facility_code
```

**Syntax Description**

```
facility_code
```

Facility code. Choose one of the following:

- `daemon`—System daemons. Facility level—3.
- `kern`—Kernel. Facility level—0.
- `local0`—Local use. Facility level—16.
- `local1`—Local use. Facility level—17.
- `local2`—Local use. Facility level—18.
- `local3`—Local use. Facility level—19.
- `local4`—Local use. Facility level—20.
- `local5`—Local use. Facility level—21.
- `local6`—Local use. Facility level—22.
- `local7`—Local use. Facility level—23.
- `mail`—Mail system. Facility level—2.
- `sys12`—System use. Facility level—12.
- `sys15`—System use. Facility level—15.
- `syslog`—The syslog itself. Facility level—5.
- `user`—User process. Facility level—1.

**Defaults**

None.

**Examples**

This example shows how to set the facility for outgoing syslog messages to authorization:

```
> config logging syslog facility authorization
```
config logging syslog facility

**Related Commands**
- config logging syslog host
- config logging syslog level
- show logging
config logging syslog level

To set the severity level for filtering syslog messages to the remote host, use the `config logging syslog level` command.

**config logging syslog level** severity_level

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>severity_level</th>
<th>severity level. Choose one of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• emergencies—Severity level 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• alerts—Severity level 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• critical—Severity level 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• errors—Severity level 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• warnings—Severity level 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• notifications—Severity level 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• informational—Severity level 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• debugging—Severity level 7</td>
</tr>
</tbody>
</table>

| Defaults | None. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to set the severity level for syslog messages to 3:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; config logging syslog level 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>config logging syslog host</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>config logging syslog facility</td>
</tr>
<tr>
<td></td>
<td>show logging</td>
</tr>
</tbody>
</table>
To close all active Telnet session(s), use the `config loginsession close` command.

```
config loginsession close {session_id | all}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>session_id</code></td>
<td>ID of the session to close.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Closes all Telnet sessions.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to close all active Telnet sessions:

```
> config loginsession close all
```

**Related Commands**

`show loginsession`
Configure Macfilter Commands

Use the `config macfilter` commands to configure macfilter settings.
config macfilter

To create or delete a MAC filter entry on the Cisco wireless LAN controller, use the `config macfilter` command.

```
config macfilter {add client_MAC wlan_id [interface_name] [description] [macfilter_IP] | delete client_MAC}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>add</strong></td>
<td>Adds a MAC filter entry on the controller.</td>
</tr>
<tr>
<td><strong>client_MAC</strong></td>
<td>MAC address.</td>
</tr>
<tr>
<td><strong>wlan_id</strong></td>
<td>Wireless LAN identifier with which the MAC filter entry should associate. A zero value associates the entry with any wireless LAN.</td>
</tr>
<tr>
<td><strong>interface_name</strong></td>
<td>Name of the interface. Enter 0 to specify no interface.</td>
</tr>
<tr>
<td><strong>description</strong></td>
<td>(Optional) Short description of the interface (up to 32 characters) in double quotes.</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>A description is mandatory if macfilterIP is specified.</td>
</tr>
<tr>
<td><strong>macfilter_IP</strong></td>
<td>(Optional) IP address of the local MAC filter database.</td>
</tr>
<tr>
<td><strong>delete</strong></td>
<td>Deletes a MAC filter entry on the controller.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

Use the `config macfilter add` command to add a client locally to a wireless LAN on the Cisco wireless LAN controller. This filter bypasses the RADIUS authentication process.

**Examples**

This example shows how to add a MAC filter entry 00:E0:77:31:A3:55 with the wireless LAN ID 1, interface name labconnect, and MAC filter IP 10.92.125.51 on the controller:

```
> config macfilter add 00:E0:77:31:A3:55 1 lab02 "labconnect" 10.92.125.51
```

**Related Commands**

`show macfilter`

`config macfilter ip-address`
config macfilter description

To add a description to a MAC filter, use the config macfilter description command.

`config macfilter description MAC description`

**Syntax Description**

<table>
<thead>
<tr>
<th>Description</th>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC</td>
<td>Client MAC address.</td>
<td></td>
</tr>
<tr>
<td>description</td>
<td>(Optional) Description within double quotes (up to 32 characters).</td>
<td></td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to set the description MAC filter 01 to MAC address 11:11:11:11:11:

```
> config macfilter description 11:11:11:11:11:11 "MAC Filter 01"
```

**Related Commands**

`show macfilter`
To create a MAC filter client interface, use the **config macfilter interface** command.

**config macfilter interface** *MAC* *interface*

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAC</strong></td>
<td>Client MAC address.</td>
</tr>
<tr>
<td><strong>interface</strong></td>
<td>Interface name. A value of zero is equivalent to no name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to create a MAC filter interface Lab01 on client 11:11:11:11:11:11:

```
> config macfilter interface 11:11:11:11:11:11 Lab01
```

**Related Commands**

`show macfilter`
# config macfilter ip-address

To assign an IP address to an existing MAC filter entry, if one was not assigned using the `config macfilter add` command, use the `config macfilter ip-address` command.

```
config macfilter ip-address MAC_address IP_address
```

## Syntax Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAC_address</strong></td>
<td>Client MAC address.</td>
</tr>
<tr>
<td><strong>IP_address</strong></td>
<td>IP address for a specific MAC address in the local MAC filter database.</td>
</tr>
</tbody>
</table>

## Defaults

None.

## Examples

This example shows how to specify IP address 10.92.125.51 for a MAC 00:E0:77:31:A3:55 in the local MAC filter database:

```
> config macfilter ip-address 00:E0:77:31:A3:55 10.92.125.51
```

## Related Commands

- `show macfilter`
- `config macfilter`
config macfilter mac-delimiter

To set the MAC delimiter (colon, hyphen, none, and single-hyphen) for MAC addresses sent to RADIUS servers, use the config macfilter mac-delimiter command.

    config macfilter mac-delimiter { none | colon | hyphen | single-hyphen }

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>none</th>
<th>colon</th>
<th>hyphen</th>
<th>single-hyphen</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>Disables the delimiters (for example, xxxxxxxxxx).</td>
<td>Sets the delimiter to a colon (for example, xx:xx:xx:xx:xx:xx).</td>
<td>Sets the delimiter to a hyphen (for example, xx-xx-xx-xx-xx-xx).</td>
<td>Sets the delimiter to a single hyphen (for example, xxxxxx-xxxxxx).</td>
</tr>
</tbody>
</table>

**Defaults**

The default delimiter is hyphen.

**Examples**

This example shows how to have the operating system send MAC addresses to the RADIUS server in the form aa:bb:cc:dd:ee:ff:

    > config macfilter mac-delimiter colon

This example shows how to have the operating system send MAC addresses to the RADIUS server in the form aa-bb-cc-dd-ee-ff:

    > config macfilter mac-delimiter hyphen

This example shows how to have the operating system send MAC addresses to the RADIUS server in the form aabbccddeeff:

    > config macfilter mac-delimiter none

**Related Commands**

show macfilter
To configure the Cisco wireless LAN controller for compatibility with selected RADIUS servers, use the `config macfilter radius-compat` command.

```
config macfilter radius-compat {Cisco | free | other}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Cisco</th>
<th>fre</th>
<th>other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configures</td>
<td>Cisco</td>
<td>free</td>
<td>other</td>
</tr>
<tr>
<td>the Cisco ACS</td>
<td>Cisco</td>
<td>free</td>
<td>other</td>
</tr>
<tr>
<td>compatibility</td>
<td>Cisco</td>
<td>free</td>
<td>other</td>
</tr>
<tr>
<td>mode (password is</td>
<td>Cisco</td>
<td>free</td>
<td>other</td>
</tr>
<tr>
<td>the MAC address</td>
<td>Cisco</td>
<td>free</td>
<td>other</td>
</tr>
<tr>
<td>of the server)</td>
<td>Cisco</td>
<td>free</td>
<td>other</td>
</tr>
</tbody>
</table>

**Defaults**

Other.

**Examples**

This example shows how to configure the Cisco ACS compatibility mode to “other”:

```
> config macfilter radius-compat other
```

**Related Commands**

`show macfilter`
**config macfilter wlan-id**

To modify a wireless LAN ID for a MAC filter, use the `config macfilter wlan-id` command.

```
config macfilter wlan-id MAC wlan_id
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC</td>
<td>Client MAC address.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier to associate with. A value of zero is not allowed.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to modify client wireless LAN ID 2 for a MAC filter 11:11:11:11:11:

```
> config macfilter wlanid 11:11:11:11:11 2
```

**Related Commands**

- `show macfilter`
- `show wlan`
Configure Memory Monitor Commands

To troubleshoot hard-to-solve or hard-to-reproduce memory problems, use the `config memory monitor` commands.

**Note** The commands in this section can be disruptive to your system and should be run only when you are advised to do so by the Cisco Technical Assistance Center (TAC).
config memory monitor errors

To enable or disable monitoring for memory errors and leaks, enter this command:

```
config memory monitor errors {enable | disable}
```

Note
The `config memory monitor` commands can be disruptive to your system and should be run only when you are advised to do so by the Cisco TAC.

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the monitoring for memory settings.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the monitoring for memory settings.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled by default.

**Usage Guidelines**

Note
Be cautious about changing the defaults for the `config memory monitor` command unless you know what you are doing, you have detected a problem, or you are collecting troubleshooting information.

**Examples**

This example shows how to enable monitoring for memory errors and leaks for a controller:

```
> config memory monitor errors enable
```

**Related Commands**

- `config memory monitor leaks`
- `debug memory`
- `show memory monitor`
config memory monitor leaks

To configure the controller to perform an auto-leak analysis between two memory thresholds, enter the `config memory monitor leaks` command.

```
config memory monitor leaks low_thresh high_thresh
```

**Note** The `config memory monitor` commands can be disruptive to your system and should be run only when you are advised to do so by the Cisco TAC.

---

**Syntax Description**

- **low_thresh**: Value below which free memory cannot fall without crashing. This value cannot be set lower than 10000 KB.
- **high_thresh**: Value below which the controller enters auto-leak-analysis mode. See the “Usage Guidelines” section.

**Defaults**
The default value for `low_thresh` is 10000 KB; the default value for `high_thresh` is 30000 KB.

**Usage Guidelines**

**Note** Be cautious about changing the defaults for the `config memory monitor` command unless you know what you are doing, you have detected a problem, or you are collecting troubleshooting information.

Use this command if you suspect that a memory leak has occurred.

If the free memory is lower than the `low_thresh` threshold, the system crashes, generating a crash file. The default value for this parameter is 10000 KB, and you cannot set it below this value.

Set the `high_thresh` threshold to the current free memory level or higher so that the system enters auto-leak-analysis mode. After the free memory reaches a level lower than the specified `high_thresh` threshold, the process of tracking and freeing memory allocation begins. As a result, the `debug memory events enable` command shows all allocations and frees, and the `show memory monitor detail` command starts to detect any suspected memory leaks.

**Examples**

This example shows how to set the threshold values for auto-leak-analysis mode to 12000 KB for the low threshold and 35000 KB for the high threshold:

```
> config memory monitor leaks 12000 35000
```

**Related Commands**

- `config memory monitor errors`
- `debug memory`
- `show memory monitor`
Configure Mesh Commands

Use the `configure mesh` commands to set mesh access point settings.
To configure alarm settings for outdoor mesh access points, use the \texttt{config mesh alarm} command.

\begin{verbatim}
config mesh alarm \{ max-hop \| max-children \| low-snr \| high-snr \| association \| parent-change count \} value
\end{verbatim}

\textbf{Syntax Description}

\begin{tabular}{|l|p{0.7\textwidth}|}
\hline
max-hop & Sets the maximum number of hops before triggering an alarm for traffic over the mesh network. The valid values are 1 to 16 (inclusive). \\
\hline
max-children & Sets the maximum number of mesh access points (MAPs) that can be assigned to a mesh router access point (RAP) before triggering an alarm. The valid values are 1 to 16 (inclusive). \\
\hline
low-snr & Sets the low-end signal-to-noise ratio (SNR) value before triggering an alarm. The valid values are 1 to 30 (inclusive). \\
\hline
high-snr & Sets the high-end SNR value before triggering an alarm. The valid values are 1 to 30 (inclusive). \\
\hline
association & Sets the mesh alarm association count value before triggering an alarm. The valid values are 1 to 30 (inclusive). \\
\hline
parent-change count & Sets the number of times a MAP can change its RAP association before triggering an alarm. The valid values are 1 to 30 (inclusive). \\
\hline
value & Triggers value above or below which an alarm is generated. The valid values vary for each command. \\
\hline
\end{tabular}

\textbf{Defaults}

See the “Syntax Description” section for command and argument value ranges.

\textbf{Examples}

This example shows how to set the maximum hops threshold to 8:
\begin{verbatim}
> config mesh alarm max-hop 8
\end{verbatim}

This example shows how to set the upper SNR threshold to 25:
\begin{verbatim}
> config mesh high-snr value 25
\end{verbatim}

\textbf{Related Commands}

\begin{verbatim}
config mesh client-access 
cfg mesh ethernet-bridging vlan-transparent 
cfg mesh full-sector-dfs 
cfg mesh multicast 
cfg mesh radius-server 
cfg mesh security 
show mesh ap 
show mesh security-stats 
show mesh stats 
show mgmt-user
\end{verbatim}
config mesh astools

To globally enable or disable the anti-stranding feature for outdoor mesh access points, use the **config mesh astools** command.

```
config mesh astools {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables this feature for all outdoor mesh access points.</td>
<td>Disables this feature for all outdoor mesh access points.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable anti-stranding on all outdoor mesh access points:

```
> config mesh astools enable
```

**Related Commands**

- config mesh security
- show mesh ap
- show mesh astools stats
- show mesh config
- show mesh stats
- show mgmtuser
To globally enable or disable background scanning for Cisco 1510 access points, use the `config mesh background-scanning` command.

```
config mesh background-scanning { enable | disable }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>enable</em></td>
<td>Enables this feature for all outdoor mesh access points.</td>
</tr>
<tr>
<td><em>disable</em></td>
<td>Disables this feature for all outdoor mesh access points.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Usage Guidelines**

*Note* This is a legacy command of the Cisco 1510 (SkyCaptain) access points. The command still exists on the controller, but it is not supported on current mesh access points.

**Examples**

This example shows how to disable background scanning for all outdoor mesh access points:

```
> config mesh background-scanning disable
```

**Related Commands**

- `show mesh config`
- `show mesh stats`
- `show mgmtuser`
config mesh backhaul dca-channels

To globally configure the DCA channel set for serial backhaul mesh access points, use the config mesh backhaul dca-channels command.

```
config mesh backhaul dca-channels {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables dca channels for serial backhaul mesh access points.</td>
<td>Disables dca channel for serial backhaul mesh access points.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Usage Guidelines**

Note: The config mesh backhaul dca-channels command is applicable only to serial backhaul mesh access points 1524 and 1523CM.

Before enabling the config mesh backhaul dca-channels command, ensure the following:

- Atleast 3 non public-safety channels are present in the DCA list.
- Channel assigned to RAPs is within the DCA list.

**Examples**

This example shows how to set the DCA channel set for serial backhaul for a mesh access point:

```
> config mesh backhaul dca-channels enable
```

**Related Commands**

<table>
<thead>
<tr>
<th>Related Commands</th>
</tr>
</thead>
<tbody>
<tr>
<td>config mesh secondary-backhaul</td>
</tr>
<tr>
<td>show mesh ap</td>
</tr>
<tr>
<td>show mesh backhaul rate-adapt</td>
</tr>
<tr>
<td>show mesh config</td>
</tr>
<tr>
<td>show mesh secondary-backhaul</td>
</tr>
<tr>
<td>show mesh stats</td>
</tr>
</tbody>
</table>
config mesh backhaul rate-adapt

To globally configure the backhaul Tx rate adaptation (universal access) settings for indoor and outdoor mesh access points, use the `config mesh backhaul rate-adapt` command.

```
config mesh backhaul rate-adapt [all | bronze | silver | gold | platinum] {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>rate-adapt</th>
<th>all</th>
<th>bronze</th>
<th>silver</th>
<th>gold</th>
<th>platinum</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Configures mesh backhaul Tx rate adaptation.</td>
<td>Grants universal access privileges on mesh access points.</td>
<td>Grants background-level client access privileges on mesh access points.</td>
<td>Grants best effort-level client access privileges on mesh access points.</td>
<td>Grants video-level client access privileges on mesh access points.</td>
<td>Grants voice-level client access privileges on mesh access points.</td>
<td>Enables this backhaul access level for mesh access points.</td>
<td>Disables this backhaul access level for mesh access points.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Usage Guidelines**

To use this command, mesh backhaul with client access must be enabled by using the `config mesh client-access` command.

**Note**

After this feature is enabled, all mesh access points reboot.

**Examples**

This example shows how to set the backhaul client access to the best-effort level:

```
> config mesh backhaul rate-adapt silver
```

**Related Commands**

- `config mesh secondary-backhaul`
- `show mesh ap`
- `show mesh backhaul rate-adapt`
- `show mesh config`
- `show mesh secondary-backhaul`
- `show mesh stats`
To configure the battery state for Cisco Aironet 1520 series mesh access points, use the `config mesh battery-state` command.

```
config mesh battery-state {enable | disable} {all | cisco_ap}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the battery-state for 1520 series mesh access points.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the battery-state for 1520 series mesh access points.</td>
</tr>
<tr>
<td>all</td>
<td>Applies this command to all mesh access points.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Specific mesh access point.</td>
</tr>
</tbody>
</table>

### Defaults

Disabled.

### Examples

This example shows how to set the backhaul client access to the best-effort level:

```
> config mesh battery-state enable all
```
To enable or disable client access to the mesh backhaul on indoor and outdoor mesh access points, use the `config mesh client-access` command.

```
config mesh client-access { enable [extended] | disable }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Allows wireless client association over the mesh access point backhaul 802.11a radio.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Restricts the 802.11a radio to backhaul traffic, and allows client association only over the 802.11b/g radio.</td>
</tr>
<tr>
<td></td>
<td>extended</td>
<td>Enables client access over both the backhaul radios for 1524 serial backhaul access points.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Usage Guidelines**

Backhaul interfaces (802.11a radios) act as primary Ethernet interfaces. Backhauls function as trunks in the network and carry all VLAN traffic between the wireless and wired network. No configuration of primary Ethernet interfaces is required.

When this feature is enabled, Cisco Aironet 1520 series (152x) mesh access points allow wireless client association over the 802.11a radio, which implies that a 152x mesh access point can carry both backhaul traffic and 802.11a client traffic over the same 802.11a radio.

When this feature is disabled, the 152x carries backhaul traffic over the 802.11a radio and allows client association only over the 802.11b/g radio.

**Examples**

This example shows how to enable client access extended to allow a wireless client association over the 802.11a radio:

```
> config mesh client-access enable extended
Enabling client access on both backhaul slots
Same BSSID will be used on both slots
All Mesh AP will be rebooted
Are you sure you want to start? (y/N) Y
```

This example shows how to restrict a wireless client association to the 802.11b/g radio:

```
> config mesh client-access disable
All Mesh AP will be rebooted
Are you sure you want to start? (Y/N) Y
Backhaul with client access is cancelled.
```
config mesh client-access

Related Commands

- config mesh secondary-backhaul
- show mesh ap
- show mesh client-access
- show mesh config
- show mesh stats
config mesh ethernet-bridging vlan-transparent

To configure how a mesh access point handles VLAN tags for Ethernet bridged traffic, use the `config mesh ethernet-bridging vlan-transparent` command.

```
config mesh ethernet-bridging vlan-transparent { enable | disable }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Bridges packets as if they are untagged.</td>
</tr>
<tr>
<td>disable</td>
<td>Drops all tagged packets.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Usage Guidelines**

VLAN transparent is enabled as a default to ensure a smooth software upgrade from 4.1.192.xxM releases to release 5.2. Release 4.1.192.xxM does not support VLAN tagging.

**Examples**

This example shows how to configure Ethernet packets as untagged:

```
> config mesh ethernet-bridging vlan-transparent enable
```

This example shows how to drop tagged Ethernet packets:

```
> config mesh ethernet-bridging vlan-transparent disable
```

**Related Commands**

- config mesh client-access
- config mesh linkdata
- config mesh linktest
- config mesh multicast
- show mesh ap
- show mesh client-access
- show mesh config
- show mesh stats
config mesh full-sector-dfs

To globally enable or disable full-sector Dynamic Frequency Selection (DFS) on mesh access points, use the `config mesh full-sector-dfs` command.

```
config mesh full-sector-dfs { enable | disable }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables DFS for mesh access points.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables DFS for mesh access points.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

This command instructs the mesh sector to make a coordinated channel change on the detection of a radar signal. For example, if a mesh access point (MAP) detects a radar signal, the MAP will notify the root access point (RAP), and the RAP will initiate a sector change.

All MAPs and the RAP that belong to that sector go to a new channel, which lowers the probability of MAPs stranding when radar is detected on the current backhaul channel, and no other valid parent is available as backup.

Each sector change causes the network to be silent for 60 seconds (as dictated by the DFS standard).

It is expected that after a half hour, the RAP will go back to the previously configured channel, which means that if radar is frequently observed on a RAP's channel, it is important that you configure a different channel for that RAP to exclude the radar affected channel at the controller.

**Examples**

This example shows to enable full-sector DFS on mesh access points:

```
> config mesh full-sector-dfs enable
```

**Related Commands**

- `config mesh alarm`
- `config mesh background-scanning`
- `config mesh battery-state`
- `config mesh client-access`
- `config mesh linkdata`
- `config mesh linktest`
- `config mesh range`
- `show mesh ap`
- `show mesh security-stats`
- `show mesh stats`
- `show mgmtuser`
config mesh linkdata

To enable external MAC filtering of access points, use the config mesh linkdata command.

```
config mesh linkdata destination_ap_name
```

**Syntax Description**

`destination_ap_name`  Destination access point name for MAC address filtering.

**Defaults**

Disabled.

**Usage Guidelines**

Note

The `config mesh linkest` and `config mesh linkdata` commands are designed to be used together to verify information between a source and a destination access point. To get this information, first execute the `config mesh linkest` command with the access point that you want link data from in the `dest_ap` argument. When the command completes, enter the `config mesh linkdata` command and list the same destination access point, to display the link data will display (see example).

MAC filtering uses the local MAC filter on the controller by default.

When external MAC filter authorization is enabled, if the MAC address is not found in the local MAC filter, then the MAC address in the external RADIUS server is used.

MAC filtering protects your network against rogue mesh access points by preventing access points that are not defined on the external server from joining.

Before employing external authentication within the mesh network, the following configuration is required:

- The RADUIS server to be used as an AAA server must be configured on the controller.
- The controller must also be configured on the RADUIS server.
- The mesh access point configured for external authorization and authentication must be added to the user list of the RADUIS server.

**Examples**

This example shows how to enable external MAC address filtering on access point AP001d.710d.e300:

```
> config mesh linkdata MAP2-1-1522.7400 AP001d.710d.e300 18 100 1000 30
```

LinkTest started on source AP, test ID: 0
[00:1D:71:0E:74:00]→[00:1D:71:0D:E3:0F]

Test config: 1000 byte packets at 100 pps for 30 seconds, a-link rate 18 Mb/s

In progress: | || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || || | |

Results

```
Results

txPkts: 2977
txBuffAllocErr: 0
txQFullErrs: 0
```

Total rx pkts heard at destination: 2977
rx pkts decoded correctly: 2977
err pkts: Total 0 (PHY 0 + CRC 0 + Unknown 0), TooBig 0, TooSmall 0
rx lost packets: 0 (incr for each pkt seq missed or out of order)
rx dup pkts: 0
rx out of order: 0

avgSNR: 30, high: 33, low: 3
SNR profile [0dB...60dB]

```
  0   6  0  0  0
  0   0  1  2  77
2888  3  0  0  0
  0   0  0  0  0
(>60dB)  0
```

avgNf: -95, high: -67, low: -97
Noise Floor profile [-100dB...-40dB]

```
  0 2948 19 3 1
  0   0  0  0  0
  3   3  0  0  0
  0   0  0  0  0
(>-40dB)  0
```

avgRssi: 64, high: 68, low: 63
RSSI profile [-100dB...-40dB]

```
  0  0  0  0  0
  0  0  0  0  0
  0  0  0  0  0
  0  0  0  0  0
(>-40dB) 2977
```

Summary PktFailedRate (Total pkts sent/recvd): 0.000%
Physical layer Error rate (Total pkts with errors/Total pkts heard): 0.000%

This example shows how to enable external MAC filtering on access point AP001d.71d.e300:

```
> config mesh linkdata AP001d.71d.e300
```

```
[SD:0,0,0(0,0,0), 0,0, 0,0, 0]
[SD:1,105,0(0,0,0),30,704,95,707]
[SD:2,103,0(0,0,0),30,46,95,25]
[SD:3,105,0(0,0,0),30,73,95,29]
[SD:4,82,0(0,0,0),30,39,95,24]
[SD:5,82,0(0,0,0),30,60,95,26]
[SD:6,105,0(0,0,0),30,47,95,23]
[SD:7,103,0(0,0,0),30,51,95,24]
[SD:8,105,0(0,0,0),30,55,95,24]
[SD:9,103,0(0,0,0),30,740,95,749]
[SD:10,105,0(0,0,0),30,39,95,20]
[SD:11,104,0(0,0,0),30,58,95,23]
[SD:12,105,0(0,0,0),30,53,95,24]
[SD:13,103,0(0,0,0),30,64,95,43]
[SD:14,105,0(0,0,0),30,54,95,27]
[SD:15,103,0(0,0,0),31,51,95,24]
[SD:16,105,0(0,0,0),30,59,99,23]
[SD:17,104,0(0,0,0),30,53,95,25]
[SD:18,105,0(0,0,0),30,773,95,777]
[SD:19,103,0(0,0,0),30,745,95,736]
[SD:20,105,0(0,0,0),30,64,95,54]
[SD:21,103,0(0,0,0),30,747,95,751]
[SD:22,105,0(0,0,0),30,55,95,25]
[SD:23,104,0(0,0,0),30,52,95,35]
[SD:24,105,0(0,0,0),30,134,95,23]
[SD:25,103,0(0,0,0),30,110,95,76]
[SD:26,105,0(0,0,0),30,791,95,788]
```
config mesh linkdata

[SD:27,103,0(0,0,0),30,53,95,23]
[SD:28,105,0(0,0,0),30,128,95,25]
[SD:29,104,0(0,0,0),30,49,95,24]
[SD:30,0,0(0,0,0), 0,0, 0,0]

Related Commands
- config mesh alarm
- config mesh client-access
- config mesh ethernet-bridging vlan-transparent
- config mesh linktest
- config mesh radius-server
- show mesh ap
- show mesh client-access
- show mesh config
- show mesh stats
**config mesh linktest**

To verify client access between mesh access points, use the `config mesh linktest` command.

```
config mesh linktest source_ap {dest_ap | dest_MAC} datarate packet_rate packet_size duration
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>source_ap</code></td>
<td>Source access point.</td>
</tr>
<tr>
<td><code>dest_ap</code></td>
<td>Destination access point.</td>
</tr>
<tr>
<td><code>dest_MAC</code></td>
<td>Destination MAC address.</td>
</tr>
<tr>
<td><code>datarate</code></td>
<td>- Data rate for 802.11a radios. Valid values are 6, 9, 11, 12, 18, 24, 36,</td>
</tr>
<tr>
<td></td>
<td>48 and 54 Mbps.</td>
</tr>
<tr>
<td></td>
<td>- Data rate for 802.11b radios. Valid values are 6, 12, 18, 24, 36, 54, or</td>
</tr>
<tr>
<td></td>
<td>100 Mbps.</td>
</tr>
<tr>
<td><code>packet_rate</code></td>
<td>Number of packets per second. Valid range is 1 through 3000, but the</td>
</tr>
<tr>
<td></td>
<td>recommended default is 100.</td>
</tr>
<tr>
<td><code>packet_size</code></td>
<td>(Optional) Packet size in bytes. If not specified, packet size defaults to</td>
</tr>
<tr>
<td></td>
<td>1500 bytes.</td>
</tr>
<tr>
<td><code>duration</code></td>
<td>(Optional) Duration of the test in seconds. Valid values are <strong>10-300</strong></td>
</tr>
<tr>
<td></td>
<td>seconds, inclusive. If not specified, duration defaults to 30 seconds.</td>
</tr>
</tbody>
</table>

**Defaults**

100 packets per second, 1500 bytes, 30 second duration.

**Usage Guidelines**

**Note** The `config mesh linktest` and `config mesh linkdata` commands are designed to be used together to verify information between a source and a destination access point. To get this information, first enter the `config mesh linktest` command with the access point that you want link data from in the `dest_ap` argument. When the command completes, enter the `config mesh linkdata` command and list the same destination access point, to display the link data.

The following warning message appears when you run a linktest that might oversubscribe the link:

```
Warning! Data Rate (100 Mbps) is not enough to perform this link test on packet size (2000bytes) and (1000) packets per second. This may cause AP to disconnect or reboot. Are you sure you want to continue?
```

**Examples**

This example shows how to verify client access between mesh access points SB_MAP1 and SB_RAP2 at 36 Mbps, 20 fps, 100 frame size, and 15 second duration:

```
> config mesh linktest SB_MAP1 SB_RAP1 36 20 100 15

LinkTest started on source AP, test ID: 0
[00:1D:71:0E:85:00] - [00:1D:71:0E:D0:0F]
Test config: 100 byte packets at 20 pps for 15 seconds, a-link rate 36 Mb/s
In progress: | || || || || ||
LinkTest complete
```

Results
config mesh linktest

```
taxPkts:              290
txBuffAllocErr:        0
txQFullErrs:           0
Total rx pkts heard at destination:       290
rx pkts decoded correctly:
  err pkts: Total       0 (PHY 0 + CRC 0 + Unknown 0), TooBig 0, TooSmall 0
  rx lost packets:      0 (incr for each pkt seq missed or out of order)
  rx dup pkts:          0
  rx out of order:      0

avgSNR:    37, high:   40, low:    5
SNR profile         [0dB...60dB]
  0            1            0            0            1
  3            0            1            0            2
  8            27           243           4            0
  0            0            0            0            0
(>60dB)            0

avgNF:    -89, high:  -58, low:  -90
Noise Floor profile [-100dB...-40dB]
  0            0            0          145          126
  11            2            0            1            0
  3            0            1            0            1
  0            0            0            0            0
(>-40dB)           0

avgRssi:   51, high:   53, low:   50
RSSI profile        [-100dB...-40dB]
  0            0            0            0            0
  0            0            0            0            0
  0            7           283           0            0
(>-40dB)           0

Summary PktFailedRate (Total pkts sent/recvd):                       0.000%
Physical layer Error rate (Total pkts with errors/Total pkts heard): 0.000%
```

Table 2-4 lists the output flags displayed for the `config mesh linktest` command.

<table>
<thead>
<tr>
<th>Output Flag</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>txPkts</td>
<td>Number of packets sent by the source.</td>
</tr>
<tr>
<td>txBuffAllocErr</td>
<td>Number of linktest buffer allocation errors at the source (expected to be zero).</td>
</tr>
<tr>
<td>txQFullErrs</td>
<td>Number of linktest queue full errors at the source (expected to be zero).</td>
</tr>
<tr>
<td>Total rx pkts heard at destination</td>
<td>Number of linktest packets received at the destination (expected to be same as or close to the txPkts).</td>
</tr>
<tr>
<td>rx pkts decoded correctly</td>
<td>Number of linktest packets received and decoded correctly at the destination (expected to be same as close to txPkts).</td>
</tr>
<tr>
<td>err pkts: Total</td>
<td>Packet error statistics for linktest packets with errors.</td>
</tr>
<tr>
<td>rx lost packets</td>
<td>Total number of linktest packets not received at the destination.</td>
</tr>
<tr>
<td>rx dup pkts</td>
<td>Total number of duplicate linktest packets received at the destination.</td>
</tr>
<tr>
<td>rx out of order</td>
<td>Total number of linktest packets received out of order at the destination.</td>
</tr>
<tr>
<td>avgNF</td>
<td>Average noise floor.</td>
</tr>
</tbody>
</table>
**Table 2-4** Output Flags for the Config Mesh Linktest Command

<table>
<thead>
<tr>
<th>Output Flag</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise Floor profile</td>
<td>Noise floor profile in dB and are negative numbers.</td>
</tr>
<tr>
<td>avgSNR</td>
<td>Average SNR values.</td>
</tr>
<tr>
<td>SNR profile [odb...60dB]</td>
<td>Histogram samples received between 0 to 60dB. The different columns in the SNR profile are the number of packets falling under the bucket 0-3, 3-6, 6-9, up to 57-60.</td>
</tr>
<tr>
<td>avgRSSI</td>
<td>Average RSSI values. The average high and low RSSI values are positive numbers.</td>
</tr>
<tr>
<td>RSSI profile [-100dB...-40dB]</td>
<td>The RSSI profile in dB and are negative numbers.</td>
</tr>
</tbody>
</table>

**Related Commands**
- `config mesh battery-state`
- `config mesh client-access`
- `config mesh full-sector-dfs`
- `config mesh linkdata`
- `config mesh multicast`
- `config mesh range`
- `config mesh secondary-backhaul`
- `show mesh backhaul rate-adapt`
- `show mesh client-access`
- `show mesh config`
- `show mesh security-stats`
- `show mesh stats`
**config mesh multicast**

To configure multicast mode settings to manage multicast transmissions within the mesh network, use the `config mesh multicast` commands.

```
config mesh multicast { regular | in | in-out }
```

---

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>regular</code></td>
<td>Multicasts the video across the entire mesh network and all its segments by bridging-enabled root access points (RAPs) and mesh access points (MAPs).</td>
</tr>
<tr>
<td><code>in</code></td>
<td>Forwards the multicast video received from the Ethernet by a MAP to the RAP’s Ethernet network. No additional forwarding occurs, which ensures that non-LWAPP multicasts received by the RAP are not sent back to the MAP Ethernet networks within the mesh network (their point of origin), and MAP-to-MAP multicasts do not occur because they are filtered out.</td>
</tr>
<tr>
<td><code>in-out</code></td>
<td>Configures the RAP and MAP to multicast, but each in a different manner:</td>
</tr>
<tr>
<td></td>
<td>If multicast packets are received at a MAP over Ethernet, they are sent to the RAP; however, they are not sent to other MAP Ethernets, and the MAP-to-MAP packets are filtered out of the multicast.</td>
</tr>
<tr>
<td></td>
<td>If multicast packets are received at a RAP over Ethernet, they are sent to all the MAPs and their respective Ethernet networks. See the Usage Guidelines section for more information.</td>
</tr>
</tbody>
</table>

---

### Defaults

**In-out** mode.

---

### Usage Guidelines

Multicast for mesh networks cannot be enabled using the controller GUI.

Mesh multicast modes determine how bridging-enabled access points mesh access points (MAPs) and root access points (RAPs) send multicasts among Ethernet LANs within a mesh network. Mesh multicast modes manage non-LWAPP multicast traffic only. LWAPP multicast traffic is governed by a different mechanism.

You can use the controller CLI to configure three mesh multicast modes to manage video camera broadcasts on all mesh access points. When enabled, these modes reduce unnecessary multicast transmissions within the mesh network and conserve backhaul bandwidth.

When using `in-out` mode, it is important to properly partition your network to ensure that a multicast sent by one RAP is not received by another RAP on the same Ethernet segment and then sent back into the network.

**Note** If 802.11b clients need to receive CAPWAP multicasts, then multicast must be enabled globally on the controller as well as on the mesh network (by using the `config network multicast global` command). If multicast does not need to extend to 802.11b clients beyond the mesh network, you should disable the global multicast parameter.
config mesh multicast

**Examples**
This example shows how to multicast video across the entire mesh network and all its segments by bridging-enabled RAPs and MAPs:

> config mesh multicast regular

**Related Commands**
- config network multicast global
- config mesh battery-state
- config mesh client-access
- config mesh linktest
- config mesh secondary-backhaul
- show mesh ap
- show mesh config
- show mesh stats
config mesh public-safety

To enable or disable the 4.9-GHz public safety band for mesh access points, use the **config mesh public-safety** command.

```
config mesh public-safety { enable | disable } { all | cisco_ap }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the 4.9-GHz public safety band.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the 4.9-GHz public safety band.</td>
</tr>
<tr>
<td>all</td>
<td>Applies the command to all mesh access points.</td>
</tr>
<tr>
<td>cisco_ap</td>
<td>Specific mesh access point.</td>
</tr>
</tbody>
</table>

**Defaults**  
Disabled.

**Usage Guidelines**  
4.9 GHz is a licensed frequency band restricted to public-safety personnel.

**Examples**  
This example shows how to enable the 4.9-GHz public safety band for all mesh access points:

```
> config mesh public-safety enable all

4.9GHz is a licensed frequency band in -A domain for public-safety usage
Are you sure you want to continue? (y/N) y
```

**Related Commands**  
- `config mesh range`
- `config mesh security`
- `show mesh ap`
- `show mesh config`
- `show mesh public-safety`
- `show mesh security-stats`
- `show mesh stats`
config mesh radius-server

To enable or disable external authentication for mesh access points, use the `config mesh radius-server` command.

```
config mesh radius-server index {enable | disable}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>index</code></td>
<td>RADIUS authentication method. Options are as follows:</td>
</tr>
<tr>
<td></td>
<td>- Enter <code>eap</code> to designate Extensible Authentication Protocol (EAP) for the mesh RADIUS server setting.</td>
</tr>
<tr>
<td></td>
<td>- Enter <code>psk</code> to designate Preshared Keys (PSKs) for the mesh RADIUS server setting.</td>
</tr>
<tr>
<td><code>enable</code></td>
<td>Enables the external authentication for mesh access points.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables the external authentication for mesh access points.</td>
</tr>
</tbody>
</table>

### Defaults

EAP is enabled by default.

### Examples

This example shows how to enable external authentication for mesh access points:

```
> config mesh radius-server eap enable
```

### Related Commands

- `config mesh alarm`
- `config mesh security`
- `show mesh ap`
- `show mesh security-stats`
- `show mesh stats`
config mesh range

To globally set the maximum range between outdoor mesh root access points (RAPs) and mesh access points (MAPs), use the `config mesh range` command.

```
cfg mesh range [distance]
```

**Syntax Description**

- `distance` (Optional) Maximum operating range (150 to 132000 ft) of the mesh access point.

**Defaults**

12,000 feet.

**Usage Guidelines**

After this command is enabled, all outdoor mesh access points reboot. This command does not affect indoor access points.

**Examples**

This example shows how to set the range between an outdoor mesh RAP and a MAP:

```
> config mesh range 300
Command not applicable for indoor mesh. All outdoor Mesh APs will be rebooted
Are you sure you want to start? (y/N) y
```

**Related Commands**

- `config mesh astools`
- `config mesh background-scanning`
- `config mesh ethernet-bridging vlan-transparent`
- `config mesh full-sector-dfs`
- `config mesh linkdata`
- `config mesh linktest`
- `show mesh ap`
- `show mesh stats`
config mesh secondary-backhaul

To configure a secondary backhaul on the mesh network, use the `config mesh secondary-backhaul` command.

```
config mesh secondary-backhaul { enable [force-same-secondary-channel] | disable [rll-retransmit | rll-transmit] }
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the secondary backhaul configuration.</td>
</tr>
<tr>
<td>force-same-secondary-channel</td>
<td>(Optional) Enables secondary-backhaul mesh capability. Forces all access points rooted at the first hop node to have the same secondary channel and ignores the automatic or manual channel assignments for the mesh access points (MAPs) at the second hop and beyond.</td>
</tr>
<tr>
<td>disable</td>
<td>Specifies the secondary backhaul configuration is disabled.</td>
</tr>
<tr>
<td>rll-transmit</td>
<td>Uses reliable link layer (RLL) at the second hop and beyond.</td>
</tr>
<tr>
<td>rll-retransmit</td>
<td>Extends the number of RLL retry attempts in an effort to improve reliability.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

**Note** The secondary backhaul access feature is not supported by Cisco 1520 and 1524 indoor mesh access points in the 5.2 release.

This command uses a secondary backhaul radio as a temporary path for traffic that cannot be sent on the primary backhaul due to intermittent interference.

### Examples

This example shows how to enable a secondary backhaul radio and force all access points rooted at the first hop node to have the same secondary channel:

```
> config mesh secondary-backhaul enable force-same-secondary-channel
```

### Related Commands

- `config mesh battery-state`
- `show mesh backhaul rate-adapt`
- `show mesh client-access`
- `show mesh config`
- `show mesh secondary-backhaul`
- `show mesh stats`
config mesh security

To configure the security settings for mesh networks, use the `config mesh security` commands.

```
config mesh security {{ {rad-mac-filter | force-ext-auth} {enable | disable} } | eap | psk}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rad-mac-filter</td>
<td>Enables a RADIUS MAC address filter for the mesh security setting.</td>
</tr>
<tr>
<td>force-ext-auth</td>
<td>Disables forced external authentication for the mesh security setting.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the setting.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the setting.</td>
</tr>
<tr>
<td>eap</td>
<td>Designates the Extensible Authentication Protocol (EAP) for the mesh security setting.</td>
</tr>
<tr>
<td>psk</td>
<td>Designates preshared keys (PSKs) for the mesh security setting.</td>
</tr>
</tbody>
</table>

**Defaults**

EAP.

**Examples**

This example shows how to configure EAP as the security option for all mesh access points:

```
> config mesh security eap
```

This example shows how to configure PSK as the security option for all mesh access points:

```
> config mesh security psk
```

**Related Commands**

- `config mesh alarm`
- `config mesh background-scanning`
- `config mesh client-access`
- `config mesh public-safety`
- `config mesh radius-server`
- `show mesh ap`
- `show mesh client-access`
- `show mesh config`
- `show mesh security-stats`
- `show mesh stats`
Configure Management-User Commands

Use the `config mgmtuser` commands to configure management user settings.
**config mgmtuser add**

To add a local management user to the Cisco wireless LAN controller, use the `config mgmtuser add` command.

```
config mgmtuser add username password {read-write | read-only} [description]
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>username</code></td>
<td>Account username. The username can be up to 24 alphanumeric characters.</td>
</tr>
<tr>
<td><code>password</code></td>
<td>Account password. The password can be up to 24 alphanumeric characters.</td>
</tr>
<tr>
<td><code>read-write</code></td>
<td>Creates a management user with read-write access.</td>
</tr>
<tr>
<td><code>read-only</code></td>
<td>Creates a management user with read-only access.</td>
</tr>
<tr>
<td><code>description</code></td>
<td>(Optional) Description of the account. The description can be up to 32 alphanumeric characters within double quotes.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to create a management user account with read-write access:

```
> config mgmtuser add admin admin read-write "Main account"
```

**Related Commands**

`show mgmtuser`
config mgmtuser delete

To delete a management user from the Cisco wireless LAN controller, use the `config mgmtuser delete` command.

```
config mgmtuser delete username
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>username</code></td>
<td>Account username. The username can be up to 24 alphanumeric characters.</td>
</tr>
</tbody>
</table>

| Defaults | None. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to delete a management user account admin from the Cisco wireless LAN controller:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>config mgmtuser delete admin</code></td>
</tr>
<tr>
<td></td>
<td>Deleted user admin</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>show mgmtuser</th>
</tr>
</thead>
</table>
config mgmtuser description

To add a description to an existing management user login to the Cisco wireless LAN controller, use the config mgmtuser description command.

```
config mgmtuser description username description
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>username</td>
<td>Account username. The username can be up to 24 alphanumeric characters.</td>
</tr>
<tr>
<td>description</td>
<td>Description of the account. The description can be up to 32 alphanumeric characters within double quotes.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to add a description “master-user” to the management user “admin”:

```
> config mgmtuser description admin "master-user"
```

Related Commands

- config mgmtuser add
- config mgmtuser delete
- config mgmtuser password
- show mgmtuser
**config mgmtuser password**

To change a management user password, use the `config mgmtuser password` command.

```
config mgmtuser password username password
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>username</code></td>
<td>Account username. The username can be up to 24 alphanumeric characters.</td>
</tr>
<tr>
<td><code>password</code></td>
<td>Account password. The password can be up to 24 alphanumeric characters.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to change the password of the management user “admin” with the new password 5rTfm:

```
> config mgmtuser password admin 5rTfm
```

**Related Commands**

`show mgmtuser`
Configure Mobility Commands

Use the `config mobility` commands to configure mobility (roaming) settings.
config mobility group anchor

To create a new mobility anchor for the WLAN or wired guest LAN, enter, use the **config mobility group anchor** command.

```
config mobility group anchor {add | delete} {wlan wlan_id | guest-lan guest_lan_id} anchor_ip
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>add</td>
<td>Adds or changes a mobility anchor to a wireless LAN.</td>
</tr>
<tr>
<td>delete</td>
<td>Deletes a mobility anchor from a wireless LAN.</td>
</tr>
<tr>
<td>wlan</td>
<td>Specifies the wireless LAN anchor settings.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512 (inclusive).</td>
</tr>
<tr>
<td>guest-lan</td>
<td>Specifies the guest LAN anchor settings.</td>
</tr>
<tr>
<td>guest_lan_id</td>
<td>Guest LAN identifier between 1 and 5 (inclusive).</td>
</tr>
<tr>
<td>anchor_ip</td>
<td>IP address of the anchor controller.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

The `wlan_id` or `guest_lan_id` must exist and be disabled.

Auto-anchor mobility is enabled for the WLAN or wired guest LAN when you configure the first mobility anchor. Deleting the last anchor disables the auto-anchor mobility feature and resumes normal mobility for new associations.

**Examples**

This example shows how to add a mobility anchor with the IP address 192.12.1.5 to a wireless LAN ID 2:

```
> config mobility group anchor add wlan 2 192.12.1.5
```

This example shows how to delete a mobility anchor with the IP address 193.13.1.15 from a wireless LAN:

```
> config mobility group anchor delete wlan 5 193.13.1.5
```

**Related Commands**

- `config guest-lan mobility anchor`
- `config mobility group domain`
- `config mobility group keepalive count`
- `config mobility group keepalive interval`
- `config mobility group member`
- `config mobility group multicast-address`
- `config mobility multicast-mode`
- `config mobility secure-mode`
- `config mobility statistics reset`
- `config wlan mobility anchor`
- `debug mobility`
show mobility anchor
show mobility statistics
show mobility summary
### config mobility group domain

To configure the mobility domain name, use the **config mobility group domain** command.

```
config mobility group domain domain_name
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>domain_name</th>
<th>Domain name. The domain name can be up to 31 case-sensitive characters.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure a mobility domain name lab1:

```
> config mobility group domain lab1
```

**Related Commands**

- config mobility group anchor
- config mobility group keepalive count
- config mobility group keepalive interval
- config mobility group member
- config mobility group multicast-address
- config mobility multicast-mode
- config mobility secure-mode
- config mobility statistics reset
- debug mobility
- show mobility anchor
- show mobility statistics
- show mobility summary
config mobility group keepalive count

To configure the controller to detect failed mobility group members (including anchor controllers), use the `config mobility group keepalive count` commands.

```
config mobility group keepalive count count
```

**Syntax Description**

<table>
<thead>
<tr>
<th>count</th>
<th>Number of times a ping request is sent to a mobility group member before the member is considered unreachable. The valid range is 3 to 20. The default is 3.</th>
</tr>
</thead>
</table>

**Defaults**

3.

**Examples**

This example shows how to specify the number of times a ping request is sent to a mobility group member before the member is considered unreachable to 3 counts:

```
> config mobility group keepalive count 3
```

**Related Commands**

- `config mobility group anchor`
- `config mobility group domain`
- `config mobility group keepalive interval`
- `config mobility group member`
- `config mobility group multicast-address`
- `config mobility multicast-mode`
- `config mobility secure-mode`
- `config mobility statistics reset`
- `debug mobility`
- `show mobility anchor`
- `show mobility statistics`
- `show mobility summary`
config mobility group keepalive interval

To configure the controller to detect failed mobility group members (including anchor controllers), use the `config mobility group keepalive` commands.

`config mobility group keepalive interval`

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>interval</code></td>
<td>Interval of time between each ping request sent to a mobility group member. The valid range is 1 to 30 seconds. The default value is 10 seconds.</td>
</tr>
</tbody>
</table>

| Defaults | 10 seconds. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to specify the amount of time between each ping request sent to a mobility group member to 10 seconds:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>&gt; config mobility group keepalive interval 10</code></td>
</tr>
</tbody>
</table>

| Related Commands | config mobility group anchor  
|                  | config mobility group domain  
|                  | config mobility group keepalive count  
|                  | config mobility group member  
|                  | config mobility group multicast-address  
|                  | config mobility multicast-mode  
|                  | config mobility secure-mode  
|                  | config mobility statistics reset  
|                  | debug mobility  
|                  | show mobility anchor  
|                  | show mobility statistics  
|                  | show mobility summary |
config mobility group member

To add or delete users from the mobility group member list, use the config mobility group member command.

```
config mobility group member { add MAC IP_address [group_name] | delete MAC }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>add</td>
<td>Adds or changes a mobility group member to the list.</td>
</tr>
<tr>
<td>MAC</td>
<td>Member switch MAC address.</td>
</tr>
<tr>
<td>IP_address</td>
<td>Member switch IP address.</td>
</tr>
<tr>
<td>group_name</td>
<td>(Optional) Member switch group name (if different from the default group name).</td>
</tr>
<tr>
<td>delete</td>
<td>(Optional) Deletes a mobility group member from the list.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to add a mobility group member to the list:

```
> config mobility group member add 11:11:11:11:11:11 192.12.1.2
```

**Related Commands**

- config mobility group anchor
- config mobility group domain
- config mobility group keepalive count
- config mobility group keepalive interval
- config mobility group multicast-address
- config mobility multicast-mode
- config mobility secure-mode
- config mobility statistics reset
- debug mobility
- show mobility anchor
- show mobility statistics
- show mobility summary
config mobility group multicast-address

To configure the multicast group IP address for nonlocal groups within the mobility list, use the `config mobility group multicast-address` command:

```
config mobility group multicast-address group_name IP_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>group_name</td>
<td>Member switch group name (if different from the default group name).</td>
</tr>
<tr>
<td>IP_address</td>
<td>Member switch IP address.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the multicast group IP address 10.10.10.1 for a group named test:

```
> config mobility group multicast-address test 10.10.10.1
```

**Related Commands**

- `config mobility group anchor`
- `config mobility group domain`
- `config mobility group keepalive count`
- `config mobility group keepalive interval`
- `config mobility group member`
- `config mobility multicast-mode`
- `config mobility secure-mode`
- `config mobility statistics reset`
- `debug mobility`
- `show mobility anchor`
- `show mobility statistics`
- `show mobility summary`
config mobility multicast-mode

To enable or disable multicast mobility mode, use the config mobility multicast-mode command.

```
config mobility multicast-mode { enable | disable } local_group_multicast_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the multicast mode; the controller uses multicast mode to send</td>
</tr>
<tr>
<td></td>
<td>Mobile Announce messages to the local group.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the multicast mode; the controller uses unicast mode to send</td>
</tr>
<tr>
<td></td>
<td>Mobile Announce messages to the local group.</td>
</tr>
<tr>
<td>local_group_multicast_address</td>
<td>IP address for the local mobility group.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Examples**

This example shows how to enable the multicast mobility mode for the local mobility group IP address 157.168.20.0:

```
> config mobility multicast-mode enable 157.168.20.0
```

**Related Commands**

- config mobility group anchor
- config mobility group domain
- config mobility group keepalive count
- config mobility group keepalive interval
- config mobility group member
- config mobility group multicast-address
- config mobility secure-mode
- config mobility statistics reset
- debug mobility
- show mobility anchor
- show mobility statistics
- show mobility summary
**config mobility secure-mode**

To configure the secure mode for mobility messages between Cisco wireless LAN controllers, use the `config mobility secure-mode` command.

`config mobility secure-mode {enable | disable}`

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables the mobility group message security.</td>
<td>Disables mobility group message security.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the secure mode for mobility messages:

```
> config mobility secure-mode enable
```

**Related Commands**

- `config mobility group anchor`
- `config mobility group domain`
- `config mobility group keepalive count`
- `config mobility group keepalive interval`
- `config mobility group member`
- `config mobility group multicast-address`
- `config mobility multicast-mode`
- `config mobility statistics reset`
- `debug mobility`
- `show mobility anchor`
- `show mobility statistics`
- `show mobility summary`
config mobility statistics reset

To reset the mobility statistics, use the config mobility statistics command.

config mobility statistics reset

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to reset the mobility group statistics:

> config mobility statistics reset

Related Commands
config mobility group anchor
config mobility group domain
config mobility group keepalive count
config mobility group keepalive interval
config mobility group member
config mobility group multicast-address
config mobility multicast-mode
config mobility secure-mode
debug mobility
show mobility anchor
show mobility statistics
show mobility summary
Configure Message Log Level Commands

Use the `config msglog` commands to configure msglog level settings.
config msglog level critical

To reset the message log so that it collects and displays only critical (highest-level) messages, use the config msglog level critical command.

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Usage Guidelines**
The message log always collects and displays critical messages, regardless of the message log level setting.

**Examples**
This example shows how to configure the message log severity level and display critical messages:

```plaintext
> config msglog level critical
```

**Related Commands**
show msglog
config msglog level error

To reset the message log so that it collects and displays both critical (highest-level) and error (second-highest) messages, use the config msglog level error command.

**config msglog level error**

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to reset the message log to collect and display critical and noncritical error messages:

```
> config msglog level error
```

**Related Commands**
show msglog
**config msglog level security**

To reset the message log so that it collects and displays critical (highest-level), error (second-highest), and security (third-highest) messages, use the `config msglog level security` command.

```
config msglog level security
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to reset the message log so that it collects and display critical, noncritical, and authentication or security-related errors:

```
> config msglog level security
```

**Related Commands**
`show msglog`
config msglog level verbose

To reset the message log so that it collects and displays all messages, use the `config msglog level verbose` command.

```plaintext
config msglog level verbose
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to reset the message logs so that it collects and display all messages:

```plaintext
> config msglog level verbose
```

**Related Commands**
show msglog
config msglog level warning

To reset the message log so that it collects and displays critical (highest-level), error (second-highest), security (third-highest), and warning (fourth-highest) messages, use the `config msglog level warning` command.

```
config msglog level warning
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to reset the message log so that it collects and displays warning messages in addition to critical, noncritical, and authentication or security-related errors:

```
> config msglog level warning
```

**Related Commands**
`show msglog`
Configure Media-Stream Commands

Use the config media-stream commands to configure media stream settings.
To configure the media-stream multicast direct, use the `config media-stream` command.

```
config media-stream multicast-direct {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables a media stream.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables a media stream.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

Media-stream multicast-direct requires load based Call Admission Control (CAC) to run.

**Examples**

This example shows how to enable a media-stream multicast-direct settings:

```
> config media-stream multicast-direct enable
```

This example shows how to disable a media-stream multicast-direct settings:

```
> config media-stream multicast-direct disable
```

**Related Commands**

- `show 802.11a media-stream name`
- `show media-stream group summary`
- `show media-stream group detail`
config media-stream message

To configure various parameters of message configuration, use the `config media-stream message` command.

```
config media-stream message {state [enable | disable] | url url | email email | phone phone_number | note note}
```

**Syntax Description**

- **state**: Specifies the media stream message state.
- **enable**: Enables the session announcement message state.
- **disable**: Disables the session announcement message state.
- **url**: Configures the URL.
- **email**: Configures the email ID.
- **phone**: Configures the phone number.
- **phone_number**: Session announcement phone number.
- **note**: Configure the notes.

**Defaults**

Disabled.

**Usage Guidelines**

Media-stream multicast-direct requires load-based Call Admission Control (CAC) to run.

**Examples**

This example shows how to enable the session announcement message state:

```
> config media-stream message state enable
```

This example shows how to configure the session announcement e-mail address:

```
> config media-stream message email abc@co.com
```

**Related Commands**

- `config media-stream`
- `show 802.11a media-stream name`
- `show media-stream group summary`
- `show media-stream group detail`
config media-stream add

To configure the various global media-stream configurations, use the `config media-stream add` command.

```
config media-stream add multicast-direct media_stream_name start-IP end-IP
[template {very-coarse | coarse | ordinary | low-resolution | med-resolution | high-resolution}]| detail {bandwidth | packet-size | re-evaluation {periodic | initial}}] video video priority {drop | fallback}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>multicast-direct</th>
<th>Specifies the media stream for the multicast-direct setting.</th>
</tr>
</thead>
<tbody>
<tr>
<td>media_stream_name</td>
<td>Media-stream name.</td>
<td></td>
</tr>
<tr>
<td>start-IP</td>
<td>IP multicast destination start address.</td>
<td></td>
</tr>
<tr>
<td>end-IP</td>
<td>IP multicast destination end address</td>
<td></td>
</tr>
<tr>
<td>template</td>
<td>(Optional) Configures the media stream from templates.</td>
<td></td>
</tr>
<tr>
<td>very coarse</td>
<td>Applies a very-coarse template.</td>
<td></td>
</tr>
<tr>
<td>coarse</td>
<td>Applies an coarse template.</td>
<td></td>
</tr>
<tr>
<td>ordinary</td>
<td>Applies a ordinary template.</td>
<td></td>
</tr>
<tr>
<td>low-resolution</td>
<td>Applies a low-resolution template.</td>
<td></td>
</tr>
<tr>
<td>med-resolution</td>
<td>Applies a medium-resolution template.</td>
<td></td>
</tr>
<tr>
<td>high-resolution</td>
<td>Applies a high-resolution template.</td>
<td></td>
</tr>
<tr>
<td>detail</td>
<td>Configures the media stream with specific parameters.</td>
<td></td>
</tr>
<tr>
<td>bandwidth</td>
<td>Maximum expected stream bandwidth.</td>
<td></td>
</tr>
<tr>
<td>packet-size</td>
<td>Average packet size.</td>
<td></td>
</tr>
<tr>
<td>re-evaluation</td>
<td>Reevaluation.</td>
<td></td>
</tr>
<tr>
<td>periodic</td>
<td>Specifies the periodic admission evaluation.</td>
<td></td>
</tr>
<tr>
<td>initial</td>
<td>Specifies the Initial admission evaluation.</td>
<td></td>
</tr>
<tr>
<td>video</td>
<td>Specifies the video stream name.</td>
<td></td>
</tr>
<tr>
<td>video</td>
<td>AIR QoS class.</td>
<td></td>
</tr>
<tr>
<td>priority</td>
<td>Specifies the media-stream priority.</td>
<td></td>
</tr>
<tr>
<td>drop</td>
<td>Specifies that the stream is dropped on a periodic reevaluation.</td>
<td></td>
</tr>
<tr>
<td>fallback</td>
<td>Specifies if the stream is demoted to the best-effort class on a periodic reevaluation.</td>
<td></td>
</tr>
</tbody>
</table>

| Defaults | None. |

| Usage Guidelines | Media-stream multicast-direct requires load-based Call Admission Control (CAC) to run. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to configure a new media stream:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>&gt; config media-stream add multicast-direct abc 227.8.8.8 227.9.9.9 detail 2 150 periodic video 1 drop</code></td>
</tr>
</tbody>
</table>
config media-stream add

Related Commands
- show 802.11a media-stream name
- show media-stream group summary
- show media-stream group detail
config media-stream delete

To configure the various global media-stream configurations, use the `config media-stream delete` command.

```
config media-stream delete media_stream_name
```

### Syntax Description

| media_stream_name | Media-stream name. |

### Defaults

None.

### Usage Guidelines

Media-stream multicast-direct requires load-based Call Admission Control (CAC) to run.

### Examples

This example shows how to configure the media stream named abc:

```
> config media-stream delete abc
```

### Related Commands

- `show 802.11a media-stream name`
- `show media-stream group summary`
- `show media-stream group detail`
Configure Net User Commands

Use the `config netuser` commands to configure netuser settings.
config netuser add

To add a guest user on a WLAN or wired guest LAN to the local user database on the controller, use the config netuser add command.

```
config netuser add username password { wlan wlan_id | guestlan guestlan_id} userType guest lifetime lifetime description description
```

### Syntax Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>username</strong></td>
<td>Guest username. The username can be up to 50 alphanumeric characters.</td>
</tr>
<tr>
<td><strong>password</strong></td>
<td>User password. The password can be up to 24 alphanumeric characters.</td>
</tr>
<tr>
<td><strong>wlan</strong></td>
<td>Specifies the wireless LAN identifier to associate with or zero for any wireless LAN.</td>
</tr>
<tr>
<td><strong>wlan_id</strong></td>
<td>Wireless LAN identifier assigned to the user. A zero value associates the user with any wireless LAN.</td>
</tr>
<tr>
<td><strong>guestlan</strong></td>
<td>Specifies the guest LAN identifier to associate with or zero for any wireless LAN.</td>
</tr>
<tr>
<td><strong>guestlan_id</strong></td>
<td>Guest LAN ID</td>
</tr>
<tr>
<td><strong>userType</strong></td>
<td>Specifies the user type.</td>
</tr>
<tr>
<td><strong>guest</strong></td>
<td>Specifies the guest for the guest user.</td>
</tr>
<tr>
<td><strong>lifetime</strong></td>
<td>Specifies the lifetime.</td>
</tr>
<tr>
<td><strong>lifetime</strong></td>
<td>Lifetime value (60 to 259200 or 0) in seconds for the guest user.</td>
</tr>
<tr>
<td><strong>description</strong></td>
<td>Short description of user. The description can be up to 32 characters enclosed in double-quotes.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

Local network usernames must be unique because they are stored in the same database.

### Examples

This example shows how to add a permanent usernamed Jane to the wireless network for 1 hour:

```
> config netuser add jane able2 1 wlan_id 1 userType permanent
```

This example shows how to add a guest usernamed George to the wireless network for 1 hour:

```
> config netuser add george able1 guestlan 1 3600
```

### Related Commands

- `show netuser`
- `config netuser delete`
config netuser delete

To delete an existing user from the local network, use the `config netuser delete` command.

```
config netuser delete username
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>username</th>
<th>Network username. The username can be up to 24 alphanumeric characters.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defaults</td>
<td>None</td>
<td>-----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Usage Guidelines</td>
<td>Local network usernames must be unique because they are stored in the same database.</td>
<td></td>
</tr>
</tbody>
</table>
| Examples           | This example shows how to delete an existing username named able1 from the network:  
> config netuser delete able1  
Deleted user able1 |
| Related Commands   | show netuser |                                                                 |
**config netuser description**

To add a description to an existing net user, use the `config netuser description` command.

```
config netuser description username description
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>username</code></td>
<td>Network username. The username can contain up to 24 alphanumeric characters.</td>
</tr>
<tr>
<td><code>description</code></td>
<td>(Optional) User description. The description can be up to 32 alphanumeric characters enclosed in double quotes.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to add a user description “HQ1 Contact” to an existing network user named able1:

```
> config netuser description able1 "HQ1 Contact"
```

**Related Commands**

`show netuser`
config netuser guest-role apply

To apply a quality of service (QoS) role to a guest user, use the `config netuser guest-role apply` command.

```
config netuser guest-role apply username role_name
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>username</code></td>
<td>Username.</td>
</tr>
<tr>
<td><code>role name</code></td>
<td>QoS guest role name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

If you do not assign a QoS role to a guest user, the Role field in the User Details shows the role as default. The bandwidth contracts for this user are defined in the QoS profile for the WLAN.

If you want to unassign a QoS role from a guest user, use the `config netuser guest-role apply username default`. This user now uses the bandwidth contracts defined in the QoS profile for the WLAN.

**Examples**

This example shows how to apply a QoS role to a guest user jsmith with the QoS guest role named Contractor:

```
> config netuser guest-role apply jsmith Contractor
```

**Related Commands**

- `config netuser guest-role create`
- `config netuser guest-role delete`
**config netuser guest-role create**

To create a quality of service (QoS) role for a guest user, use the `config netuser guest-role create` command.

```
config netuser guest-role create role_name
```

**Syntax Description**  

| role name | QoS guest role name. |

**Defaults**  

None.

**Usage Guidelines**  

To delete a QoS role, use the `config netuser guest-role delete` role-name.

**Examples**  

This example shows how to create a QoS role for the guest user named guestuser1:

```
> config netuser guest-role create guestuser1
```

**Related Commands**  

`config netuser guest-role delete`
config netuser guest-role delete

To delete a quality of service (QoS) role for a guest user, use the `config netuser guest-role delete` command.

```
config netuser guest-role delete role_name
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>role name</th>
<th>Quality of service (QoS) guest role name.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Defaults</th>
<th>None.</th>
</tr>
</thead>
</table>

**Examples**

This example shows how to delete a quality of service (QoS) role for guestuser1:

```
> config netuser guest-role delete guestuser1
```

**Related Commands**

`config netuser guest-role create`
**config netuser guest-role qos data-rate average-data-rate**

To configure the average data rate for TCP traffic on a per user basis, use the `config netuser guest-role qos data-rate average-data-rate` command.

```
config netuser guest-role qos data-rate average-data-rate role_name rate
```

### Syntax Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>role_name</td>
<td>Quality of service (QoS) guest role name.</td>
</tr>
<tr>
<td>rate</td>
<td>Rate for TCP traffic on a per user basis.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

For the `role_name` parameter in each of these commands, enter a name for the new QoS role. The name uniquely identifies the role of the QoS user (such as contractor, vendor, and so on.). For the `rate` parameter, you can enter a value between 0 and 60,000 Kbps (inclusive). A value of 0 imposes no bandwidth restriction on the QoS role.

### Examples

This example shows how to configure an average rate for the QoS guest named guestuser1:

```
> config netuser guest-role qos data-rate average-data-rate guestuser1 0
```

### Related Commands

- `config netuser guest-role create`
- `config netuser guest-role delete`
- `config netuser guest-role qos data-rate burst-data-rate`
To configure the average data rate for TCP traffic on a per user basis, use the `config netuser guest-role qos data-rate average-realtime-rate` command.

```
config netuser guest-role qos data-rate average-realtime-rate role_name rate
```

**Syntax Description**

<table>
<thead>
<tr>
<th>role_name</th>
<th>Quality of service (QoS) guest role name.</th>
</tr>
</thead>
<tbody>
<tr>
<td>rate</td>
<td>Rate for TCP traffic on a per user basis.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

For the `role_name` parameter in each of these commands, enter a name for the new QoS role. The name uniquely identifies the role of the QoS user (such as contractor, vendor, and so on.). For the `rate` parameter, you can enter a value between 0 and 60,000 Kbps (inclusive). A value of 0 imposes no bandwidth restriction on the QoS role.

**Examples**

This example shows how to configure an average data rate for the QoS guest user named guestuser1 with the rate for TCP traffic of 0 Kbps:

```
> config netuser guest-role qos data-rate average-realtime-rate guestuser1 0
```

**Related Commands**

- `config netuser guest-role`
- `config netuser guest-role qos data-rate average-data-rate`
config netuser guest-role qos data-rate burst-data-rate

To configure the peak data rate for TCP traffic on a per user basis, use the `config netuser guest-role qos data-rate burst-data-rate` command.

```
config netuser guest-role qos data-rate burst-data-rate role_name rate
```

### Syntax Description

<table>
<thead>
<tr>
<th>role_name</th>
<th>Quality of service (QoS) guest role name.</th>
</tr>
</thead>
<tbody>
<tr>
<td>rate</td>
<td>Rate for TCP traffic on a per user basis.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

The burst data rate should be greater than or equal to the average data rate. Otherwise, the QoS policy may block traffic to and from the wireless client.

For the `role_name` parameter in each of these commands, enter a name for the new QoS role. The name uniquely identifies the role of the QoS user (such as contractor, vendor, and so on.). For the `rate` parameter, you can enter a value between 0 and 60,000 Kbps (inclusive). A value of 0 imposes no bandwidth restriction on the QoS role.

### Examples

This example shows how to configure the peak data rate for the QoS guest named guestuser1 with the rate for TCP traffic of 0 Kbps:

```
> config netuser guest-role qos data-rate burst-data-rate guestuser1 0
```

### Related Commands

- `config netuser guest-role create`
- `config netuser guest-role delete`
- `config netuser guest-role qos data-rate average-data-rate`
config netuser guest-role qos data-rate burst-realtime-rate

To configure the burst real-time data rate for UDP traffic on a per user basis, use the `config netuser guest-role qos data-rate burst-realtime-rate` command.

```
config netuser guest-role qos data-rate burst-realtime-rate role_name rate
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>role_name</code></td>
<td>Quality of service (QoS) guest role name.</td>
</tr>
<tr>
<td><code>rate</code></td>
<td>Rate for TCP traffic on a per user basis.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

The burst real-time rate should be greater than or equal to the average real-time rate. Otherwise, the quality of service (QoS) policy may block traffic to and from the wireless client.

For the `role_name` parameter in each of these commands, enter a name for the new QoS role. The name uniquely identifies the role of the QoS user (such as contractor, vendor, and so on.). For the `rate` parameter, you can enter a value between 0 and 60,000 Kbps (inclusive). A value of 0 imposes no bandwidth restriction on the QoS role.

**Examples**

This example shows how to configure a burst real-time rate for the QoS guest user named guestuser1 with the rate for TCP traffic of 0 Kbps:

```
> config netuser guest-role qos data-rate burst-realtime-rate guestuser1 0
```

**Related Commands**

- `config netuser guest-role`
- `config netuser guest-role qos data-rate average-data-rate`
- `config netuser guest-role qos data-rate burst-data-rate`
config netuser maxEapUserLogin

To configure the maximum number of Extensible Authentication Protocol (EAP) user login attempts allowed for a network user, use the `config netuser maxEapUserLogin` command.

```
config netuser maxEapUserLogin count
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>count</code></td>
<td>Maximum number of login sessions for a single user. The allowed values are from 0 (unlimited) to 8.</td>
</tr>
</tbody>
</table>

### Defaults

0 (unlimited).

### Examples

This example shows how to configure the maximum number of EAP user login attempts to 8:

```
> config netuser maxEapUserLogin 8
```

### Related Commands

`show netuser`
To configure the maximum number of login sessions allowed for a network user, use the `config netuser maxuserlogin` command.

```plaintext
config netuser maxuserlogin count [per method]
```

**Syntax Description**
- `count`: Maximum number of login sessions for a single user. The allowed values are from 0 (unlimited) to 8.

**Defaults**
- 0 (unlimited)

**Examples**
This example shows how to configure the maximum number of login sessions for a single user to 8:

```
> config netuser maxuserlogin 8
```

**Related Commands**
- `show netuser`
**config netuser password**

To change a local network user password, use the `config netuser password` command.

```
config netuser password username password
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>username</code></td>
<td>Network username. The username can be up to 24 alphanumeric characters.</td>
</tr>
<tr>
<td><code>password</code></td>
<td>Network user password. The password can contain up to 24 alphanumeric characters.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to change the network user password from aire1 to aire2:

```
> config netuser password aire1 aire2
```

**Related Commands**

`show netuser`
config netuser wlan-id

To configure a wireless LAN ID for a network user, use the `config netuser wlan-id` command.

```
config netuser wlan-id username wlan_id
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>username</code></td>
<td>Network username. The username can be 24 alphanumeric characters.</td>
</tr>
<tr>
<td><code>wlan_id</code></td>
<td>Wireless LAN identifier to associate with the user. A zero value associates the user with any wireless LAN.</td>
</tr>
</tbody>
</table>

| Defaults | None. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to configure a wireless LAN ID 2 to associate with the user named aire1:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>&gt; config netuser wlan-id aire1 2</code></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>show netuser</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>show wlan summary</td>
</tr>
</tbody>
</table>
Configure Network Commands

Use the `config network` commands to configure network settings.
config network 802.3-bridging

To enable or disable 802.3 bridging on a controller, use the config network 802.3-bridging command.

    config network 802.3-bridging {enable | disable}

Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the 802.3 bridging.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the 802.3 bridging.</td>
</tr>
</tbody>
</table>

Defaults

Disabled.

Usage Guidelines

In controller software release 5.2, the software-based forwarding architecture for Cisco 2100 Series Controllers is being replaced with a new forwarding plane architecture. As a result, Cisco 2100 Series Controllers and the Cisco wireless LAN controller Network Module for Cisco Integrated Services Routers bridge 802.3 packets by default. Therefore, 802.3 bridging can now be disabled only on Cisco 4400 Series Controllers, the Cisco WiSM, and the Catalyst 3750G Wireless LAN Controller Switch.

To determine the status of 802.3 bridging, enter the show netuser guest-roles command.

Examples

This example shows how to enable the 802.3 bridging:

    > config network 802.3-bridging enable

Related Commands

show netuser guest-roles
show network
**config network allow-old-bridge-aps**

To configure an old bridge access point’s ability to associate with a switch, use the `config network allow-old-bridge-aps` command.

```
config network allow-old-bridge-aps {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the switch association.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the switch association.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to configure an old bridge access point to associate with the switch:

```
> config network allow-old-bridge-aps enable
```

**Related Commands**

- `show network summary`
config network ap-fallback

To configure Cisco lightweight access point fallback, use the `config network ap-fallback` command.

```
config network ap-fallback {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables the Cisco lightweight access point fallback.</td>
<td>Disables the Cisco lightweight access point fallback.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to enable the Cisco lightweight access point fallback:

```
> config network ap-fallback enable
```

**Related Commands**

- `show network summary`
config network ap-priority

To enable or disable the option to prioritize lightweight access points so that after a controller failure they reauthenticate by priority rather than on a first-come-until-full basis, use the config network ap-priority command.

    config network ap-priority {enable | disable}

Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>config network ap-priority enable</td>
<td>Enables the lightweight access point priority reauthentication.</td>
</tr>
<tr>
<td>disable</td>
<td>config network ap-priority disable</td>
<td>Disables the lightweight access point priority reauthentication.</td>
</tr>
</tbody>
</table>

Defaults

Disabled.

Examples

This example shows how to enable the lightweight access point priority reauthorization:

    > config network ap-priority enable

Related Commands

config ap priority
show ap summary
show network summary
config network apple-talk

To configure AppleTalk bridging, use the config network apple-talk command.

```
config network apple-talk {enable | disable}
```

**Syntax Description**

- **enable**: Enables the AppleTalk bridging.
- **disable**: Disables the AppleTalk bridging.

**Defaults**

None.

**Examples**

This example shows how to configure AppleTalk bridging:

```
> config network apple-talk enable
```

**Related Commands**

show network summary
**config network arptimeout**

To set the Address Resolution Protocol (ARP) entry timeout value, use the `config network arptimeout` command.

```
config network arptimeout seconds
```

**Syntax Description**

- `seconds`: Timeout in seconds. The minimum value is 10. The default value is 300.

**Defaults**

- 300.

**Examples**

This example shows how to set the ARP entry timeout value to 240 seconds:

```
> config network arptimeout 240
```

**Related Commands**

- `show network summary`
config network bridging-shared-secret

To configure the bridging shared secret, use the **config network bridging-shared-secret** command.

```plaintext
config network bridging-shared-secret shared_secret
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>shared_secret</td>
<td>Bridging shared secret string. The string can contain up to 10 bytes.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Usage Guidelines**

This command creates a secret that encrypts backhaul user data for the mesh access points that connect to the switch.

The zero-touch configuration must be enabled for this command to work.

**Examples**

This example shows how to configure the bridging shared secret string “shhh1”:

```plaintext
> config network bridging-shared-secret shhh2
```

**Related Commands**

- `show network summary`
config network broadcast

To enable or disable broadcast packet forwarding, use the `config network broadcast` command.

```
config network broadcast { enable | disable }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Enables the broadcast packet forwarding.</td>
</tr>
<tr>
<td></td>
<td>disable</td>
<td>Disables the broadcast packet forwarding.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Usage Guidelines**

This command allows you to enable or disable broadcasting. You must enable multicast mode before enabling broadcast forwarding. Use the `config network multicast mode` command to configure multicast mode on the controller.

**Note**

- The default multicast mode is unicast in case of all controllers except for Cisco 2106 Controllers.
- The broadcast packets and multicast packets can be independently controlled. If multicast is off and broadcast is on, broadcast packets still reach the access points, based on the configured multicast mode.

**Examples**

This example shows how to enable broadcast packet forwarding:

```
> config network broadcast enable
```

**Related Commands**

- `show network summary`
- `config network multicast global`
- `config network multicast mode`
config network fast-ssid-change

To enable or disable fast Service Set Identifier (SSID) changing for mobile stations, use the **config network fast-ssid-change** command.

```
config network fast-ssid-change {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the fast SSID changing for mobile stations</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the fast SSID changing for mobile stations.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

When you enable the Fast SSID Change feature, the controller allows clients to move between SSIDs. When the client sends a new association for a different SSID, the client entry in the controller connection table is cleared before the client is added to the new SSID.

When you disable the FastSSID Change feature, the controller enforces a delay before clients are allowed to move to a new SSID.

**Examples**

This example shows how to enable the fast SSID changing for mobile stations:

```
> config network fast-ssid-change enable
```

**Related Commands**

- **show network summary**
config network ip-mac-binding

To validate the source IP address and MAC address binding within client packets, use the config network ip-mac-binding command.

```
config network ip-network-binding {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables this command.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables this command.</td>
</tr>
</tbody>
</table>

**Command Default**

Enabled.

**Usage Guidelines**

In controller software release 5.2, the controller enforces strict IP address-to-MAC address binding in client packets. The controller checks the IP address and MAC address in a packet, compares them to the addresses that are registered with the controller, and forwards the packet only if they both match. In previous releases, the controller checks only the MAC address of the client and ignores the IP address.

**Note**

You might want to disable this binding check if you have a routed network behind a workgroup bridge (WGB).

**Examples**

This example shows how to validate the source IP and MAC address within client packets:

```
> config network ip-network-binding enable
```
config network master-base

To enable or disable the Cisco wireless LAN controller as an access point default master, use the `config network master-base` command. This setting is only used upon network installation and should be disabled after the initial network configuration.

```
config network master-base {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables the Cisco wireless LAN controller acting as a Cisco lightweight access point default master.</td>
<td>Disables the Cisco wireless LAN controller acting as a Cisco lightweight access point default master.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

This setting is only used upon network installation and should be disabled after the initial network configuration. Because the Master Cisco wireless LAN controller is normally not used in a deployed network, the Master Cisco wireless LAN controller setting can be saved from 6.0.199.0 or later releases.

**Examples**

This example shows how to enable the Cisco wireless LAN controller as a default master:

```
> config network master-base enable
```
config network mgmt-via-wireless

To enable Cisco wireless LAN controller management from an associated wireless client, use the `config network mgmt-via-wireless` command.

```plaintext
config network mgmt-via-wireless {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>Enables the switch management from a wireless interface.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables the switch management from a wireless interface.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Usage Guidelines**

This feature allows wireless clients to manage only the Cisco wireless LAN controller associated with the client and the associated Cisco lightweight access point. That is, clients cannot manage another Cisco wireless LAN controller with which they are not associated.

**Examples**

This example shows how to configure switch management from a wireless interface:

```plaintext
> config network mgmt-via-wireless enable
```

**Related Commands**

`show network summary`
config network multicast global

To enable or disable multicasting on the controller, use the `config network multicast global` command.

```
config network multicast global {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the multicast global support.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the multicast global support.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Usage Guidelines**

The `config network broadcast {enable | disable}` command allows you to enable or disable broadcasting without enabling or disabling multicasting as well. This command uses the multicast mode configured on the controller (by using the `config network multicast mode` command) to operate.

**Examples**

This example shows how to enable the global multicast support:

```
> config network multicast global enable
```

**Related Commands**

- `show network summary`
- `config network broadcast`
- `config network multicast mode`
**config network multicast igmp snooping**

To enable or disable IGMP snooping, use the `config network multicast igmp snooping` command.

```
config network multicast igmp snooping
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to configure internet IGMP snooping settings:

```
> config network multicast igmp snooping
```

**Related Commands**
`config network multicast igmp timeout`
config network multicast igmp timeout

To set the IGMP timeout value, use the `config network multicast igmp timeout` command.

```
config network multicast igmp timeout
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Usage Guidelines**
You can enter a timeout value between 30 and 300 seconds. The controller sends three queries in one timeout value at an interval of `timeout/3` to see if any clients exist for a particular multicast group. If the controller does not receive a response through an IGMP report from the client, the controller times out the client entry from the MGID table. When no clients are left for a particular multicast group, the controller waits for the IGMP timeout value to expire and then deletes the MGID entry from the controller. The controller always generates a general IGMP query (to destination address 224.0.0.1) and sends it on all WLANs with an MGID value of 1.

**Examples**
This example shows how to configure the timeout value 20 for IGMP network settings:

```
> config network multicast igmp timeout 20
```

**Related Commands**
`config network multicast igmp snooping`
**config network multicast mode multicast**

To configure the controller to use the multicast method to send broadcast or multicast packets to an access point, use the `config network multicast mode multicast` command.

```
config network multicast mode multicast
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to configure the multicast mode to send a single copy of data to multiple receivers:

```
> config network multicast mode multicast
```

**Related Commands**

- `config network multicast global`
- `config network broadcast`
- `config network multicast mode unicast`
### config network multicast mode unicast

To configure the controller to use the unicast method to send broadcast or multicast packets to an access point, use the `config network multicast mode unicast` command.

```
config network multicast mode unicast
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to configure the controller to use the unicast mode:

```
> config network multicast mode unicast
```

**Related Commands**

- `config network multicast global`
- `config network broadcast`
- `config network multicast mode multicast`
config network otap-mode

To enable or disable over-the-air provisioning (OTAP) of Cisco lightweight access points, use the `config network otap-mode` command.

```
config network otap-mode { enable | disable }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables the OTAP provisioning.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables the OTAP provisioning.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to disable the OTAP provisioning:

```
> config network otap-mode disable
```

**Related Commands**

`show network summary`
config network rf-network-name

To set the RF-Network name, use the config network rf-network-name command.

config network rf-network-name name

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>name</th>
<th>RF-Network name. The name can contain up to 19 characters.</th>
</tr>
</thead>
</table>

Defaults None.

Examples This example shows how to set the RF-network name to travelers:

> config network rf-network-name travelers

Related Commands show network summary
config network secureweb

To change the state of the secure web (https is http and SSL) interface, use the `config network secureweb` command.

`config network secureweb {enable | disable}`

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables the secure web interface.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disable the secure web interface.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Usage Guidelines**

This command allows users to access the controller GUI using `http://ip-address`. Web mode is not a secure connection.

**Examples**

This example shows how to enable the secure web interface settings:

```plaintext
> config network secureweb enable
You must reboot for the change to take effect.
```

**Related Commands**

- `config network secureweb cipher-option`
- `show network summary`
**config network secureweb cipher-option**

To enable or disable secure web mode with increased security, or to enable or disable Secure Sockets Layer (SSL v2) for web administration and web authentication, use the `config network secureweb cipher-option` command.

```
config network secureweb cipher-option {high | sslv2} {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>high</th>
<th>Configures whether or not 128-bit ciphers are required for web administration and web authentication.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>sslv2</td>
<td>Configures SSLv2 for both web administration and web authentication.</td>
</tr>
<tr>
<td></td>
<td>enable</td>
<td>Enables the secure web interface.</td>
</tr>
<tr>
<td></td>
<td>disable</td>
<td>Disables the secure web interface.</td>
</tr>
</tbody>
</table>

**Defaults**

The default is **disabled** for secure web mode with increased security and **enabled** for SSL v2.

**Usage Guidelines**

*Note* The `cipher-option high` command allows users to access the controller GUI using `http://ip-address` but only from browsers that support 128-bit (or larger) ciphers.

When `cipher-option sslv2` is disabled, users cannot connect using a browser configured with SSLv2 only. They must use a browser that is configured to use a more secure protocol such as SSLv3 or later.

**Examples**

This example shows how to enable secure web mode with increased security:

```
> config network secureweb cipher-option high enable
```

This example shows how to disable SSL v2:

```
> config network secureweb cipher-option sslv2 disable
```

**Related Commands**

- `config network secureweb`
- `show network summary`
To allow or disallow new Secure Shell (SSH) sessions, use the `config network ssh` command.

```
config network ssh {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Allows the new SSH sessions.</td>
<td>Disallows the new SSH sessions.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Examples**

This example shows how to enable the new SSH session:

```
> config network ssh enable
```

**Related Commands**

- `show network summary`
config network telnet

To allow or disallow new Telnet sessions, use the `config network telnet` command.

```
config network telnet {enable | disable}
```

| Syntax Description | enable | {enable | disable} |
|--------------------|--------|------------------|
|                    | Allows new Telnet sessions. | Disallows new Telnet sessions. |

**Defaults**

Disabled.

**Examples**

This example shows how to configure the new Telnet sessions:

```
> config network telnet enable
```

**Related Commands**

- `config ap telnet`
- `show network summary`
**config network usertimeout**

To change the timeout for idle client sessions, use the `config network usertimeout` command.

```
config network usertimeout seconds
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>seconds</th>
<th>Recommended user idle timeout in seconds between 90 and 100000. The valid range is 15 to 100000 seconds. The default value is 300 seconds.</th>
</tr>
</thead>
</table>

**Defaults**

300 seconds.

**Examples**

This example shows how to configure the idle session timeout to 1200 seconds:

```
> config network usertimeout 1200
```

**Related Commands**

`show network summary`
config network web-auth-port

To configure an additional port to be redirected for web authentication, use the `config network web-auth-port` command.

```
config network web-auth-port port
```

**Syntax Description**

- `port` Port number. The valid range is from 0 to 65535.

**Defaults**

None.

**Examples**

This example shows how to configure an additional port number 1200 to be redirected for web authentication:

```
> config network web-auth port 1200
```

**Related Commands**

- `show network summary`
config network webmode

To enable or disable the web mode, use the `config network webmode` command.

    config network webmode {enable | disable}

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables the web interface.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disable the web interface.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to disable the web interface mode:

> config network webmode disable

**Related Commands**

`show network summary`
**config network zero-config**

To configure bridge access point ZeroConfig support, use the `config network zero-config` command.

```
config network zero-config { enable | disable }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables the bridge access point ZeroConfig support.</td>
<td>Disables the bridge access point ZeroConfig support.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to enable the bridge access point ZeroConfig support:

```
> config network zero-config enable
```

**Related Commands**

`show network summary`
config nmsp notify-interval measurement

To modify the Network Mobility Services Protocol (NMSP) notification interval value on the controller to address latency in the network, use the `config nmsp notify-interval measurement` command.

```
config nmsp notify-interval measurement {client | rfid | rogue} interval
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>client</td>
<td>Modifies the interval for clients.</td>
</tr>
<tr>
<td>rfid</td>
<td>Modifies the interval for active radio frequency identification (RFID) tags.</td>
</tr>
<tr>
<td>rogue</td>
<td>Modifies the interval for rogue access points and rogue clients.</td>
</tr>
<tr>
<td>interval</td>
<td>Time interval. The range is from 1 to 30 seconds.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

The TCP port (16113) that the controller and location appliance communicate over must be open (not blocked) on any firewall that exists between the controller and the location appliance for NMSP to function.

**Examples**

This example shows how to modify the NMSP notification interval for the active RFID tags to 25 seconds:

```
> config nmsp notify-interval measurement rfid 25
```

**Related Commands**

- clear locp statistics
- clear nmsp statistics
- show nmsp statistics
- show nmsp notify-interval summary
- show nmsp status
**config passwd-cleartext**

To enable or disable temporary display of passwords in plain text, use the `config passwd-cleartext` command.

```
config passwd-cleartext {enable | disable}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>enable</strong></td>
<td>Enables the display of passwords in plain text.</td>
</tr>
<tr>
<td><strong>disable</strong></td>
<td>Disables the display of passwords in plain text.</td>
</tr>
</tbody>
</table>

### Defaults

Disabled.

### Usage Guidelines

This command must be enabled if you want to see user-assigned passwords displayed in clear text when using the `show run-config` command.

To execute this command, you must enter an admin password. This command is valid only for this particular session. It is not saved following a reboot.

### Examples

This example shows how to enable display of passwords in plain text:

```
> config passwd-cleartext enable

The way you see your passwds will be changed
You are being warned.

Enter admin password:
```

### Related Commands

`show run-config`
To delete an entry in the Pairwise Master Key (PMK) cache from all Cisco wireless LAN controllers in the mobility group, use the `config pmk-cache delete` command.

```
config pmk-cache delete { all | mac_address }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>all</code></td>
<td>Deletes all Cisco wireless LAN controllers.</td>
</tr>
<tr>
<td><code>mac_address</code></td>
<td>MAC address of the Cisco wireless LAN controller to delete.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to delete all entries in the PMK cache:

```
> config pmk-cache delete all
```

**Related Commands**

`show pmk-cache`
Configure Port Commands

Use the `config port` commands to configure port settings.
**config port adminmode**

To enable or disable the administrative mode for a specific controller port or for all ports, use the `config port adminmode` command.

```
config port adminmode {all | port} {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Configures all ports.</td>
</tr>
<tr>
<td>port</td>
<td>Number of the port.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the specified ports.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the specified ports.</td>
</tr>
</tbody>
</table>

**Defaults**  
Enabled.

**Examples**

This example shows how to disable port 8:
```
> config port adminmode 8 disable
```

This example shows how to enable all ports:
```
> config port adminmode all enable
```

**Related Commands**
- `config port autoneg`
- `config port linktrap`
- `config port multicast appliance`
- `config port power`
- `show port`
- `transfer download port`
config port autoneg

To configure 10/100BASE-T Ethernet ports for physical port autonegotiation, use the `config port autoneg` command.

```
config port autoneg {all | port} {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Configures all ports.</td>
</tr>
<tr>
<td>port</td>
<td>Number of the port.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the specified ports.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the specified ports.</td>
</tr>
</tbody>
</table>

**Defaults**
The default for all Ports si that autonegotiation is enabled.

**Examples**
This example shows how to turn on physical port autonegotiation for all front-panel Ethernet ports:
```
> config port autoneg all enable
```

This example shows how to disable physical port autonegotiation for front-panel Ethernet port 19:
```
> config port autoneg 19 disable
```

**Related Commands**
- `config port adminmode`
- `config port linktrap`
- `config port multicast appliance`
- `config port power`
- `show port`
- `transfer download port`
To enable or disable the up and down link traps for a specific controller port or for all ports, use the `config port linktrap` command.

```
config port linktrap {all | port} {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Configures all ports.</td>
</tr>
<tr>
<td>port</td>
<td>Number of the port.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the specified ports.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the specified ports.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to disable port 8 traps:

```
> config port linktrap 8 disable
```

This example shows how to enable all port traps:

```
> config port linktrap all enable
```

**Related Commands**

- `config port adminmode`
- `config port autoneg`
- `config port multicast appliance`
- `config port power`
- `show port`
- `transfer download port`
config port multicast appliance

To enable or disable the multicast appliance service for a specific controller port or for all ports, use the `config port multicast appliance` commands.

```
config port multicast appliance { all | port } { enable | disable }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>all</th>
<th>Configures all ports.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>port</td>
<td>Number of the port.</td>
</tr>
<tr>
<td></td>
<td>enable</td>
<td>Enables the specified ports.</td>
</tr>
<tr>
<td></td>
<td>disable</td>
<td>Disables the specified ports.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to enable multicast appliance service on all ports:

```
> config port multicast appliance all enable
```

This example shows how to disable multicast appliance service on port 8:

```
> config port multicast appliance 8 disable
```

**Related Commands**

- config port adminmode
- config port autoneg
- config port linktrap
- config port power
- show port
- transfer download port
config port power

To enable or disable Power over Ethernet (PoE) for a specific controller port or for all ports, use the `config port power` commands.

```
config port power {all | port} {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Configures all ports.</td>
</tr>
<tr>
<td>port</td>
<td>Port number.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the specified ports.</td>
</tr>
<tr>
<td>disable</td>
<td>Disable the specified ports.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to enable PoE on all ports:

```
> config port power all enable
```

This example shows how to disable PoE on port 8:

```
> config port power 8 disable
```

**Related Commands**

- `config port adminmode`
- `config port autoneg`
- `config port linktrap`
- `config port multicast appliance`
- `show port`
- `transfer download port`
config prompt

To change the CLI system prompt, use the `config prompt` command.

```
config prompt prompt
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>prompt</code></td>
<td>New CLI system prompt enclosed in double quotes. The prompt can be up to 31 alphanumeric characters and is case sensitive.</td>
</tr>
</tbody>
</table>

**Defaults**
The system prompt is configured using the startup wizard.

**Usage Guidelines**
Because the system prompt is a user-defined variable, it is omitted from the rest of this documentation.

**Examples**
This example shows how to change the CLI system prompt to Cisco 4400:

```
> config prompt "Cisco 4400"
```
To define the average data rate in Kbps for TCP traffic per user, use the `config qos average-data-rate` command.

```
config qos average-data-rate { bronze | silver | gold | platinum } rate
```

### Syntax Description

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bronze</td>
<td>Specifies the average data rate for the queue bronze.</td>
</tr>
<tr>
<td>silver</td>
<td>Specifies the average data rate for the queue silver.</td>
</tr>
<tr>
<td>gold</td>
<td>Specifies the average data rate for the queue gold.</td>
</tr>
<tr>
<td>platinum</td>
<td>Specifies the average data rate for the queue platinum.</td>
</tr>
<tr>
<td>rate</td>
<td>Average data rate for TCP traffic per user. A value between 0 and 60,000 Kbps (inclusive). A value of 0 imposes no bandwidth restriction on the QoS profile.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to configure the average data rate 0 Kbps for the queue gold:

```
> config qos average-data-rate gold 0
```

### Related Commands

- `show qos description`
- `config qos burst-data-rate`
- `config qos average-realtime-rate`
- `config qos burst-realtime-rate`
- `config qos max-rf-usage`
config qos average-realtime-rate

To define the average real-time data rate in Kbps for UDP traffic per user, use the `config qos average-realtime-rate` command.

```
cfg> config qos average-realtime-rate (bronze | silver | gold | platinum) rate
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bronze</td>
<td>Specifies the average real-time data rate for the queue bronze.</td>
</tr>
<tr>
<td>silver</td>
<td>Specifies the average real-time data rate for the queue silver.</td>
</tr>
<tr>
<td>gold</td>
<td>Specifies the average real-time data rate for the queue gold.</td>
</tr>
<tr>
<td>platinum</td>
<td>Specifies the average real-time data rate for the queue platinum.</td>
</tr>
<tr>
<td>rate</td>
<td>Average real-time data rate for TCP traffic per user. A value between 0 and 60,000 Kbps (inclusive). A value of 0 imposes no bandwidth restriction on the QoS profile.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the average real-time actual rate for queue gold:

```
> config qos average-realtime-rate gold 10
```

**Related Commands**

- `show qos description`
- `config qos average-data-rate`
- `config qos burst-data-rate`
- `config qos burst-realtime-rate`
- `config qos max-rf-usage`
**config qos burst-data-rate**

To define the peak data rate in Kbps for TCP traffic per user, use the `config qos burst-data-rate` command.

```
config qos burst-data-rate {bronze | silver | gold | platinum} rate
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bronze</td>
<td>Specifies the peak data rate for the queue bronze.</td>
<td></td>
</tr>
<tr>
<td>silver</td>
<td>Specifies the peak data rate for the queue silver.</td>
<td></td>
</tr>
<tr>
<td>gold</td>
<td>Specifies the peak data rate for the queue gold.</td>
<td></td>
</tr>
<tr>
<td>platinum</td>
<td>Specifies the peak data rate for the queue platinum.</td>
<td></td>
</tr>
<tr>
<td>rate</td>
<td>Peak data rate for TCP traffic per user. A value between 0 and 60,000 Kbps (inclusive). A value of 0 imposes no bandwidth restriction on the QoS profile.</td>
<td></td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the peak rate 30000 Kbps for the queue gold:

```
> config qos burst-data-rate gold 30000
```

**Related Commands**

- `show qos description`
- `config qos average-data-rate`
- `config qos average-realtime-rate`
- `config qos burst-realtime-rate`
- `config qos max-rf-usage`
config qos burst-realtime-rate

To define the burst real-time data rate in Kbps for UDP traffic per user, use the config qos burst-realtime-rate command.

```
config qos burst-realtime-rate {bronze | silver | gold | platinum} rate
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bronze</td>
<td>Specifies the burst real-time data rate for the queue bronze.</td>
</tr>
<tr>
<td>silver</td>
<td>Specifies the burst real-time data rate for the queue silver.</td>
</tr>
<tr>
<td>gold</td>
<td>Specifies the burst real-time data rate for the queue gold.</td>
</tr>
<tr>
<td>platinum</td>
<td>Specifies the burst real-time data rate for the queue platinum.</td>
</tr>
<tr>
<td>rate</td>
<td>Burst real-time data rate for TCP traffic per user. A value between 0 and 60,000 Kbps (inclusive). A value of 0 imposes no bandwidth restriction on the QoS profile.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the burst real-time actual rate 2000 Kbps for the queue gold:
```
> config qos burst-realtime-rate gold 2000
```

**Related Commands**

- show qos description
- config qos average-data-rate
- config qos burst-data-rate
- config qos average-realtime-rate
- config qos max-rf-usage
config qos description

To change the profile description, use the config qos description command.

```
config qos description {bronze | silver | gold | platinum} description
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bronze</td>
<td>Specifies the QoS profile description for the queue bronze.</td>
</tr>
<tr>
<td>silver</td>
<td>Specifies the QoS profile description for the queue silver.</td>
</tr>
<tr>
<td>gold</td>
<td>Specifies the QoS profile description for the queue gold.</td>
</tr>
<tr>
<td>platinum</td>
<td>Specifies the QoS profile description for the queue platinum.</td>
</tr>
<tr>
<td>description</td>
<td>QoS profile description.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the QoS profile description “description” for the queue gold:

```
> config qos description gold abc
```

**Related Commands**

- show qos average-data-rate
- config qos burst-data-rate
- config qos average-realtime-rate
- config qos burst-realtime-rate
- config qos max-rf-usage
config qos max-rf-usage

To specify the maximum percentage of RF usage per access point, use the `config qos max-rf-usage` command.

```
config qos max-rf-usage {bronze | silver | gold | platinum} usage_percentage
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bronze</td>
<td>Specifies the maximum percentage of RF usage for the queue bronze.</td>
</tr>
<tr>
<td>silver</td>
<td>Specifies the maximum percentage of RF usage for the queue silver.</td>
</tr>
<tr>
<td>gold</td>
<td>Specifies the maximum percentage of RF usage for the queue gold.</td>
</tr>
<tr>
<td>platinum</td>
<td>Specifies the maximum percentage of RF usage for the queue platinum.</td>
</tr>
<tr>
<td>usage-percentage</td>
<td>Maximum percentage of RF usage.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to specify the maximum percentage of RF usage for the queue gold:

```
> config qos max-rf-usage gold 20
```

**Related Commands**

- `show qos description`
- `config qos average-data-rate`
- `config qos burst-data-rate`
- `config qos average-realtime-rate`
- `config qos burst-realtime-rate`
config qos protocol-type/config qos dot1p-tag

To define the maximum value (0-7) for the priority tag associated with packets that fall within the profile, use the `config qos protocol-type` and `config qos dot1p-tag` commands.

```
config qos protocol-type {bronze | silver | gold | platinum} {none | dot1p}
config qos dot1p-tag {bronze | silver | gold | platinum} dot1p_tag
```

**Syntax Description**

<table>
<thead>
<tr>
<th>bronze</th>
<th>Specifies the QoS 802.1p tag for the queue bronze.</th>
</tr>
</thead>
<tbody>
<tr>
<td>silver</td>
<td>Specifies the QoS 802.1p tag for the queue silver.</td>
</tr>
<tr>
<td>gold</td>
<td>Specifies the QoS 802.1p tag for the queue gold.</td>
</tr>
<tr>
<td>platinum</td>
<td>Specifies the QoS 802.1p tag for the queue platinum.</td>
</tr>
<tr>
<td>none</td>
<td>Specifies when no specific protocol is assigned.</td>
</tr>
<tr>
<td>dot1p_tag</td>
<td>Dot1p tag value between 1 and 7.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the QoS protocol type silver:

```
> config qos protocol-type silver dot1p
```

This example shows how to configure the a QoS 802.1p tag for the queue gold with the dot1p tag value of 5:

```
> config qos dot1p-tag gold 5
```

**Related Commands**

`show qos queue_length all`
**config qos queue_length**

To specify the maximum number of packets that access points keep in their queues, use the `config qos queue_length` command.

```
config qos queue_length {bronze | silver | gold | platinum} queue_length
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>bronze</th>
<th>silver</th>
<th>gold</th>
<th>platinum</th>
<th>queue_length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Specifies the QoS length for the queue bronze.</td>
<td>Specifies the QoS length for the queue silver.</td>
<td>Specifies the QoS length for the queue gold.</td>
<td>Specifies the QoS length for the queue platinum.</td>
<td>Maximum queue length values (10 to 255).</td>
</tr>
</tbody>
</table>

**Defaults**
None.

**Examples**
This example shows how to configure the QoS length for the queue “gold” with the maximum queue length value as 12:

```
> config qos queue_length gold 12
```

**Related Commands**
`show qos`
Configure RADIUS Account Commands

Use the `config radius acct` commands to configure RADIUS account server settings.
config radius acct

To add, delete, or configure settings for a RADIUS accounting server for the Cisco wireless LAN controller, use the `config radius acct` command.

```
config radius acct {{ enable | disable | delete} index} |
add index server_ip port {ascii | hex} secret
```

Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables a RADIUS accounting server.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables a RADIUS accounting server.</td>
</tr>
<tr>
<td>delete</td>
<td>Deletes a RADIUS accounting server.</td>
</tr>
<tr>
<td>index</td>
<td>RADIUS server index. The controller begins the search with 1.</td>
</tr>
<tr>
<td>add</td>
<td>Adds a RADIUS accounting server.</td>
</tr>
<tr>
<td>index_server_ip</td>
<td>IP address of RADIUS server.</td>
</tr>
<tr>
<td>port</td>
<td>RADIUS server’s UDP port number for the interface protocols.</td>
</tr>
<tr>
<td>ascii</td>
<td>Specifies the RADIUS server’s secret type: <code>ascii</code>.</td>
</tr>
<tr>
<td>hex</td>
<td>Specifies the RADIUS server’s secret type: <code>hex</code>.</td>
</tr>
<tr>
<td>secret</td>
<td>RADIUS server’s secret.</td>
</tr>
</tbody>
</table>

Defaults

When adding a RADIUS server, the port number defaults to 1813 and the state is enabled.

Examples

This example shows how to configure a priority 1 RADIUS accounting server at 10.10.10.10 using port 1813 with a login password of admin:

```
> config radius acct add 1 10.10.10.10 1813 ascii admin
```

Related Commands

- `show radius acct statistics`
config radius acct IPsec authentication

To configure IPsec authentication for the Cisco wireless LAN controller, use the 
config radius acct ipsec authentication command.

```
config radius acct ipsec authentication {hmac-md5 | hmac-sha1} index
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>hmac-md5</th>
<th>Enables IPsec HMAC-MD5 authentication.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>hmac-sha1</td>
<td>Enables IPsec HMAC-SHA1 authentication.</td>
</tr>
<tr>
<td></td>
<td>index</td>
<td>RADIUS server index.</td>
</tr>
</tbody>
</table>

Defaults
None.

Examples
This example shows how to configure the IPsec hmac-md5 authentication service on the RADIUS accounting server index 1:

```
> config radius acct ipsec authentication hmac-md5 1
```

Related Commands
show radius acct statistics
config radius acct IPsec disable

To disable IPsec support for an accounting server for the Cisco wireless LAN controller, use the `config radius acct ipsec disable` command.

`config radius acct ipsec disable index`

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>index</th>
<th>RADIUS server index.</th>
</tr>
</thead>
</table>

| Defaults | None. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to disable the IPsec support for RADIUS accounting server index 1:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; config radius acct IPsec disable 1</td>
</tr>
</tbody>
</table>

| Related Commands | show radius acct statistics |
config radius acct IPsec enable

To enable IPsec support for an accounting server for the Cisco wireless LAN controller, use the `config radius acct ipsec enable` command.

```
config radius acct ipsec enable index
```

**Syntax Description**

| `index` | RADIUS server index. |

**Defaults**

None.

**Examples**

This example shows how to enable the IPsec support for RADIUS accounting server index 1:

```
> config radius acct ipsec enable 1
```

**Related Commands**

`show radius acct statistics`
config radius acct IPsec encryption

To configure IPsec encryption for an accounting server for the Cisco wireless LAN controller, use the `config radius acct ipsec encryption` command.

```
config radius acct ipsec encryption {3des | aes | des} index
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3des</td>
<td>Enables IPsec 3DES encryption.</td>
</tr>
<tr>
<td>aes</td>
<td>Enables IPsec AES encryption.</td>
</tr>
<tr>
<td>des</td>
<td>Enables IPsec DES encryption.</td>
</tr>
<tr>
<td>index</td>
<td>RADIUS server index value of between 1 and 17.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the IPsec 3DES encryption for RADIUS server index value 3:

```
> config radius acct ipsec encryption 3des 3
```

**Related Commands**

- `show radius acct statistics`
- `show radius summary`
To configure Internet Key Exchange (IKE) for the Cisco wireless LAN controller, use the `config radius acct ipsec` command.

```
config radius acct ipsec ike dh-group {group-1 | group-2 | group-5} | lifetime seconds | phase1 {aggressive | main} | index
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPsec</td>
<td>Configures the IPsec.</td>
</tr>
<tr>
<td>ike</td>
<td>Configures the IKE.</td>
</tr>
<tr>
<td>dh-group</td>
<td>Specifies the Dixie-Hellman group.</td>
</tr>
<tr>
<td>group-1</td>
<td>Configures the DH Group 1 (768 bits).</td>
</tr>
<tr>
<td>group-2</td>
<td>Configures the DH Group 2 (1024 bits).</td>
</tr>
<tr>
<td>group-5</td>
<td>Configures the DH Group 5 (1024 bits).</td>
</tr>
<tr>
<td>lifetime</td>
<td>Configures the IKE lifetime.</td>
</tr>
<tr>
<td>seconds</td>
<td>IKE Lifetime in seconds.</td>
</tr>
<tr>
<td>phase1</td>
<td>Configures the IKE phase1 node.</td>
</tr>
<tr>
<td>aggressive</td>
<td>Enables the aggressive mode.</td>
</tr>
<tr>
<td>main</td>
<td>Enables the main mode.</td>
</tr>
<tr>
<td>index</td>
<td>RADIUS server index.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to configure an IKE lifetime of 23 seconds for RADIUS server index 1:

```
> config radius acct ipsec ike lifetime 23 1
```

### Related Commands

- `show radius acct statistics`
config radius acct mac-delimiter

To specify the delimiter to be used in the MAC addresses that are sent to the RADIUS accounting server, use the `config radius acct mac-delimiter` command.

```plaintext
config radius acct mac-delimiter { colon | hyphen | single-hyphen | none }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>colon</td>
<td></td>
<td>Sets the delimiter to a colon (for example, xx:xx:xx:xx:xx:xx).</td>
</tr>
<tr>
<td>hyphen</td>
<td></td>
<td>Sets the delimiter to a hyphen (for example, xx-xx-xx-xx-xx-xx).</td>
</tr>
<tr>
<td>single-hyphen</td>
<td></td>
<td>Sets the delimiter to a single hyphen (for example, xxxxxx-xxxxxx).</td>
</tr>
<tr>
<td>none</td>
<td></td>
<td>Disables the delimiter (for example, xxxxxxxxxxx).</td>
</tr>
</tbody>
</table>

**Defaults**

The default delimiter is a hyphen.

**Examples**

This example shows how to set the delimiter hyphen to be used in the MAC addresses that are sent to the RADIUS accounting server for the network users:

```plaintext
> config radius acct mac-delimiter hyphen
```

**Related Commands**

`show radius acct statistics`
config radius acct network

To configure a default RADIUS server for network users, use the `config radius acct network` command.

```
config radius acct network index {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>index</code></td>
<td>RADIUS server index.</td>
</tr>
<tr>
<td><code>enable</code></td>
<td>Enables the server as a network user’s default RADIUS server.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables the server as a network user’s default RADIUS server.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure a default RADIUS accounting server for the network users with RADIUS server index1:

```
> config radius acct network 1 enable
```

**Related Commands**

- `show radius acct statistics`
config radius acct retransmit-timeout

To change the default transmission timeout for a RADIUS accounting server for the Cisco wireless LAN controller, use the `config radius acct retransmit-timeout` command.

```
config radius acct retransmit-timeout index timeout
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>index</code></td>
<td>RADIUS server index.</td>
</tr>
<tr>
<td><code>timeout</code></td>
<td>Number of seconds (from 2 to 30) between retransmissions.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure retransmission timeout value 5 seconds between the retransmission:

```
> config radius acct retransmit-timeout 5
```

**Related Commands**

`show radius acct statistics`
Configure RADIUS Authentication Server Commands

Use the `config radius auth` commands to configure RADIUS authentication server settings.
### config radius auth

To add, delete, or configure settings for a RADIUS authentication server for the Cisco wireless LAN controller, use the `config radius auth` command.

```
config radius auth { { enable | disable | delete } index } |
add index server_ip port { ascii | hex } secret
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables a RADIUS authentication server.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables a RADIUS authentication server.</td>
</tr>
<tr>
<td>delete</td>
<td>Deletes a RADIUS authentication server.</td>
</tr>
<tr>
<td>index</td>
<td>RADIUS server index. The controller begins the search with 1.</td>
</tr>
<tr>
<td>add</td>
<td>Adds a RADIUS authentication server. See the “Defaults” section.</td>
</tr>
<tr>
<td>server_ip</td>
<td>IP address of the RADIUS server.</td>
</tr>
<tr>
<td>port</td>
<td>RADIUS server’s UDP port number for the interface protocols.</td>
</tr>
<tr>
<td>ascii</td>
<td>Specifies RADIUS server’s secret type: ascii.</td>
</tr>
<tr>
<td>hex</td>
<td>Specifies RADIUS server’s secret type: hex.</td>
</tr>
<tr>
<td>secret</td>
<td>RADIUS server’s secret.</td>
</tr>
</tbody>
</table>

**Defaults**

When adding a RADIUS server, the port number defaults to 1813 and the state is enabled.

**Examples**

This example shows how to configure a priority 1 RADIUS authentication server at 10.10.10.10 using port 1812 with a login password of admin:

```
> config radius auth add 1 10.10.10.10 1812 ascii admin
```

**Related Commands**

- `show radius auth statistics`
config radius auth IPsec authentication

To configure IPsec support for an authentication server for the Cisco wireless LAN controller, use the `config radius auth IPsec authentication` command.

```
config radius auth IPsec authentication {hmac-md5 | hmac-sha1} index
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>hmac-md5</td>
<td>Enables IPsec HMAC-MD5 authentication.</td>
</tr>
<tr>
<td>hmac-sha1</td>
<td>Enables IPsec HMAC-SHA1 authentication.</td>
</tr>
<tr>
<td>index</td>
<td>RADIUS server index.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the IPsec hmac-md5 support for RADIUS authentication server index 1:

```
> config radius auth IPsec authentication hmac-md5 1
```

**Related Commands**

show radius acct statistics
config radius auth IPsec disable

To disable IPsec support for an authentication server for the Cisco wireless LAN controller, use the `config radius auth IPsec disable` command.

```
config radius auth IPsec {enable | disable} index
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the IPsec support for an authentication server.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the IPsec support for an authentication server.</td>
</tr>
<tr>
<td>index</td>
<td>RADIUS server index.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the IPsec support for RADIUS authentication server index 1:

```
> config radius auth IPsec enable 1
```

This example shows how to disable the IPsec support for RADIUS authentication server index 1:

```
> config radius auth IPsec disable 1
```

**Related Commands**

`show radius acct statistics`
**config radius auth IPsec encryption**

To configure IPsec encryption support for an authentication server for the Cisco wireless LAN controller, use the `config radius auth IPsec` command.

```
config radius auth IPsec encryption {3des | aes | des} index
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>3des</th>
<th>Enables the IPsec 3DES encryption.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>aes</td>
<td>Enables the IPsec AES encryption.</td>
</tr>
<tr>
<td></td>
<td>des</td>
<td>Enables the IPsec DES encryption.</td>
</tr>
<tr>
<td></td>
<td>index</td>
<td>RADIUS server index.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure IPsec 3dec encryption RADIUS authentication server index 3:

```
> config radius auth IPsec encryption 3des 3
```

**Related Commands**

`show radius acct statistics`
config radius auth IPsec ike

To configure Internet Key Exchange (IKE) for the Cisco wireless LAN controller, use the config radius auth IPsec ike command.

```
config radius auth IPsec ike { dh-group { group-1 | group-2 | group-5 } | lifetime seconds | phase1 { aggressive | main } } index
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dh-group</td>
<td>Configures the IKE Diffe-Hellman group.</td>
</tr>
<tr>
<td>group-1</td>
<td>Configures the DH Group 1 (768 bits).</td>
</tr>
<tr>
<td>group-2</td>
<td>Configures the DH Group 2 (1024 bits).</td>
</tr>
<tr>
<td>group-5</td>
<td>Configures the DH Group 2 (1024 bits).</td>
</tr>
<tr>
<td>lifetime</td>
<td>Configures the IKE lifetime.</td>
</tr>
<tr>
<td>seconds</td>
<td>Lifetime in seconds.</td>
</tr>
<tr>
<td>phase1</td>
<td>Configures the IKE phase1 mode.</td>
</tr>
<tr>
<td>aggressive</td>
<td>Enables the aggressive mode.</td>
</tr>
<tr>
<td>main</td>
<td>Enables the main mode.</td>
</tr>
<tr>
<td>index</td>
<td>RADIUS server index.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to configure IKE lifetime of 23 seconds for RADIUS authentication server index 1:

```
> config radius auth IPsec ike lifetime 23 1
```

### Related Commands

show radius acct statistics
To enable and configure Advanced Encryption Standard (AES) key wrap, which makes the shared secret between the controller and the RADIUS server more secure, use the `config radius auth keywrap` command.

```
config radius auth keywrap {enable | disable | add {ascii | hex} kek mack index}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>Enables AES key wrap.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables AES key wrap.</td>
</tr>
<tr>
<td><code>add</code></td>
<td>Configures AES key wrap attributes.</td>
</tr>
<tr>
<td><code>ascii</code></td>
<td>Configures key wrap in an ASCII format.</td>
</tr>
<tr>
<td><code>hex</code></td>
<td>Configures key wrap in a hexadecimal format.</td>
</tr>
<tr>
<td><code>kek</code></td>
<td>16-byte Key Encryption Key (KEK).</td>
</tr>
<tr>
<td><code>mack</code></td>
<td>20-byte Message Authentication Code Key (MACK).</td>
</tr>
<tr>
<td><code>index</code></td>
<td>Index of the RADIUS authentication server on which to configure the AES key wrap.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to enable the AES key wrap for a RADIUS authentication server:

```
> config radius auth keywrap enable
```

### Related Commands

- `show radius auth statistics`
config radius auth mac-delimiter

To specify a delimiter to be used in the MAC addresses that are sent to the RADIUS authentication server, use the `config radius auth mac-delimiter` command.

```
config radius auth mac-delimiter {colon | hyphen | single-hyphen | none}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>colon</td>
<td>Sets a delimiter to a colon (for example, xx:xx:xx:xx:xx:xx).</td>
</tr>
<tr>
<td>hyphen</td>
<td>Sets a delimiter to a hyphen (for example, xx-xx-xx-xx-xx-xx).</td>
</tr>
<tr>
<td>single-hyphen</td>
<td>Sets a delimiter to a single hyphen (for example, xxxxxx-xxxxxx).</td>
</tr>
<tr>
<td>none</td>
<td>Disables the delimiter (for example, xxxxxxxxxxxx).</td>
</tr>
</tbody>
</table>

**Defaults**

The default delimiter is a hyphen.

**Examples**

This example shows how to specify a delimiter hyphen to be used for a RADIUS authentication server:

```
> config radius auth mac-delimiter hyphen
```

**Related Commands**

`show radius auth statistics`
config radius auth management

To configure a default RADIUS server for management users, use the `config radius auth management` command.

```
config radius auth management index {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>index</td>
<td>RADIUS server index.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the server as a management user’s default RADIUS server.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the server as a management user’s default RADIUS server.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure a RADIUS server for management users:

```
> config radius auth management 1 enable
```

**Related Commands**

- `show radius acct statistics`
- `config radius acct network`
config radius auth network

To configure a default RADIUS server for network users, use the `config radius auth network` command.

```
config radius auth network index {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>index</code></td>
<td>RADIUS server index.</td>
</tr>
<tr>
<td><code>enable</code></td>
<td>Enables the server as a network user default RADIUS server.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disable the server as a network user default RADIUS server.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure a default RADIUS server for network users:

```
> config radius auth network 1 enable
```

**Related Commands**

- `show radius acct statistics`
- `config radius acct network`
config radius auth retransmit-timeout

To change a default transmission timeout for a RADIUS authentication server for the Cisco wireless LAN controller, use the `config radius auth retransmit-timeout` command.

```
config radius auth retransmit-timeout index timeout
```

**Syntax Description**

<table>
<thead>
<tr>
<th>index</th>
<th>RADIUS server index.</th>
</tr>
</thead>
<tbody>
<tr>
<td>timeout</td>
<td>Number of seconds (from 2 to 30) between retransmissions.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure a retransmission timeout of 5 seconds for a RADIUS authentication server:

```
> config radius auth retransmit-timeout 5
```

**Related Commands**

`show radius auth statistics`
config radius auth rfc3576

To configure RADIUS RFC-3576 support for the authentication server for the Cisco wireless LAN controller, use the **config radius auth rfc3576** command.

```
config radius auth rfc3576 {enable | disable} index
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
<th>index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables RFC-3576 support for an authentication server.</td>
<td>Disable RFC-3576 support for an authentication server.</td>
<td>RADIUS server index.</td>
</tr>
</tbody>
</table>

**Defaults** None.

**Usage Guidelines** RFC 3576, which is an extension to the RADIUS protocol, allows dynamic changes to a user session. RFC 3576 includes support for disconnecting users and changing authorizations applicable to a user session. Disconnect messages cause a user session to be terminated immediately; CoA messages modify session authorization attributes such as data filters.

**Examples** This example shows how to enable the RADIUS RFC-3576 support for a RADIUS authentication server:

```
> config radius auth rfc3576 enable 2
```

**Related Commands**
- show radius auth statistics
- show radius summary
- show radius rfc3576
config radius auth server-timeout

To configure a retransmission timeout value for a RADIUS accounting server, use the `config radius auth server-timeout` command.

```
config radius auth server-timeout index timeout
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>index</code></td>
<td>RADIUS server index.</td>
</tr>
<tr>
<td><code>timeout</code></td>
<td>Timeout value. The range is 2 to 30 seconds.</td>
</tr>
</tbody>
</table>

**Defaults**
The default timeout is 2 seconds.

**Examples**
This example shows how to configure a server timeout value of 2 seconds for RADIUS authentication server index 10:

```
> config radius auth server-timeout 2 10
```

**Related Commands**
show radius auth statistics
show radius summary
config radius aggressive-failover disabled

To configure the controller to mark a RADIUS server as down (not responding) after the server does not reply to three consecutive clients, use the `config radius aggressive-failover disabled` command.

```
config radius aggressive-failover disabled
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to configure the controller to mark a RADIUS server as down:

```
> config radius aggressive-failover disabled
```

**Related Commands**
- `show radius summary`
config radius backward compatibility

To configure RADIUS backward compatibility for the Cisco wireless LAN controller, use the config radius backward command.

```
config radius backward compatibility { enable | disable }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables RADIUS vendor ID backward compatibility.</td>
<td>Disables RADIUS vendor ID backward compatibility.</td>
</tr>
</tbody>
</table>

Defaults

Enabled.

Examples

This example shows how to enable the RADIUS backward compatibility settings:

```
> config radius backward compatibility enable
```

Related Commands

show radius summary
config radius callStationIdType

To configure callStationIdType information sent in RADIUS messages for the Cisco wireless LAN controller, use the **config radius callStationIdType** command.

```
config radius callStationIdType {ipAddr | macAddr | ap-macAddr}
```

**Syntax Description**

- **ipAddr**
  - Configures the Call Station ID type to use the IP address (only Layer 3).
- **macAddr**
  - Configures the Call Station ID type to use the system’s MAC address (Layers 2 and 3).
- **ap-macAddr**
  - Configures the Call Station ID type to use the access point’s MAC address (Layers 2 and 3).

**Defaults**

Enabled.

**Usage Guidelines**

This command uses the selected calling station ID for communications with RADIUS servers and other applications.

**Examples**

This example shows how to configure the call station ID type to use the IP address:

```
> config radius callStationIdType ipAddr
```

This example shows how to configure the call station ID type to use the system’s MAC address:

```
> config radius callStationIdType macAddr
```

This example shows how to configure the call station ID type to use the access point’s MAC address:

```
> config radius callStationIdType ap-macAddr
```

**Related Commands**

- `show radius summary`
To configure the RADIUS server fallback behavior, use the `config radius fallback-test` command.

```
config radius fallback-test mode {off | passive | active} | {username username} | {interval interval}
```

### Syntax Description

<table>
<thead>
<tr>
<th>mode</th>
<th>Specifies the mode.</th>
</tr>
</thead>
<tbody>
<tr>
<td>off</td>
<td>Disables RADIUS server fallback.</td>
</tr>
<tr>
<td>passive</td>
<td>Causes the controller to revert to a preferable server (with a lower server index) from the available backup servers without using extraneous probe messages. The controller ignores all inactive servers for a time period and retries later when a RADIUS message needs to be sent.</td>
</tr>
<tr>
<td>active</td>
<td>Causes the controller to revert to a preferable server (with a lower server index) from the available backup servers by using RADIUS probe messages to proactively determine whether a server that has been marked inactive is back online. The controller ignores all inactive servers for all active RADIUS requests.</td>
</tr>
<tr>
<td>username</td>
<td>Specifies the username.</td>
</tr>
<tr>
<td>username</td>
<td>Username. The username can be up to 16 alphanumeric characters.</td>
</tr>
<tr>
<td>interval</td>
<td>Specifies the probe interval value.</td>
</tr>
<tr>
<td>interval</td>
<td>Probe interval. The range is 180 to 3600.</td>
</tr>
</tbody>
</table>

### Defaults

The default probe interval is 300.

### Examples

This example shows how to disable the RADIUS accounting server fallback behavior:
```
> config radius fallback-test mode off
```

This example shows how to configure the controller to revert to a preferable server from the available backup servers without using the extraneous probe messages:
```
> config radius fallback-test mode passive
```

This example shows how to configure the controller to revert to a preferable server from the available backup servers by using RADIUS probe messages:
```
> config radius fallback-test mode active
```

### Related Commands

- `config advanced probe filter`
- `config advanced probe limit`
- `show advanced probe`
- `show radius acct statistics`
config rfid auto-timeout

To configure an automatic timeout of radio frequency identification (RFID) tags, use the config rfid auto-timeout command.

```
config rfid auto-timeout {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables an automatic timeout.</td>
<td>Enables an automatic timeout.</td>
</tr>
</tbody>
</table>

 Defaults

None.

 Examples

This example shows how to enable an automatic timeout of RFID tags:

```
> config rfid auto-timeout enable
```

 Related Commands

show rfid summary
config rfid status
config rfid timeout
config rfid status

To configure radio frequency identification (RFID) tag data tracking, use the **config rfid status** command.

```
config rfid status {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables RFID tag tracking.</td>
<td>Enables RFID tag tracking.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure RFID tag tracking settings:

```
> config rfid status enable
```

**Related Commands**

- `show rfid summary`
- `config rfid auto-timeout`
- `config rfid timeout`
To configure a static radio frequency identification (RFID) tag data timeout, use the `config rfid timeout` command.

```
config rfid timeout seconds
```

### Syntax Description

- **seconds**: Timeout in seconds (from 60 to 7200).

### Defaults

- None.

### Examples

This example shows how to configure a static RFID tag data timeout of 60 seconds.

```
> config rfid timeout 60
```

### Related Commands

- `show rfid summary`
- `config rfid statistics`
Configure Rogue Commands

Use the configure rogue commands to configure policy settings for unidentified (rogue) clients.
config rogue adhoc

To globally or individually configure the status of an Independent Basic Service Set (IBSS or ad-hoc) rogue access point, use the `config rogue adhoc` command.

```
config rogue adhoc { enable | disable | external rogue_MAC | alert { rogue_MAC | all } | auto-contain [ monitor_ap ] | contain rogue_MAC 1234_aps }
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>disable</td>
</tr>
<tr>
<td>external</td>
<td>Acknowledges the presence of the ad-hoc rogue.</td>
</tr>
<tr>
<td>rogue_MAC</td>
<td>MAC address of the ad-hoc rogue access point.</td>
</tr>
<tr>
<td>alert</td>
<td>Generates an SMNP trap upon detection of the ad-hoc rogue, and generates an immediate alert to the system administrator for further action.</td>
</tr>
<tr>
<td>all</td>
<td>Enables alerts for all ad-hoc rogue access points.</td>
</tr>
<tr>
<td>auto-contain</td>
<td>Contains all wired ad-hoc rogues detected by the controller.</td>
</tr>
<tr>
<td>monitor_ap</td>
<td>(Optional) IP address of the ad-hoc rogue access point.</td>
</tr>
<tr>
<td>contain</td>
<td>Contains the offending device so that its signals no longer interfere with authorized clients.</td>
</tr>
<tr>
<td>1234_aps</td>
<td>Maximum number of Cisco access points assigned to actively contain the ad-hoc rogue access point (1 through 4, inclusive).</td>
</tr>
</tbody>
</table>

### Defaults

The default for this command is enabled and is set to alert. The default for auto-containment is disabled.

### Usage Guidelines

The controller continuously monitors all nearby access points and automatically discovers and collects information on rogue access points and clients. When the controller discovers a rogue access point, it uses RLDP to determine if the rogue is attached to your wired network.

**Note** RLDP is not supported for use with Cisco autonomous rogue access points. These access points drop the DHCP Discover request sent by the RLDP client. Also, RLDP is not supported if the rogue access point channel requires dynamic frequency selection (DFS).

When you enter any of the containment commands, the following warning appears:

```
Using this feature may have legal consequences. Do you want to continue? (y/n) :
```

The 2.4- and 5-GHz frequencies in the Industrial, Scientific, and Medical (ISM) band are open to the public and can be used without a license. As such, containing devices on another party’s network could have legal consequences.

Enter `auto-contain` with the `monitor_ap` argument to monitor the rogue access point without containing it. Enter `auto-contain` without the optional `monitor_ap` to automatically contain all wired ad-hoc rogues detected by the controller.
Examples

This example shows how to enable the detection and reporting of ad-hoc rogues:

> config rogue adhoc enable

This example shows how to enable alerts for all ad-hoc rogue access points:

> config rogue adhoc alert all

Related Commands

show rogue ignore-list
show rogue rule detailed
show rogue rule summary
config rogue ap classify

To classify the status of a rogue access point, use the `config rogue ap classify` command.

```
config rogue ap classify {friendly state {internal | external} ap_mac
config rogue ap classify {malicious | unclassified} state {alert | contain} ap_mac}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>friendly</td>
<td>Classifies a rogue access point as friendly.</td>
</tr>
<tr>
<td>state</td>
<td>Specifies a response to classification.</td>
</tr>
<tr>
<td>internal</td>
<td>Configures the controller to trust this rogue access point.</td>
</tr>
<tr>
<td>external</td>
<td>Configures the controller to acknowledge the presence of this access point.</td>
</tr>
<tr>
<td>ap_mac</td>
<td>MAC address of the rogue access point.</td>
</tr>
<tr>
<td>malicious</td>
<td>Classifies a rogue access point as potentially malicious.</td>
</tr>
<tr>
<td>unclassified</td>
<td>Classifies a rogue access point as unknown.</td>
</tr>
<tr>
<td>alert</td>
<td>Configures the controller to forward an immediate alert to the system administrator for further action.</td>
</tr>
<tr>
<td>contain</td>
<td>Configures the controller to contain the offending device so that its signals no longer interfere with authorized clients.</td>
</tr>
</tbody>
</table>

### Defaults

These commands are disabled by default. Therefore, all unknown access points are categorized as unclassified by default.

### Usage Guidelines

A rogue access point cannot be moved to the unclassified class if its current state is contain.

When you enter any of the containment commands, the following warning appears: “Using this feature may have legal consequences. Do you want to continue?” The 2.4- and 5-GHz frequencies in the Industrial, Scientific, and Medical (ISM) band are open to the public and can be used without a license. As such, containing devices on another party’s network could have legal consequences.

### Examples

This example shows how to classify a rogue access point as friendly and can be trusted:

```
> config rogue ap classify friendly state internal 11:11:11:11:11:11
```

This example shows how to classify a rogue access point as malicious and to send an alert:

```
> config rogue ap classify malicious state alert 11:11:11:11:11:11
```

This example shows how to classify a rogue access point as unclassified and to contain it:

```
> config rogue ap classify unclassified state contain 11:11:11:11:11:11
```

### Related Commands

- `config rogue ap friendly`
- `config rogue ap rldp`
- `config rogue ap ssid`
- `config rogue ap timeout`
- `config rogue ap valid-client`
config rogue rule
config trapflags rogueap
show rogue ap clients
show rogue ap detailed
show rogue ap summary
show rogue ap friendly summary
show rogue ap malicious summary
show rogue ap unclassified summary
show rogue ignore-list
show rogue rule detailed
show rogue rule summary
config rogue ap friendly

To add a new friendly access point entry to the friendly MAC address list, or delete an existing friendly access point entry from the list, use the config rogue ap friendly command.

`config rogue ap friendly {add | delete} ap_mac`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>add</td>
<td>Adds this rogue access point from the friendly MAC address list.</td>
</tr>
<tr>
<td>delete</td>
<td>Deletes this rogue access point from the friendly MAC address list.</td>
</tr>
<tr>
<td>ap_mac</td>
<td>MAC address of the rogue access point that you want to add or delete.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to add a new friendly access point with MAC address 11:11:11:11:11:11 to the friendly MAC address list:

```
> config rogue ap friendly add 11:11:11:11:11:11
```

**Related Commands**

- config rogue ap classify
- config rogue ap rldp
- config rogue ap ssid
- config rogue ap timeout
- config rogue ap valid-client
- config rogue rule
- config trapflags rogueap
- show rogue ap clients
- show rogue ap detailed
- show rogue ap summary
- show rogue ap friendly summary
- show rogue ap malicious summary
- show rogue ap unclassified summary
- show rogue ignore-list
- show rogue rule detailed
- show rogue rule summary
**config rogue ap rldp**

To enable, disable, or initiate the Rogue Location Discovery Protocol (RLDP), use the `config rogue ap rldp` command.

```
config rogue ap rldp enable {alarm-only | auto-contain} [monitor_ap_only]
config rogue ap rldp initiate rogue_mac_address
config rogue ap rldp disable
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>alarm-only</td>
<td>When entered without the optional argument <code>monitor_ap_only</code>, enables RLDP on all access points.</td>
</tr>
<tr>
<td>auto-contain</td>
<td>When entered without the optional argument <code>monitor_ap_only</code>, automatically contains all rogue access points.</td>
</tr>
<tr>
<td>monitor_ap_only</td>
<td>(Optional) RLDP is enabled (when used with <code>alarm-only</code> keyword), or automatically contained (when used with <code>auto-contain</code> keyword) is enabled only on the designated monitor access point.</td>
</tr>
<tr>
<td>initiate</td>
<td>Initiates RLDP on a specific rogue access point.</td>
</tr>
<tr>
<td>rogue_mac_address</td>
<td>MAC address of specific rogue access point.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables RLDP on all access points.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

When you enter any of the containment commands, the following warning appears: “Using this feature may have legal consequences. Do you want to continue?” The 2.4- and 5-GHz frequencies in the Industrial, Scientific, and Medical (ISM) band are open to the public and can be used without a license. As such, containing devices on another party’s network could have legal consequences.

**Examples**

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

```
> config rogue ap rldp enable alarm-only
```

This example shows how to enable RLDP on monitor-mode access point `ap_1`:

```
> config rogue ap rldp enable alarm-only ap_1
```

This example shows how to start RLDP on the rogue access point with MAC address 123.456.789.000:

```
> config rogue ap rldp initiate 123.456.789.000
```

This example shows how to disable RLDP on all access points:

```
> config rogue ap rldp disable
```

**Related Commands**

- config rogue ap classify
- config rogue ap friendly
- config rogue ap ssid
- config rogue ap timeout
config rogue ap rldp
config rogue ap valid-client
config rogue rule
config trapflags rogueap
show rogue ap clients
show rogue ap detailed
show rogue ap summary
show rogue ap friendly summary
show rogue ap malicious summary
show rogue ap unclassified summary
show rogue ignore-list
show rogue rule detailed
show rogue rule summary
To generate an alarm only, or to automatically contain a rogue access point that is advertising your network’s service set identifier (SSID), use the `config rogue ap ssid` command.

```
config rogue ap ssid [alarm | auto-contain]
```

**Syntax Description**

- **alarm**: Generates only an alarm when a rogue access point is discovered to be advertising your network’s SSID.
- **auto-contain**: Automatically contains the rogue access point that is advertising your network’s SSID.

**Defaults**

None.

**Usage Guidelines**

When you enter any of the containment commands, the following warning appears: “Using this feature may have legal consequences. Do you want to continue?” The 2.4- and 5-GHz frequencies in the Industrial, Scientific, and Medical (ISM) band are open to the public and can be used without a license. As such, containing devices on another party’s network could have legal consequences.

**Examples**

This example shows how to automatically contain a rogue access point that is advertising your network’s SSID:

```
> config rogue ap ssid auto-contain
```

**Related Commands**

- `config rogue ap classify`
- `config rogue ap friendly`
- `config rogue ap rldp`
- `config rogue ap timeout`
- `config rogue ap valid-client`
- `config rogue rule`
- `show rogue ap clients`
- `show rogue ap detailed`
- `show rogue ap summary`
- `show rogue ap friendly summary`
- `show rogue ap malicious summary`
- `show rogue ap unclassified summary`
- `show rogue ignore-list`
- `show rogue rule detailed`
- `show rogue rule summary`
To specify the number of seconds after which the rogue access point and client entries expire and are removed from the list, use the `config rogue ap timeout` command.

```
config rogue ap timeout seconds
```

### Syntax Description

<table>
<thead>
<tr>
<th>seconds</th>
<th>Value of 240 to 3600 seconds (inclusive), with a default value of 1200 seconds.</th>
</tr>
</thead>
</table>

### Defaults

1200 seconds.

### Examples

This example shows how to set an expiration time for entries in the rogue access point and client list to 2400 seconds:

```bash
> config rogue ap timeout 2400
```

### Related Commands

- `config rogue ap classify`
- `config rogue ap friendly`
- `config rogue ap rldp`
- `config rogue ap ssid`
- `config rogue ap valid-client`
- `config rogue rule`
- `config trapflags rogueap`
- `show rogue ap clients`
- `show rogue ap detailed`
- `show rogue ap summary`
- `show rogue ap friendly summary`
- `show rogue ap malicious summary`
- `show rogue ap unclassified summary`
- `show rogue ignore-list`
- `show rogue rule detailed`
- `show rogue rule summary`
config rogue ap valid-client

To generate an alarm only, or to automatically contain a rogue access point to which a trusted client is associated, use the `config rogue ap valid-client` command.

```
config rogue ap valid-client {alarm | auto-contain}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>alarm</td>
<td>Generates only an alarm when a rogue access point is discovered to be associated with a valid client.</td>
</tr>
<tr>
<td>auto-contain</td>
<td>Automatically contains a rogue access point to which a trusted client is associated.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

When you enter any of the containment commands, the following warning appears: “Using this feature may have legal consequences. Do you want to continue?” The 2.4- and 5-GHz frequencies in the Industrial, Scientific, and Medical (ISM) band are open to the public and can be used without a license. As such, containing devices on another party’s network could have legal consequences.

**Examples**

This example shows how to automatically contain a rogue access point that is associated with a valid client:

```
> config rogue ap valid-client auto-contain
```

**Related Commands**

- `config rogue ap classify`
- `config rogue ap friendly`
- `config rogue ap rldp`
- `config rogue ap ssid`
- `config rogue ap timeout`
- `config rogue rule`
- `config trapflags rogueap`
- `show rogue ap clients`
- `show rogue ap detailed`
- `show rogue ap summary`
- `show rogue ap friendly summary`
- `show rogue ap malicious summary`
- `show rogue ap unclassified summary`
- `show rogue ignore-list`
- `show rogue rule detailed`
- `show rogue rule summary`
config rogue client

To configure rogue clients, use the `config rogue client` command.

```
config rogue client { aaa { enable | disable } | alert ap_mac | contain client_mac } num_of_APs
```

**Syntax Description**

- `aaa` Configures AAA server or local database to validate whether rogue clients are valid clients.
- `enable` Enables the AAA server or local database to check rogue client MAC addresses for validity.
- `disable` Disables the AAA server or local database to check rogue client MAC addresses for validity.
- `alert` Configures the controller to forward an immediate alert to the system administrator for further action.
- `ap_mac` Access point MAC address.
- `contain` Configures the controller to contain the offending device so that its signals no longer interfere with authorized clients.
- `client_mac` MAC address of the rogue client.
- `num_of_APs` Maximum number of Cisco access points to actively contain the rogue access point (1–4).

**Defaults**

None.

**Examples**

This example shows how to enable the AAA server or local database to check MAC addresses:

```
> config rogue client aaa enable
```

This example shows how to disable the AAA server or local database from checking MAC addresses:

```
> config rogue client aaa disable
```

**Related Commands**

- `config rogue rule`
- `config trapflags rogueap`
- `show rogue ap clients`
- `show rogue client detailed`
- `show rogue client summary`
- `show rogue ignore-list`
- `show rogue rule detailed`
- `show rogue rule summary`
config rogue detection

To enable or disable rogue detection, use the `config rogue detection` command.

```
config rogue detection {enable | disable} {Cisco_AP | all}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>Enables rogue detection on this access point.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables rogue detection on this access point.</td>
</tr>
<tr>
<td><code>Cisco_AP</code></td>
<td>Cisco access point.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Specifies all access points.</td>
</tr>
</tbody>
</table>

**Note**
If an AP itself is configured with the name ‘all’, then the ‘all access points’ case takes precedence over the AP that is named ‘all’.

**Defaults**
Enabled.

**Usage Guidelines**
Rogue detection is enabled by default for all access points joined to the controller except for OfficeExtend access points. OfficeExtend access points are deployed in a home environment and are likely to detect a large number of rogue devices.

**Examples**
This example shows how to enable rogue detection on the access point Cisco_AP:
```
> config rogue detection enable Cisco_AP
```

**Related Commands**
- `config rogue rule`
- `config trapflags rogueap`
- `show rogue ap clients`
- `show rogue client detailed`
- `show rogue client summary`
- `show rogue ignore-list`
- `show rogue rule detailed`
- `show rogue rule summary`
config rogue rule

To add and configure rogue classification rules, use the config rogue rule commands.

```
config rogue rule { add ap priority priority classify { friendly | malicious } rule_name |
classify { friendly | malicious } rule_name |
condition ap { set | delete } condition_type condition_value rule_name |
{ enable | delete | disable } { all | rule_name } |
match { all | any } |
priority priority rule_name }
```

### Syntax Description

| **add ap priority** | Adds a rule with match any criteria and the priority that you specify. |
| **priority** | Priority of this rule within the list of rules. |
| **classify** | Specifies the classification of a rule. |
| **friendly** | Classifies a rule as friendly. |
| **malicious** | Classifies a rule as malicious. |
| **rule_name** | Rule to which the command applies, or the name of a new rule. |
| **condition ap** | Specifies the conditions for a rule that the rogue access point must meet. |
| **set** | Adds conditions to a rule that the rogue access point must meet. |
| **delete** | Removes conditions to a rule that the rogue access point must meet. |
| **condition_type** | Type of the condition to be configured. The condition types are listed below: |
| **client-count**—Requires that a minimum number of clients be associated to the rogue access point. The valid range is 1 to 10 (inclusive). |
| **duration**—Requires that the rogue access point be detected for a minimum period of time. The valid range is 0 to 3600 seconds (inclusive). |
| **managed-ssid**—Requires that the rogue access point’s SSID be known to the controller. |
| **no-encryption**—Requires that the rogue access point’s advertised WLAN does not have encryption enabled. |
| **rssi**—Requires that the rogue access point have a minimum RSSI value. The valid range is –95 to –50 dBm (inclusive). |
| **ssid**—Requires that the rogue access point have a specific SSID. |
| **condition_value** | Value of the condition. This value is dependent upon the condition_type. For instance, if the condition type is ssid, then the condition value is either the SSID name or all. |
| **enable** | Enables all rules or a single specific rule. |
| **delete** | Deletes all rules or a single specific rule. |
| **disable** | Deletes all rules or a single specific rule. |
| **match** | Specifies whether a detected rogue access point must meet all or any of the conditions specified by the rule in order for the rule to be matched and the rogue access point to adopt the classification type of the rule. |
| **all** | Specifies all rules defined. |
| **any** | Specifies any rule meeting certain criteria. |
| **priority** | Changes the priority of a specific rule and shifts others in the list accordingly. |
config rogue rule

Defaults
None.

Usage Guidelines
For your changes to be effective, you must enable the rule. You can configure up to 64 rules.

Examples
This example shows how to create a rule called **rule_1** with a priority of 1 and a classification as friendly:

```
> config rogue rule add ap priority 1 classify friendly rule_1
```

This example shows how to enable rule_1:

```
> config rogue rule enable rule_1
```

This example shows how to change the priority of the last command:

```
> config rogue rule priority 2 rule_1
```

This example shows how to change the classification of the last command:

```
> config rogue rule classify malicious rule_1
```

This example shows how to disable the last command:

```
> config rogue rule disable rule_1
```

This example shows how to delete SSID_2 from the user-configured SSID list in rule-5:

```
> config rogue rule condition ap delete ssid ssid_2 rule-5
```

Related Commands
config rogue adhoc
config rogue ap classify
config rogue ap friendly
config rogue ap rldp
config rogue ap ssid
config rogue ap timeout
config rogue ap valid-client
config rogue client
config trapflags rogueap
show rogue ap clients
show rogue ap detailed
show rogue ap summary
show rogue ap friendly summary
show rogue ap malicious summary
show rogue ap unclassified summary
show rogue client detailed
show rogue client summary
show rogue ignore-list
show rogue rule detailed
show rogue rule summary
config route add

To configure a network route from the service port to a dedicated workstation IP address range, use the `config route add` command.

```
config route add ip_address netmask gateway
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>ip_address</code></td>
<td>Network IP address.</td>
</tr>
<tr>
<td><code>netmask</code></td>
<td>Subnet mask for the network.</td>
</tr>
<tr>
<td><code>gateway</code></td>
<td>IP address of the gateway for the route network.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to configure a network route to a dedicated workstation IP address 10.1.1.0, subnet mask 255.255.255.0, and gateway 10.1.1.1:

```
> config route add 10.1.1.0 255.255.255.0 10.1.1.1
```

### Related Commands

- `show route summary`
- `config route delete`
config route delete

To remove a network route from the service port, use the **config route delete** command.

```
config route delete ip_address
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>ip_address</th>
<th>Network IP address.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Defaults</th>
<th>None.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to delete a route from the network IP address 10.1.1.0:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; config route delete 10.1.1.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>show route all</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>config route add</td>
</tr>
</tbody>
</table>
## config serial baudrate

To set the serial port baud rate, use the `config serial baudrate` command.

```
config serial baudrate {1200 | 2400 | 4800 | 9600 | 19200 | 38400 | 57600}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>1200</th>
<th>Specifies the supported connection speeds to 1200.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2400</td>
<td>Specifies the supported connection speeds to 2400.</td>
</tr>
<tr>
<td></td>
<td>4800</td>
<td>Specifies the supported connection speeds to 4800.</td>
</tr>
<tr>
<td></td>
<td>9600</td>
<td>Specifies the supported connection speeds to 9600.</td>
</tr>
<tr>
<td></td>
<td>19200</td>
<td>Specifies the supported connection speeds to 19200.</td>
</tr>
<tr>
<td></td>
<td>38400</td>
<td>Specifies the supported connection speeds to 38400.</td>
</tr>
<tr>
<td></td>
<td>57600</td>
<td>Specifies the supported connection speeds to 57600.</td>
</tr>
</tbody>
</table>

### Defaults

9600.

### Examples

This example shows how to configure a serial baud rate with the default connection speed of 9600:

```
> config serial baudrate 9600
```

### Related Commands

`config serial timeout`
config serial timeout

To set the timeout of a serial port session, use the **config serial timeout** command.

```
cfg  serial timeout minutes
```

**Syntax Description**

| minutes | Timeout in minutes from 0 to 160. A value of 0 indicates no timeout. |

**Defaults**

0 (no timeout).

**Usage Guidelines**

Use this command to set the timeout for a serial connection to the front of the Cisco wireless LAN controller from 0 to 160 minutes where 0 is no timeout.

**Examples**

This example shows how to configure the timeout of a serial port session to 10 minutes:

```
> config serial timeout 10
```
**config service timestamps**

To enable or disable timestamps in message logs, use the `config service timestamps` command.

```
config service timestamps {debug | log} {datetime | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>debug</td>
<td>config service</td>
<td>Configures timestamps in debug messages.</td>
</tr>
<tr>
<td>log</td>
<td>timestamps</td>
<td>Configures timestamps in log messages.</td>
</tr>
<tr>
<td>datetime</td>
<td>log datetime</td>
<td>Specifies to timestamp message logs with the standard date and time.</td>
</tr>
<tr>
<td>disable</td>
<td>log disable</td>
<td>Specifies to prevent message logs being timestamped.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Examples**

This example shows how to configure timestamp message logs with the standard date and time:

```
> config service timestamps log datetime
```

This example shows how to prevent message logs being timestamped:

```
> config service timestamps debug disable
```

**Related Commands**

show logging
config sessions maxsessions

To configure the number of Telnet CLI sessions allowed by the Cisco wireless LAN controller, use the config sessions maxsessions command.

    config sessions maxsessions session_num

Syntax Description

| session_num | Number of sessions from 0 to 5. |

Defaults

5.

Usage Guidelines

Up to five sessions are possible while a setting of zero prohibits any Telnet CLI sessions.

Examples

This example shows how to configure the number of allowed CLI sessions to 2:

    > config sessions maxsessions 2

Related Commands

show sessions
**config sessions timeout**

To configure the inactivity timeout for Telnet CLI sessions, use the `config sessions timeout` command.

```
config sessions timeout timeout
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>timeout</td>
<td>Timeout of Telnet session in minutes (from 0 to 160). A value of 0 indicates no timeout.</td>
</tr>
</tbody>
</table>

**Defaults**

5.

**Examples**

This example shows how to configure the inactivity timeout for Telnet sessions to 20 minutes:

```
> config sessions timeout 20
```

**Related Commands**

`show sessions`
config slot

To configure various slot parameters, use the config slot command.

```
config slot slot_Id {enable | disable | channel ap | chan_width | txpower ap | antenna extAntGain
antenna_gain | rts} Cisco_AP
```

**Syntax Description**

- **slot_Id**: Slot identifier that refers to the slot of the downlink radio to which the channel is assigned.
- **enable**: Enable the slot.
- **disable**: Disable the slot.
- **channel**: Configures the channel for the slot.
- **ap**: Configures one 802.11a Cisco access point.
- **chan_width**: Configures channel width for the slot.
- **txpower**: Configures Tx power for the slot.
- **antenna**: Configures the 802.11a antenna.
- **extAntGain**: Configures the 802.11a external antenna gain.
- **antenna_gain**: External antenna gain value in .5 dBi units (i.e. 2.5 dBi = 5).
- **rts**: Configures RTS/CTS for an AP.
- **Cisco_AP**: Specifies the name of the Cisco access point on which the channel is configured.

**Defaults**

None.

**Examples**

This example shows how to enable slot 3 for the access point abc:

```
> config slot 3 enable abc
```

This example shows how to configure rts for the access point abc:

```
> config slot 2 rts abc
```

**Related Commands**

- show mesh ap
- show mesh stats
Configure SNMP Commands

Use the `config snmp` commands to configure Simple Network Management Protocol (SNMP) settings.
config snmp community accessmode

To modify the access mode (read only or read/write) of an SNMP community, use the `config snmp community accessmode` command.

```
config snmp community accessmode {ro | rw} name
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>ro</code></td>
<td>Specifies a read-only mode.</td>
</tr>
<tr>
<td><code>rw</code></td>
<td>Specifies a read/write mode.</td>
</tr>
<tr>
<td><code>name</code></td>
<td>SNMP community name.</td>
</tr>
</tbody>
</table>

**Defaults**

Two communities are provided by default with the following settings:

<table>
<thead>
<tr>
<th>SNMP Community Name</th>
<th>Client IP Address</th>
<th>Client IP Mask</th>
<th>Access Mode</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>public</td>
<td>0.0.0.0</td>
<td>0.0.0.0</td>
<td>Read Only</td>
<td>Enable</td>
</tr>
<tr>
<td>private</td>
<td>0.0.0.0</td>
<td>0.0.0.0</td>
<td>Read/Write</td>
<td>Enable</td>
</tr>
</tbody>
</table>

**Examples**

This example shows how to configure read/write access mode for SNMP community:

```
> config snmp community accessmode rw private
```

**Related Commands**

- `show snmp community`
- `config snmp community mode`
- `config snmp community create`
- `config snmp community delete`
- `config snmp community ipaddr`
config snmp community create

To create a new SNMP community, use the `config snmp community create` command.

```
config snmp community create name
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>SNMP community name. Up to 16 characters.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

Use this command to create a new community with the following default configuration:

**Examples**

This example shows how to create a new SNMP community named test:

```
> config snmp community create test
```

**Related Commands**

- `show snmp community`
- `config snmp community mode`
- `config snmp community accessmode`
- `config snmp community delete`
- `config snmp community ipaddr`
config snmp community delete

To delete an SNMP community, use the `config snmp community delete` command.

```
config snmp community delete name
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>name</th>
<th>SNMP community name.</th>
</tr>
</thead>
</table>

| Defaults           | None.                     |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to delete an SNMP community named test:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; config snmp community delete test</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>show snmp community</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>config snmp community mode</td>
</tr>
<tr>
<td></td>
<td>config snmp community accessmode</td>
</tr>
<tr>
<td></td>
<td>config snmp community create</td>
</tr>
<tr>
<td></td>
<td>config snmp community ipaddr</td>
</tr>
</tbody>
</table>
config snmp community ipaddr

To configure the IP address of an SNMP community, use the `config snmp community ipaddr` command.

```
config snmp community ipaddr ip_address ip_mask name
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ip_address</td>
<td>SNMP community IP address.</td>
</tr>
<tr>
<td>ip_mask</td>
<td>SNMP community subnet mask.</td>
</tr>
<tr>
<td>name</td>
<td>SNMP community name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure an SNMP community with the IP address 10.10.10.10, IP mask 255.255.255.0, and SNMP community named public:

```
> config snmp community ipaddr 10.10.10.10 255.255.255.0 public
```

**Related Commands**

- show snmp community
- config snmp community mode
- config snmp community accessmode
- config snmp community create
- config snmp community delete
- config snmp community ipaddr
config snmp community mode

To enable or disable an SNMP community, use the **config snmp community mode** command.

```plaintext
config snmp community mode {enable | disable} name
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the community.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the community.</td>
</tr>
<tr>
<td>name</td>
<td>SNMP community name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the SNMP community named public:

```plaintext
> config snmp community mode disable public
```

**Related Commands**

- show snmp community
- config snmp community accessmode
- config snmp community create
- config snmp community delete
- config snmp community ipaddr
**config snmp syscontact**

To set the SNMP system contact name, use the `config snmp syscontact` command.

```plaintext
config snmp syscontact contact
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>contact</code></td>
<td>SNMP system contact name. The contact can be up to 31 alphanumeric characters.</td>
</tr>
</tbody>
</table>

| Defaults           | None.                                           |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to set the SNMP system contact named Cisco WLAN Solution_administrator:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>&gt; config snmp syscontact Cisco WLAN Solution_administrator</code></td>
</tr>
</tbody>
</table>

| Related Commands   | show snmpcommunity                              |
**config snmp syslocation**

To configure the SNMP system location name, use the **config snmp syslocation** command.

```plaintext
config snmp syslocation location
```

**Syntax Description**

| **location** | SNMP system location name. The location can be up to 31 alphanumeric characters. |

**Defaults**

None.

**Examples**

This example shows how to configure the SNMP system location name to Building_2a:

```
> config snmp syslocation Building_2a
```

**Related Commands**

- `show snmpcommunity`
config snmp trapreceiver create

To configure a server to receive SNMP traps, use the **config snmp trapreceiver create** command.

```
config snmp trapreceiver create name ip_address
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>SNMP community name. The name contain up to 16 characters.</td>
</tr>
<tr>
<td>ip_address</td>
<td>SNMP community IP address.</td>
</tr>
</tbody>
</table>

**Defaults**
None.

**Usage Guidelines**
The IP address must be valid for the command to add the new server.

**Examples**
This example shows how to add a new SNMP trap receiver with the SNMP community named test and IP address 10.1.1.1:

```
> config snmp trapreceiver create test 10.1.1.1
```

**Related Commands**
show snmp trap
### config snmp trapreceiver delete

To delete a server from the trap receiver list, use the `config snmp trapreceiver delete` command.

```
config snmp trapreceiver delete name
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>name</code></td>
<td>SNMP community name. The name can contain up to 16 characters.</td>
</tr>
</tbody>
</table>

| Defaults            | None.        |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to delete a server named test from the SNMP trap receiver list:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>&gt; config snmp trapreceiver delete test</code></td>
</tr>
</tbody>
</table>

| Related Commands    | `show snmp trap` |
config snmp trapreceiver mode

To send or disable sending traps to a selected server, use the `config snmp trapreceiver mode` command.

```
config snmp trapreceiver mode { enable | disable } name
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables an SNMP trap receiver.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables an SNMP trap receiver.</td>
</tr>
<tr>
<td></td>
<td>name</td>
<td>SNMP community name.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

This command enables or disables the Cisco wireless LAN controller from sending the traps to the selected server.

**Examples**

This example shows how to disable an SNMP trap receiver from sending traps to a server named server1:

```
> config snmp trapreceiver mode disable server1
```

**Related Commands**

`show snmp trap`
config snmp v3user create

To create a version 3 SNMP user, use the `config snmp v3user create` command.

```
config snmp v3user create username { ro | rw } { none | hmacmd5 | hmacsha } { none | des | aescfb128 } [ auth_key ] [ encrypt_key ]
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>username</th>
<th>Version 3 SNMP username.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ro</td>
<td>Specifies a read-only user privilege.</td>
<td></td>
</tr>
<tr>
<td>rw</td>
<td>Specifies a read-write user privilege.</td>
<td></td>
</tr>
<tr>
<td>none</td>
<td>Specifies if no authentication is required.</td>
<td></td>
</tr>
<tr>
<td>hmacmd5</td>
<td>Specifies Hashed Message Authentication Coding Message Digest 5 (HMAC-MD5) for authentication.</td>
<td></td>
</tr>
<tr>
<td>hmacsha</td>
<td>Specifies Hashed Message Authentication Coding-Secure Hashing Algorithm (HMAC-SHA) for authentication.</td>
<td></td>
</tr>
<tr>
<td>none</td>
<td>Specifies if no encryption is required.</td>
<td></td>
</tr>
<tr>
<td>des</td>
<td>Specifies to use Cipher Block Chaining-Digital Encryption Standard (CBC-DES) encryption.</td>
<td></td>
</tr>
<tr>
<td>auth_key</td>
<td>(Optional) Authentication key for the HMAC-MD5 or HMAC-SHA authentication protocol.</td>
<td></td>
</tr>
<tr>
<td>encrypt_key</td>
<td>(Optional) Encryption key for the CBC-DES or CFB-AES-128 encryption protocol.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Defaults</th>
<th>SNMP v3 username</th>
<th>AccessMode</th>
<th>Authentication Encryption</th>
</tr>
</thead>
<tbody>
<tr>
<td>default</td>
<td>Read/Write</td>
<td>HMAC-SHA</td>
<td>CFB-AES</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to add an SNMP username named test with read-only privileges and no encryption or authentication:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>&gt; config snmp v3user create test ro none none</code></td>
</tr>
</tbody>
</table>

| Related Commands | show snmpv3user |
config snmp v3user delete

To delete a version 3 SNMP user, use the `config snmp v3user delete` command.

```
config snmp v3user delete username
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>username</code></td>
<td>Username to delete.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to remove an SNMP user named test:

```
> config snmp v3user delete test
```

**Related Commands**

`show snmp v3user`
### config snmp version

To enable or disable selected SNMP versions, use the `config snmp version` command.

```plaintext
config snmp version {v1 | v2 | v3} {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>v1</th>
<th>v2</th>
<th>v3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Specifies an SNMP version</td>
<td>Specifies an SNMP version</td>
<td>Specifies an SNMP version</td>
</tr>
<tr>
<td></td>
<td>to enable or disable.</td>
<td>to enable or disable.</td>
<td>to enable or disable.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables a specified version.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>disable</td>
<td>Disables a specified version.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Defaults**

All versions enabled

**Examples**

This example shows how to enable SNMP version v1:

```
> config snmp version v1 enable
```

**Related Commands**

`show snmpversion`
Configure Spanning Tree Protocol Commands

Use the `config spanningtree` commands to configure Spanning Tree Protocol settings.
config spanningtree port mode

To turn fast or 802.1D Spanning Tree Protocol (STP) on or off for one or all Cisco wireless LAN
controller ports, use the `config spanningtree port mode` command.

```
config spanningtree port mode {off | 802.1d | fast} {port | all}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>off</td>
<td>Disables STP for the specified ports.</td>
</tr>
<tr>
<td>802.1d</td>
<td>Specifies a supported port mode as 802.1D.</td>
</tr>
<tr>
<td>fast</td>
<td>Specifies a supported port mode as fast.</td>
</tr>
<tr>
<td>port</td>
<td>Port number (1 through 12 or 1 through 24).</td>
</tr>
<tr>
<td>all</td>
<td>Configures all ports.</td>
</tr>
</tbody>
</table>

**Defaults**

The default is that port STP is off.

**Usage Guidelines**

When the Cisco 4400 Series Wireless LAN Controller is configured for port redundancy, STP must be
disabled for all ports on the controller. STP can remain enabled on the switch connected to the controller.

Entering this command allows the controller to set up STP, detect logical network loops, place redundant
ports on standby, and build a network with the most efficient pathways.

**Examples**

This example shows how to disable STP for all Ethernet ports:

```
> config spanningtree port mode off all
```

This example shows how to turn on STP 802.1D mode for Ethernet port 24:

```
> config spanningtree port mode 802.1d 24
```

This example shows how to turn on fast STP mode for Ethernet port 2:

```
> config spanningtree port mode fast 2
```

**Related Commands**

- `show spanningtree port`
- `config spanningtree switch mode`
- `config spanningtree port pathcost`
- `config spanningtree port priority`
To set the Spanning Tree Protocol (STP) path cost for an Ethernet port, use the `config spanningtree port pathcost` command.

```
config spanningtree port pathcost {cost | auto} {port | all}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cost</td>
<td>Cost in decimal as determined by the network planner.</td>
</tr>
<tr>
<td>auto</td>
<td>Specifies the default cost.</td>
</tr>
<tr>
<td>port</td>
<td>Port number (1 through 12 or 1 through 24), or all to configure all ports.</td>
</tr>
<tr>
<td>all</td>
<td>Configure all ports.</td>
</tr>
</tbody>
</table>

**Defaults**

auto.

**Usage Guidelines**

When the Cisco 4400 Series Wireless LAN Controller is configured for port redundancy, STP must be disabled for all ports on the controller. STP can remain enabled on the switch that is connected to the controller.

**Examples**

This example shows how to have the STP algorithm automatically assign a path cost for all ports:

```
> config spanningtree port pathcost auto all
```

This example shows how to have the STP algorithm use a port cost of 200 for port 22:

```
> config spanningtree port pathcost 200 22
```

**Related Commands**

- `show spanningtree port`
- `config spanningtree port mode`
- `config spanningtree port priority`
**config spanningtree port priority**

To configure the Spanning Tree Protocol (STP) port priority, use the `config spanningtree port priority` command.

```
config spanningtree port priority priority_num port
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>priority_num</code></td>
<td>Priority number from 0 to 255.</td>
</tr>
<tr>
<td><code>port</code></td>
<td>Port number (1 through 12 or 1 through 24).</td>
</tr>
</tbody>
</table>

**Defaults**

The default STP priority is 128.

**Usage Guidelines**

When the Cisco 4400 Series Wireless LAN Controller is configured for port redundancy, STP must be disabled for all ports on the controller. STP can remain enabled on the switch connected to the controller.

**Examples**

This example shows how to set Ethernet port 2 to STP priority 100:

```
> config spanningtree port priority 100 2
```

**Related Commands**

- `show spanningtree port`
- `config spanningtree switch mode`
- `config spanningtree port mode`
- `config spanningtree port pathcost`
config spanningtree switch bridgepriority

To set the bridge ID, use the `config spanningtree switch bridgepriority` command.

```
config spanningtree switch bridgepriority priority_num
```

**Syntax Description**

```
priority_num  Priority number between 0 and 65535.
```

**Defaults**

The default is 32768.

**Usage Guidelines**

*Note* When the Cisco 4400 Series Wireless LAN Controller is configured for port redundancy, STP must be disabled for all ports on the controller. STP can remain enabled on the switch connected to the controller.

The value of the writable portion of the Bridge ID, that is, the first two octets of the (8 octet long) Bridge ID. The other (last) 6 octets of the Bridge ID are given by the value of Bridge MAC address. The value may be specified as a number between 0 and 65535.

**Examples**

This example shows how to configure spanning tree values on a per switch basis with the bridge priority 40230:

```
> config spanningtree switch bridgepriority 40230
```

**Related Commands**

- `show spanningtree switch`
- `config spanningtree switch forwarddelay`
- `config spanningtree switch hellotime`
- `config spanningtree switch maxage`
- `config spanningtree switch mode`
config spanningtree switch forwarddelay

To set the bridge timeout, use the `config spanningtree switch forwarddelay` command.

```
config spanningtree switch forwarddelay seconds
```

**Syntax Description**

| seconds | Timeout in seconds (between 4 and 30). |

**Defaults**

The default is 15.

**Usage Guidelines**

The value that all bridges use for `forwarddelay` when this bridge is acting as the root. 802.1D-1990 specifies that the range for this setting is related to the value of the STP bridge maximum age. The granularity of this timer is specified by 802.1D-1990 to be 1 second. An agent may return a badValue error if a set is attempted to a value that is not a whole number of seconds. The default is 15. Valid values are 4 through 30 seconds.

**Examples**

This example shows how to configure spanning tree values on a per switch basis with the bridge timeout as 20 seconds:

```
> config spanningtree switch forwarddelay 20
```

**Related Commands**

- `config spanningtree switch bridgepriority`
- `config spanningtree switch hellotime`
- `config spanningtree switch maxage`
- `config spanningtree switch mode`
- `config switchconfig flowcontrol`
config spanningtree switch hellotime

To set the hello time, use the config spanningtree switch hellotime command.

config spanningtree switch hellotime seconds

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>seconds</th>
<th>STP hello time in seconds.</th>
</tr>
</thead>
</table>

Defaults

The default is 15.

Usage Guidelines

All bridges use this value for HelloTime when this bridge is acting as the root. The granularity of this timer is specified by 802.1D-1990 to be 1 second. Valid values are 1 through 10 seconds.

Examples

This example shows how to configure the STP hello time to 4 seconds:

`> config spanningtree switch hellotime 4`

Related Commands

- show spanningtree switch
- spanningtree switch bridgepriority
- config spanningtree switch forwarddelay
- config spanningtree switch maxage
- config spanningtree switch mode
**config spanningtree switch maxage**

To set the maximum age, use the `config spanningtree switch maxage` command.

```plaintext
config spanningtree switch maxage seconds
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>seconds</td>
<td>STP bridge maximum age in seconds.</td>
</tr>
</tbody>
</table>

**Defaults**
The default is 20.

**Usage Guidelines**
All bridges use this value for MaxAge when this bridge is acting as the root. 802.1D-1990 specifies that the range for this parameter is related to the value of Stp Bridge Hello Time. The granularity of this timer is specified by 802.1D-1990 to be 1 second. Valid values are 6 through 40 seconds.

**Examples**
This example shows how to configure the STP bridge maximum age to 30 seconds:

```
> config spanningtree switch maxage 30
```

**Related Commands**
- `show spanningtree switch`
- `config spanningtree switch bridgepriority`
- `config spanningtree switch forwarddelay`
- `config spanningtree switch hellotime`
- `config spanningtree switch mode`
config spanningtree switch mode

To turn the Cisco wireless LAN controller Spanning Tree Protocol (STP) on or off, use the `config spanningtree switch mode` command.

```
config spanningtree switch mode {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables STP on the switch.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables STP on the switch.</td>
</tr>
</tbody>
</table>

**Defaults**

The default is that STP is disabled.

**Usage Guidelines**

Using this command allows the controller to set up STP, detect logical network loops, place redundant ports on standby, and build a network with the most efficient pathways.

**Examples**

This example shows how to support STP on all Cisco wireless LAN controller ports:

```
> config spanningtree switch mode enable
```

**Related Commands**

- `show spanningtree switch`
- `config spanningtree switch bridgepriority`
- `config spanningtree switch forwarddelay`
- `config spanningtree switch maxage`
- `config spanningtree port mode`
config switchconfig flowcontrol

To enable or disable 802.3x flow control, use the `config switchconfig flowcontrol` command.

```plaintext
config switchconfig flowcontrol {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables 802.3x flow control.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables 802.3x flow control.</td>
</tr>
</tbody>
</table>

| Defaults | Disabled. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to enable 802.3x flow control on Cisco wireless LAN controller parameters:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; config switchconfig flowcontrol enable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>show switchconfig</th>
</tr>
</thead>
</table>
config switchconfig mode

To configure Lightweight Access Port Protocol (LWAPP) transport mode for Layer 2 or Layer 3, use the config switchconfig command.

```config
config switchconfig mode {L2 | L3}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>L2</th>
<th>Specifies Layer 2 as the transport mode.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L3</td>
<td>Specifies Layer 3 as the transport mode.</td>
</tr>
</tbody>
</table>

**Defaults**

L3

**Examples**

This example shows how to configure LWAPP transport mode to Layer 3:

```config
> config switchconfig mode L3
```

**Related Commands**

show switchconfig
config switchconfig secret-obfuscation

To enable or disable secret obfuscation, use the `config switchconfig secret-obfuscation` command.

```
config switchconfig secret-obfuscation {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables secret obfuscation.</td>
</tr>
</tbody>
</table>

**Defaults**

Secrets and user passwords are obfuscated in the exported XML configuration file.

**Usage Guidelines**

To keep the secret contents of your configuration file secure, do not disable secret obfuscation. To further enhance the security of the configuration file, enable configuration file encryption.

**Examples**

This example shows how to enable secret obfuscation:

```
> config switchconfig secret-obfuscation enable
```

**Related Commands**

`show switchconfig`
config sysname

To set the Cisco wireless LAN controller system name, use the `config sysname` command.

```
config sysname name
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>System name. The name can contain up to 31 alphanumeric characters.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the system named Ent_01:

```
> config sysname Ent_01
```

**Related Commands**

- `show sysinfo`
Configure TACACS Commands

Use the `config tacacs` commands to configure TACACS+ settings.
config tacacs acct

To configure TACACS+ accounting server settings, use the config tacacs acct command.

`config tacacs acct add {server_index ip_address port type secret_key} | delete {server_index} | disable {server_index} | enable {server_index} | retransmit-timeout {server_index seconds}`

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>add</code></td>
<td>Adds a new TACACS+ accounting server.</td>
</tr>
<tr>
<td><code>server_index</code></td>
<td>TACACS+ accounting server index (1 to 3).</td>
</tr>
<tr>
<td><code>ip_address</code></td>
<td>IP address for the TACACS+ accounting server.</td>
</tr>
<tr>
<td><code>port</code></td>
<td>Controller port used for the TACACS+ accounting server.</td>
</tr>
<tr>
<td><code>type</code></td>
<td>Type of secret key being used (ASCII or HEX).</td>
</tr>
<tr>
<td><code>secret_key</code></td>
<td>Secret key in ASCII or hexadecimal characters.</td>
</tr>
<tr>
<td><code>delete</code></td>
<td>Deletes a TACACS+ server.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables a TACACS+ server.</td>
</tr>
<tr>
<td><code>enable</code></td>
<td>Enables a TACACS+ server.</td>
</tr>
<tr>
<td><code>retransmit-timeout</code></td>
<td>Changes the default retransmit timeout for the TACACS+ server.</td>
</tr>
<tr>
<td><code>seconds</code></td>
<td>Retransmit timeout (2 to 30 seconds).</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to add a new TACACS+ accounting server index 3 with the IP address 10.0.0.0, port number 10, and secret key 12345678 in ASCII:

```bash
> config tacacs acct add 1 10.0.0.0 10 ascii 12345678
```

This example shows how to change the default retransmit timeout of 30 seconds for the TACACS+ accounting server:

```bash
> config tacacs acct retransmit-timeout 30
```

### Related Commands

- show run-config
- show tacacs acct statistics
- show tacacs summary
config tacacs athr

To configure TACACS+ authorization server settings, use the `config tacacs athr` command.

```
config tacacs athr add {server_index ip_address port type secret_key} | delete {server_index} |
         disable {server_index} | enable {server_index} | retransmit-timeout {server_index seconds}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>add</td>
<td>Adds a new TACACS+ authorization server.</td>
</tr>
<tr>
<td>server_index</td>
<td>TACACS+ authorization server index (1 to 3).</td>
</tr>
<tr>
<td>ip_address</td>
<td>IP address for the TACACS+ authorization server.</td>
</tr>
<tr>
<td>port</td>
<td>Controller port used for the TACACS+ authorization server.</td>
</tr>
<tr>
<td>type</td>
<td>Type of secret key being used (ASCII or HEX).</td>
</tr>
<tr>
<td>secret_key</td>
<td>Secret key in ASCII or hexadecimal characters.</td>
</tr>
<tr>
<td>delete</td>
<td>Deletes a TACACS+ server.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables a TACACS+ server.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables a TACACS+ server.</td>
</tr>
<tr>
<td>retransmit-timeout</td>
<td>Changes the default retransmit timeout for the TACACS+ server.</td>
</tr>
<tr>
<td>seconds</td>
<td>Retransmit timeout (2 to 30 seconds).</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to add a new TACACS+ authorization server index 3 with the IP address 10.0.0.0, port number 4, and secret key 12345678 in ASCII:

```
> config tacacs athr add 3 10.0.0.0 4 ascii 12345678
```

This example shows how to change the default retransmit timeout of 30 seconds for the TACACS+ authorization server:

```
> config tacacs athr retransmit-timeout 30
```

### Related Commands

- `show run-config`
- `show tacacs athr statistics`
- `show tacacs summary`
config tacacs auth

To configure TACACS+ authentication server settings, use the config tacacs auth command.

```
config tacacs auth add {server_index ip_address port type secret_key} | delete {server_index} |
  disable {server_index} | enable {server_index} | retransmit-timeout {server_index seconds}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>add</th>
<th>(Optional) Adds a new TACACS+ authentication server.</th>
</tr>
</thead>
<tbody>
<tr>
<td>server_index</td>
<td>TACACS+ authentication server index (1 to 3).</td>
<td></td>
</tr>
<tr>
<td>ip_address</td>
<td>IP address for the TACACS+ authentication server.</td>
<td></td>
</tr>
<tr>
<td>port</td>
<td>Controller port used for the TACACS+ authentication server.</td>
<td></td>
</tr>
<tr>
<td>type</td>
<td>Type of secret key being used (ASCII or HEX).</td>
<td></td>
</tr>
<tr>
<td>secret_key</td>
<td>Secret key in ASCII or hexadecimal characters.</td>
<td></td>
</tr>
<tr>
<td>delete</td>
<td>(Optional) Deletes a TACACS+ server.</td>
<td></td>
</tr>
<tr>
<td>disable</td>
<td>(Optional) Disables a TACACS+ server.</td>
<td></td>
</tr>
<tr>
<td>enable</td>
<td>(Optional) Enables a TACACS+ server.</td>
<td></td>
</tr>
<tr>
<td>retransmit-timeout</td>
<td>(Optional) Changes the default retransmit timeout for the TACACS+ server.</td>
<td></td>
</tr>
<tr>
<td>seconds</td>
<td>Retransmit timeout (2 to 30 seconds).</td>
<td></td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to add a new TACACS+ authentication server index 2 with the IP address 10.0.0.3, port number 6, and secret key 12345678 in ASCII:

```
> config tacacs auth add 2 10.0.0.3 6 ascii 12345678
```

This example shows how to change the default retransmit timeout of 30 seconds for TACACS+ authentication server:

```
> config tacacs auth retransmit-timeout 30
```

**Related Commands**

- show run-config
- show tacacs auth statistics
- show tacacs summary
**config time manual**

To set the system time, use the **config time manual** command.

```
config time manual MM/DD/YY HH:MM:SS
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM/DD/YY</td>
<td>Date.</td>
</tr>
<tr>
<td>HH:MM:SS</td>
<td>Time.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to configure the system date to 04/04/2010 and time to 15:29:00:

```
> config time manual 04/04/2010 15:29:00
```

### Related Commands

show time
config time ntp

To set the Network Time Protocol (NTP), use the `config time ntp` command.

```
config time ntp {interval seconds | server index ip_address}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>interval</th>
<th>Configures the NTP polling interval.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>seconds</td>
<td>NTP polling interval in seconds (between 6800 and 604800).</td>
</tr>
<tr>
<td></td>
<td>server</td>
<td>Configures the NTP servers.</td>
</tr>
<tr>
<td></td>
<td>index</td>
<td>NTP server index.</td>
</tr>
<tr>
<td></td>
<td>ip_address</td>
<td>NTP server’s IP address. Use 0.0.0.0 to delete the entry.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the NTP polling interval to 7000 seconds:

```
> config time ntp interval 7000
```

**Related Commands**

- `show time`
config time timezone

To configure the system time zone, use the config time timezone command.

    config time timezone { enable | disable } delta_hours delta_mins

Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables daylight saving time.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables daylight saving time.</td>
</tr>
<tr>
<td>delta_hours</td>
<td>Local hour difference from the Universal Coordinated Time (UCT).</td>
</tr>
<tr>
<td>delta_mins</td>
<td>Local minute difference from UCT.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to enable the daylight saving time:

> config time timezone enable 2 0

Related Commands

show time
config time timezone location

To set the location of the time zone in order to have daylight saving time set automatically when it occurs, use the `config time timezone location` command.

```
config time timezone location location_index
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th><code>location_index</code></th>
<th>Number representing the time zone required. The time zones are as follows:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• (GMT-12:00) International Date Line West</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT-11:00) Samoa</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT-10:00) Hawaii</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT-9:00) Alaska</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT-8:00) Pacific Time (US and Canada)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT-7:00) Mountain Time (US and Canada)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT-6:00) Central Time (US and Canada)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT-5:00) Eastern Time (US and Canada)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT-4:00) Atlantic Time (Canada)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT-3:00) Buenos Aires (Argentina)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT-2:00) Mid-Atlantic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT-1:00) Azores</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT) London, Lisbon, Dublin, Edinburgh (default value)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT +1:00) Amsterdam, Berlin, Rome, Vienna</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT +2:00) Jerusalem</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT +3:00) Baghdad</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT +4:00) Muscat, Abu Dhabi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT +4:30) Kabul</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT +5:00) Karachi, Islamabad, Tashkent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT +5:30) Colombo, Kolkata, Mumbai, New Delhi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT +5:45) Katmandu</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT +6:00) Almaty, Novosibirsk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT +6:30) Rangoon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT +7:00) Saigon, Hanoi, Bangkok, Jakatar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT +8:00) Hong Kong, Beijing, Chongquing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT +9:00) Tokyo, Osaka, Sapporo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT +9:30) Darwin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT+10:00) Sydney, Melbourne, Canberra</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT+11:00) Magadan, Solomon Is., New Caledonia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (GMT+12:00) Kamchatka, Marshall Is., Fiji</td>
</tr>
</tbody>
</table>
config time timezone location

Defaults
None.

Examples
This example shows how to set the location of the time zone in order to set the daylight saving time to location index 10 automatically:

> config time timezone location 10

Related Commands
show time
Configure Trap Flag Commands

Use the `config trapflags` commands to configure trap flags settings.
config trapflags 802.11-Security

To enable or disable sending 802.11 security-related traps, use the **config trapflags 802.11-Security** command.

```
config trapflags 802.11-Security wepDecryptError {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables sending 802.11 security-related traps.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables sending 802.11 security-related traps.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to disable the 802.11 security related traps:

```
> config trapflags 802.11-Security wepDecryptError disable
```

**Related Commands**

`show trapflags`
config trapflags aaa

To enable or disable the sending of AAA server-related traps, use the `config trapflags aaa` command.

```
config trapflags aaa {auth | servers} {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>auth</th>
<th>Enables trap sending when an AAA authentication failure occurs for management user, net user, or MAC filter.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>servers</td>
<td>Enables trap sending when no RADIUS servers are responding.</td>
</tr>
<tr>
<td></td>
<td>enable</td>
<td>Enables the sending of AAA server-related traps.</td>
</tr>
<tr>
<td></td>
<td>disable</td>
<td>Disables the sending of AAA server-related traps.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to enable the sending of AAA server-related traps:

```
> config trapflags aaa auth enable
```
To enable or disable the sending of Cisco lightweight access point traps, use the `config trapflags ap` command.

```
config trapflags ap {register | interfaceUp} {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>register</td>
<td>Enables sending a trap when a Cisco lightweight access point registers with Cisco switch.</td>
</tr>
<tr>
<td>interfaceUp</td>
<td>Enables sending a trap when a Cisco lightweight access point interface (A or B) comes up.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables sending access point-related traps.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables sending access point-related traps.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to prevent traps from sending access point-related traps:

```
> config trapflags ap register disable
```

**Related Commands**

`show trapflags`
config trapflags authentication

To enable or disable sending traps with invalid SNMP access, use the config trapflags authentication command.

```
config trapflags authentication {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables sending traps with invalid SNMP access.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables sending traps with invalid SNMP access.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to prevent sending traps on invalid SNMP access:

```
> config trapflags authentication disable
```

**Related Commands**

show trapflags
config trapflags client

To enable or disable the sending of client-related DOT11 traps, use the `config trapflags client` command.

```
config trapflags client {802.11-disassociate | 802.11-deauthenticate | 802.11-authfail | 802.11-assocfail | excluded} {enable | disable}
```

**Syntax Description**
- **802.11-disassociate**: Enables the sending of Dot11 disassociation traps to clients.
- **802.11-deauthenticate**: Enables the sending of Dot11 deauthentication traps to clients.
- **802.11-authfail**: Enables the sending of Dot11 authentication fail traps to clients.
- **802.11-assocfail**: Enables the sending of Dot11 association fail traps to clients.
- **excluded**: Enables the sending of excluded trap to clients.
- **enable**: Enables sending of client-related DOT11 traps.
- **disable**: Disables sending of client-related DOT11 traps.

**Defaults**
Disabled.

**Examples**
This example shows how to enable the sending of Dot11 disassociation trap to clients:

```
> config trapflags client 802.11-disassociate enable
```

**Related Commands**
- `show trapflags`
config trapflags configsave

To enable or disable the sending of configuration-saved traps, use the **config trapflags configsave** command.

```
config trapflags configsave {enable | disable}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables sending of configuration-saved traps.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disables the sending of configuration-saved traps.</td>
<td></td>
</tr>
</tbody>
</table>

### Defaults

Enabled.

### Examples

This example shows how to enable the sending of configuration-saved traps:

```
> config trapflags configsave enable
```

### Related Commands

```
show trapflags
```
config trapflags IPsec

To enable or disable the sending of IPsec traps, use the `config trapflags IPsec` command.

```
config trapflags IPsec { esp-auth | esp-reply | invalidSPI | ike-neg | suite-neg | invalid-cookie } { enable | disable }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>esp-auth</th>
<th>Enables the sending of IPsec traps when an ESP authentication failure occurs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>esp-reply</td>
<td></td>
<td>Enables the sending of IPsec traps when an ESP replay failure occurs.</td>
</tr>
<tr>
<td>invalidSPI</td>
<td></td>
<td>Enables the sending of IPsec traps when an ESP invalid SPI is detected.</td>
</tr>
<tr>
<td>ike-neg</td>
<td></td>
<td>Enables the sending of IPsec traps when an IKE negotiation failure occurs.</td>
</tr>
<tr>
<td>suite-neg</td>
<td></td>
<td>Enables the sending of IPsec traps when a suite negotiation failure occurs.</td>
</tr>
<tr>
<td>invalid-cookie</td>
<td></td>
<td>Enables the sending of IPsec traps when an Isakamp invalid cookie is detected.</td>
</tr>
<tr>
<td>enable</td>
<td></td>
<td>Enables sending of IPsec traps.</td>
</tr>
<tr>
<td>disable</td>
<td></td>
<td>Disables sending of IPsec traps.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to enable the sending of IPsec traps when ESP authentication failure occurs:

```
> config trapflags IPsec esp-auth enable
```

**Related Commands**

`show trapflags`
config trapflags linkmode

To enable or disable Cisco wireless LAN controller level link up/down trap flags, use the `config trapflags linkmode` command.

```
config trapflags linkmode {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables Cisco wireless LAN controller level link up/down trap flags.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables Cisco wireless LAN controller level link up/down trap flags.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to enable the Cisco wireless LAN controller level link up/down trap:

```
> config trapflags linkmode disable
```

**Related Commands**

`show trapflags`
To enable or disable the sending of traps when multiple logins are active, use the `config trapflags multiusers` command.

```
config trapflags multiusers {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables the sending of traps when multiple logins are active.</td>
<td>Disables the sending of traps when multiple logins are active.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to disable the sending of traps when multiple logins are active:

```
> config trapflags multiusers disable
```

**Related Commands**

`show trapflags`
config trapflags rogueap

To enable or disable sending rogue access point detection traps, use the `config trapflags rogueap` command.

```
config trapflags rogueap {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables the sending of rogue access point detection traps.</td>
<td>Disables the sending of rogue access point detection traps.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled

**Examples**

This example shows how to disable the sending of rogue access point detection traps:

```
> config trapflags rogueap disable
```

**Related Commands**

- config rogue ap classify
- config rogue ap friendly
- config rogue ap rldp
- config rogue ap ssid
- config rogue ap timeout
- config rogue ap valid-client
- show rogue ap clients
- show rogue ap detailed
- show rogue ap summary
- show rogue ap friendly summary
- show rogue ap malicious summary
- show rogue ap unclassified summary
- show trapflags
config trapflags rrm-params

To enable or disable the sending of Radio Resource Management (RRM) parameters traps, use the `config trapflags rrm-params` command.

```
config trapflags rrm-params { tx-power | channel | antenna } { enable | disable }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>tx-power</th>
<th>Enables trap sending when the RF manager automatically changes the tx-power level for the Cisco lightweight access point interface.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>channel</td>
<td>Enables trap sending when the RF manager automatically changes the channel for the Cisco lightweight access point interface.</td>
</tr>
<tr>
<td></td>
<td>antenna</td>
<td>Enables trap sending when the RF manager automatically changes the antenna for the Cisco lightweight access point interface.</td>
</tr>
<tr>
<td></td>
<td>enable</td>
<td>Enables the sending of RRM parameter-related traps.</td>
</tr>
<tr>
<td></td>
<td>disable</td>
<td>Disables the sending of RRM parameter-related traps.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to enable the sending of RRM parameter-related traps:

```
> config trapflags rrm-params tx-power enable
```

**Related Commands**

`show trapflags`
**config trapflags rrm-profile**

To enable or disable the sending of Radio Resource Management (RRM) profile-related traps, use the `config trapflags rrm-profile` command.

```
config trapflags rrm-profile {load | noise | interference | coverage} {enable | disable}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>load</strong></td>
<td>Enables trap sending when the load profile maintained by the RF manager fails.</td>
</tr>
<tr>
<td><strong>noise</strong></td>
<td>Enables trap sending when the noise profile maintained by the RF manager fails.</td>
</tr>
<tr>
<td><strong>interference</strong></td>
<td>Enables trap sending when the interference profile maintained by the RF manager fails.</td>
</tr>
<tr>
<td><strong>coverage</strong></td>
<td>Enables trap sending when the coverage profile maintained by the RF manager fails.</td>
</tr>
<tr>
<td><strong>enable</strong></td>
<td>Enables the sending of RRM profile-related traps.</td>
</tr>
<tr>
<td><strong>disable</strong></td>
<td>Disables the sending of RRM profile-related traps.</td>
</tr>
</tbody>
</table>

### Defaults

Enabled.

### Examples

This example shows how to disable the sending of RRM profile-related traps:

```
> config trapflags rrm-profile load disable
```

### Related Commands

`show trapflags`
config trapflags stpmode

To enable or disable the sending of spanning tree traps, use the `config trapflags stpmode` command.

```
config trapflags stpmode
```

**Syntax Description**
- **enable**: Enables the sending of spanning tree traps.
- **disable**: Disables the sending of spanning tree traps.

**Defaults**
Enabled.

**Examples**
This example shows how to disable the sending of spanning tree traps:
```
> config trapflags stpmode disable
```

**Related Commands**
- `show trapflags`
config trapflags wps

To enable or disable Wireless Protection System (WPS) trap sending, use the config trapflags wps command.

    config trapflags wps { enable | disable }

Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables WPS trap sending.</td>
<td>Disables WPS trap sending.</td>
</tr>
</tbody>
</table>

Defaults

Enabled.

Examples

This example shows how to disable the WPS traps sending:

> config trapflags wps disable

Related Commands

show trapflags
Configure Watchlist Commands

Use the `config watchlist` commands to configure watchlist settings.
config watchlist add

To add a watchlist entry for a wireless LAN, use the `config watchlist add` command.

```
config watchlist add {mac MAC | username username}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mac MAC</td>
<td>Specifies the MAC address of the wireless LAN.</td>
</tr>
<tr>
<td>username username</td>
<td>Specifies the name of the user to watch.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to add a watchlist entry for the MAC address a5:6b:ac:10:01:6b:

```
> config watchlist add mac a5:6b:ac:10:01:6b
```

**Related Commands**

- `config watchlist delete`
- `config watchlist enable`
- `config watchlist disable`
- `show watchlist`
config watchlist delete

To delete a watchlist entry for a wireless LAN, use the `config watchlist delete` command.

```
cfgn watchlist delete {mac MAC | username username}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mac MAC</td>
<td>Specifies the MAC address of the wireless LAN to delete from the list.</td>
</tr>
<tr>
<td>username username</td>
<td>Specifies the name of the user to delete from the list.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to delete a watchlist entry for the MAC address a5:6b:ac:10:01:6b:

```
> config watchlist delete mac a5:6b:ac:10:01:6b
```

**Related Commands**

- `config watchlist add`
- `config watchlist enable`
- `config watchlist disable`
- `show watchlist`
**config watchlist disable**

To disable the client watchlist, use the `config watchlist disable` command.

```
> config watchlist disable
```

### Syntax Description

This command has no arguments or keywords.

### Defaults

None.

### Examples

This example shows how to disable the client watchlist:

```
> config watchlist disable
```

### Related Commands

- `config watchlist add`
- `config watchlist delete`
- `show watchlist`
**config watchlist enable**

To enable a watchlist entry for a wireless LAN, use the **config watchlist enable** command.

```
config watchlist enable
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to enable a watchlist entry:

```
> config watchlist enable
```

**Related Commands**

- config watchlist add
- config watchlist delete
- show watchlist
Configure Wireless LAN Commands

Use the `config wlan` commands to configure wireless LAN command settings.
config wlan

To create, delete, enable, or disable a wireless LAN, use the `config wlan` command.

```
config wlan {enable | disable | create | delete} wlan_id [name | foreignAp name ssid | all]
```

**Syntax Description**

- `enable`: Enables a wireless LAN.
- `disable`: Disables a wireless LAN.
- `create`: Creates a wireless LAN.
- `delete`: Deletes a wireless LAN.
- `wlan_id`: Wireless LAN identifier between 1 and 512.
- `name`: (Optional) WLAN profile name up to 32 alphanumeric characters.
- `foreignAp`: (Optional) Specifies the third-party access point settings.
- `ssid`: SSID (network name) up to 32 alphanumeric characters.
- `all`: (Optional) Specifies all wireless LANs.

**Defaults**

None.

**Usage Guidelines**

When you create a new WLAN using the `config wlan create` command, it is created in disabled mode. Leave it disabled until you have finished configuring it.

If you do not specify an SSID, the profile name parameter is used for both the profile name and the SSID.

If the management and AP-manager interfaces are mapped to the same port and are members of the same VLAN, you must disable the WLAN before making a port-mapping change to either interface. If the management and AP-manager interfaces are assigned to different VLANs, you do not need to disable the WLAN.

An error message appears if you try to delete a WLAN that is assigned to an access point group. If you proceed, the WLAN is removed from the access point group and from the access point’s radio.

**Examples**

This example shows how to enable wireless LAN identifier 16:

```
> config wlan enable 16
```

**Related Commands**

- `show ap wlan`
- `show wlan`
config wlan 7920-support

To configure support for phones, use the `config wlan 7920-support` command.

```
config wlan 7920-support {client-cac-limit | ap-cac-limit} {enable | disable} wlan_id
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ap-cac-limit</td>
<td>Supports phones that require client-controlled Call Admission Control (CAC) that expect the Cisco vendor-specific information element (IE).</td>
</tr>
<tr>
<td>client-cac-limit</td>
<td>Supports phones that require access point-controlled CAC that expect the IEEE 802.11e Draft 6 QBSS-load.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables phone support.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables phone support.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

You cannot enable both WMM mode and client-controlled CAC mode on the same WLAN.

**Examples**

This example shows how to enable the phone support that requires client-controlled CAC with wireless LAN ID 8:

```
> config wlan 7920-support ap-cac-limit enable 8
```

**Related Commands**

`show wlan`
config wlan 802.11e

To configure 802.11e support on a wireless LAN, use the `config wlan 802.11e` command.

```
config wlan 802.11e {allow | disable | require} wlan_id
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>allow</td>
<td>Allows 802.11e-enabled clients on the wireless LAN.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables 802.11e on the wireless LAN.</td>
</tr>
<tr>
<td>require</td>
<td>Requires 802.11e-enabled clients on the wireless LAN.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

802.11e provides quality of service (QoS) support for LAN applications, which are critical for delay sensitive applications such as Voice over Wireless IP (VoWIP).

802.11e enhances the 802.11 Media Access Control layer (MAC layer) with a coordinated time division multiple access (TDMA) construct, and adds error-correcting mechanisms for delay sensitive applications such as voice and video. The 802.11e specification provides seamless interoperability and is especially well suited for use in networks that include a multimedia capability.

**Examples**

This example shows how to allow 802.11e on the wireless LAN with LAN ID 1:

```
> config wlan 802.11e allow 1
```

**Related Commands**

`show trapflags`
To configure a user policy override via AAA on a wireless LAN, use the `config wlan aaa-override` command.

```
config wlan aaa-override { enable | disable } { wlan_id | foreignAp}
```

**Syntax Description**

- `enable`: Enables policy override.
- `disable`: Disables policy override.
- `wlan_id`: Wireless LAN identifier between 1 and 512.
- `foreignAp`: Specifies third-party access points.

**Defaults**

Disabled.

**Usage Guidelines**

When AAA override is enabled, and a client has conflicting AAA and Cisco wireless LAN controller wireless LAN authentication parameters, client authentication is performed by the AAA server. As part of this authentication, the operating system will move clients from the default Cisco wireless LAN VLAN to a VLAN returned by the AAA server and predefined in the controller interface configuration (only when configured for MAC filtering, 802.1X, and/or WPA operation). In all cases, the operating system will also use QoS, DSCP, 802.1p priority tag values, and ACLs provided by the AAA server, as long as they are predefined in the controller interface configuration. (This VLAN switching by AAA override is also referred to as Identity Networking.)

If the corporate wireless LAN primarily uses a management interface assigned to VLAN 2, and if AAA override returns a redirect to VLAN 100, the operating system redirects all client transmissions to VLAN 100, regardless of the physical port to which VLAN 100 is assigned.

When AAA override is disabled, all client authentication defaults to the controller authentication parameter settings, and authentication is performed by the AAA server if the controller wireless LAN does not contain any client-specific authentication parameters.

The AAA override values may come from a RADIUS server, for example.

**Examples**

This example shows how to configure user policy override via AAA on wireless LAN ID 1:

```
> config wlan aaa-override enable 1
```

**Related Commands**

- `show wlan`
config wlan acl

To configure a wireless LAN access control list (ACL), use the `config wlan acl` command.

```
config wlan acl wlan_id [acl_name | none]
```

### Syntax Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier (1 to 512).</td>
</tr>
<tr>
<td>acl_name</td>
<td>(Optional) ACL name.</td>
</tr>
<tr>
<td>none</td>
<td>(Optional) Clears the ACL settings for the specified wireless LAN.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to configure a WLAN access control list with WLAN ID 1 and ACL named `office_1`:

```
-> config wlan acl 1 office_1
```

### Related Commands

- `show wlan`
To manage access point group VLAN features, use the `config wlan apgroup` command.

```
config wlan apgroup {add apgroup_name wlan_id interface_name |
delete apgroup_name |
description apgroup_name description |
interface-mapping {add | delete} apgroup_name wlan_id interface_name |
nac {enable | disable} apgroup_name wlan_id |
radio-policy apgroup_name wlan-id {802.11a-only | 802.11bg | 802.11g-only | all}}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>add</strong></td>
<td>Creates a new access point group.</td>
</tr>
<tr>
<td><strong>apgroup_name</strong></td>
<td>Access point group name.</td>
</tr>
<tr>
<td><strong>wlan_id</strong></td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td><strong>interface_name</strong></td>
<td>Interface to which you want to map the access point group.</td>
</tr>
<tr>
<td><strong>delete</strong></td>
<td>Removes a wireless LAN from an access point group.</td>
</tr>
<tr>
<td><strong>description</strong></td>
<td>Describes an access point group.</td>
</tr>
<tr>
<td><strong>description</strong></td>
<td>Description of the access point group.</td>
</tr>
<tr>
<td><strong>interface-mapping</strong></td>
<td>Assigns or removes a Wireless LAN from an access point group.</td>
</tr>
<tr>
<td><strong>nac</strong></td>
<td>Enables or disables Network Admission Control (NAC) out-of-band support on an access point group.</td>
</tr>
<tr>
<td><strong>enable</strong></td>
<td>Turns on NAC out-of-band support on an access point group.</td>
</tr>
<tr>
<td><strong>disable</strong></td>
<td>Turns off NAC out-of-band support on an access point group.</td>
</tr>
<tr>
<td><strong>radio-policy</strong></td>
<td>Configures WLAN radio policy on the AP group.</td>
</tr>
<tr>
<td><strong>802.11a-only</strong></td>
<td>Configures the WLAN on 802.11a only.</td>
</tr>
<tr>
<td><strong>802.11bg</strong></td>
<td>Configures the WLAN on 802.11b/g only, 802.11b works only if 802.11g is disabled.</td>
</tr>
<tr>
<td><strong>802.11g-only</strong></td>
<td>Configures the WLAN on 802.11g only.</td>
</tr>
<tr>
<td><strong>all</strong></td>
<td>Configures the WLAN on all radio bands.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**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 in controller software release 6.0, move all APs in this group to another group. The access points are not moved to the default-group access point group as in previous releases. To see the APs, enter the `show wlan apgroups` command. To move APs, enter the `config ap group-name groupname Cisco_AP` command.

**Examples**

This example shows how to enable the NAC out-of-band support on access point group 4:

```
> config wlan apgroup nac enable apgroup 4
```
Related Commands

- config guest-lan nac
- config wlan nac
- debug group
- show ap stats
- show ap summary
- show ap wlan
- show nac statistics
- show nac summary
- show wlan
config wlan broadcast-ssid

To configure an Service Set Identifier (SSID) broadcast on a wireless LAN, use the `config wlan broadcast-ssid` command.

```
config wlan broadcast-ssid {enable | disable} wlan_id
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables SSID broadcasts on a wireless LAN.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables SSID broadcasts on a wireless LAN.</td>
</tr>
<tr>
<td></td>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Examples**

This example shows how to configure an SSID broadcast on wireless LAN ID 1:

```
> config wlan broadcast-ssid enable 1
```

**Related Commands**

show wlan
config wlan call-snoop

To enable or disable Voice-over-IP (VoIP) snooping for a particular WLAN, use the config wlan call-snoop command.

```
cfg wlan call-snoop {enable | disable} wlan_id
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables VoIP snooping on a wireless LAN.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables VoIP snooping on a wireless LAN.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Command Default**

None.

**Usage Guidelines**

WLAN should be with Platinum QoS and it needs to be disabled while invoking this CLI.

**Examples**

This example shows how to enable VoIP snooping for WLAN 3:

```
> config wlan call-snoop 3 enable
```

**Related Commands**

- show wlan
- show call-control ap
- show call-control client
- config wlan
To enable or disable Coverage Hole Detection (CHD) for a wireless LAN, use the `config wlan chd` command.

```
config wlan chd wlan_id {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>wlan_id</code></td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td><code>enable</code></td>
<td>Enables SSID broadcasts on a wireless LAN.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables SSID broadcasts on a wireless LAN.</td>
</tr>
</tbody>
</table>

**Command Default**

None.

**Examples**

This example shows how to enable CHD for WLAN 3:

```
> config wlan chd 3 enable
```

**Related Commands**

- `show wlan`
- `config ap wlan`
- `config wlan`
To enable or disable Aironet information elements (IEs) for a WLAN, use the `config wlan ccx aironet-ie` command.

```
cfg> config wlan ccx aironet-ie { enable | disable }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>Enables the Aironet information elements.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables the Aironet information elements.</td>
</tr>
</tbody>
</table>

**Command Default**

None.

**Examples**

This example shows how to enable Aironet information elements for a WLAN:

```
> config wlan ccx aironet-ie enable
```

**Related Commands**

- `config wlan`
- `config wlan security ckip`
- `show client detail`
config wlan channel-scan defer-priority

To configure the controller to defer priority markings for packets that can defer off channel scanning, use the `config wlan channel-scan defer-priority` command.

```
config wlan channel-scan defer-priority  priority [enable | disable] wlan_id
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>priority</code></td>
<td>User priority value (0 to 7).</td>
</tr>
<tr>
<td><code>enable</code></td>
<td>(Optional) Enables packet at given priority to defer off channel scanning.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>(Optional) Disables packet at given priority to defer off channel scanning.</td>
</tr>
<tr>
<td><code>wlan_id</code></td>
<td>Wireless LAN identifier (1 to 512).</td>
</tr>
</tbody>
</table>

**Command Default**

None.

**Usage Guidelines**

The priority value should be set to 6 on the client and on the WLAN.

**Examples**

This example shows how to enable the controller to defer priority markings that can defer off channel scanning with user priority value 6 and WLAN id 30:

```
> config wlan channel-scan defer-priority 6 enable 30
```

**Related Commands**

- `config wlan`
- `config wlan channel-scan defer-time`
- `show client detail`
config wlan channel-scan defer-time

To assign the channel scan defer time in milliseconds, use the config wlan channel-scan defer-time command.

config wlan channel-scan defer-time msecs wlan_id

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>msecs</td>
<td>Deferral time in milliseconds (0 to 60000 milliseconds).</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier (1 to 512).</td>
</tr>
</tbody>
</table>

**Command Default**

None.

**Usage Guidelines**

The time value in milliseconds should match the requirements of the equipment on your wlan.

**Examples**

This example shows how to assign the scan defer time to 40 milliseconds for WLAN id 50:

```plaintext
> config wlan channel-scan defer-time 40 50
```

**Related Commands**

- config wlan
- config wlan channel-scan defer-priority
- show client detail
config wlan dhcp_server

To configure the internal DHCP server for a wireless LAN, use the `config wlan dhcp_server` command.

```
config wlan dhcp_server {wlan_id | foreignAp} ip_address [required]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>wlan_id</code></td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td><code>foreignAp</code></td>
<td>Specifies third-party access points.</td>
</tr>
<tr>
<td><code>ip_address</code></td>
<td>IP address of the internal DHCP server (this parameter is required).</td>
</tr>
<tr>
<td><code>required</code></td>
<td>(Optional) Specifies whether DHCP address assignment is required.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

The preferred method for configuring DHCP is to use the primary DHCP address assigned to a particular interface instead of the DHCP server override. If you enable the override, you can use the `show wlan` command to verify that the DHCP server has been assigned to the WLAN.

**Examples**

This example shows how to configure an IP address 10.10.2.1 of the internal DHCP server for wireless LAN ID 16:

```
> config wlan dhcp_server 16 10.10.2.1
```

**Related Commands**

- config dhcp
- config dhcp proxy
- config interface dhcp
- debug dhcp
- debug dhcp service-port
- debug disable-all
- show dhcp
- show dhcp proxy
**config wlan diag-channel**

To enable the diagnostic channel troubleshooting on a particular WLAN, use the `config wlan diag-channel` command.

```
config wlan diag-channel [enable | disable] wlan_id
```

---

**Syntax Description**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>(Optional) Enables the wireless LAN diagnostic channel.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>(Optional) Disables the wireless LAN diagnostic channel.</td>
</tr>
<tr>
<td><code>wlan_id</code></td>
<td>Wireless LAN identifier (1 to 512).</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the wireless LAN diagnostic channel for WLAN ID 1:

```
> config wlan diag-channel enable 1
```

**Related Commands**

- `show run-config`
- `show wlan`
config wlan dtim

To configure a Delivery Traffic Indicator Message (DTIM) for 802.11 radio network `config wlan dtim` command.

```
config wlan dtim {802.11a | 802.11b} dtim wlan_id
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>802.11a</th>
<th>Configures DTIM for the 802.11a radio network.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>802.11b</td>
<td>Configures DTIM for the 802.11b radio network.</td>
</tr>
<tr>
<td></td>
<td>dtim</td>
<td>Value for DTIM (between 1 to 255 inclusive).</td>
</tr>
<tr>
<td></td>
<td>wlan_id</td>
<td>Number of the WLAN to be configured.</td>
</tr>
</tbody>
</table>

**Defaults**
The default is DTIM 1.

**Examples**
This example shows how to configure DTIM for 802.11a radio network with DTIM value 128 and WLAN ID 1:

```
> config wlan dtim 802.11a 128 1
```

**Related Commands**
`show wlan`
**config wlan exclusionlist**

To configure the wireless LAN exclusion list, use the `config wlan exclusionlist` command.

```plaintext
config wlan exclusionlist {wlan_id [enabled | disabled | time] | foreignAp [enabled | disabled | time]}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier (1 to 512).</td>
</tr>
<tr>
<td>enabled</td>
<td>(Optional) Enables the exclusion list for the specified wireless LAN or foreign access point.</td>
</tr>
<tr>
<td>disabled</td>
<td>(Optional) Disables the exclusion list for the specified wireless LAN or a foreign access point.</td>
</tr>
<tr>
<td>time</td>
<td>(Optional) Exclusion list timeout in seconds. A value of zero (0) specifies infinite time.</td>
</tr>
<tr>
<td>foreignAp</td>
<td>Specifies a third-party access point.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

This command replaces the `config wlan blacklist` command.

### Examples

This example shows how to enable the exclusion list for the WLAN ID 1:

```plaintext
> config wlan exclusionlist 1 enabled
```

### Related Commands

- `show wlan`
- `show wlan summary`
config wlan h-reap learn-ipaddr

To enable or disable client IP address learning for the Cisco WLAN controller, use the `config wlan h-reap learn-ipaddr` command.

```
config wlan h-reap learn-ipaddr wlan_id {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables client IP address learning on a wireless LAN.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables client IP address learning on a wireless LAN.</td>
</tr>
</tbody>
</table>

| Defaults            | Disabled when the `config wlan h-reap local-switching` command is disabled.  |
|                     | Enabled when the `config wlan h-reap local-switching` command is enabled.   |

**Usage Guidelines**

If the client is configured with Layer 2 encryption, the controller cannot learn the client IP address, and the controller will periodically drop the client. Disable this option to keep the client connection without waiting to learn the client IP address.

**Note**
The ability to disable IP address learning is not supported with H-REAP central switching.

**Examples**

This example shows how to disable client IP address learning for WLAN 6:

```
> config wlan h-reap learn-ipaddr disable 6
```

**Related Commands**

`config wlan h-reap local-switching`

`show wlan`
**config wlan h-reap local-switching**

To configure the WLAN for local switching, use the `config wlan h-reap local-switching` command.

```
config wlan h-reap local-switching {enable | disable} wlan_id
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>Enables local switching on a wireless LAN.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables local switching on a wireless LAN.</td>
</tr>
<tr>
<td><code>wlan_id</code></td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Usage Guidelines**

When you enable the `config wlan h-reap local-switching` command, the `config wlan h-reap learn-ipaddr` command is enabled by default.

**Note**

The ability to disable IP address learning is not supported with HREAP central switching.

**Examples**

This example shows how to enable WLAN 6 for local switching:

```
> config wlan h-reap local-switching enable 6
```

**Related Commands**

- `config wlan h-reap learn-ipaddr`
- `show wlan`
config wlan interface

To configure a wireless LAN interface, use the `config wlan interface` command.

```
config wlan interface {wlan_id | foreignAp} interface-name
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>(Optional) Wireless LAN identifier (1 to 512)</td>
</tr>
<tr>
<td>foreignAp</td>
<td>Specifies third-party access points.</td>
</tr>
<tr>
<td>interface-name</td>
<td>Interface name.</td>
</tr>
</tbody>
</table>

**Defaults**
None.

**Examples**
This example shows how to configure an interface named VLAN901:

```
> config wlan interface 16 VLAN901
```

**Related Commands**
show wlan
config wlan IPv6Support

To configure IPv6 support on a wireless LAN, use the `config wlan IPv6Support` command.

```
config wlan IPv6support {enable | disable} wlan_id
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>enable</strong></td>
<td>Enables IPv6 support on a wireless LAN.</td>
</tr>
<tr>
<td><strong>disable</strong></td>
<td>Disables IPv6 support on a wireless LAN.</td>
</tr>
<tr>
<td><strong>wlan_id</strong></td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Defaults**
None.

**Examples**
This example shows how to enable WLAN 6 for local switching:
```
> config wlan IPv6support enable 6
```

**Related Commands**
`show wlan`
config wlan ldap

To add or delete a link to a configured Lightweight Directory Access Protocol (LDAP) server, use the config wlan ldap command.

```
config wlan ldap { add wlan_id server_id | delete wlan_id { all | server_id } }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>add</th>
<th>Adds a link to a configured LDAP server.</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
<td></td>
</tr>
<tr>
<td>server_id</td>
<td>LDAP server index.</td>
<td></td>
</tr>
<tr>
<td>delete</td>
<td>Removes the link to a configured LDAP server.</td>
<td></td>
</tr>
<tr>
<td>all</td>
<td>Specifies all LDAP servers.</td>
<td></td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

Use this command to specify the LDAP server priority for the WLAN.

To specify the LDAP server priority, one of the following must be configured and enabled:

- 802.1X authentication and Local EAP
- Web authentication and LDAP

**Note**

Local EAP was introduced in controller software release 4.1; LDAP support on Web authentication was introduced in controller software release 4.2.

**Examples**

This example shows how to add a link to a configured LDAP server with the WLAN ID 100 and server ID 4:

```
> config wlan ldap add 100 4
``` 

**Related Commands**

config ldap
config wlan load-balance

To override the global load balance configuration and enable or disable load balancing on a particular WLAN, use the `config wlan load-balance` command.

```
config wlan load-balance allow {enable | disable} wlan_id
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables band selection on a wireless LAN.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables band selection on a wireless LAN.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Defaults**

Enabled.

**Examples**

This example shows how to enable band selection on a wireless LAN with WLAN ID 3:

```
> config wlan load-balance allow enable 3
```

**Related Commands**

`config load-balancing`
**config wlan mac-filtering**

To change the state of MAC filtering on a wireless LAN, use the `config wlan mac-filtering` command.

```
config wlan mac-filtering {enable | disable} {wlan_id | foreignAp}
```

**Syntax Description**

- `enable` Enables MAC filtering on a wireless LAN.
- `disable` Disables MAC filtering on a wireless LAN.
- `wlan_id` Wireless LAN identifier between 1 and 512.
- `foreignAp` Specifies third-party access points.

**Defaults**

None.

**Examples**

This example shows how to enable the MAC filtering on WLAN ID 1:

```
> config wlan mac-filtering enable 1
```

**Related Commands**

- `show wlan`
**config wlan media-stream**

To configure multicast-direct for wireless LAN’s media stream, use the `config wlan media-stream` command.

```
config wlan media-stream multicast-direct {wlan_id | all} {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>wlan_id</code></td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Configures the wireless LAN on all media streams.</td>
</tr>
<tr>
<td><code>enable</code></td>
<td>Enables global multicast to unicast conversion.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables global multicast to unicast conversion.</td>
</tr>
</tbody>
</table>

**Defaults** None.

**Usage Guidelines** Media stream multicast-direct requires load based Call Admission Control (CAC) to run. WLAN quality of service (QoS) needs to be set to either gold or platinum.

**Examples** This example shows how to enable the global multicast-direct media stream with WLAN ID 2:

```
> config wlan media-stream multicast-direct 2 enable
```

**Related Commands**

- `config wlan`
- `config wlan qos`
- `show wlan`
config wlan mfp

To configure management frame protection (MFP) options for the wireless LAN, use the `config wlan mfp` command.

```plaintext
config wlan mfp {client [enable | disable] wlan_id |
infrastructure protection [enable | disable] wlan_id}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>client</td>
<td>Configures client MFP for the wireless LAN.</td>
</tr>
<tr>
<td>enable</td>
<td>(Optional) Enables the feature.</td>
</tr>
<tr>
<td>disable</td>
<td>(Optional) Disables the feature.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier (1 to 512).</td>
</tr>
<tr>
<td>infrastructure</td>
<td>(Optional) Configures the infrastructure MFP for the wireless LAN.</td>
</tr>
<tr>
<td>protection</td>
<td></td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure client management frame protection for WLAN ID 1:

- `config wlan mfp client enable 1`

**Related Commands**

- `show run-config`
- `show wlan summary`
- `show wlan`
config wlan mobility anchor

To change the state of MAC filtering on a wireless LAN, use the `config wlan mobility anchor` command.

```
config wlan mobility anchor { add | delete } wlan_id ip_address
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>add</td>
<td>Enables MAC filtering on a wireless LAN.</td>
</tr>
<tr>
<td>delete</td>
<td>Disables MAC filtering on a wireless LAN.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>ip_address</td>
<td>Member switch IP address for anchoring the wireless LAN.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to configure the mobility wireless LAN anchor list with WLAN ID 4 and IP address 192.168.0.14:

```
> config wlan mobility anchor add 4 192.168.0.14
```

Related Commands

- `config guest-lan mobility anchor`
- `config mobility group domain`
- `config mobility group keepalive count`
- `config mobility group keepalive interval`
- `config mobility group member`
- `config mobility group multicast-address`
- `config mobility multicast-mode`
- `config mobility secure-mode`
- `config mobility statistics reset`
- `debug mobility`
- `show mobility anchor`
- `show mobility statistics`
- `show mobility summary`
config wlan nac

To enable or disable Network Admission Control (NAC) out-of-band support for a WLAN, enter this command:

```
config wlan nac {enable | disable} wlan_id
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables NAC out-of-band support.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables NAC out-of-band support.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>WLAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable NAC out-of-band support:

```
> config wlan nac enable 13
```

**Related Commands**

- show nac statistics
- show nac summary
- config guest-lan nac
- debug nac
config wlan passive-client

To configure passive-client feature on a wireless LAN, use the config wlan passive-client command.

    config wlan passive-client {enable | disable} wlan_id

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the passive-client feature on a WLAN.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the passive-client feature on a WLAN.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>WLAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

You need to enable the global multicast mode and multicast-multicast mode by using the config network multicast global and config network multicast mode commands before entering this command.

**Note**

You should configure the multicast in multicast-multicast mode only not in unicast mode. The passive client feature does not work with multicast-unicast mode in this release.

**Examples**

This example shows how to configure the passive client on wireless LAN ID 2:

```
> config wlan passive-client enable 2
```

**Related Commands**

- config wlan
- config wlan qos
- config network multicast global
- config network multicast mode
- show wlan
config wlan peer-blocking

To configure peer-to-peer blocking on a WLAN, use the `config wlan peer-blocking` command.

`config wlan peer-blocking {disable | drop | forward-upstream} wlan_id`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>disable</td>
<td>Disables peer-to-peer blocking and bridge traffic locally within the controller whenever possible.</td>
</tr>
<tr>
<td>drop</td>
<td>Causes the controller to discard the packets.</td>
</tr>
<tr>
<td>forward-upstream</td>
<td>Causes the packets to be forwarded on the upstream VLAN. The device above the controller decides what action to take regarding the packets.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>WLAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to disable the peer-to-peer blocking for WLAN ID 1:

```
> config wlan peer-blocking disable 1
```

**Related Commands**

`show wlan`
**config wlan qos**

To change the quality of service for a wireless LAN, use the `config wlan qos` command.

```
cfg wlan qos wlan_id {bronze | silver | gold | platinum}
cfg wlan qos foreignAp {bronze | silver | gold | platinum}
```

**Syntax Description**

- `wlan_id`  
  Wireless LAN identifier between 1 and 512.
- `foreignAp`  
  Specifies third-party access points.
- `bronze`  
  Specifies the bronze QoS policy.
- `silver`  
  Specifies the silver QoS policy.
- `gold`  
  Specifies the gold QoS policy.
- `platinum`  
  Specifies the platinum QoS policy.

**Defaults**

Silver.

**Examples**

This example shows how to set the highest level of service on wireless LAN 1:

```
> config wlan qos 1 gold
```

**Related Commands**

`show wlan`
config wlan radio

To set the Cisco radio policy on a wireless LAN, use the **config wlan radio** command.

```
config wlan radio wlan_id {all | 802.11a | 802.11bg | 802.11g | 802.11ag}
```

**Syntax Description**

- **wlan_id**: Wireless LAN identifier between 1 and 512.
- **all**: Configures the wireless LAN on all radio bands.
- **802.11a**: Configures the wireless LAN on only 802.11a.
- **802.11bg**: Configures the wireless LAN on only 802.11b/g (only 802.11b if 802.11g is disabled).
- **802.11g**: Configures the wireless LAN on 802.11g only.

**Defaults**

None.

**Examples**

This example shows how to configure the wireless LAN on all radio bands:

```
> config wlan radio 1 all
```

**Related Commands**

- **config 802.11a enable**
- **config 802.11a disable**
- **config 802.11b enable**
- **config 802.11b disable**
- **config 802.11b 11gSupport enable**
- **config 802.11b 11gSupport disable**
- **show wlan**
config wlan radius_server

To configure a wireless LAN’s RADIUS servers, use the **config wlan radius_server** command.

```
config wlan radius_server {auth | acct} {enable wlan_id | disable wlan_id} {add wlan_id server_id | delete wlan_id {all | server_id}}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>auth</td>
<td>Configures a RADIUS authentication or accounting server.</td>
</tr>
<tr>
<td>acct</td>
<td>Configures a RADIUS authentication or accounting server.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables RADIUS authentication or accounting for this WLAN.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables RADIUS authentication or accounting for this WLAN.</td>
</tr>
<tr>
<td>add</td>
<td>Adds a link to a configured RADIUS Server.</td>
</tr>
<tr>
<td>server_id</td>
<td>RADIUS server index.</td>
</tr>
<tr>
<td>delete</td>
<td>Deletes a link to a configured RADIUS server.</td>
</tr>
<tr>
<td>all</td>
<td>Deletes all links to configured RADIUS servers.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to add a link to a configured RADIUS server with WLAN ID 1 and Server ID 1:

```
> config wlan radius_server auth add 1 1
```

**Related Commands**

- config 802.11a enable
- config 802.11a disable
- config 802.11b enable
- config 802.11b disable
- config 802.11b 11gSupport enable
- config 802.11b 11gSupport disable
- show wlan
config wlan radius_server overwrite-interface

To configure a wireless LAN’s RADIUS dynamic interface, use the `config wlan radius_server overwrite-interface` command.

```
config wlan radius_server overwrite-interface {enable | disable} wlan_id
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables RADIUS dynamic interface for this WLAN.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables RADIUS dynamic interface for this WLAN.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

The controller uses the management interface as identity. If the RADIUS server is on a directly connected dynamic interface, the traffic is sourced from the dynamic interface. Otherwise, the management IP address is used.

If the feature is enabled, controller uses the interface specified on the WLAN configuration as identity and source for all RADIUS related traffic on the WLAN.

**Examples**

This example shows how to enable RADIUS dynamic interface for a WLAN with an ID 1:

```
> config wlan radius_server overwrite-interface enable 1
```

**Related Commands**

- config 802.11a enable
- config 802.11a disable
- config 802.11b enable
- config 802.11b disable
- config 802.11b 11gSupport enable
- config 802.11b 11gSupport disable
- show wlan
Configure Wireless LAN Security Commands

Use the `config wlan security` commands to configure wireless LAN security settings.
# config wlan security 802.1X

To change the state of 802.1X security on the wireless LAN Cisco radios, use the `config wlan security 802.1X` command.

```
config wlan security 802.1X { enable { wlan_id | foreignAp } | disable { wlan_id | foreignAp } | encryption { wlan_id | foreignAp } { 0 | 40 | 104 } }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the 802.1X settings.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>foreignAp</td>
<td>Specifies third-party access points.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the 802.1X settings.</td>
</tr>
<tr>
<td>0</td>
<td>WEP key size of 0 (no encryption) bits. The default value is 104.</td>
</tr>
<tr>
<td>Note</td>
<td>All keys within a wireless LAN must be the same size.</td>
</tr>
<tr>
<td>40</td>
<td>WEP key size of 40 bits. The default value is 104.</td>
</tr>
<tr>
<td>Note</td>
<td>All keys within a wireless LAN must be the same size.</td>
</tr>
<tr>
<td>104</td>
<td>WEP key size of 104 bits. The default value is 104.</td>
</tr>
<tr>
<td>Note</td>
<td>All keys within a wireless LAN must be the same size.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

To change the encryption level of 802.1X security on the wireless LAN Cisco radios, use the following key sizes:

- 0 — no 802.1X encryption.
- 40 — 40/64-bit encryption.
- 104 — 104/128-bit encryption. (This is the default encryption setting.)

**Examples**

This example shows how to configure 802.1X security on WLAN ID 16:

```
> config wlan security 802.1X enable 16
```

**Related Commands**

`show wlan`
config wlan security ckip

To configure Cisco Key Integrity Protocol (CKIP) security options for the wireless LAN, use the config wlan security ckip command.

```
config wlan security ckip {enable | disable} wlan_id
    [akm psk set-key {hex | ascii} {40 | 104} key key_index wlan_id]
    mmh-mic {enable | disable} wlan_id
    kp {enable | disable} wlan_id
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables CKIP security.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables CKIP security.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>WLAN to which you apply the command.</td>
</tr>
<tr>
<td>akm psk set-key</td>
<td>(Optional) Configures encryption key management for the CKIP wireless LAN.</td>
</tr>
<tr>
<td>hex</td>
<td>Specifies a hexadecimal encryption key.</td>
</tr>
<tr>
<td>ascii</td>
<td>Specifies an ASCII encryption key.</td>
</tr>
<tr>
<td>40</td>
<td>Sets the static encryption key length to 40 bits for the CKIP WLAN.</td>
</tr>
<tr>
<td>104</td>
<td>Sets the static encryption key length to 104 bits for the CKIP WLAN.</td>
</tr>
<tr>
<td>key</td>
<td>Specifies the CKIP WLAN key settings.</td>
</tr>
<tr>
<td>key_index</td>
<td>Configured PSK key index.</td>
</tr>
<tr>
<td>mmh-mic</td>
<td>(Optional) Configures multi-modular hash message integrity check (MMH MIC) validation for the CKIP wireless LAN.</td>
</tr>
<tr>
<td>kp</td>
<td>(Optional) Configures key-permutation for the CKIP wireless LAN.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure a CKIP WLAN encryption key of 104 bits (26 hexadecimal characters) for PSK key index 2 on WLAN 03:

```
> config wlan security ckip akm psk set-key hex 104 key 2 03
```

**Related Commands**

config wlan ccx aironet-ie
show wlan
config wlan security cond-web-redir

To enable or disable conditional web redirect, use the `config wlan security cond-web-redir` command.

```
config wlan security cond-web-redir {enable | disable} wlan_id
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables conditional web redirect.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables conditional web redirect.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the conditional web direct on WLAN ID 2:

```
> config wlan security cond-web-redir enable 2
```

**Related Commands**

- `show wlan`
- `show wlan wlan_id`
**config wlan security IPsec disable**

To disable IPsec security, use the `config wlan security IPsec disable` command.

```
config wlan security IPsec disable {wlan_id | foreignAp}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>foreignAp</td>
<td>Specifies third-party access points.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to disable the IPsec for WLAN ID 16:

```
> config wlan security IPsec disable 16
```

**Related Commands**

- `show wlan`
config wlan security IPsec enable

To enable IPsec security, use the `config wlan security IPsec enable` command.

```
config wlan security IPsec enable {wlan_id | foreignAp}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>foreignAp</td>
<td>Specifies third-party access points.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the IPsec for WLAN ID 16:

```
> config wlan security IPsec enable 16
```

**Related Commands**

`show wlan`
config wlan security IPsec authentication

To modify the IPsec security authentication protocol used on the wireless LAN, use the \texttt{config wlan security IPsec authentication} command.

\begin{verbatim}
config wlan security IPsec authentication \{hmac-md5 | hmac-sha-1\} \{wlan_id | foreignAp\}
\end{verbatim}

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>hmac-md5</td>
<td></td>
<td>Specifies the IPsec HMAC-MD5 authentication protocol.</td>
</tr>
<tr>
<td>hmac-sha-1</td>
<td></td>
<td>Specifies the IPsec HMAC-SHA-1 authentication protocol.</td>
</tr>
<tr>
<td>wlan_id</td>
<td></td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>foreignAp</td>
<td></td>
<td>Specifies third-party access points.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the IPsec HMAC-SHA-1 security authentication parameter for WLAN ID 1:

\begin{verbatim}
> config wlan security IPsec authentication hmac-sha-1 1
\end{verbatim}

**Related Commands**

show wlan
config wlan security IPsec encryption

To modify the IPsec security encryption protocol used on the wireless LAN, use the config wlan security IPsec encryption command.

```
config wlan security IPsec encryption {3des | aes | des} {wlan_id | foreignAp}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3des</td>
<td>Enables IPsec 3DES encryption.</td>
</tr>
<tr>
<td>aes</td>
<td>Enables IPsec AES 128-bit encryption.</td>
</tr>
<tr>
<td>des</td>
<td>Enables IPsec DES encryption.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>foreignAp</td>
<td>Specifies third-party access points.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the IPsec aes encryption:

```
> config wlan security IPsec encryption aes 1
```

**Related Commands**

show wlan
To configure the proprietary Internet Key Exchange (IKE) CFG-Mode parameters used on the wireless LAN, use the `config wlan security IPsec config` command.

```
config wlan security IPsec config qotd ip_address {wlan_id | foreignAp}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>qotd</td>
<td>Configures the quote-of-the-day server IP for cfg-mode.</td>
</tr>
<tr>
<td>ip_address</td>
<td>Quote-of-the-day server IP for cfg-mode.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>foreignAp</td>
<td>Specifies third-party access points.</td>
</tr>
</tbody>
</table>

**Defaults**
None.

**Usage Guidelines**
IKE is used as a method of distributing the session keys (encryption and authentication), as well as providing a way for the VPN endpoints to agree on how the data should be protected. IKE keeps track of connections by assigning a bundle of Security Associations (SAs), to each connection.

**Examples**
This example shows how to configure the quote-of-the-day server IP 44.55.66.77 for cfg-mode for WLAN 1:
```
> config wlan security IPsec config qotd 44.55.66.77 1
```

**Related Commands**
`show wlan`
To modify the IPsec Internet Key Exchange (IKE) authentication protocol used on the wireless LAN, use the `config wlan security IPsec ike authentication` command.

```
config wlan security IPsec ike authentication { certificates { wlan_id | foreignAp } | pre-share-key { wlan_id | foreignAp | key } | xauth-psk { wlan_id | foreignAp | key } }
```

**Syntax Description**
- `certificates` Enables the IKE certificate mode.
- `wlan_id` Wireless LAN identifier between 1 and 512.
- `foreignAp` Specifies third-party access points.
- `pre-share-key` Enables the IKE Xauth with preshared keys.
- `xauth-psk` Enables the IKE preshared key.
- `key` Key required for preshare and xauth-psk.

**Defaults**
None.

**Examples**
This example shows how to configure the IKE certification mode:
```
> config wlan security IPsec ike authentication certificates 16
```

**Related Commands**
- `show wlan`
**config wlan security IPsec ike dh-group**

To modify the IPsec Internet Key Exchange (IKE) Diffie Hellman group used on the wireless LAN, use the `config wlan security IPsec ike dh-group` command.

```
config wlan security IPsec ike dh-group {wlan_id | foreignAp} {group-1 | group-2 | group-5}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>wlan_id</code></td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td><code>foreignAp</code></td>
<td>Specifies third-party access points.</td>
</tr>
<tr>
<td><code>group-1</code></td>
<td>Specifies DH group 1 (768 bits).</td>
</tr>
<tr>
<td><code>group-2</code></td>
<td>Specifies DH group 2 (1024 bits).</td>
</tr>
<tr>
<td><code>group-5</code></td>
<td>Specifies DH group 5 (1536 bits).</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the Diffie Hellman group parameter for group-1:

```
> config wlan security IPsec ike dh-group 1 group-1
```

**Related Commands**

`show wlan`
config wlan security IPsec ike lifetime

To modify the IPsec Internet Key Exchange (IKE) lifetime used on the wireless LAN, use the `config wlan security IPsec ike lifetime` command.

```
config wlan security IPsec ike lifetime {wlan_id | foreignAp} seconds
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>foreignAp</td>
<td>Specifies third-party access points.</td>
</tr>
<tr>
<td>seconds</td>
<td>IKE lifetime in seconds, between 1800 and 345600.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the IPsec IKE lifetime use on the wireless LAN:

```
> config wlan security IPsec ike lifetime 1 1900
```

**Related Commands**

`show wlan`
To modify IPsec Internet Key Exchange (IKE) Phase 1 used on the wireless LAN, use the `config wlan security IPsec ike phase1` command.

```
config wlan security IPsec ike phase1 {aggressive | main} {wlan_id | foreignAp}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>aggressive</td>
<td>Enables the IKE aggressive mode.</td>
</tr>
<tr>
<td>main</td>
<td>Enables the IKE main mode.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>foreignAp</td>
<td>Specifies third-party access points.</td>
</tr>
</tbody>
</table>

### Defaults
None.

### Examples
This example shows how to modify IPsec IKE Phase 1:

```
> config wlan security IPsec ike phase1 aggressive 16
```
config wlan security IPsec ike contivity

To modify Nortel’s Contivity VPN client support on the wireless LAN, use the `config wlan security IPsec ike contivity` command.

```
config wlan security IPsec ike contivity {enable | disable} {wlan_id | foreignAp}
```

**Syntax Description**
- `enable`: Enables contivity support for this WLAN.
- `disable`: Disables contivity support for this WLAN.
- `wlan_id`: Wireless LAN identifier between 1 and 512.
- `foreignAp`: Specifies third-party access points.

**Defaults**
None.

**Examples**
This example shows how to modify Contivity VPN client support:
```
> config wlan security IPsec ike contivity enable 14
```

**Related Commands**
show wlan
config wlan security passthru

To modify the IPsec pass-through used on the wireless LAN, use the `config wlan security IPsec ike passthru` command.

```
config wlan security passthru {enable | disable} {wlan_id | foreignAp} [ip_address]
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables IPsec pass-through.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Enables IPsec pass-through.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
<td></td>
</tr>
<tr>
<td>foreignAp</td>
<td>Specifies third-party access points.</td>
<td></td>
</tr>
<tr>
<td>ip_address</td>
<td>IP address of the IPsec gateway (router) that is terminating the VPN tunnel.</td>
<td></td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to modify IPsec pass-through used on the wireless LAN:

```
> config wlan security passthru enable 3 192.12.1.1
```

**Related Commands**

show wlan
**config wlan security splash-page-web-redir**

To enable or disable splash page web redirect, use the `config wlan security splash-page-web-redir` command.

```
config wlan security splash-page-web-redir {enable | disable} wlan_id
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>Enables splash page web redirect.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables splash page web redirect.</td>
</tr>
<tr>
<td><code>wlan_id</code></td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Examples**

This example shows how to enable splash page web redirect:

```
> config wlan security splash-page-web-redir enable 2
```

**Related Commands**

show wlan
## config wlan security static-wep-key authentication

To configure static Wired Equivalent Privacy (WEP) key 802.11 authentication on a wireless LAN, use the `config wlan security static-wep-key authentication` command.

```
config wlan security static-wep-key authentication {shared-key | open} wlan_id
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>shared-key</td>
<td>Enables shared key authentication.</td>
</tr>
<tr>
<td>open</td>
<td>Enables open system authentication.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to enable the static WEP shared key authentication for WLAN ID 1:

```
> config wlan security static-wep-key authentication shared-key 1
```

### Related Commands

- `show wlan`
To disable the use of static Wired Equivalent Privacy (WEP) keys, use the `config wlan security static-wep-key disable` command.

```
config wlan security static-wep-key disable wlan_id
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>wlan_id</th>
<th>Wireless LAN identifier between 1 and 512.</th>
</tr>
</thead>
</table>

**Defaults**
None.

**Examples**
This example shows how to disable the static WEP keys for WLAN ID 1:

```
> config wlan security static-wep-key disable 1
```

**Related Commands**
`config wlan security wpa encryption`
To enable the use of static Wired Equivalent Privacy (WEP) keys, use the `config wlan security static-wep-key enable` command.

```
config wlan security static-wep-key enable wlan_id
```

**Syntax Description**

| `wlan_id` | Wireless LAN identifier between 1 and 512. |

**Defaults**

None.

**Examples**

This example shows how to enable the use of static WEP keys for WLAN ID 1:

```
> config wlan security static-wep-key enable 1
```

**Related Commands**

- `config wlan security wpa encryption`
config wlan security static-wep-key encryption

To configure the static Wired Equivalent Privacy (WEP) keys and indexes, use the `config wlan security static-wep-key encryption` command.

```
config wlan security static-wep-key encryption wlan_id {40 | 104} {hex | ascii} key-index
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>40</td>
<td>Specifies the encryption level: 40.</td>
</tr>
<tr>
<td>104</td>
<td>Specifies the encryption level: 104.</td>
</tr>
<tr>
<td>hex</td>
<td>Specifies to use hexadecimal characters to enter key.</td>
</tr>
<tr>
<td>ascii</td>
<td>Specifies whether to use ASCII characters to enter key.</td>
</tr>
<tr>
<td>key</td>
<td>WEP key in ASCII.</td>
</tr>
<tr>
<td>key-index</td>
<td>Key index (1 to 4).</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

One unique WEP key index can be applied to each wireless LAN. Because there are only four WEP key indexes, only four wireless LANs can be configured for static WEP Layer 2 encryption. Make sure to disable 802.1X before using this command.

**Examples**

This example shows how to configure the static WEP keys for WLAN ID 1 that uses hexadecimal character 0201702001 and key index 2:

```
> config wlan security static-wep-key encryption 1 40 hex 0201702001 2
```

**Related Commands**

`show wlan`
config wlan security web-auth

To change the status of web authentication used on the wireless LAN, use the `config wlan security web` command.

```
cfg-wlan-security-web-auth { acl | enable | disable} { wlan_id | foreignAp} [ acl_name | none]
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>acl</th>
<th>Configures the access control list.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>enable</td>
<td>Enables web authentication.</td>
</tr>
<tr>
<td></td>
<td>disable</td>
<td>Disables web authentication.</td>
</tr>
<tr>
<td></td>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td></td>
<td>foreignAp</td>
<td>Specifies third-party access points.</td>
</tr>
<tr>
<td></td>
<td>acl_name</td>
<td>ACL name (up to 32 alphanumeric characters).</td>
</tr>
<tr>
<td></td>
<td>none</td>
<td>Specifies no ACL name.</td>
</tr>
</tbody>
</table>

---

**Defaults**

None.

---

**Examples**

This example shows how to configure the security policy for WLAN ID 1 and an acl named ACL03:

```
> config wlan security web-auth acl 1 ACL03
```
config wlan security web-passthrough acl

To add an access control list (ACL) to the wireless LAN definition, use the config wlan security web-passthrough acl command.

```
cfg(config-wlan)＃> config wlan security web-passthrough acl {wlan_id | foreignAp} {acl_name | none}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>foreignAp</td>
<td>Specifies third-party access points.</td>
</tr>
<tr>
<td>acl_name</td>
<td>ACL name (up to 32 alphanumeric characters).</td>
</tr>
<tr>
<td>none</td>
<td>Specifies that there is no ACL.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to add an ACL to the wireless LAN definition:

```
> config wlan security web-passthrough acl 1 ACL03
```

### Related Commands

show wlan
config wlan security web-passthrough disable

To disable a web captive portal with no authentication required on a wireless LAN, use the `config wlan security web-passthrough disable` command.

```
config wlan security web-passthrough disable {wlan_id | foreignAp}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>foreignAp</td>
<td>Specifies third-party access points.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to disable a web captive portal with no authentication required on wireless LAN ID 1:

```
> config wlan security web-passthrough disable 1
```

**Related Commands**

show wlan
To configure a web captive portal using an e-mail address, use the `config wlan security web-passthrough email-input` command.

```
config wlan security web-passthrough email-input {enable | disable} {wlan_id | foreignAp}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>email-input</code></td>
<td>Configures a web captive portal using an e-mail address.</td>
</tr>
<tr>
<td><code>enable</code></td>
<td>Enables a web captive portal using an e-mail address.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables a web captive portal using an e-mail address.</td>
</tr>
<tr>
<td><code>wlan_id</code></td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td><code>foreignAp</code></td>
<td>Specifies third-party access points.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure a web captive portal using an e-mail address:

```
> config wlan security web-passthrough email-input enable 1
```

**Related Commands**

`show wlan`
**config wlan security web-passthrough enable**

To enable a web captive portal with no authentication required on the wireless LAN, use the `config wlan security web-passthrough enable` command.

```
config wlan security web-passthrough enable {wlan_id | foreignAp}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td>foreignAp</td>
<td>Specifies third-party access points.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable a web captive portal with no authentication required on wireless LAN ID 1:

```
> config wlan security web-passthrough enable 1
```

**Related Commands**

- `show wlan`
config wlan security wpa1 disable

To disable WPA1, use the config wlan security wpa1 disable command.

    config wlan security wpa1 disable wlan_id

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to disable WPA1:

```plaintext
> config wlan security wpa1 disable 1
```
config wlan security wpa1 enable

To enable WPA1, use the config wlan security wpa1 enable command.

config wlan security wpa1 enable wlan_id

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>wlan_id</th>
<th>Wireless LAN identifier between 1 and 512.</th>
</tr>
</thead>
</table>

Defaults
None.

Examples
This example shows how to configure the WPA1 on WLAN ID 1:

> config wlan security wpa1 enable 1

Related Commands
show wlan
config wlan security wpa1 pre-shared-key

To configure the Wi-Fi protected access (WPA) preshared key mode, use the `config wlan security wpa1 pre-shared-key` command.

```
config wlan security wpa1 pre-shared-key { enable wlan_id key | disable wlan_id }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables WPA-PSK.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables WPA-PSK.</td>
</tr>
<tr>
<td></td>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td></td>
<td>key</td>
<td>WPA preshared key.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the WPA preshared key mode:

```
> config wlan security wpa1 pre-shared-key enable 1 r45
```
config wlan security wpa2 disable

To disable WPA2, use the `config wlan security wpa2 disable` command.

```
config wlan security wpa2 disable wlan_id
```

**Syntax Description**

- `wlan_id`: Wireless LAN identifier between 1 and 512.

**Defaults**

None.

**Examples**

This example shows how to disable WPA2:

```
> config wlan security wpa2 disable 1
```

**Related Commands**

- `show wlan`
To enable WPA2, use the `config wlan security wpa2 enable` command.

```
config wlan security wpa2 enable wlan_id
```

**Syntax Description**

| `wlan_id` | Wireless LAN identifier between 1 and 512. |

**Defaults**

None.

**Examples**

This example shows how to enable WPA2:

```
> config wlan security wpa2 enable 1
```

**Related Commands**

`show wlan`
config wlan security wpa2 pre-shared-key

To configure the Wi-Fi protected access (WPA) pre-shared key mode, use the `config wlan security wpa2 pre-shared-key` command.

```
config wlan security wpa2 pre-shared-key {enable wlan_id key | disable wlan_id}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables the WPA2-PSK.</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier between 1 and 512.</td>
<td></td>
</tr>
<tr>
<td>key</td>
<td>WPA preshared key.</td>
<td></td>
</tr>
<tr>
<td>disable</td>
<td>Disables the WPA2-PSK.</td>
<td></td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to disable the WPA2-PSK for WLAN ID 2:

```
> config wlan security wpa2 pre-shared-key disable 2
```
config wlan security wpa2 tkip

To change the status of Wi-Fi protected access (WPA) authentication, use the `config wlan security wpa2 tkip` command.

```
config wlan security wpa2 tkip {enable | disable} wlan_id
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>Enables the WPA2 TKIP mode.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables the WPA2 TKIP mode.</td>
</tr>
<tr>
<td><code>wlan_id</code></td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to configure the WPA2 TKIP mode for WLAN ID 1:

```
> config wlan security wpa2 tkip enable 1
```
**config wlan security wpa2 wpa-compat**

To change the status of Wi-Fi protected access (WPA) authentication, use the `config wlan security wpa2 wpa-compat` command.

```
config wlan security wpa2 wpa-compat {enable | disable} wlan_id
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>enable</code></td>
<td>Enables WPA compatibility mode.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables WPA compatibility mode.</td>
</tr>
<tr>
<td><code>wlan_id</code></td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure the WPA compatibility mode for WLAN ID 1:

```
> config wlan security wpa2 wpa-compat enable 1
```

**Related Commands**

`show wlan`
### config wlan session-timeout

To configure client session timeout of wireless LAN clients, use the `config wlan session-timeout` command.

```
config wlan session-timeout {wlan_id | foreignAp} seconds
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>wlan_id</code></td>
<td>Wireless LAN identifier between 1 and 512.</td>
</tr>
<tr>
<td><code>foreignAp</code></td>
<td>Specifies third-party access points.</td>
</tr>
<tr>
<td><code>seconds</code></td>
<td>Timeout or session duration in seconds.</td>
</tr>
</tbody>
</table>

| Defaults            | The default value is 1800 seconds for the following Layer 2 security types: 802.1X, Static WEP+802.1X, WPA+WPA2 with 802.1X, CCKM, or 802.1X+CCKM authentication key management; and 0 seconds for all other Layer 2 security types. A value of 0 is equivalent to no timeout. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to configure the client session timeout to 6000 seconds for WLAN ID 1:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>&gt; config wlan session-timeout 1 6000</code></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th><code>config wlan</code></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><code>show wlan</code></td>
</tr>
</tbody>
</table>
config wlan webauth-exclude

To release the guest user IP address when the web authentication policy time expires and exclude the
guest user from acquiring an IP address for three minutes, use the config wlan webauth-exclude
command.

    config wlan webauth-exclude wlan_id {enable | disable}

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier (1 to 512).</td>
</tr>
<tr>
<td>enable</td>
<td>Enables web authentication exclusion.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables web authentication exclusion.</td>
</tr>
</tbody>
</table>

Defaults

Disabled.

Usage Guidelines

You can use this command for guest WLANs that are configured with web authentication.
This command is applicable when you configure the internal DHCP scope on the controller.
By default, when the web authentication timer expires for a guest user, the guest user can immediately
reassociate with the same IP address before another guest user can acquire the IP address. If there are
many guest users or limited IP address in the DHCP pool, some guest users might not be able to acquire
an IP address.
When you enable this feature on the guest WLAN, the guest user’s IP address is released when the web
authentication policy time expires and the guest user is excluded from acquiring an IP address for three
minutes. The IP address is available for another guest user to use. After three minutes, the excluded guest
user can reassociate and acquire an IP address, if available.

Examples

This example shows how to enable the web authentication exclusion for WLAN ID 5:
> config wlan webauth-exclude 5 enable

Related Commands

    config dhcp
    show run-config
    show wlan
config wlan wmm

To configure Wi-Fi Multimedia (WMM) mode on a wireless LAN, use the config wlan wmm command.

```plaintext
config wlan wmm {allow | disable | require} wlan_id
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>allow</td>
<td>(Optional) Allows WMM on the wireless LAN.</td>
</tr>
<tr>
<td>disable</td>
<td>(Optional) Disables WMM on the wireless LAN.</td>
</tr>
<tr>
<td>require</td>
<td>(Optional) Specifies that clients use WMM on the specified wireless LAN.</td>
</tr>
<tr>
<td>wlan_id</td>
<td>Wireless LAN identifier (1 to 512).</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

When the controller is in Layer 2 mode and WMM is enabled, you must put the access points on a trunk port in order to allow them to join the controller.

### Examples

```plaintext
> config wlan wmm allow 1
> config wlan wmm require 1
```

### Related Commands

- show run-config
- show wlan
Configure WPS Commands

Use the `config wps` commands to configure Wireless Protection System (WPS) settings.
config wps ap-authentication

To configure access point neighbor authentication, use the `config wps ap-authentication` command.

```plaintext
config wps ap-authentication [enable | disable | threshold threshold_value]
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>(Optional) Enables WMM on the wireless LAN.</td>
</tr>
<tr>
<td>disable</td>
<td>(Optional) Disables WMM on the wireless LAN.</td>
</tr>
<tr>
<td>threshold</td>
<td>(Optional) Specifies that WMM-enabled clients are on the wireless LAN.</td>
</tr>
<tr>
<td>threshold_value</td>
<td>Threshold value (1 to 255).</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to configure WMM-enabled clients with the threshold value 25:

```plaintext
> config wps ap-authentication threshold 25
```

### Related Commands

- `show wps ap-authentication summary`
To enable or disable protection from Denial of Service (DoS) attacks, use the `config wps auto-immune` command.

```
config wps auto-immune {enable | disable}
```

**Syntax Description**
- `enable`: Enables the auto-immune feature.
- `disable`: Disables the auto-immune feature.

**Defaults**
Disabled.

**Usage Guidelines**
A potential attacker can use specially crafted packets to mislead the Intrusion Detection System (IDS) into treating a legitimate client as an attacker. It causes the controller to disconnect this legitimate client and launch a DoS attack. The auto-immune feature, when enabled, is designed to protect against such attacks. However, conversations using Cisco 792x phones might be interrupted intermittently when the auto-immune feature is enabled. If you experience frequent disruptions when using 792x phones, you might want to disable this feature.

**Examples**
This example shows how to configure the auto-immune mode:

```
> config wps auto-immune enable
```

**Related Commands**
- `show wps summary`
config wps cids-sensor

To configure Intrusion Detection System (IDS) sensors for the Wireless Protection System (WPS), use the `config wps cids-sensor` command.

```
config wps cids-sensor {[add index ip_address username password] | [delete index] | [enable index] | [disable index] | [port index port] | [interval index query_interval] | [fingerprint index sha1 fingerprint]}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>add</strong></td>
<td>(Optional) Configures a new IDS sensor.</td>
</tr>
<tr>
<td><strong>index</strong></td>
<td>IDS sensor internal index.</td>
</tr>
<tr>
<td><strong>ip_address</strong></td>
<td>IDS sensor IP address.</td>
</tr>
<tr>
<td><strong>username</strong></td>
<td>IDS sensor username.</td>
</tr>
<tr>
<td><strong>password</strong></td>
<td>IDS sensor password.</td>
</tr>
<tr>
<td><strong>delete</strong></td>
<td>(Optional) Deletes an IDS sensor.</td>
</tr>
<tr>
<td><strong>enable</strong></td>
<td>(Optional) Enables an IDS sensor.</td>
</tr>
<tr>
<td><strong>disable</strong></td>
<td>(Optional) Disables an IDS sensor.</td>
</tr>
<tr>
<td><strong>port</strong></td>
<td>(Optional) Configures the IDS sensor’s port number.</td>
</tr>
<tr>
<td><strong>port</strong></td>
<td>Port number.</td>
</tr>
<tr>
<td><strong>interval</strong></td>
<td>(Optional) Specifies the IDS sensor’s query interval.</td>
</tr>
<tr>
<td><strong>query_interval</strong></td>
<td>Query interval setting.</td>
</tr>
<tr>
<td><strong>fingerprint</strong></td>
<td>(Optional) Specifies the IDS sensor’s TLS fingerprint.</td>
</tr>
<tr>
<td><strong>sha1</strong></td>
<td>(Optional) Specifies the TLS fingerprint.</td>
</tr>
<tr>
<td><strong>fingerprint</strong></td>
<td>TLS fingerprint.</td>
</tr>
</tbody>
</table>

### Defaults

Command defaults are listed below as follows:

<table>
<thead>
<tr>
<th>Default</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port</td>
<td>443</td>
</tr>
<tr>
<td>Query interval</td>
<td>60</td>
</tr>
<tr>
<td>Certification fingerprint</td>
<td>00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00</td>
</tr>
<tr>
<td>Query state</td>
<td>Disabled</td>
</tr>
</tbody>
</table>

### Examples

This example shows how to configure the intrusion detection system with the IDS index 1, IDS sensor IP address 10.0.0.51, IDS username Sensor_user0doc1, and IDS password passowrd01:

```
> config wps cids-sensor add 1 10.0.0.51 Sensor_user0doc1 password01
```

### Related Commands

- show wps cids-sensor
- show wps cids-sensor detail
config wps client-exclusion

To configure client exclusion policies, use the **config wps client-exclusion** command.

```
config wps client-exclusion {802.11-assoc | 802.11-auth | 802.1x-auth | ip-theft | web-auth | all} {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>802.11-assoc</th>
<th>Specifies that the controller excludes clients on the sixth 802.11 association attempt, after five consecutive failures.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>802.11-auth</td>
<td>Specifies that the controller excludes clients on the sixth 802.11 authentication attempt, after five consecutive failures.</td>
</tr>
<tr>
<td></td>
<td>802.1x-auth</td>
<td>Specifies that the controller excludes clients on the sixth 802.11X authentication attempt, after five consecutive failures.</td>
</tr>
<tr>
<td></td>
<td>ip-theft</td>
<td>Specifies that the controller excludes clients if the IP address is already assigned to another device.</td>
</tr>
<tr>
<td></td>
<td>web-auth</td>
<td>Specifies that the controller excludes clients on the fourth web authentication attempt, after three consecutive failures.</td>
</tr>
<tr>
<td></td>
<td>all</td>
<td>Specifies that the controller excludes clients for all of the above reasons.</td>
</tr>
<tr>
<td></td>
<td>enable</td>
<td>Enables client exclusion policies.</td>
</tr>
<tr>
<td></td>
<td>disable</td>
<td>Disables client exclusion policies.</td>
</tr>
</tbody>
</table>

**Defaults**

All policies are enabled.

**Examples**

This example shows how to disable clients on the 802.11 association attempt after five consecutive failures:

```
> config wps client-exclusion 802.11-assoc disable
```

**Related Commands**

```
show wps summary
```
config wps mfp

To configure Management Frame Protection (MFP), use the config wps mfp command.

    config wps mfp infrastructure {enable | disable}

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>infrastructure</td>
<td>Configures the MFP infrastructure.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the MFP feature.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the MFP feature.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the infrastructure MFP:

    > config wps mfp infrastructure enable

**Related Commands**

show wps mfp
config wps shun-list

To force the controller to synchronization with other controllers in the mobility group for the shun list, use the config wps shun-list command.

config wps shun-list re-sync

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to configure the controller to synchronize with other controllers for the shun list:
> config wps shun-list re-sync

Related Commands
show wps shun-list
config wps signature

To enable or disable Intrusion Detection System (IDS) signature processing, or to enable or disable a specific IDS signature, use the config wps signature command.

```plaintext
config wps signature {standard | custom} state signature_id {enable | disable}
```

**Syntax Description**

- **standard**: Configures a standard IDS signature.
- **custom**: Configures a custom IDS signature.
- **state**: Specifies the state of the IDS signature.
- **signature_id**: Identifier for the signature to be enabled or disabled.
- **enable**: Enables the IDS signature processing or a specific IDS signature.
- **disable**: Disables IDS signature processing or a specific IDS signature.

**Defaults**

IDS signature processing is enabled by default.

**Usage Guidelines**

If IDS signature processing is disabled, all signatures are disabled, regardless of the state configured for individual signatures.

**Examples**

This example shows how to enable IDS signature processing, which enables the processing of all IDS signatures:

```
> config wps signature enable
```

This example shows how to disable a standard individual IDS signature:

```
> config wps signature standard state 15 disable
```

**Related Commands**

- config wps signature frequency
- config wps signature interval
- config wps signature mac-frequency
- config wps signature quiet-time
- config wps signature reset
- show wps signature events
- show wps signature summary
- show wps summary
config wps signature frequency

To specify the number of matching packets per interval that must be identified at the individual access point level before an attack is detected, use the `config wps signature frequency` command.

```
config wps signature frequency signature_id frequency
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>signature_id</code></td>
<td>Identifier for the signature to be configured.</td>
</tr>
<tr>
<td><code>frequency</code></td>
<td>Number of matching packets per interval that must be at the individual access point level before an attack is detected. The range is 1 to 32,000 packets per interval.</td>
</tr>
</tbody>
</table>

**Defaults**

The `frequency` default value varies per signature.

**Usage Guidelines**

If IDS signature processing is disabled, all signatures are disabled, regardless of the state configured for individual signatures.

**Examples**

This example shows how to set the number of matching packets per interval per access point before an attack is detected to 1800 for signature ID 4:

```
> config wps signature frequency 4 1800
```

**Related Commands**

- `config wps signature`
- `config wps signature interval`
- `config wps signature mac-frequency`
- `config wps signature quiet-time`
- `config wps signature reset`
- `show wps signature events`
- `show wps signature summary`
- `show wps summary`
config wps signature interval

To specify the number of seconds that must elapse before the signature frequency threshold is reached within the configured interval, use the `config wps signature interval` command.

```
config wps signature interval signature_id interval
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>signature_id</td>
<td>Identifier for the signature to be configured.</td>
</tr>
<tr>
<td>interval</td>
<td>Number of seconds that must elapse before the signature frequency threshold is reached. The range is 1 to 3,600 seconds.</td>
</tr>
</tbody>
</table>

**Defaults**

The default value of `interval` varies per signature.

**Usage Guidelines**

If IDS signature processing is disabled, all signatures are disabled, regardless of the state configured for individual signatures.

**Examples**

This example shows how to set the number of seconds to elapse before reaching the signature frequency threshold to 200 for signature ID 1:

```
> config wps signature interval 1 200
```

**Related Commands**

- `config wps signature`
- `config wps signature frequency`
- `config wps signature mac-frequency`
- `config wps signature quiet-time`
- `config wps signature reset`
- `show wps signature events`
- `show wps signature summary`
- `show wps summary`
**config wps signature mac-frequency**

To specify the number of matching packets per interval that must be identified per client per access point before an attack is detected, use the **config wps signature mac-frequency** command.

```
config wps signature mac-frequency signature_id mac_frequency
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>signature_id</strong></td>
<td>Identifier for the signature to be configured.</td>
</tr>
<tr>
<td><strong>mac_frequency</strong></td>
<td>Number of matching packets per interval that must be identified per client per access point before an attack is detected. The range is 1 to 32,000 packets per interval.</td>
</tr>
</tbody>
</table>

**Defaults**

The **mac_frequency** default value varies per signature.

**Usage Guidelines**

If IDS signature processing is disabled, all signatures are disabled, regardless of the state configured for individual signatures.

**Examples**

This example shows how to set the number of matching packets per interval per client before an attack is detected to 50 for signature ID 3:

```
> config wps signature mac-frequency 3 50
```

**Related Commands**

- config wps signature
- config wps signature frequency
- config wps signature interval
- config wps signature quiet-time
- config wps signature reset
- show wps signature events
- show wps signature summary
- show wps summary
config wps signature quiet-time

To specify the length of time after which no attacks have been detected at the individual access point level and the alarm can stop, use the `config wps signature quiet-time` command.

```
config wps signature quiet-time signature_id quiet_time
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>signature_id</td>
<td>Identifier for the signature to be configured.</td>
</tr>
<tr>
<td>quiet_time</td>
<td>Length of time after which no attacks have been detected at the individual access point level and the alarm can stop. The range is 60 to 32,000 seconds.</td>
</tr>
</tbody>
</table>

**Defaults**

The default value of `quiet_time` varies per signature.

**Usage Guidelines**

If IDS signature processing is disabled, all signatures are disabled, regardless of the state configured for individual signatures.

**Examples**

This example shows how to set the number of seconds after which no attacks have been detected per access point to 60 for signature ID 1:

```
> config wps signature quiet-time 1 60
```

**Related Commands**

- `config wps signature`
- `config wps signature frequency`
- `config wps signature interval`
- `config wps signature mac-frequency`
- `config wps signature reset`
- `show wps signature events`
- `show wps signature summary`
- `show wps summary`
config wps signature reset

To reset a specific Intrusion Detection System (IDS) signature or all IDS signatures to default values, use the `config wps signature reset` command.

```
config wps signature reset {signature_id | all}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>signature_id</td>
<td>Identifier for the specific IDS signature to be reset.</td>
</tr>
<tr>
<td>all</td>
<td>Resets all IDS signatures.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

If IDS signature processing is disabled, all signatures are disabled, regardless of the state configured for individual signatures.

**Examples**

This example shows how to reset the IDS signature 1 to default values:

```
> config wps signature reset 1
```

**Related Commands**

- config wps signature
- config wps signature frequency
- config wps signature interval
- config wps signature mac-frequency
- config wps signature quiet-time
- show wps signature events
- show wps signature summary
- show wps summary
Capwap Access Point Commands

Use the `capwap ap` commands to configure capwap access point settings.
capwap ap controller ip address

To configure the controller IP address into the capwap access point from the access point’s console port, use the **capwap ap controller ip address** command.

**Syntax**

```
capwap ap controller ip address ip_address
```

**Syntax Description**

| **ip_address** | IP address of the controller. |

**Defaults**

None.

**Usage Guidelines**

This command must be entered from an access point’s console port.

**Note**

The access point must be running Cisco IOS Release 12.3(11)JX1 or higher releases.

**Examples**

This example shows how to configure the controller IP address 10.23.90.81 into the capwap access point:

```
> capwap ap controller ip address 10.23.90.81
```

**Related Commands**

- capwap ap dot1x
- capwap ap hostname
- capwap ap ip address
- capwap ap ip default-gateway
- capwap ap log-server
- capwap ap primary-base
- capwap ap primed-timer
- capwap ap secondary-base
- capwap ap tertiary-base
capwap ap dot1x

To configure the dot1x username and password into the capwap access point from the access point’s console port, use the **capwap ap dot1x** command.

```
capwap ap dot1x username user_name password password
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>user_name</td>
<td>Dot1x username.</td>
</tr>
<tr>
<td>password</td>
<td>Dot1x password.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

This command must be entered from an access point’s console port.

**Note**

The access point must be running Cisco IOS Release 12.3(11)JX1 or higher releases.

**Examples**

This example shows how to configure the dot1x username ABC and password pass01:

```
> capwap ap dot1x username ABC password pass01
```

**Related Commands**

- capwap ap controller ip address
- capwap ap hostname
- capwap ap ip address
- capwap ap ip default-gateway
- capwap ap log-server
- capwap ap primary-base
- capwap ap primed-timer
- capwap ap secondary-base
- capwap ap tertiary-base
capwap ap hostname

To configure the access point host name from the access point’s console port, use the `capwap ap hostname` command.

```
capwap ap hostname host_name
```

**Syntax Description**

| `host_name` | Host name of the access point. |

**Defaults**

None.

**Usage Guidelines**

This command must be entered from an access point’s console port.

**Note**

The access point must be running Cisco IOS Release 12.3(11)JX1 or higher releases. This command is available only for Lightweight AP IOS Software recovery image (rcvk9w8) without any private-config. You can remove private-config by using the `clear capwap private-config` command.

**Examples**

This example shows how to configure the hostname WLC into the capwap access point:

```
> capwap ap hostname WLC
```

**Related Commands**

- `capwap ap controller ip address`
- `capwap ap dot1x`
- `capwap ap ip address`
- `capwap ap ip default-gateway`
- `capwap ap log-server`
- `capwap ap primary-base`
- `capwap ap primed-timer`
- `capwap ap secondary-base`
- `capwap ap tertiary-base`
capwap ap ip address

To configure the IP address into the capwap access point from the access point’s console port, use the `capwap ap ip address` command.

```
capwap ap ip address ip_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th><code>ip_address</code></th>
<th>IP address.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Usage Guidelines**

This command must be entered from an access point’s console port.

**Note**

The access point must be running Cisco IOS Release 12.3(11)JX1 or higher releases.

**Examples**

This example shows how to configure the IP address 10.0.0.1 into capwap access point:

```
> capwap ap ip address 10.0.0.1
```

**Related Commands**

- `capwap ap controller ip address`
- `capwap ap dot1x`
- `capwap ap hostname`
- `capwap ap ip default-gateway`
- `capwap ap log-server`
- `capwap ap primary-base`
- `capwap ap primed-timer`
- `capwap ap secondary-base`
- `capwap ap tertiary-base`
capwap ap ip default-gateway

To configure the default gateway from the access point’s console port, use the **capwap ap ip default-gateway** command.

**capwap ap ip default-gateway**

default_gateway

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>default_gateway</td>
<td>Default gateway address of the capwap access point.</td>
</tr>
</tbody>
</table>

**Defaults**  
None.

**Usage Guidelines**  
This command must be entered from an access point’s console port.

**Note**  
The access point must be running Cisco IOS Release 12.3(11)JX1 or higher releases.

**Examples**  
This example shows how to configure the capwap access point with the default gateway address 10.0.0.1:

```
> capwap ap ip default-gateway 10.0.0.1
```

**Related Commands**  
capwap ap controller ip address
capwap ap dot1x
capwap ap hostname
capwap ap ip address
capwap ap log-server
capwap ap primary-base
capwap ap primed-timer
capwap ap secondary-base
capwap ap tertiary-base
capwap ap log-server

To configure the system log server to log all the capwap errors, use the `capwap ap log-server` command.

```
capwap ap log-server ip_address
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th><code>ip_address</code></th>
<th>IP address of the syslog server.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Usage Guidelines**

This command must be entered from an access point’s console port.

**Note**

The access point must be running Cisco IOS Release 12.3(11)JX1 or higher releases.

**Examples**

This example shows how to configure the syslog server with the IP address 10.0.0.1:

```
> capwap ap log-server 10.0.0.1
```

**Related Commands**

- `capwap ap controller ip address`
- `capwap ap dot1x`
- `capwap ap hostname`
- `capwap ap ip address`
- `capwap ap ip default-gateway`
- `capwap ap primary-base`
- `capwap ap primed-timer`
- `capwap ap secondary-base`
- `capwap ap tertiary-base`
capwap ap primary-base

To configure the primary controller name and IP address into the capwap access point from the access point’s console port, use the **capwap ap primary-base** command.

\[ \text{capwap ap primary-base controller_name controller_ip_address} \]

### Syntax Description

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>controller_name</td>
<td>Name of the primary controller.</td>
</tr>
<tr>
<td>controller_ip_address</td>
<td>IP address of the primary controller.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

This command must be entered from an access point’s console port.

### Note

The access point must be running Cisco IOS Release 12.3(11)JX1 or higher releases.

### Examples

This example shows how to configure the primary controller name WLC1 and primary controller IP address 10.92.109.1 into the capwap access point:

```
> capwap ap primary-base WLC1 10.92.109.1
```

### Related Commands

- capwap ap controller ip address
- capwap ap dot1x
- capwap ap hostname
- capwap ap ip address
- capwap ap ip default-gateway
- capwap ap log-server
- capwap ap primed-timer
- capwap ap secondary-base
- capwap ap tertiary-base
capwap ap primed-timer

To configure the primed timer into the capwap access point, use the **capwap ap primed-timer** command.

```
capwap ap primed-timer {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables the primed timer settings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disable</td>
<td>Disables the primed timer settings.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

This command must be entered from an access point’s console port.

**Note**

The access point must be running Cisco IOS Release 12.3(11)JX1 or higher releases.

**Examples**

This example shows how to enable the primed-timer settings:

```
> capwap ap primed-timer enable
```

**Related Commands**

capwap ap controller ip address
capwap ap dot1x
capwap ap hostname
capwap ap ip address
capwap ap ip default-gateway
capwap ap log-server
capwap ap primary-base
capwap ap secondary-base
capwap ap tertiary-base
capwap ap secondary-base

To configure the secondary controller name and IP address into the capwap access point from the access point’s console port, use the `capwap ap secondary-base` command.

```
capwap ap secondary-base controller_name controller_ip_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>controller_name</td>
<td>Name of the secondary controller.</td>
</tr>
<tr>
<td>controller_ip_address</td>
<td>IP address of the secondary controller.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

This command must be entered from an access point’s console port.

**Note**

The access point must be running Cisco IOS Release 12.3(11)JX1 or higher releases.

**Examples**

This example shows how to configure the secondary controller name WLC2 and secondary controller IP address 10.92.108.2 into the capwap access point:

```
> capwap ap secondary-base WLC2 10.92.108.2
```

**Related Commands**

- `capwap ap controller ip address`
- `capwap ap dot1x`
- `capwap ap hostname`
- `capwap ap ip address`
- `capwap ap ip default-gateway`
- `capwap ap log-server`
- `capwap ap primary-base`
- `capwap ap primed-timer`
- `capwap ap tertiary-base`
capwap ap tertiary-base

To configure the tertiary controller name and IP address into the capwap access point from the access point’s console port, use the **capwap ap tertiary-base** command.

```
capwap ap tertiary-base controller_name controller_ip_address
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>controller_name</td>
<td>Name of the tertiary controller.</td>
</tr>
<tr>
<td>controller_ip_address</td>
<td>IP address of the tertiary controller.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

This command must be entered from an access point’s console port.

**Note**

The access point must be running Cisco IOS Release 12.3(11)JX1 or higher releases.

**Examples**

This example shows how to configure the tertiary controller name WLC3 and secondary controller IP address 10.80.72.2 into the capwap access point:

```
> capwap ap tertiary-base WLC3 10.80.72.2
```

**Related Commands**

- capwap ap controller ip address
- capwap ap dot1x
- capwap ap hostname
- capwap ap ip address
- capwap ap ip default-gateway
- capwap ap log-server
- capwap ap primary-base
- capwap ap primed-timer
- capwap ap secondary-base
**lwapp ap controller ip address**

To configure the controller IP address into the H-REAP access point from the access point’s console port, use the **lwapp ap controller ip address** command.

```
lwapp ap controller ip address ip_address
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>ip_address</th>
<th>IP address of the controller.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defaults</td>
<td>None.</td>
<td></td>
</tr>
</tbody>
</table>

**Usage Guidelines**

This command must be entered from an access point’s console port. Prior to changing the H-REAP configuration on an access point using the access point’s console port, the access point must be in standalone mode (not connected to a controller) and you must remove the current LWAPP private configuration by using the **clear lwapp private-config** command.

**Note**
The access point must be running Cisco IOS Release 12.3(11)JX1 or higher releases.

**Examples**

This example shows how to configure the controller IP address 10.92.109.1 into the H-REAP access point:

```
> lwapp ap controller ip address 10.92.109.1
```

**Related Commands**

- clear lwapp private-config
- debug lwapp console cli
Saving Configurations

Use the `save config` command before you log out of the command line interface to save all previous configuration changes.
**save config**

To save Cisco wireless LAN controller configurations, use the **save config** command.

```
  save config
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to save the Cisco wireless LAN controller settings:

```
> save config
Are you sure you want to save? (y/n) y
Configuration Saved!
```

**Related Commands**

`show sysinfo`
Clearing Configurations, Logfiles, and Other Actions

Use the clear command to clear existing configurations, log files, and other functions.
clear acl counters

To clear the current counters for an access control list (ACL), use the **clear acl counters** command.

```
    clear acl counters acl_name
```

**Syntax Description**

<table>
<thead>
<tr>
<th>acl_name</th>
<th>ACL name.</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Usage Guidelines**

**Note**

ACL counters are available only on the following controllers: Cisco 4400 Series Controller, Cisco WiSM, and Catalyst 3750G Integrated Wireless LAN Controller Switch.

**Examples**

This example shows how to clear the current counters for acl1:

```
> clear acl counters acl1
```

**Related Commands**

| config acl counter |
| show acl detailed |
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
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ap_name</td>
<td>Access point name.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### 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 ap1240_322115:

```
> clear ap-config ap1240_322115
Clear ap-config will clear ap config and reboot the AP. Are you sure you want continue? (y/n)
```

### Related Commands

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>show ap config</td>
<td></td>
</tr>
</tbody>
</table>
clear ap-eventlog

To delete the existing event log and create an empty event log file for a specific access point or for all access points joined to the controller, use the clear ap-eventlog command.

```
  clear ap-eventlog {specific ap_name | all}
```

**Syntax Description**
- **specific**
  - Specifies a specific access point log file.
- **ap_name**
  - Name of the access point for which the event log file will be emptied.
- **all**
  - Deletes the event log for all access points joined to the controller.

**Defaults**
None.

**Examples**
This example shows how to delete the event log for all access points:
```
  > clear ap-eventlog all
  This will clear event log contents for all APs. Do you want continue? (y/n) : y
  Any AP event log contents have been successfully cleared.
```

**Related Commands**
- show ap eventlog
clear ap join stats

To clear the join statistics for all access points or for a specific access point, use the `clear ap join stats` command.

```
clear ap join stats {all | ap_mac}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>all</th>
<th>Specifies all access points.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ap_mac</td>
<td>Access point MAC address.</td>
</tr>
</tbody>
</table>

Defaults
None.

Examples
This example shows how to clear the join statistics of all the access points:

```
> clear ap join stats all
```

Related Commands
`show ap config`
clear arp

To clear the Address Resolution Protocol (ARP) table, use the clear arp command.

```
clear arp
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to clear the ARP table:

```
> clear arp
Are you sure you want to clear the ARP cache? (y/n)
```

**Related Commands**

clear transfer
clear download filename
clear download mode
clear download path
clear download serverip
clear download start
clear upload datatype
clear upload filename
clear upload mode
clear upload path
clear upload serverip
clear upload start
To clear the traffic stream metrics (TSM) statistics for a particular access point or all the access points to which this client is associated, use the `clear client tsm` command.

```
clear client tsm {802.11a | 802.11b} client_mac {ap_mac | all}
```

**Syntax Description**
- `802.11a` Specifies the 802.11a network.
- `802.11b` Specifies the 802.11b network.
- `client_mac` MAC address of the client.
- `ap_mac` MAC address of a Cisco lightweight access point.
- `all` Specifies all access points.

**Defaults**
None.

**Examples**
This example shows how to clear the TSM for the MAC address 00:40:96:a8:f7:98:

```
> clear client tsm 802.11a 00:40:96:a8:f7:98 all
```

**Related Commands**
- `clear upload start`
clear config

To reset configuration data to factory defaults, use the clear config command.

    clear config

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to reset the configuration data to factory defaults:

    > clear config

    Are you sure you want to clear the configuration? (y/n)
    n
    Configuration not cleared!

Related Commands
    clear transfer
    clear download filename
    clear download mode
    clear download path
    clear download serverip
    clear download start
    clear upload datatype
    clear upload filename
    clear upload mode
    clear upload path
    clear upload serverip
    clear upload start
clear ext-webauth-url

To clear the external web authentication URL, use the clear ext-webauth-url command.

```
clear ext-webauth-url
```

**Syntax Description**  
This command has no arguments or keywords.

**Defaults**  
None.

**Examples**  
This example shows how to clear the external web authentication URL:

```
> clear ext-webauth-url
URL cleared.
```

**Related Commands**  
clear transfer  
clear download datatype  
clear download filename  
clear download mode  
clear download path  
clear download serverip  
clear download start  
clear upload filename  
clear upload mode  
clear upload path  
clear upload serverip  
clear upload start
clear license agent

To clear the license agent’s counter or session statistics, use the **clear license agent** command.

```plaintext
clear license agent {counters | sessions}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>counters</th>
<th>Clears the counter statistics.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>sessions</td>
<td>Clears the session statistics.</td>
</tr>
</tbody>
</table>

**Defaults**  
None.

**Examples**  
This example shows how to clear the license agent’s counter settings:

```plaintext
> clear license agent counters
```

**Related Commands**  
config license agent  
show license agent  
license install
clear location rfid

To clear a specific radio frequency identification (RFID) tag or all of the RFID tags in the entire database, use the clear location rfid command.

```
clear location rfid {mac_address | all}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>mac_address</code></td>
<td>MAC address of a specific RFID tag.</td>
</tr>
<tr>
<td><code>all</code></td>
<td>Specifies all of the RFID tags in the database.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to clear all of the RFID tags in the database:

```
> clear location rfid all
```

**Related Commands**

clear location statistics rfid
config location
show location
show location statistics rfid
clear location statistics rfid

To clear radio frequency identification (RFID) statistics, use the `clear location statistics rfid` command.

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to clear RFID statistics:

```
> clear location statistics rfid
```

**Related Commands**

- `clear location statistics rfid`
- `config location`
- `show location`
clear locp statistics

To clear the Location Protocol (LOCP) statistics, use the **clear locp statistics** command.

```
clear locp statistics
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to clear the statistics related to LOCP:

```
> clear locp statistics
```

**Related Commands**

- clear nmsp statistics
- config nmsp notify-interval measurement
- show nmsp notify-interval summary
- show nmsp statistics
- show nmsp status
clear login-banner

To remove the login banner file from the controller, use the `clear login-banner` command.

```plaintext
clear login-banner
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to clear the login banner file:

```plaintext
> clear login-banner
```

**Related Commands**
`transfer download datatype`
clear lwapp private-config

To clear (reset to default values) an access point’s current Lightweight Access Point Protocol (LWAPP) private configuration, which contains static IP addressing and controller IP address configurations, use the clear lwapp private-config command.

```
clear lwapp private-config
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Usage Guidelines**
This command is executed from the access point console port.

Prior to changing the H-REAP configuration on an access point using the access point’s console port, the access point must be in standalone mode (not connected to a controller) and you must remove the current LWAPP private configuration by using the clear lwapp private-config command.

**Note**
The access point must be running Cisco IOS Release 12.3(11)JX1 or higher releases.

**Examples**
This example shows how to clear an access point’s current LWAPP private configuration:

```
AP# clear lwapp private-config
removing the reap config file flash:/lwapp_reap.cfg
```

**Related Commands**
debug capwap
debug capwap reap
debug lwapp console cli
show capwap reap association
show capwap reap status
clear nmsp statistics

To clear the Network Mobility Services Protocol (NMSP) statistics, use the clear nmsp statistics command.

```
clear nmsp statistics
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to delete the NMSP statistics log file:

```
> clear nmsp statistics
```

**Related Commands**

- clear locp statistics
- config nmsp notify-interval measurement
- show nmsp notify-interval summary
- show nmsp status
clear radius acct statistics

To clear the RADIUS accounting statistics on the controller, use the **clear radius acct statistics** command.

```
clear radius acct statistics [index | all]
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>index</td>
<td>(Optional) Index of the RADIUS accounting server.</td>
</tr>
<tr>
<td>all</td>
<td>(Optional) Specifies all RADIUS accounting servers.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to clear the RADIUS accounting statistics:

```
> clear radius acct statistics
```

**Related Commands**

`show radius acct statistics`
clear tacacs auth statistics

To clear the RADIUS authentication server statistics in the controller, use the `clear tacacs auth statistics` command.

```
clear radius tacacs auth statistics [index | all]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>index</td>
<td>(Optional) Index of the RADIUS authentication server.</td>
</tr>
<tr>
<td>all</td>
<td>(Optional) Specifies all RADIUS authentication servers.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to clear the RADIUS authentication server statistics:

```
> clear tacacs auth statistics
```

**Related Commands**

- `show tacacs auth statistics`
- `show tacacs summary`
- `config tacacs auth`
clear redirect-url

To clear the custom web authentication redirect URL on the Cisco wireless LAN controller, use the `clear redirect-url` command.

```
clear redirect-url
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to clear the custom web authentication redirect URL:

```
> clear redirect-url
URL cleared.
```

**Related Commands**
clear transfer
clear download datatype
clear download filename
clear download mode
clear download path
clear download start
clear upload datatype
clear upload filename
clear upload mode
clear upload path
clear upload serverip
clear upload start
clear stats ap wlan

To clear the WLAN statistics, use the **clear stats ap wlan** command.

```
clear stats ap wlan cisco_ap
```

**Syntax Description**
- **cisco_ap**  
  Selected configuration elements.

**Defaults**
- None.

**Examples**
This example shows how to clear the WLAN configuration elements of the access point cisco_ap:

```
> clear stats ap wlan cisco-ap
WLAN statistics cleared.
```

**Related Commands**
- show ap stats
- show ap wlan
clear stats local-auth

To clear the local Extensible Authentication Protocol (EAP) statistics, use the `clear stats local-auth` command.

```
clear stats local-auth
```

### Syntax Description

This command has no arguments or keywords.

### Defaults

None.

### Examples

This example shows how to clear the local EAP statistics:

```
> clear stats local-auth
Local EAP Authentication Stats Cleared.
```

### Related Commands

- `config local-auth active-timeout`
- `config local-auth eap-profile`
- `config local-auth method fast`
- `config local-auth user-credentials`
- `debug aaa local-auth`
- `show local-auth certificates`
- `show local-auth config`
- `show local-auth statistics`
clear stats mobility

To clear mobility manager statistics, use the clear stats mobility command.

```
clear stats mobility
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to clear mobility manager statistics:
```
> clear stats mobility
Mobility stats cleared.
```

**Related Commands**
clear transfer
clear download datatype
clear download filename
clear download mode
clear download serverip
clear download start
clear upload datatype
clear upload filename
clear upload mode
clear upload path
clear upload serverip
clear upload start
clear stats port
**clear stats port**

To clear statistics counters for a specific port, use the `clear stats port` command.

```
clear stats port port
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>port</code></td>
<td>Physical interface port number.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to clear the statistics counters for port 9:

```
> clear stats port 9
```

**Related Commands**

- `clear transfer`
- `clear download datatype`
- `clear download filename`
- `clear download mode`
- `clear download serverip`
- `clear download start`
- `clear upload datatype`
- `clear upload filename`
- `clear upload mode`
- `clear upload path`
- `clear upload serverip`
- `clear upload start`
clear stats radius

To clear the statistics for one or more RADIUS servers, use the clear stats radius command.

```
clear stats radius {auth | acct} {index | all}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>auth</td>
<td>Clears statistics regarding authentication.</td>
</tr>
<tr>
<td>acct</td>
<td>Clears statistics regarding accounting.</td>
</tr>
<tr>
<td>index</td>
<td>Index number of the RADIUS server to be cleared.</td>
</tr>
<tr>
<td>all</td>
<td>Clears statistics for all RADIUS servers.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to clear the statistics for all RADIUS authentication servers:

```
> clear stats radius auth all
```
clear stats switch

To clear all switch statistics counters on a Cisco wireless LAN controller, use the `clear stats switch` command.

```
clear stats switch
```

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Examples

This example shows how to clear all switch statistics counters:

```
> clear stats switch
```

Related Commands

- clear transfer
- clear download datatype
- clear download filename
- clear download mode
- clear download path
- clear download start
- clear upload datatype
- clear upload filename
- clear upload mode
- clear upload path
- clear upload serverip
- clear upload start
clear stats tacacs

To clear the TACACS+ server statistics on the controller, use the clear stats tacacs command.

```
clear stats tacacs [auth | athr | acct] [index | all]
```

Syntax Description

- **auth** (Optional) Clears the TACACS+ authentication server statistics.
- **athr** (Optional) Clears the TACACS+ authorization server statistics.
- **acct** (Optional) Clears the TACACS+ accounting server statistics.
- **index** Index of the TACACS+ server.
- **all** (Optional) Specifies all TACACS+ servers.

Defaults

None.

Examples

This example shows how to clear the TACACS+ accounting server statistics for index 1:

```
> clear stats tacacs acct 1
```

Related Commands

- show tacacs summary
clear transfer

To clear the transfer information, use the `clear transfer` command.

```
clear transfer
```

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to clear the transfer information:
```
> clear transfer
Are you sure you want to clear the transfer information? (y/n) y
Transfer Information Cleared.
```

Related Commands
- `transfer upload datatype`
- `transfer upload filename`
- `transfer upload mode`
- `transfer upload pac`
- `transfer upload password`
- `transfer upload path`
- `transfer upload port`
- `transfer upload serverip`
- `transfer upload start`
- `transfer upload username`
### clear traplog

To clear the trap log, use the `clear traplog` command.

```
clear traplog
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>This command has no arguments or keywords.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Defaults</strong></td>
<td>None.</td>
</tr>
<tr>
<td><strong>Examples</strong></td>
<td>This example shows how to clear the trap log:</td>
</tr>
<tr>
<td></td>
<td><code>&gt; clear traplog</code></td>
</tr>
<tr>
<td></td>
<td>Are you sure you want to clear the trap log? (y/n) y</td>
</tr>
<tr>
<td></td>
<td>Trap Log Cleared.</td>
</tr>
</tbody>
</table>

**Related Commands**
- clear transfer
- clear download datatype
- clear download filename
- clear download mode
- clear download path
- clear download serverip
- clear download start
- clear upload filename
- clear upload mode
- clear upload path
- clear upload serverip
- clear upload start
clear webimage

To clear the custom web authentication image, use the `clear webimage` command.

```
clear webimage
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to clear the custom web authentication image:

```
> clear webimage
```

**Related Commands**

- clear transfer
- clear download datatype
- clear download filename
- clear download mode
- clear download path
- clear download serverip
- clear download start
- clear upload filename
- clear upload mode
- clear upload path
- clear upload serverip
- clear upload start
clear webmessage

To clear the custom web authentication message, use the `clear webmessage` command.

```
clear webmessage
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to clear the custom web authentication message:
```
> clear webmessage
Message cleared.
```

**Related Commands**
clear transfer
clear download datatype
clear download filename
clear download mode
clear download path
clear download serverip
clear download start
clear upload filename
clear upload mode
clear upload path
clear upload serverip
clear upload start
clear webtitle

To clear the custom web authentication title, use the clear webtitle command.

    clear webtitle

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to clear the custom web authentication title:

    > clear webtitle
    Title cleared.

Related Commands
clear transfer
clear download datatype
clear download filename
clear download mode
clear download path
clear download serverip
clear download start
clear upload filename
clear upload mode
clear upload path
clear upload serverip
clear upload start
Resetting the System Reboot Time

Use the `reset` command to schedule a reboot of the controller and access points.
reset system at

To reset the system at a specified time, use the **reset system at** command.

```
reset system at YYYY-MM-DD HH:MM:SS image {no-swap | swap} reset-aps [save-config]
```

### Syntax Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>YYYY-MM-DD</td>
<td>Date.</td>
</tr>
<tr>
<td>HH:MM:SS</td>
<td>Time in 24-hour format.</td>
</tr>
<tr>
<td>image</td>
<td>Configures the image to be rebooted.</td>
</tr>
<tr>
<td>swap</td>
<td>Changes the active boot image.</td>
</tr>
<tr>
<td>no-swap</td>
<td>Boots from the active image.</td>
</tr>
<tr>
<td>reset-aps</td>
<td>Resets all access points during the system reset.</td>
</tr>
<tr>
<td>save-config</td>
<td>(Optional) Saves the configuration before the system reset.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to reset the system at 2010-03-29 and 12:01:01 time:

```
> reset system at 2010-03-29 12:01:01 image swap reset-aps save-config
```
reset system in

To specify the amount of time delay before the devices reboot, use the `reset system in` command.

```
reset system in HH:MM:SS image {swap | no-swap} reset-aps save-config
```

### Syntax Description

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HH:MM:SS</td>
<td>Delay in duration.</td>
</tr>
<tr>
<td>image</td>
<td>Configures the image to be rebooted.</td>
</tr>
<tr>
<td>swap</td>
<td>Changes the active boot image</td>
</tr>
<tr>
<td>no-swap</td>
<td>Boots from the active image</td>
</tr>
<tr>
<td>reset-aps</td>
<td>Resets all access points during the system reset.</td>
</tr>
<tr>
<td>save-config</td>
<td>Saves the configuration before the system reset.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to reset the system after a delay of 00:01:01:

```
> reset system in 00:01:01 image swap reset-aps save-config
```

### Related Commands

- `reset system notify-time`
- `reset system at`
reset system cancel

To cancel a scheduled reset, use the reset system cancel command.

```
reset system cancel
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to cancel a scheduled reset:

```
> reset system cancel
```

**Related Commands**
reset system at
reset system in
reset system notify-time
reset system notify-time

To configure the trap generation prior to scheduled resets, use the `reset system notify-time` command.

```
reset system notify-time minutes
```

**Syntax Description**

| minutes | Number of minutes before each scheduled reset at which to generate a trap. |

**Defaults**

The default is 10 minutes.

**Examples**

This example shows how to configure the trap generation to 10 minutes before the scheduled resets:

```
> reset system notify-time 55
```
Uploading and Downloading Files and Configurations

Use the `transfer` command to transfer files to or from the Cisco wireless LAN controller.
transfer download certpassword

To set the password for the .PEM file so that the operating system can decrypt the web administration SSL key and certificate, use the transfer download certpassword command.

    transfer download certpassword private_key_password

Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>private_key_password</td>
<td>Certificate's private key password.</td>
</tr>
</tbody>
</table>

Defaults

None.

Examples

This example shows how to transfer a file to the switch with the certificate’s private key password certpassword:

    > transfer download certpassword

Clearing password

Related Commands

clear transfer
transfer download filename
transfer download mode
transfer download path
transfer download serverip
transfer download start
transfer upload datatype
transfer upload filename
transfer upload mode
transfer upload path
transfer upload serverip
transfer upload start
transfer download datatype

To set the download file type, use the `transfer download datatype` command.

```
transfer download datatype {config | code | image | signature | webadmincert | webauthbundle | eapdevcert | eapcacert}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>config</td>
<td>Downloads the configuration file.</td>
</tr>
<tr>
<td>code</td>
<td>Downloads an executable image to the system.</td>
</tr>
<tr>
<td>image</td>
<td>Downloads a web page login to the system.</td>
</tr>
<tr>
<td>signature</td>
<td>Downloads a signature file to the system.</td>
</tr>
<tr>
<td>webadmincert</td>
<td>Downloads a certificate for web administration to the system.</td>
</tr>
<tr>
<td>webauthbundle</td>
<td>Downloads a custom webauth bundle to the system.</td>
</tr>
<tr>
<td>eapdevcert</td>
<td>Downloads an EAP dev certificate to the system.</td>
</tr>
<tr>
<td>eapcacert</td>
<td>Downloads an EAP ca certificate to the system.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to download an executable image to the system:

```
> transfer download datatype code
```

**Related Commands**

- clear transfer
- transfer download certpassword
- transfer download filename
- transfer download mode
- transfer download path
- transfer download serverip
- transfer download start
- transfer upload datatype
- transfer upload filename
- transfer upload mode
- transfer upload path
- transfer upload serverip
- transfer upload start
transfer download filename

To download a specific file, use the transfer download filename command.

```
transfer download filename filename
```

**Syntax Description**

| filename | Filename that contains up to 512 alphanumeric characters. |

**Defaults**

None.

**Examples**

This example shows how to download a file named build603:

```
> transfer download filename build603
```

**Related Commands**

- clear transfer
- transfer download certpassword
- transfer download mode
- transfer download path
- transfer download serverip
- transfer download start
- transfer upload datatype
- transfer upload filename
- transfer upload mode
- transfer upload path
- transfer upload serverip
- transfer upload start
transfer download mode

To set the transfer mode, use the **transfer download mode** command.

```
transfer download mode {ftp | tftp}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>ftp</th>
<th>tftp</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sets the transfer mode to FTP.</td>
<td>Sets the transfer mode to TFTP.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to transfer a file using the tftp mode:

```
> transfer download mode tftp
```

**Related Commands**

- `clear transfer`
- `transfer download certpassword`
- `transfer download filename`
- `transfer download path`
- `transfer download serverip`
- `transfer download start`
- `transfer upload datatype`
- `transfer upload filename`
- `transfer upload mode`
- `transfer upload path`
- `transfer upload serverip`
- `transfer upload start`
transfer download password

To set the password for an FTP transfer, use the `transfer download password` command.

```
transfer download password password
```

**Syntax Description**

| `password` | Password. |

**Defaults**

None.

**Examples**

This example shows how to set the password for FTP transfer to pass01:

```
> transfer download password pass01
```

**Related Commands**

- `transfer download mode`
- `transfer download port`
- `transfer download username`
transfer download path

To set a specific FTP or TFTP path, use the transfer download path command.

```
transfer download path path
```

**Syntax Description**

<table>
<thead>
<tr>
<th>path</th>
<th>Directory path.</th>
</tr>
</thead>
</table>

**Note**

Pathnames on a TFTP or FTP server are relative to the server’s default or root directory. For example, in the case of the Solarwinds TFTP server, the path is “/”.

**Defaults**

None.

**Examples**

This example shows how to transfer a file to the path c:\install\version2:

```
> transfer download path c:\install\version2
```

**Related Commands**

- clear transfer
download path certpassword
transfer download filename
transfer download mode
transfer download serverip
transfer download start
transfer upload datatype
transfer upload filename
transfer upload mode
transfer upload path
transfer upload serverip
transfer upload start
**transfer download port**

To specify the FTP port, use the `transfer download port` command.

```
transfer download port port
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>port</th>
<th>FTP port.</th>
</tr>
</thead>
</table>

**Defaults**

The default FTP port is 21.

**Examples**

This example shows how to specify FTP port number 23:

```
> transfer download port 23
```

**Related Commands**

- `transfer download mode`
- `transfer download password`
- `transfer download username`
transfer download serverip

To configure the IP address of the TFTP server from which to download information, use the transfer download serverip command.

```
transfer download serverip TFTP_server ip_address
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>TFTP_server</code></td>
<td>TFTP IP address.</td>
</tr>
<tr>
<td><code>ip_address</code></td>
<td>Server IP address.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to configure the IP address of the TFTP server with the IP address 175.34.56.78:

```
> transfer download serverip 175.34.56.78
```

### Related Commands

- clear transfer
- transfer download certpassword
- transfer download filename
- transfer download mode
- transfer download path
- transfer download start
- transfer upload datatype
- transfer upload filename
- transfer upload mode
- transfer upload path
- transfer upload serverip
- transfer upload start
transfer download start

To initiate a download, use the transfer download start command.

```
transfer download start
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to initiate a download:

```
> transfer download start

Mode...................... TFTP
DataType.................. Site Cert
TFTP Server IP........ 172.16.16.78
TFTP Path................ directory path
TFTP Filename........... webadmincert_name

This may take some time.
Are you sure you want to start? (y/n) Y
TFTP Webadmin cert transfer starting.
Certificate installed.
Please restart the switch (reset system) to use the new certificate.
```

**Related Commands**

- `clear transfer`
- `transfer download certpassword`
- `transfer download filename`
- `transfer download mode`
- `transfer download path`
- `transfer download serverip`
- `transfer upload datatype`
- `transfer upload filename`
- `transfer upload mode`
- `transfer upload path`
- `transfer upload serverip`
- `transfer upload start`
transfer download tftpPktTimeout

To specify the TFTP packet timeout, use the `transfer download tftpPktTimeout` command.

```
transfer download tftpPktTimeout timeout
```

### Syntax Description
- **timeout**: Timeout in seconds between 1 and 254.

### Defaults
None.

### Examples
This example shows how to transfer a file with the TFTP packet timeout of 55 seconds:

```
> transfer download tftpPktTimeout 55
```

### Related Commands
- `clear transfer`
- `transfer download certpassword`
- `transfer download filename`
- `transfer download mode`
- `transfer download path`
- `transfer download serverip`
- `transfer download start`
- `transfer upload datatype`
- `transfer upload filename`
- `transfer upload mode`
- `transfer upload path`
- `transfer upload serverip`
- `transfer upload start`
transfer download tftpMaxRetries

To specify the number of allowed TFTP packet retries, use the transfer download tftpMaxRetries command.

```
transfer download tftpMaxRetries retries
```

**Syntax Description**

<table>
<thead>
<tr>
<th>retries</th>
<th>Number of allowed TFTP packet retries between 1 and 254 seconds.</th>
</tr>
</thead>
</table>

**Defaults**
None.

**Examples**
This example shows how to set the number of allowed TFTP packet retries to 55:
```
> transfer download tftpMaxRetries 55
```

**Related Commands**
clear transfer
transfer download certpassword
transfer download filename
transfer download mode
transfer download path
transfer download serverip
transfer download start
transfer upload datatype
transfer upload filename
transfer upload mode
transfer upload path
transfer upload serverip
transfer upload start
transfer download username

To specify the FTP username, use the transfer download username command.

transfer download username username

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>username</th>
<th>Username.</th>
</tr>
</thead>
</table>

Defaults: None.

Examples

This example shows how to set the FTP username to ftp_username:

> transfer download username ftp_username

Related Commands

transfer download mode
transfer download password
transfer download port
transfer encrypt

To configure encryption for configuration file transfers, use the `transfer encrypt` command.

```
transfer encrypt {enable | disable | set-key key}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables the encryption settings.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the encryption settings.</td>
</tr>
<tr>
<td>set-key</td>
<td>Specifies the encryption key for configuration file transfers.</td>
</tr>
<tr>
<td>key</td>
<td>Encryption key for config file transfers.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to enable the encryption settings:

```
> transfer encrypt enable
```

### Related Commands

- clear transfer
- transfer download datatype
- transfer download filename
- transfer download mode
- transfer download path
- transfer download serverip
- transfer upload datatype
- transfer download filename
- transfer download mode
- transfer download path
- transfer download serverip
- transfer download start
transfer upload datatype

To set the controller to upload specified log and crash files, use the `transfer upload datatype` command.

```
transfer upload datatype { config | coredump | crashfile | errorlog | invalid-config | pac | packet-capture | panic-crash-file | radio-core-dump | signature | systemtrace | traplog | watchdog-crash-file }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>config</th>
<th>Uploads the system configuration file.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>coredump</td>
<td>Uploads the core-dump file.</td>
</tr>
<tr>
<td></td>
<td>crashfile</td>
<td>Uploads the system crash file.</td>
</tr>
<tr>
<td></td>
<td>errorlog</td>
<td>Uploads the system error log file.</td>
</tr>
<tr>
<td></td>
<td>invalid-config</td>
<td>Uploads the system invalid-config file.</td>
</tr>
<tr>
<td></td>
<td>pac</td>
<td>Uploads a Protected Access Credential (PAC).</td>
</tr>
<tr>
<td></td>
<td>packet-capture</td>
<td>Uploads a packet capture file.</td>
</tr>
<tr>
<td></td>
<td>panic-crash-file</td>
<td>Uploads the kernel panic information file.</td>
</tr>
<tr>
<td></td>
<td>radio-core-dump</td>
<td>Uploads the system error log.</td>
</tr>
<tr>
<td></td>
<td>signature</td>
<td>Uploads the system signature file.</td>
</tr>
<tr>
<td></td>
<td>systemtrace</td>
<td>Uploads the system trace file.</td>
</tr>
<tr>
<td></td>
<td>traplog</td>
<td>Uploads the system trap log.</td>
</tr>
<tr>
<td></td>
<td>watchdog-crash-file</td>
<td>Uploads a console dump file resulting from a software-watchdog-initiated controller reboot following a crash.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to upload the system error log file:

```
> transfer upload datatype errorlog
```

**Related Commands**

- clear transfer
- transfer upload filename
- transfer upload mode
- transfer upload pac
- transfer upload password
- transfer upload path
- transfer upload port
- transfer upload serverip
- transfer upload start
- transfer upload username
**transfer upload filename**

To upload a specific file, use the `transfer upload filename` command.

```
transfer upload filename filename
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>filename</td>
<td>Filename that contains up to 16 alphanumeric characters.</td>
</tr>
</tbody>
</table>

| Defaults            | None.                                  |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to upload a file build603:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; transfer upload filename build603</td>
</tr>
</tbody>
</table>

**Related Commands**
- clear transfer
- transfer upload datatype
- transfer upload mode
- transfer upload pac
- transfer upload password
- transfer upload path
- transfer upload port
- transfer upload serverip
- transfer upload start
- transfer upload username
transfer upload mode

To configure the transfer mode, use the `transfer upload mode` command.

```
transfer upload mode {ftp | tftp}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ftp</td>
<td>Sets the transfer mode to FTP.</td>
</tr>
<tr>
<td>tftp</td>
<td>Sets the transfer mode to TFTP.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to set the transfer mode to TFTP:

```
> transfer upload mode tftp
```

**Related Commands**

- clear transfer
- transfer upload datatype
- transfer upload filename
- transfer upload pac
- transfer upload password
- transfer upload path
- transfer upload port
- transfer upload serverip
- transfer upload start
- transfer upload username
transfer upload pac

To load a Protected Access Credential (PAC) to support the local authentication feature and allow a client to import the PAC, use the `transfer upload pac` command.

```
transfer upload pac username validity password
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>username</td>
<td>User identity of the PAC.</td>
</tr>
<tr>
<td>validity</td>
<td>Validity period (days) of the PAC.</td>
</tr>
<tr>
<td>password</td>
<td>Password to protect the PAC.</td>
</tr>
</tbody>
</table>

**Defaults**
None.

**Usage Guidelines**
The client upload process uses a TFTP or FTP server.

**Examples**
This example shows how to upload a PAC with the username user1, validity period 53, and password pass01:
```
> transfer upload pac user1 53 pass01
```

**Related Commands**
clear transfer
transfer upload datatype
transfer upload filename
transfer upload mode
transfer upload password
transfer upload path
transfer upload port
transfer upload serverip
transfer upload start
transfer upload username
transfer upload password

To configure the password for FTP transfer, use the `transfer upload password` command.

```
transfer upload password password
```

### Syntax Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>password</code></td>
<td>Password needed to access the FTP server.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to configure the password for the FTP transfer to pass01:

```
> transfer upload password pass01
```

### Related Commands

- clear transfer
- transfer upload datatype
- transfer upload filename
- transfer upload mode
- transfer upload pac
- transfer upload path
- transfer upload port
- transfer upload serverip
- transfer upload start
- transfer upload username
transfer upload path

To set a specific upload path, use the transfer upload path command.

\textbf{transfer upload path} \textit{path}

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>\textit{path}</td>
<td>Server path to file.</td>
</tr>
</tbody>
</table>

| Defaults | None. |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to set the upload path to c:\install\version2:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; transfer upload path c:\install\version2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>clear transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>transfer upload datatype</td>
</tr>
<tr>
<td></td>
<td>transfer upload filename</td>
</tr>
<tr>
<td></td>
<td>transfer upload mode</td>
</tr>
<tr>
<td></td>
<td>transfer upload pac</td>
</tr>
<tr>
<td></td>
<td>transfer upload password</td>
</tr>
<tr>
<td></td>
<td>transfer upload port</td>
</tr>
<tr>
<td></td>
<td>transfer upload serverip</td>
</tr>
<tr>
<td></td>
<td>transfer upload start</td>
</tr>
<tr>
<td></td>
<td>transfer upload username</td>
</tr>
</tbody>
</table>
transfer upload port

To specify the FTP port, use the transfer upload port command.

    transfer upload port port

Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>port</td>
<td>Port number.</td>
</tr>
</tbody>
</table>

Defaults

The default FTP port is 21.

Examples

This example shows how to specify FTP port 23:

    > transfer upload port 23

Related Commands

clear transfer
transfer upload datatype
transfer upload filename
transfer upload mode
transfer upload pac
transfer upload password
transfer upload path
transfer upload serverip
transfer upload start
transfer upload username
**transfer upload serverip**

To configure the IP address of the TFTP server to upload files to, use the `transfer upload serverip` command.

```
transfer upload serverip ip_address
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>ip_address</code></td>
<td>Server IP address.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to set the IP address of the TFTP server to 175.31.56.78:

```
> transfer upload serverip 175.31.56.78
```

**Related Commands**

- clear transfer
- transfer upload datatype
- transfer upload filename
- transfer upload mode
- transfer upload pac
- transfer upload password
- transfer upload path
- transfer upload port
- transfer upload start
- transfer upload username
transfer upload start

To initiate an upload, use the transfer upload start command.

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to initiate an upload of a file:

> transfer upload start

Mode........................................... TFTP
TFTP Server IP................................. 172.16.16.78
TFTP Path...................................... c:\find\off/
TFTP Filename.................................. wps_2_0_75_0.aes
Data Type...................................... Code

Are you sure you want to start? (y/n) n
 Transfer Cancelled

Related Commands
clear transfer
transfer upload datatype
transfer upload filename
transfer upload mode
transfer upload pac
transfer upload password
transfer upload path
transfer upload port
transfer upload serverip
transfer upload username
transfer upload username

To specify the FTP username, use the `transfer upload username` command.

```
transfer download username username
```

### Syntax Description

<table>
<thead>
<tr>
<th>Username</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>username</code></td>
<td>Username required to access the FTP server. The username can contain up to 31 characters.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to set the FTP username to `ftp_username`:

```
> transfer upload username ftp_username
```

### Related Commands

- `clear transfer`
- `transfer upload datatype`
- `transfer upload filename`
- `transfer upload mode`
- `transfer upload pac`
- `transfer upload password`
- `transfer upload path`
- `transfer upload port`
- `transfer upload serverip`
- `transfer upload start`
Installing and Modifying Licenses

Use the **license** commands to install, remove, modify, or rehost licenses.

---

**Note**

The **license** commands are available only on the Cisco 5500 Series Controller.

---

**Note**

For detailed information on installing and rehosting licenses on the Cisco 5500 Series Controller, see the “Installing and Configuring Licenses” section in Chapter 4 of the *Cisco Wireless LAN Controller Configuration Guide*. 

---
**license clear**

To remove a license from the Cisco 5500 Series Controller, use the **license clear** command.

```
license clear license_name
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>license_name</td>
<td>Name of the license.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

You can delete an expired evaluation license or any unused license. You cannot delete unexpired evaluation licenses, the permanent base image license, or licenses that are in use by the controller.

**Examples**

This example shows how to remove the license settings of the license named wplus-ap-count:

```
> license clear wplus-ap-count
```

**Related Commands**

- license comment
- license install
- license revoke
- license save
- show license all
license comment

To add comments to a license or delete comments from a license on the Cisco 5500 Series Controller, use the `license comment` command.

```
license comment { add | delete } license_name comment_string
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>add</td>
<td>Adds a comment.</td>
</tr>
<tr>
<td>delete</td>
<td>Deletes a comment.</td>
</tr>
<tr>
<td>license_name</td>
<td>Name of the license.</td>
</tr>
<tr>
<td>comment_string</td>
<td>License comment.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to add a comment “wplus ap count license” to the license name wplus-ap-count:

```
> license comment add wplus-ap-count Comment for wplus ap count license
```

**Related Commands**

- license clear
- license install
- license revoke
- license save
- show license all
license install

To install a license on the Cisco 5500 Series Controller, use the **license install** command.

```
license install url
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>url</code></td>
<td>URL of the TFTP server (tftp://server_ip/path/filename).</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

We recommend that the access point count be the same for the base-ap-count and wplus-ap-count licenses installed on your controller. If your controller has a base-ap-count license of 100 and you install a wplus-ap-count license of 12, the controller supports up to 100 access points when the base license is in use but only a maximum of 12 access points when the wplus license is in use.

You cannot install a wplus license that has an access point count greater than the controller’s base license. For example, you cannot apply a wplus-ap-count 100 license to a controller with an existing base-ap-count 12 license. If you attempt to register for such a license, an error message appears indicating that the license registration has failed. Before upgrading to a wplus-ap-count 100 license, you would first have to upgrade the controller to a base-ap-count 100 or 250 license.

### Examples

This example shows how to install a license on the controller from the URL tftp://10.10.10.10/path/license.lic:

```
> license install tftp://10.10.10.10/path/license.lic
```

### Related Commands

license clear
license modify priority
license revoke
license save
show license all
license modify priority

To raise or lower the priority of the base-ap-count or wplus-ap-count evaluation license on a Cisco 5500 Series Controller, use the `license modify priority` command.

```
license modify priority license_name { high | low }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>license_name</code></td>
<td>Ap-count evaluation license.</td>
</tr>
<tr>
<td><code>high</code></td>
<td>Modifies the priority of an ap-count evaluation license.</td>
</tr>
<tr>
<td><code>low</code></td>
<td>Modifies the priority of an ap-count evaluation license.</td>
</tr>
</tbody>
</table>

**Defaults**
None.

**Usage Guidelines**
If you are considering upgrading to a license with a higher access point count, you can try an evaluation license before upgrading to a permanent version of the license. For example, if you are using a permanent license with a 50 access point count and want to try an evaluation license with a 100 access point count, you can try out the evaluation license for 60 days.

AP-count evaluation licenses are set to low priority by default so that the controller uses the ap-count permanent license. If you want to try an evaluation license with an increased access point count, you must change its priority to high. If you no longer want to have this higher capacity, you can lower the priority of the ap-count evaluation license, which forces the controller to use the permanent license.

**Note**
You can set the priority only for ap-count evaluation licenses. AP-count permanent licenses always have a medium priority, which cannot be configured.

**Note**
If the ap-count evaluation license is a wplus license and the ap-count permanent license is a base license, you must also change the feature set to wplus.

**Note**
To prevent disruptions in operation, the controller does not switch licenses when an evaluation license expires. You must reboot the controller in order to return to a permanent license. Following a reboot, the controller defaults to the same feature set level as the expired evaluation license. If no permanent license at the same feature set level is installed, the controller uses a permanent license at another level or an unexpired evaluation license.

**Examples**
This example shows how to set the priority of the wplus-ap-count to high:

```
> license modify priority wplus-ap-count high
```
license modify priority

Related Commands
- license clear
- license install
- license revoke
- license save
- show license all
license revoke

To rehost a license on a Cisco 5500 Series Controller, use the `license revoke` command.

```plaintext
license revoke {permission_ticket_url | rehost rehost_ticket_url}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>permission_ticket_url</code></td>
<td>URL of the TFTP server (<code>tftp://server_ip/path/filename</code>) where you saved the permission ticket.</td>
</tr>
<tr>
<td><code>rehost</code></td>
<td>Specifies the rehost license settings.</td>
</tr>
<tr>
<td><code>rehost_ticket_url</code></td>
<td>URL of the TFTP server (<code>tftp://server_ip/path/filename</code>) where you saved the rehost ticket.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Usage Guidelines**

Before you revoke a license, save the device credentials by using the `license save credential url` command.

You can rehost all permanent licenses except the permanent base image license. Evaluation licenses and the permanent base image license cannot be rehosted.

In order to rehost a license, you must generate credential information from the controller and use it to obtain a permission ticket to revoke the license from the Cisco licensing site (https://tools.cisco.com/SWIFT/Licensing/PrivateRegistrationServlet). Next, you must obtain a rehost ticket and use it to obtain a license installation file for the controller on which you want to install the license.

For detailed information on rehosting licenses, see the “Installing and Configuring Licenses” section in Chapter 4 of the *Cisco Wireless LAN Controller Configuration Guide*.

**Examples**

This example shows how to revoke the license settings from the saved permission ticket URL `tftp://10.10.10.10/path/permit_ticket.lic`:

```plaintext
license revoke tftp://10.10.10.10/path/permit_ticket.lic
```

This example shows how to revoke the license settings from the saved rehost ticket URL `tftp://10.10.10.10/path/rehost_ticket.lic`:

```plaintext
license revoke rehost tftp://10.10.10.10/path/rehost_ticket.lic
```

**Related Commands**

- `license clear`
- `license install`
- `license modify priority`
- `license save`
- `show license all`
license save

To save a backup copy of all installed licenses or license credentials on the Cisco 5500 Series Controller, use the **license save** command.

```
license save credential url
```

### Syntax Description

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>credential</td>
<td>Saves device credential information to a file.</td>
</tr>
<tr>
<td>url</td>
<td>URL of the TFTP server (tftp://server_ip/path/filename).</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Usage Guidelines

Save the device credentials before you revoke the license by using the **license revoke** command.

### Examples

This example shows how to save a backup copy of all installed licenses or license credentials on tftp://10.10.10.10/path/cred.lic:

```
> license save credential tftp://10.10.10.10/path/cred.lic
```

### Related Commands

- license clear
- license install
- license modify priority
- license revoke
- show license all
Troubleshooting Commands

Use the `debug` commands to manage system debugging.

⚠️ Caution

Debug commands are reserved for use only under direction of Cisco personnel. Do not use these commands without direction from Cisco-certified staff.

📝 Note

Enabling all `debug` commands on a system with many clients authenticating may result in some debugs being lost.
debug aaa

To configure AAA debug options, use the `debug aaa` command.

```
debug aaa { [all | detail | events | packet | ldap | local-auth | tacacs] [ enable | disable ] }
```

**Syntax Description**

- **all** *(Optional)* Specifies debugging of all AAA messages.
- **detail** *(Optional)* Specifies debugging of AAA errors.
- **events** *(Optional)* Specifies debugging of AAA events.
- **packet** *(Optional)* Specifies debugging of AAA packets.
- **ldap** *(Optional)* Specifies debugging of the AAA Lightweight Directory Access Protocol (LDAP) events.
- **local-auth** *(Optional)* Specifies debugging of the AAA local Extensible Authentication Protocol (EAP) events.
- **tacacs** *(Optional)* Specifies debugging of the AAA TACACS+ events.
- **enable** *(Optional)* Starts the debugging feature.
- **disable** *(Optional)* Stops the debugging feature.

**Defaults**

None.

**Examples**

This example shows how to enable the debugging of AAA LDAP events:

```
> debug aaa ldap enable
```

**Related Commands**

- `debug aaa local-auth eap`
- `show running-config`
debug aaa local-auth

To debug AAA local authentication on the controller, use the debug aaa local-auth command.

```
debug aaa local-auth { db | shim | eap { framework | method } { all | errors | events | packets | sm } } { enable | disable }
```

| Syntax Description | db | shim | eap { framework | method } { all | errors | events | packets | sm } | enable | disable |
|--------------------|----|------|-----------------------------|----------|---------|---------|
| db                 | Configures debugging of the AAA local authentication back-end messages and events. |         |                             |          |         |         |
| shim               | Configures debugging of the AAA local authentication shim layer events. |         |                             |          |         |         |
| all                | errors | events | packets | sm | enable | disable |

**Defaults**

None.

**Examples**

This example shows how to enable the debugging of the AAA local EAP authentication:

```
> debug aaa local-auth eap method all enable
```

**Related Commands**
clear stats local-auth
cfg local-auth active-timeout
cfg local-auth eap-profile
cfg local-auth method fast
cfg local-auth user-credentials
show local-auth certificates
show local-auth config
show local-auth statistics
**debug airewave-director**

To configure the Airewave Director software debug options, use the `debug airewave-director` command.

```
debug airewave-director {all | channel | detail | error | group | manager | message | packet | power | profile | radar | rf-change} {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Configures debugging of all Airewave Director logs.</td>
</tr>
<tr>
<td>channel</td>
<td>Configures debugging of the Airewave Director channel assignment protocol.</td>
</tr>
<tr>
<td>detail</td>
<td>Configures debugging of the Airewave Director detail logs.</td>
</tr>
<tr>
<td>error</td>
<td>Configures debugging of the Airewave Director error logs.</td>
</tr>
<tr>
<td>group</td>
<td>Configures debugging of the Airewave Director grouping protocol.</td>
</tr>
<tr>
<td>manager</td>
<td>Configures debugging of the Airewave Director manager.</td>
</tr>
<tr>
<td>message</td>
<td>Configures debugging of the Airewave Director messages.</td>
</tr>
<tr>
<td>packet</td>
<td>Configures debugging of the Airewave Director packets.</td>
</tr>
<tr>
<td>power</td>
<td>Configures debugging of the Airewave Director power assignment protocol and coverage hole detection.</td>
</tr>
<tr>
<td>profile</td>
<td>Configures debugging of the Airewave Director profile events.</td>
</tr>
<tr>
<td>radar</td>
<td>Configures debugging of the Airewave Director radar detection/avoidance protocol.</td>
</tr>
<tr>
<td>rf-change</td>
<td>Configures debugging of the Airewave Director rf changes.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the Airewave Director debug setting.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the Airewave Director debug setting.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the debugging of Airewave Director profile events:

```
> debug airewave-director profile enable
```

**Related Commands**

- `show sysinfo`
- `debug disable-all`
debug ap

To enable or disable remote debugging of Cisco lightweight access points or to remotely execute a command on a lightweight access point, use the debug ap command.

```
debug ap {enable | disable | command cmd} cisco_ap
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables debugging on a lightweight access point.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables debugging on a lightweight access point.</td>
</tr>
<tr>
<td>command</td>
<td>Specifies that a CLI command is to be executed on the access point.</td>
</tr>
<tr>
<td>cmd</td>
<td>Command to be executed.</td>
</tr>
</tbody>
</table>

**Note:** The command to be executed must be enclosed in double quotes, such as `debug ap command "led flash 30" AP03.`

**Note:** The output of the command displays only to the controller console and does not send output to a controller Telnet/SSH CLI session.

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cisco_ap</td>
<td>Name of a Cisco lightweight access point.</td>
</tr>
</tbody>
</table>

**Defaults** Disabled.

### Examples

This example shows how to enable remote debugging on access point AP01:

```
> debug ap enable AP01
```

This example shows how to execute the `config ap location` command on access point AP02:

```
> debug ap command "config ap location "Building 1" AP02"
```

This example shows how to execute the flash LED command on access point AP03:

```
> debug ap command "led flash 30" AP03
```

### Related Commands

- show sysinfo
- config sysname
debug ap enable

To enable or disable remote debugging of Cisco lightweight access points or to remotely execute a command on a lightweight access point, use the `debug ap enable` command.

```
debug ap {enable | disable | command cmd} cisco_ap
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>Enables remote debugging.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Note</td>
<td>The debugging information is displayed only to the controller console and does not send output to a controller Telnet/SSH CLI session.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables remote debugging.</td>
<td></td>
</tr>
<tr>
<td>command</td>
<td>Specifies that a CLI command is to be executed on the access point.</td>
<td></td>
</tr>
<tr>
<td>cmd</td>
<td>Command to be executed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note</td>
<td>The command to be executed must be enclosed in double quotes, such as <code>debug ap command &quot;led flash 30&quot; AP03</code>.</td>
</tr>
<tr>
<td></td>
<td>Note</td>
<td>The output of the command displays only to the controller console and does not send output to a controller Telnet/SSH CLI session.</td>
</tr>
</tbody>
</table>

**cisco_ap** Cisco lightweight access point name.

**Defaults** None.

**Examples**

This example shows how to enable remote debugging on access point AP01:
```
> debug ap enable AP01
```

This example shows how to disable remote debugging on access point AP02:
```
> debug ap disable AP02
```

This example shows how to execute the flash LED command on access point AP03:
```
> debug ap command "led flash 30" AP03
```

**Related Commands**

- `show sysinfo`
- `config sysname`
debug arp

To configure Address Resolution Protocol (ARP) debug options, use the debug arp command.

```
debug arp {all | detail | events | message} {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Configures debugging of all ARP logs.</td>
</tr>
<tr>
<td>detail</td>
<td>Configures debugging of ARP detail messages.</td>
</tr>
<tr>
<td>error</td>
<td>Configures debugging of ARP errors.</td>
</tr>
<tr>
<td>message</td>
<td>Configures debugging of ARP messages.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables ARP debugging.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables ARP debugging.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable ARP debug settings:

```
> debug arp error enable
```

This example shows how to disable ARP debug settings:

```
> debug arp error disable
```

**Related Commands**

- show sysinfo
- debug disable-all
**debug bcast**

To configure debugging of broadcast options, use the **debug bcast** command.

```
default bcast {all | error | message | igmp | detail} {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Configures debugging of all broadcast logs.</td>
</tr>
<tr>
<td>error</td>
<td>Configures debugging of broadcast errors.</td>
</tr>
<tr>
<td>message</td>
<td>Configures debugging of broadcast messages.</td>
</tr>
<tr>
<td>igmp</td>
<td>Configures debugging of broadcast IGMP messages.</td>
</tr>
<tr>
<td>detail</td>
<td>Configures debugging of broadcast detailed messages.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the broadcast debugging.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the broadcast debugging.</td>
</tr>
</tbody>
</table>

**Defaults**
None.

**Examples**
This example shows how to enable broadcast debug settings:
```
> debug bcast message enable
```

This example shows how to disable broadcast debug settings:
```
> debug bcast message disable
```

**Related Commands**
- show sysinfo
- debug disable-all
To configure Call Admission Control (CAC) debug options, use the `debug cac` command.

```
debug cac {all | event | packet} {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Configures debugging options for all CAC messages.</td>
</tr>
<tr>
<td>event</td>
<td>Configures debugging options for CAC events.</td>
</tr>
<tr>
<td>packet</td>
<td>Configures debugging options for selected CAC packets.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the debugging.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the debugging.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Examples**

This example shows how to enable debug CAC settings:

```
> debug cac event enable
```

**Related Commands**

- `config 802.11 cac video acm`
- `config 802.11 {enable | disable} network`
- `config 802.11 cac video max-bandwidth`
- `config 802.11 cac video roam-bandwidth`
- `config 802.11 cac video tspec-inactivity-timeout`
- `config 802.11 cac voice acm`
- `config 802.11 cac voice load-based`
- `config 802.11 cac voice max-bandwidth`
- `config 802.11 cac voice roam-bandwidth`
- `config 802.11 cac voice stream-size`
- `config 802.11 cac voice tspec-inactivity-timeout`
debug call-control

To debug the SIP call control settings, use the `debug call-control` command.

```
dbg call-control { all | event } { enable | disable }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Configures debugging options for all SIP call control messages.</td>
</tr>
<tr>
<td>event</td>
<td>Configures debugging options for SIP call control events.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the SIP call control debugging settings.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the SIP call control debugging settings.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled.

**Examples**

This example shows how to enable debugging of all SIP call control messages:

```
> debug call-control all enable
```
debug capwap

To obtain troubleshooting information about Control and Provisioning of Wireless Access Points (CAPWAP) settings, use the `debug capwap` command.

```
debug capwap {detail | dtls-keepalive | errors | events | hexdump | info | packet | payload} {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>Configures debugging for CAPWAP detail settings.</td>
</tr>
<tr>
<td>dtls-keepalive</td>
<td>Configures debugging for CAPWAP DTLS data keepalive packets settings.</td>
</tr>
<tr>
<td>errors</td>
<td>Configures debugging for CAPWAP error settings.</td>
</tr>
<tr>
<td>events</td>
<td>Configures debugging for CAPWAP events settings.</td>
</tr>
<tr>
<td>hexdump</td>
<td>Configures debugging for CAPWAP hexadecimal dump settings.</td>
</tr>
<tr>
<td>info</td>
<td>Configures debugging for CAPWAP info settings.</td>
</tr>
<tr>
<td>packet</td>
<td>Configures debugging for CAPWAP packet settings.</td>
</tr>
<tr>
<td>payload</td>
<td>Configures debugging for CAPWAP payload settings.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables debugging of the CAPWAP command.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables debugging of the CAPWAP command.</td>
</tr>
</tbody>
</table>

**Command Default**

None.

**Examples**

This example shows how to enable debug CAPWAP detail settings:

```
> debug capwap detail enable
```

**Related Commands**

- `clear lwapp private-config`
- `debug disable-all`
- `show capwap reap association`
- `show capwap reap status`
debug capwap reap

To obtain troubleshooting information about Control and Provisioning of Wireless Access Points (CAPWAP) settings on a Hybrid Remote Edge Access Point (hybrid-REAP) access point, use the `debug capwap reap` command.

```
debug capwap reap [mgmt | load]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mgmt</td>
<td>(Optional) Configures debugging for client authentication and association messages.</td>
</tr>
<tr>
<td>load</td>
<td>(Optional) Configures debugging for payload activities, which is useful when the hybrid-REAP access point boots up in standalone mode.</td>
</tr>
</tbody>
</table>

**Command Default**

None.

**Examples**

This example shows how to debug hybrid-REAP client authentication and association messages:

```
> debug capwap reap mgmt
```

**Related Commands**

clear lwapp private-config
debug disable-all
show capwap reap association
show capwap reap status
debug client

To debug if the passive client is associated correctly with the access point and if the passive client has moved into the DHCP required state at the controller, use the debug client command.

dependent client \textit{mac\_address}

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>\textit{mac_address}</th>
<th>MAC address of the client.</th>
</tr>
</thead>
</table>

| Command Default    | None.                 |

<table>
<thead>
<tr>
<th>Examples</th>
<th>This example shows how to debug a passive client with mac address 00:0d:28:f4:c0:45:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>\texttt{&gt; debug client 00:0d:28:f4:c0:45}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Commands</th>
<th>debug disable-all</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>show capwap reap association</td>
</tr>
<tr>
<td></td>
<td>show capwap reap status</td>
</tr>
</tbody>
</table>
# debug crypto

To configure hardware cryptographic debug options, use the `debug crypto` command.

```
d debug crypto \{ all | sessions | trace | warning \} \{ enable | disable \}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>all</code></td>
<td>Configures debugging of all hardware crypto messages.</td>
</tr>
<tr>
<td><code>sessions</code></td>
<td>Configures debugging of hardware crypto sessions.</td>
</tr>
<tr>
<td><code>trace</code></td>
<td>Configures debugging of hardware crypto sessions.</td>
</tr>
<tr>
<td><code>warning</code></td>
<td>Configures debugging of hardware crypto sessions.</td>
</tr>
<tr>
<td><code>enable</code></td>
<td>Enables the hardware cryptographic debugging.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables the hardware cryptographic debugging setting.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable the debugging of hardware crypto sessions:

```
> debug crypto sessions enable
```

**Related Commands**

- `show sysinfo`
- `debug disable-all`
debug dhcp

To configure DHCP debug options, use the **debug dhcp** command.

```
debug dhcp {message | packet} {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>message</td>
<td>Configures debugging of DHCP error messages.</td>
</tr>
<tr>
<td>packet</td>
<td>Configures debugging of DHCP packets.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the DHCP debugging.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the DHCP debugging.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable DHCP debug settings:

```
> debug dhcp message enable
```

**Related Commands**

- `config dhcp`
- `config dhcp proxy`
- `config interface dhcp`
- `config wlan dhcp_server`
- `debug dhcp service-port`
- `debug disable-all`
- `show dhcp`
- `show dhcp proxy`
debug dhcp service-port

To enable or disable debugging of Dynamic Host Configuration Protocol (DHCP) packets on the service port, use the **debug dhcp service-port** command.

```
ddebug dhcp service-port {enable | disable}
```

<table>
<thead>
<tr>
<th>SyntaxDescription</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables the debugging of DHCP packets on the service port.</td>
<td>Disables the debugging of DHCP packets on the service port.</td>
</tr>
</tbody>
</table>

**Command Default**
None.

**Examples**
This example shows how to enable debugging of DHCP packets on a service port:
```
> debug dhcp service-port enable
```

**Related Commands**
- config dhcp
- config dhcp proxy
- config interface dhcp
- config wlan dhcp_server
- debug dhcp
- debug disable-all
- show dhcp
- show dhcp proxy
debug disable-all

To disable all debug messages, use the debug disable-all command.

debug disable-all

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
Disabled.

**Examples**
This example shows how to disable all debug messages:
> debug disable-all
**debug dot11**

To configure dot11 events debug options, use the `debug dot11` command.

```
dot11 { all | load-balancing | management | mobile | rfid | rldp | rogue | state } { enable | disable }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>all</code></td>
<td>Configures debugging of all 802.11 messages.</td>
</tr>
<tr>
<td><code>load-balancing</code></td>
<td>Configures debugging of 802.11 load balancing events.</td>
</tr>
<tr>
<td><code>management</code></td>
<td>Configures debugging of 802.11 MAC management messages.</td>
</tr>
<tr>
<td><code>mobile</code></td>
<td>Configures debugging of 802.11 mobile events.</td>
</tr>
<tr>
<td><code>rfid</code></td>
<td>Configures debugging of the 802.11 RFID tag module.</td>
</tr>
<tr>
<td><code>rldp</code></td>
<td>Configures debugging of 802.11 Rogue Location Discovery.</td>
</tr>
<tr>
<td><code>rogue</code></td>
<td>Configures debugging of 802.11 rogue events.</td>
</tr>
<tr>
<td><code>state</code></td>
<td>Configures debugging of 802.11 mobile state transitions.</td>
</tr>
<tr>
<td><code>enable</code></td>
<td>Enables dot11 debugging.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables dot11 debugging.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable dot11 debug settings:

```
> debug dot11 state enable
```

**Related Commands**

- `debug disable-all`
- `debug dot11 mgmt interface`
- `debug dot11 mgmt msg`
- `debug dot11 mgmt ssid`
- `debug dot11 mgmt state-machine`
- `debug dot11 mgmt station`
debug dot11 mgmt interface

To debug 802.11 management interface events, use the debug dot11 mgmt interface command.

**debug dot11 mgmt interface**

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to debug dot11 management interface events:

```
> debug dot11 mgmt interface
```

**Related Commands**
- debug disable-all
- debug dot11
- debug dot11 mgmt msg
- debug dot11 mgmt ssid
- debug dot11 mgmt state-machine
- debug dot11 mgmt station
debug dot11 mgmt msg

To debug 802.11 management messages, use the **debug dot11 mgmt msg** command.

`debug dot11 mgmt msg`

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to debug dot11 management messages:

```
> debug dot11 mgmt msg
```

**Related Commands**
- **debug disable-all**
- **debug dot11**
- **debug dot11 mgmt interface**
- **debug dot11 mgmt ssid**
- **debug dot11 mgmt state-machine**
- **debug dot11 mgmt station**
debug dot11 mgmt ssid

To debug 802.11 Service Set Identifier (SSID) management events, use the `debug dot11 mgmt ssid` command.

`debug dot11 mgmt ssid`

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Examples**
This example shows how to debug dot11 SSID management events:

```
> debug dot11 mgmt ssid
```

**Related Commands**
- debug disable-all
- debug dot11
- debug dot11 mgmt interface
- debug dot11 mgmt msg
- debug dot11 mgmt state-machine
- debug dot11 mgmt station
debug dot11 mgmt state-machine

To debug the 802.11 state machine, use the debug dot11 mgmt state-machine command.

Syntax Description
This command has no arguments or keywords.

Defaults
None.

Examples
This example shows how to debug dot11 state machine settings:

> debug dot11 mgmt state-machine

Related Commands
debug disable-all
debug dot11
debug dot11 mgmt interface
debug dot11 mgmt msg
debug dot11 mgmt ssid
debug dot11 mgmt station
debug dot11 mgmt station

To debug client events, use the **debug dot11 mgmt station** command.

```
  debug dot11 mgmt station
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

None.

**Examples**

This example shows how to debug management station settings:

```
  > debug dot11 mgmt station
```

**Related Commands**

- debug disable-all
- debug dot11
- debug dot11 mgmt interface
- debug dot11 mgmt msg
- debug dot11 mgmt ssid
- debug dot11 mgmt state-machine
## debug dot1x

To configure dot1x debug options, use the `debug dot1x` command.

```
dot1x { aaa | all | events | packet | states } { enable | disable }
```

### Syntax Description

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>aaa</td>
<td>Configures debugging of 802.1X AAA interactions.</td>
</tr>
<tr>
<td>all</td>
<td>Configures debugging of all 802.1X messages.</td>
</tr>
<tr>
<td>events</td>
<td>Configures debugging of 802.1X events.</td>
</tr>
<tr>
<td>packet</td>
<td>Configures debugging of 802.1X mobile state transitions.</td>
</tr>
<tr>
<td>states</td>
<td>Configures debugging of 802.1X mobile state transitions.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables dot1x debugging.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables dot1x debugging.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

- This example shows how to enable debugging of dot1x mobile state transitions:
  ```
  > debug dot1x states enable
  ```

- This example shows how to disable debugging of all dot1x interactions:
  ```
  > debug dot1x all disable
  ```

### Related Commands

- `debug disable-all`
- `debug dot11`
- `debug dot11 mgmt interface`
- `debug dot11 mgmt msg`
- `debug dot11 mgmt ssid`
- `debug dot11 mgmt state-machine`
- `debug dot11 mgmt station`
debug group

To enable or disable debugging of access point groups, use the \textbf{debug group} command.

\texttt{debug group \{enable \mid disable\}}

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables access point group debugging.</td>
<td>Disables access point group debugging.</td>
</tr>
</tbody>
</table>

\textbf{Defaults} None.

\textbf{Examples} This example shows how to enable debugging of access point groups:

\texttt{> debug group enable}

\textbf{Related Commands} \texttt{config guest-lan nac}  
\texttt{config wlan apgroup}  
\texttt{config wlan nac}
debug hreap aaa

To enable or disable debugging of hybrid-REAP (HREAP) backup RADIUS server events or errors, use the `debug hreap aaa` command.

```
  debug hreap aaa {event | error} {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>event</td>
<td>Configures debugging for HREAP RADIUS server events.</td>
</tr>
<tr>
<td>error</td>
<td>Configures debugging for HREAP RADIUS server errors.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables debugging of hybrid-REAP RADIUS server settings.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables debugging of hybrid-REAP RADIUS server settings.</td>
</tr>
</tbody>
</table>

**Command Default**

None.

**Examples**

This example shows how to enable debugging of HREAP RADIUS server events:

```
> debug hreap aaa event enable
```

**Related Commands**

dump disable-all
dump hreap cckm
dump hreap group
cfg hreap group
dump hreap group detail
dump hreap group summary
dump radius summary
debug hreap cckm

To enable or disable debugging of hybrid-REAP (HREAP) Cisco Centralized Key Management (CCKM fast roaming), use the `debug hreap cckm` command.

```
dump hreap cckm {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enables debugging of HREAP CCKM fast roaming settings.</td>
<td>Disables debugging of HREAP CCKM fast roaming settings.</td>
</tr>
</tbody>
</table>

**Command Default**

None.

**Examples**

This example shows how to enable debugging of HREAP CCKM fast roaming events:

```
> debug hreap cckm event enable
```

**Related Commands**

- `debug disable-all`
- `debug hreap aaa`
- `debug hreap group`
- `config hreap group`
- `show hreap group detail`
- `show hreap group summary`
- `show radius summary`
debug hreap group

To enable or disable debugging of hybrid-REAP (HREAP) access point groups, use the `debug hreap group` command.

```
  debug hreap group { enable | disable }
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables debugging of HREAP access point groups.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables debugging of HREAP access point groups.</td>
</tr>
</tbody>
</table>

### Command Default

None.

### Examples

This example shows how to enable debugging of HREAP access point groups:

```
> debug hreap group enable
```

### Related Commands

- `debug disable-all`
- `debug hreap aaa`
- `debug hreap cckm`
- `config hreap group`
- `show hreap group detail`
- `show hreap group summary`
debug l2age

To configure debugging of Layer 2 age timeout messages, use the `debug l2age` command.

```
default l2age { enable | disable }
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable Layer2 age debug settings:

```
> debug l2age enable
```

**Related Commands**

`debug disable-all`
debug lwapp console cli

To begin debugging the access point console CLI, use the `debug lwapp console cli` command from the access point console port.

```
debug lwapp console cli
```

**Syntax Description**
This command has no arguments or keywords.

**Defaults**
None.

**Usage Guidelines**
This access point CLI command must be entered from the access point console port.

**Examples**
This example shows how to begin debugging the access point console:

```
AP# debug lwapp console cli
LWAPP console CLI allow/disallow debugging is on
```

**Related Commands**
- `debug disable-all`
- `debug ap`
- `clear lwapp private-config`
To configure MAC address debugging, use the `debug mac` command.

```
ddebug mac {disable | addr MAC}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>disable</th>
<th>addr MAC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disables MAC debugging.</td>
<td>Configures MAC address debugging.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure MAC address debugging settings:

```
> debug mac addr 00.0c.41.07.33.a6
```

**Related Commands**

`debug disable-all`
debug memory

To enable or disable debugging of errors or events during controller memory allocation, use this command

```
default memory {errors | events} {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>errors</th>
<th>Troubleshoots memory leak errors.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>events</td>
<td>Troubleshoots memory leak events.</td>
</tr>
<tr>
<td></td>
<td>enable</td>
<td>Enables debugging of memory leak events.</td>
</tr>
<tr>
<td></td>
<td>disable</td>
<td>Disables debugging of memory leak events.</td>
</tr>
</tbody>
</table>

**Command Default** Disabled.

**Examples**

This example shows how to enable debugging of memory leak events:

```
> debug memory events enable
```

**Related Commands**

- config memory monitor errors
- config memory monitor leaks
- show memory monitor
To begin debugging mesh security problems, use the `debug mesh security` command.

```
ddebug mesh security {all | events | errors} {enable | disable}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>all</code></td>
<td>Debugs all mesh security messages.</td>
</tr>
<tr>
<td><code>events</code></td>
<td>Debugs mesh security event messages.</td>
</tr>
<tr>
<td><code>errors</code></td>
<td>Debugs mesh security error messages.</td>
</tr>
<tr>
<td><code>enable</code></td>
<td>Enables debugging of mesh security error messages.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables debugging of mesh security error messages.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to enable debugging of mesh security error messages:

```
> debug mesh security errors enable
```

### Related Commands

- `config mesh security`
- `show mesh security-stats`
debug mobility

To debug wireless mobility issues, use the `debug mobility` command.

```
debug mobility { { directory | handoff | multicast } { enable | disable } | keep-alive { enable | disable } } IP_address
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>directory</th>
<th>Starts debugging of wireless mobility error messages.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>handoff</td>
<td>Starts debugging of wireless mobility packets.</td>
</tr>
<tr>
<td></td>
<td>multicast</td>
<td>Starts debugging of multicast mobility packets.</td>
</tr>
<tr>
<td></td>
<td>enable</td>
<td>Enables debugging of the wireless mobility feature.</td>
</tr>
<tr>
<td></td>
<td>disable</td>
<td>Disables debugging of the wireless mobility feature.</td>
</tr>
<tr>
<td></td>
<td>keep-alive</td>
<td>Starts debugging of wireless mobility keepalive messages.</td>
</tr>
<tr>
<td></td>
<td>IP_address</td>
<td>IP address of the wireless mobility client.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable debugging of wireless mobility packets:

```
> debug mobility handoff enable
```

**Related Commands**

- config guest-lan mobility anchor
- config mobility group domain
- config mobility group keepalive count
- config mobility group keepalive interval
- config mobility group member
- config mobility group multicast-addrres
- config mobility multicast-mode
- config mobility secure-mode
- config mobility statistics reset
- config wlan mobility anchor
- show mobility anchor
- show mobility statistics
- show mobility summary
debug nac

To configure debugging of Network Access Control (NAC), use the `debug nac` command.

```
debug nac {events | packet} {enable | disable}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>events</code></td>
<td>Configures debugging of NAC events.</td>
</tr>
<tr>
<td><code>packet</code></td>
<td>Configures debugging of NAC packets.</td>
</tr>
<tr>
<td><code>enable</code></td>
<td>Enables NAC debugging.</td>
</tr>
<tr>
<td><code>disable</code></td>
<td>Disables NAC debugging.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to enable NAC debug settings:

```
> debug nac events enable
```

### Related Commands

- `show nac statistics`
- `show nac summary`
- `config guest-lan nac`
- `config wlan nac`
debug nmsp

To configure debugging of the Network Mobility Services Protocol (NMSP), use the `debug nmsp` command.

```
debug nmsp { all | connection | detail | error | event | message | packet }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Configures debugging for all NMSP messages.</td>
</tr>
<tr>
<td>connection</td>
<td>Configures debugging for NMSP connection events.</td>
</tr>
<tr>
<td>detail</td>
<td>Configures debugging for NMSP events in detail.</td>
</tr>
<tr>
<td>error</td>
<td>Configures debugging for NMSP error messages.</td>
</tr>
<tr>
<td>event</td>
<td>Configures debugging for NMSP events.</td>
</tr>
<tr>
<td>message</td>
<td>Configures debugging for NMSP transmit and receive messages.</td>
</tr>
<tr>
<td>packet</td>
<td>Configures debugging for NMSP packet events.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to configure debugging of NMSP connection events:

```
> debug nmsp connection
```

**Related Commands**

- `clear nmsp statistics`
- `debug disable-all`
- `config nmsp notify-interval measurement`
To configure debugging of the Network Time Protocol (NTP), use the **debug ntp** command.

```
depug ntp {detail | low | packet} {enable | disable}
```

**Syntax Description**
- `detail` Configures debugging of detailed NTP messages.
- `low` Configures debugging of NTP messages.
- `packet` Configures debugging of NTP packets.
- `enable` Enables NTP debugging.
- `disable` Disables NTP debugging.

**Defaults**
None.

**Examples**
This example shows how to enable NTP debug settings:

```
> debug ntp packet enable
```

**Related Commands**
- `debug disable-all`
**debug packet logging**

To configure logging of packets sent to the controller CPU, use the `debug packet logging` command.

```
debug packet logging acl | disable | enable  { rx | tx | all } packet_count display_size | format
{ hex2pcap | text2pcap }
```

```
debug packet logging acl { clear-all | driver { rule_index action npu_encap port } | eoip-eth
{ rule_index action dst src type vlan } | eoip-ip { rule_index action src dst proto src_port dst_port } |
eth { rule_index action dst src type vlan } | ip { rule_index action src dst proto src_port dst_port } |
wapp-dot11 { rule_index action dst src bssid type } |
wapp-ip { rule_index action src dst proto src_port dst_port }
```

| Syntax Description | acl | Filters the displayed packets according to a rule.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>disable</td>
<td></td>
<td>Disables logging of the packets.</td>
</tr>
<tr>
<td>enable</td>
<td></td>
<td>Enables logging of the packets.</td>
</tr>
<tr>
<td>rx</td>
<td></td>
<td>Displays all received packets.</td>
</tr>
<tr>
<td>tx</td>
<td></td>
<td>Displays all transmitted packets.</td>
</tr>
<tr>
<td>all</td>
<td></td>
<td>Displays both transmitted and received packets.</td>
</tr>
<tr>
<td>packet_count</td>
<td></td>
<td>Maximum number of packets to log. The range is from 1 to 65535 packets, and the default value is 25 packets.</td>
</tr>
<tr>
<td>display_size</td>
<td></td>
<td>Number of bytes to display when printing a packet. By default, the entire packet is displayed.</td>
</tr>
<tr>
<td>format</td>
<td></td>
<td>Configures the format of the debug output.</td>
</tr>
<tr>
<td>hex2pcap</td>
<td></td>
<td>Configures output format to be compatible with hex2pcap format. Standard format used by IOS supports the use of hex2pcap and can be decoded using an HTML front end.</td>
</tr>
<tr>
<td>text2pcap</td>
<td></td>
<td>Configures output format to be compatible with text2pcap. In this format the sequence of packets can be decoded from the same console log file.</td>
</tr>
<tr>
<td>clear-all</td>
<td></td>
<td>Clears all existing rules for the packets.</td>
</tr>
<tr>
<td>driver</td>
<td></td>
<td>Filters the packets based on an incoming port or an NPU encapsulation type.</td>
</tr>
<tr>
<td>rule_index</td>
<td></td>
<td>Index for the rule that is a value between 1 and 6 (inclusive).</td>
</tr>
<tr>
<td>action</td>
<td></td>
<td>Action for the rule that can be permit, deny, or disable.</td>
</tr>
<tr>
<td>npu_encap</td>
<td></td>
<td>NPU encapsulation type that determines how the packets are filtered. The possible values include dhcp, dot11-mgmt, dot11-probe, dot1x, eoip-ping, iapp, ip, lwapp, multicast, orphan-from-sta, orphan-to-sta, rbcp, wired-guest, or any.</td>
</tr>
<tr>
<td>port</td>
<td></td>
<td>Physical port for packet transmission or reception.</td>
</tr>
<tr>
<td>eoip-eth</td>
<td></td>
<td>Filters packets based on the Ethernet II header in the EoIP payload.</td>
</tr>
<tr>
<td>dst</td>
<td></td>
<td>Destination MAC address.</td>
</tr>
<tr>
<td>src</td>
<td></td>
<td>Source MAC address.</td>
</tr>
<tr>
<td>type</td>
<td></td>
<td>Two-byte type code such as 0x800 for IP, 0x806 for ARP. You can also enter a few common string values such as “ip” (for 0x800) or “arp” (for 0x806).</td>
</tr>
<tr>
<td>vlan</td>
<td></td>
<td>Two-byte VLAN identifier.</td>
</tr>
<tr>
<td>eoip-ip</td>
<td></td>
<td>Filters packets based on the IP header in the EoIP payload.</td>
</tr>
</tbody>
</table>
### debug packet logging

**Defaults**

None.

**Examples**

This example shows how to enable logging of the packets:

```
> debug packet logging enable
```

**Related Commands**

*show debug packet*

### Table

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>proto</strong></td>
<td>Protocol that can be ip, icmp, igmp, ggp, ipencap, st, tcp, egp, pup, udp, hmp, xns-idp, rdp, iso-tp4, xtp, ddp, idpr-cmtp, rsvp, vmtp, ospf, ipip, and encaps.</td>
</tr>
<tr>
<td><strong>src_port</strong></td>
<td>UDP/TCP two-byte source port like telnet, 23 or any. The controller supports the following strings: tcpmux, echo, discard, systat, daytime, netstat, qtd, msp, chargen, ftp-data, ftp, fsp, ssh, telnet, smtp, time, rlp, nameserver, whois, re-mail-ck, domain, mtp, bootps, bootpc, tftp, gopher, rje, finger, www, link, kerberos, supdup, hostnames, iso-tsap, csnet-ns, 3com-tsmux, rtelnet, pop-2, pop-3, sunrpc, auth, sftp, uucp-path, nntp, ntp, netbios-ns, netbios-dgm, netbios-ssn, imap2, snmp, snmp-trap, cmip-man, cmip-agent, xdmcp, nextstep, bgp, prospero, irc, smux, at-rtmp, at-nbp, at-echo, at-zis, qntp, z3950, ipx, map, ulistserv, https, snpp, saft, npmp-local, npmp-gui, and hmmp-ind.</td>
</tr>
<tr>
<td><strong>dst_port</strong></td>
<td>UDP/TCP two-byte destination port like telnet, 23 or any. The controller supports the same strings as those for the src_port.</td>
</tr>
<tr>
<td><strong>eth</strong></td>
<td>Filters packets based on values in the Ethernet II header.</td>
</tr>
<tr>
<td><strong>ip</strong></td>
<td>Filters packets based on values in the IP header.</td>
</tr>
<tr>
<td><strong>lwapp-dot11</strong></td>
<td>Filters packets based on the 802.11 header in the LWAPP payload.</td>
</tr>
<tr>
<td><strong>bssid</strong></td>
<td>Basic Service Set Identifier of the VLAN.</td>
</tr>
<tr>
<td><strong>lwapp-dot11</strong></td>
<td>Filters packets based on the IP header in the LWAPP payload.</td>
</tr>
</tbody>
</table>
To configure the access policy manager debug options, use the `debug pem` command.

```
ddebug pem {events | state} {enable | disable}
```

### Syntax Description

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>events</td>
<td>Configures debugging of the policy manager events.</td>
</tr>
<tr>
<td>state</td>
<td>Configures debugging of the policy manager state machine.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables access policy manager debugging.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables access policy manager debugging.</td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to enable access policy manager debug settings:

```
> debug pem state enable
```

### Related Commands

`debug disable-all`
# debug pm

To configure debugging of the security policy manager module, use the `debug pm` command.

```plaintext
display pm { all disable | config | hwcrypto | ikemsg | init | list | message | pki | rng | rules | sa-export | sa-import | ssh-l2tp | ssh-apppgw | ssh-engine | ssh-int | ssh-pmgr | ssh-ppp | ssh-tcp } { enable | disable }
```

## Syntax Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all disable</td>
<td>Disables all debugging in the policy manager module.</td>
</tr>
<tr>
<td>config</td>
<td>Configures debugging of the policy manager configuration.</td>
</tr>
<tr>
<td>hwcrypto</td>
<td>Configures debugging of hardware offload events.</td>
</tr>
<tr>
<td>ikemsg</td>
<td>Configures debugging of Internet Key Exchange (IKE) messages.</td>
</tr>
<tr>
<td>init</td>
<td>Configures debugging of policy manager initialization events.</td>
</tr>
<tr>
<td>list</td>
<td>Configures debugging of policy manager list mgmt.</td>
</tr>
<tr>
<td>message</td>
<td>Configures debugging of policy manager message queue events.</td>
</tr>
<tr>
<td>pki</td>
<td>Configures debugging of Public Key Infrastructure (PKI) related events.</td>
</tr>
<tr>
<td>rng</td>
<td>Configures debugging of random number generation.</td>
</tr>
<tr>
<td>rules</td>
<td>Configures debugging of Layer 3 policy events.</td>
</tr>
<tr>
<td>sa-export</td>
<td>Configures debugging of SA export (mobility).</td>
</tr>
<tr>
<td>sa-import</td>
<td>Configures debugging of SA import (mobility).</td>
</tr>
<tr>
<td>ssh-l2tp</td>
<td>Configures debugging of policy manager L2TP handling.</td>
</tr>
<tr>
<td>ssh-apppgw</td>
<td>Configures debugging of application gateways.</td>
</tr>
<tr>
<td>ssh-engine</td>
<td>Configures debugging of the policy manager engine.</td>
</tr>
<tr>
<td>ssh-int</td>
<td>Configures debugging of the policy manager interceptor.</td>
</tr>
<tr>
<td>ssh-pmgr</td>
<td>Configures debugging of the policy manager.</td>
</tr>
<tr>
<td>ssh-ppp</td>
<td>Configures debugging of policy manager PPP handling.</td>
</tr>
<tr>
<td>ssh-tcp</td>
<td>Configures debugging of policy manager TCP handling.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the debugging.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the debugging.</td>
</tr>
</tbody>
</table>

## Defaults

None.

## Examples

This example shows how to configure debugging of PKI-related events:

```plaintext
> debug pm pki enable
```

## Related Commands

`debug disable-all`
debug poe

To configure debugging of Power over Ethernet (PoE) debug options, use the `debug poe` command.

```
debug poe {detail | error | message} {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>detail</td>
<td>Configures debugging of PoE detail logs.</td>
</tr>
<tr>
<td>error</td>
<td>Configures debugging of PoE error logs.</td>
</tr>
<tr>
<td>message</td>
<td>Configures debugging of PoE messages.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables the PoE debugging.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables the PoE debugging.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable PoE debug settings:

```
> debug poe message enable
```

**Related Commands**

`debug disable-all`
debug rbcp

To configure Router Blade Control (RBCP) debug options, use the **debug rbcp** command.

```
d debug rbcp {all | detail | errors | packet} {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>all</th>
<th>Configures debugging of RBCP.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>detail</td>
<td>Configures debugging of RBCP detail.</td>
</tr>
<tr>
<td></td>
<td>errors</td>
<td>Configures debugging of RBCP errors.</td>
</tr>
<tr>
<td></td>
<td>packet</td>
<td>Configures debugging of RBCP packet trace.</td>
</tr>
<tr>
<td></td>
<td>enable</td>
<td>Enables RBCP debugging.</td>
</tr>
<tr>
<td></td>
<td>disable</td>
<td>Disables RBCP debugging.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable RBCP debug settings:

```
> debug rbcp packet enable
```

**Related Commands**

debug disable-all
**debug rfid**

To configure radio-frequency identification (RFID) debug options, use the `debug rfid` command.

```
d.debug rfid {all | detail | errors | nmsp | receive} {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Configures debugging of all RFID.</td>
</tr>
<tr>
<td>detail</td>
<td>Configures debugging of RFID detail.</td>
</tr>
<tr>
<td>errors</td>
<td>Configures debugging of RFID error messages.</td>
</tr>
<tr>
<td>nmsp</td>
<td>Configures debugging of RFID Network Mobility Services Protocol (NMSP) messages.</td>
</tr>
<tr>
<td>receive</td>
<td>Configures debugging of incoming RFID tag messages.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables RFID debugging.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables RFID debugging.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable debugging of RFID error messages:

```
> debug rfid errors enable
```

**Related Commands**

`debug disable-all`
debug service ap-monitor

To debug the access point monitor service, use the `debug service ap-monitor` command.

```
depbug service ap-monitor { all | error | event | nmsp | packet } { enable | disable }
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Configures debugging of all access point status messages.</td>
</tr>
<tr>
<td>error</td>
<td>Configures debugging of access point monitor error events.</td>
</tr>
<tr>
<td>event</td>
<td>Configures debugging of access point monitor events.</td>
</tr>
<tr>
<td>nmsp</td>
<td>Configures debugging of access point monitor Network Mobility Services Protocol (NMSP) events.</td>
</tr>
<tr>
<td>packet</td>
<td>Configures debugging of access point monitor packets.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables debugging for access point monitor service.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables debugging for access point monitor service.</td>
</tr>
</tbody>
</table>

**Command Default**

None.

**Examples**

This example shows how to debug access point monitor NMSP events:

```
> debug service ap-monitor events
```

**Related Commands**

- `debug disable-all`
- `show nmsp status`
debug snmp

To configure SNMP debug options, use the **debug snmp** command.

```
debug snmp {agent | all | mib | trap} {enable | disable}
```

### Syntax Description

- **agent**: Configures debugging of the SNMP agent.
- **all**: Configures debugging of all SNMP messages.
- **mib**: Configures debugging of the SNMP MIB.
- **trap**: Configures debugging of SNMP traps.
- **enable**: Enables SNMP debugging.
- **disable**: Disables SNMP debugging.

### Defaults

None.

### Examples

This example shows how to enable SNMP debug settings:

```
> debug snmp trap enable
```

### Related Commands

- **debug disable-all**
**debug transfer**

To configure transfer debug options, use the `debug transfer` command.

```
debug transfer {all | tftp | trace} {enable | disable}
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>all</th>
<th>Configures debugging of all transfer messages.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>tftp</td>
<td>Configures debugging of TFTP transfers.</td>
</tr>
<tr>
<td></td>
<td>trace</td>
<td>Configures debugging of transfer/upgrade.</td>
</tr>
<tr>
<td></td>
<td>enable</td>
<td>Enables transfer debugging.</td>
</tr>
<tr>
<td></td>
<td>disable</td>
<td>Disables transfer debugging.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable transfer/upgrade settings:

```
> debug transfer trace enable
```

**Related Commands**

`debug disable-all`
debug wcp

To configure WLAN Control Protocol (WCP) debug options, use the debug wcp command.

```
debug wcp {events | packet} {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>events</td>
<td>Configures debugging of WCP events.</td>
</tr>
<tr>
<td>packet</td>
<td>Configures debugging of WCP packets.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables WCP debugging settings.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables WCP debugging settings.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable WCP debug settings:

```
> debug wcp packet enable
```

**Related Commands**

debug disable-all
debug wps sig

To troubleshoot Wireless Provisioning Service (WPS) signature settings, use the `debug wps sig` command.

```
debug wps sig { enable | disable }
```

### Syntax Description

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>enable</th>
<th>disable</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables debugging for WPS settings.</td>
<td></td>
</tr>
<tr>
<td>disable</td>
<td>Disables debugging for WPS settings.</td>
<td></td>
</tr>
</tbody>
</table>

### Defaults

None.

### Examples

This example shows how to enable WPS signature settings:

```
> debug wps sig enable
```

### Related Commands

- `debug disable-all`
- `debug wps mfp`
debug wps mfp

To debug WPS Management Frame Protection (MFP) settings, use the `debug wps mfp` command.

```
default wps mfp {client | capwap | detail | report | mm} {enable | disable}
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>client</td>
<td>Configures debugging for client MFP messages.</td>
</tr>
<tr>
<td>capwap</td>
<td>Configures debugging for MFP messages between the controller and access points.</td>
</tr>
<tr>
<td>detail</td>
<td>Configures detailed debugging for MFP messages.</td>
</tr>
<tr>
<td>report</td>
<td>Configures debugging for MFP reporting.</td>
</tr>
<tr>
<td>mm</td>
<td>Configures debugging for MFP mobility (inter-controller) messages.</td>
</tr>
<tr>
<td>enable</td>
<td>Enables debugging for WPS MFP settings.</td>
</tr>
<tr>
<td>disable</td>
<td>Disables debugging for WPS MFP settings.</td>
</tr>
</tbody>
</table>

**Defaults**

None.

**Examples**

This example shows how to enable debugging of WPS MFP settings:

```
> debug wps mfp detail enable
```

**Related Commands**

- `debug disable-all`
- `debug wps sig`
**eping**

To test the mobility Ethernet over IP (EoIP) data packet communication between two controllers, use the `eping` command.

```plaintext
eping mobility_peer_IP_address
```

**Syntax Description**

- `mobility_peer_IP_address`: IP address of a controller that belongs to a mobility group.

**Defaults**

None.

**Usage Guidelines**

This command tests the mobility data traffic over the management interface.

**Note**

This ping test is not Internet Control Message Protocol (ICMP) based. The term “ping” is used to indicate an echo request and an echo reply message.

**Examples**

This example shows how to test EoIP data packets and to set the IP address of a controller that belongs to a mobility group to 172.12.35.31:

```plaintext
> eping 172.12.35.31
```

**Related Commands**

- `mping`
- `config logging buffered debugging`
- `show logging`
- `debug mobility handoff enable`
mping

To test mobility UDP control packet communication between two controllers, use the `mping` command.

```
mping mobility_peer_IP_address
```

**Syntax Description**

- `mobility_peer_IP_address`: IP address of a controller that belongs to a mobility group.

**Defaults**

None.

**Usage Guidelines**

This test runs over mobility UDP port 16666. It tests whether the mobility control packet can be reached over the management interface.

**Note**

This ping test is not Internet Control Message Protocol (ICMP) based. The term “ping” is used to indicate an echo request and an echo reply message.

**Examples**

This example shows how to test mobility UDP control packet communications and to set the IP address of a controller that belongs to a mobility group to 172.12.35.31:

```
> mping 172.12.35.31
```

**Related Commands**

- `eping`
- `config logging buffered debugging`
- `show logging`
- `debug mobility handoff enable`