



Cisco Wireless LAN Controller Command Reference, Release 7.3

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Preface

This preface describes the audience, organization, and conventions of the *Cisco Wireless LAN Controller Command Reference Guide* and *Cisco Mobility Express Command Reference Guide*. Cisco Mobility Express only supports the AireOS commands mentioned in this document. It also provides information on how to obtain other documentation.

This preface includes the following sections:

- [Audience, on page xli](#)
- [Document Conventions, on page xli](#)
- [Related Documentation, on page xliv](#)
- [Communications, Services, and Additional Information, on page xliv](#)

Audience

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



Note Usage of **test** commands may cause system disruption such as an unexpected reboot of the controller. Therefore, we recommend that you use the **test** commands on controllers for debugging purposes with the help of Cisco Technical Assistance Center (TAC) personnel.

Document Conventions

This document uses the following conventions:

Convention	Indication
bold font	Commands and keywords and user-entered text appear in bold font.
<i>italic</i> font	Document titles, new or emphasized terms, and arguments for which you supply values are in <i>italic</i> font.
[]	Elements in square brackets are optional.

Convention	Indication
{x y z }	Required alternative keywords are grouped in braces and separated by vertical bars.
[x y z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
<code>courier font</code>	Terminal sessions and information the system displays appear in <code>courier font</code> .
<>	Nonprinting characters such as passwords are in angle brackets.
[]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.



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



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.



Warning This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. (To see translations of the warnings that appear in this publication, refer to the appendix "Translated Safety Warnings.")

Warning Title	Description
Waarschuwing	Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijke letsels kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen. (Voor vertalingen van de waarschuwingen die in deze publicatie verschijnen, kunt u het aanhangsel "Translated Safety Warnings" (Vertalingen van veiligheidsvoorschriften) raadplegen.)

Warning Title	Description
Varoitus	Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista. (Tässä julkaisussa esiintyvien varoitusten käännökset löydät liitteestä "Translated Safety Warnings" (käännetyt turvallisuutta koskevat varoitukset).)
Attention	Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures. Avant d'accéder à cet équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures courantes de prévention des accidents. Pour obtenir les traductions des mises en garde figurant dans cette publication, veuillez consulter l'annexe intitulée « Translated Safety Warnings » (Traduction des avis de sécurité).
Warnung	Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewußt. (Übersetzungen der in dieser Veröffentlichung enthaltenen Warnhinweise finden Sie im Anhang mit dem Titel "Translated Safety Warnings" (Übersetzung der Warnhinweise).)
Avvertenza	Questo simbolo di avvertenza indica un pericolo. Si è in una situazione che può causare infortuni. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti. La traduzione delle avvertenze riportate in questa pubblicazione si trova nell'appendice, "Translated Safety Warnings" (Traduzione delle avvertenze di sicurezza).
Advarsel	Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du være oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker. (Hvis du vil se oversettelser av de advarslene som finnes i denne publikasjonen, kan du se i vedlegget "Translated Safety Warnings" [Oversatte sikkerhetsadvarsler].)
Aviso	Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes. (Para ver as traduções dos avisos que constam desta publicação, consulte o apêndice "Translated Safety Warnings" - "Traduções dos Avisos de Segurança").
¡Advertencia!	Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes. (Para ver traducciones de las advertencias que aparecen en esta publicación, consultar el apéndice titulado "Translated Safety Warnings.")

Warning Title	Description
Varning	Denna varningssymbol signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanligt förfarande för att förebygga skador. (Se förklaringar av de varningar som förekommer i denna publikation i appendix "Translated Safety Warnings" [Översatta säkerhetsvarningar].)

Related Documentation

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

- *Cisco Wireless LAN Controller Configuration Guide*
- *Cisco Wireless LAN Controller System Message Guide*
- *Release Notes for Cisco Wireless LAN Controllers and Lightweight Access Points*
- *Cisco Mobility Express User Guide*
- *Cisco Mobility Express Best Practices Guide*
- *Cisco Mobility Express Solution Release Notes*

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To provide feedback about Cisco technical documentation, use the feedback form available in the right pane of every online document.



Overview

The command-line interface (CLI) is a line-oriented user interface that provides commands for configuring, managing, and monitoring the Cisco Wireless LAN Controller.

- [CLI Command Keyboard Shortcuts, on page 2](#)
- [Using the Interactive Help Feature, on page 4](#)

CLI Command Keyboard Shortcuts

The table below lists the CLI keyboard shortcuts to help you enter and edit command lines on the controller.

Table 1: CLI Command Keyboard Shortcuts

Action	Description	Keyboard Shortcut
Change	The word at the cursor to lowercase.	Esc l
	The word at the cursor to uppercase.	Esc u
Delete	A character to the left of the cursor.	Ctrl-h, Delete, or Backspace
	All characters from the cursor to the beginning of the line.	Ctrl-u
	All characters from the cursor to the end of the line.	Ctrl-k
	All characters from the cursor to the end of the word.	Esc d
Display MORE output	The word to the left of the cursor.	Ctrl-w or Esc Backspace
	Exit from MORE output.	q, Q, or Ctrl-C
	Next additional screen. The default is one screen. To display more than one screen, enter a number before pressing the Spacebar key.	Spacebar
	Next line. The default is one line. To display more than one line, enter the number before pressing the Enter key.	Enter
Enter or Return key character.		Ctrl-m
Expand the command or abbreviation.		Ctrl-t or Tab
Move the cursor	One character to the left (back).	Ctrl-b or Left Arrow
	One character to the right (forward).	Ctrl-f or Right Arrow
	One word to the left (back), to the beginning of the current or previous word.	Esc b
	One word to the right (forward), to the end of the current or next word.	Esc f
	To the beginning of the line.	Ctrl-a
	To the end of the line.	Ctrl-e
Redraw the screen at the prompt.		Ctrl-l or Ctrl-r

Action	Description	Keyboard Shortcut
	Return to the EXEC mode from any configuration mode	Ctrl-z
	Return to the previous mode or exit from the CLI from Exec mode.	exit command
	Transpose a character at the cursor with a character to the left of the cursor.	Ctrl-t

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. The table below lists the interactive help feature list.

Table 2: Interactive Help Feature List

Command	Description
help	Provides a brief description of the Help feature in any command mode.
? at the command prompt	Lists all commands available for a particular command mode.
partial command?	Provides a list of commands that begin with the character string.
partial command<Tab>	Completes a partial command name.
command ?	Lists the keywords, arguments, or both associated with a command.
command keyword ?	Lists the arguments that are associated with the keyword.

Using the help Command

Before you begin

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

help

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?).

Example:

```
> 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
Exit .... go to next lower command prompt
? .... list choices

```

Using the ? command

Before you begin

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 ?

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.
config         Configure switch options and settings.
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

Before you begin

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

partial command?

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

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>

Before you begin

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

partial command<tab>

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

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

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

Using the command ?

Examples

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

```
command-name ?
```

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

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 ?
```

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

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



Show Commands

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Show Commands

Use the **show** commands to display information about your configuration 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

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

Command Default

None.

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..... Supported
  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
  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
Priority 4..... Disabled
Priority 5..... Disabled
Priority 6..... Disabled
Priority 7..... Disabled
Beacon Interval..... 100
CF Pollable mandatory..... Disabled
CF Poll Request mandatory..... Disabled
--More-- or (q)uit
CFP Period..... 4
CFP Maximum Duration..... 60
Default Channel..... 36
Default Tx Power Level..... 0
DTPC Status..... Enabled
Fragmentation Threshold..... 2346
TI Threshold..... -50
Legacy Tx Beamforming setting..... Disabled
Traffic Stream Metrics Status..... Enabled
Expedited BW Request Status..... Disabled
World Mode..... Enabled
EDCA profile type..... default-wmm
Voice MAC optimization status..... Disabled
Call Admission Control (CAC) configuration
Voice AC:
  Voice AC - Admission control (ACM)..... Disabled
  Voice max RF bandwidth..... 75
  Voice reserved roaming bandwidth..... 6
  Voice load-based CAC mode..... Disabled
  Voice tspec inactivity timeout..... Disabled
  Voice Stream-Size..... 84000
  Voice Max-Streams..... 2
Video AC:
  Video AC - Admission control (ACM)..... Disabled
  Video max RF bandwidth..... Infinite
  Video reserved roaming bandwidth..... 0

```

This example shows how to display basic 802.11h network settings:

```

> 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 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		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
h		Specifies the 802.11h network.
config		Displays the network Cleanair configuration.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the 802.11a cleanair configuration:

```
(Cisco Controller) > show 802.11a cleanair
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 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

Syntax Description	
a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
h	Specifies the 802.11h network.
summary	Displays a summary of 802.11 radio band air quality information.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```

(Cisco Controller) > show 802.11a cleanair air-quality summary
AQ = Air Quality
DFS = Dynamic Frequency Selection
AP Name           Channel  Avg AQ  Min AQ  Interferers  DFS
-----
CISCO_AP3500     36     95   70     0
CISCO_AP3500     40     93   75     0
    
```

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		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
h		Specifies the 802.11h network.
worst		Displays the worst air quality information for 802.11 networks.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > show 802.11 cleanair air-quality worst
AQ = Air Quality
DFS = Dynamic Frequency Selection
AP Name           Channel  Avg AQ  Min AQ  Interferers  DFS
-----
CISCO_AP3500      1    83  57   3    5
```

show 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.
<i>cisco_ap</i>		Specified access point name.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > show 802.11a cleanair device ap AP_3500
DC = Duty Cycle (%)
ISI = Interference Severity Index (1-Low Interference, 100-High Interference)
RSSI = Received Signal Strength Index (dBm)
DevID = Device ID
No ClusterID DevID Type AP Name ISI
RSSI DC Channel
-----
-----
1 c2:f7:40:00:00:03 0x8001 DECT phone CISCO_AP3500 1 -43 3
 149,153,157,161
2 c2:f7:40:00:00:51 0x8002 Radar CISCO_AP3500 1 -81 2
 153,157,161,165
3 c2:f7:40:00:00:03 0x8005 Canopy CISCO_AP3500 2 -62 2
 153,157,161,165
```

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.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > show 802.11a cleanair device type canopy
DC = Duty Cycle (%)
ISI = Interference Severity Index (1-Low Interference, 100-High Interference)
RSSI = Received Signal Strength Index (dBm)
DevID = Device ID
No ClusterID          DevID  Type          AP Name          ISI
RSSI  DC  Channel
-----
-----
1c2:f7:40:00:00:03  0x8005 Canopy        CISCO_AP3500    2    -62    2
                153,157,161,165
```


show 802.11 cu-metrics

To display access point channel utilization metrics, use the **show 802.11 cu-metrics** command.

```
show 802.11 {a | b} cu-metrics cisco_ap
```

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	cisco_ap	Access point name.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show 802.11a cu-metrics** command:

```
(Cisco Controller) > show 802.11a cu-metrics AP1
AP Interface Mac:          30:37:a6:c8:8a:50
Measurement Duration:     90sec
Timestamp                 Thu Jan 27 09:08:48 2011
Channel Utilization stats
=====
Picc (50th Percentile)..... 0
Pib (50th Percentile)..... 76
Picc (90th Percentile)..... 0
Pib (90th Percentile)..... 77
Timestamp                 Thu Jan 27 09:34:34 2011
```

show 802.11 extended

To display access point radio extended configurations, use the **show 802.11 extended** command.

```
show 802.11 {a | b} extended
```

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	extended	Displays the 802.11a/b radio extended configurations.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Release	Modification
8.0	The command output was expanded to include the Rx SOP threshold.

The following example shows how to display radio extended configurations:

```
(Cisco Controller) > show 802.11a extended
Default 802.11a band radio extended configurations:
  beacon period 300, range 60;
  multicast buffer 45, rate 200;
  RX SOP -80; CCA threshold -90;
AP0022.9090.b618 00:24:97:88:99:60
  beacon period 300, range 60; multicast buffer 45, rate 200;
  RX SOP -80; CCA threshold -77
AP0022.9090.bb3e 00:24:97:88:c5:d0
  beacon period 300, range 0; multicast buffer 0, rate 0;
  RX SOP -80; CCA threshold -0
ironRap.ddbf 00:17:df:36:dd:b0
  beacon period 300, range 0; multicast buffer 0, rate 0;
  RX SOP -80; CCA threshold -0
```

The following example shows how to display radio extended configurations and the Rx SOP threshold:

```
(Cisco Controller) > show 802.11a extended
Default 802.11a band Radio Extended Configurations:
  Beacon period: 100, range: 0 (AUTO);
  Multicast buffer: 0 (AUTO), rate: 0 (AUTO);
  RX SOP threshold: -76; CCA threshold: 0 (AUTO);

AP3600-XALE3 34:a8:4e:6a:7b:00
  Beacon period: 100, range: 0 (AUTO);
  Multicast buffer: 0 (AUTO), rate: 0 (AUTO);
  RX SOP threshold: -76; CCA threshold: 0 (AUTO);
```

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	
a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
h	Specifies the 802.11h network.
<i>media_stream_name</i>	Specified media stream name.
Command Default	None.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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 Per Radio..... Auto
Max Allowed Streams Per Client..... Auto
Max Video Bandwidth..... 0
Max Voice Bandwidth..... 75
Max Media Bandwidth..... 85
Min PHY Rate..... 6000
Max Retry Percentage..... 80
```

Related Commands **show media-stream group summary**

Show Advanced Commands

Use the **show advanced** commands to display more detailed information.

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 | b} channel

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > 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..... SNI.
  Channel Assignment Leader..... 00:1a:6d:dd:1e:40
  Last Run..... 129 seconds ago
  DCA Sensitivity Level: ..... STARTUP (5 dB)
  DCA Minimum Energy Limit..... -95 dBm
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

```

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	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```

(Cisco Controller) > 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

```

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.
Command Default	None	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display Cisco radio RF group settings:

```
(Cisco Controller) > show advanced 802.11a group
Radio RF Grouping
 802.11a Group Mode..... AUTO
 802.11a Group Update Interval..... 600 seconds
 802.11a Group Leader..... xx:xx:xx:xx:xx:xx
 802.11a Group Member..... xx:xx:xx:xx:xx:xx
 802.11a Last Run..... 133 seconds ago
```

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		
a	Specifies the 802.11a network.	
b	Specifies the 802.11b/g network.	
rf-param	Specifies the Layer 2 frequency parameters.	
statistics	Specifies the Layer 2 client roaming statistics.	
<i>mac_address</i>	MAC address of the client.	

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show advanced 802.11b l2roam rf-param** command:

```
(Cisco Controller) > 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
```

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	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > 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
```

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

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > show advanced 802.11b monitor
Default 802.11b AP monitoring
 802.11b Monitor Mode..... enable
 802.11b Monitor Channels..... Country channels
 802.11b RRM Neighbor Discovery Type..... Transparent
 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
```

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}
```

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	global	Specifies all Cisco lightweight access points.
	<i>cisco_ap</i>	Name of a specific Cisco lightweight access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > show advanced 802.11 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
 802.11a Global coverage threshold..... 12 dB
 802.11a Global coverage exception level..... 80%
 802.11a Global client minimum exception lev..... 3 clients
```


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

```
(Cisco Controller) > show advanced 802.11 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.

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 | b} receiver

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the configuration and statistics of the 802.11a network settings:

```
(Cisco Controller) > show advanced 802.11 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
```

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

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > show advanced 802.11b summary
AP Name      MAC Address      Admin State  Operation State  Channel
TxPower
-----
CJ-1240      00:21:1b:ea:36:60  ENABLED     UP               161
 1 ( )
CJ-1130      00:1f:ca:cf:b6:60  ENABLED     UP               56*
 1 (*)
```



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

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

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
Command Default	None	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > 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.
  Transmit Power Assignment Leader..... xx:xx:xx:xx:xx:xx
  Last Run..... 384 seconds ago
```

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the backup controller information:

```
(Cisco Controller) >
show advanced backup-controller
AP primary Backup Controller ..... controller 10.10.10.10
AP secondary Backup Controller ..... 0.0.0.0
```

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.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >show advanced client-handoff
Client auto handoff after retries..... 130
```

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to view the state of over-the-air frame padding:

```
(Cisco Controller) > show advanced dot11-padding
dot11-padding..... Disabled
```

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the EAP settings:

```
(Cisco Controller) > 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 hotspot

To display the advanced HotSpot parameters, use the **show advanced hotspot** command.

show advanced hotspot

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the advanced HotSpot parameters:

```

(Cisco Controller) >show advanced hotspot
ANQP 4-way state..... Disabled
GARP Broadcast state: ..... Enabled
GAS request rate limit ..... Disabled
ANQP comeback delay in TUs(TU=1024usec)..... 50

```

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.

show advanced max-1x-sessions

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the maximum 802.1X sessions per access point:

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

show advanced probe

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

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the probe settings for the controller:

```
(Cisco Controller) >show advanced probe
Probe request filtering..... Enabled
Probes fwd to controller per client per radio.... 12
Probe request rate-limiting interval..... 100 msec
```

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >show advanced rate
Control Path Rate Limiting..... Disabled
```

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

Syntax Description This command has no arguments or keywords.

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show advanced send-disassoc-on-handoff** command:

```
(Cisco Controller) > show advanced send-disassoc-on-handoff
Send Disassociate on Handoff..... Disabled
```

show advanced sip-preferred-call-no

To display the list of preferred call numbers, use the **show advanced sip-preferred-call-no** command.

show advanced sip-preferred-call-no

Syntax Description This command has no arguments or keywords.

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show advanced sip-preferred-call-no** command:

```
(Cisco Controller) > show advanced sip-preferred-call-no
Preferred Call Numbers List
Call Index          Preferred Call No
-----
1                   911
2                   100
3                   101
4                   102
5                   103
6                   104
```

show advanced sip-snooping-ports

To display the port range for call snooping, use the **show advanced sip-snooping-ports** command.

show advanced sip-snooping-ports

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

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show advanced sip-snooping-ports** command:

```
(Cisco Controller) > show advanced sip-snooping-ports
SIP Call Snoop Ports: 1000 - 2000
```

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.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display switch port statistics mode:

```
(Cisco Controller) > show advanced statistics
Switch port statistics..... Enabled
```

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.

Command Default The defaults are shown in the “Examples” section.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the system timers setting:

```
(Cisco Controller) >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 flexconnect mode Fast Heartbeat (seconds)..... disable
AP Primary Discovery Timeout (seconds)..... 120
```

Show Access Point Commands

Use the **show ap** commands to see 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.

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

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	<i>cisco_ap</i>	Cisco lightweight access point name.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > 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..... -128 dBm @ 0% busy
  Channel 56..... -73 dBm @ 1% busy
  Channel 60..... -55 dBm @ 1% busy
```

```

Channel 64..... -69 dBm @ 1% busy
Rogue Histogram (20/40_ABOVE/40_BELOW)
Channel 36..... 16/ 0/ 0
Channel 40..... 28/ 0/ 0
Channel 44..... 9/ 0/ 0
Channel 48..... 9/ 0/ 0
Channel 52..... 3/ 0/ 0
Channel 56..... 4/ 0/ 0
Channel 60..... 7/ 1/ 0
Channel 64..... 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**

Syntax Description	<i>ap_name</i>	Specified access point name.
	status	Displays the CCX radio management status information for an access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >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
```

show ap cdp

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

show ap cdp {**all** | **ap-name** *cisco_ap* | **neighbors** {**all** | **ap-name** *cisco_ap* | **detail** *cisco_ap*}}

Syntax Description	all	Displays the CDP status on all access points.
	ap-name	Displays the CDP status for a specified access point.
	<i>cisco_ap</i>	Specified access point name.

neighbors	Displays neighbors using CDP.
detail	Displays details about a specific access point neighbor using CDP.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >show ap cdp all
AP CDP State
AP Name          AP CDP State
-----
SB_RAP1          enable
SB_MAP1          enable
SB_MAP2          enable
SB_MAP3          enable
```

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

```
(Cisco Controller) >show ap cdp ap-name SB_RAP1
AP CDP State
AP Name          AP CDP State
-----
AP CDP State.....Enabled
AP Interface-Based CDP state
 Ethernet 0.....Enabled
  Slot 0.....Enabled
  Slot 1.....Enabled
```

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

```
(Cisco Controller) >show ap cdp neighbor all
AP Name      AP IP      Neighbor Name      Neighbor IP      Neighbor Port
-----
SB_RAP1      192.168.102.154  sjc14-41a-sw1      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_MAP1      192.168.102.137  SB_MAP2             192.168.102.138  Virtual-Dot11Radio0
SB_MAP2      192.168.102.138  SB_MAP1             192.168.102.137  Virtual-Dot11Radio1
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
```

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

```
(Cisco Controller) >show ap cdp neighbors ap-name SB_MAP2
AP Name      AP IP      Neighbor Name      Neighbor IP      Neighbor Port
-----
SB_MAP2      192.168.102.138  SB_MAP1             192.168.102.137  Virtual-Dot11Radio1
```

```
SB_MAP2      192.168.102.138  SB_MAP3      192.168.102.139  Virtual-Dot11Radio0
```

The following example shows how to display details about neighbors using CDP:

```
(Cisco Controller) >show ap cdp neighbors detail SB_MAP2
AP Name:SB_MAP2
AP IP address:192.168.102.138
-----
Device ID: SB_MAP1
Entry address(es): 192.168.102.137
Platform: cisco AIR-LAP1522AG-A-K9 , Cap
Interface: Virtual-Dot11Radio0, Port ID (outgoing port): Virtual-Dot11Radio1
Holdtime : 180 sec
Version :
Cisco IOS Software, C1520 Software (C1520-K9W8-M), Experimental Version 12.4(200
81114:084420) [BLD-v124_18a_ja_throttle.20081114 208] Copyright (c) 1986-2008 by
Cisco Systems, Inc. Compiled Fri 14-Nov-08 23:08 by
advertisement version: 2
-----
Device ID: SB_MAP3
Entry address(es): 192.168.102.139
Platform: cisco AIR-LAP1522AG-A-K9 , Capabilities: Trans-Bridge
Interface: Virtual-Dot11Radio1, Port ID (outgoing port): Virtual-Dot11Radio0
Holdtime : 180 sec
Version :
Cisco IOS Software, C1520 Software (C1520-K9W8-M), Experimental Version 12.4(200
81114:084420) [BLD-v124_18a_ja_throttle.20081114 208] Copyright (c) 1986-2008 by
Cisco Systems, Inc. Compiled Fri 14-Nov-08 23:08 by
advertisement version: 2
```

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	<i>ap_name</i>	Name of the mesh access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >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
```

show ap config

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

show ap config 802.11{a | b} [summary] cisco_ap

Syntax Description	802.11a	Specifies the 802.11a or 802.11b/g network.
	802.11b	Specifies the 802.11b/g network.
	summary	(Optional) Displays radio summary of all APs
	<i>cisco_ap</i>	Lightweight access point name.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >show ap config 802.11a AP02
Cisco AP Identifier..... 0
Cisco AP Name..... AP02
Country code..... US - United States
Regulatory Domain allowed by Country..... 802.11bg:-A      802.11a:-A
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
CAPWAP Path MTU..... 1485
Telnet State..... Disabled
Ssh State..... Disabled
Cisco AP Location..... default-location
Cisco AP Group Name..... default-group
Primary Cisco Switch..... Cisco_32:ab:63
Primary Cisco Switch IP Address..... Not Configured
Secondary Cisco Switch.....
Secondary Cisco Switch IP Address..... Not Configured
Tertiary Cisco Switch.....
Tertiary Cisco Switch IP Address..... Not Configured
Administrative State ..... ADMIN_ENABLED
Operation State ..... REGISTERED
Mirroring Mode ..... Disabled
AP Mode ..... Sniffer
Public Safety ..... Global: Disabled, Local: Disabled
AP SubMode ..... Not Configured
Remote AP Debug ..... Disabled
Logging trap severity level ..... informational
Logging syslog facility ..... kern
S/W Version ..... 7.0.110.6
Boot Version ..... 12.4.18.0
```

```

Mini IOS Version ..... 3.0.51.0
Stats Reporting Period ..... 180
Stats Re--More-- or (q)uit
LED State..... Enabled
PoE Pre-Standard Switch..... Enabled
PoE Power Injector MAC Addr..... Disabled
Power Type/Mode..... Power injector / Normal mode
Number Of Slots..... 2
AP Model..... AIR-LAP1142N-A-K9
AP Image..... C1140-K9W8-M
IOS Version..... 12.4(20100502:031212)
Reset Button..... Enabled
AP Serial Number..... FTX1305S180
AP Certificate Type..... Manufacture Installed
AP User Mode..... AUTOMATIC
AP User Name..... Not Configured
AP Dot1x User Mode..... Not Configured
AP Dot1x User Name..... Not Configured
Cisco AP system logging host..... 255.255.255.255
AP Up Time..... 47 days, 23 h 47 m 47 s
AP LWAPP Up Time..... 47 days, 23 h 10 m 37 s
Join Date and Time..... Tue May 4 16:05:00 2010
Join Taken Time..... 0 days, 00 h 01 m 37 s
Attributes for Slot 1
  Radio Type..... RADIO_TYPE_80211n-5
  Radio Subband..... RADIO_SUBBAND_ALL
  Administrative State ..... ADMIN_ENABLED
  Operation State ..... UP
  Radio Role ..... ACCESS
  CellId ..... 0
Station Configuration
  Configuration ..... AUTOMATIC
  Number Of WLANs ..... 2
  Medium Occupancy Limit ..... 100
  CFP Period ..... 4
  CFP MaxDuration ..... 60
  BSSID ..... 00:24:97:88:99:60
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
MCS Set
  MCS 0..... SUPPORTED
  MCS 1..... SUPPORTED
  MCS 2..... SUPPORTED
  MCS 3..... SUPPORTED
  MCS 4..... SUPPORTED
  MCS 5..... SUPPORTED
  MCS 6..... SUPPORTED
  MCS 7..... SUPPORTED
  MCS 8..... SUPPORTED
  MCS 9..... SUPPORTED
  MCS 10..... SUPPORTED
  MCS 11..... SUPPORTED
  MCS 12..... SUPPORTED
  MCS 13..... SUPPORTED
  MCS 14..... SUPPORTED
  MCS 15..... SUPPORTED
Beacon Period ..... 100

```



```

Fragmentation Threshold ..... 2346
Multi Domain Capability Implemented ..... TRUE
Multi Domain Capability Enabled ..... TRUE
Country String ..... US
Multi Domain Capability
  Configuration ..... AUTOMATIC
  First Chan Num ..... 36
  Number Of Channels ..... 21
MAC Operation Parameters
  Configuration ..... AUTOMATIC
  Fragmentation Threshold ..... 2346
  Packet Retry Limit ..... 64
Tx Power
  Num Of Supported Power Levels ..... 6
  Tx Power Level 1 ..... 14 dBm
  Tx Power Level 2 ..... 11 dBm
  Tx Power Level 3 ..... 8 dBm
  Tx Power Level 4 ..... 5 dBm
  Tx Power Level 5 ..... 2 dBm
  Tx Power Level 6 ..... -1 dBm
  Tx Power Configuration ..... AUTOMATIC
  Current Tx Power Level ..... 0
Phy OFDM parameters
  Configuration ..... AUTOMATIC
  Current Channel ..... 36
  Extension Channel ..... NONE
  Channel Width..... 20 Mhz
  Allowed Channel List..... 36,40,44,48,52,56,60,64,100,
    ..... 104,108,112,116,132,136,140,
    ..... 149,153,157,161,165
  TI Threshold ..... -50
  Legacy Tx Beamforming Configuration ..... AUTOMATIC
  Legacy Tx Beamforming ..... DISABLED
  Antenna Type..... INTERNAL_ANTENNA
  Internal Antenna Gain (in .5 dBi units).... 6
  Diversity..... DIVERSITY_ENABLED
802.11n Antennas
  Tx
    A..... ENABLED
    B..... ENABLED
  Rx
    A..... ENABLED
    B..... ENABLED
    C..... ENABLED
Performance Profile Parameters
  Configuration ..... AUTOMATIC
  Interference threshold..... 10 %
  Noise threshold..... -70 dBm
  RF utilization threshold..... 80 %
  Data-rate threshold..... 1000000 bps
  Client threshold..... 12 clients
  Coverage SNR threshold..... 16 dB
  Coverage exception level..... 25 %
  Client minimum exception level..... 3 clients
Rogue Containment Information
  Containment Count..... 0
CleanAir Management Information
  CleanAir Capable..... No
Radio Extended Configurations:
  Buffer size .....30
  Data-rate.....0
  Beacon strt .....90 ms
  Rx-Sensitivity SOP threshold ..... -80 dB

```

```
CCA threshold ..... -60 dB
```

The following example shows how to display the detailed configuration for another access point:

```
(Cisco Controller) >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
    24000 Kilo Bits..... SUPPORTED
    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 ..... 1
Number Of Channels ..... 11
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 ..... 17 dBm
Tx Power Level 2..... 14 dBm
Tx Power Level 3..... 11 dBm
Tx Power Level 4..... 8 dBm
Tx Power Level 5..... 5 dBm
Tx Power Configuration..... CUSTOMIZED
Current Tx Power Level..... 5
Phy OFDM parameters
Configuration..... CUSTOMIZED
Current Channel..... 1
TI Threshold..... -50
Legacy Tx Beamforming Configuration ..... CUSTOMIZED
Legacy Tx Beamforming ..... ENABLED
Antenna Type..... INTERNAL_ANTENNA
Internal Antenna Gain (in5 dBm units)..... 11
Diversity..... DIVERSITY_ENABLED
Performance Profile Parameters
Configuration..... AUTOMATIC
Interference threshold..... 10%
Noise threshold..... -70 dBm
RF utilization threshold..... 80%
Data-rate threshold..... 1000000 bps
Client threshold..... 12 clients
Coverage SNR threshold..... 12 dB
Coverage exception level..... 25%
Client minimum exception level..... 3 clients
Rogue Containment Information
Containment Count..... 0

```

The following example shows how to display the general configuration of a Cisco access point:

```

(Cisco Controller) >show ap config general cisco-ap
Cisco AP Identifier..... 9
Cisco AP Name..... cisco-ap
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

```

show ap config global

```

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.....
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 ..... 5.1.0.0
Boot Version ..... 12.4.10.0
Mini IOS Version ..... 0.0.0.0
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
Rogue Detection..... Enabled
AP TCP MSS Adjust..... Disabled
Mesh preferred parent..... 00:24:13:0f:92:00

```

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 This command has no arguments and keywords.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display global syslog server settings:

```
(Cisco Controller) >show ap config global
AP global system logging host..... 255.255.255.255
```

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	<i>cisco_ap</i>	Cisco lightweight access point name.
--------------------	-----------------	--------------------------------------

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display memory core dump information:

```
(Cisco Controller) >show ap core-dump AP02
Memory core dump is disabled.
```

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.
--------------------	--

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >show ap crash-file
```

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	all	Specifies all Cisco lightweight access points.
	<i>cisco_ap</i>	Name of a Cisco lightweight access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >show ap data-plane all
Min Data      Data      Max Data      Last
AP Name      Round Trip  Round Trip  Round Trip  Update
-----
1130          0.000s     0.000s     0.002s     18:51:23
1240          0.000s     0.000s     0.000s     18:50:45
```

show ap ethernet tag

To display the VLAN tagging information of an Ethernet interface, use the **show ap ethernet tag** command.

```
show ap ethernet tag {summary | cisco_ap}
```

Syntax Description	summary	Displays the VLAN tagging information for all access points associated to the controller.
	<i>cisco_ap</i>	Name of the Cisco lightweight access point. Displays the VLAN tagging information for a specific access point associated to the controller.
Command Default	None	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

If the access point is unable to route traffic or reach the controller using the specified trunk VLAN, it falls back to the untagged configuration. If the access point joins the controller using this fallback configuration, the controller sends a trap to a trap server such as the WCS, which indicates the failure of the trunk VLAN. In this scenario, the "Failover to untagged" message appears in show command output.

The following example shows how to display the VLAN tagging information for all access points associated to the controller:

```
(Cisco Controller) >show ap ethernet tag summary

AP Name                Vlan Tag Configuration
-----
AP2                    7 (Failover to untagged)
charan.AP1140.II      disabled
```

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	<i>ap_name</i>	Event log for the specified access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >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
contoller 'admin'
*Feb 13 11:54:32.874: *** Access point reloading. Reason: Reload Command ***
*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		
	<i>cisco_ap</i>	Name of the lightweight access point.
	all	Specifies all access points.



Note If you have an AP that has the name *all*, it conflicts with the keyword **all** that specifies all access points. In this scenario, the keyword **all** takes precedence over the AP that is named *all*.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

show ap inventory

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

```
show ap inventory {ap-name | all}
```

Syntax Description		
	<i>ap-name</i>	Inventory for the specified AP.
	all	Inventory for all the APs.

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >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	<i>ap_mac</i>	Access point Ethernet MAC address or the MAC address of the 802.11 radio interface.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco 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 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	<i>ap_mac</i>	Access point Ethernet MAC address or the MAC address of the 802.11 radio interface.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
Usage Guidelines	To obtain the MAC address of the 802.11 radio interface, enter the show interface command on the access point.	

The following example shows how to display specific join information for an access point:

```
(Cisco Controller) >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
```

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.	
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >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

show ap led-state

To view the LED state of all access points or a specific access point, use the **show ap led-state** command.

```
show ap led-state {all | cisco_ap}
```

Syntax Description	all	Shows the LED state for all access points.
	<i>cisco_ap</i>	Name of the access point whose LED state is to be shown.
Command Default	The AP LED state is enabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to get the LED state of all access points:

```
(Cisco Controller) >show ap led-state all
Global LED State: Enabled (default)
```

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.
	<i>cisco_ap</i>	Name of the lightweight access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >show ap link-encryption all
      Encryption  Dnstream  Upstream  Last
AP Name      State      Count      Count      Update
-----
1240          Dis        4406      237553     Never
1130          En         2484      276308     19:31
```

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.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >show ap monitor-mode summary
AP Name      Ethernet MAC      Status      Scanning Channel List
-----
AP_004          xx:xx:xx:xx:xx:xx Tracking      1, 6, 11, 4
```

show ap packet-dump status

To display access point Packet Capture configurations, use the **show ap packet-dump status** command.

show ap packet-dump status

Syntax Description

This command has no arguments or keywords.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

Packet Capture does not work during intercontroller roaming.

The controller does not capture packets created in the radio firmware and sent out of the access point, such as the beacon or probe response. Only packets that flow through the Radio driver in the Tx path are captured.

The following example shows how to display the access point Packet Capture configurations:

```
(Cisco Controller) >show ap packet-dump status
Packet Capture Status..... Stopped
FTP Server IP Address..... 0.0.0.0
FTP Server Path.....
FTP Server Username.....
FTP Server Password..... *****
Buffer Size for Capture..... 2048 KB
Packet Capture Time..... 45 Minutes
Packet Truncate Length..... Unspecified
Packet Capture Classifier..... None
```

show ap retransmit

To display access point control packet retransmission parameters, use the **show ap retransmit** command.

show ap retransmit {all | *cisco_ap*}

Syntax Description	all	Specifies all access points.
	<i>cisco_ap</i>	Name of the access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the control packet retransmission parameters of all access points on a network:

```
(Cisco Controller) >show ap retransmit all
Global control packet retransmit interval: 3 (default)
Global control packet retransmit count: 5 (default)
AP Name           Retransmit Interval  Retransmit count
-----
AP_004             3 (default)         5 (WLC default),5 (AP default)
```

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 | ethernet summary} *cisco_ap* [tsm {*client_mac* | all}]

Syntax Description	802.11a	Specifies the 802.11a network
	802.11b	Specifies the 802.11b/g network.

wlan	Specifies WLAN statistics.
ethernet	Specifies AP ethernet interface statistics.
summary	Displays ethernet interface summary of all the connected Cisco access points.
<i>cisco_ap</i>	Name of the lightweight access point.
tsm	(Optional) Specifies the traffic stream metrics.
<i>client_mac</i>	(Optional) MAC address of the client.
all	(Optional) Specifies all access points.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	This command was modified. The OEAP WMM Counters were added to the output.

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

```
(Cisco Controller) >show ap stats 802.11a Ibiza

Number Of Slots..... 2
AP Name..... Ibiza
MAC Address..... 44:2b:03:9a:8a:73
Radio Type..... RADIO_TYPE_80211a
Stats Information
  Number of Users..... 0
  TxFragmentCount..... 84628
  MulticastTxFrameCnt..... 84628
  FailedCount..... 0
  RetryCount..... 0
  MultipleRetryCount..... 0
  FrameDuplicateCount..... 0
  RtsSuccessCount..... 1
  RtsFailureCount..... 0
  AckFailureCount..... 0
  RxIncompleteFragment..... 0
  MulticastRxFrameCnt..... 0
  FcsErrorCount..... 20348857
  TxFrameCount..... 84628
  WepUndecryptableCount..... 19907
  TxFramesDropped..... 0
OEAP WMM Stats :
Best Effort:
  Tx Frame Count..... 0
  Tx Failed Frame Count..... 0
  Tx Expired Count..... 0
  Tx Overflow Count..... 0
  Tx Queue Count..... 0
  Tx Queue Max Count..... 0
```

```

    Rx Frame Count..... 0
    Rx Failed Frame Count..... 0
Background:
    Tx Frame Count..... 0
    Tx Failed Frame Count..... 0
    Tx Expired Count..... 0
    Tx Overflow Count..... 0
    Tx Queue Count..... 0
    Tx Queue Max Count..... 0
    Rx Frame Count..... 0
    Rx Failed Frame Count..... 0
Video:
    Tx Frame Count..... 0
    Tx Failed Frame Count..... 0
    Tx Expired Count..... 0
    Tx Overflow Count..... 0
    Tx Queue Count..... 0
    Tx Queue Max Count..... 0
    Rx Frame Count..... 0
    Rx Failed Frame Count..... 0
Voice:
    Tx Frame Count..... 0
    Tx Failed Frame Count..... 0
    Tx Expired Count..... 0
    Tx Overflow Count..... 0
    Tx Queue Count..... 0
    Tx Queue Max Count..... 0
    Rx Frame Count..... 0
    Rx Failed Frame Count..... 0

Rate Limiting Stats:
Wlan 1:
    Number of Data Packets Received..... 592
    Number of Data Rx Packets Dropped..... 160
    Number of Data Bytes Received..... 160783
    Number of Data Rx Bytes Dropped..... 0
    Number of Realtime Packets Received..... 592
    Number of Realtime Rx Packets Dropped..... 0
    Number of Realtime Bytes Received..... 160783
    Number of Realtime Rx Bytes Dropped..... 0
    Number of Data Packets Sent..... 131
    Number of Data Tx Packets Dropped..... 0
    Number of Data Bytes Sent..... 23436
    Number of Data Tx Bytes Dropped..... 0
    Number of Realtime Packets Sent..... 131
    Number of Realtime Tx Packets Dropped..... 0
    Number of Realtime Bytes Sent..... 23436
    Number of Realtime Tx Bytes Dropped..... 0
Call Admission Control (CAC) Stats
    Voice Bandwidth in use(% of config bw)..... 0
    Voice Roam Bandwidth in use(% of config bw).... 0
    Total channel MT free..... 0
    Total voice MT free..... 0
    Na Direct..... 0
    Na Roam..... 0
    Video Bandwidth in use(% of config bw)..... 0
    Video Roam Bandwidth in use(% of config bw).... 0
    Total BW in use for Voice(%)..... 0
    Total BW in use for SIP Preferred call(%)..... 0
WMM TSPEC CAC Call Stats
    Total num of voice calls in progress..... 0
    Num of roaming voice calls in progress..... 0
    Total Num of voice calls since AP joined..... 0
    Total Num of roaming calls since AP joined..... 0

```

```

Total Num of exp bw requests received..... 0
Total Num of exp bw requests admitted..... 0
Num of voice calls rejected since AP joined.... 0
Num of roam calls rejected since AP joined..... 0
Num of calls rejected due to 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..... 0
Num of roaming calls in progress..... 0
Total Num of calls since AP joined..... 0
Total Num of roaming calls since AP joined.... 0
Total Num of Preferred calls received..... 0
Total Num of Preferred calls accepted..... 0
Total Num of ongoing Preferred calls..... 0
Total Num of calls rejected(Insuff BW)..... 0
Total Num of roam calls rejected(Insuff BW).... 0
WMM Video TSPEC CAC Call Stats
Total num of video calls in progress..... 0
Num of roaming video calls in progress..... 0
Total Num of video calls since AP joined..... 0
Total Num of video roaming calls since AP j.... 0
Num of video calls rejected since AP joined.... 0
Num of video roam calls rejected since AP j.... 0
Num of video calls rejected due to insuffic.... 0
Num of video calls rejected due to invalid .... 0
Num of video calls rejected due to PHY rate.... 0
Num of video calls rejected due to QoS poli.... 0
SIP Video CAC Call Stats
Total Num of video calls in progress..... 0
Num of video roaming calls in progress..... 0
Total Num of video calls since AP joined..... 0
Total Num of video roaming calls since AP j.... 0
Total Num of video calls rejected(Insuff BW.... 0
Total Num of video roam calls rejected(Insu.... 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

```

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 [*cisco_ap*]

Syntax Description	<i>cisco_ap</i>	(Optional) Type sequence of characters that make up the name of a specific AP or a group of APs, or enter a wild character search pattern.
Command Default	None	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

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

```
(Cisco Controller) >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
Country IP Address Clients
-----
AP1140            2    AIR-LAP1142N-A-K9    f0:f7:55:75:f3:29    default
location          US    192.168.0.0          0
Access Points using IPv6 transport:
  AP Name  Slots  AP Model          Ethernet MAC          Location          Country  IPv6
  Address          Clients
-----
  AP1040    2    AIR-LAP1042N-A-K9    00:40:96:b9:4b:89    default location  US
2001:DB8:0:1::1          0
```

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** }

Syntax Description		
	<i>cisco_ap</i>	Specified lightweight access point name.
	all	Specifies all access points.



Note If an AP itself is configured with the keyword **all**, the all access points case takes precedence over the AP that is with the keyword **all**.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >show ap tcp-mss-adjust all
AP Name          TCP State MSS Size
-----
AP-1140          enabled  536
AP-1240          disabled -
AP-1130          disabled -
```

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.

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

Syntax Description	802.11a	Specifies the 802.11a network.
	802.11b	Specifies the 802.11b/g network.
	<i>ap_name</i>	Lightweight access point name.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >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
```

Show CAC Commands

Use the **show cac** commands to display Call Admission Control (CAC) voice and video summary and statistics.

show cac voice stats

To view the detailed voice CAC statistics of the 802.11a or 802.11b radio, use the **show cac voice stats** command.

show cac voice stats {802.11a | 802.11b}

Syntax Description	
802.11a	Displays detailed voice CAC statistics for 802.11a.
802.11b	Displays detailed voice CAC statistics for 802.11b/g.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show cac voice stats 802.11b** command:

```
(Cisco Controller) > show cac voice stats 802.11b

WLC Voice Call Statistics for 802.11b Radio

WMM TSPEC CAC Call Stats
  Total num of Calls in progress..... 0
  Num of Roam Calls in progress..... 0
  Total Num of Calls Admitted..... 0
  Total Num of Roam Calls Admitted..... 0
  Total Num of exp bw requests received..... 0
  Total Num of exp bw requests Admitted..... 0
  Total Num of Calls Rejected..... 0
  Total Num of Roam Calls Rejected..... 0
  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..... 0
  Num of Roam Calls in progress..... 0
  Total Num of Calls Admitted..... 0
  Total Num of Roam Calls Admitted..... 0
  Total Num of Preferred Calls Received..... 0
  Total Num of Preferred Calls Admitted..... 0
  Total Num of Ongoing Preferred Calls..... 0
  Total Num of Calls Rejected(Insuff BW)..... 0
  Total Num of Roam Calls Rejected(Insuff BW).... 0
KTS based CAC Call Stats
  Total Num of Calls in progress..... 0
  Num of Roam Calls in progress..... 0
  Total Num of Calls Admitted..... 0
  Total Num of Roam Calls Admitted..... 0
  Total Num of Calls Rejected(Insuff BW)..... 0
  Total Num of Roam Calls Rejected(Insuff BW).... 0
```

show cac voice summary

To view the list of all APs with brief voice statistics (includes bandwidth used, maximum bandwidth available, and the number of calls information), use the **show cac voice summary** command.

show cac voice summary

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

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show cac voice summary** command:

```
(Cisco Controller) > show cac voice summary
  AP Name                Slot#   Radio   BW Used/Max   Calls
-----
APc47d.4f3a.3547        0       11b/g    0/23437       0
      1      11a    1072/23437    1
```

show cac video stats

To view the detailed video CAC statistics of the 802.11a or 802.11b radio, use the **show cac video stats** command.

show cac video stats {802.11a | 802.11b}

Syntax Description	802.11a Displays detailed video CAC statistics for 802.11a.
---------------------------	--

	802.11b Displays detailed video CAC statistics for 802.11b/g.
--	--

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show cac video stats 802.11b** command:

```
(Cisco Controller) > show cac video stats 802.11b

WLC Video Call Statistics for 802.11b Radio

WMM TSPEC CAC Call Stats
  Total num of Calls in progress..... 0
  Num of Roam Calls in progress..... 0
  Total Num of Calls Admitted..... 0
  Total Num of Roam Calls Admitted..... 0
  Total Num of Calls Rejected..... 0
  Total Num of Roam Calls Rejected..... 0
  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..... 0
    Num of Roam Calls in progress..... 0
    Total Num of Calls Admitted..... 0
    Total Num of Roam Calls Admitted..... 0
    Total Num of Calls Rejected(Insuff BW)..... 0
    Total Num of Roam Calls Rejected(Insuff BW).... 0

```

Related Commands

config 802.11 cac voice
config 802.11 cac defaults
config 802.11 cac video
config 802.11 cac multimedia
show cac voice stats
show cac voice summary
show cac video stats
show cac video summary
config 802.11 cac video load-based
config 802.11 cac video cac-method
config 802.11 cac video sip

show cac video summary

To view the list of all access points with brief video statistics (includes bandwidth used, maximum bandwidth available, and the number of calls information), use the **show cac video summary** command.

show cac video summary

Syntax Description

This command has no arguments or keywords.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show cac video summary** command:

```
(Cisco Controller) > show cac video summary
```

AP Name	Slot#	Radio	BW Used/Max	Calls
AP001b.d571.88e0	0	11b/g	0/10937	0
	1	11a	0/18750	0
AP5_1250	0	11b/g	0/10937	0
	1	11a	0/18750	0

Related Commands

config 802.11 cac voice

config 802.11 cac defaults
config 802.11 cac video
config 802.11 cac multimedia
show cac voice stats
show cac voice summary
show cac video stats
show cac video summary
config 802.11 cac video load-based
config 802.11 cac video cac-method
config 802.11 cac video sip

Show Client Commands

Use the **show client** commands to see 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	802.11a	Specifies the 802.11a network.
	802.11b	Specifies the 802.11b/g network.
	<i>cisco_ap</i>	Cisco lightweight access point name.
Command Default	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.	

This example shows how to display client information on an access point:

```
(Cisco Controller) >show client ap 802.11b AP1
MAC Address      AP Id  Status      WLAN Id  Authenticated
-----
xx:xx:xx:xx:xx:xx  1  Associated  1        No
```

show client calls

To display the total number of active or rejected calls on the controller, use the **show client calls** command.

```
show client calls {active | rejected} {802.11a | 802.11bg | all}
```

Syntax Description	active	Specifies active calls.
	rejected	Specifies rejected calls.
	802.11a	Specifies the 802.11a network.
	802.11bg	Specifies the 802.11b/g network.
	all	Specifies both the 802.11a and 802.11b/g network.
Command Default	None	

show client ccx client-capability

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show client calls active 802.11a** command :

```
(Cisco Controller) > show client calls active 802.11a
Client MAC           Username           Total Call
                    Duration (sec)
-----
00:09: ef: 02:65:70   abc               45           VJ-1240C-ed45cc  802.11a
00:13: ce: cc: 51:39   xyz               45           AP1130-a416      802.11a
00:40:96: af: 15:15   def               45           AP1130-a416      802.11a
00:40:96:b2:69: df    def               45           AP1130-a416      802.11a
Number of Active Calls ----- 4
```

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	<i>client_mac_address</i> MAC address of the client.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

Usage Guidelines This command displays the client's available capabilities, not the current settings for the capabilities.

The following is a sample output of the **show client ccx client-capability** command:

```
(Cisco Controller) >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)
```


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	<i>client_mac_address</i>	MAC address of the client.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show client ccx frame-data** command:

```
(Cisco Controller) >show client ccx frame-data
xx:xx:xx:xx:xx:xx
```

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	<i>client_mac_address</i>	MAC address of the client.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show client ccx last-response-status** command:

```
(Cisco Controller) >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
```

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	<i>client_mac_address</i>	MAC address of the client.
---------------------------	---------------------------	----------------------------

Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show client ccx last-test-status** command:

```
(Cisco Controller) >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
```

show client ccx log-response

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

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

Syntax Description	roam	(Optional) Displays the CCX client roaming log response.
	rsna	(Optional) Displays the CCX client RSNA log response.
	syslog	(Optional) Displays the CCX client system log response.
	<i>client_mac_address</i>	Inventory for the specified access point.

Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show client ccx log-response syslog** command:

```
(Cisco Controller) >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'
```

The following example shows how to display the client roaming log response:

```
(Cisco Controller) >show client ccx log-response roam 00:40:96:a8:f7:98
Thu Jun 22 11:55:14 2007    Roaming Response LogID=20: Status=Successful
Event Timestamp=0d 00h 00m 13s 322396us    Source BSSID=00:40:96:a8:f7:98
Target BSSID=00:0b:85:23:26:70,           Transition Time=100(ms)
Transition Reason: Normal roam, poor link    Transition Result: Success
Thu Jun 22 11:55:14 2007    Roaming Response LogID=133: Status=Successful
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
Thu Jun 22 18:28:48 2007    Roaming Response LogID=133: Status=Successful
Event Timestamp=0d 00h 00m 08s 815477us    Source BSSID=00:0b:85:81:06:c2
Target BSSID=00:0b:85:81:06:d2,           Transition Time=3281(ms)
Transition Reason: First association to WLAN  Transition Result: Success
```

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	<i>client_mac_address</i>	MAC address of the client.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show client ccx manufacturer-info** command:

```
(Cisco Controller) >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)
    ERP(802.11g)
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, MinRss1:-95, MaxRss1:-30
```


Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show client ccx profiles** command:

```
(Cisco Controller) >show client ccx profiles 00:40:96:15:21:ac
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+CCKM
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
```

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	<i>client_mac_address</i>	MAC address of the client.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show client ccx results** command:

```
(Cisco Controller) >show client ccx results xx.xx.xx.xx
dot1x Complete..... Success
EAP Method..... *1,Host OS Login Credentials
dot1x Status..... 255
```

show client ccx rm

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

show client ccx rm *client_MAC* {**status** | {**report** {**chan-load** | **noise-hist** | **frame** | **beacon** | **pathloss** } } }

Syntax Description	<i>client_MAC</i>	Client MAC address.
	status	Displays the client CCX radio management status information.
	report	Displays the client CCX radio management report.
	chan-load	Displays radio management channel load reports.
	noise-hist	Displays radio management noise histogram reports.
	beacon	Displays radio management beacon load reports.
	frame	Displays radio management frame reports.
	pathloss	Displays radio management path loss reports.
Command Default	None	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >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
```

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

```
(Cisco Controller) >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
```

The following example shows how to display the client radio management noise histogram reports:

```
(Cisco Controller) >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
```

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*

show client detail

Syntax Description	<i>client_mac_address</i>	Client MAC address.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show client ccx stats-report** command:

```
(Cisco Controller) > show client ccx stats-report 00:0c:41:07:33:a6
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
```

show client detail

To display IP addresses per client learned through DNS snooping (DNS-based ACL), use the **show client detail mac_address** command.

show client detail mac_address

Syntax Description	<i>mac_address</i>	MAC address of the client.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced.

The following is a sample output of the **show client detail mac_address** command.

```
(Cisco Controller) > show client detail 01:35:6x:yy:21:00
Client MAC Address..... 01:35:6x:yy:21:00
Client Username ..... test
AP MAC Address..... 00:11:22:33:44:x0
AP Name..... AP0011.2020.x111
AP radio slot Id..... 1
Client State..... Associated
Client NAC OOB State..... Access
```



```

Wireless LAN Id..... 7
Hotspot (802.11u)..... Not Supported
BSSID..... 00:11:22:33:44:xx
Connected For ..... 28 secs
Channel..... 56
IP Address..... 10.0.0.1
Gateway Address..... Unknown
Netmask..... Unknown
IPv6 Address..... xx20::222:6xyy:zeeb:2233
Association Id..... 1
Authentication Algorithm..... Open System
Reason Code..... 1
Status Code..... 0
Client CCX version..... No CCX support
Re-Authentication Timeout..... 1756
QoS Level..... Silver
Avg data Rate..... 0
Burst data Rate..... 0
Avg Real time data Rate..... 0
Burst Real Time data Rate..... 0
802.1P Priority Tag..... disabled
CTS Security Group Tag..... Not Applicable
KTS CAC Capability..... No
WMM Support..... Enabled
    APSD ACs..... BK BE VI VO
Power Save..... ON
Current Rate..... m7
Supported Rates.....
6.0,9.0,12.0,18.0,24.0,36.0,
..... 48.0,54.0
Mobility State..... Local
Mobility Move Count..... 0
Security Policy Completed..... No
Policy Manager State..... SUPPLICANT_PROVISIONING
Policy Manager Rule Created..... Yes
AAA Override ACL Name..... android
AAA Override ACL Applied Status..... Yes
AAA Override Flex ACL Name..... none
AAA Override Flex ACL Applied Status..... Unavailable
AAA URL redirect.....
https://10.0.0.3:8443/guestportal/gateway?sessionId=0a68aa72000000015272404e&action=nspp
Audit Session ID..... 0a68aa72000000015272404e
AAA Role Type..... none
Local Policy Applied..... p1
IPv4 ACL Name..... none
FlexConnect ACL Applied Status..... Unavailable
IPv4 ACL Applied Status..... Unavailable
IPv6 ACL Name..... none
IPv6 ACL Applied Status..... Unavailable
Layer2 ACL Name..... none
Layer2 ACL Applied Status..... Unavailable

```

```

Client Type..... SimpleIP
mDNS Status..... Enabled
mDNS Profile Name..... default-mdns-profile
No. of mDNS Services Advertised..... 0
Policy Type..... WPA2
Authentication Key Management..... 802.1x
Encryption Cipher..... CCMP (AES)
Protected Management Frame ..... No
Management Frame Protection..... No
EAP Type..... PEAP
Interface.....
.. management
VLAN..... 0
Quarantine VLAN..... 0
Access VLAN..... 0
Client Capabilities:
    CF Pollable..... Not implemented
    CF Poll Request..... Not implemented
    Short Preamble..... Not implemented
    PBCC..... Not implemented
    Channel Agility..... Not implemented
    Listen Interval..... 10
    Fast BSS Transition..... Not implemented
Client Wifi Direct Capabilities:
    WFD capable..... No
    Manged WFD capable..... No
    Cross Connection Capable..... No
    Support Concurrent Operation..... No
Fast BSS Transition Details:
Client Statistics:
    Number of Bytes Received..... 123659
    Number of Bytes Sent..... 120564
    Number of Packets Received..... 1375
    Number of Packets Sent..... 276
    Number of Interim-Update 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..... 0
    Number of EAP Key Msg Timeouts..... 0
    Number of EAP Key Msg Failures..... 0
    Number of Data Retries..... 82
    Number of RTS Retries..... 0
    Number of Duplicate Received Packets..... 0
    Number of Decrypt Failed Packets..... 0
    Number of Mic Failed Packets..... 0
    Number of Mic Missing Packets..... 0
    Number of RA Packets Dropped..... 0
    Number of Policy Errors..... 0
    Radio Signal Strength Indicator..... -51 dBm
    Signal to Noise Ratio..... 46 dB

```

```

Client Rate Limiting Statistics:
  Number of Data Packets Recieved..... 0
  Number of Data Rx Packets Dropped..... 0
  Number of Data Bytes Recieved..... 0
  Number of Data Rx Bytes Dropped..... 0
  Number of Realtime Packets Recieved..... 0
  Number of Realtime Rx Packets Dropped..... 0
  Number of Realtime Bytes Recieved..... 0
  Number of Realtime Rx Bytes Dropped..... 0
  Number of Data Packets Sent..... 0
  Number of Data Tx Packets Dropped..... 0
  Number of Data Bytes Sent..... 0
  Number of Data Tx Bytes Dropped..... 0
  Number of Realtime Packets Sent..... 0
  Number of Realtime Tx Packets Dropped..... 0
  Number of Realtime Bytes Sent..... 0
  Number of Realtime Tx Bytes Dropped..... 0
Nearby AP Statistics:
  AP0022.9090.c545(slot 0)
    antenna0: 26 secs ago..... -33 dBm
    antennal: 26 secs ago..... -35 dBm
  AP0022.9090.c545(slot 1)
    antenna0: 25 secs ago..... -41 dBm
    antennal: 25 secs ago..... -44 dBm
  APc47d.4f3a.35c2(slot 0)
    antenna0: 26 secs ago..... -30 dBm
    antennal: 26 secs ago..... -36 dBm
  APc47d.4f3a.35c2(slot 1)
    antenna0: 24 secs ago..... -43 dBm
    antennal: 24 secs ago..... -45 dBm
DNS Server details:
  DNS server IP ..... 0.0.0.0
  DNS server IP ..... 0.0.0.0

Client Dhcp Required:      False
Allowed (URL) IP Addresses
-----
209.165.200.225
209.165.200.226
209.165.200.227
209.165.200.228
209.165.200.229
209.165.200.230
209.165.200.231
209.165.200.232
209.165.200.233
209.165.200.234
209.165.200.235
209.165.200.236
209.165.200.237
209.165.200.238

```

```

209.165.201.1
209.165.201.2
209.165.201.3
209.165.201.4
209.165.201.5
209.165.201.6
209.165.201.7
209.165.201.8
209.165.201.9
209.165.201.10

```

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.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the location calibration summary information:

```

(Cisco Controller) >show client location-calibration summary
MAC Address Interval
-----
10:10:10:10:10:10 60
21:21:21:21:21:21 45

```

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.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the number of probing clients:

```
(Cisco Controller) >show client probing
Number of Probing Clients..... 0
```

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*

Syntax Description	<i>mac_address</i>	Client MAC address.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

This command provides the following information:

- The time when the report was received
- The MAC address of the access point to which the client is currently associated
- The MAC address of the access point to which the client was previously associated
- The channel of the access point to which the client was previously associated
- The SSID of the access point to which the client was previously associated
- The time when the client disassociated from the previous access point
- The reason for the client roam



Note For non-CCXv4 clients, the Layer 2 roam reason is not displayed in the command output. For more information, see [CSCvv85022](#).

Examples

The following is a sample output of the **show client roam-history** command:

```
(Cisco Controller) > 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 [*ssid / ip / username / devicetype*]

Syntax Description This command has no arguments or keywords up to Release 7.4.

Syntax Description *ssid / ip / username / devicetype* (Optional) Displays active clients selective details on any of the following parameters or all the parameters in any order:

- SSID
- IP addresss
- Username
- Device type (such as Samsung-Device or WindowsXP-Workstation)

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines Use **show client ap** command to list the status of automatically disabled clients. Use the **show exclusionlist** command to display clients on the exclusion list.

The following example shows how to display a summary of the active clients:

```
(Cisco Controller) > show client summary
Number of Clients..... 24
Number of PMIPv6 Clients..... 200
MAC Address      AP Name      Status      WLAN/GLAN/RLAN Auth Protocol      Port
Wired  PMIPv6
-----
-----
00:00:15:01:00:01 NMSP-TalwarSIM1-2 Associated      1              Yes  802.11a      13
No           Yes
00:00:15:01:00:02 NMSP-TalwarSIM1-2 Associated      1              Yes  802.11a      13
No           No
00:00:15:01:00:03 NMSP-TalwarSIM1-2 Associated      1              Yes  802.11a      13
No           Yes
00:00:15:01:00:04 NMSP-TalwarSIM1-2 Associated      1              Yes  802.11a      13
No           No
```

The following example shows how to display all clients that are WindowsXP-Workstation device type:

```
(Cisco Controller) >show client summary WindowsXP-Workstation
Number of Clients in WLAN..... 0

MAC Address      AP Name      Status      Auth Protocol      Port Wired Mobility Role
-----
-----

Number of Clients with requested device type..... 0
```

show client summary guest-lan

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

show client summary guest-lan

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

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show client summary guest-lan** command:

```
(Cisco Controller) > 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}

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

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show client tsm 802.11a** command:

```
(Cisco Controller) > 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*

Syntax Description	<i>username</i>	Client's username. You can view a list of the first eight clients that are in RUN state associated to controller's access points.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show client username** command:

```

(Cisco Controller) > show client username local

MAC Address      AP Name          Status          WLAN  Auth  Protocol          Port
Device Type     -----
-----

```



```

12:22:64:64:00:01 WEB-AUTH-AP-1 Associated 1 Yes 802.11g 1
Unknown
12:22:64:64:00:02 WEB-AUTH-AP-1 Associated 1 Yes 802.11g 1
Unknown
12:22:64:64:00:03 WEB-AUTH-AP-1 Associated 1 Yes 802.11g 1
Unknown
12:22:64:64:00:04 WEB-AUTH-AP-1 Associated 1 Yes 802.11g 1
Unknown
12:22:64:64:00:05 WEB-AUTH-AP-1 Associated 1 Yes 802.11g 1
Unknown
12:22:64:64:00:06 WEB-AUTH-AP-1 Associated 1 Yes 802.11g 1
Unknown
12:22:64:64:00:07 WEB-AUTH-AP-1 Associated 1 Yes 802.11g 1
Unknown
12:22:64:64:00:08 WEB-AUTH-AP-1 Associated 1 Yes 802.11g 1
Unknown

```

show client voice-diag

To display voice diagnostics statistics, use the **show client voice-diag** command.

show client voice-diag { **quos-map** | **roam-history** | **rss**i | **status** | **tspec** }

Syntax	Description
quos-map	Displays information about the QoS/DSCP mapping and packet statistics in each of the four queues: VO, VI, BE, BK. The different DSCP values are also displayed.
roam-history	Displays information about history of the last three roamings. The output contains the timestamp, access point associated with the roaming, the roaming reason, and if there is a roaming failure, the reason for the roaming failure.
rss i	Displays the client's RSSI values in the last 5 seconds when voice diagnostics are enabled.
status	Displays the status of voice diagnostics for clients.
tspec	Displays TSPEC for the voice diagnostic for clients.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show client voice-diag status** command:

```
(Cisco Controller) > show client voice-diag status
Voice Diagnostics Status: FALSE
```

Related Commands

- show client ap**
- show client detail**

show client summary

debug voice-diag

Show IPv6 Commands

Use the **show ipv6** commands to display the IPv6 settings and information.

show ipv6 acl

To display the IPv6 access control lists (ACLs) that are configured on the controller, use the **show ipv6 acl** command.

show ipv6 acl detailed {*acl_name* | **summary**}

Syntax Description	<i>acl_name</i>	IPv6 ACL name. The name can be up to 32 alphanumeric characters.
	detailed	Displays detailed information about a specific ACL.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >show ipv6 acl detailed acl6
Rule Index..... 1
Direction..... Any
IPv6 source prefix..... ::/0
IPv6 destination prefix..... ::/0
Protocol..... Any
Source Port Range..... 0-65535
Destination Port Range..... 0-65535
DSCP..... Any
Flow label..... 0
Action..... Permit
Counter..... 0
Deny Counter..... 0
```

show ipv6 neighbor-binding

To display the IPv6 neighbor binding data that are configured on the controller, use the **show ipv6 neighbor-binding** command.

show ipv6 neighbor-binding {**capture-policy** | **counters** | **detailed** {**mac** *mac_address* | **port** *port_number* | **vlan** *vlan_id*} | **features** | **policies** | **ra-throttle** {**statistics** *vlan_id* | **routers** *vlan_id*} | **summary**}

Syntax Description	capture-policy	Displays IPv6 next-hop message capture policies.
	counters	Displays IPv6 next-hop counters (Bridging mode only).

detailed	Displays the IPv6 neighbor binding table.
mac	Displays the IPv6 binding table entries for a specific MAC address.
<i>mac_address</i>	Displays the IPv6 binding table entries for a specific MAC address.
port	Displays the IPv6 binding table entries for a specific port.
<i>port_number</i>	Port Number. You can enter ap for an access point or LAG for a LAG port.
vlan	Displays the IPv6 neighbor binding table entries for a specific VLAN.
<i>vlan_id</i>	VLAN identifier.
features	Displays IPv6 next-hop registered features.
policies	Displays IPv6 next-hop policies.
ra-throttle	Displays RA throttle information.
statistics	Displays RA throttle statistics.
routers	Displays RA throttle routers.
summary	Displays the IPv6 neighbor binding table.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

DHCPv6 counters are applicable only for IPv6 bridging mode.

The following is the output of the **show ipv6 neighbor-binding summary** command:

```
(Cisco Controller) >show ipv6 neighbor-binding summary
Binding Table has 6 entries, 5 dynamic
Codes: L - Local, S - Static, ND - Neighbor Discovery, DH - DDCP
Preflevel flags (prlvl):
0001:MAC and LLA match      0002:Orig trunk           0004:Orig access
0008:Orig trusted access    0010:Orig trusted trunk   0020:DHCP assigned
0040:Cga authenticated      0080:Cert authenticated   0100:Statically assigned
   IPv6 address                MAC Address           Port VLAN Type      prlvl age
   state      Time left
-----
ND fe80::216:46ff:fe43:eb01    00:16:46:43:eb:01     1  980 wired          0005
 2 REACHABLE 157
ND fe80::9cf9:b009:b1b4:1ed9    70:f1:a1:dd:cb:d4     AP  980 wireless       0005
 2 REACHABLE 157
ND fe80::6233:4bff:fe05:25ef    60:33:4b:05:25:ef     AP  980 wireless       0005
 2 REACHABLE 203
ND fe80::250:56ff:fe8b:4a8f     00:50:56:8b:4a:8f     AP  980 wireless       0005
 2 REACHABLE 157
ND 2001:410:0:1:51be:2219:56c6:a8ad 70:f1:a1:dd:cb:d4     AP  980 wireless       0005
 5 REACHABLE 157
```

```
S 2001:410:0:1::9 00:00:00:00:00:08 AP 980 wireless 0100
1 REACHABLE 205
```

The following is the output of the **show ipv6 neighbor-binding detailed** command:

```
(Cisco Controller) >show ipv6 neighbor-binding detailed mac 60:33:4b:05:25:ef
macDB has 3 entries for mac 60:33:4b:05:25:ef, 3 dynamic
Codes: L - Local, S - Static, ND - Neighbor Discovery, DH - DDCP
Preflevel flags (prlvl):
0001:MAC and LLA match 0002:Orig trunk 0004:Orig access
0008:Orig trusted access 0010:Orig trusted trunk 0020:DHCP assigned
0040:Cga authenticated 0080:Cert authenticated 0100:Statically assigned
IPv6 address MAC Address Port VLAN Type prlvl age
state Time left
-----
ND fe80::6233:4bff:fe05:25ef 60:33:4b:05:25:ef AP 980 wireless 0009
0 REACHABLE 303
ND 2001:420:0:1:6233:4bff:fe05:25ef 60:33:4b:05:25:ef AP 980 wireless 0009
0 REACHABLE 300
ND 2001:410:0:1:6233:4bff:fe05:25ef 60:33:4b:05:25:ef AP 980 wireless 0009
0 REACHABLE 301
```

The following is the output of the **show ipv6 neighbor-binding counters** command:

```
(Cisco Controller) >show ipv6 neighbor-binding counters
Received Messages
```

```
NDP Router Solicitation 6
NDP Router Advertisement 19
NDP Neighbor Solicitation 557
NDP Neighbor Advertisement 48
NDP Redirect 0
NDP Certificate Solicit 0
NDP Certificate Advert 0
DHCPv6 Solicitation 0
DHCPv6 Advertisement 0
DHCPv6 Request 0
DHCPv6 Reply 0
DHCPv6 Inform 0
DHCPv6 Confirm 0
DHCPv6 Renew 0
DHCPv6 Rebind 0
DHCPv6 Release 0
DHCPv6 Decline 0
DHCPv6 Reconfigure 0
DHCPv6 Relay Forward 0
DHCPv6 Relay Rep 0
```

Bridged Messages

```
NDP Router Solicitation 6
NDP Router Advertisement 19
NDP Neighbor Solicitation 471
NDP Neighbor Advertisement 16
NDP Redirect 0
NDP Certificate Solicit 0
NDP Certificate Advert 0
DHCPv6 Solicitation 0
DHCPv6 Advertisement 0
DHCPv6 Request 0
DHCPv6 Reply 0
```

show ipv6 neighbor-binding

```

DHCPv6 Inform                0
DHCPv6 Confirm                0
DHCPv6 Renew                  0
DHCPv6 Rebind                 0
DHCPv6 Release                0
DHCPv6 Decline                0
DHCPv6 Reconfigure            0
DHCPv6 Relay Forward          0
DHCPv6 Relay Rep              0

```

NDSUPPRESS Drop counters

```

total   silent ns_in_out ns_dad unicast multicast internal
-----
0       0       0       0       0       0       0

```

SNOOPING Drop counters

Dropped Msgs		total	silent	internal	CGA_vfy	RSA_vfy	limit	martian	martian_mac
no_trust	not_auth	stop							
NDP RS			0	0	0	0	0	0	0
0	0	0							
NDP RA			0	0	0	0	0	0	0
0	0	0							
NDP NS			0	0	0	0	0	0	0
0	0	0							
NDP NA			0	0	0	0	0	0	0
0	0	0							
NDP Redirect			0	0	0	0	0	0	0
0	0	0							
NDP CERT SOL			0	0	0	0	0	0	0
0	0	0							
NDP CERT ADV			0	0	0	0	0	0	0
0	0	0							
DHCPv6 Sol			0	0	0	0	0	0	0
0	0	0							
DHCPv6 Adv			0	0	0	0	0	0	0
0	0	0							
DHCPv6 Req			0	0	0	0	0	0	0
0	0	0							
DHCPv6 Confirm			0	0	0	0	0	0	0
0	0	0							
DHCPv6 Renew			0	0	0	0	0	0	0
0	0	0							
DHCPv6 Rebind			0	0	0	0	0	0	0
0	0	0							
DHCPv6 Reply			0	0	0	0	0	0	0
0	0	0							
DHCPv6 Release			0	0	0	0	0	0	0
0	0	0							
DHCPv6 Decline			0	0	0	0	0	0	0
0	0	0							
DHCPv6 Recfg			0	0	0	0	0	0	0
0	0	0							
DHCPv6 Infreq			0	0	0	0	0	0	0
0	0	0							
DHCPv6 Relayfwd			0	0	0	0	0	0	0
0	0	0							
DHCPv6 Relayreply			0	0	0	0	0	0	0
0	0	0							

CacheMiss Statistics

```

Multicast NS Forwarded

```

```

        To STA 0
        To DS 0
    Multicast NS Dropped
        To STA 467
        To DS 467

Multicast NA Statistics
    Multicast NA Forwarded
        To STA 0
        To DS 0
    Multicast NA Dropped
        To STA 0
        To DS 0

(Cisco Controller) > >
    
```

show ipv6 ra-guard

To display the RA guard statistics, use the **show ipv6 ra-guard** command.

show ipv6 ra-guard {ap | wlc} summary

Syntax Description	ap	Displays Cisco access point details.
	wlc	Displays Cisco controller details.
	summary	Displays RA guard statistics.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example show the output of the **show ipv6 ra-guard ap summary** command:

```

(Cisco Controller) >show ipv6 ra-guard ap summary
IPv6 RA Guard on AP..... Enabled
RA Dropped per client:
MAC Address      AP Name          WLAN/GLAN      Number of RA Dropped
-----
00:40:96:b9:4b:89 Bhavik_1130_1_p13 2                19
-----
Total RA Dropped on AP..... 19
    
```

The following example shows how to display the RA guard statistics for a controller:

```

(Cisco Controller) >show ipv6 ra-guard wlc summary
IPv6 RA Guard on WLC..... Enabled
    
```

show ipv6 summary

To display the IPv6 configuration settings, use the **show ipv6 summary** command.

show ipv6 summary

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

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example displays the output of the **show ipv6 summary** command:

```
(Cisco Controller) >show ipv6 summary
Global Config..... Enabled
Reachable-lifetime value..... 30
Stale-lifetime value..... 300
Down-lifetime value..... 300
RA Throttling..... Disabled
RA Throttling allow at-least..... 1
RA Throttling allow at-most..... no-limit
RA Throttling max-through..... 5
RA Throttling throttle-period..... 600
RA Throttling interval-option..... ignore
NS Multicast CacheMiss Forwarding..... Enabled
NA Multicast Forwarding..... Enabled
IPv6 Capwap UDP Lite..... Enabled
Operating System IPv6 state ..... Enabled
```


Show Media-Stream Commands

Use the **show media-stream** commands to see the multicast-direct configuration state.

show media-stream client

To display the details for a specific media-stream client or a set of clients, use the **show media-stream client** command.

show media-stream client { *media-stream_name* | **summary** }

Syntax Description	<i>media-stream_name</i>	Name of the media-stream client of which the details is to be displayed.
	summary	Displays the details for a set of media-stream clients.

Command Default None.

This example shows how to display a summary media-stream clients:

```
> show media-stream client summary
Number of Clients..... 1
Client Mac           Stream Name  Stream Type  Radio WLAN  QoS   Status
-----
00:1a:73:dd:b1:12  mountainview  MC-direct   2.4   2     Video  Admitted
```

Related Commands **show media-stream group summary**

show media-stream group detail

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*

Syntax Description	<i>media-stream_name</i>	Name of the media-stream group.
---------------------------	--------------------------	---------------------------------

Command Default None.

This example shows how to display media-stream group configuration details:

```
> 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to display a summary of the media-stream group:

```
(Cisco Controller) > 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 802.11 media-stream client**

show media-stream client

show media-stream group detail

show mesh Commands

Use the **show mesh** commands to see settings for outdoor and indoor mesh access points.

show mesh ap

To display settings for mesh access points, use the **show mesh ap** command.

show mesh ap {**summary** | **tree**}

Syntax Description	summary	tree
	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.	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.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a summary format:

```
(Cisco Controller) >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
```

The following example shows how to display settings in a hierarchical (tree) format:

```
(Cisco Controller) >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 astools stats

To display antistranding statistics for outdoor mesh access points, use the **show mesh astools stats** command.

```
show mesh astools stats [cisco_ap]
```

Syntax Description	<i>cisco_ap</i>	(Optional) Antistranding feature statistics for a designated mesh access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display anti-stranding statistics on all outdoor mesh access points:

```
(Cisco Controller) >show mesh astools stats
Total No of Aps stranded : 0
```

The following example shows how to display anti-stranding statistics for access point *sb_map1*:

```
(Cisco Controller) >show mesh astools stats sb_map1
Total No of Aps stranded : 0
```

show mesh backhaul

To check the current backhaul information, use the **show mesh backhaul** command.

```
show mesh backhaul cisco_ap
```

Syntax Description	<i>cisco_ap</i>	Name of the access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the current backhaul:

```
(Cisco Controller) >show mesh backhaul
```

If the current backhaul is 5 GHz, the output is as follows:

```
Basic Basic Attributes for Slot 0
  Radio Type..... RADIO_TYPE_80211g
  Radio Role..... DOWNLINK ACCESS
```

```

Administrative State ..... ADMIN_ENABLED
Operation State ..... UP
  Current Tx Power Level ..... 1
If the current backhaul is 2.4 GHz, the output is as follows:
Basic Attributes for Slot 1
  Radio Type..... RADIO_TYPE_80211a
  Radio Subband..... RADIO_SUBBAND_ALL
  Radio Role..... DOWNLINK_ACCESS
  Administrative State ..... ADMIN_ENABLED
  Operation State ..... UP
    Current Tx Power Level ..... 1
    Current Channel ..... 165
    Antenna Type..... EXTERNAL_ANTENNA
    External Antenna Gain (in .5 dBm units).... 0
Current Channel.....6
Antenna Type.....External_ANTENNA
External Antenna Gain (in .5 dBm units).....0
    
```

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	summary	Displays the total number of voice calls and voice bandwidth used for each mesh access point.
	bwused	Displays the bandwidth for a selected access point in a tree topology.
	voice	Displays the mesh topology and the voice bandwidth used or available.
	video	Displays the mesh topology and the video bandwidth used or available.
	access	Displays access voice calls in progress in a tree topology.
	callpath	Displays the call bandwidth distributed across the mesh tree.
	rejected	Displays voice calls rejected for insufficient bandwidth in a tree topology.
	<i>cisco_ap</i>	Mesh access point name.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a summary of the call admission control settings:

```

(Cisco Controller) >show mesh cac summary
AP Name          Slot#      Radio  BW Used/Max  Calls
-----
    
```

```

SB_RAP1          0      11b/g  0/23437  0
                  1      11a    0/23437  0
SB_MAP1          0      11b/g  0/23437  0
                  1      11a    0/23437  0
SB_MAP2          0      11b/g  0/23437  0
                  1      11a    0/23437  0
SB_MAP3          0      11b/g  0/23437  0
                  1      11a    0/23437  0

```

The following example shows how to display the mesh topology and the voice bandwidth used or available:

```

(Cisco Controller) >show mesh cac bwused voice SB_MAP1
AP Name           Slot#   Radio   BW Used/Max
-----
SB_RAP1           0      11b/g   0/23437
                  1      11a    0/23437
| SB_MAP1         0      11b/g   0/23437
                  1      11a    0/23437
|| SB_MAP2        0      11b/g   0/23437
                  1      11a    0/23437
||| SB_MAP3       0      11b/g   0/23437
                  1      11a    0/23437

```

The following example shows how to display the access voice calls in progress in a tree topology:

```

(Cisco Controller) >show mesh cac access 1524 Map1
AP Name           Slot#   Radio   Calls
-----
1524_Rap          0      11b/g   0
                  1      11a    0
                  2      11a    0
| 1524_Map1       0      11b/g   0
                  1      11a    0
                  2      11a    0
|| 1524_Map2      0      11b/g   0
                  1      11a    0
                  2      11a    0

```

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display backhaul client access configuration settings for a mesh access point:

```

(Cisco Controller) >show mesh client-access
Backhaul with client access status: enabled
Backhaul with client access extended status(3 radio AP): disabled

```

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.	
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	The display was expanded to include Mesh Convergence Method.

The following example shows how to display global mesh configuration settings:

```
(Cisco Controller) >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
Mesh Slot Bias..... enabled
Mesh Convergence Method..... standard
```

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}
```

Syntax Description	summary	Displays global environment summary information.
---------------------------	----------------	--

show mesh neigh

cisco_ap Name of access point for which environment summary information is requested.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display global environment summary information:

```
(Cisco Controller) >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
```

The following example shows how to display an environment summary for an access point:

```
(Cisco Controller) >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
```

show mesh neigh

To display summary or detailed information about the mesh neighbors of a mesh access point, use the **show mesh neigh** command.

```
show mesh neigh {detail | summary} {cisco_ap | all}
```

Syntax Description

detail	Displays the channel and signal-to-noise ratio (SNR) details between the designated mesh access point and its neighbor.
summary	Displays the mesh neighbors for a designated mesh access point.
<i>cisco_ap</i>	Cisco lightweight access point name.
all	Displays all access points.



Note If an AP itself is configured with the **all** keyword, the **all** keyword access points take precedence over the AP that is named **all**.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a neighbor summary of an access point:

```
(Cisco Controller) >show mesh neigh summary RAP1
AP Name/Radio Mac Channel Rate Link-Snr Flags State
-----
00:1D:71:0F:CA:00 157 54 6 0x0 BEACON
00:1E:14:48:25:00 157 24 1 0x0 BEACON
MAP1-BB00 157 54 41 0x11 CHILD BEACON
```

The following example shows how to display the detailed neighbor statistics of an access point:

```
(Cisco Controller) >show mesh neigh detail RAP1
AP MAC : 00:1E:BD:1A:1A:00 AP Name: HOR1522_MINE06_MAP_S_Dyke
backhaul rate 54
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
```

The following table lists the output flags displayed for the **show mesh neigh detail** command.

Table 3: Output Flags for the show mesh neigh detail command

Output Flag	Description
AP MAC	MAC address of a mesh neighbor for a designated mesh access point.
AP Name	Name of the mesh access point.

Output Flag	Description
FLAGS	Describes adjacency. The possible values are as follows: <ul style="list-style-type: none"> • UPDATED—Recently updated neighbor. • NEIGH—One of the top neighbors. • EXCLUDED—Neighbor is currently excluded. • WASEXCLUDED—Neighbor was recently removed from the exclusion list. • PERMSNR—Permanent SNR neighbor. • CHILD—A child neighbor. • PARENT—A parent neighbor. • NEEDUPDATE—Not a current neighbor and needs an update. • BEACON—Heard a beacon from this neighbor. • ETHER—Ethernet neighbor.
worstDv	Worst distance vector through the neighbor.
Ant	Antenna on which the route was received.
channel	Channel of the neighbor.
biter	Number of black list timeouts left.
ppiter	Number of potential parent timeouts left.
Numroutes	Number of distance routes.
snr	Signal to Noise Ratio.
snrUp	SNR of the link to the AP.
snrDown	SNR of the link from the AP.
linkSnr	Calculated SNR of the link.
adjustedEase	Ease to the root AP through this AP. It is based on the current SNR and threshold SNR values.
unadjustedEase	Ease to the root AP through this AP after applying correct for number of hops.
txParent	Packets sent to this node while it was a parent.
rxparent	Packets received from this node while it was a parent.
poorSnr	Packets with poor SNR received from a node.
lastUpdate	Timestamp of the last received message for this neighbor
parentChange	When this node last became parent.

Output Flag	Description
per antenna smoother SNR values	SNR value is populated only for antenna 0.

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	<i>cisco_ap</i>	Mesh access point name.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display channel and SNR details for a designated link path:

```
(Cisco Controller) >show mesh path mesh-45-rap1
AP Name/Radio Mac Channel Rate Link-Snr Flags State
-----
MAP1-BB00 157 54 32 0x0 UPDATED NEIGH PARENT BEACON
RAP1 157 54 37 0x0 BEACON
```

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.
	<i>cisco_ap</i>	Name of mesh access point.
	all	Displays all mesh access points.



Note If an AP itself is configured with the **all** keyword, the **all** keyword access points take precedence over the AP that is named **all**.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to display the percentage of packet errors for packets transmitted by the neighbors to a mesh access point:

```
(Cisco Controller) >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
RTS Attempts: 0
RTS Success: 0
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
RTS Attempts: 0
RTS Success: 0
```

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to view 4.8-GHz public safety settings:

```
(Cisco Controller) >(Cisco Controller) >show mesh public-safety
Global Public Safety status: disabled
```

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	<i>cisco_ap</i>	Name of access point for which you want packet error statistics.
	all	Displays all access points.



Note If an AP itself is configured with the **all** keyword, the **all** keyword access points take precedence over the AP that is named **all**.

Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to view packet error statistics for access point ap417:

```
(Cisco Controller) >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
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
Re-Authentication Successes 0
```

show mesh stats

To display the mesh statistics for an access point, use the **show mesh stats** command.

```
show mesh stats cisco_ap
```

show mesh stats

Syntax Description	<i>cisco_ap</i>	Access point name.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display statistics of an access point:

```
(Cisco Controller) >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
```

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** command.

show mobility anchor [**wlan** *wlan_id* | **guest-lan** *guest_lan_id*]

Syntax Description

wlan	(Optional) Displays wireless LAN mobility group settings.
<i>wlan_id</i>	Wireless LAN identifier from 1 to 512 (inclusive).
guest-lan	(Optional) Displays guest LAN mobility group settings.
<i>guest_lan_id</i>	Guest LAN identifier from 1 to 5 (inclusive).

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to display a mobility wireless LAN anchor list:

```
(Cisco Controller) >show mobility anchor
Mobility Anchor Export List
WLAN ID      IP Address      Status
-----
12           192.168.0.15   UP
GLAN ID      IP Address      Status
-----
1            192.168.0.9    CNTRL_DATA_PATH_DOWN
```

show mobility ap-list

To display the mobility AP list, use the **show mobility ap-list** command.

show mobility ap-list

Syntax Description	This command has no arguments or keywords.	
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the mobility AP list:



Note The AP name is displayed only with New Mobility. With Old Mobility, the AP name is displayed as Unknown.

```
(Cisco Controller) >show mobility ap-list
AP Name                AP Radio MAC address      Controller      Learnt From
-----                -
AP30e4.dbc5.38ab      b8:62:1f:e5:33:10        9.7.104.10     Self
```

show mobility foreign-map

To display a mobility wireless LAN foreign map list, use the **show mobility foreign-map** command.

show mobility foreign-map wlan wlan_id

Syntax Description	wlan	Displays the mobility WLAN foreign-map list.
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to get a mobility wireless LAN foreign map list:

```
(Cisco Controller) >show mobility foreign-map wlan 2
Mobility Foreign Map List
WLAN ID                Foreign MAC Address        Interface
-----                -

```


2

00:1b:d4:6b:87:20

dynamic-105

show mobility group member

To display the details of the mobility group members in the same domain, use the **show mobility group member** command.

show mobility group member hash

Syntax Description	hash Displays the hash keys of the mobility group members in the same domain.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

The following example shows how to display the hash keys of the mobility group members:

```
(Cisco Controller) >show mobility group member hash
Default Mobility Domain..... new-mob

IP Address      Hash Key
-----
9.2.115.68      a819d479dcfeb3e0974421b6e8335582263d9169
9.6.99.10       0974421b6e8335582263d9169a819d479dcfeb3e
9.7.7.7         feb3e0974421b6e8335582263d9169a819d479dc
```

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.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

The following example shows how to display statistics of the mobility manager:

```
(Cisco Controller) >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
```

show mobility summary

To display the summary information for the controller mobility groups, use the **show mobility summary** command.

show mobility summary

Syntax Description	This command has no arguments or keywords.	
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines Some WLAN controllers may list no mobility security mode.

The following is a sample output of the **show mobility summary** command.

```
(Cisco Controller) >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
    
```

The following is a sample output of the **show mobility summary** command with new mobility architecture.

(Cisco Controller) >**show mobility summary**

```

Mobility Protocol Port..... 16666
Default Mobility Domain..... Mobility
Multicast Mode ..... Disabled
Mobility Domain ID for 802.11r..... 0xb348
Mobility Keepalive Interval..... 10
Mobility Keepalive Count..... 3
Mobility Group Members Configured..... 3
Mobility Control Message DSCP Value..... 0

Controllers configured in the Mobility Group
 IP Address  Public IP Address  Group Name      Multicast IP  MAC Address
Status
 9.71.106.2  9.72.106.2        Mobility        0.0.0.0       00:00:00:00:00:00  Control and
Data Path Down
 9.71.106.3  9.72.106.3        Mobility        0.0.0.0       00:00:00:00:00:00  Control and
Data Path Down
 9.71.106.69 9.72.106.69       Mobility        0.0.0.0       68:ef:bd:8e:5f:20   Up
    
```

Show Proxy Mobility IPv6 (PMIPv6) Commands

Use the **show pmipv6** commands to display PMIPv6 information of the Mobile Access Gateway (MAG) and the Local Mobility Anchor (LMA).

show pmipv6 domain

To display the summary information of a PMIPv6 domain, use the **show pmipv6 domain** command.

show pmipv6 domain *domain_name* **profile** *profile_name*

Syntax Description		
	<i>domain_name</i>	Name of the PMIPv6 domain. The domain name can be up to 127 case-sensitive alphanumeric characters.
	profile	Specifies the PMIPv6 profile.
	<i>profile_name</i>	Name of the profile associated with the PMIPv6 domain. The profile name can be up to 127 case-sensitive alphanumeric characters.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the summary information of a PMIPv6 domain:

```
(Cisco Controller) >show pmipv6 domain floor1 profile profile1
NAI: @example.com
APN: Example
LMA: Examplelma

NAI: *
APN: ciscoapn
LMA: ciscolma
```

show pmipv6 mag bindings

To display the binding information of a Mobile Access Gateway (MAG), use the **show pmipv6 mag binding** command.

show pmipv6 mag bindings [**lma** *lma_name* | **nai** *nai_string*]

Syntax Description		
	lma	(Optional) Displays the binding details of the MAG to an Local Mobility Anchor (LMA).
	<i>lma_name</i>	Name of the LMA. The LMA name is case-sensitive and can be up to 127 alphanumeric characters.

nai	(Optional) Displays the binding details of the MAG to a client.
<i>nai_string</i>	Network Access Identifier (NAI) of the client. The NAI is case-sensitive and can be up to 127 alphanumeric characters. You can use all special characters except a colon.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the MAG bindings:

```
(Cisco Controller) >show pmipv6 mag binding
[Binding][MN]: Domain: D1, Nai: MN1@cisco.com
[Binding][MN]: State: ACTIVE
[Binding][MN]: Interface: Management
[Binding][MN]: Hoa: 0xE0E0E02, att: 3, llid: aabb.cc00.c800
[Binding][MN][LMA]: Id: LMA1
[Binding][MN][LMA]: lifetime: 3600
[Binding][MN][GREKEY]: Upstream: 102, Downstream: 1
```

show pmipv6 mag globals

To display the global PMIPv6 parameters of the Mobile Access Gateway (MAG), use the **show pmipv6 mag globals** command.

show pmipv6 mag globals

Syntax Description

This command has no arguments or keywords.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the global PMIPv6 parameters of a MAG:

```
(Cisco Controller) >show pmipv6 mag globals
Domain : D1

MAG Identifier : M1
  MAG Interface           : Management
  Max Bindings            : 10000
  Registration Lifetime   : 3600 (sec)
  BRI Init-delay time     : 1000 (msec)
  BRI Max-delay time      : 2000 (msec)
  BRI Max retries         : 1
  Refresh time            : 300 (sec)
  Refresh RetxInit time   : 1000 (msec)
  Refresh RetxMax time    : 32000 (msec)
```

```

Timestamp option           : Enabled
Validity Window           : 7
Peer#1:
    LMA Name: AN-LMA-5K    LMA IP: 209.165.201.10
Peer#2:
    LMA Name: AN-LMA      LMA IP: 209.165.201.4
Peer#3:
    LMA Name: AN-LMA      LMA IP: 209.165.201.4

```

show pmipv6 mag stats

To display the statistics of the Mobile Access Gateway (MAG), use the **show pmipv6 mag stats** command.

show pmipv6 mag stats [**domain** *domain_name* **peer** *lma_name*]

Syntax Description

domain	(Optional) Displays the MAG statistics for a Local Mobility Anchor (LMA) in the domain.
<i>domain_name</i>	Name of the PMIPv6 domain. The domain name is case-sensitive and can be up to 127 alphanumeric characters.
peer	(Optional) Displays the MAG statistics for an LMA.
<i>lma_name</i>	Name of the LMA. The LMA name is case sensitive and can be up to 127 alphanumeric characters.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

This table lists the descriptions of the LMA statistics.

Table 4: Descriptions of the LMA Statistics:

LMA Statistics	Description
PBU Sent	Total number of Proxy Binding Updates (PBUs) sent to the LMA by the MAG. PBU is a request message sent by the MAG to a mobile node's LMA for establishing a binding between the mobile node's interface and its current care-of address (Proxy-CoA).
PBA Received	Total number of Proxy Binding Acknowledgements (PBAs) received by the MAG from the LMA. PBA is a reply message sent by an LMA in response to a PBU message that it receives from a MAG.
PBRI Sent	Total number of Proxy Binding Revocation Indications (PBRIs) sent by the MAG to the LMA.
PBRI Received	Total number of PBRIs received from the LMA by the MAG.

LMA Statistics	Description
PBRA Sent	Total number of Proxy Binding Revocation Acknowledgements (PBRAs) sent by the MAG to the LMA.
PBRA Received	Total number of PBRAs that the MAG receives from the LMA.
Number of Handoff	Number of handoffs between the MAG and the LMA.

The following example shows how to display the LMA statistics:

```
(Cisco Controller) >show pmipv6 mag stats
[M1]: Total Bindings      : 1
[M1]: PBU Sent           : 7
[M1]: PBA Rcvd           : 4
[M1]: PBRI Sent          : 0
[M1]: PBRI Rcvd          : 0
[M1]: PBRA Sent          : 0
[M1]: PBRA Rcvd          : 0
[M1]: No Of handoff      : 0
```

show pmipv6 profile summary

To display the summary of the PMIPv6 profiles, use the **show pmipv6 profile summary** command.

show pmipv6 profile summary

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the summary of the PMIPv6 profiles:

```
(Cisco Controller) >show pmipv6 profile summary
Profile Name      WLAN IDS (Mapped)
-----
Group1            6
```

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display RADIUS accounting server statistics:

```
(Cisco Controller) > 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

This command has no arguments or keyword.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display RADIUS authentication server statistics:

```
(Cisco Controller) > show radius auth statistics
Authentication Servers:
  Server Index..... 1
  Server Address..... 209.165.200.10
  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.

show radius rfc3576 statistics

Syntax Description

This command has no arguments or keywords.

Command Default 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.

The following 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a RADIUS authentication server summary:

```
(Cisco Controller) > 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
e/Phase1/Group/Lifetime/Auth/Encr
-----
-----

Accounting Servers
Index  Type  Server Address      Port    State    Tout  RFC-3576  IPsec -
AuthMod
e/Phase1/Group/Lifetime/Auth/Encr
-----
-----
    
```

Related Commands **show radius auth statistics**
 show radius acct 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.

Command Default None.

Usage Guidelines When the RFID tag is not in client mode, the above fields are blank.

This example shows how to display the RFID tag that is associated to the controller as clients:

```
> show rfid client
-----
RFID Mac          Vendor      Heard      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.

Command Default None.

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*

Syntax Description	<i>mac_address</i>	MAC address of an RFID tag.
--------------------	--------------------	-----------------------------

Command Default	None.
-----------------	-------

This example shows how to display detailed RFID information:

```

> show rfid detail 00:12:b8:00:20:52
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
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 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 10 00 23 b2 4e 03 02 0a 03
Nearby AP Statistics:

```

```
lap1242-2(slot 0, chan 1) 50 seconds ag.... -76 dBm
lap1242(slot 0, chan 1) 50 seconds ago..... -65 dBm
```

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.

Command Default None.

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    wolferine       -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 detail**
- show rfid config**

Show Redundancy Commands

Use the **show redundancy** commands to display redundancy information of the active and standby controllers.

show redundancy summary

To display the redundancy summary information, use the **show redundancy summary** command.

show redundancy summary

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the redundancy summary information of the controller:

```
(Cisco Controller) >show redundancy summary
Redundancy Mode = SSO DISABLED
  Local State = ACTIVE
  Peer State = N/A
    Unit = Primary
    Unit ID = 88:43:E1:7E:03:80
Redundancy State = N/A
  Mobility MAC = 88:43:E1:7E:03:80
Network Monitor = ENABLED
Link Encryption = DISABLED

BulkSync Status = <Status>
Average Redundancy Peer Reachability Latency = 1390 usecs
Average Management Gateway Reachability Latency = 1165 usecs

Redundancy Management IP Address..... 9.4.92.12
Peer Redundancy Management IP Address..... 9.4.92.14
Redundancy Port IP Address..... 169.254.92.12
Peer Redundancy Port IP Address..... 169.254.92.14
```

show redundancy latency

To display the average latency to reach the management gateway and the peer redundancy management IP address, use the **show redundancy latency** command .

show redundancy latency

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the average latency to reach the management gateway and the peer redundancy management IP address:

```
(Cisco Controller) >show redundancy latency
```

```
Network Latencies (RTT) for the Peer Reachability on the Redundancy Port in micro seconds for the past 10 intervals
```

```
Peer Reachability Latency[ 1 ] : 524 usecs
Peer Reachability Latency[ 2 ] : 524 usecs
Peer Reachability Latency[ 3 ] : 522 usecs
Peer Reachability Latency[ 4 ] : 526 usecs
Peer Reachability Latency[ 5 ] : 524 usecs
Peer Reachability Latency[ 6 ] : 524 usecs
Peer Reachability Latency[ 7 ] : 522 usecs
Peer Reachability Latency[ 8 ] : 522 usecs
Peer Reachability Latency[ 9 ] : 526 usecs
Peer Reachability Latency[ 10 ] : 523 usecs
```

```
Network Latencies (RTT) for the Management Gateway Reachability in micro seconds for the past 10 intervals
```

```
Gateway Reachability Latency[ 1 ] : 1347 usecs
Gateway Reachability Latency[ 2 ] : 2427 usecs
Gateway Reachability Latency[ 3 ] : 1329 usecs
Gateway Reachability Latency[ 4 ] : 2014 usecs
Gateway Reachability Latency[ 5 ] : 2675 usecs
Gateway Reachability Latency[ 6 ] : 731 usecs
Gateway Reachability Latency[ 7 ] : 1882 usecs
Gateway Reachability Latency[ 8 ] : 2853 usecs
Gateway Reachability Latency[ 9 ] : 832 usecs
Gateway Reachability Latency[ 10 ] : 3708 usecs
```

show redundancy interfaces

To display details of redundancy and service port IP addresses, use the **show redundancy interfaces** command.

show redundancy interfaces

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

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the redundancy and service port IP addresses information:


```
(Cisco Controller) >show redundancy interfaces

Redundancy Management IP Address..... 9.4.120.5
Peer Redundancy Management IP Address..... 9.4.120.3
Redundancy Port IP Address..... 169.254.120.5
Peer Redundancy Port IP Address..... 169.254.120.3
Peer Service Port IP Address..... 10.104.175.189
```

show redundancy mobilitymac

To display the High Availability (HA) mobility MAC address that is used to communicate with the peer, use the **show redundancy mobilitymac** command.

show redundancy mobilitymac

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

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the HA mobility MAC address used to communicate with the peer:

```
(Cisco Controller) >show redundancy mobilitymac
ff:ff:ff:ff:ff:ff
```

show redundancy peer-route summary

To see the routes assigned to the standby controller, use the **show redundancy peer-route summary** command.

show redundancy peer-route summary

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

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to view all the configured routes of the standby controller:

```
(Cisco Controller) >show redundancy peer-route summary
Number of Routes..... 1
```

Destination Network	Netmask	Gateway
----- xxx.xxx.xxx.xxx	----- 255.255.255.0	----- xxx.xxx.xxx.xxx

show redundancy statistics

To display the statistics information of the Redundancy Manager, use the **show redundancy statistics** command.

show redundancy statistics

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This command displays the statistics of different redundancy counters.

Local Physical Ports - Connectivity status of each physical port of the controller. 1 indicates that the port is up and 0 indicates that the port is down.

Peer Physical Ports - Connectivity status of each physical port of the peer controller. 1 indicates that the port is up and 0 indicates that the port is down.

The following example shows how to display the statistics information of the Redundancy Manager:

```
(Cisco Controller) >show redundancy statistics
```

```
Redundancy Manager Statistics

Keep Alive Request Send Counter      : 16
Keep Alive Response Receive Counter  : 16

Keep Alive Request Receive Counter   : 500322
Keep Alive Response Send Counter     : 500322

Ping Request to Default GW Counter   : 63360
Ping Response from Default GW Counter: 63360

Ping Request to Peer Counter         : 12
Ping Response from Peer Counter      : 3

Keep Alive Loss Counter              : 0
Default GW Loss Counter              : 0

Local Physical Ports 1...8           : 10000000
Peer Physical Ports 1...8           : 10000000
```

show redundancy timers

To display details of the Redundancy Manager timers, use the **show redundancy timers** command.

show redundancy timers

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the details of the Redundancy Manager timers:

```
(Cisco Controller) >show redundancy timers

      Keep Alive Timer      : 100 msec
      Peer Search Timer     : 120 sec
```

Show RF-Profile Commands

Use the **show RF-Profile** commands to display RF profiles details.

show rf-profile summary

To display a summary of RF profiles in the controller, use the **show rf-profile summary** command.

show rf-profile summary

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

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is the output of the **show rf-profile summary** command:

```
(Cisco Controller) >show rf-profile summary
Number of RF Profiles..... 2
Out Of Box State..... Disabled
RF Profile Name           Band      Description           Applied
-----
T1a                       5 GHz    <none>                No
T1b                       2.4 GHz  <none>                No
```

show rf-profile details

To display the RF profile details in the Cisco wireless LAN controller, use the **show rf-profile details** command.

show rf-profile details *rf-profile-name*

Syntax Description	<i>rf-profile-name</i>	Name of the RF profile.
---------------------------	------------------------	-------------------------

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	The output was updated to include the Rx SOP threshold.
	8.5	The output was updated to include the Client Aware FRA configurations.

The following is the output of the **show rf-profile details** command::

```
(Cisco Controller) >show rf-profile details profile1
Description..... <none>
AP Group Name..... test
Radio policy..... 5 GHz
11n-client-only..... disabled
Transmit Power Threshold v1..... -70 dBm
Transmit Power Threshold v2..... -67 dBm
Min Transmit Power..... -10 dBm
Max Transmit Power..... 30 dBm
802.11a Operational Rates
  802.11a 6M Rate..... Mandatory
  802.11a 9M Rate..... Supported
  802.11a 12M Rate..... Mandatory
  802.11a 18M Rate..... Supported
  802.11a 24M Rate..... Mandatory
  802.11a 36M Rate..... Supported
  802.11a 48M Rate..... Supported
  802.11a 54M Rate..... Supported
Max Clients..... 200

WLAN ID          Max Clients
-----          -
1                600

--More-- or (q)uit
2                600
4                600
9                600
11               600
12               600
13               600
14               600
15               600
16               600

Trap Threshold
  Clients..... 12 clients
  Interference..... 10 %
  Noise..... -70 dBm
  Utilization..... 80 %
Multicast Data Rate..... 0
Rx Sop Threshold..... AUTO
Cca Threshold..... 0 dBm
Slot Admin State:..... Enabled

Client Aware FRA
  State..... Disabled
  Client Select Utilization Threshold..... 20%

--More-- or (q)uit
  Client Reset Utilization Threshold..... 5%

Band Select
  Probe Response..... Disabled
  Cycle Count..... 2 cycles
  Cycle Threshold..... 200 milliseconds
  Expire Suppression..... 20 seconds
  Expire Dual Band..... 60 seconds
  Client Rssi..... -80 dBm
  Client Mid Rssi..... -80 dBm

Load Balancing
  Denial..... 3 count
```

```

Window..... 5 clients

Coverage Data
Data..... -80 dBm
Voice..... -80 dBm
Minimum Client Level..... 3 clients
Exception Level..... 25 %
DCA Channel List..... 36,40,44,48,52,56,60,64,100,
104,108,112,116,120,124,128,
132,136,140,144,149,153,157,

--More-- or (q)uit
161
DCA Bandwidth..... 20
DCA Foreign AP Contribution..... enabled
HSR Mode..... disabled

802.11n MCS Rates
MCS-00 Rate..... enabled
MCS-01 Rate..... enabled
MCS-02 Rate..... enabled
MCS-03 Rate..... enabled
MCS-04 Rate..... enabled
MCS-05 Rate..... enabled
MCS-06 Rate..... enabled
MCS-07 Rate..... enabled
MCS-08 Rate..... enabled
MCS-09 Rate..... enabled
MCS-10 Rate..... enabled
MCS-11 Rate..... enabled
MCS-12 Rate..... enabled
MCS-13 Rate..... enabled
MCS-14 Rate..... enabled
MCS-15 Rate..... enabled
MCS-16 Rate..... enabled

--More-- or (q)uit
MCS-17 Rate..... enabled
MCS-18 Rate..... enabled
MCS-19 Rate..... enabled
MCS-20 Rate..... enabled
MCS-21 Rate..... enabled
MCS-22 Rate..... enabled
MCS-23 Rate..... enabled
MCS-24 Rate..... enabled
MCS-25 Rate..... enabled
MCS-26 Rate..... enabled
MCS-27 Rate..... enabled
MCS-28 Rate..... enabled
MCS-29 Rate..... enabled
MCS-30 Rate..... enabled
MCS-31 Rate..... enabled
Client Network Preference..... default

```

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_address*

Syntax Description	<i>MAC_address</i>	Adhoc rogue MAC address.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display detailed ad-hoc rogue MAC address information:

```
(Cisco Controller) > show rogue adhoc client 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
	show rogue ignore-list

show rogue rule summary
show rogue rule detailed
config rogue rule
show rogue adhoc 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a summary of all ad-hoc rogues:

```
(Cisco Controller) > show rogue adhoc summary
Detect and report Ad-Hoc Networks..... Enabled
Client MAC Address      Adhoc BSSID      State # Aps      Last Heard
-----
xx:xx:xx:xx:xx:xx      super            Alert  1              Sat Aug  9 21:12:50
2004
xx:xx:xx:xx:xx:xx      Alert           1              Aug  9 21:12:50
2003
xx:xx:xx:xx:xx:xx      Alert           1              Sat Aug  9 21:10:50
2003
```

Related Commands

- config rogue adhoc**
- show rogue ignore-list**
- show rogue rule summary**
- show rogue rule detailed**
- config rogue rule**
- show rogue adhoc detailed**

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	<i>ap_mac_address</i>	Rogue access point MAC address.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display details of rogue access point clients:

```
(Cisco Controller) > show rogue ap clients xx:xx:xx:xx:xx:xx
MAC Address State # APs Last Heard
-----
00:bb:cd:12:ab:ff Alert 1 Fri Nov 30 11:26:23 2007
```

Related Commands	<ul style="list-style-type: none"> config rogue adhoc config rogue ap classify config rogue ap friendly config rogue ap rldp config rogue ap timeout config rogue ap valid-client config rogue client 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 client detailed show rogue client summary show rogue ignore-list show rogue rule detailed show rogue rule 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	<i>ap_mac_address</i>	Rogue access point MAC address.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display detailed information of a rogue access point:

```
(Cisco Controller) > show rogue ap detailed xx:xx:xx:xx:xx:xx
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..... flexconnect
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
```

This example shows how to display detailed information of a rogue access point with a customized classification:

```
(Cisco Controller) > show rogue ap detailed xx:xx:xx:xx:xx:xx
Rogue BSSID..... 00:17:0f:34:48:a0
Is Rogue on Wired Network..... No
Classification..... custom
Severity Score ..... 1
Class Name..... VeryMalicious
```

```

Class Change by..... Rogue Rule
Classified at ..... -60 dBm
Classified by..... c4:0a:cb:a1:18:80

State..... Contained
State change by..... Rogue Rule
First Time Rogue was Reported..... Mon Jun  4 10:31:18
2012
Last Time Rogue was Reported..... Mon Jun  4 10:31:18
2012
Reported By
  AP 1
    MAC Address..... c4:0a:cb:a1:18:80
    Name..... SHIELD-3600-2027
    Radio Type..... 802.11g
    SSID..... sri
    Channel..... 11
    RSSI..... -87 dBm
    SNR..... 4 dB
    Encryption..... Enabled
    ShortPreamble..... Enabled
    WPA Support..... Enabled
    Last reported by this AP..... Mon Jun  4 10:31:18
2012

```

Related Commands

```

config rogue adhoc
config rogue ap classify
config rogue ap friendly
config rogue ap rldp
config rogue ap timeout
config rogue ap valid-client
config rogue client
config trapflags rogueap
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 client detailed
show rogue client summary
show rogue ignore-list
show rogue rule detailed

```

show rogue rule 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.

show rogue ap summary {ssid | channel}

Syntax Description	<i>ssid</i>	Displays specific user-configured SSID of the rogue access point.
	<i>channel</i>	Displays specific user-configured radio type and channel of the rogue access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	The new keywords SSID and channel are added.

The following example shows how to display a summary of all rogue access points:

```
(Cisco Controller) > show rogue ap summary

Rogue Location Discovery Protocol..... Disabled
Rogue ap timeout..... 1200
Rogue on wire Auto-Contain..... Disabled
Rogue using our SSID Auto-Contain..... Disabled
Valid client on rogue AP Auto-Contain..... Disabled
Rogue AP timeout..... 1200
Rogue Detection Report Interval..... 10
Rogue Detection Min Rssi..... -128
Rogue Detection Transient Interval..... 0
Rogue Detection Client Num Thershold..... 0
Total Rogues (AP+Ad-hoc) supported..... 2000
Total Rogues classified..... 729

MAC Address          Classification      # APs # Clients Last Heard
-----
xx:xx:xx:xx:xx:xx  friendly          1     0     Thu Aug  4 18:57:11 2005
xx:xx:xx:xx:xx:xx  malicious         1     0     Thu Aug  4 19:00:11 2005
xx:xx:xx:xx:xx:xx  malicious         1     0     Thu Aug  4 18:57:11 2005
xx:xx:xx:xx:xx:xx  malicious         1     0     Thu Aug  4 18:57:11 2005
```

The following example shows how to display a summary of all rogue access points with SSID as extended parameter.

```
(Cisco Controller) > show rogue ap summary ssid

MAC Address          Class              State      SSID      Security
-----
```

```

xx:xx:xx:xx:xx:xx  Unclassified      Alert      xxx      Open
xx:xx:xx:xx:xx:xx  Unclassified      Alert      xxx      Open
xx:xx:xx:xx:xx:xx  Pending           Pending    xxx      Open
xx:xx:xx:xx:xx:xx  Unclassified      Alert      xxx      WEP/WPA

```

The following example shows how to display a summary of all rogue access points with channel as extended parameter.

```
(Cisco Controller) > show rogue ap summary channel
```

MAC Address	Class	State	Det	RadioType	Channel	RSSIlast/Max)
xx:xx:xx:xx:xx:xx	Unclassified	Alert	802.11g		11	-53 / -48
xx:xx:xx:xx:xx:xx	Unclassified	Alert	802.11g		11	-53 / -48
xx:xx:xx:xx:xx:xx	Unclassified	Alert	802.11a		149	-74 / -69
xx:xx:xx:xx:xx:xx	Unclassified	Alert	802.11a		149	-74 / -69
xx:xx:xx:xx:xx:xx	Unclassified	Alert	802.11a		149	-74 / -69

The following example shows how to display a summary of all rogue access points with both SSID and channel as extended parameters.

```
(Cisco Controller) > show rogue ap summary ssid channel
```

MAC Address	Class	State	SSID	Security	Det	RadioType
Channel	RSSI (last/Max)					
xx:xx:xx:xx:xx:xx	Unclassified	Alert	dd	WEP/WPA	802.11n5G	
56	-73 / -62					
xx:xx:xx:xx:xx:xx	Unclassified	Alert	SSID IS HIDDEN	Open	802.11a	
149	-68 / -66					
xx:xx:xx:xx:xx:xx	Unclassified	Alert	wlan16	WEP/WPA	802.11n5G	
149	-71 / -71					
xx:xx:xx:xx:xx:xx	Unclassified	Alert	wlan15	WEP/WPA	802.11n5G	
149	-71 / -71					
xx:xx:xx:xx:xx:xx	Unclassified	Alert	wlan14	WEP/WPA	802.11n5G	
149	-71 / -71					
xx:xx:xx:xx:xx:xx	Unclassified	Alert	wlan13	WEP/WPA	802.11n5G	
149	-71 / -70					
xx:xx:xx:xx:xx:xx	Unclassified	Alert	wlan12	WEP/WPA	802.11n5G	
149	-71 / -71					

Related Commands

- config rogue adhoc**
- config rogue ap classify**
- config rogue ap friendly**
- config rogue ap rldp**
- 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 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 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.

show rogue ap friendly summary

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a summary of all friendly rogue access points:

```
(Cisco Controller) > show rogue ap friendly summary
Number of APs..... 1
MAC Address          State      # APs  # Clients Last Heard
-----
XX:XX:XX:XX:XX:XX Internal    1     0  Tue Nov 27 13:52:04 2007
```

Related Commands

- config rogue adhoc**
- config rogue ap classify**
- config rogue ap friendly**
- config rogue ap rldp**
- 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 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 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a summary of all malicious rogue access points:

```
(Cisco Controller) > show rogue ap malicious summary
Number of APs..... 2
MAC Address      State      # APs  # Clients Last Heard
-----
XX:XX:XX:XX:XX:XX Alert      1      0  Tue Nov 27 13:52:04 2007
XX:XX:XX:XX:XX:XX Alert      1      0  Tue Nov 27 13:52:04 2007
```

- Related Commands**
- config rogue adhoc
 - config rogue ap classify
 - config rogue ap friendly
 - config rogue ap rldp
 - 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 unclassified summary
show rogue client detailed
show rogue client summary
show rogue ignore-list
show rogue rule detailed
show rogue rule 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.

show rogue ap unclassified summary

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a list of all unclassified rogue access points:

```
(Cisco Controller) > show rogue ap unclassified summary
Number of APs..... 164
MAC Address      State # APs # Clients Last Heard
-----
XX:XX:XX:XX:XX:XX Alert 1      0   Fri Nov 30 11:12:52 2007
XX:XX:XX:XX:XX:XX Alert 1      0   Fri Nov 30 11:29:01 2007
XX:XX:XX:XX:XX:XX Alert 1      0   Fri Nov 30 11:26:23 2007
XX:XX:XX:XX:XX:XX Alert 1      0   Fri Nov 30 11:26:23 2007
```

show rogue auto-contain

To display information about rogue auto-containment, use the **show rogue auto-contain** command.

show rogue auto-contain

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display information about rogue auto-containment:

```
(Cisco Controller) > show rogue auto-contain
Containment Level..... 3
monitor_ap_only..... false
```

Related Commands `config rogue adhoc`
`config rogue auto-contain level`

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 *Rogue_AP MAC_address*

Syntax Description	
<i>Rogue_AP</i>	Rogue AP address.
<i>MAC_address</i>	Rogue client MAC address.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.1	The <i>Rogue_AP</i> parameter to the show rogue client detailed command is added.

The following example shows how to display detailed information for a rogue client:

```
(Cisco Controller) > show rogue client detailed xx:xx:xx:xx:xx:xx
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
```

- Related Commands**
- show rogue client summary
 - show rogue ignore-list
 - config rogue rule client
 - config rogue rule

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a list of all rogue clients:

```
(Cisco Controller) > show rogue client summary
Validate rogue clients against AAA..... Disabled
Total Rogue Clients supported..... 2500
Total Rogue Clients present..... 3
MAC Address          State          # APs Last Heard
-----
xx:xx:xx:xx:xx:xx  Alert          1    Thu Aug 4 19:00:08 2005
xx:xx:xx:xx:xx:xx  Alert          1    Thu Aug 4 19:00:08 2005
xx:xx:xx:xx:xx:xx  Alert          1    Thu Aug 4 19:00:08 2005
xx:xx:xx:xx:xx:xx  Alert          1    Thu Aug 4 19:00:08 2005
xx:xx:xx:xx:xx:xx  Alert          1    Thu Aug 4 19:00:08 2005
xx:xx:xx:xx:xx:xx  Alert          1    Thu Aug 4 19:00:08 2005
xx:xx:xx:xx:xx:xx  Alert          1    Thu Aug 4 19:09:11 2005
xx:xx:xx:xx:xx:xx  Alert          1    Thu Aug 4 19:03:11 2005
xx:xx:xx:xx:xx:xx  Alert          1    Thu Aug 4 19:03:11 2005
xx:xx:xx:xx:xx:xx  Alert          1    Thu Aug 4 19:09:11 2005
xx:xx:xx:xx:xx:xx  Alert          1    Thu Aug 4 18:57:08 2005
xx:xx:xx:xx:xx:xx  Alert          1    Thu Aug 4 19:12:08 2005
```

- 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.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a list of all rogue access points that are configured to be ignored.

```
(Cisco Controller) > 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 rule
config trapflags rogueap
show rogue client detailed
show rogue ignore-list
show rogue rule summary
show rogue client summary
show rogue ap unclassified summary
show rogue ap malicious summary
show rogue ap friendly summary
config rogue client

show rogue ap summary

show rogue ap clients

show rogue ap detailed

config rogue rule

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	<i>rule_name</i>	Rogue rule name.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display detailed information on a specific rogue classification rule:

```
(Cisco Controller) > show rogue rule detailed Rule2
Priority..... 2
Rule Name..... Rule2
State..... Enabled
Type..... Malicious
Severity Score..... 1
Class Name..... Very_Malicious
Notify..... All
State ..... Contain
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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a list of all rogue rules that are configured on the controller:

```

(Cisco 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
    
```

The following example shows how to display a list of all rogue rules that are configured on the controller:

```

(Cisco Controller) > show rogue rule summary
Priority Rule Name           Rule state Class Type   Notify
State   Match Hit Count
-----
1        rule2                   Enabled  Friendly Global
Alert   All   234
2        rule1                   Enabled  Custom   Global
Alert   All   0
    
```

- Related Commands**
- config rogue rule
 - show rogue ignore-list

■ **show rogue rule summary**

show rogue rule detailed

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 the **show tacacs acct statistics** command.

show tacacs acct statistics

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

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display detailed RFID information:

```
(Cisco Controller) > 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
```

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.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display TACACS server authorization statistics:

```
(Cisco Controller) > 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 Authenticator Msgs..... 0
Pending Requests..... 0
Timeout Requests..... 0
Unknowntype Msgs..... 0
Other Drops..... 0
```

Related Commands	config tacacs acct config tacacs athr config tacacs auth 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.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display TACACS server authentication statistics:

```
(Cisco Controller) > show tacacs auth statistics
Authentication Servers:
Server Index..... 2
Server Address..... 10.0.0.2
Msg Round Trip Time..... 0 (msec)
First Requests..... 0
Retry Requests..... 0
Accept Responses..... 0
Reject Responses..... 0
Error Responses..... 0
Restart Responses..... 0
Follow Responses..... 0
GetData Responses..... 0
Encrypt no secret Responses..... 0
Challenge Responses..... 0
Malformed Msgs..... 0
Bad Authenticator Msgs..... 0
Pending Requests..... 0
Timeout Requests..... 0
Unknowntype Msgs..... 0
Other Drops..... 0
```

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.	
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display TACACS server summary information:

```
(Cisco Controller) > show tacacs summary
Authentication Servers
Idx  Server Address  Port  State  Tout
---  -
2    10.0.0.1        49    Enabled 30
Accounting Servers
Idx  Server Address  Port  State  Tout
---  -
```

show tacacs summary

```
1      10.0.0.0          49      Enabled    5
Authorization Servers
Idx  Server Address      Port    State      Tout
----  -
3      10.0.0.3            49      Enabled    5
Idx  Server Address      Port    State      Tout
----  -
4      2001:9:6:40::623    49      Enabled    5
...
```

Related Commands**config tacacs acct****config tacacs athr****config tacacs auth****show tacacs summary****show tacacs athr statistics****show tacacs auth statistics**

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.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a summary of the Wireless Protection System (WPS) access point neighbor authentication:

```
(Cisco Controller) > 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	summary	Displays a summary of sensor settings.
	detail	Displays all settings for the selected sensor.
	<i>index</i>	IDS sensor identifier.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display all settings for the selected sensor:

```
(Cisco Controller) > show wps cids-sensor detail1
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 ap-authentication**

show wps mfp

To display Management Frame Protection (MFP) information, use the **show wps mfp** command.

show wps mfp {summary | statistics}

Syntax Description		
summary		Displays the MFP configuration and status.
statistics		Displays MFP statistics.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a summary of the MFP configuration and status:

```
(Cisco Controller) > show wps mfp summary
Global Infrastructure MFP state..... DISABLED (*all infrastructure
settings are overridden)
Controller Time Source Valid..... False
WLAN ID  WLAN Name                WLAN      Infra.   Client
-----  -----                Status    Protection Protection
1         homeap                    Disabled  *Enabled Optional but inactive
(WPA2 not configured)
2         7921                     Enabled   *Enabled Optional but inactive
(WPA2 not configured)
```

```

3      open1                               Enabled  *Enabled  Optional but inactive
(WPA2 not configured)
4      7920                                 Enabled  *Enabled  Optional but inactive
(WPA2 not configured)
AP Name      Infra.      Operational  --Infra. Capability--
-----      Validation  State        Protection  Validation
AP1252AG-EW  *Enabled  b/g          Down        Full        Full
              a          Down        Full        Full
    
```

The following example shows how to display the MFP statistics:

```

(Cisco Controller) > show wps mfp statistics
BSSID      Radio Validator AP      Last Source Addr  Found  Error Type
  Count      Frame Types
-----
no errors
    
```

Related Commands `config wps mfp`

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the IDS system sensor shun list:

```

(Cisco Controller) > show wps shun-list
    
```

Related Commands `config wps shun-list re-sync`

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to display information on the attacks detected by standard signature 1:

```
(Cisco Controller) > 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 mac-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**

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	
summary	Displays all tracking signature summary information.
standard	Displays Standard Intrusion Detection System (IDS) signature settings.

custom	Displays custom IDS signature settings.
<i>precedenceID</i>	Signature precedence identification value.
detailed	Displays tracking source MAC address details.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the number of attacks detected by all enabled signatures:

```
(Cisco Controller) > show wps signature events summary
Precedence  Signature Name      Type      # Events
-----
1           Bcast deauth             Standard   2
2           NULL probe resp 1        Standard   1
```

This example shows how to display a summary of information on the attacks detected by standard signature 1:

```
(Cisco Controller) > show wps signature events standard 1 summary
Precedence..... 1
Signature Name..... Bcast deauth
Type..... Standard
Number of active events..... 2
Source MAC Addr   Track Method   Frequency # APs Last Heard
-----
00:a0:f8:58:60:dd Per Signature  50          1   Wed Oct 25 15:03:05
2006
00:a0:f8:58:60:dd Per Mac       30          1   Wed Oct 25 15:02:53
2006
```

- Related Commands**
- config wps signature frequency
 - config wps signature mac-frequency
 - config wps signature interval
 - config wps signature quiet-time
 - config wps signature reset
 - config wps signature
 - 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a summary of all of the standard and custom signatures:

```
(Cisco Controller) > 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 frequency**
- config wps signature interval**
- config wps signature quiet-time**
- config wps signature reset**
- show wps signature events**
- show wps summary**
- config wps signature mac-frequency**
- config wps signature**

show wps summary

To display Wireless Protection System (WPS) summary information, use the **show wps summary** command.

show wps summary

Syntax Description	Description
	This command has no arguments or keywords.
Command Default	None

The following example shows how to display WPS summary information:

```
(Cisco Controller) > 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
  Rogues 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
...
```

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 statistics** command.

show wps wips statistics

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the statistics of the wIPS operation:

```
(Cisco Controller) > 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a summary of the WIPS configuration:

```
(Cisco Controller) > 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**

Other Show Commands

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the configuration settings for the AAA authentication server database:

```
(Cisco Controller) > 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 { **cpu** | **detailed** *acl_name* | **summary** | **layer2** { **summary** | **detailed** *acl_name* } }

Syntax Description		
cpu		Displays the ACLs configured on the controller's central processing unit (CPU).
detailed		Displays detailed information about a specific ACL.
<i>acl_name</i>		ACL name. The name can be up to 32 alphanumeric characters.
summary		Displays a summary of all ACLs configured on the controller.

layer2	Displays the Layer 2 ACLs.
---------------	----------------------------

Command Default None

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the access control lists on the CPU.

```
(Cisco Controller) >show acl cpu

CPU Acl Name.....
Wireless Traffic..... Disabled
Wired Traffic..... Disabled
Applied to NPU..... No
```

The following example shows how to display a summary of the access control lists.

```
(Cisco Controller) > show acl summary

ACL Counter Status          Disabled
-----
IPv4 ACL Name               Applied
-----
acl1                         Yes
acl2                         Yes
acl3                         Yes
-----
IPv6 ACL Name               Applied
-----
acl6                         No
```

The following example shows how to display the detailed information of the access control lists.

```
(Cisco Controller) > show acl detailed acl_name

      Source          Destination          Source Port Dest Port
I Dir IP Address/Netmask IP Address/Netmask Prot  Range  Range  DSCP
Action Counter
-----
-----
1
Any 0.0.0.0/0.0.0.0  0.0.0.0/0.0.0.0  Any 0-65535  0-65535  0  Deny  0
2
In 0.0.0.0/0.0.0.0  200.200.200.0/  6  80-80  0-65535  Any Permit  0
                255.255.255.0
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

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the access control lists on the CPU:

```
(Cisco Controller) > show acl cpu
CPU Acl Name.....
Wireless Traffic..... Disabled
Wired Traffic..... Disabled
Applied to NPU..... No
```

- 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

show arp kernel

To display the kernel Address Resolution Protocol (ARP) cache information, use the **show arp kernel** command.

show arp kernel

This command has no arguments or keywords.

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show arp kernel** command:

```
(Cisco Controller) > show arp kernel
IP address      HW type      Flags      HW address      Mask      Device
192.0.2.1       0x1          0x2        00:1A:6C:2A:09:C2  *         dt10
192.0.2.8       0x1          0x6        00:1E:E5:E6:DB:56  *         dt10
```

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.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show arp switch** command:

```
(Cisco Controller) > show arp switch
MAC Address      IP Address      Port      VLAN      Type
-----
xx:xx:xx:xx:xx:xx  xxx.xxx.xxx.xxx  service port  1
xx:xx:xx:xx:xx:xx  xxx.xxx.xxx.xxx  service port
xx:xx:xx:xx:xx:xx  xxx.xxx.xxx.xxx  service port
```

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.
---------------------------	--

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the access point authorization list:

```
(Cisco Controller) >show auth-list
Authorize APs against AAA..... disabled
Allow APs with Self-signed Certificate (SSC)... disabled
Mac Addr                Cert Type    Key Hash
-----                -
xx:xx:xx:xx:xx:xx      MIC
```

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.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.
-------------------------	--

The following is a sample output of the **show boot** command:

```
(Cisco Controller) > show boot
Primary Boot Image..... 3.2.13.0 (active)
Backup Boot Image..... 3.2.15.0
```

Related Commands	config boot
-------------------------	--------------------

show band-select

To display band selection information, use the **show band-select** command.

show band-select

Syntax Description	This command has no arguments or keywords.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

The following is a sample output of the **show band-select** command:

```
(Cisco Controller) > show band-select
Band Select Probe Response..... per WLAN enabling
Cycle Count..... 3 cycles
Cycle Threshold..... 200 milliseconds
Age Out Suppression..... 20 seconds
Age Out Dual Band..... 60 seconds
Client RSSI..... -80 dBm
```

Related Commands	config band-select config wlan band-select
-------------------------	---

show buffers

To display buffer information of the controller, use the **show buffers** command.

show buffers

Syntax Description	This command has no arguments or keywords.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

The following is a sample output of the **show buffers** command:

```
(Cisco Controller) > show buffers
Pool[00]: 16 byte chunks
chunks in pool: 50000
chunks in use: 9196
bytes in use: 147136
bytes requested: 73218 (73918 overhead bytes)
Pool[01]: 64 byte chunks
chunks in pool: 50100
chunks in use: 19222
bytes in use: 1230208
bytes requested: 729199 (501009 overhead bytes)
```

```

Pool[02]: 128 byte chunks
  chunks in pool: 26200
  chunks in use: 9861
  bytes in use: 1262208
  bytes requested: 848732 (413476 overhead bytes)
Pool[03]: 256 byte chunks
  chunks in pool: 3000
  chunks in use: 596
  bytes in use: 152576
  bytes requested: 93145 (59431 overhead bytes)
Pool[04]: 384 byte chunks
  chunks in pool: 6000
  chunks in use: 258
  bytes in use: 99072
  bytes requested: 68235 (30837 overhead bytes)
Pool[05]: 512 byte chunks
  chunks in pool: 18700
  chunks in use: 18667
  bytes in use: 9557504
  bytes requested: 7933814 (1623690 overhead bytes)
Pool[06]: 1024 byte chunks
  chunks in pool: 3500
  chunks in use: 94
  bytes in use: 96256
  bytes requested: 75598 (20658 overhead bytes)
Pool[07]: 2048 byte chunks
  chunks in pool: 1000
  chunks in use: 54
  bytes in use: 110592
  bytes requested: 76153 (34439 overhead bytes)
Pool[08]: 4096 byte chunks
  chunks in pool: 1000
  chunks in use: 47
  bytes in use: 192512
  bytes requested: 128258 (64254 overhead bytes)
Raw Pool:
  chunks in use: 256
  bytes requested: 289575125

```

show cdp

To display the status and details of the Cisco Discovery Protocol (CDP), use the **show cdp** command.

show cdp { **neighbors** [**detail**] | **entry all** | **traffic** }

Syntax Description

neighbors	Displays a list of all CDP neighbors on all interfaces.
detail	(Optional) Displays detailed information of the controller's CDP neighbors. This command shows only the CDP neighbors of the controller; it does not show the CDP neighbors of the controller's associated access points.
entry all	Displays all CDP entries in the database.
traffic	Displays CDP traffic information.

Command Default

None

Command History**Release Modification**

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show cdp** command:

```
(Cisco Controller) > show cdp
CDP counters :
Total packets output: 0, Input: 0
Chksum error: 0
No memory: 0, Invalid packet: 0,
```

Related Commands**config cdp****config ap cdp****show ap cdp**

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

802.11a	Specifies the 802.11a network
802.11b	Specifies the 802.11b/g network.
<i>cisco_ap</i>	Cisco access point name.
metrics	Specifies the call metrics information.
traps	Specifies the trap information for call control.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

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

Table 5: Error Codes for Failed VoIP Calls

Error Code	Integer	Description
1	unknown	Unknown error.
400	badRequest	The request could not be understood because of malformed syntax.
401	unauthorized	The request requires user authentication.
402	paymentRequired	Reserved for future use.
403	forbidden	The server understood the request but refuses to fulfill it.
404	notFound	The server has information that the user does not exist at the domain specified in the Request-URI.
405	methodNotAllowed	The method specified in the Request-Line is understood but not allowed for the address identified by the Request-URI.
406	notAcceptable	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.
407	proxyAuthenticationRequired	The client must first authenticate with the proxy.
408	requestTimeout	The server could not produce a response within a suitable amount of time.
409	conflict	The request could not be completed due to a conflict with the current state of the resource.
410	gone	The requested resource is no longer available at the server, and no forwarding address is known.
411	lengthRequired	The server is refusing to process a request because the request entity-body is larger than the server is willing or able to process.
413	requestEntityTooLarge	The server is refusing to process a request because the request entity-body is larger than the server is willing or able to process.
414	requestURITooLarge	The server is refusing to service the request because the Request-URI is longer than the server is willing to interpret.
415	unsupportedMediaType	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.
420	badExtension	The server did not understand the protocol extension specified in a Proxy-Require or Require header field.

Error Code	Integer	Description
480	temporarilyNotAvailable	The callee's end system was contacted successfully, but the callee is currently unavailable.
481	callLegDoesNotExist	The UAS received a request that does not match any existing dialog or transaction.
482	loopDetected	The server has detected a loop.
483	tooManyHops	The server received a request that contains a Max-Forwards header field with the value zero.
484	addressIncomplete	The server received a request with a Request-URI that was incomplete.
485	ambiguous	The Request-URI was ambiguous.
486	busy	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.
500	internalServerError	The server encountered an unexpected condition that prevented it from fulfilling the request.
501	notImplemented	The server does not support the functionality required to fulfill the request.
502	badGateway	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.
503	serviceUnavailable	The server is temporarily unable to process the request because of a temporary overloading or maintenance of the server.
504	serverTimeout	The server did not receive a timely response from an external server it accessed in attempting to process the request.
505	versionNotSupported	The server does not support or refuses to support the SIP protocol version that was used in the request.
600	busyEverywhere	The callee's end system was contacted successfully, but the callee is busy or does not want to take the call at this time.
603	decline	The callee's machine was contacted successfully, but the user does not want to or cannot participate.
604	doesNotExistAnywhere	The server has information that the user indicated in the Request-URI does not exist anywhere.
606	notAcceptable	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.

The following is a sample output of the **show call-controller ap** command that displays successful calls generated for an access point:

```
(Cisco Controller) >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
```

The following is a sample output of the **show call-control ap** command that displays metrics of traps generated for an AP.

```
(Cisco Controller) >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
```

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	callInfo	Specifies the call-control information.
	<i>client_MAC_address</i>	Client MAC address.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example is a sample output of the **show call-controller client** command:

```
(Cisco Controller) > 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
```

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.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display clients associated with CAPWAP access point:

```
> show capwap client
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)
```

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.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the CAPWAP static IP information:

```
> show capwap client ip config
LWAPP Static IP Configuration
Primary Controller 9.41.80.88
```

show capwap reap association

To display the list of clients associated with an access point and their SSIDs, use the **show capwap reap association** command.

show capwap reap association

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

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >show capwap reap association
```

show capwap reap status

To display the status of the FlexConnect 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.	
---------------------------	--	--

Command Default	None	
------------------------	------	--

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines	The command shows only the VLAN when configured as AP-specific.	
-------------------------	---	--

The following example shows how to display the status of the FlexConnect access point:

```
(Cisco Controller) >show capwap reap status
```

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.	
---------------------------	--	--

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show certificate compatibility** command:

```
(Cisco Controller) > show certificate compatibility
Certificate compatibility mode:..... off
```

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	summary	Displays a summary of LSC certificate settings and certificates.
	ap-provision	Displays details about the access points that are provisioned using the LSC.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show certificate lsc summary** command:

```
(Cisco Controller) > 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
Email..... 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:

```
(Cisco Controller) > show certificate lsc ap-provision
LSC AP-Provisioning..... Yes
Provision-List..... Present
Idx Mac Address
-----
1 00:18:74:c7:c0:90
```

show certificate ssc

To view the Self Signed Device Certificate (SSC) and hash key of the virtual controller, use the **show certificate ssc** command.

show certificate ssc

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

Command History	Release	Modification
Command History	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show certificate ssc** command :

```
(Cisco Controller) > show certificate ssc
SSC Hash validation..... Enabled.

SSC Device Certificate details:

    Subject Name :
        C=US, ST=California, L=San Jose, O=Cisco Virtual Wireless LAN Controller,
        CN=DEVICE-vWLC-AIR-CTVM-K9-000C297F2CF7, MAILTO=support@vwlc.com

    Validity :
        Start : 2012 Jul 23rd, 15:47:53 GMT
        End   : 2022 Jun 1st, 15:47:53 GMT

    Hash key : 5870ffabb15de2a617132bafcd73
```

show certificate summary

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

show certificate summary

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

Command History	Release	Modification
Command History	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show certificate summary** command:

```
(Cisco Controller) > show certificate summary
Web Administration Certificate..... Locally Generated
Web Authentication Certificate..... Locally Generated
Certificate compatibility mode:..... off
```

show country

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


```

      : 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 *
-----:+++++-----

```

show country supported

To display a list of the supported country options, use the **show country supported** command.

show country supported

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a list of all the supported countries:

```

(Cisco Controller) >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
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
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

```

show coredump summary

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

show coredump summary

Syntax Description	This command has no arguments or keywords.	
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show coredump summary** command:

```

(Cisco Controller) > 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

Syntax Description This command has no arguments or keywords.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show cpu** command:

```
(Cisco Controller) > show cpu
Current CPU load: 2.50%
```

show custom-web

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

show custom-web *all remote-lan guest-lan sleep-client webauth-bundle wlan*

Syntax Description

all	Display all Web-Auth customization information.
remote-lan	Display per WLAN Web-Auth customization information.
guest-lan	Display per Guest LAN Web-Auth customization information.
sleep-client	Display all Web-Auth Sleeping Client entries summary.
webauth-bundle	Display the content of Web-Auth Bundle.
wlan	Display per WLAN Web-Auth customization information.

Command History

Release	Modification
7.6	This command was introduced in the release earlier than 7.6.
8.2	This command was modified and the all, remote-lan, guest-lan, sleep-client, webauth-bundle, and wlan keywords are added.

The following is a sample output of the **show custom-web all** command:

```
(Cisco Controller) > show custom-web all
Radius Authentication Method..... PAP
Cisco Logo..... Enabled
CustomLogo..... None
Custom Title..... None
Custom Message..... None
Custom Redirect URL..... None
Web Authentication Type..... Internal Default
Logout-popup..... Enabled
External Web Authentication URL..... None
```

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.
---------------------------	--

Command Default	None
------------------------	------

The following is a sample output of the **show database summary** command:

```
(Cisco Controller) > 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 debugs.
---------------------------	---

Command Default	None.
------------------------	-------

This example shows how to display if debugging is enabled:

```
> show debug
MAC debugging..... disabled
Debug Flags Enabled:
  arp error enabled.
  bcast error enabled.
```

This example shows how to display if debugging is enabled:

```
> show debug packet
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
    [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 {leases | summary | scope}

Syntax Description	leases	Displays allocated DHCP leases.
	summary	Displays DHCP summary information.
	scope	Name of a scope to display the DHCP information for that scope.

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the allocated DHCP leases:

```
(Cisco Controller) >show dhcp leases
No leases allocated.
```

The following example shows how to display the DHCP summary information:

```
(Cisco Controller) >show dhcp summary
Scope Name      Enabled      Address Range
003             No          0.0.0.0 -> 0.0.0.0
```

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

```
(Cisco Controller) >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..... 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
```

show dtls connections

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

show dtls connections

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show dtls connections** command.

```
Device > show dtls connections
```

AP Name	Local Port	Peer IP	Peer Port	Ciphersuite
1130	Capwap_Ctrl	1.100.163.210	23678	TLS_RSA_WITH_AES_128_CBC_SHA
1130	Capwap_Data	1.100.163.210	23678	TLS_RSA_WITH_AES_128_CBC_SHA
1240	Capwap_Ctrl	1.100.163.209	59674	TLS_RSA_WITH_AES_128_CBC_SHA

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the status of DHCP proxy information:

```
(Cisco Controller) >show dhcp proxy
```

```
DHCP Proxy Behavior: enabled
```

show dhcp timeout

To display the DHCP timeout value, use the **show dhcp timeout** command.

show exclusionlist

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This command displays all manually excluded MAC addresses.

The following example shows how to display the exclusion list:

```
(Cisco Controller) > show exclusionlist
No manually disabled clients.
Dynamically Disabled Clients
-----
  MAC Address           Exclusion Reason           Time Remaining (in secs)
  -----
00:40:96:b4:82:55      802.1X Failure             51
```

Related Commands **config exclusionlist**

show flexconnect acl detailed

To display a detailed summary of FlexConnect access control lists, use the **show flexconnect acl detailed** command.

show flexconnect acl detailed *acl-name*

Syntax Description *acl-name* Name of the access control list.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the FlexConnect detailed ACLs:

```
(Cisco Controller) > show flexconnect acl detailed acl-2
```

show flexconnect acl summary

To display a summary of all access control lists on FlexConnect access points, use the **show flexconnect acl summary** command.

show flexconnect acl summary

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

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the FlexConnect ACL summary:

```
(Cisco Controller) >show flexconnect acl summary
ACL Name                               Status
-----
acl1                                     Modified
acl10                                    Modified
acl100                                   Modified
acl101                                   Modified
acl102                                   Modified
acl103                                   Modified
acl104                                   Modified
acl105                                   Modified
acl106                                   Modified
```

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	<i>guest_lan_id</i>	ID of the selected wired guest LAN.
---------------------------	---------------------	-------------------------------------

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

The following is a sample output of the **show guest-lan** *guest_lan_id* command:

```
(Cisco Controller) >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

```

show flexconnect group detail

To display details of a FlexConnect group, use the **show flexconnect group detail** command.

```
show flexconnect group detail {group_name | default-flex-group} | [module-vlan | aps]
```

Syntax Description		
<i>group_name</i>	Name of the FlexConnect group.	
module-vlan	Displays status of the FlexConnect local switching and VLAN ID in the group	
aps	Displays list of APs that are part of the FlexConnect group	
<i>default-flex-group</i>	Displays configuration of the default-flexgroup and the APs that are part of it.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.1	The module-vlan and aps parameters were added.
	8.3	The <i>default-flex-group</i> option was added.

The following example shows how to display the detailed information for a specific FlexConnect group:

```

(Cisco Controller) >show flexconnect group detail myflexgroup
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

```

show flexconnect group summary

To display the current list of FlexConnect groups, use the **show flexconnect group summary** command.

show flexconnect group summary

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

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the current list of FlexConnect groups:

```
(Cisco Controller) >show flexconnect group summary
flexconnect Group Summary: Count 1
Group Name           # APs
Group 1               1
```

show flexconnect office-extend

To view information about OfficeExtend access points that in FlexConnect mode, use the **show flexconnect office-extend** command.

show flexconnect office-extend {summary | latency}

Syntax Description	summary	Displays a list of all OfficeExtend access points.
---------------------------	----------------	--

	latency	Displays the link delay for OfficeExtend access points.
--	----------------	---

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display information about the list of FlexConnect OfficeExtend access points:

```
(Cisco Controller) >show flexconnect office-extend summary
Summary of OfficeExtend AP
AP Name           Ethernet MAC           Encryption   Join-Mode   Join-Time
-----
AP1130            00:22:90:e3:37:70     Enabled     Latency     Sun Jan 4 21:46:07 2009
AP1140            01:40:91:b5:31:70     Enabled     Latency     Sat Jan 3 19:30:25 2009
```

The following example shows how to display the FlexConnect OfficeExtend access point's link delay:

```
(Cisco Controller) >show flexconnect 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

```

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*

Syntax Description	brief	Displays a brief summary of all active IKE SAs.
	detailed	Displays a detailed summary of all active IKE SAs.
	<i>IP_or_MAC_address</i>	IP or MAC address of active IKE SA.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > show ike brief 209.165.200.254
```

show interface detailed

To display details of the system interfaces, use the **show interface** command.

show interfacedetailed { *interface_name* | **management** | **redundancy-management** | **redundancy-port** | **service-port** | **virtual** }

Syntax Description	detailed	Displays detailed interface information.
	<i>interface_name</i>	Interface name for detailed display.
	management	Displays detailed management interface information.
		Note This command output shows the port MAC address.
	redundancy-management	Displays detailed redundancy management interface information.
	redundancy-port	Displays detailed redundancy port information.
	service-port	Displays detailed service port information.

virtual	Displays detailed virtual gateway interface information.	
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command was updated in Release 8.0 and displays IPv6 related details

The following example shows how to display the detailed interface information:

```
(Cisco Controller) > show interface detailed management

Interface Name..... management
MAC Address..... 00:24:97:69:69:af
IP Address..... 9.10.56.60
IP Netmask..... 255.255.255.0
IP Gateway..... 9.10.56.1
External NAT IP State..... Disabled
External NAT IP Address..... 0.0.0.0
Link Local IPv6 Address..... fe80::224:97ff:fe69:69af/64
STATE ..... REACHABLE
Primary IPv6 Address..... 2001:9:10:56::60/64
STATE ..... REACHABLE
Primary IPv6 Gateway..... fe80::aea0:16ff:fe4f:2242
Primary IPv6 Gateway Mac Address..... ac:a0:16:4f:22:42
STATE ..... REACHABLE
VLAN..... 56
Quarantine-vlan..... 0
NAS-Identifier..... Building1
Active Physical Port..... LAG (13)
Primary Physical Port..... LAG (13)
Backup Physical Port..... Unconfigured
DHCP Proxy Mode..... Global
Primary DHCP Server..... 9.1.0.100
Secondary DHCP Server..... Unconfigured
DHCP Option 82..... Disabled
DHCP Option 82 bridge mode insertion..... Disabled
IPv4 ACL..... Unconfigured
IPv6 ACL..... Unconfigured
mDNS Profile Name..... Unconfigured
AP Manager..... Yes
Guest Interface..... No
L2 Multicast..... Enabled
```



Note Some WLAN controllers may have only one physical port listed because they have only one physical port.

The following example shows how to display the detailed redundancy management interface information:

```
(Cisco Controller) > show interface detailed redundancy-management
Interface Name..... redundancy-management
MAC Address..... 88:43:e1:7e:0b:20
IP Address..... 209.165.201.2
```

The following example shows how to display the detailed redundancy port information:

```
(Cisco Controller) > show interface detailed redundancy-port
Interface Name..... redundancy-port
MAC Address..... 88:43:e1:7e:0b:22
IP Address..... 169.254.120.5
```

The following example shows how to display the detailed service port information:

```
(Cisco Controller) > show interface detailed service-port
Interface Name..... redundancy-port
MAC Address..... 88:43:e1:7e:0b:22
IP Address..... 169.254.120.5
```

The following example shows how to display the detailed virtual gateway interface information:

```
(Cisco Controller) > show interface detailed virtual
Interface Name..... virtual
MAC Address..... 88:43:e1:7e:0b:20
IP Address..... 192.0.2.1
Virtual DNS Host Name..... Disabled
AP Manager..... No
Guest Interface..... No
```

show interface group

To display details of system interface groups, use the **show interface group** command.

```
show interface group { summary | detailed interface_group_name }
```

Syntax Description	summary	Displays a summary of the local interface groups.
	detailed	Displays detailed interface group information.
	<i>interface_group_name</i>	Interface group name for a detailed display.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a summary of local interface groups:

```
(Cisco Controller) > show interface group summary
Interface Group Name      Total Interfaces  Total WLANs      Total AP
Groups      Quarantine
-----
mygroup1          1                0                0                No
mygroup2          1                0                0                No
mygroup3          5                1                0                No
```

The following example shows how to display the detailed interface group information:

```
(Cisco Controller) > show interface group detailed mygroup1
Interface Group Name..... mygroup1
Quarantine ..... No
Number of Wlans using the Interface Group..... 0
Number of AP Groups using the Interface Group.... 0
Number of Interfaces Contained..... 1
mDNS Profile Name..... NCS12Prof
Interface Group Description..... My Interface Group
Next interface for allocation to client..... testabc
Interfaces Contained in this group ..... testabc
Interface marked with * indicates DHCP dirty interface
Interface list sorted based on vlan:

Index  Vlan    Interface Name
-----  ---
0      42     testabc
```

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.	
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
Usage Guidelines	You can enter this command only before the clear config or save config command.	

The following is a sample output of the **show invalid-config** command:

```
(Cisco Controller) > 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following is a sample output of the **show inventory** command:

```
(Cisco Controller) > show inventory
Burned-in MAC Address..... 50:3D:E5:1A:31:A0
Power Supply 1..... Present, OK
Power Supply 2..... Absent
Maximum number of APs supported..... 500
NAME: "Chassis" , DESCR: "Cisco 5500 Series Wireless LAN Controller"
PID: AIR-CT5508-K9, VID: V01, SN: XXXXXXXXXXXX
```

show IPsec

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

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

Syntax Description	brief	Displays a brief summary of active IPsec SAs.
	detailed	Displays a detailed summary of active IPsec SAs.
	<i>IP_or_MAC_address</i>	IP address or MAC address of a device.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > show IPsec brief 209.165.200.254
```

Related Commands

config radius acct ipsec authentication
config radius acct ipsec disable
config radius acct ipsec enable
config radius acct ipsec encryption
config radius auth IPsec encryption
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}
```

Syntax Description	
summary	Displays a list of all known access points.
detailed	Provides detailed information for all known access points.

MAC MAC address of the known AP.

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a summary of all known access points:

```
(Cisco Controller) >show known ap summary
MAC Address      State      # APs  # Clients  Last Heard
-----
```

show l2tp

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

show l2tp {**summary** | *ip_address*}

Syntax Description

summary	Displays all L2TP sessions.
<i>ip_address</i>	IP address.

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > show l2tp summary
LAC_IPaddr LTid LSid RTid RSid ATid ASid State
-----
```

show lag eth-port-hash

To display the physical port used for specific MAC addresses, use the **show lag eth-port-hash** command.

show lag eth-port-hash *dest_MAC* [*source_MAC*]

Syntax Description

<i>dest_MAC</i>	MAC address to determine output port for non-IP packets.
-----------------	--

<i>source_MAC</i>	(Optional) MAC address to determine output port for non-IP packets.
-------------------	---

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the physical port used for a specific MAC address:

```
(Cisco Controller) > show lag eth-port-hash 11:11:11:11:11:11
Destination MAC 11:11:11:11:11:11 currently maps to port 1
```

show lag ip-port-hash

To display the physical port used for specific IP addresses, use the **show lag ip-port-hash** command.

show lag ip-port-hash *dest_IP* [*source_IP*]

Syntax Description		
<i>dest_IP</i>		IP address to determine the output port for IP packets.
<i>source_IP</i>		(Optional) IP address to determine the output port for IP packets.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both— IPv4 and IPv6 addresses.

Usage Guidelines	For CAPWAP packets, enter the IP address of the access points. For EOIP packets, enter the IP address of the controller. For WIRED_GUEST packets, enter its IP address. For non-tunneled IP packets from controller, enter the destination IP address. For other non-tunneled IP packets, enter both destination and source IP addresses.
-------------------------	---

This command is applicable for both IPv4 and IPv6 addresses.

The following example shows how to display the physical port used for a specific IP address:

```
(Cisco Controller) > show lag ip-port-hash 192.168.102.138
Destination IP 192.168.102.138 currently maps to port 1
```

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.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the current status of the LAG configuration:

```
(Cisco Controller) > show lag summary
LAG Enabled
```

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	<i>index</i>	LDAP server index. Valid values are from 1 to 17.
---------------------------	--------------	---

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the detailed LDAP server information:

```
(Cisco Controller) > 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.

show ldap statistics

Syntax Description This command has no arguments or keywords.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the LDAP server statistics:

```
(Cisco Controller) > 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > 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 statistics**
- show ldap**

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	counters	Displays license agent counter information.
	sessions	Displays session information.

Command Default None

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show license agent counters** command:

```
(Cisco Controller) > 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
```

The following is a sample output of the **show license agent sessions** command:

```
(Cisco Controller) > 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 controllers, use the **show license all** command.

show license all

Syntax Description

This command has no arguments or keywords.

Command Default

None.

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
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

```

This example shows how to view all the licenses on the Smart License mechanism:

```
(Cisco Controller) > show license all
```

```

Smart Licensing Status
=====

Smart Licensing is ENABLED

Registration:
  Status: REGISTERED
  Smart Account: vWLC-Prod
  Virtual Account: Default
  Export-Controlled Functionality: Allowed
  Initial Registration: SUCCEEDED on Dec 11 12:19:38 2015 UTC
  Last Renewal Attempt: None
  Next Renewal Attempt: Jun 08 12:19:37 2016 UTC
  Registration Expires: Dec 10 12:16:56 2016 UTC

License Authorization:
  Status: AUTHORIZED on Dec 11 12:20:12 2015 UTC
  Last Communication Attempt: SUCCEEDED on Dec 11 12:20:12 2015 UTC
  Next Communication Attempt: Jan 10 12:20:11 2016 UTC
  Communication Deadline: Mar 10 12:17:43 2016 UTC

```

```

--More-- or (q)uit

License Usage
=====

No licenses in use

Product Information
=====
UDI: PID:AIR-CTVM-K9,SN:91U8NQ5XDBE

Agent Version
=====
Smart Agent for Licensing: 1.4.0_rel/25
Component Versions: SA:1.4, SI:0.1, CH:rel_1, PK:x.x

```

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.

Command Default None.

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

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	<i>license-name</i>	Name of a specific license.
---------------------------	---------------------	-----------------------------

Command Default	None.	
------------------------	-------	--

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
-------------------------	------------------------

show license agent

show license all

show license feature

show license image-level

show license summary

license modify priority

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.
---------------------------	--

Command Default	None.
------------------------	-------

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

```

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.

Command Default

None.

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****show license all****show license detail****show license expiring****show license in-use****show license summary****license modify priority****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.

Command Default

None.

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

```

> show license feature
      Feature name Enforcement Evaluation Clear Allowed Enabled
      wplus          yes          yes          yes          yes
      wplus-ap-count yes          yes          yes          yes

```


base	no	yes	yes	no
base-ap-count	yes	yes	yes	no

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

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 This command has no arguments or keywords.

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 NiL SLM_CODE CL_ND_LCK NiL *1AR5NS7M5AD8PPU400
NiL NiL NiL 5_MINS <UDI><PID>AIR-CT5508-K9</PID><SN>RFD000P2D27<
/SN></UDI> Pe0L7tv8KDUqo:z1Pe423S5wasgM8G,tTs0i,7zLyA3VfxhnIe5aJa
m63lR5l8JM3DPkr4O2DI43iLlKn7jomo3RF11LjMRqLkKhiLJ2tOyuftQsSq2bCAO6
nR3wIb38xKi3t$<WLC>AQEBIQAB//++mCzRUbOhw28vz0czAY0iAm7ocDLUMB9ER0
+BD3w2PhNEYwsBN/T3xBqJqfC+oKRqwInXo3s+nsLU7rOtdOxoIxYZAo3LYmUJ+M
FzsqlhKoJVlPyEvQ8H21MNUjVbhoN0gyIWsyiJaM8AQIkVBQFzhr10GYo1VzdzfJf
EPQIx6tZ++/Vtc/q3SF/5Ko8XCy=</WLC>
Comment:
Hash: iOGjuLlXgLhcTB113ohIzxVioHA=
. . .
```

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 evaluation

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.

Command Default None.

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 (0x000
00002), 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.

Command Default

None.

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

show license all

show license detail

show license expiring

show license feature

license modify priority

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.

Command Default

None.

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

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

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.
---------------------------	--

Command Default	None.
------------------------	-------

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 show license all show license detail show license expiring show license feature
-------------------------	--

show license image-level**show license in-use****show license summary****license modify priority****show license evaluation**

show license status

To display the license status on the Cisco Wireless Controller, use the **show license status** command.

show license status

Syntax Description

This command has no arguments or keywords.

Command Default

None.

This example shows how to view the **license status** on the RTU license mechanism:

```
> 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
```

This example shows how to view the **license status** on the Smart License mechanism:

```
(Cisco Controller) >show license status

Smart Licensing is ENABLED

Registration:
  Status: REGISTERED
  Smart Account: vWLC-Prod
  Virtual Account: Default
  Export-Controlled Functionality: Allowed
  Initial Registration: SUCCEEDED on Dec 11 12:19:38 2015 UTC
  Last Renewal Attempt: None
  Next Renewal Attempt: Jun 08 12:19:37 2016 UTC
  Registration Expires: Dec 10 12:16:56 2016 UTC

License Authorization:
  Status: AUTHORIZED on Dec 11 12:20:12 2015 UTC
  Last Communication Attempt: SUCCEEDED on Dec 11 12:20:12 2015 UTC
  Next Communication Attempt: Jan 10 12:20:11 2016 UTC
```

Communication Deadline: Mar 10 12:17:43 2016 UTC

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.

Command Default None.

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
c    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
- show license all
- show license detail
- show license expiring
- show license feature
- show license image-level
- show license in-use
- show license summary
- license modify priority
- show license evaluation

show license summary

To see a brief summary of all licenses on the controllers, use the **show license summary** command.

show license summary

Syntax Description This command has no arguments or keywords.

Command Default None.

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
```

This example shows how to view the **license summary** on the Smart License mechanism:

```
(Cisco Controller) >show license summary

Smart Licensing is ENABLED

Registration:
  Status: REGISTERED
  Smart Account: vWLC-Prod
  Virtual Account: Default
  Export-Controlled Functionality: Allowed
  Last Renewal Attempt: None
  Next Renewal Attempt: Jun 08 12:19:38 2016 UTC

License Authorization:
  Status: AUTHORIZED
  Last Communication Attempt: SUCCEEDED
  Next Communication Attempt: Jan 10 12:20:11 2016 UTC
```

show license udi

To display unique device identifier (UDI) values for licenses on the controllers, use the **show license udi** command.

show license udi

Syntax Description This command has no arguments or keywords.

Command Default None.

This example shows how to view the UDI values for licenses on the RTU license mechanism:

```
(Cisco Controller) > show license udi
Device# PID                               SN                               UDI
-----
*0      AIR-CT5508-K9                          RFD000P2D27                      AIR-CT5508-K9:RFD000P2D27
```

This example shows how to view the UDI values for licenses on the Smart License mechanism:

```
(Cisco Controller) > show license udi
UDI: PID:AIR-CTVM-K9,SN:91U8NQ5XD8E
```

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.

Command Default None.

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.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the authentication certificate information stored locally:

```
(Cisco Controller) > show local-auth certificates
```

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.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the local authentication configuration information:

```
(Cisco Controller) > 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 ..... default
Peer verification options:
  Check against CA certificates ..... Enabled
  Verify certificate CN identity .... Disabled
  Check certificate date validity ... Enabled
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 ..... 7b7fffffff00000000000000000000000000000000
Authority Information ..... Test
EAP Profile..... tls-prof
Enabled methods for this profile ..... tls
Active on WLANs ..... 1 3EAP 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the local authentication certificate statistics:

```
(Cisco Controller) > 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 config
 - show local-auth certificates

show location

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

show location [**detail** *mac_address* | **summary**]

Syntax Description	detail	(Optional) Displays detailed location information.
	<i>mac_address</i>	MAC address of a client.
	summary	(Optional) Displays summary location information.

Command Default None.

This example shows how to display the location summary information:

```
> 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**
- show location statistics rfid**
- config location**

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.

Command Default None.

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**
 - show location**
 - config 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the current settings and buffer content details:

```
(Cisco Controller) >show logging

(Cisco Controller) > config logging syslog host 10.92.125.52
System logs will be sent to 10.92.125.52 from now on

(Cisco Controller) > config logging syslog host 2001:9:6:40::623
System logs will be sent to 2001:9:6:40::623 from now on

(Cisco Controller) > show logging
Logging to buffer :
- Logging of system messages to buffer :
  - Logging filter level..... errors
  - Number of system messages logged..... 1316
  - Number of system messages dropped..... 6892
- Logging of debug messages to buffer ..... Disabled
  - Number of debug messages logged..... 0
  - Number of debug messages dropped..... 0
- Cache of logging ..... Disabled
- Cache of logging time(mins) ..... 10080
- Number of over cache time log dropped ..... 0
Logging to console :
```

```

- Logging of system messages to console :
- Logging filter level..... disabled
- Number of system messages logged..... 0
- Number of system messages dropped..... 8243
- 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 console :
- Logging filter level..... disabled
- Number of system messages logged..... 0
- Number of system messages dropped..... 8208
- Logging of debug messages to console ..... Enabled
- Number of debug messages logged..... 0
- Number of debug messages dropped..... 0
- Logging of system messages to syslog :
- Logging filter level..... errors
- Number of system messages logged..... 1316
- Number of system messages dropped..... 6892
- Logging of debug messages to syslog ..... Disabled
- Number of debug messages logged..... 0
- Number of debug messages dropped..... 0
- Number of remote syslog hosts..... 2
- syslog over tls..... Disabled
  - Host 0..... 10.92.125.52
  - Host 1..... 2001:9:6:40::623
  - Host 2.....
Logging of RFC 5424..... Disabled
Logging of Debug messages to file :
- Logging of Debug messages to file..... Disabled
- Number of debug messages logged..... 0
- Number of debug messages dropped..... 0
Logging of traceback..... Enabled

```

show loginsession

To display the existing sessions, use the **show loginsession** command.

show loginsession

Syntax Description This command has no arguments or keywords.

Command Default None.

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 | detailMAC | mesh | {wlan wlan-id}}
```

Syntax Description

summary	Displays a summary of all MAC filter entries.
detail MAC	Displays details of a MAC filter entry.
mesh	Display a summary of all MESH AP MAC filter entries.
wlan wlan-id	Display a summary of all MAC filter entries on given wlan.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.4	wlan wlan-id was added.

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.

The following example shows how to display the detailed display of a MAC filter entry:

```
(Cisco Controller) >show macfilter detail xx:xx:xx:xx:xx:xx
MAC Address..... xx:xx:xx:xx:xx:xx
WLAN Identifier..... Any
Interface Name..... management
Description..... RAP
```

The following example shows how to display a summary of the MAC filter parameters:

```
(Cisco Controller) > show macfilter summary
MAC Filter RADIUS Compatibility mode..... Cisco ACS
MAC Filter Delimiter..... None
Local Mac Filter Table
MAC Address          WLAN Id          Description
-----
xx:xx:xx:xx:xx:xx   Any              RAP
xx:xx:xx:xx:xx:xx   Any              PAP2 (2nd hop)
xx:xx:xx:xx:xx:xx   Any              PAP1 (1st hop)
```

show memory monitor

To display a summary of memory analysis settings and any discovered memory issues, use the **show memory monitor** command.

```
show memory monitor [detail]
```

Syntax Description	detail (Optional) Displays details of any memory leaks or corruption.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				
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.				

The following is a sample output of the **show buffers** command:

```
(Cisco Controller) > 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.
```

The following is a sample output of the **show memory monitor detail** command:

```
(Cisco Controller) > 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 ceeff00d readf00d 00000080 00000000 00000000
(179a7ae0): 17958b20 00000000 1175608c 00000078 00000000 readceef 179a7afc 00000001
(179a7b00): 00000003 00000006 00000001 00000004 00000001 00000009 00000009 0000020d
(179a7b20): 00000001 00000002 00000002 00000001 00000004 00000000 00000000 5d7b9aba
(179a7b40): cbddf004 192f465e 7791acc8 e5032242 5365788c alb7cee6 00000000 00000000
(179a7b60): 00000000 00000000 00000000 00000000 00000000 ceeff00d readf00d 00000080
(179a7b80): 00000000 00000000 17958dc0 00000000 1175608c 00000078 00000000 readceef
(179a7ba0): 179a7ba4 00000001 00000003 00000006 00000001 00000004 00000001 00003763
(179a7c00): 1722246c 1722246c 00000000 00000000 00000000 00000000 00000000 ceeff00d
(179a7c20): readf00d 00000080 00000000 00000000 179a7b78 00000000 1175608c 00000078
...
```

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.
---------------------------	--

Command Default None.

This example shows how to display a list of management users:

```
> show mgmtuser
User Name          Permissions      Description      Password Strength
-----
admin              read-write      -----
Weak
```

Related Commands

- config mgmtuser add**
- config mgmtuser delete**
- config mgmtuser description**
- config mgmtuser password**

show msglog

To display the message logs written to the controller database, use the **show msglog** command.

show msglog

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines If there are more than 15 entries, you are prompted to display the messages shown in the example.

The following example shows how to display message logs:

```
(Cisco Controller) >show msglog
Message Log Severity Level..... ERROR
Thu Aug  4 14:30:08 2005 [ERROR] spam_lrad.c 1540: AP 00:0b:85:18:b6:50 associated. Last
AP failure was due to Link Failure
Thu Aug  4 14:30:08 2005 [ERROR] spam_lrad.c 13840: Updating IP info for AP 00:
0b:85:18:b6:50 -- static 0, 1.100.49.240/255.255.255.0, gw 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
Thu Aug  4 14:29:32 2005 [ERROR] rrmgroup.c 733: Airewave Director: 802.11bg sw
itch group 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 Previous message occurred 2 times
Thu Aug  4 14:29:14 2005 [CRITICAL] osapi_sem.c 794: Error! osapiMutexTake called with
NULL pointer: osapi_bsntime.c:927
Thu Aug  4 14:29:14 2005 [CRITICAL] osapi_sem.c 794: Error! osapiMutexTake called with
NULL pointer: osapi_bsntime.c:919
Thu Aug  4 14:29:14 2005 [CRITICAL] hwutils.c 1861: Security Module not found
```

```
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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display detailed statistics of network access control settings:

```
(Cisco Controller) > 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a summary information of network access control settings:

```
(Cisco Controller) > 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 the **show netuser** command.

show netuser { **detail** *user_name* | **guest-roles** | **summary** }

Syntax Description	detail	Displays detailed information about the specified network user.
	<i>user_name</i>	Network user.
	guest_roles	Displays configured roles for guest users.
	summary	Displays a summary of all users in the local user database.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following is a sample output of the **show netuser summary** command:

```
(Cisco Controller) > show netuser summary
Maximum logins allowed for a given username .....Unlimited
```

The following is a sample output of the **show netuser detail** command:

```
(Cisco Controller) > 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
config 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.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to display a QoS role for the guest network user:

```
(Cisco Controller) > 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.

Command Default None.

This example shows how to display the network details:

```
(Cisco Controller) > show network
```

Related Commands

- config network**
- 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.

Command Default None.

This example shows how to display a summary configuration:

```
(Cisco Controller) >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 Web Mode RC4 Cipher Preference..... Disable
OCSF..... Disabled
OCSF responder URL.....
```

show network multicast mgid detail

```

Secure Shell (ssh)..... Enable
Telnet..... Enable
Ethernet Multicast Mode..... Disable   Mode: Ucast
Ethernet Broadcast Mode..... Disable
Ethernet Multicast Forwarding..... Disable
Ethernet Broadcast Forwarding..... Disable
AP Multicast/Broadcast Mode..... Unicast
IGMP snooping..... Disabled
IGMP timeout..... 60 seconds
IGMP Query Interval..... 20 seconds
MLD snooping..... Disabled
MLD timeout..... 60 seconds
MLD query interval..... 20 seconds
User Idle Timeout..... 300 seconds
AP Join Priority..... Disable
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
Mesh Full Sector DFS..... Enable
AP Fallback ..... Disable
Web Auth CMCC Support ..... Disabled
Web Auth Redirect Ports ..... 80
Web Auth Proxy Redirect ..... Disable
Web Auth Captive-Bypass ..... Disable
Web Auth Secure Web ..... Enable
Fast SSID Change ..... Disabled
AP Discovery - NAT IP Only ..... Enabled
IP/MAC Addr Binding Check ..... Enabled
CCX-lite status ..... Disable
oeap-600 dual-rlan-ports ..... Disable
oeap-600 local-network ..... Enable
mDNS snooping..... Disabled
mDNS Query Interval..... 15 minutes
Web Color Theme..... Red
Web Color Theme..... Default
CAPWAP Prefer Mode..... IPv4

```

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	<i>mgid_value</i>	Number between 550 and 4095.
--------------------	-------------------	------------------------------

Command Default	None.
-----------------	-------

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 summary`
- `show network multicast mgid detail`
- `show network`

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.

Command Default None.

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 summary`
- `show network multicast mgid detail`
- `show network`

show nmsp notify-interval summary

To display the Network Mobility Services Protocol (NMSp) configuration settings, use the `show nmsp notify-interval summary` command.

`show nmsp notify-interval summary`

Syntax Description This command has no arguments or keywords.

Command Default None.

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	summary	Displays common NMSP counters.
	connection all	Displays all connection-specific counters.

Command Default None.

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:
Transmit Q full: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           NMSP Subscr Resp:  0
  Info Req:         1           Info Resp:         1
  Measure Req:      2           Measure Resp:      2
  Stats Req:        2           Stats Resp:        2
  Info Notify:      0           Measure Notify:    0
  Loc Capability:   2
  Location Req:     0           Location Resp:     0
  Loc Subscr Req:   0           Loc Subscr Resp:   0
  Loc Notif:        0
  Loc Unsubscr Req: 0           Loc Unsubscr Resp: 0
  IDS Get Req:      0           IDS Get Resp:      0
  IDS Notif:        0
  IDS Set Req:      0           IDS Set Resp:      0

```

Related Commands

- show nmsp notify-interval summary**
- clear nmsp statistics**
- config nmsp notify-interval measurement**
- 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.

Command Default None.

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

- show nmosp notify-interval summary
- clear nmosp statistics
- config nmosp notify-interval measurement
- show nmosp status
- clear loep statistics
- show nmosp statistics

show nmosp subscription

To display the Network Mobility Services Protocol (NMSP) services that are active on the controller, use the **show nmosp subscription** command.

show nmosp subscription {**summary** | **detail ip-addr**}

Syntax Description	summary	Displays all of the NMSP services to which the controller is subscribed.
	detail	Displays details for all of the NMSP services to which the controller is subscribed.
	<i>ip-addr</i>	Details only for the NMSP services subscribed to by a specific IPv4 or IPv6 address.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

This example shows how to display a summary of all the NMSP services to which the controller is subscribed:

```
> show nmosp 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 NMSP services:

```
> show nmosp 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,
```

```
> show nmsp subscription detail 2001:9:6:40::623
Mobility Services Subscribed by 2001:9:6:40::623
Services          Sub-services
-----          -
RSSI              Mobile Station, Tags,
Info              Mobile Station,
Statistics        Mobile Station, Tags,
```

show ntp-keys

To display network time protocol authentication key details, use the **show ntp-keys** command.

show ntp-keys

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to display NTP authentication key details:

```
(Cisco Controller) > show ntp-keys
Ntp Authentication Key Details.....
  Key Index
  -----
      1
      3
```

Related Commands `config time ntp`

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	all	Displays information about all entries in the PMK cache.
	MAC	Information about a single entry in the PMK cache.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display information about a single entry in the PMK cache:

```
(Cisco Controller) >show pmk-cache xx:xx:xx:xx:xx:xx
```

The following example shows how to display information about all entries in the PMK cache:

```
(Cisco Controller) >show pmk-cache all
PMK Cache
Station          Entry
                Lifetime  VLAN Override  IP Override
-----
-----
```

show port

To see the controller port settings on an individual or global basis, use the **show port** command.

```
show port { port-number | summary | detailed-info | sfp-info | vlan }
```

Syntax Description

<i>port-number</i>	Port number of the physical interface.
summary	Displays a summary of all ports.
detailed-info	Displays detailed port information.
sfp-info	Displays SFP information.
	Note This feature is applicable only to Cisco 5520 and 8540 controllers.
vlan	Displays VLAN port table summary.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.8	sfp-info parameter was added.

The following example shows how to display information about an individual controller port:

```
(Cisco Controller) > 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 controllers may not have multicast or Power over Ethernet (PoE) listed because they do not support those features.

The following example shows how to display a summary of all ports:

```
(Cisco Controller) > show port summary
Physical Link Link Mcast STP Admin Physical
Pr Type Stat Mode Mode Status Status Trap Appliance
POE SFPTType
-----
-----
1 Normal Forw Enable Auto 1000 Full Up Enable Enable
N/A NotPresent
2 Normal Disa Enable Auto 1000 Full Down Enable Enable
N/A NotPresent
3 Normal Disa Enable Auto 1000 Full Down Enable Enable
N/A NotPresent
4 Normal Disa Enable Auto 1000 Full Down Enable Enable
N/A NotPresent
```



Note Some controllers may have only one port listed because they have only one physical port.

The following example shows how to display SFP information:

```
(Cisco Controller) > show port sfp-info (Cisco Controller) > FP0 Port SFP Vendor
Transceiver Type OUI PartNumber Rev SerialNumber DateCode
Auth
1 CISCO-AVAGO (0x08)1000BaseTX XXXX-XXXXX
XXXXXXXXXXXX XXXXXX ok
2 Not Present (0x00)NOT_SUPPORTED
fail
FP0.
```

show process

To display how various processes in the system are using the CPU at that instant in time, use the **show process** command.

show process {cpu | memory}

Syntax Description	cpu	memory
	Displays how various system tasks are using the CPU at that moment.	Displays the allocation and deallocation of memory from various processes in the system at that moment.

Command Default None.

Usage Guidelines

This command is helpful in understanding if any single task is monopolizing the CPU and preventing other tasks from being performed.

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
emWeb      (255/ 1)  0 %    ( 0/ 0)%   T 300
cliWebTask  (255/ 1)  0 %    ( 0/ 0)%   I
UtilTask    (255/ 1)  0 %    ( 0/ 0)%   T 300
```

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
emWeb      (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

To display quality of service (QoS) information, use the **show qos** command.

show qos {bronze | gold | platinum | silver}

Syntax Description

bronze	Displays QoS information for the bronze profile of the WLAN.
gold	Displays QoS information for the gold profile of the WLAN.
platinum	Displays QoS information for the platinum profile of the WLAN.
silver	Displays QoS information for the silver profile of the WLAN.

Command Default

None.

This example shows how to display QoS information for the gold profile:

```
> show qos gold
Description..... For Video Applications
Maximum Priority..... video
Unicast Default Priority..... video
```

```

Multicast Default Priority..... video
Per-SSID Rate Limits..... UpstreamDownstream
Average Data Rate..... 0 0
Average Realtime Data Rate..... 0 0
Burst Data Rate..... 0 0
Burst Realtime Data Rate..... 0 0
Per-Client Rate Limits..... UpstreamDownstream
Average Data Rate..... 0 0
Average Realtime Data Rate..... 0 0
Burst Data Rate..... 0 0
Burst Realtime Data Rate..... 0 0
protocol..... none

802.11a Customized EDCA Settings:
ecwmin..... 3
ecwmax..... 4
aifs..... 7
txop..... 94

802.11a Customized packet parameter Settings:
Packet retry time..... 3
Not retrying threshold..... 100
Disassociating threshold..... 500
Time out value..... 35

```

Related Commands**config qos protocol-type****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.

Command Default

None.

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 remote-lan

To display information about remote LAN configuration, use the **show remote-lan** command.

show remote-lan { **summary** | *remote-lan-id* }

Syntax Description	summary	Displays a summary of all remote LANs.
	<i>remote-lan-id</i>	Remote LAN identifier.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display a summary of all remote LANs:

```
(Cisco Controller) >show remote-lan summary
Number of Remote LANS..... 2
RLAN ID  RLAN Profile Name                               Status   Interface Name
-----  -
2         remote                                               Disabled management
8         test                                                  Disabled management
```

The following example shows configuration information about the remote LAN with the *remote-lan-id* 2:

```
(Cisco Controller) >show remote-lan 2
Remote LAN Identifier..... 2
Profile Name..... remote
Status..... Disabled
MAC Filtering..... Disabled
AAA Policy Override..... Disabled
Network Admission Control
  Radius-NAC State..... Disabled
  SNMP-NAC State..... Disabled
  Quarantine VLAN..... 0
Maximum number of Associated Clients..... 0
Number of Active Clients..... 0
Exclusionlist..... Disabled
Session Timeout..... Infinity
CHD per Remote LAN..... Enabled
Webauth DHCP exclusion..... Disabled
Interface..... management
Remote LAN ACL..... unconfigured
DHCP Server..... Default
DHCP Address Assignment Required..... Disabled
Static IP client tunneling..... Disabled
Radius Servers
  Authentication..... Global Servers
  Accounting..... Global Servers
  Dynamic Interface..... Disabled
Security
  Web Based Authentication..... Enabled
  ACL..... Unconfigured
```



```

Web Authentication server precedence:
1..... local
2..... radius
3..... ldap
Web-Passthrough..... Disabled
Conditional Web Redirect..... Disabled
Splash-Page Web Redirect..... Disabled

```

show route kernel

To display the kernel route cache information, use the **show route kernel** command.

show route kernel

Syntax Description This command has no arguments or keywords.

Command Default None.

This example shows how to display the kernel route cache information:

```

> show route kernel
Iface Destination Gateway Flags RefCnt Use Metric Mask MTU Window IRTT
dt10 14010100 00000000 0001 0 0 0 FFFFFFF0 0 0 0
dt10 28282800 00000000 0001 0 0 0 FFFFFFF0 0 0 0
dt10 34010100 00000000 0001 0 0 0 FFFFFFF0 0 0 0
eth0 02020200 00000000 0001 0 0 0 FFFFFFF0 0 0 0
dt10 33010100 00000000 0001 0 0 0 FFFFFFF0 0 0 0
dt10 0A010100 00000000 0001 0 0 0 FFFFFFF0 0 0 0
dt10 32010100 00000000 0001 0 0 0 FFFFFFF0 0 0 0
dt10 0A000000 0202020A 0003 0 0 0 FF000000 0 0 0
lo 7F000000 00000000 0001 0 0 0 FF000000 0 0 0
dt10 00000000 0A010109 0003 0 0 0 00000000 0 0 0

```

Related Commands

- clear ap
- debug arp
- show arp kernel
- config route add
- config route delete

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.

Command Default None.

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.

show rules

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display active internal firewall rules:

```
(Cisco Controller) > 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 Mobility Express controller configuration, use the **show run-config all** command.

```
show run-config {all | commands} [no-ap | commands]
```

Syntax Description

all	Shows all the commands under the show run-config.
no-ap	(Optional) Excludes access point configuration settings.
commands	(Optional) Displays a list of user-configured commands on

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.2	This command was introduced .

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 all** command shows only values configured by the user. It does not show system-configured default values.

The following is a sample output of the **show run-config all** command:

```

(Cisco Controller) > show run-config all
Press Enter to continue...
System Inventory
Switch Description..... Cisco Controller
Machine Model.....
Serial Number..... FLS0923003B
Burned-in MAC Address..... xx:xx:xx:xx:xx:xx
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...

```

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.	
Command Default	The default values for Baud rate, Character, Flow Control, Stop Bits, Parity type of the port configuration are 9600, 8, off, 1, none.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display EIA-232 parameters and the serial port inactivity timeout:

```
(Cisco Controller) > show serial
Serial Port Login Timeout (minutes)..... 45
Baud Rate..... 9600
Character Size..... 8
Flow Control:..... Disable
Stop Bits..... 1
Parity Type:..... none
```

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.
Command Default	5 minutes, 5 sessions.

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.

Command Default

None.

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 snmpengineID

To display the SNMP engine ID, use the **show snmpengineID** command.

show snmpengineID

Syntax Description

This command has no arguments or keywords.

Command Default

None.

This example shows how to display the SNMP engine ID:

```
> show snmpengineID
SNMP EngineId... ffffffff
```

Related Commands

config snmp engineID

show snmptrap

To display Cisco wireless LAN controller Simple Network Management Protocol (SNMP) trap receivers and their status, use the **show snmptrap** command.

show snmptrap

Syntax Description This command has no arguments or keywords.

Command Default None.

This example shows how to display SNMP trap receivers and their status:

```
> show snmptrap
SNMP Trap Receiver Name      IP Address      Status
-----
xxx.xxx.xxx.xxx             xxx.xxx.xxx.xxx  Enable
```

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.

Command Default None.

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.

Command Default Enable.

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 *port*

Syntax Description	<p><i>port</i></p> <p>Physical port number:</p> <ul style="list-style-type: none"> • 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.
---------------------------	--

Command Default The default SPT configuration output values are 800C, Disabled, 802.1D, 128, 100, Auto.

Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

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.

The following example shows how to display spanning tree values on a per port basis:

```
(Cisco Controller) > 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

```

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.	
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
Usage Guidelines	Some WLAN controllers do not support the spanning tree function.	

The following example shows how to display spanning tree values on a per switch basis:

```

(Cisco Controller) > 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

```

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.

<i>port</i>	<p>Physical port number:</p> <ul style="list-style-type: none"> • 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.
-------------	--

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the port summary information:

```
(Cisco Controller) > show stats port summary
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
```

The following example shows how to display the detailed port information:

```
(Cisco Controller) > 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
Local Traffic Frames:0          RX Pause Frames      :0
Unacceptable Frames :0          VLAN Membership      :0
VLAN Viable Discards:0          MulticastTree Viable:0
ReserveAddr Discards:0
CFI Discards      :0          Upstream Threshold  :0
PACKETS TRANSMITTED (OCTETS)
Total Bytes..... 353831
64 byte pkts      :0          65-127 byte pkts    :0
128-255 byte pkts :0          256-511 byte pkts  :0
512-1023 byte pkts :0          1024-1518 byte pkts :2
1519-1530 byte pkts :0          Max Info             :1522
PACKETS TRANSMITTED SUCCESSFULLY
Total..... 5875
Unicast Pkts :5868          Multicast Pkts:0          Broadcast Pkts:7
TRANSMIT ERRORS
Total Errors..... 0
FCS Error      :0          TX Oversized :0          Underrun Error:0
TRANSMIT DISCARDS
Total Discards..... 0
Single Coll Frames :0          Multiple Coll Frames:0
Excessive Coll Frame:0          Port Membership      :0
VLAN Viable Discards:0
PROTOCOL STATISTICS
BPDUs Received      :6          BPDUs Transmitted    :0
802.3x RX PauseFrame:0
Time Since Counters Last Cleared..... 2 day 0 hr 39 min 59 sec

```

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	Parameter	Description
	detailed	Displays detailed switch statistics.
	summary	Displays switch summary statistics.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display switch summary statistics:

```

(Cisco Controller) > 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

```

The following example shows how to display detailed switch statistics:

```

(Cisco Controller) > 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 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.

Command Default Enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to display parameters that apply to the Cisco wireless LAN controller:

```
(Cisco Controller) >> show switchconfig
802.3x Flow Control Mode..... Disabled
FIPS prerequisite features..... Enabled
Boot Break..... Enabled
secret obfuscation..... Enabled
Strong Password Check Features:
  case-check .....Disabled
  consecutive-check ....Disabled
  default-check .....Disabled
  username-check .....Disabled
```

Related Commands
config switchconfig mode
config switchconfig secret-obfuscation
config switchconfig strong-pwd
config switchconfig flowcontrol
config switchconfig fips-prerequisite
show stats switch

show sysinfo

To see high-level controller information, use the **show sysinfo** command.



Note This command output shows the burned-in MAC address.

show sysinfo

Syntax Description This command has no arguments or keywords.

Command Default None

This example shows a sample output of the command run on Cisco 8540 Wireless Controller using Release 8.3:

```
(Cisco Controller) >show sysinfo

Manufacturer's Name..... Cisco Systems Inc.
Product Name..... Cisco Controller
Product Version..... 8.3.100.0
RTOS Version..... 8.3.100.0
Bootloader Version..... 8.0.110.0
Emergency Image Version..... 8.0.110.0
```

```

OUI File Last Update Time..... Sun Sep 07 10:44:07 IST 2014

Build Type..... DATA + WPS

System Name..... TestSpartan8500Dev1
System Location.....
System Contact.....
System ObjectID..... 1.3.6.1.4.1.9.1.1615
Redundancy Mode..... Disabled
IP Address..... 8.1.4.2
IPv6 Address..... ::
System Up Time..... 0 days 17 hrs 20 mins 58 secs

--More-- or (q)uit
System Timezone Location.....
System Stats Realtime Interval..... 5
System Stats Normal Interval..... 180

Configured Country..... Multiple Countries : IN,US
Operating Environment..... Commercial (10 to 35 C)
Internal Temp Alarm Limits..... 10 to 38 C
Internal Temperature..... +21 C
Fan Status..... OK

RAID Volume Status
Drive 0..... Good
Drive 1..... Good

State of 802.11b Network..... Enabled
State of 802.11a Network..... Enabled
Number of WLANs..... 7
Number of Active Clients..... 1

OUI Classification Failure Count..... 0

Burned-in MAC Address..... F4:CF:E2:0A:27:00
Power Supply 1..... Present, OK

--More-- or (q)uit
Power Supply 2..... Present, OK
Maximum number of APs supported..... 6000
System Nas-Id.....
WLC MIC Certificate Types..... SHA1/SHA2
Licensing Type..... RTU

```

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.

Command Default None.

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.

Command Default

None.

This example shows how to display the controller time and date when authentication is not enabled:

```
> show time
Time..... Wed Apr 13 09:29:15 2011
Timezone delta..... 0:0
Timezone location..... (GMT +5:30) Colombo, New Delhi, Chennai, Kolkata
NTP Servers
  NTP Polling Interval..... 3600
  Index      NTP Key Index      NTP Server      NTP Msg Auth Status
  -----
  1          0          9.2.60.60      AUTH DISABLED
```

This example shows successful authentication of NTP Message results in the AUTH Success:

```
> show time
Time..... Thu Apr 7 13:56:37 2011
Timezone delta..... 0:0
Timezone location..... (GMT +5:30) Colombo, New Delhi, Chennai, Kolkata
NTP Servers
  NTP Polling Interval..... 3600
  Index      NTP Key Index      NTP Server      NTP Msg Auth Status
  -----
  1          1          9.2.60.60      AUTH SUCCESS
```

This example shows that if the packet received has errors, then the NTP Msg Auth status will show AUTH Failure:

```
> show time
Time..... Thu Apr 7 13:56:37 2011
Timezone delta..... 0:0
Timezone location..... (GMT +5:30) Colombo, New Delhi, Chennai, Kolkata
NTP Servers
  NTP Polling Interval..... 3600
  Index      NTP Key Index      NTP Server      NTP Msg Auth Status
-----
  1          10          9.2.60.60      AUTH FAILURE
```

This example shows that if there is no response from NTP server for the packets, the NTP Msg Auth status will be blank:

```
> show time
Time..... Thu Apr 7 13:56:37 2011
Timezone delta..... 0:0
Timezone location..... (GMT +5:30) Colombo, New Delhi, Chennai,
  Kolkata
NTP Servers
  NTP Polling Interval..... 3600
  Index      NTP Key Index      NTP Server      NTP Msg Auth Status
-----
  1          11          9.2.60.60
```

Related Commands

- config time manual**
- config time ntp**
- config time timezone**
- 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 or keywords.

Command Default

None.

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 Association..... Disabled
  802.11 Deauthenticate..... Disable
  802.11 Authenticate Failure..... Disable
  802.11 Association Failure..... Disable
  Authentication..... Disabled
```

show trapflags

```

    Excluded..... Disable
    Max Client Warning Threshold..... 90%
    Nac-Alert Traps..... Disabled
    RFID Related Traps
    Max RFIDs Warning Threshold..... 90%

802.11 Security related traps
    WEP Decrypt Error..... Enable
    IDS Signature Attack..... Disable

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
adjchannel-rogueap..... Disabled
wps..... Enable
configsave..... Enable
IP Security
    esp-auth..... Enable
    esp-replay..... Enable
    invalidSPI..... Enable
    ike-neg..... Enable
    suite-neg..... Enable
    invalid-cookie..... Enable

Mesh
    auth failure..... Enabled
    child excluded parent..... Enabled
    parent change..... Enabled
    child moved..... Enabled
    excessive parent change..... Enabled
    onset SNR..... Enabled
    abate SNR..... Enabled
    console login..... Enabled
    excessive association..... Enabled
    default bridge group name..... Enabled
    excessive hop count..... Disabled
    excessive children..... Enabled
    sec backhaul change..... Disabled

```

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 or keywords.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

The following is a sample output of the **show traplog** command:

```
(Cisco Controller) > show traplog
Number of Traps Since Last Reset..... 2447
Number of Traps Since Log Last Displayed... 2447
Log System Time          Trap
-----
 0 Thu Aug  4 19:54:14 2005 Rogue AP : 00:0b:85:52:62:fe detected on Base Rad
io MAC : 00:0b:85:18:b6:50 Interface no:1(802.11
b/g) with RSSI: -78 and SNR: 10
 1 Thu Aug  4 19:54:14 2005 Rogue AP : 00:0b:85:52:19:d8 detected on Base Rad
io MAC : 00:0b:85:18:b6:50 Interface no:1(802.11
b/g) with RSSI: -72 and SNR: 16
 2 Thu Aug  4 19:54:14 2005 Rogue AP : 00:0b:85:26:a1:8d detected on Base Rad
io MAC : 00:0b:85:18:b6:50 Interface no:1(802.11
b/g) with RSSI: -82 and SNR: 6
 3 Thu Aug  4 19:54:14 2005 Rogue AP : 00:0b:85:14:b3:4f detected on Base Rad
io MAC : 00:0b:85:18:b6:50 Interface no:1(802.11
b/g) with RSSI: -56 and SNR: 30
Would you like to display more entries? (y/n)
```

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.
Command Default	None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines You can only use this command from the access point console port when not connected to a controller.

The following example shows how to display the access point version number:

```
AP# show version
```

show watchlist

To display the client watchlist, use the **show watchlist** command.

show watchlist

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to display the client watchlist information:

```
(Cisco Controller) >show watchlist
client watchlist state is disabled
```

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 | lobby-admin-access }
```

Syntax Description		
	apgroups	Displays access point group information.
	summary	Displays a summary of all wireless LANs.
	<i>wlan_id</i>	Displays the configuration of a WLAN. The Wireless LAN identifier ranges from 1 to 512.
	foreignAp	Displays the configuration for support of foreign access points.

lobby-admin-access Display all wlans that have lobby-admin-access enabled.

Command Default None

Usage Guidelines For 802.1X client security type, which creates the PMK cache, the maximum session timeout that can be set is 86400 seconds when the session timeout is disabled. For other client security such as open, WebAuth, and PSK for which the PMK cache is not created, the session timeout value is shown as infinite when session timeout is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.4	Shows WLANs which have lobby-admin-access enabled.

The following example shows how to display a summary of wireless LANs for wlan_id 1:

```
(Cisco Controller) >show wlan 1
WLAN Identifier..... 1
Profile Name..... aicha
Network Name (SSID)..... aicha
Status..... Enabled
MAC Filtering..... Disabled
Broadcast SSID..... Enabled
AAA Policy Override..... Disabled
Network Admission Control
  RADIUS Profiling Status ..... Disabled
  DHCP ..... Disabled
  HTTP ..... Disabled
Client Profiling Status ..... Disabled
  DHCP ..... Disabled
  HTTP ..... Disabled
  Radius-NAC State..... Enabled
  SNMP-NAC State..... Enabled
Quarantine VLAN..... 0
Maximum number of Associated Clients..... 0
Maximum number of Clients per AP Radio..... 200
Number of Active Clients..... 0
Exclusionlist Timeout..... 60 seconds
Session Timeout..... 1800 seconds
User Idle Timeout..... 300 seconds
User Idle Threshold..... 0 Bytes
NAS-identifier..... Talwar1
CHD per WLAN..... Enabled
Webauth DHCP exclusion..... Disabled
Interface..... management
Multicast Interface..... Not Configured
WLAN IPv4 ACL..... unconfigured
WLAN IPv6 ACL..... unconfigured
mDNS Status..... Disabled
mDNS Profile Name..... unconfigured
DHCP Server..... Default
DHCP Address Assignment Required..... Disabled
Static IP client tunneling..... Enabled
PMIPv6 Mobility Type..... none
Quality of Service..... Silver (best effort)
Per-SSID Rate Limits..... Upstream      Downstream
Average Data Rate..... 0                0
Average Realtime Data Rate..... 0        0
```

```

Burst Data Rate..... 0 0
Burst Realtime Data Rate..... 0 0
Per-Client Rate Limits..... Upstream Downstream
Average Data Rate..... 0 0
Average Realtime Data Rate..... 0 0
Burst Data Rate..... 0 0
Burst Realtime Data Rate..... 0 0
Scan Defer Priority..... 4,5,6
Scan Defer Time..... 100 milliseconds
WMM..... Allowed
WMM UAPSD Compliant Client Support..... Disabled
Media Stream Multicast-direct..... Disabled
CCX - AironetIe Support..... Enabled
CCX - Gratuitous ProbeResponse (GPR)..... Disabled
CCX - Diagnostics Channel Capability..... Disabled
Dot11-Phone Mode (7920)..... Disabled
Wired Protocol..... None
Passive Client Feature..... Disabled
IPv6 Support..... Disabled
Peer-to-Peer Blocking Action..... Disabled
Radio Policy..... All
DTIM period for 802.11a radio..... 1
DTIM period for 802.11b radio..... 1
Radius Servers
  Authentication..... Global Servers
  Accounting..... Global Servers
  Interim Update..... Disabled
  Dynamic Interface..... Disabled
Local EAP Authentication..... Enabled (Profile 'Controller_Local_EAP')
Radius NAI-Realm..... Enabled
Security
  802.11 Authentication:..... Open System
  FT Support..... Disabled
  Static WEP Keys..... Disabled
  802.1X..... Disabled
  Wi-Fi Protected Access (WPA/WPA2)..... Enabled
    WPA (SSN IE)..... Enabled
      TKIP Cipher..... Disabled
      AES Cipher..... Enabled
    WPA2 (RSN IE)..... Enabled
      TKIP Cipher..... Disabled
      AES Cipher..... Enabled
Auth Key Management
  802.1x..... Enabled
  PSK..... Disabled
  CCKM..... Enabled
  FT(802.11r)..... Disabled
  FT-PSK(802.11r)..... Disabled
  PMF-1X(802.11w)..... Enabled
  PMF-PSK(802.11w)..... Disabled
FT Reassociation Timeout..... 20
FT Over-The-Air mode..... Enabled
FT Over-The-Ds mode..... Enabled
  GTK Randomization..... Disabled
  SKC Cache Support..... Disabled
  CCKM TSF Tolerance..... 1000
  Wi-Fi Direct policy configured..... Disabled
EAP-Passthrough..... Disabled
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
FlexConnect Local Switching..... Enabled
flexconnect Central Dhcp Flag..... Disabled
flexconnect nat-pat Flag..... Disabled
flexconnect Dns Override Flag..... Disabled
FlexConnect Vlan based Central Switching ..... Disabled
FlexConnect Local Authentication..... Disabled
FlexConnect Learn IP Address..... Enabled
Client MFP..... Optional
PMF..... Disabled
PMF Association Comeback Time..... 1
PMF SA Query RetryTimeout..... 200
Tkip MIC Countermeasure Hold-down Timer..... 60
Call Snooping..... Disabled
Roamed Call Re-Anchor Policy..... Disabled
SIP CAC Fail Send-486-Busy Policy..... Enabled
SIP CAC Fail Send Dis-Association Policy..... Disabled
KTS based CAC Policy..... Disabled
Band Select..... Disabled
Load Balancing..... Disabled
Mobility Anchor List
WLAN ID      IP Address      Status
-----
802.11u..... Enabled
Network Access type..... Chargeable Public Network
Internet service..... Enabled
Network Authentication type..... Not Applicable
HESSID..... 00:00:00:00:00:00
IP Address Type Configuration
  IPv4 Address type..... Available
  IPv6 Address type..... Not Known

Roaming Consortium List
Index      OUI List      In Beacon
-----
  1      313131      Yes
  2      DDBBCC      No
  3      DDDDDD      Yes

Realm configuration summary
Realm index..... 1
Realm name..... jobin
EAP index..... 1
EAP method..... Unsupported
Index      Inner Authentication      Authentication Method
-----
  1      Credential Type      SIM
  2      Tunneled Eap Credential Type      SIM
  3      Credential Type      SIM
  4      Credential Type      USIM
  5      Credential Type      Hardware Token
  6      Credential Type      SoftToken

Domain name configuration summary
Index      Domain name
-----
  1      rom3
  2      ram
  3      rom1

Hotspot 2.0..... Enabled

Operator name configuration summary
Index      Language      Operator name
-----

```

```

1      ros  Robin

Port config summary
Index  IP protocol  Port number  Status
-----
1      1          1          0    Closed
2      1          1          0    Closed
3      1          1          0    Closed
4      1          1          0    Closed
5      1          1          0    Closed
6      1          1          0    Closed
7      1          1          0    Closed

WAN Metrics Info
Link status..... Up
Symmetric Link..... No
Downlink speed..... 4 kbps
Uplink speed..... 4 kbps

MSAP Services..... Disabled
Local Policy
-----
Priority  Policy Name
-----
1      Teacher_access_policy

```

The following example shows how to display a summary of all WLANs:

```

(Cisco Controller) >show wlan summary
Number of WLANs..... 1

WLAN ID  WLAN Profile Name / SSID          Status  Interface Name  PMIPv6
Mobility
-----
1      apssso / apssso                    Disabled management  none

```

The following example shows how to display the configuration for support of foreign access points:

```

(Cisco Controller) >show wlan foreignap
Foreign AP support is not enabled.

```

The following example shows how to display the AP groups:

```

(Cisco Controller) >show wlan apgroups
Total Number of AP Groups..... 1
Site Name..... APUser
Site Description..... <none>
Venue Name..... Not configured
Venue Group Code..... Unspecified
Venue Type Code..... Unspecified
Language Code..... Not configured
AP Operating Class..... 83,84,112,113,115,116,117,118,123
RF Profile
-----
2.4 GHz band..... <none>
5 GHz band..... <none>
WLAN ID      Interface      Network Admission Control      Radio Policy
-----
14           int_4          Disabled                        All
AP Name      Slots  AP Model      Ethernet MAC      Location      Port

```

```

Country Priority
-----
Ibiza      2      AIR-CAP2602I-A-K9  44:2b:03:9a:8a:73  default location  1
US        1
Larch     2      AIR-CAP3502E-A-K9  f8:66:f2:ab:23:95  default location  1
US        1
Zest      2      AIR-CAP3502I-A-K9  00:22:90:91:6d:b6  ren 1
US        1

Number of Clients..... 1

MAC Address      AP Name      Status      Device Type
-----
24:77:03:89:9b:f8  ap2      Associated  Android
    
```




Config Commands

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Config 802.11-a Commands

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** command.

```
config {802.11-a49 | 802.11-a58} {enable | disable} cisco_ap
```

Syntax Description		
	802.11-a49	Specifies the 4.9-GHz public safety channel.
	802.11-a58	Specifies the 5.8-GHz public safety channel.
	enable	Enables the use of this frequency on the designated access point.
	disable	Disables the use of this frequency on the designated access point.
	<i>cisco_ap</i>	Name of the access point to which the command applies.

Command Default The default 4.9-GHz and 5.8-GHz public safety channels on an access point is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the 4.9-GHz public safety channel on ap_24 access point:

```
(Cisco Controller) > config 802.11-a
```

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}
```

Syntax Description		
	802.11-a49	Specifies the 4.9-GHz public safety channel.
	802.11-a58	Specifies the 5.8-GHz public safety channel.
	<i>ant_gain</i>	Value in .5-dBi units (for instance, 2.5 dBi = 5).

<i>cisco_ap</i>	Name of the access point to which the command applies.
global	Specifies the antenna gain value to all channels.
<i>channel_no</i>	Antenna gain value for a specific channel.

Command Default Channel properties are disabled.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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 reenab the 802.11 Cisco radio.

The following example shows how to configure an 802.11-a49 external antenna gain of 10 dBi for AP1:

```
(Cisco Controller) >config 802.11-a antenna extAntGain 10 AP1
```

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.

```
config {802.11-a49 | 802.11-a58} channel ap cisco_ap {global | channel_no}
```

Syntax Description

802.11-a49	Specifies the 4.9-GHz public safety channel.
802.11-a58	Specifies the 5.8-GHz public safety channel.
<i>cisco_ap</i>	Name of the access point to which the command applies.
global	Enables the Dynamic Channel Assignment (DCA) on all 4.9-GHz and 5.8-GHz subband radios.
<i>channel_no</i>	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.

Command Default Channel properties are disabled.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the channel properties:

```
(Cisco Controller) >config 802.11-a channel 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		
	802.11-a49	Specifies the 4.9-GHz public safety channel.
	802.11-a58	Specifies the 5.8-GHz public safety channel.
	txpower	Configures transmission power properties.
	ap	Configures access point channel settings.
	<i>cisco_ap</i>	Name of the access point to which the command applies.
	global	Applies the transmission power value to all channels.
	<i>power_level</i>	Transmission power value to the designated mesh access point. The range is from 1 to 5.

Command Default The default transmission power properties for the 4.9-GHz and 5.8-GHz public safety channels on an access point is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure an 802.11-a49 transmission power level of 4 for AP1:

```
(Cisco Controller) >config 802.11-a txpower ap 4 AP1
```

Configure 802.11b Commands

Use the **config 802.11b** commands to configure settings specifically for an 802.11b/g network.

config 802.11b 11gSupport

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}

Syntax Description	enable	Enables the 802.11g network.
	disable	Disables the 802.11g network.
Command Default	The default network for Cisco wireless LAN solution 802.11g is enabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable the 802.11g network:

```
(Cisco Controller) > 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!
```

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}

Syntax Description	long	Specifies the long 802.11b preamble.
	short	Specifies the short 802.11b preamble.

Command Default The default 802.11b preamble value is short.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to change the 802.11b preamble to short:

```
(Cisco Controller) >config 802.11b preamble short
(Cisco Controller) >(reset system with save)
```

Configure 802.11h Commands

Use the **config 802.11h** commands to configure settings specifically for an 802.11h network.

config 802.11h channelswitch

To configure an 802.11h channel switch announcement, use the **config 802.11h channelswitch** command.

config 802.11h channelswitch {enable {loud | quiet} | disable}

Syntax Description	enable	Enables the 802.11h channel switch announcement.
	loud	Enables the 802.11h channel switch announcement in the loud mode. The 802.11h-enabled clients can send packets while switching channel.
	quiet	Enables 802.11h-enabled clients to stop transmitting packets immediately because the AP has detected radar and client devices should also quit transmitting to reduce interference.
	disable	Disables the 802.11h channel switch announcement.

Command Default None

Command History	Release	Modification
	7.6	<ul style="list-style-type: none"> This command was introduced in a release earlier than Release 7.6. The loud and quiet parameters were introduced.

The following example shows how to disable an 802.11h switch announcement:

```
(Cisco Controller) >config 802.11h channelswitch disable
```

config 802.11h powerconstraint

To configure the 802.11h power constraint value, use the **config 802.11h powerconstraint** command.

config 802.11h powerconstraint *value*

Syntax Description	<i>value</i>	802.11h power constraint value.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the 802.11h power constraint to 5:

```
(Cisco Controller) >config 802.11h powerconstraint 5
```

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

<i>cisco_ap</i>	Cisco lightweight access point name.
-----------------	--------------------------------------

Command Default

None

Command History

Release Modification

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

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

```
(Cisco Controller) >config 802.11h setchannel ap02
```

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}
```

Syntax Description		
	a	Specifies the 802.11a network settings.
	b	Specifies the 802.11b/g network settings.
	enable	Enables the 802.11n support.
	disable	Disables the 802.11n support.

Command Default None

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the 802.11n support on an 802.11a network:

```
(Cisco Controller) >config 802.11a 11nsupport enable
```

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.

Command Default

Priority 0 is enabled.

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.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >config 802.11a 11nsupport a-mpdu tx priority all enable
```

config 802.11 11nsupport a-mpdu tx scheduler

To configure the 802.11n-5 GHz A-MPDU transmit aggregation scheduler, use the **config 802.11 11nsupport a-mpdu tx scheduler** command.

config 802.11 {a | b} 11nsupport a-mpdu tx scheduler {enable | disable | timeout rt *timeout-value*}

Syntax Description

enable	Enables the 802.11n-5 GHz A-MPDU transmit aggregation scheduler.
disable	Disables the 802.11n-5 GHz A-MPDU transmit aggregation scheduler.
timeout rt	Configures the A-MPDU transmit aggregation scheduler realtime traffic timeout.

<i>timeout-value</i>	Timeout value in milliseconds. The valid range is between 1 millisecond to 1000 milliseconds.
----------------------	---

Command Default None

Usage Guidelines Ensure that the 802.11 network is disabled before you enter this command.

Command History

Release	Modification
---------	--------------

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

The following example shows how to configure the A-MPDU transmit aggregation scheduler realtime traffic timeout of 100 milliseconds:

```
(Cisco Controller) >config 802.11 11n support a-mpdu tx scheduler timeout rt 100
```

config 802.11 11n support antenna

To configure an access point to use a specific antenna, use the **config 802.11 11n support antenna** command.

config 802.11{ a | b } **11n support antenna** *cisco_ap* {A | B | C | D} {enable | disable}

Syntax Description		
a	Specifies the 802.11a/n network.	
b	Specifies the 802.11b/g/n network.	
<i>cisco_ap</i>	Access point.	
A/B/C/D	Specifies an antenna port.	
enable	Enables the configuration.	
disable	Disables the configuration.	

Command Default None

Usage Guidelines Cisco Catalyst 9120AXE, 9120AXP, and Cisco Catalyst 9130AXE access points should have at least two antennas configured if you want to disable this configuration.

Command History

Release	Modification
---------	--------------

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

The following example shows how to configure transmission to a single antenna for legacy orthogonal frequency-division multiplexing:

```
(Cisco Controller) >config 802.11 11n support antenna AP1 C enable
```

config 802.11 11nsupport guard-interval

To configure the guard interval, use the **config 802.11 11nsupport guard-interval** command.

config 802.11 {a | b} 11nsupport guard-interval {any | long}

Syntax Description	any	Enables either a short or a long guard interval.
	long	Enables only a long guard interval.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a long guard interval:

```
(Cisco Controller) >config 802.11 11nsupport guard-interval long
```

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.

config 802.11 {a | b} 11nsupport mcs tx {0-15} {enable | disable}

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	11nsupport	Specifies support for 802.11n devices.

mcs tx	Specifies the modulation and coding scheme data rates as follows: <ul style="list-style-type: none"> • 0 (7 Mbps) • 1 (14 Mbps) • 2 (21 Mbps) • 3 (29 Mbps) • 4 (43 Mbps) • 5 (58 Mbps) • 6 (65 Mbps) • 7 (72 Mbps) • 8 (14 Mbps) • 9 (29 Mbps) • 10 (43 Mbps) • 11 (58 Mbps) • 12 (87 Mbps) • 13 (116 Mbps) • 14 (130 Mbps) • 15 (144 Mbps)
---------------	--

enable	Enables this configuration.
---------------	-----------------------------

disable	Disables this configuration.
----------------	------------------------------

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to specify MCS rates:

```
(Cisco Controller) >config 802.11a 11nsupport mcs tx 5 enable
```

config 802.11 11nsupport rifs

To configure the Reduced Interframe Space (RIFS) between data frames and its acknowledgment, use the **config 802.11 11nsupport rifs** command.

```
config 802.11{a | b} 11nsupport rifs {enable | disable}
```

Syntax Description	enable	Enables RIFS for the 802.11 network.
	disable	Disables RIFS for the 802.11 network.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to enable RIFS:

```
(Cisco Controller) >config 802.11a 11nsupport rifs enable
```

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	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	enable	Enables the diversity.
	sideA	Specifies the diversity between the internal antennas and an external antenna connected to the Cisco lightweight access point left port.
	sideB	Specifies the diversity between the internal antennas and an external antenna connected to the Cisco lightweight access point right port.
	cisco_ap	Cisco lightweight access point name.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable antenna diversity for AP01 on an 802.11b network:

```
(Cisco Controller) >config 802.11a antenna diversity enable AP01
```

The following 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):

```
(Cisco Controller) >config 802.11a antenna diversity sideA AP01
```

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.
<i>antenna_gain</i>	Antenna gain in 0.5 dBm units (for example, 2.5 dBm = 5).
<i>cisco_ap</i>	Cisco lightweight access point name.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to configure an *802.11a* external antenna gain of *0.5 dBm* for *API*:

```
(Cisco Controller) >config 802.11 antenna extAntGain 1 API
```

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
```

Syntax Description		
a	Specifies the 802.11a network.	
b	Specifies the 802.11b/g network.	
omni	Specifies to use both internal antennas.	
sectorA	Specifies to use only the side A internal antenna.	
sectorB	Specifies to use only the side B internal antenna.	
<i>cisco_ap</i>	Cisco lightweight access point name.	

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure access point AP01 antennas for a 360-degree omnidirectional pattern on an 802.11b network:

```
(Cisco Controller) >config 802.11 antenna mode omni AP01
```

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
```

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
internal		Specifies the internal antenna.
external		Specifies the external antenna.
<i>cisco_ap</i>		Cisco lightweight access point name.

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure access point AP02 on an 802.11b network to use the internal antenna:

```
(Cisco Controller) >config 802.11a antenna selection internal AP02
```

Configure 802.11 CleanAir Commands

Use the **config 802.11 cleanair** commands to configure cleanair settings on different 802.11 networks.

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 | 80 | 160 | best }
```

Syntax Description

a	Configures the 802.11a radio on slot 1 and 802.11ac/ax radio on slot 2.
b	Specifies the 802.11b/g radio.
<i>cisco_ap</i>	Access point.
20	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.
40	Allows 40-MHz 802.11n radios to communicate using two adjacent 20-MHz channels bonded together.
80	Allows 80-MHz 802.11ac/ax radios to communicate using two adjacent 40-MHz channels bonded together.
160	Allows 160-MHz 802.11ac/ax radios to communicate.
best	In this mode, the device selects the optimum bandwidth channel.

Command Default

The default channel width is 20.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.3	This command was enhanced in this release with the inclusion of 160 MHz and best channel bandwidth modes.
8.9	This command was enhanced to support 802.11ax.

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-MHz or 40-MHz mode overrides the globally configured DCA channel width setting (configured by using the **config advanced 802.11 channel dca chan-width** 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.

The following example shows how to configure the channel width for access point AP01 on an 802.11 network using 40-MHz channels:

```
(Cisco Controller) >config 802.11a chan_width AP01 40
```

config 802.11 cleanair device

To configure CleanAir interference device types, use the **config 802.11 cleanair device** command.

config 802.11{a | b} **cleanair device** {enable | disable | reporting {enable | disable}}
device_type

Syntax Description		
	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	enable	Enables the CleanAir reporting for the interference device type.
	disable	Disables the CleanAir reporting for the interference device type.
	reporting	Configures CleanAir interference device reporting.
	enable	Enables the 5-GHz Cleanair interference devices reporting.
	disable	Disables the 5-GHz Cleanair interference devices reporting.

<i>device_type</i>	<p>Interference device type. The device type are as follows:</p> <ul style="list-style-type: none"> • 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.
--------------------	---

Command Default

The default setting CleanAir reporting for the interference device type is disabled.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the CleanAir reporting for the device type jammer:

```
(Cisco Controller) > config 802.11a cleanair device enable jammer
```

The following example shows how to disable the CleanAir reporting for the device type video:

```
(Cisco Controller) > config 802.11a cleanair device disable video
```

The following example shows how to enable the CleanAir interference device reporting:

```
(Cisco Controller) > config 802.11a cleanair device reporting enable
```

config 802.11 cleanair alarm

To configure the triggering of the air quality alarms, use the **config 802.11 cleanair alarm** command.

```
config 802.11 { a | b } cleanair alarm { air-quality { disable | enable | threshold alarm_threshold } | device { disable device_type | enable device_type | reporting { disable | enable } | unclassified { disable | enable | threshold alarm_threshold } }
```

Syntax Description

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
air-quality	Configures the 5-GHz air quality alarm.
disable	Disables the 5-GHz air quality alarm.
enable	Enables the 5-GHz air quality alarm.
threshold	Configures the 5-GHz air quality alarm threshold.
<i>alarm_threshold</i>	Air quality alarm threshold (1 is bad air quality, and 100 is good air quality).
device	Configures the 5-GHz cleanair interference devices alarm.
all	Configures all the device types at once.
reporting	Configures the 5-GHz CleanAir interference devices alarm reporting.
unclassified	Configures the 5-GHz air quality alarm on exceeding unclassified category severity.
<i>device_type</i>	Device types. The device types are as follows: <ul style="list-style-type: none"> • 802.11-nonstd—Devices using nonstandard Wi-Fi channels. • 802.11-inv—Devices using spectrally inverted Wi-Fi 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.

Command Default The default setting for 5-GHz air quality alarm is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the CleanAir alarm to monitor the air quality:

```
(Cisco Controller) > config 802.11a cleanair alarm air-quality enable
```

The following example shows how to enable the CleanAir alarm for the device type video:

```
(Cisco Controller) > config 802.11a cleanair alarm device enable video
```

The following example shows how to enable alarm reporting for the CleanAir interference devices:

```
(Cisco Controller) > config 802.11a cleanair alarm device reporting enable
```

Configure 802.11 CAC Commands

Use the **config 802.11 cac** commands to configure Call Admission Control (CAC) protocol settings.

config 802.11 cac defaults

To configure the default Call Admission Control (CAC) parameters for the 802.11a and 802.11b/g network, use the **config 802.11 cac defaults** command.

config 802.11 {a | b} cac defaults

Syntax Description

a Specifies the 802.11a network.

b Specifies the 802.11b/g network.

Usage Guidelines

CAC commands for video applications on the 802.11a or 802.11b/g network require that the WLAN you are planning to modify is configured for the Wi-Fi Multimedia (WMM) protocol and the quality of service (QoS) level be set to Gold.

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 want 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 want 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.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to configure the default CAC parameters for the 802.11a network:

```
(Cisco Controller) > config 802.11 cac defaults
```

Related Commands

show cac voice stats

show cac voice summary

show cac video stats

show cac video summary

config 802.11 cac video tspec-inactivity-timeout

config 802.11 cac video max-bandwidth

config 802.11 cac video acm
config 802.11 cac video sip
config 802.11 cac video roam-bandwidth
config 802.11 cac load-based
config 802.11 cac media-stream
config 802.11 cac multimedia
config 802.11 cac video cac-method
debug cac

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}

Syntax Description

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
enable	Enables video CAC settings.
disable	Disables video CAC settings.

Command Default

The default video CAC settings for the 802.11a or 802.11b/g network is disabled.

Usage Guidelines

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

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

- Disable all WLANs with WMM enabled by entering the **config wlan disable wlan_id** command.
- Disable the radio network you want 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 want 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.

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the video CAC for the 802.11a network:

```
(Cisco Controller) > config 802.11 cac video acm enable
```

The following example shows how to disable the video CAC for the 802.11b network:

```
(Cisco Controller) > config 802.11 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

config 802.11 cac video cac-method

To configure the Call Admission Control (CAC) method for video applications on the 802.11a or 802.11b/g network, use the **config 802.11 cac video cac-method** command.

```
config 802.11 { a | b } cac video cac-method { static | load-based }
```

Syntax Description

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
static	<p>Enables the static CAC method for video applications on the 802.11a or 802.11b/g network.</p> <p>Static or bandwidth-based CAC enables the client to specify how much bandwidth or shared medium time is required to accept a new video request and in turn enables the access point to determine whether it is capable of accommodating the request.</p>
load-based	<p>Enables the load-based CAC method for video applications on the 802.11a or 802.11b/g network.</p> <p>Load-based or dynamic CAC incorporates a measurement scheme that takes into account the bandwidth consumed by all traffic types from itself, from co-channel access points, and by collocated channel interference. Load-based CAC also covers the additional bandwidth consumption results from PHY and channel impairment. The access point admits a new call only if the channel has enough unused bandwidth to support that call.</p> <p>Load-based CAC is not supported if SIP-CAC is enabled.</p>

Command Default

Static.

Usage Guidelines

CAC commands for video applications on the 802.11a or 802.11b/g network require that the WLAN you are planning to modify is configured for the Wi-Fi Multimedia (WMM) protocol and the quality of service (QoS) level be set to Gold.

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 want 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 want 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.

Video CAC consists of two parts: Unicast Video-CAC and MC2UC CAC. If you need only Unicast Video-CAC, you must configure only static mode. If you need only MC2UC CAC, you must configure Static or Load-based CAC. Load-based CAC is not supported if SIP-CAC is enabled.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to enable the static CAC method for video applications on the 802.11a network:

```
(Cisco Controller) > config 802.11 cac video cac-method static
```

Related Commands

```
show cac voice stats
show cac voice summary
show cac video stats
show cac video summary
config 802.11 cac video tspec-inactivity-timeout
config 802.11 cac video max-bandwidth
config 802.11 cac video acm
config 802.11 cac video sip
config 802.11 cac video roam-bandwidth
config 802.11 cac load-based
config 802.11 cac defaults
config 802.11 cac media-stream
config 802.11 cac multimedia
debug cac
```

config 802.11 cac video load-based

To enable or disable load-based Call Admission Control (CAC) for video applications on the 802.11a or 802.11b/g network, use the **config 802.11 cac video load-based** command.

config 802.11 {a | b} cac video load-based {enable | disable}

Syntax Description

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
enable	Enables load-based CAC for video applications on the 802.11a or 802.11b/g network. Load-based or dynamic CAC incorporates a measurement scheme that takes into account the bandwidth consumed by all traffic types from itself, from co-channel access points, and by collocated channel interference. Load-based CAC also covers the additional bandwidth consumption results from PHY and channel impairment. The access point admits a new call only if the channel has enough unused bandwidth to support that call.
disable	Disables load-based CAC method for video applications on the 802.11a or 802.11b/g network.

Command Default

Disabled.

Usage Guidelines

CAC commands for video applications on the 802.11a or 802.11b/g network require that the WLAN you are planning to modify is configured for the Wi-Fi Multimedia (WMM) protocol and the quality of service (QoS) level be set to Gold.

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 want 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 want 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.

Video CAC consists of two parts: Unicast Video-CAC and MC2UC CAC. If you need only Unicast Video-CAC, you must configure only static mode. If you need only MC2UC CAC, you must configure Static or Load-based CAC. Load-based CAC is not supported if SIP-CAC is enabled.



Note Load-based CAC is not supported if SIP-CAC is enabled.

Command History

Release Modification

7.6	This command was introduced in a release earlier than Release 7.6.
------------	--

This example shows how to enable load-based CAC method for video applications on the 802.11a network:

```
(Cisco Controller) > config 802.11 cac video load-based enable
```

Related Commands

show cac voice stats
show cac voice summary
show cac video stats
show cac video summary
config 802.11 cac video tspec-inactivity-timeout
config 802.11 cac video max-bandwidth
config 802.11 cac video acm
config 802.11 cac video sip
config 802.11 cac video roam-bandwidth
config 802.11 cac load-based
config 802.11 cac defaults
config 802.11 cac media-stream
config 802.11 cac multimedia
config 802.11 cac video cac-method
debug cac

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

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
<i>bandwidth</i>	Bandwidth percentage value from 5 to 85%.

Command Default

The default maximum bandwidth allocated to clients for video applications on the 802.11a or 802.11b/g network is 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 the Wi-Fi Multimedia (WMM) protocol and the quality of service (QoS) level be set to Platinum.

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

- Disable all WLANs with WMM enabled by entering the **config wlan disable wlan_id** command.
- Disable the radio network you want 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 want 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.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > config 802.11 cac video max-bandwidth 50
```

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 media-stream

To configure media stream Call Admission Control (CAC) voice and video quality parameters for 802.11a and 802.11b networks, use the **config 802.11 cac media-stream** command.

```
config 802.11 {a | b} cac media-stream multicast-direct {max-retry-percent retry-percentage | min-client-rate dot11-rate }
```

Syntax Description

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
multicast-direct	Configures CAC parameters for multicast-direct media streams.

max-retry-percent	Configures the percentage of maximum retries that are allowed for multicast-direct media streams.
<i>retry-percentage</i>	Percentage of maximum retries that are allowed for multicast-direct media streams.
min-client-rate	Configures the minimum transmission data rate to the client for multicast-direct media streams.
<i>dot11-rate</i>	Minimum transmission data rate to the client for multicast-direct media streams. Rate in kbps at which the client can operate. If the transmission data rate is below this rate, either the video will not start or the client may be classified as a bad client. The bad client video can be demoted for better effort QoS or subject to denial. The available data rates are 6000, 9000, 12000, 18000, 24000, 36000, 48000, 54000, and 11n rates.

Command Default

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

Usage Guidelines

CAC commands for video applications on the 802.11a or 802.11b/g network 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 Gold.

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 want 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 want 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.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > config 802.11 cac media-stream multicast-direct max-retry-percent 90
```

Related Commands

show cac voice stats
show cac voice summary

show cac video stats
show cac video summary
config 802.11 cac video tspec-inactivity-timeout
config 802.11 cac video max-bandwidth
config 802.11 cac video acm
config 802.11 cac video sip
config 802.11 cac video roam-bandwidth
config 802.11 cac load-based
config 802.11 cac defaults
config 802.11 cac multimedia
debug cac

config 802.11 cac multimedia

To configure the CAC media voice and video quality parameters for 802.11a and 802.11b networks, use the **config 802.11 cac multimedia** command.

config 802.11 { a | b } cac multimedia max-bandwidth *bandwidth*

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

Command Default The default maximum bandwidth allocated to Wi-Fi Multimedia (WMM) clients for voice and video applications on the 802.11a or 802.11b/g network is 85%.

Usage Guidelines Call Admission Control (CAC) commands for video applications on the 802.11a or 802.11b/g network 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 Gold.

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 want 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 want 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.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the percentage of the maximum bandwidth allocated to WMM clients for voice and video applications on the 802.11a network:

```
(Cisco Controller) > config 802.11 cac multimedia max-bandwidth 80
```

Related Commands

show cac voice stats
show cac voice summary
show cac video stats
show cac video summary
config 802.11 cac video tspec-inactivity-timeout
config 802.11 cac video max-bandwidth
config 802.11 cac video acm
config 802.11 cac video sip
config 802.11 cac video roam-bandwidth
config 802.11 cac load-based
config 802.11 cac defaults
debug cac

config 802.11 cac voice roam-bandwidth

To configure the percentage of the Call Admission Control (CAC) 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.
<i>bandwidth</i>	Bandwidth percentage value from 0 to 85%.

Command Default The default CAC maximum allocated bandwidth reserved for roaming voice clients on the 802.11a or 802.11b/g network is 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.

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

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

- Disable all WLANs with WMM enabled by entering the **config wlan disable wlan_id** command.
- Disable the radio network you want 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 want 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.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > config 802.11 cac voice roam-bandwidth 10
```

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 video sip

To enable or disable video Call Admission Control (CAC) for nontraffic specifications (TSPEC) SIP clients using video applications on the 802.11a or 802.11b/g network, use the **config 802.11 cac video sip** command.

```
config 802.11 {a | b} cac video sip {enable | disable}
```

Syntax Description

a	Specifies the 802.11a network.
---	--------------------------------

b	Specifies the 802.11b/g network.
enable	Enables video CAC for non-TSPEC SIP clients using video applications on the 802.11a or 802.11b/g network. When you enable video CAC for non-TSPEC SIP clients, you can use applications like Facetime and CIUS video calls.
disable	Disables video CAC for non-TSPEC SIP clients using video applications on the 802.11a or 802.11b/g network.

Command Default

None

Usage Guidelines

CAC commands for video applications on the 802.11a or 802.11b/g network require that the WLAN you are planning to modify is configured for the Wi-Fi Multimedia (WMM) protocol and the quality of service (QoS) level be set to Gold.

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 want 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 want 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.
- Enable call snooping on the WLAN on which the SIP client is present by entering the **config wlan call-snoop enable** *wlan_id* command.

The following example shows how to enable video CAC for non-TSPEC SIP clients using video applications on the 802.11a network:

```
(Cisco Controller) > config 802.11 cac video sip enable
```

Related Commands

config 802.11 cac video tspec-inactivity-timeout
config 802.11 cac video max-bandwidth
config 802.11 cac video acm
config 802.11 cac video cac-method
config 802.11 cac video load-based
config 802.11 cac video roam-bandwidth

config 802.11 cac video tspec-inactivity-timeout

To process or ignore the Call Admission Control (CAC) 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}

Syntax Description

a	Specifies the 802.11a network.
ab	Specifies the 802.11b/g network.
enable	Processes the TSPEC inactivity timeout messages.
ignore	Ignores the TSPEC inactivity timeout messages.

Command Default

The default CAC WMM TSPEC inactivity timeout received from an access point is disabled (ignore).

Usage Guidelines

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

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

- Disable all WLANs with WMM enabled by entering the **config wlan disable wlan_id** command.
- Disable the radio network you want 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 want 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.

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

```
(Cisco Controller) > 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:

```
(Cisco Controller) > config 802.11a 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.	

Command Default The default bandwidth-based voice CAC for the 802.11a or 802.11b/g network id disabled.

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

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

- Disable all WLANs with WMM enabled by entering the **config wlan disable wlan_id** command.
- Disable the radio network you want 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 want 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.

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

```
(Cisco Controller) > config 802.11c cac voice acm enable
```

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

```
(Cisco Controller) > 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	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	<i>bandwidth</i>	Bandwidth percentage value from 5 to 85%.
Command Default	The default maximum bandwidth allocated to clients for voice applications on the 802.11a or 802.11b/g network is 0%.	
Usage Guidelines	<p>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.</p> <p>CAC commands require that the WLAN you are planning to modify is configured for the Wi-Fi Multimedia (WMM) protocol and the quality of service (QoS) level be set to Platinum.</p> <p>Before you can configure CAC parameters on a network, you must complete the following prerequisites:</p> <ul style="list-style-type: none"> • Disable all WLANs with WMM enabled by entering the config wlan disable wlan_id command. • Disable the radio network you want 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 want 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. <p>For complete instructions, see the “Configuring Voice and Video Parameters” section in the “Configuring Controller Settings” chapter of the <i>Cisco Wireless LAN Controller Configuration Guide</i> for your release.</p>	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > config 802.11a cac voice max-bandwidth 50
```

Related Commands	config 802.11 cac voice roam-bandwidth
	config 802.11 cac voice stream-size
	config 802.11 exp-bwreq
	config 802.11 tsm
	config wlan save
	show wlan
	show wlan summary
	config 802.11 cac voice tspec-inactivity-timeout
	config 802.11 cac voice load-based

config 802.11 cac video acm

config 802.11 cac voice roam-bandwidth

To configure the percentage of the Call Admission Control (CAC) 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.
	<i>bandwidth</i>	Bandwidth percentage value from 0 to 85%.
Command Default	The default CAC maximum allocated bandwidth reserved for roaming voice clients on the 802.11a or 802.11b/g network is 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.

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

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

- Disable all WLANs with WMM enabled by entering the **config wlan disable** *wlan_id* command.
- Disable the radio network you want 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 want 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.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > config 802.11 cac voice roam-bandwidth 10
```

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 802.11 { a | b } cac voice tspec-inactivity-timeout { enable | ignore }
```

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
enable		Processes the TSPEC inactivity timeout messages.
ignore		Ignores the TSPEC inactivity timeout messages.

Command Default The default WMM TSPEC inactivity timeout received from an access point is 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 want 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 want 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.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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


```
(Cisco Controller) > config 802.11 cac voice tspec-inactivity-timeout enable
```

Related Commands

- config 802.11 cac voice load-based
- config 802.11 cac voice roam-bandwidth
- 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 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		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
enable		Enables load-based CAC.
disable		Disables load-based CAC.

Command Default The default load-based CAC for the 802.11a or 802.11b/g network is disabled.

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

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

- Disable all WLANs with WMM enabled by entering the **config wlan disable wlan_id command**.
- Disable the radio network you want 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 want 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.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the voice load-based CAC parameters:

```
(Cisco Controller) > config 802.11a cac voice load-based enable
```

The following example shows how to disable the voice load-based CAC parameters:

```
(Cisco Controller) > config 802.11a cac voice load-based disable
```

Related Commands

- config 802.11 cac voice tspec-inactivity-timeout
- config 802.11 cac video max-bandwidth
- config 802.11 cac video acm
- config 802.11 cac voice stream-size

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 Call Admission Control (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
```

Syntax Description	
a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
<i>number</i>	Number of calls to be allowed per radio.

Command Default The default maximum number of voice call supported by the radio is 0, which means that there is no maximum limit check for the number of calls.

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

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

- Disable all WLANs with WMM enabled by entering the **config wlan disable wlan_id command**.
- Disable the radio network you want 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 want 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.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the maximum number of voice calls supported by radio:

```
(Cisco Controller) > config 802.11 cac voice max-calls 10
```

Related Commands

config 802.11 cac voice roam-bandwidth
config 802.11 cac voice stream-size
config 802.11 exp-bwreq
config 802.11 cac voice tspec-inactivity-timeout
config 802.11 cac voice load-based
config 802.11 cac video acm

config 802.11 cac voice sip bandwidth



Note SIP bandwidth and sample intervals are used to compute per call bandwidth for the SIP-based Call Admission Control (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
```

Syntax Description

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
<i>bw_kbps</i>	Bandwidth in kbps.
sample-interval	Specifies the packetization interval for SIP codec.
<i>number_msecs</i>	Packetization sample interval in msecs. The sample interval for SIP codec is 20 seconds.

Command Default

None

Usage Guidelines

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

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

- Disable all WLANs with WMM enabled by entering the **config wlan disable** *wlan_id* command.

- Disable the radio network you want 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 want 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.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the bandwidth and voice packetization interval for a SIP codec:

```
(Cisco Controller) > config 802.11 cac voice sip bandwidth 10 sample-interval 40
```

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 Call Admission Control (CAC) 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
```

Syntax Description

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
g711	Specifies CAC parameters for the SIP G711 codec.
g729	Specifies CAC parameters for the SIP G729 codec.
sample-interval	Specifies the packetization interval for SIP codec.
<i>number_msecs</i>	Packetization interval in msecs. The sample interval for SIP codec value is 20 seconds.

Command Default

The default CAC codec parameter is g711.

Usage Guidelines

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

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

- Disable all WLANs with WMM enabled by entering the **config wlan disable** *wlan_id* command.
- Disable the radio network you want 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 want 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.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the codec name and sample interval as parameters for SIP G711 codec:

```
(Cisco Controller) > config 802.11a cac voice sip codec g711 sample-interval 40
```

This example shows how to configure the codec name and sample interval as parameters for SIP G729 codec:

```
(Cisco Controller) > config 802.11a cac voice sip codec g729 sample-interval 40
```

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 mean_datarate
```

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	stream-size	Configures the maximum data rate for the stream.
	<i>stream_size</i>	Range of stream size is between 84000 and 92100.
	<i>number</i>	Number (1 to 5) of voice streams.
	mean_datarate	Configures the mean data rate.
	max-streams	Configures the mean data rate of a voice stream.
	<i>mean_datarate</i>	Mean data rate (84 to 91.2 kbps) of a voice stream.

Command Default 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 the Wi-Fi Multimedia (WMM) protocol and the quality of service (QoS) level be set to Platinum.

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

- Disable all WLANs with WMM enabled by entering the **config wlan disable wlan_id** command.
- Disable the radio network you want 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 want 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.

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following 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:

```
(Cisco Controller) > config 802.11 cac voice stream-size 5 max-streams size 85
```

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 Commands

Use the **config 802.11** commands to configure settings for an 802.11 network.

config 802.11 beacon period

To change the beacon period globally for an 802.11a, 802.11b, or other supported 802.11 network, use the **config 802.11 beacon period** command.

config 802.11 { a | b } **beacon period** *time_units*



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

Syntax Description

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
<i>time_units</i>	Beacon interval in time units (TU). One TU is 1024 microseconds.

Command Default

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.

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

This example shows how to configure an 802.11a network for a beacon period of 120 time units:

```
(Cisco Controller) > config 802.11 beacon period 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 (ClientLink) 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 }
```

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
global		Specifies all lightweight access points.
ap <i>ap_name</i>		Specifies the Cisco access point name.
enable		Enables beamforming.
disable		Disables beamforming.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable Beamforming on the 802.11a network:

```
(Cisco Controller) >config 802.11 beamforming global enable
```

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 | restart] } | ap { ap_name [global | channel] }
```

Syntax Description

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
global	Specifies the 802.11a operating channel that is automatically set by RRM and overrides the existing configuration setting.
auto	(Optional) Specifies that the channel is automatically set by Radio Resource Management (RRM) for the 802.11a radio.
once	(Optional) Specifies that the channel is automatically set once by RRM.
off	(Optional) Specifies that the automatic channel selection by RRM is disabled.
restarts	(Optional) Restarts the aggressive DCA cycle.
<i>ap_name</i>	Access point name.
<i>channel</i>	Manual channel number to be used by the access point. The supported channels depend on the specific access point used and the regulatory region.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to have RRM automatically configure the 802.11a channels for automatic channel configuration based on the availability and interference:

```
(Cisco Controller) >config 802.11a channel global auto
```

The following example shows how to configure the 802.11b channels one time based on the availability and interference:

```
(Cisco Controller) >config 802.11b channel global once
```

The following example shows how to turn 802.11a automatic channel configuration off:

```
(Cisco Controller) >config 802.11a channel global off
```

The following example shows how to configure the 802.11b channels in access point AP01 for automatic channel configuration:

```
(Cisco Controller) >config 802.11b AP01 channel global
```

The following example shows how to configure the 802.11a channel 36 in access point AP01 as the default channel:

```
(Cisco Controller) >config 802.11a channel AP01 36
```

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	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	<i>cisco_ap</i>	Name of the Cisco access point.
	global	Enables auto-RF on the designated access point.
	<i>channel_no</i>	Default channel from 1 to 26, inclusive.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable auto-RF for access point AP01 on an 802.11b network:

```
(Cisco Controller) >config 802.11b channel ap AP01 global
```

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 | 80 | 160 | best }
```

Syntax Description	a	Configures the 802.11a radio on slot 1 and 802.11ac/ax radio on slot 2.
---------------------------	----------	---

b	Specifies the 802.11b/g radio.
<i>cisco_ap</i>	Access point.
20	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.
40	Allows 40-MHz 802.11n radios to communicate using two adjacent 20-MHz channels bonded together.
80	Allows 80-MHz 802.11ac/ax radios to communicate using two adjacent 40-MHz channels bonded together.
160	Allows 160-MHz 802.11ac/ax radios to communicate.
best	In this mode, the device selects the optimum bandwidth channel.

Command Default The default channel width is 20.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.3	This command was enhanced in this release with the inclusion of 160 MHz and best channel bandwidth modes.
	8.9	This command was enhanced to support 802.11ax.

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-MHz or 40-MHz mode overrides the globally configured DCA channel width setting (configured by using the **config advanced 802.11 channel dca chan-width** 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.

The following example shows how to configure the channel width for access point AP01 on an 802.11 network using 40-MHz channels:

```
(Cisco Controller) >config 802.11a chan_width AP01 40
```

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* }

Syntax Description		
a		Configures the 802.11a on slot 1 and 802.11ac/ax radio on slot 2. radio.
b		Specifies the 802.11b/g network.
network		Disables transmission for the entire 802.11a network.
<i>cisco_ap</i>		Individual Cisco lightweight access point radio.

Command Default The transmission is enabled for the entire network by default.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

- 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.

The following example shows how to disable the entire 802.11a network:

```
(Cisco Controller) >config 802.11a disable network
```

The following example shows how to disable access point AP01 802.11b transmissions:

```
(Cisco Controller) >config 802.11b disable AP01
```

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** }

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
enable		Enables the support for this command.
disable		Disables the support for this command.

Command Default The default DTPC setting for an 802.11 network is enabled.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable DTTPC for an 802.11a network:

```
(Cisco Controller) > config 802.11a dttpc disable
```

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

a	Configures the 802.11a radio on slot 1 and 802.11ac/ax on slot 2.
b	Specifies the 802.11b/g network.
network	Disables transmission for the entire 802.11a network.
<i>cisco_ap</i>	Individual Cisco lightweight access point radio.

Command Default

The transmission is enabled for the entire network by default.

Usage Guidelines

Use this command 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.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable radio transmission for the entire 802.11a network:

```
(Cisco Controller) > config 802.11a enable network
```

The following example shows how to enable radio transmission for AP1 on an 802.11b network:

```
(Cisco Controller) > 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		
	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	enable	Enables the expedited bandwidth request feature.
	disable	Disables the expedited bandwidth request feature.

Command Default 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.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the CCX expedited bandwidth settings:

```
(Cisco Controller) > config 802.11a exp-bwreq enable
Cannot change Exp Bw Req mode while 802.11a network is operational.
```

The following example shows how to disable the CCX expedited bandwidth settings:

```
(Cisco Controller) > 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	Parameter	Description
	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	<i>threshold</i>	Number between 256 and 2346 bytes (inclusive).

Command Default None.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to configure the fragmentation threshold on an 802.11a network with the threshold number of 6500 bytes:

```
(Cisco Controller) > 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 }
```

Syntax Description	Parameter	Description
	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	default	Restores Layer 2 client roaming RF parameters to default values.
	custom	Configures custom Layer 2 client roaming RF parameters.
	<i>min_rssi</i>	Minimum received signal strength indicator (RSSI) that is associated to the access point. If the client's average received signal strength is below the threshold, reliable communication is usually impossible. Clients will roam to another access point with a stronger signal when the threshold is reached. The valid range is -80 to -90 dBm, and the default is -85 dBm.

<i>roam_hyst</i>	How much greater the signal strength of a neighboring access point is than the client to roam to it. This parameter is intended to be used between access points if the client is physically located between two access points. The valid range is 2 to 4 dB, and the default value is 2 dB.
<i>scan_thresh</i>	Minimum RSSI that is allowed before the client should roam. When the RSSI drops below the specified value, the client scans for a better access point within the specified transition time. This parameter is used as a method to minimize the time that the client spends in a particular access point. For example, the client can scan slowly when the RSSI is above the threshold and rapidly when the RSSI is below the threshold. The valid range is -85 to -72 dBm, and the default value is -72 dBm.
<i>trans_time</i>	Maximum time allowed for the client to detect a suitable access point to and to complete the roam, whenever the RSSI from the current access point is below the scan threshold. The valid range is 1 to 10 seconds, and the default value is 5 seconds.
	Note For high-speed client roaming applications in outdoor mesh environments, we recommend that you set the transition time to 1 second.

Command Default

The default minimum RSSI is -85 dBm. The default signal strength of a neighboring access point is 2 dB. The default scan threshold value is -72 dBm. The default time allowed for the client to detect a suitable neighboring access point to roam to and to complete the roam is 5 seconds.

Usage Guidelines

For high-speed client roaming applications in outdoor mesh environments, we recommend that you set the *trans_time* to 1 second.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > config 802.11 l2roam rf-params custom -80 2 -70 7
```

Related Commands

show advanced 802.11 l2roam
show l2tp

config 802.11 max-clients

To configure the maximum number of clients per access point, use the **config 802.11 max-clients** command.

```
config 802.11 {a | b} max-clients max-clients
```

Syntax Description

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

max-clients	Configures the maximum number of client connections per access point.
<i>max-clients</i>	Maximum number of client connections per access point. The range is from 1 to 200.

Command Default None

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the maximum number of clients at 22:

```
(Cisco Controller) > config 802.11 max-clients 22
```

Related Commands

show ap config 802.11a
config 802.11b rate

config 802.11 multicast data-rate

To configure the minimum multicast data rate, use the **config 802.11 multicast data-rate** command.

config 802.11 { a | b } multicast data-rate data_rate [ap ap_name | default]

Syntax Description

<i>data_rate</i>	Minimum multicast data rates. The options are 6, 9, 12, 18, 24, 36, 48, 54. Enter 0 to specify that APs will dynamically adjust the number of the buffer allocated for multicast.
<i>ap_name</i>	Specific AP radio in this data rate.
default	Configures all APs radio in this data rate.

Command Default

The default is 0 where the configuration is disabled and the multicast rate is the lowest mandatory data rate and unicast client data rate.

Usage Guidelines

When you configure the data rate without the AP name or **default** keyword, you globally reset all the APs to the new value and update the controller global default with this new data rate value. If you configure the data rate with **default** keyword, you only update the controller global default value and do not reset the value of the APs that are already joined to the controller. The APs that join the controller after the new data rate value is set receives the new data rate value.

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure minimum multicast data rate settings:

```
(Cisco Controller) > config 802.11 multicast data-rate 12
```

config 802.11 rate

To set mandatory and supported operational data rates for an 802.11 network, use the **config 802.11 rate** command.

```
config 802.11 {a | b} rate {disabled | mandatory | supported} rate
```

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
disabled		Disables a specific data rate.
mandatory		Specifies that a client supports the data rate in order to use the network.
supported		Specifies to allow any associated client that supports the data rate to use the network.
<i>rate</i>		Rate value of 6, 9, 12, 18, 24, 36, 48, or 54 Mbps.

Command Default 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.

Command History **Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the 802.11b transmission at a mandatory rate at 12 Mbps:

```
(Cisco Controller) > 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}
```

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.

enable	Enables the video TSM settings.
disable	Disables the video TSM settings.

Command Default

By default, the TSM for the 802.11a or 802.11b/g network is disabled.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the video TSM option for the 802.11b/g network:

```
(Cisco Controller) > config 802.11b tsm enable
```

The following example shows how to disable the video TSM option for the 802.11b/g network:

```
(Cisco Controller) > 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.

```
config 802.11{ a | b } txPower { global { power_level | auto | max | min | once } | ap cisco_ap }
```

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.
<i>power_level</i>	(Optional) Manual Transmit power level number for the access point.
ap	Configures the 802.11 transmit power level for a specified lightweight access point.
<i>ap_name</i>	Access point name.

Command Default The command default (**global, auto**) is for automatic configuration by RRM.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to automatically set the 802.11a radio transmit power level in all lightweight access points:

```
(Cisco Controller) > config 802.11a txPower auto
```

The following example shows how to manually set the 802.11b radio transmit power to level 5 for all lightweight access points:

```
(Cisco Controller) > config 802.11b txPower global 5
```

The following example shows how to automatically set the 802.11b radio transmit power for access point AP1:

```
(Cisco Controller) > config 802.11b txPower AP1 global
```

The following example shows how to manually set the 802.11a radio transmit power to power level 2 for access point AP1:

```
(Cisco Controller) > config 802.11b txPower AP1 2
```

Related Commands **show ap config 802.11a**
config 802.11b txPower

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.

config advanced 802.11 7920VSIEConfig

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* }

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
call-admission-limit		Configures the call admission limit for the 7920s.
G711-CU-Quantum		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.
<i>limit</i>		Call admission limit (from 0 to 255). The default value is 105.
<i>quantum</i>		G711 quantum value. The default value is 15.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to configure the call admission limit for 7920 VISE parameters:

```
(Cisco Controller) >config advanced 802.11 7920VSIEConfig call-admission-limit 4
```

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** *channel_number*

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
add		Adds a channel to the 802.11 network auto RF channel list.

<i>channel_number</i>	Channel number to add to the 802.11 network auto RF channel list.
-----------------------	---

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to add a channel to the 802.11a network auto RF channel list:

```
(Cisco Controller) >config advanced 802.11 channel add 132
```

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] | custom threshold *threshold_value* }

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	enable	Enables the CleanAir event-driven RRM parameters.
	disable	Disables the CleanAir event-driven RRM parameters.
	sensitivity	Sets the sensitivity for CleanAir event-driven RRM.
	low	(Optional) Specifies low sensitivity.
	medium	(Optional) Specifies medium sensitivity
	high	(Optional) Specifies high sensitivity
	custom	Specifies custom sensitivity.
	threshold	Specifies the EDRRM AQ threshold value.
	<i>threshold_value</i>	Number of custom threshold.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the CleanAir event-driven RRM parameters:

```
(Cisco Controller) > config advanced 802.11 channel cleanair-event enable
```

The following example shows how to configure high sensitivity for CleanAir event-driven RRM:

```
(Cisco Controller) > config advanced 802.11 channel cleanair-event sensitivity high
```

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	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	<i>value</i>	Hour of the time between 0 and 23. These values represent the hour from 12:00 a.m. to 11:00 p.m.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the time of delay when the DCA algorithm starts:

```
(Cisco Controller) > config advanced 802.11 channel dca anchor-time 17
```

Related Commands	config advanced 802.11 channel dca interval
	config advanced 802.11 channel dca sensitivity
	config 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 **config advanced 802.11 channel dca chan-width-11n** command.

config advanced 802.11 {a | b} **channel dca chan-width-11n** {20 | 40 | 80}

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	20	Sets the channel width for 802.11n radios to 20 MHz.

40	Sets the channel width for 802.11n radios to 40 MHz.
80	Sets the channel width for 802.11ac/ax radios to 80-MHz.

Command Default The default channel width is 20.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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 the 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.

The following example shows how to add a channel to the 802.11a network auto channel list:

```
(Cisco Controller) >config advanced 802.11a channel dca chan-width-11n 40
```

The following example shows how to set the channel width for the 802.11ac radio as 80-MHz:

```
(Cisco Controller) >config advanced 802.11a channel dca chan-width-11n 80
```

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

Syntax Description		
a	Specifies the 802.11a network.	
b	Specifies the 802.11b/g network.	
<i>value</i>	Valid values are 0, 1, 2, 3, 4, 6, 8, 12, or 24 hours. 0 is 10 minutes (600 seconds).	

Command Default The default DCA channel interval is 10 (10 minutes).

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how often the DCA algorithm is allowed to run:

```
(Cisco Controller) > config advanced 802.11 channel dca interval 8
```

Related Commands

config advanced 802.11 dca anchor-time

config advanced 802.11 dca sensitivity

show advanced 802.11 channel

config advanced 802.11 channel dca min-metric

To configure the 5-GHz minimum RSSI energy metric for DCA, use the **config advanced 802.11 channel dca min-metric** command.

config advanced 802.11 {a | b} channel dca *RSSI_value*

Syntax Description

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
<i>RSSI_value</i>	Minimum received signal strength indicator (RSSI) that is required for the DCA to trigger a channel change. The range is from -100 to -60 dBm.

Command Default

The default minimum RSSI energy metric for DCA is -95 dBm.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the minimum 5-GHz RSSI energy metric for DCA:

```
(Cisco Controller) > config advanced 802.11a channel dca min-metric -80
```

In the above example, the RRM must detect an interference energy of at least -80 dBm in RSSI for the DCA to trigger a channel change.

Related Commands

config advanced 802.11 dca interval

config advanced 802.11 dca anchor-time

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 dcasensitivity { low | medium | high }

Syntax Description

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
low	Specifies the DCA algorithm is not particularly sensitive to environmental changes. See the “Usage Guidelines” section for more information.
medium	Specifies the DCA algorithm is moderately sensitive to environmental changes. See the “Usage Guidelines” section for more information.
high	Specifies the DCA algorithm is highly sensitive to environmental changes. See the “Usage Guidelines” section for more information.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

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

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

Table 6: DCA Sensitivity Thresholds

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

The following example shows how to configure the value of DCA algorithm’s sensitivity to low:

```
(Cisco Controller) > config advanced 802.11 channel dca sensitivity low
```

Related Commands

config advanced 802.11 dca interval

config advanced 802.11 dca anchor-time
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		
	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	enable	Enables the foreign access point 802.11a interference avoidance in the channel assignment.
	disable	Disables the foreign access point 802.11a interference avoidance in the channel assignment.

Command Default The default value for the foreign access point 802.11a interference avoidance in the channel assignment is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to have RRM consider foreign 802.11a interference when making channel selection updates for all 802.11a Cisco lightweight access points:

```
(Cisco Controller) > 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}

Syntax Description		
	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.

enable	Enables the Cisco lightweight access point 802.11a load avoidance in the channel assignment.
disable	Disables the Cisco lightweight access point 802.11a load avoidance in the channel assignment.

Command Default The default value for Cisco lightweight access point 802.11a load avoidance in the channel assignment is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to have RRM consider the traffic load when making channel selection updates for all 802.11a Cisco lightweight access points:

```
(Cisco Controller) > config advanced 802.11 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.

Command Default The default value for non-802.11a noise avoidance in the channel assignment is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to have RRM consider non-802.11a noise when making channel selection updates for all 802.11a Cisco lightweight access points:

```
(Cisco Controller) > config advanced 802.11 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-Dynamic Frequency Selection (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}
```

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
enable		Enables 802.11 network DCA list option for outdoor access point.
disable		Disables 802.11 network DCA list option for outdoor access point.

Command Default The default value for 802.11 network DCA list option for outdoor access point is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable the 802.11a DCA list option for outdoor access point:

```
(Cisco Controller) > 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 pda-prop

To enable or disable propagation of persistent devices, use the **config advanced 802.11 channel pda-prop** command.

```
config advanced 802.11 {a | b} channel pda-prop {enable | disable}
```

Syntax Description		
	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	enable	Enables the 802.11 network DCA list option for the outdoor access point.
	disable	Disables the 802.11 network DCA list option for the outdoor access point.

Command Default The default 802.11 network DCA list option for the outdoor access point is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable or disable propagation of persistent devices:

```
(Cisco Controller) > config advanced 802.11 channel pda-prop enable
```

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

Syntax Description		
	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to initiate a channel selection update for all 802.11a network access points:

```
(Cisco Controller) > config advanced 802.11a channel update
```

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		
	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	enable	Enables the coverage hole detection.
	disable	Disables the coverage hole detection.

Command Default The default coverage hole detection value is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable coverage hole detection on an 802.11a network:

```
(Cisco Controller) > 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**

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		
	a	Specifies the 802.11a network.

b	Specifies the 802.11b/g network.
data	Specifies the threshold for data packets.
voice	Specifies the threshold for voice packets.
<i>percent</i>	Failure rate as a percentage. Valid values are from 1 to 100 percent.

Command Default The default failure rate threshold uplink coverage fail-rate value is 20%.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to configure the threshold count for minimum uplink failures for data packets:

```
(Cisco Controller) > config advanced 802.11 coverage fail-rate 80
```

Related Commands

- 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**
- config 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.

```
config advanced 802.11 { a | b } coverage exception global percent
```

Syntax Description	
a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.

<i>percent</i>	Percentage of clients. Valid values are from 0 to 100%.
----------------	---

Command Default

The default percentage value for clients on an access point is 25%.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to specify the percentage of clients for all 802.11a access points that are experiencing a low signal level:

```
(Cisco Controller) > config advanced 802.11 coverage exception global 50
```

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**
- config 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.

config advanced 802.11 {a | b} coverage level global *clients*

Syntax Description

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
<i>clients</i>	Minimum number of clients. Valid values are from 1 to 75.

Command Default The default minimum number of clients on an access point is 3.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following 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:

```
(Cisco Controller) > config advanced 802.11 coverage level global 60
```

Related Commands

- 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**
- config 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		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
data		Specifies the threshold for data packets.
voice		Specifies the threshold for voice packets.
<i>packets</i>		Minimum number of packets. Valid values are from 1 to 255 packets.

Command Default The default failure count threshold for uplink data or voice packets is 10.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to configure the failure count threshold for uplink data packets:

```
(Cisco Controller) > config advanced 802.11 coverage packet-count 100
```

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 rssi-threshold**
- config 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
```

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
data		Specifies the threshold for data packets.
voice		Specifies the threshold for voice packets.
<i>rssi</i>		Valid values are from -60 to -90 dBm.

Command Default

- The default RSSI value for data packets is -80 dBm.
- The default RSSI value for voice packets is -75 dBm.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

The *rss* 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.

The following 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:

```
(Cisco Controller) > config advanced 802.11a coverage rssi-threshold -60
```

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

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

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g network.
logging channel	Logs channel changes.
on	Enables the 802.11 channel logging.
off	Disables 802.11 channel logging.

Command Default

The default channel change logging mode is Off (disabled).

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to turn the 802.11a logging channel selection mode on:

```
(Cisco Controller) > 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		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
on		Enables the 802.11 coverage profile violation logging.
off		Disables the 802.11 coverage profile violation logging.

Command Default The default coverage profile logging mode is Off (disabled).

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to turn the 802.11a coverage profile violation logging selection mode on:

```
(Cisco Controller) > 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		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.

on	Enables the 802.11 foreign interference profile violation logging.
off	Disables the 802.11 foreign interference profile violation logging.

Command Default The default foreign interference profile logging mode is Off (disabled).

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to turn the 802.11a foreign interference profile violation logging selection mode on:

```
(Cisco Controller) > config advanced 802.11a logging foreign on
```

Related Commands `show advanced 802.11a logging`
`config advanced 802.11b logging foreign`

config advanced 802.11 logging load

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		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
on		Enables the 802.11 load profile violation logging.
off		Disables the 802.11 load profile violation logging.

Command Default The default 802.11a load profile logging mode is Off (disabled).

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to turn the 802.11a load profile logging mode on:

```
(Cisco Controller) > config advanced 802.11 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}

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	on	Enables the 802.11 noise profile violation logging.
	off	Disables the 802.11 noise profile violation logging.
Command Default	The default 802.11a noise profile logging mode is off (disabled).	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to turn the 802.11a noise profile logging mode on:

```
(Cisco Controller) > 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	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	on	Enables the 802.11 performance profile violation logging.
	off	Disables the 802.11 performance profile violation logging.

Command Default The default 802.11a performance profile logging mode is off (disabled).

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to turn the 802.11a performance profile logging mode on:

```
(Cisco Controller) > 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		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
on		Enables the 802.11 transmit power change logging.
off		Disables the 802.11 transmit power change logging.

Command Default The default 802.11a transmit power change logging mode is off (disabled).

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to turn the 802.11a transmit power change mode on:

```
(Cisco Controller) > config advanced 802.11 logging txpower off
```

Related Commands `show advanced 802.11 logging`
`config advanced 802.11b logging power`

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}

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
all		Monitors all channels.
country		Monitors the channels used in the configured country code.
dca		Monitors the channels used by the automatic channel assignment.

Command Default The default 802.11a noise, interference, and rogue monitoring channel list is country.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > config advanced 802.11 monitor channel-list country
```

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*

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
<i>seconds</i>		Coverage measurement interval between 60 and 3600 seconds.

Command Default The default coverage measurement interval is 180 seconds.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > config advanced 802.11 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
```

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
<i>seconds</i>		Load measurement interval between 60 and 3600 seconds.

Command Default The default load measurement interval is 60 seconds.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the load measurement interval to 60 seconds:

```
(Cisco Controller) > config advanced 802.11 monitor load 60
```

Related Commands

- show advanced 802.11a monitor
- config advanced 802.11b monitor load

config advanced 802.11 monitor ndp-type

To configure the 802.11 access point radio resource management (RRM) Neighbor Discovery Protocol (NDP) type, use the **config advanced 802.11 monitor ndp-type** command:

```
config advanced 802.11 { a | b } monitor ndp-type { protected | transparent }
```

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
protected		Specifies the Tx RRM protected NDP.
transparent		Specifies the Tx RRM transparent NDP.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines Before you configure the 802.11 access point RRM NDP type, ensure that you have disabled the network by entering the **config 802.11 disable network** command.

The following example shows how to enable the 802.11a access point RRM NDP type as protected:

```
(Cisco Controller) > config advanced 802.11 monitor ndp-type protected
```

Related Commands

- config advanced 802.11 monitor
- config advanced 802.11 monitor mode
- config advanced 802.11 disable

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		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
<i>seconds</i>		Noise measurement interval between 60 and 3600 seconds.

Command Default The default 802.11a noise measurement interval is 80 seconds.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the noise measurement interval to 120 seconds:

```
(Cisco Controller) > config advanced 802.11 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.
<i>seconds</i>		Signal measurement interval between 60 and 3600 seconds.

Command Default The default signal measurement interval is 60 seconds.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the signal measurement interval to 120 seconds:

```
(Cisco Controller) > config advanced 802.11 monitor signal 120
```

Related Commands

- show advanced 802.11a monitor
- config advanced 802.11b monitor signal

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*

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
global		Configures all 802.11a Cisco lightweight access points.
<i>cisco_ap</i>		Cisco lightweight access point name.
<i>clients</i>		802.11a Cisco lightweight access point client threshold between 1 and 75 clients.

Command Default The default Cisco lightweight access point clients threshold is 12 clients.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set all Cisco lightweight access point clients thresholds to 25 clients:

```
(Cisco Controller) >config advanced 802.11 profile clients global 25
Global client count profile set.
```

The following example shows how to set the AP1 clients threshold to 75 clients:

```
(Cisco Controller) >config advanced 802.11 profile clients AP1 75
Global client count profile set.
```

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		
a		Specifies the 802.11a/n network.
b		Specifies the 802.11b/g/n network.
<i>cisco_ap</i>		Cisco lightweight access point.
on		Customizes performance profiles for this Cisco lightweight access point.
off		Uses global default performance profiles for this Cisco lightweight access point.

Command Default The default state of performance profile customization is Off.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >config advanced 802.11 profile customize AP1 on
```

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
```

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
global		Configures all 802.11a Cisco lightweight access points.
<i>cisco_ap</i>		Cisco lightweight access point name.
<i>percent</i>		802.11a foreign 802.11a interference threshold between 0 and 100 percent.

Command Default The default foreign 802.11a transmitter interference threshold value is 10.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the foreign 802.11a transmitter interference threshold for all Cisco lightweight access points to 50 percent:

```
(Cisco Controller) >config advanced 802.11a profile foreign global 50
```

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

```
(Cisco Controller) >config advanced 802.11 profile foreign AP1 0
```

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/n network.
b		Specifies the 802.11b/g/n network.
global		Configures all 802.11a Cisco lightweight access point specific profiles.
<i>cisco_ap</i>		Cisco lightweight access point name.
<i>dBm</i>		802.11a foreign noise threshold between -127 and 0 dBm.

Command Default The default foreign noise threshold value is -70 dBm.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the 802.11a foreign noise threshold for all Cisco lightweight access points to -127 dBm:

```
(Cisco Controller) >config advanced 802.11a profile noise global -127
```

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

```
(Cisco Controller) >config advanced 802.11a profile noise AP1 0
```

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
```

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.
	value	802.11a Cisco lightweight access point throughput threshold between 1000 and 10000000 bytes per second.
Command Default	The default Cisco lightweight access point data-rate throughput threshold value is 1,000,000 bytes per second.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set all Cisco lightweight access point data-rate thresholds to 1000 bytes per second:

```
(Cisco Controller) >config advanced 802.11 profile throughput global 1000
```

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

```
(Cisco Controller) >config advanced 802.11 profile throughput AP1 10000000
```

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
```


Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	global	Configures a global Cisco lightweight access point specific profile.
	<i>cisco_ap</i>	Cisco lightweight access point name.
	<i>percent</i>	802.11a RF utilization threshold between 0 and 100 percent.

Command Default The default RF utilization threshold value is 80 percent.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the RF utilization threshold for all Cisco lightweight access points to 0 percent:

```
(Cisco Controller) >config advanced 802.11 profile utilization global 0
```

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

```
(Cisco Controller) >config advanced 802.11 profile utilization AP1 100
```

config advanced 802.11 receiver

To set the advanced receiver configuration settings, use the **config advanced 802.11 receiver** command.

```
config advanced 802.11 { a | b } receiver { default | rxstart jumpThreshold value }
```

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	receiver	Specifies the receiver configuration.
	default	Specifies the default advanced receiver configuration.
	rxstart jumpThreshold	Specifies the receiver start signal.
		Note
	<i>value</i>	Jump threshold configuration value between 0 and 127.

Command Default None

Usage Guidelines

- Before you change the 802.11 receiver configuration, you must disable the 802.11 network.

- We recommend that you do not use the **rxstart jumpThreshold** *value* option as it is for Cisco internal use only.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to prevent changes to receiver parameters while the network is enabled:

```
(Cisco Controller) > config advanced 802.11 receiver default
```

config advanced 802.11 edca-parameters

To enable a specific Enhanced Distributed Channel Access (EDCA) profile on a 802.11a network, use the **config advanced 802.11 edca-parameters** command.

```
config advanced 802.11 { a | b } edca-parameters { wmm-default | syp-voice | optimized-voice | optimized-video-voice | custom-voice | fastlane | custom-set { QoS Profile Name } { aifs AP-value (0-16) Client value (0-16) | ecwmax AP-Value (0-10) Client value (0-10) | ecwmin AP-Value (0-10) Client value (0-10) | txop AP-Value (0-255) Client value (0-255) } }
```

Syntax Description		
a		Specifies the 802.11a network.
b		Specifies the 802.11b/g network.
wmm-default		Enables the Wi-Fi Multimedia (WMM) default parameters. Choose this option if voice or video services are not deployed on your network.
syp-voice		Enables Spectralink voice-priority parameters. Choose this option if Spectralink phones are deployed on your network to improve the quality of calls.
optimized-voice		Enables EDCA voice-optimized profile parameters. Choose this option if voice services other than Spectralink are deployed on your network.
optimized-video-voice		Enables EDCA voice-optimized and video-optimized profile parameters. Choose this option when both voice and video services are deployed on your network.
	Note	If you deploy video services, admission control must be disabled.
custom-voice		Enables custom voice EDCA parameters for 802.11a. The EDCA parameters under this option also match the 6.0 WMM EDCA parameters when this profile is applied.

fastlane	Enables fastlane on compatible devices.
custom-set	<p>Enables customization of EDCA parameters</p> <ul style="list-style-type: none"> • aifs—Configures the Arbitration Inter-Frame Space. AP Value (0-16) Client value (0-16) • ecwmax—Configures the maximum Contention Window. AP Value(0-10) Client Value (0-10) • ecwmin—Configures the minimum Contention Window. AP Value(0-10) Client Value(0-10) • txop—Configures the Arbitration Transmission Opportunity Limit. AP Value(0-255) Client Value(0-255) <p>QoS Profile Name - Enter the QoS profile name:</p> <ul style="list-style-type: none"> • bronze • silver • gold • platinum

Command Default The default EDCA parameter is **wmm-default**.

Command History **Release Modification**

7.6	This command was introduced in a release earlier than Release 7.6.
8.2.110.0	In this release, custom-set keyword was added to edca-parameters command.
8.3	This command was modified and the fastlane keyword was added.

Examples

The following example shows how to enable Spectralink voice-priority parameters:

```
(Cisco Controller) > config advanced 802.11 edca-parameters svp-voice
```

Related Commands

config advanced 802.11b edca-parameters	Enables a specific Enhanced Distributed Channel Access (EDCA) profile on the 802.11a network.
show 802.11a	Displays basic 802.11a network settings.

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**

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to return all the 802.11a advanced settings to their factory defaults:

```
(Cisco Controller) > config advanced 802.11a factory
```

Related Commands **show advanced 802.11a channel**

config advanced 802.11 group-member

To configure members in 802.11 static RF group, use the **config advanced 802.11 group-member** command.

config advanced 802.11{a | b} **group-member** {add | remove} *controller controller-ip-address*

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	add	Adds a controller to the static RF group.
	remove	Removes a controller from the static RF group.
	<i>controller</i>	Name of the controller to be added.
	<i>controller-ip-address</i>	IP address of the controller to be added.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to add a controller in the 802.11a automatic RF group:

```
(Cisco Controller) > config advanced 802.11a group-member add cisco-controller 209.165.200.225
```

Related Commands

- show advanced 802.11a group
- config advanced 802.11 group-mode

config advanced 802.11 tpc-version

To configure the Transmit Power Control (TPC) version for a radio, use the **config advanced 802.11 tpc-version** command.

```
config advanced 802.11 {a | b} tpc-version {1 | 2}
```

Syntax Description	1	2
	Specifies the TPC version 1 that offers strong signal coverage and stability.	
		Specifies TPC version 2 is for scenarios where voice calls are extensively used. The Tx power is dynamically adjusted with the goal of minimum interference. It is suitable for dense networks. In this mode, there could be higher roaming delays and coverage hole incidents.

Command Default The default TPC version for a radio is 1.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the TPC version as 1 for the 802.11a radio:

```
(Cisco Controller) > config advanced 802.11a tpc-version 1
```

Related Commands config advanced 802.11 tpcv1-thresh

config advanced 802.11 tpcv1-thresh

To configure the threshold for Transmit Power Control (TPC) version 1 of a radio, use the **config advanced 802.11 tpcv1-thresh** command.

```
config advanced 802.11 {a | b} tpcv1-thresh threshold
```

Syntax Description	a	b
	Specifies the 802.11a network.	
		Specifies the 802.11b/g/n network.

<i>threshold</i>	Threshold value between –50 dBm to –80 dBm.
------------------	---

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the threshold as –60 dBm for TPC version 1 of the 802.11a radio:

```
(Cisco Controller) > config advanced 802.11 tpcv1-thresh -60
```

Related Commands

config advanced 802.11 tpc-thresh
config advanced 802.11 tpcv2-thresh

config advanced 802.11 tpcv2-intense

To configure the computational intensity for Transmit Power Control (TPC) version 2 of a radio, use the **config advanced 802.11 tpcv2-intense** command.

config advanced 802.11 {a | b} tpcv2-intense intensity

Syntax Description

a	Specifies the 802.11a network.
b	Specifies the 802.11b/g/n network.
<i>intensity</i>	Computational intensity value between 1 to 100.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the computational intensity as 50 for TPC version 2 of the 802.11a radio:

```
(Cisco Controller) > config advanced 802.11 tpcv2-intense 50
```

Related Commands

config advanced 802.11 tpc-thresh
config advanced 802.11 tpcv2-thresh
config advanced 802.11 tpcv2-per-chan

config advanced 802.11 tpcv2-per-chan

To configure the Transmit Power Control Version 2 on a per-channel basis, use the **config advanced 802.11 tpcv2-per-chan** command.

config advanced 802.11 { a | b } tpcv2-per-chan { enable | disable }

Syntax Description	enable	Disables the configuration of TPC version 2 on a per-channel basis.
	disable	Disables the configuration of TPC version 2 on a per-channel basis.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable TPC version 2 on a per-channel basis for the 802.11a radio:

```
(Cisco Controller) > config advanced 802.11 tpcv2-per-chan enable
```

Related Commands

- config advanced 802.11 tpc-thresh**
- config advanced 802.11 tpcv2-thresh**
- config advanced 802.11 tpcv2-intense**

config advanced 802.11 tpcv2-thresh

To configure the threshold for Transmit Power Control (TPC) version 2 of a radio, use the **config advanced 802.11 tpcv2-thresh** command.

config advanced 802.11 { a | b } tpcv2-thresh *threshold*

Syntax Description	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
	<i>threshold</i>	Threshold value between –50 dBm to –80 dBm.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the threshold as –60 dBm for TPC version 2 of the 802.11a radio:

```
(Cisco Controller) > config advanced 802.11a tpcv2-thresh -60
```

Related Commands

- config advanced 802.11 tpc-thresh**

config advanced 802.11 tpcv1-thresh
config advanced 802.11 tpcv2-per-chan

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	a	Specifies the 802.11a network.
	b	Specifies the 802.11b/g network.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to initiate updates of 802.11a transmit power for an 802.11a access point:

```
(Cisco Controller) > config advanced 802.11 txpower-update
```

Related Commands **config advance 802.11b txpower-update**

config advanced backup-controller primary

To configure a primary backup controller, use the **config advanced backup-controller primary** command.

config advanced backup-controller primary *system name IP addr*

Syntax Description	<i>system name</i>	Configures primary secondary backup controller.
	<i>IP addr</i>	IP address of the backup controller.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

Usage Guidelines To delete a primary backup controller entry (IPv6 or IPv4), enter 0.0.0.0 for the controller IP address.

The following example shows how to configure the IPv4 primary backup controller:

```
(Cisco Controller) >config advanced backup-controller primary Controller_1 10.10.10.10
```

The following example shows how to configure the IPv6 primary backup controller:

```
(Cisco Controller) >config advanced backup-controller primary systemname 2001:9:6:40::623
```

The following example shows how to remove the IPv4 primary backup controller:

```
(Cisco Controller) >config advanced backup-controller primary Controller_1 10.10.10.10
```

The following example shows how to remove the IPv6 primary backup controller:

```
(Cisco Controller) >config advanced backup-controller primary Controller_1 0.0.0.0
```

Related Commands show advanced back-up controller

config advanced backup-controller secondary

To configure a secondary backup controller, use the **config advanced backup-controller secondary** command.

config advanced backup-controller secondary *system name IP addr*

Syntax Description	<i>system name</i>	Configures primary secondary backup controller.
	<i>IP addr</i>	IP address of the backup controller.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

Usage Guidelines To delete a secondary backup controller entry (IPv4 or IPv6), enter 0.0.0.0 for the controller IP address.

The following example shows how to configure an IPv4 secondary backup controller:

```
(Cisco Controller) >config advanced backup-controller secondary Controller_2 10.10.10.10
```

The following example shows how to configure an IPv6 secondary backup controller:

```
(Cisco Controller) >config advanced backup-controller secondary Controller_2 2001:9:6:40::623
```

The following example shows how to remove an IPv4 secondary backup controller:

```
(Cisco Controller) >config advanced backup-controller secondary Controller_2 0.0.0.0
```

The following example shows how to remove an IPv6 secondary backup controller:

```
(Cisco Controller) >config advanced backup-controller secondary Controller_2 0.0.0.0
```

Related Commands show advanced back-up 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*

Syntax Description	<i>num_of_retries</i>	Number of excessive retries before client handoff (from 0 to 255).
---------------------------	-----------------------	--

Command Default	The default value for the number of 802.11 data packet excessive retries is 0.	
------------------------	--	--

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines	This command is supported only for the 1000/1510 series access points.
-------------------------	--

This example shows how to set the client handoff to 100 excessive retries:

```
(Cisco Controller) >config advanced client-handoff 100
```

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}

Syntax Description	enable	Enables the over-the-air frame padding.
---------------------------	---------------	---

	disable	Disables the over-the-air frame padding.
--	----------------	--

Command Default	The default over-the-air frame padding is disabled.	
------------------------	---	--

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable over-the-air frame padding:

```
(Cisco Controller) > config advanced dot11-padding enable
```

Related Commands	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 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 ] | disable }
```

Syntax Description	enable	Enables the configuration of the association requests per access point.
	disable	Disables the configuration of the association requests per access point.
	<i>number of associations per interval</i>	(Optional) Number of association request per access point slot in a given interval. The range is from 1 to 100.
	<i>interval</i>	(Optional) Association request limit interval. The range is from 100 to 10000 milliseconds.

Command Default The default state of the command is disabled state.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following 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:

```
(Cisco Controller) >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 { bcst-key-interval seconds | 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 } | rsn-capability-validation { enable | disable } }
```

Syntax Description	bcast-key-interval <i>seconds</i>	Specifies the EAP-broadcast key renew interval time in seconds. The range is from 120 to 86400 seconds.
	eapol-key-timeout <i>timeout</i>	Specifies the amount of time (200 to 5000 milliseconds) that the controller waits before retransmitting an EAPOL (WPA) key message to a wireless client using EAP or WPA/WPA-2 PSK. The default value is 1000 milliseconds.
	eapol-key-retries <i>retries</i>	Specifies the maximum number of times (0 to 4 retries) that the controller retransmits an EAPOL (WPA) key message to a wireless client. The default value is 2.
	identity-request- timeout <i>timeout</i>	Specifies the amount of time (1 to 120 seconds) that the controller waits before retransmitting an EAP Identity Request message to a wireless client. The default value is 30 seconds.
	identity-request- retries	Specifies the maximum number of times (0 to 4 retries) that the controller retransmits an EAPOL (WPA) key message to a wireless client. The default value is 2.
	key-index <i>index</i>	Specifies the key index (0 or 3) used for dynamic wired equivalent privacy (WEP).
	max-login-ignore- identity-response	When enabled, this command ignores the limit set for the number of devices that can be connected to the controller with the same username using 802.1x authentication. When disabled, this command limits the number of devices that can be connected to the controller with the same username. This option is not applicable for Web auth user. Use the command config netuser maxUserLogin to set the limit of maximum number of devices per 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	For EAP messages other than Identity Requests or EAPOL (WPA) key messages, specifies the amount of time (1 to 120 seconds) that the controller waits before retransmitting the message to a wireless client. The default value is 30 seconds.
request-retries	(Optional) For EAP messages other than Identity Requests or EAPOL (WPA) key messages, specifies the maximum number of times (0 to 20 retries) that the controller retransmits the message to a wireless client. The default value is 2.
rsn-capability-validation {enable disable}	Allows you to enable or disable RSN-capability (2-Byte in EAPOL-M2 frame) validation with respect to association request.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.5.151.0	The rsn-capability-validation parameter was added.
8.10	

The following example shows how to configure the key index used for dynamic wired equivalent privacy (WEP):

```
(Cisco Controller) > config advanced eap key-index 0
```

config advanced fastpath fastcache

To configure the fastpath fast cache control, use the **config advanced fastpath fastcache** command.

config advanced fastpath fastcache {enable | disable}

Syntax Description

enable	Enables the fastpath fast cache control.
disable	Disables the fastpath fast cache control.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the fastpath fast cache control:

```
(Cisco Controller) > config advanced fastpath fastcache enable
```

Related Commands `config advanced fastpath pkt-capture`

config advanced fastpath pkt-capture

To configure the fastpath packet capture, use the **config advanced fastpath pkt-capture** command.

config advanced fastpath pkt-capture {enable | disable}

Syntax Description	enable	Enables the fastpath packet capture.
	disable	Disables the fastpath packet capture.

Command Default None

Command History

Release	Modification
---------	--------------

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

The following example shows how to enable the fastpath packet capture:

```
(Cisco Controller) > config advanced fastpath pkt-capture enable
```

Related Commands `config advanced fastpath fastcache`

config advanced hotspot

To configure advanced hotspot configurations, use the **config advanced hotspot** command.

config advanced hotspot {anqp-4way {disable | enable | threshold *value* } | cmbk-delay *value* | garp {disable | enable } | gas-limit {disable | enable } }

Syntax Description	anqp-4way	Enables, disables, or, configures the Access Network Query Protocol (ANQP) four way fragment threshold.
	disable	Disables the ANQP four way message.
	enable	Enables the ANQP four way message.
	threshold	Configures the ANQP fourway fragment threshold.
	<i>value</i>	ANQP four way fragment threshold value in bytes. The range is from 10 to 1500. The default value is 1500.
	cmbk-delay	Configures the ANQP comeback delay in Time Units (TUs).

<i>value</i>	ANQP comeback delay in Time Units (TUs). 1 TU is defined by 802.11 as 1024 usec. The range is from 1 milliseconds to 30 seconds.
garp	Disables or enables the Gratuitous ARP (GARP) forwarding to wireless network.
disable	Disables the Gratuitous ARP (GARP) forwarding to wireless network.
enable	Enables the Gratuitous ARP (GARP) forwarding to wireless network.
gas-limit	Limits the number of Generic Advertisement Service (GAS) request action frames sent to the switch by an access point in a given interval.
disable	Disables the GAS request action frame limit on access points.
enable	Enables the GAS request action frame limit on access points.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the ANQP four way fragment threshold value:

```
(Cisco Controller) >config advanced hotspot anqp-4way threshold 200
```

config advanced max-1x-sessions

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

config advanced max-1x-sessions *no_of_sessions*

Syntax Description	<i>no_of_sessions</i>	Number of maximum 802.1x session initiation per AP at a time. The range is from 0 to 255, where 0 indicates unlimited.
---------------------------	-----------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >config advanced max-1x-sessions 200
```

config advanced rate

To configure switch control path rate limiting, use the **config advanced rate** command.

config advanced rate {enable | disable}

Syntax Description	enable	Enables the switch control path rate limiting feature.
	disable	Disables the switch control path rate limiting feature.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable switch control path rate limiting:

```
(Cisco Controller) >config advanced rate enable
```

config advanced sip-preferred-call-no

To configure voice prioritization, use the **config advanced sip-preferred-call-no** command.

config advanced sip-preferred-call-no *call_index* {*call_number* | none}

Syntax Description	<i>call_index</i>	Call index with valid values between 1 and 6.
	<i>call_number</i>	Preferred call number that can contain up to 27 characters.
	none	Deletes the preferred call set for the specified index.
Command Default	None	
Usage Guidelines	Before you configure voice prioritization, you must complete the following prerequisites:	
	<ul style="list-style-type: none"> • Set the voice to the platinum QoS level by entering the config wlan qos wlan-id platinum command. • Enable the admission control (ACM) to this radio by entering the config 802.11 {a b} cac {voice video} acm enable command. • Enable the call-snooping feature for a particular WLAN by entering the config wlan call-snoop enable wlan-id command. <p>To view statistics about preferred calls, enter the show ap stats {802.11 {a b} wlan} cisco_ap command.</p>	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to add a new preferred call for index 2:

```
(Cisco Controller) > config advanced sip-preferred-call-no 2 0123456789
```

Related Commands

- config wlan qos
- config 802.11 cac video acm
- config 802.11 cac voice acm
- config wlan call-snoop
- show ap stats

config advanced sip-snooping-ports

To configure call snooping ports, use the **config advanced sip-snooping-ports** command.

```
config advanced sip-snooping-ports start_port end_port
```

Syntax Description

<i>start_port</i>	Starting port for call snooping. The range is from 0 to 65535.
<i>end_port</i>	Ending port for call snooping. The range is from 0 to 65535.

Usage Guidelines

If you need only a single port for call snooping, configure the start and end port with the same number. The port used by the CIUS tablet is 5060 and the port range used by Facetime is from 16384 to 16402.

Command History	Release Modification
	7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the call snooping ports:

```
(Cisco Controller) > config advanced sip-snooping-ports 4000 4500
```

Related Commands

- show cac voice stats
- show cac voice summary
- show cac video stats
- show cac video summary
- config 802.11 cac video sip
- config 802.11 cac voice sip
- show advanced sip-preferred-call-no
- show advanced sip-snooping-ports
- debug cac

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**}

Syntax Description	enable	Enables the switch port statistics collection.
	disable	Disables the switch port statistics collection.
Command Default	The default switch port statistics collection value is enable.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the switch port statistics collection settings:

```
(Cisco Controller) > config advanced statistics disable
```

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	<i>num_probes</i>	Number of probe requests (from 1 to 100) forwarded to the controller per client per access point radio in a given interval.
	<i>interval</i>	Probe limit interval (from 100 to 10000 milliseconds).
Command Default	The default number of probe requests is 2. The default interval is 500 milliseconds.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to set the number of probes per access point per client to 5 and the probe interval to 800 milliseconds:

```
(Cisco Controller) > config advanced probe limit 5 800
```

config advanced timers

To configure an advanced system timer, use the **config advanced timers** command.

```
config advanced timers { ap-coverage-report seconds | ap-discovery-timeout discovery-timeout |
ap-fast-heartbeat { local | flexconnect | all } { enable | disable } fast_heartbeat_seconds
| ap-heartbeat-timeout heartbeat_seconds | ap-primary-discovery-timeout primary_discovery_timeout
| ap-primed-join-timeout primed_join_timeout | auth-timeout auth_timeout | pkt-fwd-watchdog
{ enable | disable } { watchdog_timer | default } | eap-identity-request-delay
eap_identity_request_delay | eap-timeout eap_timeout }
```

Syntax Description		
ap-coverage-report		Configures RRM coverage report interval for all APs.
<i>seconds</i>		Configures the ap coverage report interval in seconds. The range is between 60 and 90 seconds. Default is 90 seconds.
ap-discovery-timeout		Configures the Cisco lightweight access point discovery timeout value.
<i>discovery-timeout</i>		Cisco lightweight access point discovery timeout value, in seconds. The range is from 1 to 10.
ap-fast-heartbeat		Configures the fast heartbeat timer, which reduces the amount of time it takes to detect a controller failure in access points.
local		Configures the fast heartbeat interval for access points in local mode.
flexconnect		Configures the fast heartbeat interval for access points in FlexConnect mode.
all		Configures the fast heartbeat interval for all the access points.
enable		Enables the fast heartbeat interval.
disable		Disables the fast heartbeat interval.
<i>fast_heartbeat_seconds</i>		Small heartbeat interval, which reduces the amount of time it takes to detect a controller failure, in seconds. The range is from 1 to 10.
ap-heartbeat-timeout		Configures Cisco lightweight access point heartbeat timeout value.
<i>heartbeat_seconds</i>		Cisco the Cisco lightweight access point heartbeat timeout value, in seconds. The range is from 1 to 30. This value should be at least three times larger than the fast heartbeat timer.
ap-primary-discovery-timeout		Configures the access point primary discovery request timer.
<i>primary_discovery_timeout</i>		Access point primary discovery request time, in seconds. The range is from 30 to 3600.
ap-primed-join-timeout		Configures the access point primed discovery timeout value.
<i>primed_join_timeout</i>		Access point primed discovery timeout value, in seconds. The range is from 120 to 43200.

auth-timeout	Configures the authentication timeout.
<i>auth_timeout</i>	Authentication response timeout value, in seconds. The range is from 10 to 600.
pkt-fwd-watchdog	Configures the packet forwarding watchdog timer to protect from fastpath deadlock.
<i>watchdog_timer</i>	Packet forwarding watchdog timer, in seconds. The range is from 60 to 300.
default	Configures the watchdog timer to the default value of 240 seconds.
eap-identity-request-delay	Configures the advanced Extensible Authentication Protocol (EAP) identity request delay, in seconds.
<i>eap_identity_request_delay</i>	Advanced EAP identity request delay, in seconds. The range is from 0 to 10.
eap-timeout	Configures the EAP expiration timeout.
<i>eap_timeout</i>	EAP timeout value, in seconds. The range is from 8 to 120.

Command Default

- The default access point discovery timeout is 10 seconds.
- The default access point heartbeat timeout is 30 seconds.
- The default access point primary discovery request timer is 120 seconds.
- The default authentication timeout is 10 seconds.
- The default packet forwarding watchdog timer is 240 seconds.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.3	This command was enhanced.
8.6	This command was enhanced with new keyword in Release 8.6. The new keyword added is ap-coverage-report .

Usage Guidelines

The Cisco lightweight access point discovery timeout indicates how often a controller attempts to discover unconnected Cisco lightweight access points.

The Cisco lightweight access point heartbeat timeout controls how often the Cisco lightweight access point sends a heartbeat keepalive signal to the Cisco Wireless Controller.

The following example shows how to configure an access point discovery timeout with a timeout value of 20:

```
(Cisco Controller) >config advanced timers ap-discovery-timeout 20
```

The following example shows how to enable the fast heartbeat interval for an access point in FlexConnect mode:

```
(Cisco Controller) >config advanced timers ap-fast-heartbeat flexconnect enable 8
```

The following example shows how to configure the authentication timeout to 20 seconds:

```
(Cisco Controller) >config advanced timers auth-timeout 20
```

config advanced timers ap-fast-heartbeat

To configure the fast heartbeat timer which reduces the amount of time it takes to detect a controller failure for local, FlexConnect, or all access points, use the **config advanced timers ap-fast-heartbeat** command.

config advanced timers ap-fast-heartbeat {local | flexconnect | all} {enable | disable} interval

Syntax Description		
local		Configures the fast heartbeat interval for access points in local mode only.
flexconnect		Configures the fast heartbeat interval for access points in FlexConnect mode only.
all		Configures the fast heartbeat interval for all access points.
enable		Enables the fast heartbeat interval.
disable		Disables the fast heartbeat interval.
<i>interval</i>		Small heartbeat interval (between 1 and 10 seconds, inclusive), which reduces the amount of time it takes to detect a controller failure.

Command Default The default state of the command is disabled state.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the fast heartbeat interval for access point in local mode:

```
(Cisco Controller) >config advanced timers ap-fast-heartbeat local enable 5
```

The following example shows how to enable the fast heartbeat interval for access point in FlexConnect mode:

```
(Cisco Controller) >config advanced timers ap-fast-heartbeat flexconnect enable 8
```

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

```
(Cisco Controller) >config advanced timers ap-fast-heartbeat all enable 6
```

The following example shows how to disable the fast heartbeat interval for all access point:

```
(Cisco Controller) >config advanced timers ap-fast-heartbeat all disable
```

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	<i>seconds</i>	Cisco lightweight access point heartbeat timeout value between 1 and 30 seconds.
Command Default	The default Cisco lightweight access point heartbeat timeout value is 30 seconds.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

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

```
(Cisco Controller) >config advanced timers ap-heartbeat-timeout 20
```

config advanced timers ap-primary-discovery-timeout

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	<i>interval</i>	Access point primary discovery request timer between 30 and 3600 seconds.
Command Default	The default access point primary discovery request timer value is 120 seconds.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >config advanced timers ap-primary-discovery-timeout 1200
```

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	<i>seconds</i>	Authentication response timeout value in seconds between 10 and 600.
Command Default	The default authentication timeout value is 10 seconds.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the authentication timeout to 20 seconds:

```
(Cisco Controller) >config advanced timers auth-timeout 20
```

config advanced timers eap-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	<i>seconds</i>	EAP timeout value in seconds between 8 and 120.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the EAP expiration timeout to 10 seconds:

```
(Cisco Controller) >config advanced timers eap-timeout 10
```

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	<i>seconds</i>	Advanced EAP identity request delay in number of seconds between 0 and 10.
---------------------------	----------------	--

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the advanced EAP identity request delay to 8 seconds:

```
(Cisco Controller) >config advanced timers eap-identity-request-delay 8
```


Configure Access Point Commands

Use the **config ap** commands to configure access point settings.

config ap

To configure a Cisco lightweight access point or to add or delete a third-party (foreign) access point, use the **config ap** command.

```
config ap {{enable | disable} cisco_ap | {add | delete} MAC port {enable | disable} IP_address}
```

Syntax Description

enable	Enables the Cisco lightweight access point.
disable	Disables the Cisco lightweight access point.
<i>cisco_ap</i>	Name of the Cisco lightweight access point.
add	Adds foreign access points.
delete	Deletes foreign access points.
<i>MAC</i>	MAC address of a foreign access point.
<i>port</i>	Port number through which the foreign access point can be reached.
<i>IP_address</i>	IP address of the foreign access point.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	This command supports both IPv4 and IPv6.

The following example shows how to disable lightweight access point AP1:

```
(Cisco Controller) >config ap disable AP1
```

The following 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:

```
(Cisco Controller) >config ap add 12:12:12:12:12:12 2033 enable 192.12.12.1
```

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		
	<i>rate</i>	Cisco bridge backhaul Tx rate in kbps. The valid values are 6000, 12000, 18000, 24000, 36000, 48000, and 54000.
	auto	Configures the auto data rate.
	<i>cisco_ap</i>	Name of a Cisco lightweight access point.

Command Default The default status of the command is set to Auto.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines In previous software releases, the default value for the bridge data rate was 24000 (24 Mbps). In Cisco WLC Release 6.0, the default value for the bridge data rate is **auto**. If you configured the default bridge data rate value (24000) in a previous Cisco WLC release, the bridge data rate is configured with the new default value (auto) when you upgrade to Cisco WLC Release 6.0. However, if you configured a non default value (for example, 18000) in a previous Cisco WLC 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).

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

```
(Cisco Controller) >config ap bhrate 54000 AP1
```

config ap autoconvert

To automatically convert all access points to FlexConnect mode or Monitor mode upon associating with the controller, use the **config ap autoconvert** command.

config ap autoconvert { **flexconnect** | **monitor** | **disable** }

Syntax Description		
	flexconnect	Configures all the access points automatically to FlexConnect mode.
	monitor	Configures all the access points automatically to monitor mode.
	disable	Disables the autoconvert option on the access points.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

When access points in local mode connect to a Cisco 7500 Series Wireless Controller, they do not serve clients. The access point details are available in the controller. To enable access points to serve clients or perform monitoring related tasks when connected to the Cisco 7500 Series Wireless Controller, the access points must be in FlexConnect mode or Monitor mode.

The command can also be used for conversion of AP modes in Cisco 5520, 8540, and 8510 Series Wireless Controller platforms.

The following example shows how to automatically convert all access points to the FlexConnect mode:

```
(Cisco Controller) >config ap autoconvert flexconnect
```

The following example shows how to disable the autoconvert option on the APs:

```
(Cisco Controller) >config ap autoconvert disable
```

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 | {strict-matching {enable | disable}}} cisco_ap
```

Syntax Description

set	Sets a Cisco lightweight access point's bridge group name.
<i>groupname</i>	Bridge group name.
delete	Deletes a Cisco lightweight access point's bridge group name.
<i>cisco_ap</i>	Name of a Cisco lightweight access point.
strict-matching	Restricts the possible parent list, if the MAP has a non-default BGN, and the potential parent has a different BGN
enable	Enables a Cisco lightweight access point's group name.
disable	Disables a Cisco lightweight access point's group name.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	The strict-matching parameter was added.

Usage Guidelines

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

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

```
(Cisco Controller) >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)
```

config ap bridging

To configure Ethernet-to-Ethernet bridging on a Cisco lightweight access point, use the **config ap bridging** command.

```
config ap bridging {enable | disable} cisco_ap
```

Syntax Description

enable	Enables the Ethernet-to-Ethernet bridging on a Cisco lightweight access point.
disable	Disables Ethernet-to-Ethernet bridging.
<i>cisco_ap</i>	Name of a Cisco lightweight access point.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable bridging on an access point:

```
(Cisco Controller) >config ap bridging enable nyc04-44-1240
```

The following example shows how to disable bridging on an access point:

```
(Cisco Controller) >config ap bridging disable nyc04-44-1240
```

config ap cdp

To configure the Cisco Discovery Protocol (CDP) on a Cisco lightweight access point, use the **config ap cdp** command.

```
config ap cdp {enable | disable | interface {ethernet interface_number | slot slot_id} {cisco_ap | all}}
```

Syntax Description

enable	Enables CDP on an access point.
disable	Disables CDP on an access point.

interface	Configures CDP in a specific interface.
ethernet	Configures CDP for an ethernet interface.
<i>interface_number</i>	Ethernet interface number between 0 and 3.
slot	Configures CDP for a radio interface.
<i>slot_id</i>	Slot number between 0 and 3.
<i>cisco_ap</i>	Name of a Cisco lightweight access point.
all	Specifies all access points.



Note If an AP itself is configured with the keyword **all**, the all access points case takes precedence over the AP that is with the keyword **all**.

Command Default

Enabled on radio interfaces of mesh APs and disabled on radio interfaces of non-mesh APs. Enabled on Ethernet interfaces of all APs.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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 CDP over Ethernet/radio interfaces is available only when CDP is enabled. After you enable CDP on all access points joined to the controller, you may disable and then reenabling CDP on individual access points using the **config ap cdp {enable | disable} cisco_ap command**. After you disable CDP on all access points joined to the controller, you may not enable and then disable CDP on individual access points.

The following example shows how to enable CDP on all access points:

```
(Cisco Controller) >config ap cdp enable all
```

The following example shows how to disable CDP on ap02 access point:

```
(Cisco Controller) >config ap cdp disable ap02
```

The following example shows how to enable CDP for Ethernet interface number 2 on all access points:

```
(Cisco Controller) >config ap cdp ethernet 2 enable all
```

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		
enable		Enables the Cisco lightweight access point's memory core dump setting.
disable		Disables the Cisco lightweight access point's memory core dump setting.
<i>tftp_server_ipaddress</i>		IP address of the TFTP server to which the access point sends core dump files.
<i>filename</i>		Name that the access point uses to label the core file.
compress		Compresses the core dump file.
uncompress		Uncompresses the core dump file.
<i>cisco_ap</i>		Name of a Cisco lightweight access point.
all		Specifies 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'.

Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6.

Usage Guidelines The access point must be able to reach the TFTP server. This command is applicable for both IPv4 and IPv6 addresses.

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

```
(Cisco Controller) >config ap core-dump enable 209.165.200.225 log compress AP02
```

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.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete all crash files:

```
(Cisco Controller) >config ap crash-file clear-all
```

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*

Syntax Description	<i>filename</i>	Name of the file to delete.
---------------------------	-----------------	-----------------------------

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete crash file 1:

```
(Cisco Controller) >config ap crash-file delete crash_file_1
```

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*

Syntax Description	<i>cisco_ap</i>	Name of the Cisco lightweight access point.
---------------------------	-----------------	---

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines	Use the transfer upload datatype command to transfer the collected data to the Cisco wireless LAN controller.
-------------------------	--

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

```
(Cisco Controller) >config ap crash-file get-crash-file AP3
```

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	<i>slot_id</i>	Slot ID (either 0 or 1).
	<i>cisco_ap</i>	Name of a Cisco lightweight access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >config ap crash-file get-radio-core-dump 0 AP02
```

config ap 802.1Xuser

To configure the global authentication username and password for all access points currently associated with the controller as well as any access points that associate with the controller in the future, use the **config ap 802.1Xuser** command.

config ap 802.1Xuser add username *ap-username* **password** *ap-password* {**all** | *cisco_ap*}

Syntax Description	add username	Specifies to add a username.
	<i>ap-username</i>	Username on the Cisco AP.
	password	Specifies to add a password.
	<i>ap-password</i>	Password.
	<i>cisco_ap</i>	Specific access point.
	all	Specifies all access points.
Command Default	None	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

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

```
(Cisco Controller) >config ap 802.1Xuser add username cisco123 password cisco2020 all
```

config ap 802.1Xuser delete

To force a specific access point to use the controller's global authentication settings, use the **config ap 802.1Xuser delete** command.

```
config ap 802.1Xuser delete cisco_ap
```

Syntax Description	<i>cisco_ap</i>	Access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete access point AP01 to use the controller's global authentication settings:

```
(Cisco Controller) >config ap 802.1Xuser delete AP01
```

config ap 802.1Xuser disable

To disable authentication for all access points or for a specific access point, use the **config ap 802.1Xuser disable** command.

```
config ap 802.1Xuser disable {all | cisco_ap}
```

Syntax Description	disable	Disables authentication.
---------------------------	----------------	--------------------------

all	Specifies all access points.
------------	------------------------------

<i>cisco_ap</i>	Access point.
-----------------	---------------

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to disable the authentication for access point *cisco_ap1*:

```
(Cisco Controller) >config ap 802.1Xuser disable
```

config ap ethernet duplex

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

config ap ethernet duplex [**auto** | **half** | **full**] **speed** [**auto** | **10** | **100** | **1000**] { **all** | *cisco_ap* }

Syntax Description

auto	(Optional) Specifies the Ethernet port duplex auto settings.
half	(Optional) Specifies the Ethernet port duplex half settings.
full	(Optional) Specifies the Ethernet port duplex full settings.
speed	Specifies the Ethernet port speed settings.
auto	(Optional) Specifies the Ethernet port speed to auto.
10	(Optional) Specifies the Ethernet port speed to 10 Mbps.
100	(Optional) Specifies the Ethernet port speed to 100 Mbps.
1000	(Optional) Specifies the Ethernet port speed to 1000 Mbps.
all	Specifies the Ethernet port setting for all connected access points.
<i>cisco_ap</i>	Cisco access point.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the Ethernet port duplex half settings as 10 Mbps for all access points:

```
(Cisco Controller) >config ap ethernet duplex half speed 10 all
```

config ap ethernet tag

To configure VLAN tagging of the Control and Provisioning of Wireless Access Points protocol (CAPWAP) packets, use the **config ap ethernet tag** command.

```
config ap ethernet tag {id vlan_id | disable} {cisco_ap | all}
```

Syntax Description	id	Specifies the VLAN id.
	<i>vlan_id</i>	ID of the trunk VLAN.
	disable	Disables the VLAN tag feature. When you disable VLAN tagging, the access point untags the CAPWAP packets.
	<i>cisco_ap</i>	Name of the Cisco AP.
	all	Configures VLAN tagging on all the Cisco access points.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines After you configure VLAN tagging, the configuration comes into effect only after the access point reboots. You cannot configure VLAN tagging on mesh access points.

If the access point is unable to route traffic or reach the controller using the specified trunk VLAN, it falls back to the untagged configuration. If the access point joins the controller using this fallback configuration, the controller sends a trap to a trap server such as the Cisco Prime Infrastructure, which indicates the failure of the trunk VLAN. In this scenario, the "Failover to untagged" message appears in show command output.

The following example shows how to configure VLAN tagging on a trunk VLAN:

```
(Cisco Controller) >config ap ethernet tag 6 AP1
```

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

<i>groupname</i>	Descriptive name for the access point group.
<i>cisco_ap</i>	Name of the Cisco lightweight access point.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

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

The following example shows how to configure a descriptive name for access point AP01:

```
(Cisco Controller) >config ap group-name superusers AP01
```

config ap flexconnect central-dhcp

To enable central-DHCP on a FlexConnect access point in a WLAN, use the **config ap flexconnect central-dhcp** command.

config ap flexconnect central-dhcp *wlan_id* *cisco_ap* [**add** | **delete**] {**enable** | **disable**} **override dns** {**enable** | **disable**} **nat-pat** {**enable** | **disable**}

Syntax Description

<i>wlan_id</i>	Wireless LAN identifier from 1 to 512.
<i>cisco_ap</i>	Name of the Cisco lightweight access point.
add	(Optional) Adds a new WLAN DHCP mapping.
delete	(Optional) Deletes a WLAN DHCP mapping.
enable	Enables central-DHCP on a FlexConnect access point. When you enable this feature, the DHCP packets received from the access point are centrally switched to the controller and then forwarded to the corresponding VLAN based on the AP and the SSID.
disable	Disables central-DHCP on a FlexConnect access point.
override dns	Overrides the DNS server address on the interface assigned by the controller. When you override DNS in centrally switched WLANs, the clients get their DNS server IP address from the AP and not from the controller.
enable	Enables the Override DNS feature on a FlexConnect access point.

disable	Disables the Override DNS feature on a FlexConnect access point.
nat-pat	Network Address Translation (NAT) and Port Address Translation (PAT) that you can enable or disable.
enable	Enables NAT-PAT on a FlexConnect access point.
disable	Deletes NAT-PAT on a FlexConnect access point.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable central-DHCP, Override DNS, and NAT-PAT on a FlexConnect access point:

```
(Cisco Controller) >config ap flexconnect central-dhcp 1 ap1250 enable override dns enable nat-pat enable
```

config ap flexconnect local-split

To configure a local-split tunnel on a FlexConnect access point, use the **config ap flexconnect local-split** command.

config ap flexconnect local-split *wlan_id* *cisco_ap* {**enable** | **disable**} **acl** *acl_name*

Syntax Description	
<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
<i>cisco_ap</i>	Name of the FlexConnect access point.
enable	Enables local-split tunnel on a FlexConnect access point.
disable	Disables local-split tunnel feature on a FlexConnect access point.
acl	Configures a FlexConnect local-split access control list.
<i>acl_name</i>	Name of the FlexConnect access control list.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This command allows you to configure a local-split tunnel in a centrally switched WLAN using a FlexConnect ACL. A local split tunnel supports only for unicast Layer 4 IP traffic as NAT/PAT does not support multicast IP traffic.

The following example shows how to configure a local-split tunnel using a FlexConnect ACL:

```
(Cisco Controller) >config ap flexconnect local-split 6 AP2 enable acl flex6
```

config ap flexconnect radius auth set

To configure a primary or secondary RADIUS server for a specific FlexConnect access point, use the **config ap flexconnect radius auth set** command.

```
config ap flexconnect radius auth set { primary | secondary } ip_address auth_port secret
```

Syntax Description	primary	Specifies the primary RADIUS server for a specific FlexConnect access point
	secondary	Specifies the secondary RADIUS server for a specific FlexConnect AP
	<i>ip_address</i>	IP address of the RADIUS server
	<i>auth_port secret</i>	Name of the port
	<i>secret</i>	RADIUS server secret
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a primary RADIUS server for a specific access point:

```
(Cisco Controller) >config ap flexconnect radius auth set primary 192.12.12.1
```

config ap flexconnect vlan

To enable or disable VLAN tagging for a FlexConnect access, use the **config ap flexconnect vlan** command.

```
config ap flexconnect vlan { enable | disable } cisco_ap
```

Syntax Description	enable	Enables the access point's VLAN tagging.
	disable	Disables the access point's VLAN tagging.
	<i>cisco_ap</i>	Name of the Cisco lightweight access point.
Command Default	Disabled. Once enabled, WLANs enabled for local switching inherit the VLAN assigned at the controller.	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to enable the access point's VLAN tagging for a FlexConnect access:

```
(Cisco Controller) >config ap flexconnect vlan enable AP02
```

config ap flexconnect vlan add

To add a VLAN to a FlexConnect access point, use the **config ap flexconnect vlan add** command.

```
config ap flexconnect vlan add vlan-id acl in-acl out-acl cisco_ap
```

Syntax Description		
	<i>vlan-id</i>	VLAN identifier.
	<i>acl</i>	ACL name that contains up to 32 alphanumeric characters.
	<i>in-acl</i>	Inbound ACL name that contains up to 32 alphanumeric characters.
	<i>out-acl</i>	Outbound ACL name that contains up to 32 alphanumeric characters.
	<i>cisco_ap</i>	Name of the Cisco lightweight access point.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the FlexConnect access point:

```
(Cisco Controller) >config ap flexconnect vlan add 21 acl inacl1 outacl1 ap1
```

config ap flexconnect vlan native

To configure a native VLAN for a FlexConnect access point, use the **config ap flexconnect vlan native** command.

```
config ap flexconnect vlan native vlan-id cisco_ap
```

Syntax Description		
	<i>vlan-id</i>	VLAN identifier.
	<i>cisco_ap</i>	Name of the Cisco lightweight access point.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a native VLAN for a FlexConnect access point mode:

```
(Cisco Controller) >config ap flexconnect vlan native 6 AP02
```

config ap flexconnect web-auth

To configure a FlexConnect ACL for external web authentication in locally switched WLANs, use the **config ap flexconnect web-auth** command.

```
config ap flexconnect web-auth wlan wlan_id cisco_ap acl_name { enable | disable }
```

Syntax Description	Parameter	Description
	wlan	Specifies the wireless LAN to be configured with a FlexConnect ACL.
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512 (inclusive).
	<i>cisco_ap</i>	Name of the FlexConnect access point.
	<i>acl_name</i>	Name of the FlexConnect ACL.
	enable	Enables the FlexConnect ACL on the locally switched wireless LAN.
	disable	Disables the FlexConnect ACL on the locally switched wireless LAN.

Command Default FlexConnect ACL for external web authentication in locally switched WLANs is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines The FlexConnect ACLs that are specific to an AP have the highest priority. The FlexConnect ACLs that are specific to WLANs have the lowest priority.

The following example shows how to enable FlexConnect ACL for external web authentication on WLAN 6:

```
(Cisco Controller) >config ap flexconnect web-auth wlan 6 AP2 flexacl2 enable
```

config ap flexconnect vlan wlan

To assign a VLAN ID to a FlexConnect access point, use the **config ap flexconnect vlan wlan** command.

```
config ap flexconnect vlan wlan wlan-id vlan-id cisco_ap
```

Syntax Description	Parameter	Description
	<i>wlan-id</i>	WLAN identifier

<i>vlan-id</i>	VLAN identifier (1 - 4094).
<i>cisco_ap</i>	Name of the Cisco lightweight access point.

Command Default VLAN ID associated to the WLAN.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to assign a VLAN ID to a FlexConnect access point:

```
(Cisco Controller) >config ap flexconnect vlan wlan 192.12.12.1 6 AP02
```

config ap flexconnect web-policy acl

To configure a Web Policy FlexConnect ACL on an access point, use the **config ap flexconnect web-policy acl** command.

config ap flexconnect web-policy acl {**add** | **delete**} *acl_name*

Syntax Description		
add		Adds a Web Policy FlexConnect ACL on an access point.
delete		Deletes Web Policy FlexConnect ACL on an access point.
<i>acl_name</i>		Name of the Web Policy FlexConnect ACL.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to add a Web Policy FlexConnect ACL on an access point:

```
(Cisco Controller) >config ap flexconnect web-policy acl add flexacl2
```

config ap hotspot

To configure hotspot parameters on an access point, use the **config ap hotspot** command.

config ap hotspot venue {**type** *group_code type_code* | **name** {**add** *language_code venue_name* | **delete**}} *cisco_ap*

Syntax Description		
venue		Configures venue information for given AP group.
type		Configures the type of venue for given AP group.

group_code Venue group information for given AP group.

The following options are available:

- 0—UNSPECIFIED
 - 1—ASSEMBLY
 - 2—BUSINESS
 - 3—EDUCATIONAL
 - 4—FACTORY-INDUSTRIAL
 - 5—INSTITUTIONAL
 - 6—MERCANTILE
 - 7—RESIDENTIAL
 - 8—STORAGE
 - 9—UTILITY-MISC
 - 10—VEHICULAR
 - 11—OUTDOOR
-

type_code

Venue type information for the AP group.

For venue group 1 (ASSEMBLY), the following options are available:

- 0—UNSPECIFIED ASSEMBLY
- 1—ARENA
- 2—STADIUM
- 3—PASSENGER TERMINAL
- 4—AMPHITHEATER
- 5—AMUSEMENT PARK
- 6—PLACE OF WORSHIP
- 7—CONVENTION CENTER
- 8—LIBRARY
- 9—MUSEUM
- 10—RESTAURANT
- 11—THEATER
- 12—BAR
- 13—COFFEE SHOP
- 14—ZOO OR AQUARIUM
- 15—EMERGENCY COORDINATION CENTER

For venue group 2 (BUSINESS), the following options are available:

- 0—UNSPECIFIED BUSINESS
- 1—DOCTOR OR DENTIST OFFICE
- 2—BANK
- 3—FIRE STATION
- 4—POLICE STATION
- 6—POST OFFICE
- 7—PROFESSIONAL OFFICE
- 8—RESEARCH AND DEVELOPMENT FACILITY
- 9—ATTORNEY OFFICE

For venue group 3 (EDUCATIONAL), the following options are available:

- 0—UNSPECIFIED EDUCATIONAL
 - 1—PRIMARY SCHOOL
 - 2—SECONDARY SCHOOL
-

- 3—UNIVERSITY OR COLLEGE

For venue group 4 (FACTORY-INDUSTRIAL), the following options are available:

- 0—UNSPECIFIED FACTORY AND INDUSTRIAL
- 1—FACTORY

For venue group 5 (INSTITUTIONAL), the following options are available:

- 0—UNSPECIFIED INSTITUTIONAL
 - 1—HOSPITAL
 - 2—LONG-TERM CARE FACILITY
 - 3—ALCOHOL AND DRUG RE-HABILITATION CENTER
 - 4—GROUP HOME
 - 5 :PRISON OR JAIL
-

type_code

For venue group 6 (MERCANTILE), the following options are available:

- 0—UNSPECIFIED MERCANTILE
- 1—RETAIL STORE
- 2—GROCERY MARKET
- 3—AUTOMOTIVE SERVICE STATION
- 4—SHOPPING MALL
- 5—GAS STATION

For venue group 7 (RESIDENTIAL), the following options are available:

- 0—UNSPECIFIED RESIDENTIAL
- 1—PRIVATE RESIDENCE
- 2—HOTEL OR MOTEL
- 3—DORMITORY
- 4—BOARDING HOUSE

For venue group 8 (STORAGE), the option is:

- 0—UNSPECIFIED STORAGE

For venue group 9 (UTILITY-MISC), the option is:

- 0—UNSPECIFIED UTILITY AND MISCELLANEOUS

For venue group 10 (VEHICULAR), the following options are available:

- 0—UNSPECIFIED VEHICULAR
- 1—AUTOMOBILE OR TRUCK
- 2—AIRPLANE
- 3—BUS
- 4—FERRY
- 5—SHIP OR BOAT
- 6—TRAIN
- 7—MOTOR BIKE

For venue group 11 (OUTDOOR), the following options are available:

- 0—UNSPECIFIED OUTDOOR
- 1—MINI-MESH NETWORK
- 2—CITY PARK
- 3—REST AREA

- 4—TRAFFIC CONTROL
- 5—BUS STOP
- 6—KIOSK

name	Configures the name of venue for this access point.
<i>language_code</i>	ISO-639 encoded string defining the language used at the venue. This string is a three-character language code. For example, you can enter ENG for English.
<i>venue_name</i>	Venue name for this access point. This name is associated with the basic service set (BSS) and is used in cases where the SSID does not provide enough information about the venue. The venue name is case sensitive and can be up to 252 alphanumeric characters.
add	Adds the HotSpot venue name for this access point.
delete	Deletes the HotSpot venue name for this access point.
<i>cisco_ap</i>	Name of the Cisco access point.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the venue group as educational and venue type as university:

```
(Cisco Controller) >config ap hotspot venue type 3 3
```

config ap image predownload

To configure an image on a specified access point, use the **config ap image predownload** command.

```
config ap image predownload {abort | primary | backup} {cisco_ap | all}
```

Syntax Description

abort	Terminates the predownload image process.
primary	Predownloads an image to a Cisco access point from the controller's primary image.
<i>cisco_ap</i>	Name of a Cisco lightweight access point.
all	Specifies all access points to predownload an image.
(Cisco Controller) >	



Note If an AP itself is configured with the keyword **all**, the all access points case takes precedence over the AP that is with the keyword **all**.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to predownload an image to an access point from the primary image:

```
(Cisco Controller) >config ap image predownload primary all
```

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		
	<i>cisco_ap</i>	Name of a Cisco lightweight access point.
	all	Specifies all access points to interchange the boot images.



Note If an AP itself is configured with the keyword **all**, the all access points case takes precedence over the AP that is with the keyword **all**.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >config ap image swap all
```

config ap led-state

To configure the LED state of an access point or to configure the flashing of LEDs, use the **config ap led-state** command.

config ap led-state {enable | disable} {cisco_ap | all}

config ap led-state flash {seconds | indefinite | disable} {cisco_ap | dual-band}

Syntax Description

enable	Enables the LED state of an access point.
disable	Disables the LED state of an access point.
<i>cisco_ap</i>	Name of a Cisco lightweight access point.
flash	Configure the flashing of LEDs for an access point.
<i>seconds</i>	Duration that the LEDs have to flash. The range is from 1 to 3600 seconds.
indefinite	Configures indefinite flashing of the access point's LED.
dual-band	Configures the LED state for all dual-band access points.

Usage Guidelines



Note If an AP itself is configured with the keyword **all**, the all access points case takes precedence over the AP that is with the keyword **all**.

LEDs on access points with dual-band radio module will flash green and blue when you execute the led state flash command.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) >config ap led-state enable AP02
```

The following example shows how to enable the flashing of LEDs for dual-band access points:

```
(Cisco Controller) >config ap led-state flash 20 dual-band
```

config ap link-encryption

To configure the Datagram Transport Layer Security (DTLS) data encryption for access points on the 5500 series controller, use the **config ap link-encryption** command.



Note If an AP itself is configured with the keyword **all**, the all access points case takes precedence over the AP that is with the keyword **all**.

```
config ap link-encryption { enable | disable } { cisco_ap | all }
```

Syntax Description	enable	Enables the DTLS data encryption for access points.
	disable	Disables the DTLS data encryption for access points.
	<i>cisco_ap</i>	Name of a Cisco lightweight access point.
	all	Specifies all access points.

Command Default DTLS data encryption is enabled automatically for OfficeExtend access points but disabled by default for all other access points.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable the data encryption for an access point:

```
(Cisco Controller) >config ap link-encryption enable AP02
```

config ap link-latency

To configure link latency for a specific access point or for all access points currently associated to the controller, use the **config ap link-latency** command:



Note If an AP itself is configured with the keyword **all**, the all access points case takes precedence over the AP that is with the keyword **all**.

```
config ap link-latency { enable | disable | reset } { cisco_ap | all }
```

Syntax Description	enable	Enables the link latency for an access point.
	disable	Disables the link latency for an access point.

reset	Resets all link latency for all access points.
<i>cisco_ap</i>	Name of the Cisco lightweight access point.
all	Specifies all access points.

Command Default

By default, link latency is in disabled state.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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.

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

```
(Cisco Controller) >config ap link-latency enable all
```

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
```

Syntax Description

<i>location</i>	Location name of the access point (enclosed by double quotation marks).
<i>cisco_ap</i>	Name of the Cisco lightweight access point.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

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

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

```
(Cisco Controller) >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	<i>severity_level</i>	Severity levels are as follows: <ul style="list-style-type: none"> • 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
	<i>cisco_ap</i>	Cisco access point.

<i>cisco_ap</i>	Cisco access point.
all	Specifies all access points.



Note If an AP itself is configured with the keyword **all**, the all access points case takes precedence over the AP that is with the keyword **all**.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

This example shows how to set the severity for filtering syslog messages to 3:

```
(Cisco Controller) >config ap logging syslog level 3
```

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	username	Configures the username for AP management.
	<i>AP_username</i>	Management username.

password	Configures the password for AP management.
<i>AP_password</i>	AP management password.
secret	Configures the secret password for privileged AP management.
<i>secret</i>	AP managemetn secret password.
all	Applies configuration to every AP that does not have a specific username.
<i>cisco_ap</i>	Cisco access point.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

The following requirements are enforced on the password:

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

The following requirement is enforced on the secret password:

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

The following example shows how to add a username, password, and secret password for AP management:

```
(Cisco Controller) > config ap mgmtuser add username acd password Arc_1234 secret Mid_45
all
```

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

<i>cisco_ap</i>	Access point.
-----------------	---------------

Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete the credentials of an access point:

```
(Cisco Controller) > config ap mgmtuser delete cisco_ap1
```

config ap mode

To change a controller communication option for an individual Cisco lightweight access point, use the **config ap mode** command.

```
config ap mode {bridge | flexconnect sensor submode {none | wips | pppoe-only | pppoe-wips}
| local submode {none | wips} | reap | rogue | sniffer | se-connect | monitor submode
{none | wips} | flex+bridge submode {none | wips | pppoe-only | pppoe-wips} } cisco_ap
```

Syntax Description		
bridge		Converts from a lightweight access point to a mesh access point (bridge mode).
flexconnect		Enables FlexConnect mode on an access point.
local		Converts from an indoor mesh access point (MAP or RAP) to a non-mesh lightweight access point (local mode).
reap		Enables remote edge access point mode on an access point.
rogue		Enables wired rogue detector mode on an access point.
sniffer		Enables wireless sniffer mode on an access point.
se-connect		Enables flex+bridge mode on an access point.
flex+bridge		Enables spectrum expert mode on an access point.
submode		(Optional) Configures wIPS submode on an access point.
none		Disables the wIPS on an access point.
wips		Enables the wIPS submode on an access point.
pppoe-only		Enables the PPPoE submode on an access point.
pppoe-wips		Enables the PPPoE-wIPS submode on an access point.
sensor		Enables sensor mode for the Cisco AP
<i>cisco_ap</i>		Name of the Cisco lightweight access point.

Command Default Local

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	The flex+bridge keyword was added..
	8.3	This command was modified. The sensor keyword was added.

Usage Guidelines

The sniffer mode captures and forwards all the packets from the clients on that channel to a remote machine that runs AiroPeek or other supported packet analyzer software. It includes information on the timestamp, signal strength, packet size and so on.

The following example shows how to set the controller to communicate with access point AP91 in bridge mode:

```
(Cisco Controller) > config ap mode bridge AP91
```

The following example shows how to set the controller to communicate with access point AP01 in local mode:

```
(Cisco Controller) > config ap mode local AP01
```

The following example shows how to set the controller to communicate with access point AP91 in remote office (REAP) mode:

```
(Cisco Controller) > config ap mode flexconnect AP91
```

The following example shows how to set the controller to communicate with access point AP91 in a wired rogue access point detector mode:

```
(Cisco Controller) > config ap mode rogue AP91
```

The following example shows how to set the controller to communicate with access point AP02 in wireless sniffer mode:

```
(Cisco Controller) > config ap mode sniffer AP02
```

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		
	802.11b fast-channel	Configures 802.11b scanning channels for a monitor-mode access point.
	no-optimization	Specifies no channel scanning optimization for the access point.
	tracking-opt	Enables tracking optimized channel scanning for the access point.
	wips-optimized	Enables WIPS optimized channel scanning for the access point.

<i>cisco_ap</i>	Name of the Cisco lightweight access point.
-----------------	---

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a Cisco wireless intrusion prevention system (wIPS) monitor mode on access point AP01:

```
(Cisco Controller) > config ap monitor-mode wips-optimized AP01
```

config ap packet-dump

To configure the Packet Capture parameters on access points, use the **config ap packet-dump** command.

```
config ap packet-dump {buffer-size Size_in_KB | capture-time Time_in_Min | ftp serverip IP_addr | path path username username password password | start MAC_address Cisco_AP | stop | truncate Length_in_Bytes}
config ap packet-dump classifier {{arp | broadcast | control | data | dot1x | iapp | ip | management | multicast } {enable | disable} | tcp {enable | disable | port TCP_Port {enable | disable}} | udp {enable | disable | port UDP_Port {enable | disable}}}
```

Syntax Description	buffer-size	Configures the buffer size for Packet Capture in the access point.
	<i>Size_in_KB</i>	Size of the buffer. The range is from 1024 to 4096 KB.
	capture-time	Configures the timer value for Packet Capture.
	<i>Time_in_Min</i>	Timer value for Packet Capture. The range is from 1 to 60 minutes.
	ftp	Configures FTP parameters for Packet Capture.
	serverip	Configures the FTP server.
	<i>IP_addr</i>	IP address of the FTP server.
	path <i>path</i>	Configures FTP server path.
	username <i>user_ID</i>	Configures the username for the FTP server.
	password <i>password</i>	Configures the password for the FTP server.

start	Starts Packet Capture from the access point.
<i>MAC_address</i>	Client MAC Address for Packet Capture.
<i>Cisco_AP</i>	Name of the Cisco access point.
stop	Stops Packet Capture from the access point.
truncate	Truncates the packet to the specified length during Packet Capture.
<i>Length_in_Bytes</i>	Length of the packet after truncation. The range is from 20 to 1500.
classifier	Configures the classifier information for Packet Capture. You can specify the type of packets that needs to be captured.
arp	Captures ARP packets.
enable	Enables capture of ARP, broadcast, 802.11 control, 802.11 data, dot1x, Inter Access Point Protocol (IAPP), IP, 802.11 management, or multicast packets.
disable	Disables capture of ARP, broadcast, 802.11 control, 802.11 data, dot1x, IAPP, IP, 802.11 management, or multicast packets.
broadcast	Captures broadcast packets.
control	Captures 802.11 control packets.
data	Captures 802.11 data packets.
dot1x	Captures dot1x packets.
iapp	Captures IAPP packets.
ip	Captures IP packets.
management	Captures 802.11 management packets.
multicast	Captures multicast packets.
tcp	Captures TCP packets.

<i>TCP_Port</i>	TCP port number. The range is from 1 to 65535.
udp	Captures TCP packets.
<i>UDP_Port</i>	UDP port number. The range is from 1 to 65535.
ftp	Configures FTP parameters for Packet Capture.
<i>server_ip</i>	FTP server IP address.

Command Default

The default buffer size is 2 MB. The default capture time is 10 minutes.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	This command supports both IPv4 and IPv6 address formats.
8.8	This command is not supported for Cisco Wave 2 APs. For more information, see CSCvj19314 .

Usage Guidelines

Packet Capture does not work during intercontroller roaming.

The controller does not capture packets created in the radio firmware and sent out of the access point, such as a beacon or probe response. Only packets that flow through the Radio driver in the Tx path will be captured.

Use the command **config ap packet-dump start** to start the Packet Capture from the access point. When you start Packet Capture, the controller sends a Control and Provisioning of Wireless Access Points protocol (CAPWAP) message to the access point to which the client is associated and captures packets. You must configure the FTP server and ensure that the client is associated to the access point before you start Packet Capture. If the client is not associated to the access point, you must specify the name of the access point.

This command supports both IPv4 and IPv6 address formats.

The following example shows how to start Packet Capture from an access point:

```
(Cisco Controller) >config ap packet-dump start 00:0d:28:f4:c0:45 AP1
```

The following example shows how to capture 802.11 control packets from an access point:

```
(Cisco Controller) >config ap packet-dump classifier control enable
```

config ap port

To configure the port for a foreign access point, use the **config ap port** command.

config ap port *MAC port*

Syntax Description	<i>MAC</i>	Foreign access point MAC address.
	<i>port</i>	Port number for accessing the foreign access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the port for a foreign access point MAC address:

```
(Cisco Controller) > config ap port 12:12:12:12:12:12 20
```

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}

Syntax Description	enable	Enables the power injector state for an access point.
	disable	Disables the power injector state for an access point.
	<i>cisco_ap</i>	Name of the Cisco lightweight access point.
	all	Specifies all Cisco lightweight access points connected to the controller.
	installed	Detects the MAC address of the current switch port that has a power injector.
	override	Overrides the safety checks and assumes a power injector is always installed.
	<i>switch_MAC</i>	MAC address of the switch port with an installed power injector.



Note If an AP itself is configured with the keyword **all**, the all access points case takes precedence over the AP that is with the keyword **all**.

Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the power injector state for all access points:

```
(Cisco Controller) > config ap power injector enable all 12:12:12:12:12:12
```

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	enable	Enables the inline power Cisco pre-standard switch state for an access point.
		disable
	<i>cisco_ap</i>	Name of the Cisco lightweight access point.
Command Default	Disabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the inline power Cisco pre-standard switch state for access point AP02:

```
(Cisco Controller) > config ap power pre-standard enable AP02
```

config ap primary-base

To set the Cisco lightweight access point primary controller, use the **config ap primary-base** command.

```
config ap primary-base controller_name Cisco_AP [ controller_ip_address ]
```

Syntax Description	<i>controller_name</i>	Name of the controller.
		<i>Cisco_AP</i>
	<i>controller_ip_address</i>	(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.
	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.
Command Default	None	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

Usage Guidelines

The Cisco lightweight access point associates with this 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.

This command supports both IPv4 and IPv6 address formats.

The following example shows how to set an access point primary controller IPv4 address for an Cisco AP:

```
(Cisco Controller) > config ap primary-base SW_1 AP2 10.0.0.0
```

The following example shows how to set an access point primary controller IPv6 address for an Cisco AP:

```
(Cisco Controller) > config ap primary-base SW_1 AP2 2001:DB8:0:1::1
```

Related Commands `show ap config general`

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		
	1	Specifies low priority.
	2	Specifies medium priority.
	3	Specifies high priority.
	4	Specifies the highest (critical) priority.
	<i>cisco_ap</i>	Cisco lightweight access point name.

Command Default 1 - Low priority.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following 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:

```
(Cisco Controller) > config ap priority 3 AP02
```

config ap reset

To reset a Cisco lightweight access point, use the **config ap reset** command.

```
config ap reset cisco_ap
```

Syntax Description

<i>cisco_ap</i>	Cisco lightweight access point name.
-----------------	--------------------------------------

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to reset an access point:

```
(Cisco Controller) > config ap reset AP2
```

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

<i>period</i>	Time period in seconds between 10 and 120.
---------------	--

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to reset an access point reporting period to 120 seconds:

```
> config ap reporting-period 120
```

config ap retransmit count

To configure the access point control packet retransmission count, use the **config ap retransmit count** command.

config ap retransmit count *count* {**all** | *cisco_ap*}

Syntax Description		
<i>count</i>		Number of times control packet will be retransmitted. The range is from 3 to 8.
all		Specifies all access points.
<i>cisco_ap</i>		Cisco lightweight access point name.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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

```
(Cisco Controller) > config ap retransmit count 6 cisco_ap
```

config ap retransmit interval

To configure the access point control packet retransmission interval, use the **config ap retransmit interval** command.

config ap retransmit interval *seconds* {**all** | *cisco_ap*}

Syntax Description		
<i>seconds</i>		AP control packet retransmission timeout between 2 and 5 seconds.
all		Specifies all access points.
<i>cisco_ap</i>		Cisco lightweight access point name.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the retransmission interval for all access points globally:


```
(Cisco Controller) > config ap retransmit interval 4 all
```

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} cisco_ap
```

Syntax Description	rootAP	Designates the mesh access point as a root access point (RAP).
	meshAP	Designates the mesh access point as a mesh access point (MAP).
	<i>cisco_ap</i>	Name of the Cisco lightweight access point.
Command Default	meshAP.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
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. If you change the role of the AP, the AP will be rebooted.	

The following example shows how to designate mesh access point AP02 as a root access point:

```
(Cisco Controller) > 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)
```

config ap rst-button

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.
	<i>cisco_ap</i>	Name of the Cisco lightweight access point.
Command Default	None	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the Reset button for access point AP03:

```
(Cisco Controller) > config ap rst-button enable AP03
```

config ap secondary-base

To set the Cisco lightweight access point secondary controller, use the **config ap secondary-base** command.

config ap secondary-base *Controller_name* *Cisco_AP* [*Controller_IP_address*]

Syntax Description		
	<i>controller_name</i>	Name of the controller.
	<i>Cisco_AP</i>	Cisco lightweight access point name.
	<i>Controller_IP_address</i>	(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.
	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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

Usage Guidelines The Cisco lightweight access point associates with this 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.

This command supports both IPv4 and IPv6 address formats.

The following example shows how to set an access point secondary controller:

```
(Cisco Controller) > config ap secondary-base SW_1 AP2 10.0.0.0
```

The following example shows how to set an access point primary controller IPv6 address for an Cisco AP:

```
(Cisco Controller) > config ap secondary-base SW_1 AP2 2001:DB8:0:1::1
```

Related Commands `show ap config general`

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

802.11a	Specifies the 802.11a network.
802.11b	Specifies the 802.11b network.
enable	Enables sniffing on an access point.
<i>channel</i>	Channel to be sniffed.
<i>server_ip</i>	IP address of the remote machine running Omnippeek, Airopeek, AirMagnet, or Wireshark software.
disable	Disables sniffing on an access point.
<i>cisco_ap</i>	Access point configured as the sniffer.

Command Default

Channel 36.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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 Omnippeek, 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)

The following example shows how to enable the sniffing on the 802.11a an access point from the primary controller:

```
(Cisco Controller) > config ap sniff 80211a enable 23 11.22.44.55 AP01
```

config ap ssh

To enable Secure Shell (SSH) connectivity on an access point, use the **config ap ssh** command.

config ap ssh {enable | disable | default} *cisco_ap* | *all*

Syntax Description		
enable		Enables the SSH connectivity on an access point.
disable		Disables the SSH connectivity on an access point.
default		Replaces the specific SSH configuration of an access point with the global SSH configuration.
<i>cisco_ap</i>		Cisco access point name.
<i>all</i>		All access points.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable SSH connectivity on access point Cisco_ap2:

```
> config ap ssh enable cisco_ap2
```

config ap static-ip

To configure Static IP address settings on Cisco lightweight access point , use the **config ap static-ip** command.

config ap static-ip {enable *Cisco_AP AP_IP_addr IP_netmask /prefix_length gateway* | **disable** *Cisco_AP* | **add** {**domain** {*Cisco_AP* | **all**} *domain_name* | **nameserver** {*Cisco_AP* | **all**} *nameserver-ip*} | **delete** {**domain** | **nameserver**} {*Cisco_AP* | **all**}}

Syntax Description		
enable		Enables the Cisco lightweight access point static IP address.
disable		Disables the Cisco lightweight access point static IP address. The access point uses DHCP to get the IP address.
<i>Cisco_AP</i>		Cisco lightweight access point name.
<i>AP_IP_addr</i>		Cisco lightweight access point IP address

<i>IP_netmask/prefix_length</i>	Cisco lightweight access point network mask.
<i>gateway</i>	IP address of the Cisco lightweight access point gateway.
add	Adds a domain or DNS server.
domain	Specifies the domain to which a specific access point or all access points belong.
all	Specifies all access points.
<i>domain_name</i>	Specifies a domain name.
nameserver	Specifies a DNS server so that a specific access point or all access points can discover the controller using DNS resolution.
<i>nameserver-ip</i>	DNS server IP address.
delete	Deletes a domain or DNS server.



Note If an AP itself is configured with the keyword **all**, the all access points case takes precedence over the AP that is with the keyword **all**.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

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 IPv6 address, Prefix-length and IPv6 gateway address, the CAPWAP tunnel will restart for access point. Changing the AP's IP address will cause the AP to disjoin. After the access point rejoins the controller, you can enter the domain and IPv6 DNS server information.

This command supports both IPv4 and IPv6 address formats.

The following example shows how to configure static IP address on an access point:

```
(Cisco Controller) >config ap static-ip enable AP2 209.165.200.225 255.255.255.0
209.165.200.254
```

The following example shows how to configure static IPv6 address on an access point:

```
(Cisco Controller) > config ap static-ip enable AP2 2001:DB8:0:1::1
```

Related Commands `show ap config general`

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	period	Time in seconds from 0 to 65535. A zero value disables the timer.
	<i>cisco_ap</i>	Cisco lightweight access point name.

Command Default The default value is 0 (disabled state).

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines A value of 0 (zero) means that the Cisco lightweight access point does not send any DOT11 statistics. The acceptable range for the timer is from 0 to 65535 seconds, and the Cisco lightweight access point must be disabled to set this value.

The following example shows how to set the stats timer to 600 seconds for access point AP2:

```
(Cisco Controller) > config ap stats-timer 600 AP2
```

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 ip_address
```

Syntax Description	<i>ip_address</i>	IPv4/IPv6 address of the syslog server.
--------------------	-------------------	---

Command Default The default value of the IPv4 address of the syslog server is 255.255.255.255.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Release	Modification
8.0	This command supports both IPv4 and IPv6 address formats.

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.

This command supports both IPv4 and IPv6 address formats.

The following example shows how to configure a global syslog server, using IPv4 address, for all access points:

```
(Cisco Controller) > config ap syslog host global 255.255.255.255
```

The following example shows how to configure a global syslog server, using IPv6 address, for all access points:

```
(Cisco Controller) > config ap syslog host global 2001:9:10:56::100
```

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 *ap_name* *ip_address*

Syntax Description	
<i>ap_name</i>	Cisco lightweight access point.
<i>ip_address</i>	IPv4/IPv6 address of the syslog server.

Command Default The default value of the syslog server IP address is 0.0.0.0.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

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.

This command supports both IPv4 and IPv6 address formats.

The following example shows how to configure a syslog server:

```
(Cisco Controller) > config ap syslog host specific 0.0.0.0
```

The following example shows how to configure a syslog server for a specific AP, using IPv6 address:

```
(Cisco Controller) > config ap syslog host specific AP3600 2001:9:10:56::100
```

config ap tcp-mss-adjust

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-mss-adjust** command.

config ap tcp-mss-adjust {enable | disable} {cisco_ap | all} size

Syntax Description

enable	Enables the TCP maximum segment size on an access point.
disable	Disables the TCP maximum segment size on an access point.
<i>cisco_ap</i>	Cisco access point name.
all	Specifies all access points.
<i>size</i>	Maximum segment size. <ul style="list-style-type: none"> • IPv4—Specify a value between 536 and 1363. • IPv6—Specify a value between 1220 and 1331. <p>Note Any TCP MSS value that is below 1220 and above 1331 will not be effective for CAPWAP v6 AP.</p>



Note If an AP itself is configured with the keyword **all**, the all access points case takes precedence over the AP that is with the keyword **all**.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	This command supports only IPv6.

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.

This example shows how to enable the TCP MSS on access point `cisco_ap1` with a segment size of 1200 bytes:

```
(Cisco Controller) > config ap tcp-mss-adjust enable cisco_ap1 1200
```


config ap telnet

To enable Telnet connectivity on an access point, use the **config ap telnet** command.

config ap telnet { **enable** | **disable** | **default** } *cisco_ap* | *all*

Syntax Description	enable	Enables the Telnet connectivity on an access point.
	disable	Disables the Telnet connectivity on an access point.
	default	Replaces the specific Telnet configuration of an access point with the global Telnet configuration.
	<i>cisco_ap</i>	Cisco access point name.
	<i>all</i>	All access points.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

- The Cisco lightweight access point associates with this controller for all network operation and in the event of a hardware reset.
- Telnet is not supported on Cisco Aironet 1810 OEAP, 1810W, 1830, 1850, 2800, and 3800 Series APs.

The following example shows how to enable Telnet connectivity on access point *cisco_ap1*:

```
(Cisco Controller) >config ap telnet enable cisco_ap1
```

The following example shows how to disable Telnet connectivity on access point *cisco_ap1*:

```
(Cisco Controller) > config ap telnet disable cisco_ap1
```

config ap tertiary-base

To set the Cisco lightweight access point tertiary controller, use the **config ap tertiary-base** command.

config ap tertiary-base *controller_name* *Cisco_AP* [*controller_ip_address*]

Syntax Description	<i>controller_name</i>	Name of the controller.
	<i>Cisco_AP</i>	Cisco lightweight access point name.

controller_ip_address (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.

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

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 controller for all network operations and in the event of a hardware reset.

This command supports both IPv4 and IPv6 address formats.

This example shows how to set the access point tertiary controller:

```
(Cisco Controller) > config ap tertiary-base SW_1 AP02 10.0.0.0
```

The following example shows how to set an access point tertiary controller IPv6 address for an Cisco AP:

```
(Cisco Controller) > config ap tertiary-base SW_1 AP2 2001:DB8:0:1::1
```

Related Commands `show ap config general`

config ap tftp-downgrade

To configure the settings used for downgrading a lightweight access point to an autonomous access point, use the **config ap tftp-downgrade** command.

config ap tftp-downgrade *tftp_ip_address* *filename* *Cisco_AP*

Syntax Description		
<i>tftp_ip_address</i>		IP address of the TFTP server.
<i>filename</i>		Filename of the access point image file on the TFTP server.
<i>Cisco_AP</i>		Access point name.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

The following example shows how to configure the settings for downgrading access point ap1240_102301:

```
(Cisco Controller) >config ap ftp-downgrade 209.165.200.224 1238.tar ap1240_102301
```

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*]

Syntax Description		
<i>user_id</i>		Administrator username.
<i>passwd</i>		Administrator password.
all		(Optional) Specifies all access points.
<i>ap_name</i>		Name of a specific access point.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to assign a username and password to a specific access point:

```
(Cisco Controller) > config ap username jack password blue 1a204
```

The following example shows how to assign the same username and password to a all access points:

```
(Cisco Controller) > config ap username jack password blue all
```

config ap venue

To configure the venue information for 802.11u network on an access point, use the **config ap venue** command.

config ap venue { **add**venue_name venue-group venue-type lang-code cisco-ap | **delete** }

Syntax Description

add	Adds venue information.
<i>venue_name</i>	Venue name.
<i>venue_group</i>	Venue group category. See the table below for details on venue group mappings.
<i>venue_type</i>	Venue type. This value depends on the venue-group specified. See the table below for venue group mappings.
<i>lang_code</i>	Language used. An ISO-14962-1997 encoded string that defines the language. This string is a three character language code. Enter the first three letters of the language in English (for example, eng for English).
<i>cisco_ap</i>	Name of the access point.
deletes	Deletes venue information.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the venue details for an access point named cisco-ap1:

```
(Cisco Controller) > config ap venue add test 11 34 eng cisco-ap1
```

This table lists the different venue types for each venue group.

Table 7: Venue Group Mapping

Venue Group Name	Value	Venue Type for Group
UNSPECIFIED	0	

Venue Group Name	Value	Venue Type for Group
ASSEMBLY	1	<ul style="list-style-type: none"> • 0—UNSPECIFIED ASSEMBLY • 1—ARENA • 2—STADIUM • 3—PASSENGER TERMINAL (E.G., AIRPORT, BUS, FERRY, TRAIN STATION) • 4—AMPHITHEATER • 5—AMUSEMENT PARK • 6—PLACE OF WORSHIP • 7—CONVENTION CENTER • 8—LIBRARY • 9—MUSEUM • 10—RESTAURANT • 11—THEATER • 12—BAR • 13—COFFEE SHOP • 14—ZOO OR AQUARIUM • 15—EMERGENCY COORDINATION CENTER
BUSINESS	2	<ul style="list-style-type: none"> • 0—UNSPECIFIED BUSINESS • 1—DOCTOR OR DENTIST OFFICE • 2—BANK • 3—FIRE STATION • 4—POLICE STATION • 6—POST OFFICE • 7—PROFESSIONAL OFFICE • 8—RESEARCH AND DEVELOPMENT FACILITY • 9—ATTORNEY OFFICE

Venue Group Name	Value	Venue Type for Group
EDUCATIONAL	3	<ul style="list-style-type: none"> • 0—UNSPECIFIED EDUCATIONAL • 1—SCHOOL, PRIMARY • 2—SCHOOL, SECONDARY • 3—UNIVERSITY OR COLLEGE
FACTORY-INDUSTRIAL	4	<ul style="list-style-type: none"> • 0—UNSPECIFIED FACTORY AND INDUSTRIAL • 1—FACTORY
INSTITUTIONAL	5	<ul style="list-style-type: none"> • 0—UNSPECIFIED INSTITUTIONAL • 1—HOSPITAL • 2—LONG-TERM CARE FACILITY (E.G., NURSING HOME, HOSPICE, ETC.) • 3—ALCOHOL AND DRUG RE-HABILITATION CENTER • 4—GROUP HOME • 5—PRISON OR JAIL
MERCANTILE	6	<ul style="list-style-type: none"> • 0—UNSPECIFIED MERCANTILE • 1—RETAIL STORE • 2—GROCERY MARKET • 3—AUTOMOTIVE SERVICE STATION • 4—SHOPPING MALL • 5—GAS STATION
RESIDENTIAL	7	<ul style="list-style-type: none"> • 0—UNSPECIFIED RESIDENTIAL • 1—PRIVATE RESIDENCE • 2—HOTEL OR MOTEL • 3—DORMITORY • 4—BOARDING HOUSE
STORAGE	8	UNSPECIFIED STORAGE

Venue Group Name	Value	Venue Type for Group
UTILITY-MISC	9	0—UNSPECIFIED UTILITY AND MISCELLANEOUS
VEHICULAR	10	<ul style="list-style-type: none"> • 0—UNSPECIFIED VEHICULAR • 1—AUTOMOBILE OR TRUCK • 2—AIRPLANE • 3—BUS • 4—FERRY • 5—SHIP OR BOAT • 6—TRAIN • 7—MOTOR BIKE
OUTDOOR	11	<ul style="list-style-type: none"> • 0—UNSPECIFIED OUTDOOR • 1—MUNI-MESH NETWORK • 2—CITY PARK • 3—REST AREA • 4—TRAFFIC CONTROL • 5—BUS STOP • 6—KIOSK

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
enable	Enables the wireless LAN override on an access point.
disable	Disables the wireless LAN override on an access point.
802.11a	Specifies the 802.11a network.
802.11b	Specifies the 802.11b network.
<i>wlan_id</i>	Cisco wireless LAN controller ID assigned to a wireless LAN.
<i>cisco_ap</i>	Cisco lightweight access point name.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable wireless LAN override on the AP03 802.11a radio:

```
(Cisco Controller) > config ap wlan 802.11a AP03
```


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 *count*

Syntax Description	<i>count</i>	Value for the cycle count between 1 to 10.
---------------------------	--------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the probe cycle count for band select to 8:

```
(Cisco Controller) > 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 *threshold*

Syntax Description	<i>threshold</i>	Value for the cycle threshold between 1 and 1000 milliseconds.
---------------------------	------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the time threshold for a new scanning cycle with threshold value of 700 milliseconds:

```
(Cisco Controller) > config band-select cycle-threshold 700
```

Related Commands

- config band-select cycle-count
- config band-select expire
- config band-select client-rssi

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		
suppression		Sets the suppression expire to the band select.
dual-band		Sets the dual band expire to the band select.
<i>seconds</i>		<ul style="list-style-type: none"> • Value for suppression between 10 to 200 seconds. • Value for a dual-band between 10 to 300 seconds.

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the suppression expire to 70 seconds:

```
(Cisco Controller) > config band-select expire suppression 70
```

Related Commands

- config band-select cycle-threshold
- config band-select client-rssi
- config band-select cycle-count

config band-select client-rssi

To set the client received signal strength indicator (RSSI) threshold for band select, use the **config band-select client-rssi** command.

```
config band-select client-rssi rssi
```

Syntax Description	<i>rssi</i>	Minimum dBm of a client RSSI to respond to probe bet
--------------------	-------------	--

Command Default None

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the RSSI threshold for band select to 70:

```
(Cisco Controller) > config band-select client-rssi 70
```

Related Commands

config band-select cycle-threshold

config band-select expire

config band-select cycle-count

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	<i>client_mac_address</i>	MAC address of the client.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the reporting information of the client MAC address 00:1f:ca:cf:b6:60:

```
(Cisco Controller) >config client ccx clear-reports 00:1f:ca:cf:b6:60
```

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	<i>client_mac_address</i>	MAC address of the client.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the test results of the client MAC address 00:1f:ca:cf:b6:60:

```
(Cisco Controller) >config client ccx clear-results 00:1f:ca:cf:b6:60
```

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	<i>client_mac_address</i> MAC address of the client.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

Usage Guidelines This test does not require the client to use the diagnostic channel.

The following example shows how to send a request to the client00:0b:85:02:0d:20 to perform the default gateway ping test:

```
(Cisco Controller) >config client ccx default-gw-ping 00:0b:85:02:0d:20
```

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	<i>client_mac_address</i> MAC address of the client.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

Usage Guidelines This test does not require the client to use the diagnostic channel.

The following example shows how to send a request to the client 00:E0:77:31:A3:55 to perform the DHCP test:

```
(Cisco Controller) >config client ccx dhcp-test 00:E0:77:31:A3:55
```

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	<i>client_mac_address</i> MAC address of the client.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This test does not require the client to use the diagnostic channel.

The following example shows how to send a request to a client to perform the DNS server IP address ping test:

```
(Cisco Controller) >config client ccx dns-ping 00:E0:77:31:A3:55
```

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	<i>client_mac_address</i>	MAC address of the client.
	<i>host_name</i>	Hostname of the client.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This test does not require the client to use the diagnostic channel.

The following 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:

```
(Cisco Controller) >config client ccx dns-resolve 00:E0:77:31:A3:55 host_name
```

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	<i>client_mac_address</i>	MAC address of the client.
---------------------------	---------------------------	----------------------------

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to send a request to the client 172.19.28.40 to send its capability information:

```
(Cisco Controller) >config client ccx get-client-capability 172.19.28.40
```

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	<i>client_mac_address</i>	MAC address of the client.
--------------------	---------------------------	----------------------------

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to send a request to the client 172.19.28.40 to send the manufacturer's information:

```
(Cisco Controller) >config client ccx get-manufacturer-info 172.19.28.40
```

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	<i>client_mac_address</i>	MAC address of the client.
--------------------	---------------------------	----------------------------

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to send a request to the client 172.19.28.40 to send its current operating parameters:

```
(Cisco Controller) >config client ccx get-operating-parameters 172.19.28.40
```

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	<i>client_mac_address</i>	MAC address of the client.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to send a request to the client 172.19.28.40 to send its profile details:

```
(Cisco Controller) >config client ccx get-profiles 172.19.28.40
```

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 client ccx log-request { **roam** | **rsna** | **syslog** } *client_mac_address*

Syntax Description	roam	(Optional) Specifies the request to specify the client CCX roaming log.
	rsna	(Optional) Specifies the request to specify the client CCX RSNA log.
	syslog	(Optional) Specifies the request to specify the client CCX system log.
	<i>client_mac_address</i>	MAC address of the client.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to specify the request to specify the client CCS system log:

```
(Cisco Controller) >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'
Tue Oct 05 13:04:04 2006
SysLog Request LogID=1
```

The following example shows how to specify the client CCX roaming log:

```
(Cisco Controller) >config client ccx log-request roam 00:40:96:a8:f7:98
Thu Jun 22 11:55:14 2006
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
```

The following example shows how to specify the client CCX RSNA log:

```
(Cisco Controller) >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
RSNA Version=1
Group Cipher Suite=00-x0f-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 1a 1b 1c 1d 1e 1f
802.11i Auth Type: EAP_FAST
RSNA Result: Success
```

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	<i>client_mac_address</i> MAC address of the client.
---------------------------	--

message_id

Message type that involves one of the following:

- 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)

-
- 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.
-

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to send a message to the client MAC address 172.19.28.40 with the message user-action-required:

```
(Cisco Controller) >config client ccx send-message 172.19.28.40 user-action-required
```

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* {**dot11** | **security**} *client_mac_address*

Syntax Description	
<i>measurement_duration</i>	Measurement duration in seconds.
dot11	(Optional) Specifies dot11 counters.
security	(Optional) Specifies security counters.
<i>client_mac_address</i>	MAC address of the client.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to specify dot11 counter settings:

```
(Cisco Controller) >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
```

config client ccx test-abort

To send a request to the client to terminate the current test, use the **config client ccx test-abort** command.

config client ccx test-abort *client_mac_address*

Syntax Description	<i>client_mac_address</i> MAC address of the client.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				
Usage Guidelines	<p>Only one test can be pending at a time.</p> <p>The following example shows how to send a request to a client to terminate the correct test settings:</p> <pre>(Cisco Controller) >config client ccx test-abort 11:11:11:11:11:11</pre>				

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*

Syntax Description	<i>client_mac_address</i> MAC address of the client.				
	<i>ssid</i> Network name.				
	<i>bssid</i> Basic SSID.				
	802.11a Specifies the 802.11a network.				
	802.11b Specifies the 802.11b network.				
	802.11g Specifies the 802.11g network.				
	<i>channel</i> Channel number.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

The following 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:

```
(Cisco Controller) >config client ccx test-association 00:E0:77:31:A3:55 ssid bssid 802.11a
```

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.

```
config client ccx test-dot1x client_mac_address profile_id bssid 802.11 { a | b | g } channel
```

Syntax Description

client_mac_address MAC address of the client.

profile_id Test profile name.

bssid Basic SSID.

802.11a Specifies the 802.11a network.

802.11b Specifies the 802.11b network.

802.11g Specifies the 802.11g network.

channel Channel number.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to send a request to the client to perform the 802.11b test with the profile name profile_01:

```
(Cisco Controller) >config client ccx test-dot1x 172.19.28.40 profile_01 bssid 802.11b
```

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.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to send a request to the client to perform the profile redirect test with the profile name profile_01:

```
(Cisco Controller) >config client ccx test-profile 11:11:11:11:11:11 profile_01
```

config client deauthenticate

To disconnect a client, use the **config client deauthenticate** command.

config client deauthenticate {*MAC* | *IPv4/v6_address* | *user_name*}

Syntax Description		
<i>MAC</i>		Client MAC address.
<i>IPv4/v6_address</i>		IPv4 or IPv6 address.
<i>user_name</i>		Client user name.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to deauthenticate a client using its MAC address:

```
(Cisco Controller) >config client deauthenticate 11:11:11:11:11
```

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		
enable		(Optional) Specifies that client location calibration is enabled.
<i>mac_address</i>		MAC address of the client.
<i>interval</i>		Measurement interval in seconds.
disable		(Optional) Specifies that client location calibration is disabled.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the client location calibration for the client 37:15:85:2a with a measurement interval of 45 seconds:

```
(Cisco Controller) >config client location-calibration enable 37:15:86:2a:Bc:cf 45
```


Configure Guest-LAN Commands

Use the **config guest-lan** commands to create, delete, enable, and disable the wireless LAN commands.

config guest-lan

To create, delete, enable or disable a wireless LAN, use the **config guest-lan** command.

```
config guest-lan {create | delete} guest_lan_id interface_name | {enable | disable} guest_lan_id
```

Syntax Description		
create		Creates a wired LAN settings.
delete		Deletes a wired LAN settings:
<i>guest_lan_id</i>		LAN identifier between 1 and 5 (inclusive).
<i>interface_name</i>		Interface name up to 32 alphanumeric characters.
enable		Enables a wireless LAN.
disable		Disables a wireless LAN.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable a wireless LAN with the LAN ID 16:

```
(Cisco Controller) > 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.

```
config guest-lan custom-web ext-webauth-url ext_web_url guest_lan_id
```

Syntax Description		
<i>ext_web_url</i>		URL for the external server.
<i>guest_lan_id</i>		Guest LAN identifier between 1 and 5 (inclusive).

Command Default None

Command History**Release Modification**

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable a wireless LAN with the LAN ID 16:

```
(Cisco Controller) > 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

Parameter	Description
<i>guest_lan_id</i>	Guest LAN identifier between 1 and 5 (inclusive).

Command Default

None

Command History**Release Modification**

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to disable the global web configuration for guest LAN ID 1:

```
(Cisco Controller) > 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	<i>page_name</i>	Name of the customized web login page.
	<i>guest_lan_id</i>	Guest LAN identifier between 1 and 5 (inclusive).
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to customize a web login page `custompage1` for guest LAN ID 1:

```
(Cisco Controller) > 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

config guest-lan custom-web webauth-type

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.
	<i>guest_lan_id</i>	Guest LAN identifier between 1 and 5 (inclusive).
Command Default	The default web login page for the controller is internal.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the guest LAN with the webauth-type as internal for guest LAN ID 1:

```
(Cisco Controller) > 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 that provides a path between the wired guest client and the controller through 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		
<i>guest_lan_id</i>		Guest LAN identifier from 1 to 5 (inclusive).
<i>interface_name</i>		Interface name.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following 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:

```
(Cisco Controller) > config guest-lan 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		
<i>guest_lan_id</i>		Guest LAN identifier between 1 and 5 (inclusive).
<i>interface_name</i>		Interface name.

Command Default None

Command History **Release** **Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following 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:

```
(Cisco Controller) > 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** command.

config guest-lan mobility anchor {**add** | **delete**} *Guest LAN Id IP addr*

Syntax Description

add	Adds a mobility anchor to a WLAN.
delete	Deletes a mobility anchor from a WLAN.
<i>Guest LAN Id</i>	Guest LAN identifier between 1 and 5.
<i>IP addr</i>	Member switch IPv4 or IPv6 address to anchor WLAN.

Command Default None

Command History **Release** **Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

8.0 This command supports both IPv4 and IPv6 address formats.

The following example shows how to delete a mobility anchor for WAN ID 4 and the anchor IP *192.168.0.14*:

```
(Cisco Controller) > config guest-lan mobility anchor delete 4 192.168.0.14
```

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	enable	Enables the NAC out-of-band support.
	disable	Disables the NAC out-of-band support.
	<i>guest_lan_id</i>	Guest LAN identifier between 1 and 5 (inclusive).

Command Default None

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the NAC out-of-band support for guest LAN ID 3:

```
(Cisco Controller) > 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	web-auth	Specifies web authentication.
	enable	Enables the web authentication settings.
	disable	Disables the web authentication settings.
	acl	Configures an access control list.
	server-precedence	Configures the authentication server precedence order for web authentication users.
	<i>guest_lan_id</i>	LAN identifier between 1 and 5 (inclusive).
	web-passthrough	Specifies the web captive portal with no authentication required.
	email-input	Configures the web captive portal using an e-mail address.

Command Default The default security policy for the wired guest LAN is web authentication.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the security web authentication policy for guest LAN ID 1:

```
(Cisco Controller) > config guest-lan security web-auth enable 1
```

Related Commands

config ingress-interface guest-lan

config guest-lan create

config interface guest-lan

Configure IPv6 Commands

Use the **config ipv6** commands to configure IPv6 settings.

config ipv6 disable

To disable IPv6 globally on the controller, use the **config ipv6 disable** command .

config ipv6 disable

Syntax Description This command has no arguments or keywords.

Command Default By default, the IPv6 configuration is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines When you use this command, the controller drops all IPv6 packets and the clients will not receive any IPv6 address.

The following example shows how to disable IPv6 on the controller:

```
(Cisco Controller) >config ipv6 disable
```

config ipv6 enable

To enable IPv6 globally on the controller, use the **config ipv6 enable** command.

config ipv6 enable

Syntax Description This command has no arguments or keywords.

Command Default By default, the IPv6 configuration is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable IPv6 on the controller:

```
(Cisco Controller) >config ipv6 enable
```

config ipv6 acl

To create or delete an IPv6 ACL on the Cisco wireless LAN controller, apply ACL to data path, and configure rules in the IPv6 ACL, use the **config ipv6 acl** command.


```

config ipv6 acl [apply | cpu | create | delete | rule]
config ipv6 acl apply name
config ipv6 acl cpu {name | none}
config ipv6 acl create name
config ipv6 acl delete name
config ipv6 acl rule [action | add | change | delete | destination | direction | dscp | protocol
| source | swap ]
config ipv6 acl rule action name index {permit | deny}
config ipv6 acl rule add name index
config ipv6 acl rule change index name old_index new_index
config ipv6 acl rule delete name index
config ipv6 acl rule destination {address name index ip_address prefix-len | port range name index }
config ipv6 acl rule direction name index {in | out | any}
config ipv6 acl rule dscp name dscp
config ipv6 acl rule protocol name index protocol
config ipv6 acl rule source {address name index ip_address prefix-len | port range name index
start_port end_port}
config ipv6 acl rule swap index name index_1 index_2

```

Syntax Description

apply <i>name</i>	Applies an IPv6 ACL. An IPv6 ACL can contain up to 32 alphanumeric characters.
cpu <i>name</i>	Applies the IPv6 ACL to the CPU.
cpu none	Configure none if you wish not to have a IPV6 ACL.
create	Creates an IPv6 ACL.
delete	Deletes an IPv6 ACL.
rule (action) (<i>name</i>) (<i>index</i>)	Configures rules in the IPv6 ACL to either permit or deny access. IPv6 ACL name can contain up to 32 alphanumeric characters and IPv6 ACL rule index can be between 1 and 32.
{ permit deny }	Permit or deny the IPv6 rule action.
add <i>name index</i>	Adds a new rule and rule index.
change <i>name old_index</i> <i>new_index</i>	Changes a rule's index.
delete <i>name index</i>	Deletes a rule and rule index.
destination address <i>name</i> <i>index ip_addr prefix-len</i>	Configures a rule's destination IP address and prefix length (between 0 and 128).
destination port <i>name index</i>	Configure a rule's destination port range. Enter IPv6 ACL name and set an rule index for it.
direction <i>name index</i> { in out any }	Configures a rule's direction to in, out, or any.

dscp <i>name index dscp</i>	Configures a rule's DSCP. For rule index of DSCP, select a number between 0 and 63, or any .
protocol <i>name index protocol</i>	Configures a rule's protocol. Enter a name and set an index between 0 and 255 or any .
source address <i>name index ip_address prefix-len</i>	Configures a rule's source IP address and netmask.
source port range <i>name index start_port end_port</i>	Configures a rule's source port range.
swap index <i>name index_1 index_2</i>	Swap's two rules' indices.

Command Default

After adding an ACL, the **config ipv6 acl cpu** is by default configured as **enabled**.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6..
8.0	This command was updated by adding cpu and none keywords and the <i>ipv6_acl_name</i> variable.

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.

The following example shows how to configure an IPv6 ACL to permit access:

```
(Cisco Controller) >config ipv6 acl rule action lab1 4 permit
```

The following example shows how to configure an interface ACL:

```
(Cisco Controller) > config ipv6 interface acl management IPv6-Acl
```

Related Commands

show ipv6 acl detailed
show ipv6 acl cpu

config ipv6 neighbor-binding

To configure the Neighbor Binding table on the Cisco wireless LAN controller, use the **config ipv6 neighbor-binding** command.

```
config ipv6 neighbor-binding { timers { down-lifetime down_time | reachable-lifetime reachable_time | stale-lifetime stale_time } | { ra-throttle { allow at-least at_least_value } | enable | disable | interval-option { ignore | passthrough | throttle } | max-through { no_mcast_RA | no-limit } | throttle-period throttle_period }
```

Syntax Description	timers	Configures the neighbor binding table timeout timers.
	down-lifetime	Configures the down lifetime.
	<i>down_time</i>	Down lifetime in seconds. The range is from 0 to 86400. The default is 30 seconds.
	reachable-lifetime	Configures the reachable lifetime.
	<i>reachable_time</i>	Reachable lifetime in seconds. The range is from 0 to 86400. The default is 300 seconds.
	stale-lifetime	Configures the stale lifetime.
	<i>stale_time</i>	Stale lifetime in seconds. The range is from 0 to 86400. The default is 86400 seconds.
	ra-throttle	Configures IPv6 RA throttling options.
	allow	Specifies the number of multicast RAs per router per throttle period.
	<i>at_least_value</i>	Number of multicast RAs from router before throttling. The range is from 0 to 32. The default is 1.
	enable	Enables IPv6 RA throttling.
	disable	Disables IPv6 RA throttling.
	interval-option	Adjusts the behavior on RA with RFC3775 interval option.
	ignore	Indicates interval option has no influence on throttling.
	passthrough	Indicates all RAs with RFC3775 interval option will be forwarded (default).
	throttle	Indicates all RAs with RFC3775 interval option will be throttled.
	max-through	Specifies unthrottled multicast RAs per VLAN per throttle period.
	<i>no_mcast_RA</i>	Number of multicast RAs on VLAN by which throttling is enforced. The default multicast RAs on vlan is 10.
	no-limit	Configures no upper bound at the VLAN level.
	throttle-period	Configures the throttle period.

<i>throttle_period</i>	Duration of the throttle period in seconds. The range is from 10 to 86400 seconds. The default is 600 seconds.
------------------------	--

Command Default This command is disabled by default.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the Neighbor Binding table:

```
(Cisco Controller) >config ipv6 neighbor-binding ra-throttle enable
```

Related Commands `show ipv6 neighbor-binding`

config ipv6 ns-mcast-fwd

To configure the nonstop multicast cache miss forwarding, use the **config ipv6 ns-mcast-fwd** command.

```
config ipv6 ns-mcast-fwd {enable | disable}
```

Syntax Description		
enable		Enables nonstop multicast forwarding on a cache miss.
disable		Disables nonstop multicast forwarding on a cache miss.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure an nonstop multicast forwarding:

```
(Cisco Controller) >config ipv6 ns-mcast-fwd enable
```

config ipv6 ra-guard

To configure the filter for Router Advertisement (RA) packets that originate from a client on an AP, use the **config ipv6 ra-guard** command.

```
config ipv6 ra-guard ap {enable | disable}
```

Syntax Description		
enable		Enables RA guard on an AP.
disable		Disables RA guard on an AP.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable IPv6 RA guard:

```
(Cisco Controller) >config ipv6 ra-guard enable
```

Related Commands show ipv6 ra-guard

Configure Interface Group Commands

Use the **config interface** group to create and delete an interface group.

config interface group

To add an interface to the existing interface group, use the **config interface group** command.

config interface group { **create** *interface-group-name* *interface-group-description* } | { **delete** *interface-group-name* } | { **interface** { **add** | **delete** } *interface-group-name* *interface-name* } | { **description** *interface-group-name* *interface-group-description* }

Syntax Description

create	Adds a new interface group.
<i>interface-group-name</i>	Interface group's name.
<i>interface-group-description</i>	Interface group's description to be entered within double quotation marks. You can enter up to 32 characters.
delete	Deletes an interface group.
interface	Edits the list of interface represented by the interface group.
add	Adds a new interface to the interface group.
delete	Deletes an interface from the interface group.
description	Configures the description for an interface group.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a new interface group with the name int-grp-10:

```
(Cisco Controller) > config interface group create int-grp-10 "for wlan1"
```

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** {*add* | *delete*} command.

config macfilter {**add** *client_MAC wlan_id [interface_name] [description] [macfilter_IP]* | **delete** *client_MAC*}

Syntax	Description				
add	Adds a MAC filter entry on the controller.				
delete	Deletes a MAC filter entry on the controller.				
<i>MAC_addr</i>	Client MAC address.				
<i>wlan_id</i>	Wireless LAN identifier with which the MAC filter entry should associate. A zero value associates the entry with any wireless LAN.				
<i>interface_name</i>	(Optional) Name of the interface. Enter 0 to specify no interface.				
<i>description</i>	(Optional) Short description of the interface (up to 32 characters) in double quotes. Note A description is mandatory if <i>macfilterIP</i> is specified.				
<i>IP Address</i>	(Optional) IPv4 address of the local MAC filter database.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

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.

As on release 7.6, the optional *macfilter_IP* supports only IPv4 address.

The following 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:

```
(Cisco 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 addr* *description*

Syntax Description	<i>MAC addr</i>	Client MAC address.
	<i>description</i>	(Optional) Description within double quotes (up to 32 characters).

Command Default None

Command History	Release	Modification
		7.6

The following example shows how to configure the description MAC filter 01 to MAC address 11:11:11:11:11:11:

```
(Cisco Controller) > config macfilter description 11:11:11:11:11:11 "MAC Filter 01"
```

Related Commands `show macfilter`

config macfilter interface

To create a MAC filter client interface, use the **config macfilter interface** command.

config macfilter interface *MAC_addr* *interface*

Syntax Description	<i>MAC addr</i>	Client MAC address.
	<i>interface</i>	Interface name. A value of zero is equivalent to no name.

Command Default None

Command History	Release	Modification
		7.6

The following example shows how to configure a MAC filter interface Lab01 on client 11:11:11:11:11:11:


```
(Cisco Controller) > 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		
	<i>MAC_address</i>	Client MAC address.
	<i>IP_address</i>	IPv4 address for a specific MAC address in the local MAC filter database.

Command Default None

Usage Guidelines As on release 7.6, *IP_address* supports only IPv4 addresses.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports only IPv4 address format.

The following example shows how to configure IP address 10.92.125.51 for a MAC 00:E0:77:31:A3:55 in the local MAC filter database:

```
(Cisco Controller) > 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		
	none	Disables the delimiters (for example, xxxxxxxxxxxx).
	colon	Sets the delimiter to a colon (for example, xx:xx:xx:xx:xx:xx).

hyphen	Sets the delimiter to a hyphen (for example, xx-xx-xx-xx-xx-xx).
single-hyphen	Sets the delimiter to a single hyphen (for example, xxxxxx-xxxxxx).

Command Default

The default delimiter is hyphen.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to have the operating system send MAC addresses to the RADIUS server in the form aa:bb:cc:dd:ee:ff:

```
(Cisco Controller) > config macfilter mac-delimiter colon
```

The following example shows how to have the operating system send MAC addresses to the RADIUS server in the form aa-bb-cc-dd-ee-ff:

```
(Cisco Controller) > config macfilter mac-delimiter hyphen
```

The following example shows how to have the operating system send MAC addresses to the RADIUS server in the form aabbccddeeff:

```
(Cisco Controller) > config macfilter mac-delimiter none
```

Related Commands

show macfilter

config macfilter radius-compat

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

cisco	Configures the Cisco ACS compatibility mode (password is the MAC address of the server).
free	Configures the Free RADIUS server compatibility mode (password is secret).
other	Configures for other server behaviors (no password is necessary).

Command Default

Other

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports only IPv4.

The following example shows how to configure the Cisco ACS compatibility mode to “other”:

```
(Cisco Controller) > 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_addr* *WLAN_id*

Syntax Description		
	<i>MAC_addr</i>	Client MAC address.
	<i>WLAN_id</i>	Wireless LAN identifier to associate with. A value of zero is not allowed.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to modify client wireless LAN ID 2 for a MAC filter 11:11:11:11:11:11:

```
(Cisco Controller) > config macfilter wlan-id 11:11:11:11:11:11 2
```

Related Commands **show macfilter**
show wlan

Config Remote LAN Commands

Use the **config remote-lan** commands to configure remote LANs.

config remote-lan

To configure a remote LAN, use the **config remote-lan** command.

config remote-lan { **enable** | **disable** } { *remote-lan-id* | **all** }

Syntax Description	enable	disable	<i>remote-lan-id</i>	all
	Enables a remote LAN.	Disables a remote LAN.	Remote LAN identifier. Valid values are between 1 and 512.	Configures all wireless LANs.
Command Default	None			
Command History	Release	Modification		
	7.6	This command was introduced in a release earlier than Release 7.6.		

The following example shows how to enable a remote LAN with ID 2:

```
(Cisco Controller) >config remote-lan enable 2
```

config remote-lan aaa-override

To configure user policy override through AAA on a remote LAN, use the **config remote-lan aaa-override** command.

config remote-lan aaa-override { **enable** | **disable** } *remote-lan-id*

Syntax Description	enable	disable	<i>remote-lan-id</i>
	Enables user policy override through AAA on a remote LAN.	Disables user policy override through AAA on a remote LAN.	Remote LAN identifier. Valid values are between 1 and 512.
Command Default	None		
Command History	Release	Modification	
	7.6	This command was introduced in a release earlier than Release 7.6.	

The following example shows how to enable user policy override through AAA on a remote LAN where the remote LAN ID is 2:

```
(Cisco Controller) >config remote-lan aaa-override enable 2
```

config remote-lan acl

To specify an access control list (ACL) for a remote LAN, use the **config remote-lan acl** command.

```
config remote-lan acl remote-lan-id acl_name
```

Syntax Description	<i>remote-lan-id</i>	Remote LAN identifier. Valid values are between 1 and 512.
	<i>acl_name</i>	ACL name.
	Note	Use the show acl summary command to know the ACLs available.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to specify ACL1 for a remote LAN whose ID is 2:

```
(Cisco Controller) >config remote-lan acl 2 ACL1
```

config remote-lan create

To configure a new remote LAN connection, use the **config remote-lan create** command.

```
config remote-lan create remote-lan-id name
```

Syntax Description	<i>remote-lan-id</i>	Remote LAN identifier. Valid values are between 1 and 512.
	<i>name</i>	Remote LAN name. Valid values are up to 32 alphanumeric characters.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a new remote LAN, MyRemoteLAN, with the LAN ID as 3:

```
(Cisco Controller) >config remote-lan create 3 MyRemoteLAN
```

config remote-lan custom-web

To configure web authentication for a remote LAN, use the **config remote-lan custom-web** command.

config remote-lan custom-web { **ext-webauth-url** *URL* } | **global** { **enable** | **disable** } | **login-page** *page-name* | **loginfailure-page** { *page-name* | **none** } | **logout-page** { *page-name* | **none** } | **webauth-type** { **internal** | **customized** | **external** } } *remote-lan-id*

Syntax Description

ext-webauth-url	Configures an external web authentication URL.
<i>URL</i>	Web authentication URL for the Login page.
global	Configures the global status for the remote LAN.
enable	Enables the global status for the remote LAN.
disable	Disables the global status for the remote LAN.
login-page	Configures a login page.
<i>page-name</i>	Login page name.
none	Configures no login page.
logout-page	Configures a logout page.
none	Configures no logout page.
webauth-type	Configures the web authentication type for the remote LAN.
internal	Displays the default login page.
customized	Displays a downloaded login page.
external	Displays a login page that is on an external server.
<i>name</i>	Remote LAN name. Valid values are up to 32 alphanumeric characters.
<i>remote-lan-id</i>	Remote LAN identifier. Valid values are from 1 to 512.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

Follow these guidelines when you use the **config remote-lan custom-web** command:

- When you configure the external Web-Auth URL, do the following:
 - Ensure that Web-Auth or Web-Passthrough Security is in enabled state. To enable Web-Auth, use the **config remote-lan security web-auth enable** command. To enable Web-Passthrough, use the **config remote-lan security web-passthrough enable** command.

- Ensure that the global status of the remote LAN is in disabled state. To enable the global status of the remote LAN, use the **config remote-lan custom-web global disable** command.
- Ensure that the remote LAN is in disabled state. To disable a remote LAN, use the **config remote-lan disable** command.
- When you configure the Web-Auth type for the remote LAN, do the following:
 - When you configure a customized login page, ensure that you have a login page configured. To configure a login page, use the **config remote-lan custom-web login-page** command.
 - When you configure an external login page, ensure that you have configured preauthentication ACL for external web authentication to function.

The following example shows how to configure an external web authentication URL for a remote LAN with ID 3:

```
(Cisco Controller) >config remote-lan custom-web ext-webauth-url
http://www.AuthorizationURL.com/ 3
```

The following example shows how to enable the global status of a remote LAN with ID 3:

```
(Cisco Controller) >config remote-lan custom-web global enable 3
```

The following example shows how to configure the login page for a remote LAN with ID 3:

```
(Cisco Controller) >config remote-lan custom-web login-page custompage1 3
```

The following example shows how to configure a web authentication type with the default login page for a remote LAN with ID 3:

```
(Cisco Controller) >config remote-lan custom-web webauth-type internal 3
```

config remote-lan delete

To delete a remote LAN connection, use the **config remote-lan delete** command.

config remote-lan delete *remote-lan-id*

Syntax Description	<i>remote-lan-id</i>	Remote LAN identifier. Valid values are between 1 and 512.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete a remote LAN with ID 3:

```
(Cisco Controller) >config remote-lan delete 3
```

config remote-lan dhcp_server

To configure a dynamic host configuration protocol (DHCP) server for a remote LAN, use the **config remote-lan dhcp_server** command.

```
config remote-lan dhcp_server remote-lan-id ip_address
```

Syntax Description		
	<i>remote-lan-id</i>	Remote LAN identifier. Valid values are between 1 and 512.
	<i>ip_addr</i>	IPv4 address of the override DHCP server.

Command Default 0.0.0.0 is set as the default interface value.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports only IPv4 address format.

The following example shows how to configure a DHCP server for a remote LAN with ID 3:

```
(Cisco Controller) >config remote-lan dhcp_server 3 209.165.200.225
```

Related Commands `show remote-lan`

config remote-lan exclusionlist

To configure the exclusion list timeout on a remote LAN, use the **config remote-lan exclusionlist** command.

```
config remote-lan exclusionlist remote-lan-id {seconds | disabled | enabled}
```

Syntax Description		
	<i>remote-lan-id</i>	Remote LAN identifier. Valid values are between 1 and 512.
	<i>seconds</i>	Exclusion list timeout in seconds. A value of 0 requires an administrator override.
	disabled	Disables exclusion listing.
	enabled	Enables exclusion listing.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the exclusion list timeout to 20 seconds on a remote LAN with ID 3:

```
(Cisco Controller) >config remote-lan exclusionlist 3 20
```

config remote-lan interface

To configure an interface for a remote LAN, use the **config remote-lan interface** command.

config remote-lan interface *remote-lan-id interface_name*

Syntax Description	<i>remote-lan-id</i>	Remote LAN identifier. Valid values are between 1 and 512.
		<i>interface_name</i>
		Note Interface name should not be in upper case characters.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure an interface myinterface for a remote LAN with ID 3:

```
(Cisco Controller) >config remote-lan interface 3 myinterface
```

config remote-lan ldap

To configure a remote LAN's LDAP servers, use the **config remote-lan ldap** command.

config remote-lan ldap { **add** | **delete** } *remote-lan-id index*

Syntax Description	add	Adds a link to a configured LDAP server (maximum of three).
		delete
	<i>remote-lan-id</i>	Remote LAN identifier. Valid values are between 1 and 512.
	<i>index</i>	LDAP server index.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to add an LDAP server with the index number 10 for a remote LAN with ID 3:

```
(Cisco Controller) >config remote-lan ldap add 3 10
```

config remote-lan mac-filtering

To configure MAC filtering on a remote LAN, use the **config remote-lan mac-filtering** command.

```
config remote-lan mac-filtering {enable | disable} remote-lan-id
```

Syntax Description	enable	Disables MAC filtering on a remote LAN.
	disable	Enables MAC filtering on a remote LAN.
	remote-lan-id	Remote LAN identifier. Valid values are between 1 and 512.
Command Default	MAC filtering on a remote LAN is enabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable MAC filtering on a remote LAN with ID 3:

```
(Cisco Controller) >config remote-lan mac-filtering disable 3
```

config remote-lan max-associated-clients

To configure the maximum number of client connections on a remote LAN, use the **config remote-lan max-associated-clients** command.

```
config remote-lan max-associated-clients remote-lan-id max-clients
```

Syntax Description	remote-lan-id	Remote LAN identifier. Valid values are between 1 and 512.
	max-clients	Configures the maximum number of client connections on a remote LAN.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure 10 client connections on a remote LAN with ID 3:

```
(Cisco Controller) >config remote-lan max-associated-clients 3 10
```

config remote-lan radius_server

To configure the RADIUS servers on a remote LAN, use the **config remote-lan radius_server** command.

```
config remote-lan radius_server {acct {{add | delete} server-index | {enable | disable} |
interim-update {interval | enable | disable}} | auth {{add | delete} server-index | {enable
| disable }} | overwrite-interface {enable | disable}} remote-lan-id
```

Syntax Description

acct	Configures a RADIUS accounting server.
add	Adds a link to a configured RADIUS server.
delete	Deletes a link to a configured RADIUS server.
<i>remote-lan-id</i>	Remote LAN identifier. Valid values are between 1 and 512.
<i>server-index</i>	RADIUS server index.
enable	Enables RADIUS accounting for this remote LAN.
disable	Disables RADIUS accounting for this remote LAN.
interim-update	Enables RADIUS accounting for this remote LAN.
<i>interval</i>	Accounting interim interval. The range is from 180 to 3600 seconds.
enable	Enables accounting interim update.
disable	Disables accounting interim update.
auth	Configures a RADIUS authentication server.
enable	Enables RADIUS authentication for this remote LAN.
disable	Disables RADIUS authentication for this remote LAN.
overwrite-interface	Configures a RADIUS dynamic interface for the remote LAN.
enable	Enables a RADIUS dynamic interface for the remote LAN.
disable	Disables a RADIUS dynamic interface for the remote LAN.

Command Default

The interim update interval is set to 600 seconds.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable RADIUS accounting for a remote LAN with ID 3:

```
(Cisco Controller) >config remote-lan radius_server acct enable 3
```

config remote-lan security

To configure security policy for a remote LAN, use the **config remote-lan security** command.

config remote-lan security {{**sgt** | **802.1X** | **web-auth** {**enable** | **disable** | **acl** | **server-precedence**} *remote-lan-id* | {**web-passthrough** {**enable** | **disable** | **acl** | **email-input**} *remote-lan-id*}}

Syntax Description		
sgt		Configures Secure Group Tag for the WLAN.
802.1X		Configures 802.1X.
web-auth		Specifies web authentication.
enable		Enables the web authentication settings.
disable		Disables the web authentication settings.
acl		Configures an access control list.
server-precedence		Configures the authentication server precedence order for web authentication users.
<i>remote-lan-id</i>		Remote LAN identifier. Valid values are between 1 and 512.
email-input		Configures the web captive portal using an e-mail address.
web-passthrough		Specifies the web captive portal with no authentication required.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.4	The 802.1X keyword was added.

The following example shows how to configure the security web authentication policy for remote LAN ID 1:

```
(Cisco Controller) >config remote-lan security web-auth enable 1
```

config remote-lan session-timeout

To configure client session timeout, use the **config remote-lan session-timeout** command.

config remote-lan session-timeout *remote-lan-id seconds*

Syntax Description		
<i>remote-lan-id</i>		Remote LAN identifier. Valid values are between 1 and 512.
<i>seconds</i>		Timeout or session duration in seconds. A value of zero is equivalent to no timeout.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the client session timeout to 6000 seconds for a remote LAN with ID 1:

```
(Cisco Controller) >config remote-lan session-timeout 1 6000
```

config remote-lan webauth-exclude

To configure web authentication exclusion on a remote LAN, use the **config remote-lan webauth-exclude** command.

config remote-lan webauth-exclude *remote-lan-id* {**enable** | **disable**}

Syntax Description		
<i>remote-lan-id</i>	Remote LAN identifier. Valid values are between 1 and 512.	
enable	Enables web authentication exclusion on the remote LAN.	
disable	Disables web authentication exclusion on the remote LAN.	

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable web authentication exclusion on a remote LAN with ID 1:

```
(Cisco Controller) >config remote-lan webauth-exclude 1 enable
```

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, use the **config memory monitor errors** command.

config memory monitor errors {enable | disable}



Caution 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

enable	Enables the monitoring for memory settings.
disable	Disables the monitoring for memory settings.

Command Default

Monitoring for memory errors and leaks is disabled by default.

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

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.

The following example shows how to enable monitoring for memory errors and leaks for a controller:

```
(Cisco 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, use the **config memory monitor leaks** command.

config memory monitor leaks *low_thresh high_thresh*



Caution 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

<i>low_thresh</i>	Value below which free memory cannot fall without crashing. This value cannot be set lower than 10000 KB.
<i>high_thresh</i>	Value below which the controller enters auto-leak-analysis mode. See the “Usage Guidelines” section.

Command Default

The default value for *low_thresh* is 10000 KB; the default value for *high_thresh* is 30000 KB.

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

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.

The following 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:

```
(Cisco Controller) > config memory monitor leaks 12000 35000
```

Related Commands

config memory monitor leaks
debug memory
show memory monitor

Configure Mesh Commands

Use the **configure mesh** commands to set mesh access point settings.

config mesh alarm

To configure alarm settings for outdoor mesh access points, use the **config mesh alarm** command.

config mesh alarm { **max-hop** | **max-children** | **low-snr** | **high-snr** | **association** | **parent-change count** } *value*

Syntax Description		
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).
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).
low-snr		Sets the low-end signal-to-noise ratio (SNR) value before triggering an alarm. The valid values are 1 to 30 (inclusive).
high-snr		Sets the high-end SNR value before triggering an alarm. The valid values are 1 to 30 (inclusive).
association		Sets the mesh alarm association count value before triggering an alarm. The valid values are 1 to 30 (inclusive).
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).
<i>value</i>		Value above or below which an alarm is generated. The valid values vary for each command.

Command Default See the “Syntax Description” section for command and argument value ranges.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the maximum hops threshold to 8:

```
(Cisco Controller) >config mesh alarm max-hop 8
```

The following example shows how to set the upper SNR threshold to 25:

```
(Cisco Controller) >config mesh alarm high-snr 25
```


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** }

Syntax Description	enable	Enables this feature for all outdoor mesh access points.
	disable	Disables this feature for all outdoor mesh access points.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable anti-stranding on all outdoor mesh access points:

```
(Cisco Controller) >config mesh astools enable
```

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** }

Syntax Description	all	(Optional) Grants universal access privileges on mesh access points.
	bronze	(Optional) Grants background-level client access privileges on mesh access points.
	silver	(Optional) Grants best effort-level client access privileges on mesh access points.
	gold	(Optional) Grants video-level client access privileges on mesh access points.
	platinum	(Optional) Grants voice-level client access privileges on mesh access points.
	enable	Enables this backhaul access level for mesh access points.
	disable	Disables this backhaul access level for mesh access points.
	Command Default	Backhaul access level for mesh access points is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to set the backhaul client access to the best-effort level:

```
(Cisco Controller) >config mesh backhaul rate-adapt silver
```

config mesh backhaul slot

To configure the slot radio as a downlink backhaul, use the **config mesh backhaul slot** command.

```
config mesh backhaul slot slot_id {enable | disable} cisco_ap
```

Syntax Description	<i>slot_id</i>	Slot number between 0 and 2.
	enable	Enables the entered slot radio as a downlink backhaul.
	disable	Disables the entered slot radio as a downlink backhaul.
	<i>cisco_ap</i>	Name of the Root AP of the sector on which the backhaul needs to be enabled or disabled.

Command Default The entered slot radio as a downlink backhaul is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines For 2.4 GHz, only slot 0 and 1 are valid. If slot 0 is enabled, slot 1 is automatically be disabled. If slot 0 is disabled, slot 1 is automatically enabled.

The following example shows how to enable slot 1 as the preferred backhaul for the root AP myrootap1:

```
(Cisco Controller) >config mesh backhaul slot 1 enable myrootap1
```

config mesh battery-state

To configure the battery state for Cisco mesh access points, use the **config mesh battery-state** command.

```
config mesh battery-state disable {all | cisco_ap}
```

Syntax Description	disable	Disables the battery-state for mesh access points.
	all	Applies this command to all mesh access points.
	<i>cisco_ap</i>	Specific mesh access point.

Command Default Battery state is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable battery state for all mesh APs:

```
(Cisco Controller) >config mesh battery-state disable all
```

config mesh client-access

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**}

Syntax Description	enable	Allows wireless client association over the mesh access point backhaul 802.11a radio.
	extended	(Optional) Enables client access over both the backhaul radios for backhaul access points.
	disable	Restricts the 802.11a radio to backhaul traffic, and allows client association only over the 802.11b/g radio.

Command Default Client access is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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, the 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 mesh access points carry backhaul traffic over the 802.11a radio and allows client association only over the 802.11b/g radio.

The following example shows how to enable client access extended to allow a wireless client association over the 802.11a radio:

```
(Cisco Controller) >config mesh client-access enable extended
Enabling client access on both backhaul slots
Same BSSIDs will be used on both slots
All Mesh AP will be rebooted
Are you sure you want to start? (y/N)Y
```

The following example shows how to restrict a wireless client association to the 802.11b/g radio:

```
(Cisco Controller) >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 canceled.
```

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	enable	Bridges packets as if they are untagged.
	disable	Drops all tagged packets.
Command Default	Bridges packets as if they are untagged.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure Ethernet packets as untagged:

```
(Cisco Controller) >config mesh ethernet-bridging vlan-transparent enable
```

The following example shows how to drop tagged Ethernet packets:

```
(Cisco Controller) >config mesh ethernet-bridging vlan-transparent disable
```

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	enable	Enables DFS for mesh access points.
	disable	Disables DFS for mesh access points.
Command Default	None	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

This example shows to enable full-sector DFS on mesh access points:

```
(Cisco Controller) >config mesh full-sector-dfs enable
```

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	<i>destination_ap_name</i>	Destination access point name for MAC address filtering.
--------------------	----------------------------	--

Command Default	External MAC filtering is disabled.
-----------------	-------------------------------------

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 execute 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 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 RADIUS server to be used as an AAA server must be configured on the controller.


```
[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),30,59,95,23]
[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]
[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]
```

config mesh linktest

To verify client access between mesh access points, use the **config mesh linktest** command.

config mesh linktest *source_ap* { *dest_ap* | *MAC addr* } *datarate* *packet_rate* *packet_size* *duration*

Syntax Description	
<i>source_ap</i>	Source access point.
<i>dest_ap</i>	Destination access point.
<i>MAC addr</i>	MAC address.
<i>datarate</i>	<ul style="list-style-type: none"> • Data rate for 802.11a radios. Valid values are 6, 9, 11, 12, 18, 24, 36, 48 and 54 Mbps. • Data rate for 802.11b radios. Valid values are 6, 12, 18, 24, 36, 54, or 100 Mbps. • Data rate for 802.11n radios. Valid values are MCS rates between m0 to m15.
<i>packet_rate</i>	Number of packets per second. Valid range is 1 through 3000, but the recommended default is 100.
<i>packet_size</i>	(Optional) Packet size in bytes. If not specified, packet size defaults to 1500 bytes.
<i>duration</i>	(Optional) Duration of the test in seconds. Valid values are 10-300 seconds, inclusive. If not specified, duration defaults to 30 seconds.

Command Default 100 packets per second, 1500 bytes, 30-second duration.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

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?
```

The following 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:

```
(Cisco Controller) >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
=====
txPkts:                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          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%
```


The following table lists the output flags displayed for the **config mesh linktest** command.

Table 8: Output Flags for the Config Mesh Linktest Command

Output Flag	Description
txPkts	Number of packets sent by the source.
txBuffAllocErr	Number of linktest buffer allocation errors at the source (expected to be zero).
txQFullErrs	Number of linktest queue full errors at the source (expected to be zero).
Total rx pkts heard at destination	Number of linktest packets received at the destination (expected to be same as or close to the txPkts).
rx pkts decoded correctly	Number of linktest packets received and decoded correctly at the destination (expected to be same as close to txPkts).
err pkts: Total	Packet error statistics for linktest packets with errors.
rx lost packets	Total number of linktest packets not received at the destination.
rx dup pkts	Total number of duplicate linktest packets received at the destination.
rx out of order	Total number of linktest packets received out of order at the destination.
avgNF	Average noise floor.
Noise Floor profile	Noise floor profile in dB and are negative numbers.
avgSNR	Average SNR values.
SNR profile [odb...60dB]	Histogram samples received between 0 to 60 dB. The different columns in the SNR profile is the number of packets falling under the bucket 0-3, 3-6, 6-9, up to 57-60.
avgRSSI	Average RSSI values. The average high and low RSSI values are positive numbers.
RSSI profile [-100dB...-40dB]	The RSSI profile in dB and are negative numbers.

config mesh lsc

To configure a locally significant certificate (LSC) on mesh access points, use the **config mesh lsc** command.

config mesh lsc { **enable** | **disable** }

Syntax Description

enable	Enables an LSC on mesh access points.
disable	Disables an LSC on mesh access points.

Command Default

None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable LSC on mesh access points:

```
(Cisco Controller) >config mesh lsc enable
```

config mesh multicast

To configure multicast mode settings to manage multicast transmissions within the mesh network, use the **config mesh multicast** command.

config mesh multicast {**regular** | **in** | **in-out**}

Syntax Description		
regular		Multicasts the video across the entire mesh network and all its segments by bridging-enabled root access points (RAPs) and mesh access points (MAPs).
in		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.
in-out		Configures the RAP and MAP to multicast, but each in a different manner: 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. 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.

Command Default	
	In-out mode

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to multicast video across the entire mesh network and all its segments by bridging-enabled RAPs and MAPs:

```
(Cisco Controller) >config mesh multicast regular
```

config mesh parent preferred

To configure a preferred parent for a mesh access point, use the **config mesh parent preferred** command.

```
config mesh parent preferred cisco_ap {mac_address | none}
```

Syntax Description

<i>cisco_ap</i>	Name of the child access point.
<i>mac_address</i>	MAC address of the preferred parent.
none	Clears the configured parent.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

A child AP selects the preferred parent based on the following conditions:

- The preferred parent is the best parent.
- The preferred parent has a link SNR of at least 20 dB (other parents, however good, are ignored).
- The preferred parent has a link SNR in the range of 12 dB and 20 dB, but no other parent is significantly better (that is, the SNR is more than 20 percent better). For an SNR lower than 12 dB, the configuration is ignored.
- The preferred parent is not in a blocked list.
- The preferred parent is not in silent mode because of dynamic frequency selection (DFS).
- The preferred parent is in the same bridge group name (BGN). If the configured preferred parent is not in the same BGN and no other parent is available, the child joins the parent AP using the default BGN.

The following example shows how to configure a preferred parent with the MAC address 00:21:1b:ea:36:60 for a mesh access point myap1:

```
(Cisco Controller) >config mesh parent preferred myap1 00:21:1b:ea:36:60
```

The following example shows how to clear a preferred parent with the MAC address 00:21:1b:ea:36:60 for a mesh access point myap1, by using the keyword none:

```
(Cisco Controller) >config mesh parent preferred myap1 00:21:1b:ea:36:60 none
```

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}
```

Syntax Description	enable	Disables the 4.9-GHz public safety band.
	disable	Enables the 4.9-GHz public safety band.
	all	Applies the command to all mesh access points.
	cisco_ap	Specific mesh access point.

Command Default The 4.9-GHz public safety band is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines 4.9 GHz is a licensed frequency band restricted to public-safety personnel.

The following example shows how to enable the 4.9-GHz public safety band for all mesh access points:

```
(Cisco Controller) >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
```

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	index	RADIUS authentication method. Options are as follows: <ul style="list-style-type: none"> Enter eap to designate Extensible Authentication Protocol (EAP) for the mesh RADIUS server setting. Enter psk to designate Preshared Keys (PSKs) for the mesh RADIUS server setting.
	enable	Enables the external authentication for mesh access points.

disable	Disables the external authentication for mesh access points.
----------------	--

Command Default	EAP is enabled.
------------------------	-----------------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable external authentication for mesh access points:

```
(Cisco Controller) >config mesh radius-server eap enable
```

config mesh range

To globally set the maximum range between outdoor root access points (RAPs) and mesh access points (MAPs), use the **config mesh range** command.

config mesh range [*distance*]

Syntax Description	<i>distance</i>	(Optional) Maximum operating range (150 to 132000 ft) of the mesh access point.
---------------------------	-----------------	---

Command Default	12,000 feet.
------------------------	--------------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines	After this command is enabled, all outdoor mesh access points reboot. This command does not affect indoor access points.
-------------------------	--

The following example shows how to set the range between an outdoor mesh RAP and a MAP:

```
(Cisco Controller) >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
```

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	enable	Enables the secondary backhaul configuration.
---------------------------	---------------	---

force-same-secondary-channel	(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.
disable	Specifies the secondary backhaul configuration is disabled.
rll-transmit	(Optional) Uses reliable link layer (RLL) at the second hop and beyond.
rll-retransmit	(Optional) Extends the number of RLL retry attempts in an effort to improve reliability.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines 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.

The following 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:

```
(Cisco Controller) >config mesh secondary-backhaul enable force-same-secondary-channel
```

config mesh security

To configure the security settings for mesh networks, use the **config mesh security** command.

config mesh security **{rad-mac-filter | force-ext-auth | lsc-only-auth}** **{enable | disable}** **{eap | psk provisioning | provisioning window}** **{enable | disable}** **{delete_psk | key}**

Syntax Description		
rad-mac-filter		Enables a Remote Authentication Dial-In User Service (RADIUS) MAC address filter for the mesh security setting.
force-ext-auth		Disables forced external authentication for the mesh security setting.
lsc-only-auth		Enables Locally Significant Certificate only authentication for the mesh security setting.
enable		Enables the mesh security setting.
disable		Disables the mesh security setting.
eap		Designates the Extensible Authentication Protocol (EAP) for the mesh security setting by default.

psk	Designates a preshared key(PSK) for the mesh security setting.
provisioning	Encrypts provisioning for the PSK in the controller.
provisioning window	Encrypts provisioning window for the PSK in controller.
enable	Enables provisioning of the PSK.
disable	Disables provisioning of the PSK.
key	Specifies the key for the PSK.

Command Default

The EAP is designated as default for the mesh security.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.2	This command was modified, the psk provisioning and psk provisioning keywords are added.

The following example shows how to configure EAP as the security option for all mesh access points:

```
(Cisco Controller) config mesh security eap
```

The following example shows how to configure PSK as the security option for all mesh access points:

```
(Cisco Controller) config mesh security psk
```

The following example shows how to enable PSK provisioning as the security option for all mesh access points:

```
(Cisco Controller)> config mesh security psk provisioning enable
```

The following example shows how to configure a PSK provisioning key as the security option for all mesh access points:

```
(Cisco Controller)> config mesh security psk provisioning key 5
```

The following example shows how to enable a PSK provisioning window as the security option for all mesh access points:

```
(Cisco Controller)> config mesh security psk provisioning window enable
```

The following example shows how to delete the PSK provisioning for controller :

```
(Cisco Controller)> config mesh security psk provisioning delete_psk wlc
```

The following example shows how to delete the PSK provisioning for all mesh access points:

```
(Cisco Controller)> config mesh security psk provisioning delete_psk ap
```

The following example shows how to delete PSK provisioning for all configurations in controller :

```
(Cisco Controller)> config mesh security psk provisioning delete_psk wlc all
```

config mesh slot-bias

To enable or disable slot bias for serial backhaul mesh access points, use the **config mesh slot-bias** command.

config mesh slot-bias {enable | disable}

Syntax Description

enable	Enables slot bias for serial backhaul mesh APs.
disable	Disables slot bias for serial backhaul mesh APs.

Command Default

By default, slot bias is in enabled state.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

Follow these guidelines when using this command:

- The **config mesh slot-bias** command is a global command and therefore applicable to all 1524SB APs associated with the same controller.
- Slot bias is applicable only when both slot 1 and slot 2 are available. If a slot radio does not have a channel that is available because of dynamic frequency selection (DFS), the other slot takes up both the uplink and downlink roles.
- If slot 2 is not available because of hardware issues, slot bias functions normally. Corrective action should be taken by disabling the slot bias or fixing the antenna.

The following example shows how to disable slot bias for serial backhaul mesh APs:

```
(Cisco Controller) >config mesh slot-bias disable
```


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 controller, use the **config mgmtuser add** command.

config mgmtuser add *username password* {**lobby-admin** | **read-write** | **read-only**} [*description*]

Syntax Description

<i>username</i>	Account username. The username can be up to 24 alphanumeric characters.
<i>password</i>	Account password. The password can be up to 24 alphanumeric characters.
lobby-admin	Creates a management user with lobby ambassador privileges.
read-write	Creates a management user with read-write access.
read-only	Creates a management user with read-only access.
<i>description</i>	(Optional) Description of the account. The description can be up to 32 alphanumeric characters within double quotes.

Command Default

None

Command History

Release Modification

7.6	This command was introduced in a release earlier than Release 7.6.
8.4	This command creates lobby-admin user .

The following example shows how to create a management user account with read-write access.

```
(Cisco Controller) > config mgmtuser add admin admin read-write "Main account"
```

Related Commands

show mgmtuser

config mgmtuser delete

To delete a management user from the controller, use the **config mgmtuser delete** command.

config mgmtuser delete *username*

Syntax Description

<i>username</i>	Account username. The username can be up to 24 alphanumeric characters.
-----------------	---

Command Default

The management user is not deleted by default.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete a management user account admin from the controller.

```
(Cisco Controller) > config mgmtuser delete admin
Deleted user admin
```

Related Commands

show mgmtuser

config mgmtuser description

To add a description to an existing management user login to the controller, use the **config mgmtuser description** command.

config mgmtuser description *username description*

Syntax Description

<i>username</i>	Account username. The username can be up to 24 alphanumeric characters.
<i>description</i>	Description of the account. The description can be up to 32 alphanumeric characters within double quotes.

Command Default

No description is added to the management user.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to add a description “primary-user” to the management user “admin”:

```
(Cisco Controller) > config mgmtuser description admin "primary-user"
```

Related Commands

config mgmtuser add
config mgmtuser delete
config mgmtuser password
show mgmtuser

config mgmtuser password

To configure a management user password, use the **config mgmtuser password** command.

config mgmtuser password *username password*

Syntax Description	<i>username</i>	Account username. The username can be up to 24 alphanumeric characters.
	<i>password</i>	Account password. The password can be up to 24 alphanumeric characters.

Command Default None

Command History **Release** **Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to change the password of the management user “admin” with the new password 5rTfm:

```
(Cisco Controller) > config mgmtuser password admin 5rTfm
```

Related Commands show mgmtuser

config mgmtuser termination-interval

To configure the user re-authentication terminal interval in seconds, use the **config mgmtuser termination-interval** command.

config mgmtuser termination-interval {*seconds* }

Syntax Description	<i>seconds</i>	Re-authentication terminal interval in seconds for a user before being logged out. Default value is 0, the valid range is 0 to 300 seconds.
---------------------------	----------------	---

Command History **Release** **Modification**

8.2 This command was introduced in this release.

The following example shows how to set the interval in seconds before the user is logged out:

```
(Cisco Controller) > config mgmtuser termination-interval 180
```

Configure Mobility Commands

Use the **config mobility** commands to configure mobility (roaming) settings.

config mobility dscp

To configure the mobility intercontroller DSCP value, use the **config mobility dscp** command.

config mobility dscp *dscp_value*

Syntax Description	<i>dscp_value</i>	DSCP value ranging from 0 to 63.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the mobility intercontroller DSCP value to 40:

```
(Cisco Controller) >config mobility dscp 40
```

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*

Syntax Description	add	Adds or changes a mobility anchor to a wireless LAN.
	delete	Deletes a mobility anchor from a wireless LAN.
	wlan	Specifies the wireless LAN anchor settings.
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512 (inclusive).
	guest-lan	Specifies the guest LAN anchor settings.
	<i>guest_lan_id</i>	Guest LAN identifier between 1 and 5 (inclusive).
	<i>anchor_ip</i>	IP address of the anchor controller.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to add a mobility anchor with the IP address 192.12.1.5 to a wireless LAN ID 2:

```
(Cisco Controller) >config mobility group anchor add wlan 2 192.12.1.5
```

The following example shows how to delete a mobility anchor with the IP address 193.13.1.15 from a wireless LAN:

```
(Cisco Controller) >config mobility group anchor delete wlan 5 193.13.1.5
```

config mobility group domain

To configure the mobility domain name, use the **config mobility group domain** command.

config mobility group domain *domain_name*

Syntax Description	<i>domain_name</i>	Domain name. The domain name can be up to 31 case-sensitive characters.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a mobility domain name lab1:

```
(Cisco Controller) >config mobility group domain lab1
```

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** command.

config mobility group keepalive count *count*

Syntax Description	<i>count</i>	Number of times that a ping request is sent to a mobility group member before the member is considered unreachable. The range is from 3 to 20. The default is 3.
---------------------------	--------------	--

Command Default The default number of times that a ping request is sent to a mobility group member is 3.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following 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 three counts:

```
(Cisco Controller) >config mobility group keepalive count 3
```

config mobility group keepalive interval

To configure the controller to detect failed mobility group members (including anchor controllers), use the **config mobility group keepalive** command.

config mobility group keepalive *interval*

Syntax Description	<i>interval</i>	Interval of time between each ping request sent to a mobility group member. The range is from 1 to 30 seconds. The default value is 10 seconds.
--------------------	-----------------	---

Command Default The default interval of time between each ping request is 10 seconds.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to specify the amount of time between each ping request sent to a mobility group member to 10 seconds:

```
(Cisco Controller) >config mobility group keepalive 10
```

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-addr IP-addr* [*group_name*] [**encrypt**{**enable** | **disable**} | [**data-dtls** *mac-addr* {**enable** | **disable**} | **delete** *MAC-addr* | **hash** *IP-addr* {*key* | **none**}}

Syntax Description	add	Adds or changes a mobility group member to the list.
	<i>MAC-addr</i>	Member switch MAC address.
	<i>IP-addr</i>	Member switch IP address.

<i>group_name</i>	(Optional) Member switch group name (if different from the default group name).
encrypt	(Optional) Secure communication to peer. Default value is disabled
data-dtls	(Optional) Configure data-dtls for mobility peer. Default value is enabled
delete	(Optional) Deletes a mobility group member from the list.
hash	Configures the hash key for authorization. You can configure the hash key only if the member is a virtual controller in the same domain.
<i>key</i>	Hash key of the virtual controller. For example, a819d479dcfeb3e0974421b6e8335582263d9169
none	Clears the previous hash key of the virtual controller.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	This command supports both IPv4 and IPv6 address formats.
8.8.111.0	This command was updated by adding encrypt , data-dtls keywords to support IRCM functionality.

The following example shows how to add a mobility group member with an IPv4 address to the list:

```
(Cisco Controller) >config mobility group member add 11:11:11:11:11:11 209.165.200.225
```

The following example shows how to add a mobility group member with an IPv6 address to the list:

```
(Cisco Controller) >config mobility group member add 11:11:11:11:11:11 2001:DB8:::1
```

The following example shows how to configure the hash key of a virtual controller in the same domain:



Note The IP address in this example can be in either IPv4 or IPv6 format.

```
(Cisco Contoller) >config mobility group member hash 209.165.201.1
a819d479dcfeb3e0974421b6e8335582263d9169
```

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		
	<i>group_name</i>	Member switch group name (if different from the default group name).
	<i>ip_address</i>	Member switch IP address.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

The following example shows how to configure the multicast group IP address 10.10.10.1 for a group named test:

```
(Cisco Contoller) >config mobility group multicast-address test 10.10.10.1
```

The following example shows how to configure the multicast group IP address 2001:DB8::1 for a group named test:

```
(Cisco Contoller) >config mobility group multicast-address test 2001:DB8::1
```

config mobility multicast-mode

To enable or disable mobility multicast mode, use the **config mobility multicast-mode** command.

config mobility multicast-mode {**enable** | **disable**} *local_group_multicast_address*

Syntax Description		
	enable	Enables the multicast mode; the controller uses to send Mobile Announce messages to the local
	disable	Disables the multicast mode; the controller uses send the Mobile Announce messages to the local
	<i>local_group_multicast_address</i>	IP address for the local mobility group.

Command Default The mobility multicast mode is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the multicast mobility mode for the local mobility group IP address 157.168.20.0:

```
(Cisco Controller) >config mobility multicast-mode enable 157.168.20.0
```

config mobility secure-mode

To configure the secure mode for mobility messages between controllers, use the **config mobility secure-mode** command.

config mobility secure-mode {enable | disable}

Syntax Description	enable	Disables mobility group message security.
	disable	Enables the mobility group message security.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the secure mode for mobility messages:

```
(Cisco Controller) >config mobility secure-mode enable
```

config mobility statistics reset

To reset the mobility statistics, use the **config mobility statistics reset** command.

config mobility statistics reset

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to reset the mobility group statistics:

```
(Cisco Controller) >config mobility statistics reset
```

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.

config msglog level critical

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines The message log always collects and displays critical messages, regardless of the message log level setting.

The following example shows how to configure the message log severity level and display critical messages:

```
(Cisco Controller) > 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to reset the message log to collect and display critical and noncritical error messages:

```
(Cisco Controller) > 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to reset the message log so that it collects and display critical, noncritical, and authentication or security-related errors:

```
(Cisco Controller) > 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.

config msglog level verbose

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to reset the message logs so that it collects and display all messages:

```
(Cisco Controller) > 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.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release Modification
------------------------	------------------------------------

7.6	This command was introduced in a release earlier than Release 7.6.
------------	--

The following 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:

```
(Cisco Controller) > config msglog level warning
```

Related Commands	show msglog
-------------------------	--------------------

Configure Media-Stream Commands

Use the config media-stream commands to configure media stream settings.

config 802.11 media-stream multicast-direct

To configure the media stream multicast-direct parameters for the 802.11 networks, use the **config 802.11 media-stream multicast-direct** command.

```
config 802.11 { a | b } media-stream multicast-direct { admission-besteffort { enable | disable } |
{ client-maximum | radio-maximum } { value | no-limit } | enable | disable }
```

Syntax Description	Parameter	Description
	802.11a	Specifies the 802.11a network.
	802.11b	Specifies the 802.11b/g network.
	admission-besteffort	Admits media stream to best-effort queue.
	enable	Enables multicast-direct on a 2.4-GHz or a 5-GHz band.
	disable	Disables multicast-direct on a 2.4-GHz or a 5-GHz band.
	client-maximum	Specifies the maximum number of streams allowed on a client.
	radio-maximum	Specifies the maximum number of streams allowed on a 2.4-GHz or a 5-GHz band.
	<i>value</i>	Number of streams allowed on a client or on a 2.4-GHz or a 5-GHz band, between 1 to 20.
	no-limit	Specifies the unlimited number of streams allowed on a client or on a 2.4-GHz or a 5-GHz band.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines Before you configure the media stream multicast-direct parameters on a 802.11 network, ensure that the network is nonoperational.

This example shows how to enable a media stream multicast-direct settings on an 802.11a network:

```
> config 802.11a media-stream multicast-direct enable
```

This example shows how to admit the media stream to the best-effort queue:

```
> config 802.11a media-stream multicast-direct admission-besteffort enable
```

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

```
> config 802.11a media-stream multicast-direct client-maximum 10
```

Related Commands

- config 802.11 media-stream video-redirect
- show 802.11a media-stream name
- show media-stream group summary
- show media-stream group detail

config 802.11 media-stream video-redirect

To configure the media stream video-redirect for the 802.11 networks, use the **config 802.11 media-stream video-redirect** command.

```
config 802.11 {a | b} media-stream video-redirect {enable | disable}
```

Syntax Description	802.11a	Specifies the 802.11a network.
	802.11b	Specifies the 802.11b/g network.
	enable	Enables traffic redirection.
	disable	Disables traffic redirection.

Command Default None.

Usage Guidelines Before you configure the media stream video-redirect on a 802.11 network, ensure that the network is nonoperational.

This example shows how to enable media stream traffic redirection on an 802.11a network:

```
> config 802.11a media-stream video-redirect enable
```

Related Commands

- config 802.11 media-stream multicast-redirect
- show 802.11a media-stream name
- show media-stream group summary
- show media-stream group detail

config media-stream multicast-direct

To configure the media-stream multicast direct, use the **config media-stream multicast direct** command.

config media-stream multicast-direct { **enable** | **disable** }

Syntax Description	enable	Enables a media stream.
	disable	Disables a media stream.

Command Default None.

Usage Guidelines Media-stream multicast-direct requires load based Call Admission Control (CAC) to run.

This example shows how to enable media-stream multicast-direct settings:

```
> config media-stream multicast-direct enable
```

This example shows how to disable media-stream multicast-direct settings:

```
> config media-stream multicast-direct disable
```

Related Commands

- config 802.11 media-stream video-redirect**
- 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	(Optional) Enables the session announcement message state.
	disable	(Optional) Disables the session announcement message state.
	url	Configures the URL.
	<i>url</i>	Session announcement URL.
	email	Configures the email ID.
	<i>email</i>	Specifies the session announcement e-mail.
	phone	Configures the phone number.
	<i>phone_number</i>	Session announcement phone number.
	note	Configures the notes.

note Session announcement notes.

Command Default Disabled.

Usage Guidelines Media-stream multicast-direct requires load-based Call Admission Control (CAC) to run.

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 mail 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 { periodic | initial } } qos priority { drop | fallback }
```

Syntax Description	
multicast-direct	Specifies the media stream for the multicast-direct setting.
<i>media_stream_name</i>	Media-stream name.
<i>start-IP</i>	IP multicast destination start address.
<i>end-IP</i>	IP multicast destination end address.
template	(Optional) Configures the media stream from templates.
very coarse	Applies a very-coarse template.
coarse	Applies a coarse template.
ordinary	Applies an ordinary template.
low-resolution	Applies a low-resolution template.
med-resolution	Applies a medium-resolution template.
high-resolution	Applies a high-resolution template.
detail	Configures the media stream with specific parameters.

<i>bandwidth</i>	Maximum expected stream bandwidth.
<i>packet-size</i>	Average packet size.
periodic	Specifies the periodic admission evaluation.
initial	Specifies the Initial admission evaluation.
<i>qos</i>	AIR QoS class (video only).
<i>priority</i>	Media-stream priority.
drop	Specifies that the stream is dropped on a periodic reevaluation.
fallback	Specifies if the stream is demoted to the best-effort class on a periodic reevaluation.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines Media-stream multicast-direct requires load-based Call Admission Control (CAC) to run.

This example shows how to configure a new media stream:

```
> config media-stream add multicast-direct abc 227.8.8.8 227.9.9.9 detail 2 150 periodic
video 1 drop
```

Related Commands

- show 802.11a media-stream name
- show media-stream group summary
- show media-stream group detail

config media-stream admit

To allow traffic for a media stream group, use the **config media-stream admit** command.

config media-stream admit *media_stream_name*

Syntax Description

<i>media_stream_name</i>	Media-stream group name.
--------------------------	--------------------------

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

When you try to allow traffic for the media stream group, you will be prompted that IGMP snooping will be disabled and enabled again, and all clients might observe a glitch on the multicast traffic.

This example shows how to allow traffic for a media stream group:

```
(Cisco Controller) > config media-stream admit MymediaStream
```

Related Commands

show 802.11a media-stream name
show media-stream group summary
show media-stream group detail

config media-stream deny

To block traffic for a media stream group, use the **config media-stream deny** command.

Syntax Description

media_stream_name Media-stream group name.

config media-stream deny *media_stream_name*

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

When you try to block traffic for the media stream group, you will be prompted that IGMP snooping will be disabled and enabled again, and all clients might observe a glitch on the multicast traffic.

This example shows how to block traffic for a media stream group:

```
(Cisco Controller) > config media-stream deny MymediaStream
```

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines Media-stream multicast-direct requires load-based Call Admission Control (CAC) to run.

This example shows how to delete the media stream named abc:

```
(Cisco Controller) > 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		
<i>username</i>		Guest username. The username can be up to 50 alphanumeric characters.
<i>password</i>		User password. The password can be up to 24 alphanumeric characters.
wlan		Specifies the wireless LAN identifier to associate with or zero for any wireless LAN.
<i>wlan_id</i>		Wireless LAN identifier assigned to the user. A zero value associates the user with any wireless LAN.
guestlan		Specifies the guest LAN identifier to associate with or zero for any wireless LAN.
<i>guestlan_id</i>		Guest LAN ID.
userType		Specifies the user type.
guest		Specifies the guest for the guest user.
lifetime		Specifies the lifetime.
<i>lifetime</i>		Lifetime value (60 to 259200 or 0) in seconds for the guest user. Note A value of 0 indicates an unlimited lifetime.
<i>description</i>		Short description of user. The description can be up to 32 characters enclosed in double-quotes.

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines Local network usernames must be unique because they are stored in the same database.

The following example shows how to add a permanent username Jane to the wireless network for 1 hour:

```
(Cisco Controller) > config netuser add jane able2 1 wlan_id 1 userType permanent
```

The following example shows how to add a guest username George to the wireless network for 1 hour:

```
(Cisco Controller) > 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 username | wlan-id wlan-id }
```

Syntax Description	<i>username</i>	Network username. The username can be up to 24 alphanumeric characters.
	<i>wlan-id</i>	WLAN identification number.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines Local network usernames must be unique because they are stored in the same database.



Note When a WLAN associated with network users is deleted, the system prompts to delete all network users associated with the WLAN first. After deleting the network users, you can delete the WLAN.

The following example shows how to delete an existing username named able1 from the network:

```
(Cisco Controller) > config netuser delete able1
Deleted user able1
```

Related Commands **show netuser**

config netuser guest-lan-id

To configure a wired guest LAN ID for a network user, use the **config netuser guest-lan-id** command.

```
config netuser guest-lan-id username lan_id
```

Syntax Description	<i>username</i>	Network username. The username can be 24 alphanumeric characters.
	<i>lan_id</i>	Wired guest LAN identifier to associate with the user. A zero value associates the user with any wired LAN.

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a wired LAN ID 2 to associate with the user named aire1:

```
(Cisco Controller) > config netuser guest- lan-id aire1 2
```

Related Commands

- show netuser
- show wlan summary

config netuser description

To add a description to an existing net user, use the **config netuser description** command.

config netuser description *username description*

Syntax Description	<i>username</i>	Network username. The username can contain up to 24 alphanumeric characters.
	<i>description</i>	(Optional) User description. The description can be up to 32 alphanumeric characters enclosed in double quotes.

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to add a user description “HQ1 Contact” to an existing network user named able 1:

```
(Cisco Controller) > 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

username Name of the user.

role_name QoS guest role name.

Command Default

None

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to apply a QoS role to a guest user jsmith with the QoS guest role named Contractor:

```
(Cisco Controller) > 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.

Command Default

None

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

To delete a QoS role, use the **config netuser guest-role delete** *role-name* .

The following example shows how to create a QoS role for the guest user named guestuser1:

```
(Cisco Controller) > 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*

Syntax Description	<i>role_name</i>	Quality of service (QoS) guest role name.
---------------------------	------------------	---

Command Default	None	
------------------------	------	--

Command History	Release	Modification
------------------------	----------------	---------------------

7.6	This command was introduced in a release earlier than Release 7.6.	
-----	--	--

The following example shows how to delete a quality of service (QoS) role for guestuser1:

```
(Cisco Controller) > 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	<i>role_name</i>	Quality of service (QoS) guest role name.
---------------------------	------------------	---

<i>rate</i>	Rate for TCP traffic on a per user basis.	
-------------	---	--

Command Default	None	
------------------------	------	--

Usage Guidelines	For the <i>role_name</i> 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 <i>rate</i> 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.
-------------------------	---

The following example shows how to configure an average rate for the QoS guest named guestuser1:

```
(Cisco Controller) > 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

config netuser guest-role qos data-rate average-realtime-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

<i>role_name</i>	Quality of service (QoS) guest role name.
<i>rate</i>	Rate for TCP traffic on a per user basis.

Command Default

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.

The following 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:

```
(Cisco Controller) > 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

<i>role_name</i>	Quality of service (QoS) guest role name.
<i>rate</i>	Rate for TCP traffic on a per user basis.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to configure the peak data rate for the QoS guest named `guestuser1` with the rate for TCP traffic of 0 Kbps:

```
(Cisco Controller) > 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	<i>role_name</i>	Quality of service (QoS) guest role name.
	<i>rate</i>	Rate for TCP traffic on a per user basis.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following 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:

```
(Cisco Controller) > 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 lifetime

To configure the lifetime for a guest network user, use the **config netuser lifetime** command.

config netuser lifetime *username time*

Syntax Description	username	Network username. The username can be up to 50 alphanumeric characters.
	<i>time</i>	Lifetime between 60 to 31536000 seconds or 0 for no limit.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure lifetime for a guest network user:

```
(Cisco Controller) > config netuser lifetime guestuser1 22450
```

Related Commands

- show netuser
- show wlan summary

config netuser maxUserLogin

To configure the maximum number of login sessions allowed for a network user, use the **config netuser maxUserLogin** command.

config netuser maxUserLogin *count*

Syntax Description	count	Maximum number of login sessions for a single user. The allowed values are from 0 (unlimited) to 8.
--------------------	-------	---

Command Default By default, the maximum number of login sessions for a single user is 0 (unlimited).

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the maximum number of login sessions for a single user to 8:

```
(Cisco Controller) > 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		
	<i>username</i>	Network username. The username can be up to 24 alphanumeric characters.
	<i>password</i>	Network user password. The password can contain up to 24 alphanumeric characters.

Command Default None

Command History **Release** **Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to change the network user password from aire1 to aire2:

```
(Cisco Controller) > 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*

Syntax Description		
	<i>username</i>	Network username. The username can be 24 alphanumeric characters.
	<i>wlan_id</i>	Wireless LAN identifier to associate with the user. A zero value associates the user with any wireless LAN.

Command Default None

Command History **Release** **Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

Examples

The following example shows how to configure a wireless LAN ID 2 to associate with the user named aire1:

```
(Cisco Controller) > config netuser wlan-id aire1 2
```

Related Commands

show netuser

show wlan summary

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	enable	Disables the 802.3 bridging.
	disable	Enables the 802.3 bridging.

Command Default By default, 802.3 bridging on the controller is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable the 802.3 bridging:

```
(Cisco Controller) > 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}
```

Syntax Description	enable	Enables the switch association.
	disable	Disables the switch association.

Command Default	Switch association is enabled.
------------------------	--------------------------------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure an old bridge access point to associate with the switch:

```
(Cisco Controller) > config network allow-old-bridge-aps enable
```

config network ap-discovery

To enable or disable NAT IP in an AP discovery response, use the **config network ap-discovery** command.

config network ap-discovery nat-ip-only {enable | disable}

Syntax Description	enable	disable
	Enables use of NAT IP only in discovery response.	Enables use of both NAT IP and non NAT IP in discovery response.

Command Default	The use of NAT IP only in discovery response is enabled.
------------------------	--

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

- If the **config interface nat-address management** command is set, this command controls which address(es) are sent in the CAPWAP discovery responses.
- If all APs are on the outside of the NAT gateway of the controller, enter the **config network ap-discovery nat-ip-only enable** command, and only the management NAT address is sent.
- If the controller has both APs on the outside and the inside of its NAT gateway, enter the **config network ap-discovery nat-ip-only disable** command, and both the management NAT address and the management inside address are sent. Ensure that you have entered the **config ap link-latency disable all** command to avoid stranding APs.
- If you disable **nat-ip-only**, the controller sends all active AP-Manager interfaces with their non-NAT IP in discovery response to APs.

If you enable **nat-ip-only**, the controller sends all active AP-Manager interfaces with NAT IP if configured for the interface, else non-NAT IP.

We recommend that you configure the interface as AP-Manager interface with NAT IP or non-NAT IP keeping these scenarios in mind because the AP chooses the least loaded AP-Manager interface received in the discovery response.

The following example shows how to enable NAT IP in an AP discovery response:


```
(Cisco Controller) > config network ap-discovery nat-ip-only enable
```

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	enable	Enables the Cisco lightweight access point fallback.
	disable	Disables the Cisco lightweight access point fallback.
Command Default	The Cisco lightweight access point fallback is enabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the Cisco lightweight access point fallback:

```
(Cisco Controller) > config network ap-fallback enable
```

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	enable	Enables the lightweight access point priority reauthentication.
	disable	Disables the lightweight access point priority reauthentication.
Command Default	The lightweight access point priority reauthentication is disabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the lightweight access point priority reauthorization:

```
(Cisco Controller) > config network ap-priority enable
```

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.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure AppleTalk bridging:

```
(Cisco Controller) > config network apple-talk enable
```

config network bridging-shared-secret

To configure the bridging shared secret, use the **config network bridging-shared-secret** command.

config network bridging-shared-secret *shared_secret*

Syntax Description	<i>shared_secret</i>	Bridging shared secret string. The string can contain up to 10 bytes.
Command Default	The bridging shared secret is enabled by default.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to configure the bridging shared secret string “shhh1”:

```
(Cisco Controller) > config network bridging-shared-secret shhh1
```

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	<i>seconds</i>	Timeout in seconds. The minimum value is 10 seconds. The default value is 300 seconds.
---------------------------	----------------	--

Command Default	The default ARP entry timeout value is 300 seconds.
------------------------	---

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to set the ARP entry timeout value to 240 seconds:

```
(Cisco Controller) > config network arptimeout 240
```

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** }

Syntax Description	enable	Enables the broadcast packet forwarding.
	disable	Disables the broadcast packet forwarding.

Command Default	The broadcast packet forwarding is disabled by default.
------------------------	---

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.
-------------	--

The following example shows how to enable broadcast packet forwarding:

```
(Cisco Controller) > 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	enable	Disables the fast SSID changing for mobile stations
	disable	Disables the fast SSID changing for mobile stations.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable the fast SSID changing for mobile stations:

```
(Cisco Controller) > 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}
```

Syntax Description	enable	Enables the validation of the source IP address to MAC address binding in clients packets.
	disable	Disables the validation of the source IP address to MAC address binding in clients packets.

Command Default The validation of the source IP address to MAC address binding in clients packets is enabled by default.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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).

The following example shows how to validate the source IP and MAC address within client packets:

```
(Cisco Controller) > config network ip-mac-binding enable
```

config network master-base

To enable or disable the Cisco wireless LAN controller as an access point default primary, use the **config network master-base** command.

```
config network master-base {enable | disable}
```

Syntax Description	enable	Enables the Cisco wireless LAN controller acting as a Cisco lightweight access point default primary.
	disable	Disables the Cisco wireless LAN controller acting as a Cisco lightweight access point default primary.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This setting is only used upon network installation and should be disabled after the initial network configuration. Because the primary Cisco wireless LAN controller is normally not used in a deployed network, the primary Cisco wireless LAN controller setting can be saved from 6.0.199.0 or later releases.

The following example shows how to enable the Cisco wireless LAN controller as a default primary:

```
(Cisco Controller) > 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.

```
config network mgmt-via-wireless {enable | disable}
```

Syntax Description

enable	Enables the switch management from a wireless interface.
disable	Disables the switch management from a wireless interface.

Command Default

The switch management from a wireless interface is disabled by default.

Command History

Release Modification

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

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.

This example shows how to configure switch management from a wireless interface:

```
(Cisco Controller) > 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

enable	Enables the multicast global support.
disable	Disables the multicast global support.

Command Default

Multicasting on the controller is disabled by default.

Command History

Release Modification

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

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.

The following example shows how to enable the global multicast support:

```
(Cisco Controller) > config network multicast global enable
```

Related Commands

show network summary
config network broadcast
config network multicast mode

config network multicast igmp query interval

To configure the IGMP query interval, use the **config network multicast igmp query interval** command.

config network multicast igmp query interval *value*

Syntax Description

<i>value</i>	Frequency at which controller sends IGMP query messages. The range is from 15 to 2400 seconds.
--------------	--

Command Default

The default IGMP query interval is 20 seconds.

Command History**Release Modification**

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

Usage Guidelines

To configure IGMP query interval, ensure that you do the following:

- Enable the global multicast by entering the **config network multicast global enable** command.
- Enable IGMP snooping by entering the **config network multicast igmp snooping enable** command.

The following example shows how to configure the IGMP query interval at 20 seconds:

```
(Cisco Controller) > config network multicast igmp query interval 20
```

Related Commands

config network multicast global
config network multicast igmp snooping
config network multicast igmp timeout

config network multicast igmp snooping

To enable or disable IGMP snooping, use the **config network multicast igmp snooping** command.

config network multicast igmp snooping {enable | disable}

Syntax Description	enable	Enables IGMP snooping.
	disable	Disables IGMP snooping.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable internet IGMP snooping settings:

```
(Cisco Controller) > config network multicast igmp snooping enable
```

Related Commands

- config network multicast global
- config network multicast igmp query interval
- 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 *value*

Syntax Description	<i>value</i>	Timeout range from 30 to 7200 seconds.
---------------------------	--------------	--

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

You can enter a timeout value between 30 and 7200 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.

The following example shows how to configure the timeout value 50 for IGMP network settings:

```
(Cisco Controller) > config network multicast igmp timeout 50
```

Related Commands

- config network multicast global
- config network igmp snooping

config network multicast igmp query interval

config network multicast l2mcast

To configure the Layer 2 multicast on an interface or all interfaces, use the **config network multicast l2mcast** command.

config network multicast l2mcast { **enable** | **disable** { **all** | *interface-name* }

Syntax Description	enable	Enables Layer 2 multicast.
	disable	Disables Layer 2 multicast.
	all	Applies to all interfaces.
	<i>interface-name</i>	Interface name for which the Layer 2 multicast is to be enabled or disabled.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable Layer 2 multicast for all interfaces:

```
(Cisco Controller) > config network multicast l2mcast enable all
```

Related Commands

- config network multicast global**
- config network multicast igmp snooping**
- config network multicast igmp query interval**
- config network multicast mld**

config network multicast mld

To configure the Multicast Listener Discovery (MLD) parameters, use the **config network multicast mld** command.

config network multicast mld { **query interval** *interval-value* | **snooping** { **enable** | **disable** } | **timeout** *timeout-value* }

Syntax Description	query interval	Configures query interval to send MLD query n
	<i>interval-value</i>	Query interval in seconds. The range is from 15
	snooping	Configures MLD snooping.
	enable	Enables MLD snooping.

disable	Disables MLD snooping.
timeout	Configures MLD timeout.
<i>timeout-value</i>	Timeout value in seconds. The range is from 30 seconds to 300 seconds.

Command Default None

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to set a query interval of 20 seconds for MLD query messages:

```
(Cisco Controller) > config network multicast mld query interval 20
```

Related Commands

config network multicast global
config network multicast igmp snooping
config network multicast igmp query interval
config network multicast l2mcast

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.

Command Default

None

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the multicast mode to send a single copy of data to multiple receivers:

```
(Cisco Controller) > 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.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the controller to use the unicast mode:

```
(Cisco Controller) > config network multicast mode unicast
```

Related Commands	config network multicast global
	config network broadcast
	config network multicast mode multicast

config network oeap-600 dual-rlan-ports

To configure the Ethernet port 3 of Cisco OfficeExtend 600 Series access points to operate as a remote LAN port in addition to port 4, use the **config network oeap-600 dual-rlan-ports** command.

config network oeap-600 dual-rlan-ports {enable | disable}

Syntax Description	enable	Enables Ethernet port 3 of Cisco OfficeExtend 600 Series access points to operate as a remote LAN port in addition to port 4.
	disable	Resets the Ethernet port 3 Cisco OfficeExtend 600 Series access points to function as a local LAN port.

Command Default	The Ethernet port 3 Cisco 600 Series OEAP is reset.
------------------------	---

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the Ethernet port 3 of Cisco OfficeExtend 600 Series access points to operate as a remote LAN port:

```
(Cisco Controller) > config network oeap-600 dual-rlan-ports enable
```

config network oeap-600 local-network

To configure access to the local network for the Cisco 600 Series OfficeExtend access points, use the **config network oeap-600 local-network** command.

config network oeap-600 local-network {enable | disable}

Syntax Description	enable	Disables access to the local network for the Cisco 600 Series OfficeExtend access points.
	enable	Enables access to the local network for the Cisco 600 Series OfficeExtend access points.
	disable	Disables access to the local network for the Cisco 600 Series OfficeExtend access points.
Command Default	Access to the local network for the Cisco 600 Series OEAPs is disabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable access to the local network for the Cisco 600 Series OfficeExtend access points:

```
(Cisco Controller) > config network oeap-600 local-network enable
```

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}

Syntax Description	enable	Disables the OTAP provisioning.
	enable	Enables the OTAP provisioning.
	disable	Disables the OTAP provisioning.
Command Default	The OTAP provisioning is enabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the OTAP provisioning:

```
(Cisco Controller) > config network otap-mode disable
```

config network profiling

To profile http port for a specific port, use the **config network profiling http-port** command.

config network profiling http-port *port number*

Syntax Description	<i>port number</i>	Interface port number. Default value is 80.
Command History	Release	Modification
	8.2	This command was introduced

The following example shows how to configure the http port in a network:

```
(Cisco Controller) > config network profiling http-port 80
```

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*

Syntax Description	<i>name</i>	RF-Network name. The name can contain up to 19 characters.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the RF-network name to travelers:

```
(Cisco Controller) > 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 for management users, use the **config network secureweb** command.

config network secureweb {**enable** | **disable**}

Syntax Description	enable	Enables the secure web interface for management users.
---------------------------	---------------	--

disable	Disables the secure web interface for management users.
----------------	---

Command Default

The secure web interface for management users is enabled by default.

Command History**Release Modification**

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

Usage Guidelines

This command allows management users to access the controller GUI using an http://ip-address. Web mode is not a secure connection.

The following example shows how to enable the secure web interface settings for management users:

```
(Cisco Controller) > 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** | **rc4-preference** } { **enable** | **disable** }

Syntax Description

high	Configures whether or not 128-bit ciphers are required for web administration and web authentication.
sslv2	Configures SSLv2 for both web administration and web authentication.
rc4-preference	Configures preference for RC4-SHA (Rivest Cipher 4-Secure Hash Algorithm) cipher suites (over CBC cipher suites) for web authentication and web administration.
enable	Enables the secure web interface.
disable	Disables the secure web interface.

Command Default

The default is **disable** for secure web mode with increased security and **enable** for SSL v2.

Command History**Release Modification**

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

Usage Guidelines



Note The **config network secureweb cipher-option** command allows users to access the controller GUI using an 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.

In RC4-SHA based cipher suites, RC4 is used for encryption and SHA is used for message authentication.

The following example shows how to enable secure web mode with increased security:

```
(Cisco Controller) > config network secureweb cipher-option
```

The following example shows how to disable SSL v2:

```
(Cisco Controller) > config network secureweb cipher-option sslv2 disable
```

Related Commands **config network secureweb**
show network summary

config network ssh

To allow or disallow new Secure Shell (SSH) sessions, use the **config network ssh** command.

config network ssh {enable | disable}

Syntax Description	enable	Allows the new SSH sessions.
	disable	Disallows the new SSH sessions.

Command Default The default value for the new SSH session is **disable**.

The following example shows how to enable the new SSH session:

```
(Cisco Controller) > 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	Allows new Telnet sessions.
---------------------------	---------------	-----------------------------

disable	Disallows new Telnet sessions.
----------------	--------------------------------

Command Default By default, the new Telnet session is disallowed and the value is **disable**.

Usage Guidelines Telnet is not supported on Cisco Aironet 1830 and 1850 Series Access Points.

Command History

Release Modification

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

The following example shows how to configure the new Telnet sessions:

```
(Cisco Controller) > 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*

Syntax Description

<i>seconds</i>	Timeout duration in seconds. The minimum value is 90 seconds. The default value is 300 seconds.
----------------	---

Command Default

The default timeout value for idle client session is 300 seconds.

Usage Guidelines

Use this command to set the idle client session duration on the Cisco wireless LAN controller. The minimum duration is 90 seconds.

The following example shows how to configure the idle session timeout to 1200 seconds:

```
(Cisco Controller) > config network usertimeout 1200
```

Related Commands

show network summary

config network web-auth captive-bypass

To configure the controller to support bypass of captive portals at the network level, use the **config network web-auth captive-bypass** command.

config network web-auth captive-bypass {**enable** | **disable**}

Syntax Description

enable	Allows the controller to support bypass of captive portals.
---------------	---

disable	Disallows the controller to support bypass of captive portals.
----------------	--

Command Default None

The following example shows how to configure the controller to support bypass of captive portals:

```
(Cisco Controller) > config network web-auth captive-bypass enable
```

Related Commands `show network summary`
`config network web-auth cmcc-support`

config network web-auth cmcc-support

To configure eWalk on the controller, use the `config network web-auth cmcc-support` command.

```
config network web-auth cmcc-support {enable | disable}
```

Syntax Description	enable Enables eWalk on the controller.
	disable Disables eWalk on the controller.

Command Default None

The following example shows how to enable eWalk on the controller:

```
(Cisco Controller) > config network web-auth cmcc-support enable
```

Related Commands `show network summary`
`config network web-auth captive-bypass`

config network web-auth port

To configure an additional port to be redirected for web authentication at the network level, use the `config network web-auth port` command.

```
config network web-auth port port
```

Syntax Description	<i>port</i>	Port number. The valid range is from 0 to 65535.
---------------------------	-------------	--

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure an additional port number 1200 to be redirected for web authentication:

```
(Cisco Controller) > config network web-auth port 1200
```

Related Commands `show network summary`

config network web-auth proxy-redirect

To configure proxy redirect support for web authentication clients, use the **config network web-auth proxy-redirect** command.

config network web-auth proxy-redirect { **enable** | **disable** }

Syntax Description	enable	Allows proxy redirect support for web authentication clients.
	disable	Disallows proxy redirect support for web authentication clients.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable proxy redirect support for web authentication clients:

```
(Cisco Controller) > config network web-auth proxy-redirect enable
```

Related Commands `show network summary`

config network web-auth secureweb

To configure the secure web (https) authentication for clients, use the **config network web-auth secureweb** command.

config network web-auth secureweb { **enable** | **disable** }

Syntax Description	enable	Allows secure web (https) authentication for clients.
	disable	Disallows secure web (https) authentication for clients. Enables http web authentication for clients.

Command Default The default secure web (https) authentication for clients is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines If you configure the secure web (https) authentication for clients using the **config network web-auth secureweb disable** command, then you must reboot the controller to implement the change.

The following example shows how to enable the secure web (https) authentication for clients:

```
(Cisco Controller) > config network web-auth secureweb enable
```

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}
```

Syntax Description	enable	Disables the web interface.
	enable	Enables the web interface.
	disable	Disables the web interface.

Command Default The default value for the web mode is **enable**.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the web interface mode:

```
(Cisco Controller) > config network webmode disable
```

Related Commands `show network summary`

config network web-auth

To configure the network-level web authentication options, use the **config network web-auth** command.

```
config network web-auth {port port-number} | {proxy-redirect {enable | disable}}
```

Syntax Description	port	Configures additional ports for web authentication redirection.
	port-number	Port number (between 0 and 65535).

proxy-redirect	Configures proxy redirect support for web authentication clients.
enable	Enables proxy redirect support for web authentication clients. Note Web-auth proxy redirection will be enabled for ports 80, 8080, and 3128, along with user defined port 345.
disable	Disables proxy redirect support for web authentication clients.

Command Default The default network-level web authentication value is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines You must reset the system for the configuration to take effect.

The following example shows how to enable proxy redirect support for web authentication clients:

```
(Cisco Controller) > config network web-auth proxy-redirect enable
```

Related Commands

- show network summary
- show run-config
- config qos protocol-type

config network zero-config

To configure bridge access point ZeroConfig support, use the **config network zero-config** command.

config network zero-config {enable | disable}

Syntax Description	
enable	Enables the bridge access point ZeroConfig support.
disable	Disables the bridge access point ZeroConfig support.

Command Default The bridge access point ZeroConfig support is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the bridge access point ZeroConfig support:

```
(Cisco Controller) >config network zero-config enable
```

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}

Syntax Description	all	Configures all ports.
	<i>port</i>	Number of the port.
	enable	Enables the specified ports.
	disable	Disables the specified ports.
Command Default	Enabled	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable port 8:

```
(Cisco Controller) > config port adminmode 8 disable
```

The following example shows how to enable all ports:

```
(Cisco Controller) > config port adminmode all enable
```

config qos average-realtime-rate

To define the average real-time data rate in Kbps for UDP traffic per user or per service set identifier (SSID), use the **config qos average-realtime-rate** command.

config qos average-realtime-rate {bronze | silver | gold | platinum} {per-ssid | per-client} {downstream | upstream} rate

Syntax Description	bronze	Specifies the average real-time data rate for the queue bronze.
	silver	Specifies the average real-time data rate for the queue silver.
	gold	Specifies the average real-time data rate for the queue gold.

platinum	Specifies the average real-time data rate for the queue platinum.
per-ssid	Configures the rate limit for an SSID per radio. The combined tra
per-client	Configures the rate limit for each client associated with the SSID.
downstream	Configures the rate limit for downstream traffic.
upstream	Configures the rate limit for upstream traffic.
<i>rate</i>	Average real-time data rate for UDP traffic per user. A value between restriction on the QoS profile.

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the average real-time actual rate for queue gold:

```
(Cisco Controller) > config qos average-realtime-rate gold per ssid downstream 10
```

Related Commands

- config qos average-data-rate
- config qos burst-data-rate
- config qos burst-realtime-rate
- config wlan override-rate-limit

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}
```

Syntax Description	
all	Configures all ports.
<i>port</i>	Number of the port.
enable	Enables the specified ports.
disable	Disables the specified ports.

Command Default The default for all ports is that auto-negotiation is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Example

The following example shows how to turn on physical port autonegotiation for all front-panel Ethernet ports:

```
(Cisco Controller) > config port autoneg all enable
```

The following example shows how to disable physical port autonegotiation for front-panel Ethernet port 19:

```
(Cisco Controller) > config port autoneg 19 disable
```

config pmipv6 add profile

To create a Proxy Mobility IPv6 (PMIPv6) profile for the WLAN, use the **config pmipv6 add profile** command. You can configure PMIPv6 profiles based on a realm or a service set identifier (SSID).

config pmipv6 add profile *profile_name* **nai** { *user@realm* | *@realm* | * } **lma** *lma_name* **apn** *apn_name*

Syntax Description	
<i>profile_name</i>	Name of the profile. The profile name is case sensitive and can be up to 127 alphanumeric characters.
nai	Specifies the Network Access Identifier of the client.
<i>user@realm</i>	Network Access Identifier of the client in the format <i>user@realm</i> . The NAI name is case sensitive and can be up to 127 alphanumeric characters.
<i>@realm</i>	Network Access Identifier of the client in the format <i>@realm</i> .
*	All Network Access Identifiers. You can have profiles based on an SSID for all users.
lma	Specifies the Local Mobility Anchor (LMA).
<i>lma_name</i>	Name of LMA. The LMA name is case sensitive and can be up to 127 alphanumeric characters.
apn	Specifies the access point.
<i>apn_name</i>	Name of the access point. The access point name is case sensitive and can be up to 127 alphanumeric characters.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This command is a prerequisite for using PMIPv6 configuration commands if the controller uses open authentication.

The following example shows how to create a PMIPv6 profile:

```
(Cisco Controller) >config pmipv6 add profile profile1 nai @vodafone.com lma vodfonelma apn
vodafoneapn
```

config port linktrap

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		
	all	Configures all ports.
	<i>port</i>	Number of the port.
	enable	Enables the specified ports.
	disable	Disables the specified ports.

Command Default The default value for down link traps for a specific controller port or for all ports is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable port 8 traps:

```
(Cisco Controller) > config port linktrap 8 disable
```

The following example shows how to enable all port traps:

```
(Cisco Controller) > config port linktrap all enable
```

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}

Syntax Description		
	all	Configures all ports.
	<i>port</i>	Number of the port.
	enable	Enables the specified ports.
	disable	Disables the specified ports.

Command Default The default multicast appliance service for a specific controller port or for all ports is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable multicast appliance service on all ports:

```
(Cisco Controller) > config port multicast appliance all enable
```

The following example shows how to disable multicast appliance service on port 8:

```
(Cisco Controller) > config port multicast appliance 8 disable
```

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** command.

config port power {all | port} {enable | disable}

Syntax Description		
	all	Configures all ports.
	<i>port</i>	Port number.
	enable	Enables the specified ports.
	disable	Disables the specified ports.

Command Default Enabled

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable PoE on all ports:

```
(Cisco Controller) > config port power all enable
```

The following example shows how to disable PoE on port 8:

```
(Cisco Controller) > config port power 8 disable
```

Configure PMIPv6 Commands

Use the **config pmipv6** commands to configure PMIPv6 parameters on the Mobile Access Gateway (MAG) module of the controller. To enable the MAG module on the controller and to configure the PMIPv6 commands, you must configure the following prerequisite commands:

- **config pmipv6 domain**—Enables MAG functionality on the controller and configures a PMIPv6 domain.
- **config pmipv6 mag lma**—Configures a Local Mobility Anchor (LMA) with the MAG.
- **config pmipv6 add profile**—Creates a PMIPv6 profile. This command is a prerequisite only when open authentication is used.

config pmipv6 domain

To configure PMIPv6 and to enable Mobile Access Gateway (MAG) functionality on controller, use the **config pmipv6 domain** command.

config pmipv6 domain *domain_name*

Syntax Description	<i>domain_name</i> Name of the PMIPv6 domain. The domain name can be up to 127 case-sensitive, alphanumeric characters.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

The following example shows how to configure a domain name for a PMIPv6 WLAN:

```
(Cisco Controller) >config pmipv6 domain floor1
```

config pmipv6 add profile

To create a Proxy Mobility IPv6 (PMIPv6) profile for the WLAN, use the **config pmipv6 add profile** command. You can configure PMIPv6 profiles based on a realm or a service set identifier (SSID).

config pmipv6 add profile *profile_name* **nai** { *user@realm* | *@realm* | * } **lma** *lma_name* **apn** *apn_name*

Syntax Description	<i>profile_name</i> Name of the profile. The profile name is case sensitive and can be up to 127 alphanumeric characters.
	nai Specifies the Network Access Identifier of the client.
	<i>user@realm</i> Network Access Identifier of the client in the format <i>user@realm</i> . The NAI name is case sensitive and can be up to 127 alphanumeric characters.

<i>@realm</i>	Network Access Identifier of the client in the format <i>@realm</i> .
*	All Network Access Identifiers. You can have profiles based on an SSID for all users.
lma	Specifies the Local Mobility Anchor (LMA).
<i>lma_name</i>	Name of LMA. The LMA name is case sensitive and can be up to 127 alphanumeric characters.
apn	Specifies the access point.
<i>ap_name</i>	Name of the access point. The access point name is case sensitive and can be up to 127 alphanumeric characters.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This command is a prerequisite for using PMIPv6 configuration commands if the controller uses open authentication.

The following example shows how to create a PMIPv6 profile:

```
(Cisco Controller) >config pmipv6 add profile profile1 nai @vodafone.com lma vodfonelma apn
vodafoneapn
```

config pmipv6 delete

To delete a Proxy Mobility IPv6 (PMIPv6) profile, domain, or Local Mobility Anchor (LMA), use the **config pmipv6 delete** command.

```
config pmipv6 delete { profile profile_name nai { nai_id | all } | domain domain_name | lma
lma_name }
```

Syntax Description		
profile	Specifies the PMIPv6 profile.	
<i>profile_name</i>	Name of the PMIPv6 profile. The profile name is case sensitive and can be up to 127 alphanumeric characters.	
nai	Specifies the Network Access Identifier (NAI) of a mobile client.	
<i>nai_id</i>	Network Access Identifier of a mobile client. The NAI is case sensitive and can be up to 127 alphanumeric characters.	
all	Specifies all NAIs. When you delete all NAIs, the profile is deleted.	
domain	Specifies the PMIPv6 domain.	

domain_name Name of the PMIPv6 domain. The domain name is case sensitive and can be up to 127 alphanumeric characters.

lma Specifies the LMA.

lma_name Name of the LMA. The LMA name is case sensitive and can be up to 127 alphanumeric characters.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete a domain:

```
(Cisco Controller) >config pmipv6 delete lab1
```

config pmipv6 mag binding init-retx-time

To configure the initial timeout between the proxy binding updates (PBUs) when the Mobile Access Gateway (MAG) does not receive the proxy binding acknowledgements (PBAs), use the **config pmipv6 mag binding init-retx-time** command.

config pmipv6 mag binding init-retx-time *units*

Syntax Description	<i>units</i>
	Initial timeout between the PBUs when the MAG does not receive the PBAs. The range is from 100 to 65535 seconds.

Command Default The default initial timeout is 1000 seconds.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the initial timeout between the PBUs when the MAG does not receive the PBAs:

```
(Cisco Controller) >config pmipv6 mag binding init-retx-time 500
```

config pmipv6 mag binding lifetime

To configure the lifetime of the binding entries in the Mobile Access Gateway (MAG), use the **config pmipv6 mag binding lifetime** command.

config pmipv6 mag binding lifetime *units*

Syntax Description	<i>units</i> Lifetime of the binding entries in the MAG. The binding lifetime must be a multiple of 4 seconds. The range is from 10 to 65535 seconds.				
Command Default	The default lifetime of the binding entries is 65535 seconds.				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				
Usage Guidelines	<p>You must configure a Proxy Mobility IPv6 (PMIPv6) domain before you configure the lifetime of the binding entries in the controller.</p> <p>The following example shows how to configure the lifetime of the binding entries in the controller:</p> <pre>(Cisco Controller) >config pmipv6 mag binding lifetime 5000</pre>				

config pmipv6 mag binding max-retx-time

To configure the maximum timeout between the proxy binding updates (PBUs) when the Mobility Access Gateway (MAG) does not receive the proxy binding acknowledgments (PBAs), use the **config pmipv6 mag binding max-retx-time** command.

config pmipv6 mag binding max-retx-time *units*

Syntax Description	<i>units</i> Maximum timeout between the PBUs when the MAG does not receive the PBAs. The range is from 100 to 65535 seconds.				
Command Default	The default maximum timeout is 32000 seconds.				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

The following example shows how to configure the maximum timeout between the PBUs when the MAG does not receive the PBAs:

```
(Cisco Controller) >config pmipv6 mag binding max-retx-time 50
```

config pmipv6 mag binding maximum

To configure the maximum number of binding entries in the Mobile Access Gateway (MAG), use the **config pmipv6 mag binding maximum** command.

config pmipv6 mag binding maximum *units*

Syntax Description	<i>units</i> Maximum number of binding entries in the MAG. This number indicates the maximum number of users connected to the MAG. The range is from 0 to 40000.				
Command Default	The default maximum number of binding entries in the MAG is 10000.				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				
Usage Guidelines	You must configure a Proxy Mobility IPv6 (PMIPv6) domain before you configure the maximum number of binding entries in the MAG.				

The following example shows how to configure the maximum number of binding entries in the MAG:

```
(Cisco Controller) >config pmipv6 mag binding maximum 20000
```

config pmipv6 mag binding refresh-time

To configure the refresh time of the binding entries in the MAG, use the **config pmipv6 mag binding refresh-time** command.

config pmipv6 mag binding refresh-time *units*

Syntax Description	<i>units</i> Refresh time of the binding entries in the MAG. The binding refresh time must be a multiple of 4. The range is from 4 to 65535 seconds.
Command Default	The default refresh time of the binding entries in the MAG is 300 seconds.
Usage Guidelines	You must configure a PMIPv6 domain before you configure the refresh time of the binding entries in the MAG.

The following example shows how to configure the refresh time of the binding entries in the MAG:

```
(Cisco Controller) >config pmipv6 mag binding refresh-time 500
```

config pmipv6 mag bri delay

To configure the maximum or minimum amount of time that the MAG waits before retransmitting a Binding Revocation Indication (BRI) message, use the **config pmipv6 mag bri delay** command.

config pmipv6 mag bri delay { **min** | **max** } *time*

Syntax Description	min Specifies the minimum amount of time that the MAG waits before retransmitting a BRI message.
	max Specifies the maximum amount of time that the MAG waits before retransmitting a BRI message.

time Maximum or minimum amount of time that the controller waits before retransmitting a BRI message. The range is from 500 to 65535 milliseconds.

Command Default

The default value of the maximum amount of time that the MAG waits before retransmitting a BRI message is 2 seconds.

The default value of the minimum amount of time that the MAG waits before retransmitting a BRI message is 1 second.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the minimum amount of time that the MAG waits before retransmitting a BRI message:

```
(Cisco Controller) >config pmipv6 mag bri delay min 500
```

config pmipv6 mag bri retries

To configure the maximum number of times that the MAG retransmits the Binding Revocation Indication (BRI) message before receiving the Binding Revocation Acknowledgment (BRA) message, use the **config pmipv6 mag bri retries** command.

config pmipv6 mag bri retries *retries*

Syntax Description

retries Maximum number of times that the MAG retransmits the BRI message before receiving the BRA message. The range is from 1 to 10 retries.

Command Default

The default is 1 retry.

The following example shows how to configure the maximum number of times that the MAG retries:

```
(Cisco Controller) >config pmipv6 mag bri retries 5
```

config pmipv6 mag lma

To configure a local mobility anchor (LMA) with the mobile access gateway (MAG), use the **config pmipv6 mag lma** command.

config pmipv6 mag lma *lma_name ipv4-address address*

Syntax Description

<i>lma_name</i>	Name of the LMA. The LMA name can be a NAI or a string that uniquely identifies the LMA.
ipv4-address	Specifies the IP address of the LMA.
<i>address</i>	IP address of the LMA.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This command is a prerequisite to configure PMIPv6 parameters on the MAG.

The following example shows how to configure an LMA with the MAG:

```
(Cisco Controller) >config pmipv6 mag lma vodafonelma ipv4-address 209.165.200.254
```

config pmipv6 mag replay-protection

To configure the maximum amount of time difference between the timestamp in the received proxy binding acknowledgment (PBA) and the current time of the day for replay protection, use the **config pmipv6 mag replay-protection** command.

```
config pmipv6 mag replay-protection { timestamp window time | sequence-no sequence | mobile-node-timestamp mobile_node_timestamp }
```

Syntax Description		
timestamp		Specifies the time stamp of the PBA message.
window		Specifies the maximum time difference between the time stamp in the received PBA message and the current time of day.
<i>time</i>		Maximum time difference between the time stamp in the received PBA message and the current time of day. The range is from 1 to 300 milliseconds.
sequence-no		(Optional) Specifies the sequence number in a Proxy Binding Update message.
<i>sequence</i>		(Optional) Sequence number in the Proxy Binding Update message.
mobile_node_timestamp		(Optional) Specifies the time stamp of the mobile node.
<i>mobile_node_timestamp</i>		(Optional) Time stamp of the mobile node.

Command Default The default maximum time difference is 300 milliseconds.

Usage Guidelines Only the timestamp option is supported.

The following example shows how to configure the maximum amount of time difference in milliseconds between the time stamp in the received PBA message and the current time of day:

```
(Cisco Controller) >config pmipv6 mag replay-protection timestamp window 200
```

Configure QoS Commands

Use the **config qos** commands to configure Quality of Service (QoS) settings.

config qos average-realtime-rate

To define the average real-time data rate in Kbps for UDP traffic per user or per service set identifier (SSID), use the **config qos average-realtime-rate** command.

```
config qos average-realtime-rate {bronze | silver | gold | platinum} {per-ssid | per-client}
{downstream | upstream} rate
```

Syntax Description		
	bronze	Specifies the average real-time data rate for the queue bronze.
	silver	Specifies the average real-time data rate for the queue silver.
	gold	Specifies the average real-time data rate for the queue gold.
	platinum	Specifies the average real-time data rate for the queue platinum.
	per-ssid	Configures the rate limit for an SSID per radio. The combined tra
	per-client	Configures the rate limit for each client associated with the SSID.
	downstream	Configures the rate limit for downstream traffic.
	upstream	Configures the rate limit for upstream traffic.
	<i>rate</i>	Average real-time data rate for UDP traffic per user. A value betwe restriction on the QoS profile.

Command Default None

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the average real-time actual rate for queue gold:

```
(Cisco Controller) > config qos average-realtime-rate gold per ssid downstream 10
```

Related Commands

config qos average-data-rate
config qos burst-data-rate
config qos burst-realtime-rate
config wlan override-rate-limit

config qos average-data-rate

To define the average data rate in Kbps for TCP traffic per user or per service set identifier (SSID), use the **config qos average-data-rate** command.

```
config qos average-data-rate { bronze | silver | gold | platinum } { per-ssid | per-client }
{ downstream | upstream } rate
```

Syntax Description		
	bronze	Specifies the average data rate for the queue bronze.
	silver	Specifies the average data rate for the queue silver.
	gold	Specifies the average data rate for the queue gold.
	platinum	Specifies the average data rate for the queue platinum.
	per-ssid	Configures the rate limit for an SSID per radio. The command is not supported on the 5760 and 5760-UP series.
	per-client	Configures the rate limit for each client associated with the SSID.
	downstream	Configures the rate limit for downstream traffic.
	upstream	Configures the rate limit for upstream traffic.
	<i>rate</i>	Average data rate for TCP traffic per user. A value between 0 and 1000000 Kbps. A value of 0 indicates no bandwidth restriction on the QoS profile.

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the average data rate 0 Kbps for the queue gold per SSID:

```
(Cisco Controller) > config qos average-data-rate gold per ssid downstream 0
```

Related Commands

- config qos burst-data-rate**
- config qos average-realtime-rate**
- config qos burst-realtime-rate**
- config wlan override-rate-limit**

config qos burst-data-rate

To define the peak data rate in Kbps for TCP traffic per user or per service set identifier (SSID), use the **config qos burst-data-rate** command.

```
config qos burst-data-rate {bronze | silver | gold | platinum} {per-ssid | per-client}
{downstream | upstream} rate
```

Syntax Description		
bronze		Specifies the peak data rate for the queue bronze.
silver		Specifies the peak data rate for the queue silver.
gold		Specifies the peak data rate for the queue gold.
platinum		Specifies the peak data rate for the queue platinum.
per-ssid		Configures the rate limit for an SSID per radio. The combined traffic of all clients will not exceed this limit.
per-client		Configures the rate limit for each client associated with the SSID.
downstream		Configures the rate limit for downstream traffic.
upstream		Configures the rate limit for upstream traffic.
<i>rate</i>		Peak data rate for TCP traffic per user. A value between 0 and 51,200 Kbps (inclusive). A value of 0 imposes no bandwidth restriction on the QoS profile.

Command Default None

Command History **Release** **Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the peak rate 30000 Kbps for the queue gold:

```
(Cisco Controller) > config qos burst-data-rate gold per ssid downstream 30000
```

Related Commands

- config qos average-data-rate
- config qos average-realtime-rate
- config qos burst-realtime-rate
- config wlan override-rate-limit

config qos burst-realtime-rate

To define the burst real-time data rate in Kbps for UDP traffic per user or per service set identifier (SSID), use the **config qos burst-realtime-rate** command.

```
config qos burst-realtime-rate {bronze | silver | gold | platinum} { per-ssid | per-client }
{ downstream | upstream } rate
```

Syntax Description		
bronze		Specifies the burst real-time data rate for the queue bronze.

silver	Specifies the burst real-time data rate for the queue silver.
gold	Specifies the burst real-time data rate for the queue gold.
platinum	Specifies the burst real-time data rate for the queue platinum.
per-ssid	Configures the rate limit for an SSID per radio. The combined traffic of all clients will not exceed this limit.
per-client	Configures the rate limit for each client associated with the SSID.
downstream	Configures the rate limit for downstream traffic.
upstream	Configures the rate limit for upstream traffic.
<i>rate</i>	Burst real-time data rate for UDP traffic per user. A value between 0 and 51,200 Kbps (inclusive). A value of 0 imposes no bandwidth restriction on the QoS profile.

Command Default

None

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the burst real-time actual rate 2000 Kbps for the queue gold:

```
(Cisco Controller) > config qos burst-realtime-rate gold per ssid downstream 2000
```

Related Commands

config qos average-data-rate
config qos burst-data-rate
config qos average-realtime-rate
config wlan override-rate-limit

config qos description

To change the profile description, use the **config qos description** command.

```
config qos description {bronze | silver | gold | platinum} description
```

Syntax Description

bronze	Specifies the QoS profile description for the queue bronze.
silver	Specifies the QoS profile description for the queue silver.
gold	Specifies the QoS profile description for the queue gold.

platinum	Specifies the QoS profile description for the queue platinum.
<i>description</i>	QoS profile description.

Command Default None

Command History **Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the QoS profile description “description” for the queue gold:

```
(Cisco Controller) > 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	bronze	Specifies the maximum percentage of RF usage for the queue bronze.
	silver	Specifies the maximum percentage of RF usage for the queue silver.
	gold	Specifies the maximum percentage of RF usage for the queue gold.
	platinum	Specifies the maximum percentage of RF usage for the queue platinum.
	<i>usage-percentage</i>	Maximum percentage of RF usage.

Command Default None

Command History **Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to specify the maximum percentage of RF usage for the queue gold:

```
(Cisco Controller) > 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 dot1p-tag

To define the maximum value (0 to 7) for the priority tag associated with packets that fall within the profile, use the **config qos dot1p-tag** command.

```
config qos dot1p-tag {bronze | silver | gold | platinum} dot1p_tag
```

Syntax Description		
bronze		Specifies the QoS 802.1p tag for the queue bronze.
silver		Specifies the QoS 802.1p tag for the queue silver.
gold		Specifies the QoS 802.1p tag for the queue gold.
platinum		Specifies the QoS 802.1p tag for the queue platinum.
<i>dot1p_tag</i>		Dot1p tag value between 1 and 7.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the a QoS 802.1p tag for the queue gold with the dot1p tag value of 5:

```
(Cisco Controller) > config qos dot1p-tag gold 5
```

Related Commands

- show qos queue_length all
- config qos protocol-type

config qos priority

To define the maximum and default QoS levels for unicast and multicast traffic when you assign a QoS profile to a WLAN, use the **config qos priority** command.

config qos priority {**bronze** | **silver** | **gold** | **platinum**} {*maximum-priority* | *default-unicast-priority* | *default-multicast-priority*}

Syntax Description		
bronze		Specifies a Bronze profile of the WLAN.
silver		Specifies a Silver profile of the WLAN.
gold		Specifies a Gold profile of the WLAN.
platinum		Specifies a Platinum profile of the WLAN.
<i>maximum-priority</i>		Maximum QoS priority as one of the following: <ul style="list-style-type: none"> • besteffort • background • video • voice
<i>default-unicast-priority</i>		Default unicast priority as one of the following: <ul style="list-style-type: none"> • besteffort • background • video • voice
<i>default-multicast-priority</i>		Default multicast priority as one of the following: <ul style="list-style-type: none"> • besteffort • background • video • voice

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

The maximum priority level should not be lower than the default unicast and multicast priority levels.

The following example shows how to configure the QoS priority for a gold profile of the WLAN with voice as the maximum priority, video as the default unicast priority, and besteffort as the default multicast priority.

```
(Cisco Controller) > config qos priority gold voice video besteffort
```

Related Commands

config qos protocol-type

config qos protocol-type

To define the maximum value (0 to 7) for the priority tag associated with packets that fall within the profile, use the **config qos protocol-type** command.

config qos protocol-type { **bronze** | **silver** | **gold** | **platinum** } { **none** | *dot1p* }

Syntax Description	Parameter	Description
	bronze	Specifies the QoS 802.1p tag for the queue bronze.
	silver	Specifies the QoS 802.1p tag for the queue silver.
	gold	Specifies the QoS 802.1p tag for the queue gold.
	platinum	Specifies the QoS 802.1p tag for the queue platinum.
	none	Specifies when no specific protocol is assigned.
	<i>dot1p</i>	Specifies when dot1p type protocol is assigned.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the QoS protocol type silver:

```
(Cisco Controller) > config qos protocol-type silver dot1p
```

Related Commands

- show qos queue_length all
- config qos dot1p-tag

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*

Syntax Description	Parameter	Description
	bronze	Specifies the QoS length for the queue bronze.
	silver	Specifies the QoS length for the queue silver.
	gold	Specifies the QoS length for the queue gold.
	platinum	Specifies the QoS length for the queue platinum.
	<i>queue_length</i>	Maximum queue length values (10 to 255).

Command Default None

Command History **Release** **Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the QoS length for the queue “gold” with the maximum queue length value as 12:

```
(Cisco Controller) > 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 configure settings for a RADIUS accounting server for the Cisco wireless LAN controller, use the **config radius acct** command.

```
config radius acct { {add index IP addr port {ascii | hex} secret} | delete index | disable index
| enable index | disable index | enable index | {mac-delimiter {colon | hyphen | none
| single-hyphen}} | {network index {disable | enable}} | {region {group | none |
provincial}} | retransmit-timeout index seconds | realm {add | delete} index realm-string }
```

Syntax Description

add	Adds a RADIUS accounting server (IPv4 or IPv6).
<i>index</i>	RADIUS server index (1 to 17).
<i>IP addr</i>	RADIUS server IP address (IPv4 or IPv6).
<i>port</i>	RADIUS server's UDP port number for the interface protocols.
ascii	Specifies the RADIUS server's secret type: ascii .
hex	Specifies the RADIUS server's secret type: hex .
<i>secret</i>	RADIUS server's secret.
enable	Enables a RADIUS accounting server.
disable	Disables a RADIUS accounting server.
delete	Deletes a RADIUS accounting server.
disable	Disables IPsec support for an accounting server.
enable	Enables IPsec support for an accounting server.
mac-delimiter	Configures MAC delimiter for caller station ID and calling station ID.
colon	Sets the delimiter to colon (For example: xx:xx:xx:xx:xx:xx).
hyphen	Sets the delimiter to hyphen (For example: xx-xx-xx-xx-xx-xx).
none	Disables delimiters (For example: xxxxxxxxxx).
single-hyphen	Sets the delimiters to single hyphen (For example: xxxxxx-xxxxxx).

network	Configures a default RADIUS server for network users.
group	Specifies RADIUS server type group.
none	Specifies RADIUS server type none.
provincial	Specifies RADIUS server type provincial.
retransmit-timeout	Changes the default retransmit timeout for the server.
<i>seconds</i>	The number of seconds between retransmissions.
realm	Specifies radius acct realm.
add	Adds radius acct realm.
delete	Deletes radius acct realm.

Command Default

When adding a RADIUS server, the port number defaults to 1813 and the state is **enabled**.

Usage Guidelines

IPSec is not supported for IPv6.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	This command supports both IPv4 and IPv6 address formats.

The following 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*:

```
(Cisco Controller) > config radius acct add 1 10.10.10.10 1813 ascii admin
```

The following example shows how to configure a priority 1 RADIUS accounting server at *2001:9:6:40::623* using port *1813* with a login password of *admin*:

```
(Cisco Controller) > config radius acct add 1 2001:9:6:40::623 1813 ascii admin
```

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*

Syntax Description

hmac-md5	Enables IPsec HMAC-MD5 authentication.
hmac-sha1	Enables IPsec HMAC-SHA1 authentication.

<i>index</i>	RADIUS server index.
--------------	----------------------

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the IPsec hmac-md5 authentication service on the RADIUS accounting server index 1:

```
(Cisco Controller) > config radius acct ipsec authentication hmac-md5 1
```

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	<i>index</i>	RADIUS server index.
---------------------------	--------------	----------------------

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Examples

The following example shows how to enable the IPsec support for RADIUS accounting server index 1:

```
(Cisco Controller) > config radius acct ipsec enable 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*

Syntax Description	<i>index</i>	RADIUS server index.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the IPsec support for RADIUS accounting server index 1:

```
(Cisco Controller) > config radius acct ipsec disable 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	256-aes	Enables IPsec AES-256 encryption.
	3des	Enables IPsec 3DES encryption.
	aes	Enables IPsec AES encryption.
	des	Enables IPsec DES encryption.
	<i>index</i>	RADIUS server index value of between 1 and 17.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the IPsec 3DES encryption for RADIUS server index value 3:

```
(Cisco Controller) > config radius acct ipsec encryption 3des 3
```

config radius auth

To configure settings for a RADIUS authentication server for the Cisco wireless LAN controller, use the **config radius auth** command.

```

config radius auth { add index IP addr port ascii/hex secret } | | delete index | disable index |
enable index | framed-mtu mtu | { ipsec { authentication { hmac-md5 index | hmac-sha1 index
} | disable index | enable index | encryption { 256-aes | 3des | aes | des } index | ike
{ auth-mode { pre-shared-key index ascii/hex shared_secret | certificate index } | dh-group {
2048bit-group-14 | group-1 | group-2 | group-5 } index | lifetime seconds index | phase1
{ aggressive | main } index } } | { { keywrap { add ascii/hex kek mack index } | delete index
| disable | enable } } | { mac-delimiter { colon | hyphen | none | single-hyphen } } |
{ { management index { enable | disable } } } | { mgmt-retransmit-timeout index Retransmit Timeout
} | { network index { enable | disable } } } | { realm { add | delete } radius-index realm-string
} } | { region { group | none | provincial } } | { retransmit-timeout index Retransmit Timeout
} | { rfc3576 { enable | disable } index }

```

Syntax Description

enable	Enables a RADIUS authentication server.
disable	Disables a RADIUS authentication server.
delete	Deletes a RADIUS authentication server.
<i>index</i>	RADIUS server index. The controller begins the search with 1. The server index range is from 1 to 17.
add	Adds a RADIUS authentication server. See the “Defaults” section.
<i>IP addr</i>	IP address (IPv4 or IPv6) of the RADIUS server.
<i>port</i>	RADIUS server’s UDP port number for the interface protocols.
<i>ascii/hex</i>	Specifies RADIUS server’s secret type: ascii or hex .
<i>secret</i>	RADIUS server’s secret.
callStationIdType	Configures Called Station Id information sent in RADIUS authentication messages.
framed-mtu	Configures the Framed-MTU for all the RADIUS servers. The framed-mtu range is from 64 to 1300 bytes.
ipsec	Enables or disables IPSEC support for an authentication server. Note IPsec is not supported for IPv6.
keywrap	Configures RADIUS keywrap.
<i>ascii/hex</i>	Specifies the input format of the keywrap keys.

<i>kek</i>	Enters the 16-byte key-encryption-key.
<i>mack</i>	Enters the 20-byte message-authenticator-code-key.
mac-delimiter	Configures MAC delimiter for caller station ID and calling station ID.
management	Configures a RADIUS Server for management users.
mgmt-retransmit-timeout	Changes the default management login retransmission timeout for the server.
network	Configures a default RADIUS server for network users.
realm	Configures radius auth realm.
region	Configures RADIUS region property.
retransmit-timeout	Changes the default network login retransmission timeout for the server.
rfc3576	Enables or disables RFC-3576 support for an authentication server.

Command Default

When adding a RADIUS server, the port number defaults to 1812 and the state is **enabled**.

Usage Guidelines

IPSec is not supported for IPv6.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	This command supports both IPv4 and IPv6 address formats.

The following example shows how to configure a priority 3 RADIUS authentication server at *10.10.10.10* using port *1812* with a login password of *admin*:

```
(Cisco Controller) > config radius auth add 3 10.10.10.10 1812 ascii admin
```

The following example shows how to configure a priority 3 RADIUS authentication server at *2001:9:6:40::623* using port *1812* with a login password of *admin*:

```
(Cisco Controller) > config radius auth add 3 2001:9:6:40::623 1812 ascii admin
```

config radius acct ipsec ike

To configure Internet Key Exchange (IKE) for the controller, use the **config radius acct ipsec ike** command.

config radius acct ipsec ike dh-group {**group-1** | **group-2** | **group-5** | **group-14**} | **lifetime** *seconds* | **phase1** {**aggressive** | **main**}} *index*

Syntax Description		
	dh-group	Specifies the Dixie-Hellman (DH) group.
	group-1	Configures the DH Group 1 (768 bits).
	group-2	Configures the DH Group 2 (1024 bits).
	group-5	Configures the DH Group 5 (1024 bits).
	group-5	Configures the DH Group 14 (2048 bits).
	lifetime	Configures the IKE lifetime.
	<i>seconds</i>	IKE lifetime in seconds.
	phase1	Configures the IKE phase1 node.
	aggressive	Enables the aggressive mode.
	main	Enables the main mode.
	<i>index</i>	RADIUS server index.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure an IKE lifetime of 23 seconds for RADIUS server index 1:

```
(Cisco Controller) > 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.

config radius acct mac-delimiter {**colon** | **hyphen** | **single-hyphen** | **none**}

Syntax Description		
	colon	Sets the delimiter to a colon (for example, xx:xx:xx:xx:xx:xx).
	hyphen	Sets the delimiter to a hyphen (for example, xx-xx-xx-xx-xx-xx).

single-hyphen	Sets the delimiter to a single hyphen (for example, xxxxxx-xxxxxx).
none	Disables the delimiter (for example, xxxxxxxxxxxx).

Command Default The default delimiter is a hyphen.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following 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:

```
(Cisco Controller) > 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		
	<i>index</i>	RADIUS server index.
	enable	Enables the server as a network user's default RADIUS server.
	disable	Disables the server as a network user's default RADIUS server.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a default RADIUS accounting server for the network users with RADIUS server index1:

```
(Cisco Controller) > 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	<i>index</i>	RADIUS server index.
	<i>timeout</i>	Number of seconds (from 2 to 30) between retransmissions.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure retransmission timeout value 5 seconds between the retransmission:

```
(Cisco Controller) > 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 configure settings for a RADIUS authentication server for the Cisco wireless LAN controller, use the **config radius auth** command.

```
config radius auth {add index IP addr portascii/hexsecret} | | delete index | disable index |
enable index | framed-mtu mtu | { ipsec {authentication {hmac-md5 index | hmac-sha1 index
} | disable index | enable index | encryption {256-aes | 3des | aes | des} index | ike
{auth-mode {pre-shared-key index ascii/hex shared_secret | certificate index } | dh-group {
2048bit-group-14 | group-1 | group-2 | group-5} index | lifetime seconds index | phase1
{aggressive | main} index } } | { { keywrap{add ascii/hex kek mack index } | delete index
| disable | enable} } | {mac-delimiter {colon | hyphen | none | single-hyphen}} |
{{management index {enable | disable}} | {mgmt-retransmit-timeout index Retransmit Timeout
} | {network index {enable | disable}} | {realm {add | delete} radius-index realm-string}
} | {region {group | none | provincial}} | {retransmit-timeout index Retransmit Timeout}
| {rfc3576 {enable | disable} index }
```

Syntax	Description
enable	Enables a RADIUS authentication server.
disable	Disables a RADIUS authentication server.
delete	Deletes a RADIUS authentication server.
<i>index</i>	RADIUS server index. The controller begins the search with 1. The server index range is from 1 to 17.
add	Adds a RADIUS authentication server. See the “Defaults” section.
<i>IP addr</i>	IP address (IPv4 or IPv6) of the RADIUS server.
<i>port</i>	RADIUS server’s UDP port number for the interface protocols.
<i>ascii/hex</i>	Specifies RADIUS server’s secret type: ascii or hex .
<i>secret</i>	RADIUS server’s secret.
callStationIdType	Configures Called Station Id information sent in RADIUS authentication messages.
framed-mtu	Configures the Framed-MTU for all the RADIUS servers. The framed-mtu range is from 64 to 1300 bytes.

ipsec	Enables or disables IPSEC support for an authentication server. Note IPsec is not supported for IPv6.
keywrap	Configures RADIUS keywrap.
<i>ascii/hex</i>	Specifies the input format of the keywrap keys.
<i>kek</i>	Enters the 16-byte key-encryption-key.
<i>mack</i>	Enters the 20-byte message-authenticator-code-key.
mac-delimiter	Configures MAC delimiter for caller station ID and calling station ID.
management	Configures a RADIUS Server for management users.
mgmt-retransmit-timeout	Changes the default management login retransmission timeout for the server.
network	Configures a default RADIUS server for network users.
realm	Configures radius auth realm.
region	Configures RADIUS region property.
retransmit-timeout	Changes the default network login retransmission timeout for the server.
rfc3576	Enables or disables RFC-3576 support for an authentication server.

Command Default

When adding a RADIUS server, the port number defaults to 1812 and the state is **enabled**.

Usage Guidelines

IPsec is not supported for IPv6.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	This command supports both IPv4 and IPv6 address formats.

The following example shows how to configure a priority 3 RADIUS authentication server at *10.10.10.10* using port *1812* with a login password of *admin*:

```
(Cisco Controller) > config radius auth add 3 10.10.10.10 1812 ascii admin
```

The following example shows how to configure a priority 3 RADIUS authentication server at *2001:9:6:40::623* using port *1812* with a login password of *admin*:

```
(Cisco Controller) > config radius auth add 3 2001:9:6:40::623 1812 ascii admin
```

config radius auth callStationIdType

To configure the RADIUS authentication server, use the **config radius auth callStationIdType** command.

```
config radius auth callStationIdType {ap-ethmac-only | ap-ethmac-ssid | ap-group-name |
ap-label-address | ap-label-address-ssid | ap-location | ap-mac-ssid-ap-group | ap-macaddr-only
| ap-macaddr-ssid | ap-name | ap-name-ssid | flex-group-name | ipaddr | macaddr | vlan-id}
```

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-only	Configures the Call Station ID type to use the access point's MAC address (Layers 2 and 3).
	ap-macaddr-ssid	Configures the Call Station ID type to use the access point's MAC address (Layers 2 and 3) in the format <i>AP MAC address:SSID</i> .
	ap-ethmac-only	Configures the Called Station ID type to use the access point's Ethernet MAC address.
	ap-ethmac-ssid	Configures the Called Station ID type to use the access point's Ethernet MAC address in the format <i>AP Ethernet MAC address:SSID</i> .
	ap-group-name	Configures the Call Station ID type to use the AP group name. If the AP is not part of any AP group, default-group is taken as the AP group name.
	flex-group-name	Configures the Call Station ID type to use the FlexConnect group name. If the FlexConnect AP is not part of any FlexConnect group, the system MAC address is taken as the Call Station ID.
	ap-name	Configures the Call Station ID type to use the access point's name.
	ap-name-ssid	Configures the Call Station ID type to use the access point's name in the format <i>AP name:SSID</i>
	ap-location	Configures the Call Station ID type to use the access point's location.
	ap-mac-ssid-ap-group	Sets Called Station ID type to the format <AP MAC address>:<SSID>:<AP Group>

vlan-id	Configures the Call Station ID type to use the system's VLAN-ID.
ap-label-address	Configures the Call Station ID type to the AP MAC address that is printed on the AP label, for the accounting messages.
ap-label-address-ssid	Configures the Call Station ID type to the AP MAC address:SSID format.

Command Default

The MAC address of the system.

Usage Guidelines

The controller sends the Called Station ID attribute to the RADIUS server in all authentication and accounting packets. The Called Station ID attribute can be used to classify users to different groups based on the attribute value. The command is applicable only for the Called Station and not for the Calling Station.

You cannot send only the SSID as the Called-Station-ID, you can only combine the SSID with either the access point MAC address or the access point name.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
7.6	The ap-ethmac-only and ap-ethmac-ssid keywords were added to support the access point's Ethernet MAC address. The ap-label-address and ap-label-address-ssid keywords were added.
8.0	This command supports both IPv4 and IPv6 address formats.
8.3	The ap-mac-ssid-ap-group keyword was added.

The following example shows how to configure the call station ID type to use the IP address:

```
(Cisco Controller) > config radius auth callStationIdType ipAddr
```

The following example shows how to configure the call station ID type to use the system's MAC address:

```
(Cisco Controller) > config radius auth callStationIdType macAddr
```

The following example shows how to configure the call station ID type to use the access point's MAC address:

```
(Cisco Controller) > config radius auth callStationIdType ap-macAddr
```


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*

Syntax Description	hmac-md5	Enables IPsec HMAC-MD5 authentication.
	hmac-sha1	Enables IPsec HMAC-SHA1 authentication.
	<i>index</i>	RADIUS server index.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the IPsec hmac-md5 support for RADIUS authentication server index 1:

```
(Cisco Controller) > 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	enable	Enables the IPsec support for an authentication server.
	disable	Disables the IPsec support for an authentication server.
	<i>index</i>	RADIUS server index.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to enable the IPsec support for RADIUS authentication server index 1:

```
(Cisco Controller) > config radius auth ipsec enable 1
```

This example shows how to disable the IPsec support for RADIUS authentication server index 1:

```
(Cisco Controller) > 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 encryption` command.

`config radius auth IPsec encryption` {**256-aes** | **3des** | **aes** | **des**} *index*

Syntax Description		
	256-aes	Enables the IPsec 256 AES encryption.
	3des	Enables the IPsec 3DES encryption.
	aes	Enables the IPsec AES encryption.
	des	Enables the IPsec DES encryption.
	<i>index</i>	RADIUS server index.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	The keyword 256-aes was added.

The following example shows how to configure IPsec 3des encryption RADIUS authentication server index 3:

```
(Cisco Controller) > 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 {auth-mode {pre-shared-key index {ascii | hex shared-secret} |
certificate index} dh-group {2048bit-group-14 | group-1 | group-2 | group-5} | lifetime
seconds | phase1 {aggressive | main}} index
```

Syntax Description		
auth-mode		Configures the IKE authentication method.
pre-shared-key		Configures the preshared key for IKE authentication method.
<i>index</i>		RADIUS server index between 1 and 17.
ascii		Configures RADIUS IPsec IKE secret in an ASCII format.
hex		Configures RADIUS IPsec IKE secret in a hexadecimal format.
<i>shared-secret</i>		Configures the shared RADIUS IPsec secret.
certificate		Configures the certificate for IKE authentication.
dh-group		Configures the IKE Diffe-Hellman group.
2048bit-group-14		Configures the DH Group14 (2048 bits).
group-1		Configures the DH Group 1 (768 bits).
group-2		Configures the DH Group 2 (1024 bits).
group-5		Configures the DH Group 2 (1024 bits).
lifetime		Configures the IKE lifetime.
<i>seconds</i>		IKE lifetime in seconds. The range is from 1800 to 57600 seconds.
phase1		Configures the IKE phase1 mode.
aggressive		Enables the aggressive mode.
main		Enables the main mode.
<i>index</i>		RADIUS server index.

Command Default By default, preshared key is used for IPsec sessions and IKE lifetime is 28800 seconds.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure IKE lifetime of 23 seconds for RADIUS authentication server index 1:

```
(Cisco Controller) > config radius auth ipsec ike lifetime 23 1
```

Related Commands `show radius acct statistics`

config radius auth keywrap

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 | delete} index

Syntax Description		
enable		Enables AES key wrap.
disable		Disables AES key wrap.
add		Configures AES key wrap attributes.
ascii		Configures key wrap in an ASCII format.
hex		Configures key wrap in a hexadecimal format.
<i>kek</i>		16-byte Key Encryption Key (KEK).
<i>mack</i>		20-byte Message Authentication Code Key (MACK).
delete		Deletes AES key wrap attributes.
<i>index</i>		Index of the RADIUS authentication server on which to configure the AES key wrap.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the AES key wrap for a RADIUS authentication server:

```
(Cisco Controller) > 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	colon	Sets a delimiter to a colon (for example, xx:xx:xx:xx:xx:xx).
	hyphen	Sets a delimiter to a hyphen (for example, xx-xx-xx-xx-xx-xx).
	single-hyphen	Sets a delimiter to a single hyphen (for example, xxxxxx-xxxxxx).
	none	Disables the delimiter (for example, xxxxxxxxxxxx).

Command Default The default delimiter is a hyphen.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to specify a delimiter hyphen to be used for a RADIUS authentication server:

```
(Cisco Controller) > 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** }

Syntax Description	<i>index</i>	RADIUS server index.
	enable	Enables the server as a management user's default RADIUS server.
	disable	Disables the server as a management user's default RADIUS server.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a RADIUS server for management users:

```
(Cisco Controller) > config radius auth management 1 enable
```

Related Commands

- show radius acct statistics
- config radius acct network
- config radius auth mgmt-retransmit-timeout

config radius auth mgmt-retransmit-timeout

To configure a default RADIUS server retransmission timeout for management users, use the **config radius auth mgmt-retransmit-timeout** command.

config radius auth mgmt-retransmit-timeout *index retransmit-timeout*

Syntax Description	<i>index</i>	RADIUS server index.
	<i>retransmit-timeout</i>	Timeout value. The range is from 1 to 30 seconds.

Command Default None

Command History	Release	Modification
		7.6

The following example shows how to configure a default RADIUS server retransmission timeout for management users:

```
(Cisco Controller) > config radius auth mgmt-retransmit-timeout 1 10
```

Related Commands config radius auth management

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	<i>index</i>	RADIUS server index.
	enable	Enables the server as a network user default RADIUS server.
	disable	Disables the server as a network user default RADIUS server.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a default RADIUS server for network users:

```
(Cisco Controller) > config radius auth network 1 enable
```

Related Commands
show radius acct statistics
config radius acct network

config radius auth mgmt-retransmit-timeout

To configure a default RADIUS server retransmission timeout for management users, use the **config radius auth mgmt-retransmit-timeout** command.

config radius auth mgmt-retransmit-timeout *index retransmit-timeout*

Syntax Description		
<i>index</i>		RADIUS server index.
<i>retransmit-timeout</i>		Timeout value. The range is from 1 to 30 seconds.

Command Default
None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a default RADIUS server retransmission timeout for management users:

```
(Cisco Controller) > config radius auth mgmt-retransmit-timeout 1 10
```

Related Commands
config radius auth management

config radius auth rfc3576

To configure RADIUS RFC-3576 support for the authentication server for the controller, use the **config radius auth rfc3576** command.

config radius auth rfc3576 { **enable** | **disable** } *index*

Syntax Description		
enable		Enables RFC-3576 support for an authentication server.

disable	Disables RFC-3576 support for an authentication server.
<i>index</i>	RADIUS server index.

Command Default Disabled

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable the RADIUS RFC-3576 support for a RADIUS authentication server:

```
(Cisco Controller) > config radius auth rfc3576 enable 2
```

Related Commands

- show radius auth statistics
- show radius summary
- show radius rfc3576

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the controller to mark a RADIUS server as down:

```
(Cisco Controller) > config radius aggressive-failover disabled
```

Related Commands show radius summary

config radius backward compatibility

To configure RADIUS backward compatibility for the controller, use the **config radius backward compatibility** command.

config radius backward compatibility { **enable** | **disable** }

Syntax Description	enable	Enables RADIUS vendor ID backward compatibility.
	disable	Disables RADIUS vendor ID backward compatibility.
Command Default	Enabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the RADIUS backward compatibility settings:

```
(Cisco Controller) > config radius backward compatibility disable
```

Related Commands **show radius summary**

config radius callStationIdCase

To configure callStationIdCase information sent in RADIUS messages for the controller, use the **config radius callStationIdCase** command.

config radius callStationIdCase { **legacy** | **lower** | **upper** }

Syntax Description	legacy	Configures Call Station IDs for Layer 2 authentication to RADIUS in uppercase.
	lower	Configures all Call Station IDs to RADIUS in lowercase.
	upper	Configures all Call Station IDs to RADIUS in uppercase.
Command Default	Enabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to send the call station ID in lowercase:

```
(Cisco Controller) > config radius callStationIdCase lower
```

Related Commands show radius summary

config radius auth callStationIdType

To configure the RADIUS authentication server, use the **config radius auth callStationIdType** command.

```
config radius auth callStationIdType { ap-ethmac-only | ap-ethmac-ssid | ap-group-name |
ap-label-address | ap-label-address-ssid | ap-location | ap-mac-ssid-ap-group | ap-macaddr-only
| ap-macaddr-ssid | ap-name | ap-name-ssid | flex-group-name | ipaddr | macaddr | vlan-id }
```

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-only		Configures the Call Station ID type to use the access point's MAC address (Layers 2 and 3).
ap-macaddr-ssid		Configures the Call Station ID type to use the access point's MAC address (Layers 2 and 3) in the format <i>AP MAC address:SSID</i> .
ap-ethmac-only		Configures the Called Station ID type to use the access point's Ethernet MAC address.
ap-ethmac-ssid		Configures the Called Station ID type to use the access point's Ethernet MAC address in the format <i>AP Ethernet MAC address:SSID</i> .
ap-group-name		Configures the Call Station ID type to use the AP group name. If the AP is not part of any AP group, default-group is taken as the AP group name.
flex-group-name		Configures the Call Station ID type to use the FlexConnect group name. If the FlexConnect AP is not part of any FlexConnect group, the system MAC address is taken as the Call Station ID.
ap-name		Configures the Call Station ID type to use the access point's name.
ap-name-ssid		Configures the Call Station ID type to use the access point's name in the format <i>AP name:SSID</i>
ap-location		Configures the Call Station ID type to use the access point's location.
ap-mac-ssid-ap-group		Sets Called Station ID type to the format <AP MAC address>:<SSID>:<AP Group>

vlan-id	Configures the Call Station ID type to use the system's VLAN-ID.
ap-label-address	Configures the Call Station ID type to the AP MAC address that is printed on the AP label, for the accounting messages.
ap-label-address-ssid	Configures the Call Station ID type to the AP MAC address:SSID format.

Command Default

The MAC address of the system.

Usage Guidelines

The controller sends the Called Station ID attribute to the RADIUS server in all authentication and accounting packets. The Called Station ID attribute can be used to classify users to different groups based on the attribute value. The command is applicable only for the Called Station and not for the Calling Station.

You cannot send only the SSID as the Called-Station-ID, you can only combine the SSID with either the access point MAC address or the access point name.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
7.6	The ap-ethmac-only and ap-ethmac-ssid keywords were added to support the access point's Ethernet MAC address. The ap-label-address and ap-label-address-ssid keywords were added.
8.0	This command supports both IPv4 and IPv6 address formats.
8.3	The ap-mac-ssid-ap-group keyword was added.

The following example shows how to configure the call station ID type to use the IP address:

```
(Cisco Controller) > config radius auth callStationIdType ipAddr
```

The following example shows how to configure the call station ID type to use the system's MAC address:

```
(Cisco Controller) > config radius auth callStationIdType macAddr
```

The following example shows how to configure the call station ID type to use the access point's MAC address:

```
(Cisco Controller) > config radius auth callStationIdType ap-macAddr
```

config radius fallback-test

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	mode	Specifies the mode.
	off	Disables RADIUS server fallback.
	passive	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.
	active	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.
	username	Specifies the username.
	<i>username</i>	Username. The username can be up to 16 alphanumeric characters.
	interval	Specifies the probe interval value.
	<i>interval</i>	Probe interval. The range is 180 to 3600.

Command Default The default probe interval is 300.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the RADIUS accounting server fallback behavior:

```
(Cisco Controller) > config radius fallback-test mode off
```

The following example shows how to configure the controller to revert to a preferable server from the available backup servers without using the extraneous probe messages:

```
(Cisco Controller) > config radius fallback-test mode passive
```

The following example shows how to configure the controller to revert to a preferable server from the available backup servers by using RADIUS probe messages:

```
(Cisco Controller) > config radius fallback-test mode active
```

Related Commands

config advanced probe filter

config advanced probe limit

show advanced probe

show radius acct statistics

Configure Redundancy Commands

Use the **config redundancy** commands to configure High Availability parameters on the Active and Standby controllers.

config redundancy interface address peer-service-port

To configure the service port IP and netmask of the peer or standby controller, use the **config redundancy interface address peer-service-port** command.

config redundancy interface address peer-service-port *ip_address netmask*

Syntax Description	
<i>ip_address</i>	IP address of the peer service port.
<i>netmask</i>	Netmask of the peer service port.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines You can configure this command only from the Active controller. For the HA feature, the service port configurations are made per controller. You will lose these configurations if you change the mode from HA to non-HA and vice-versa.

The following example shows how to configure the service port IP and netmask of the peer or standby controller:

```
(Cisco Controller) >config redundancy interface address peer-service-port 11.22.44.55
```

config redundancy mobilitymac

To configure the High Availability mobility MAC address to be used as an identifier, use the **config redundancy mobilitymac** command.

config redundancy mobilitymac *mac_address*

Syntax Description	
<i>mac_address</i>	MAC address that is an identifier for the active and standby controller pair.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

From Release 8.0.132.0 onwards, mobility MAC configuration is no longer present in the uploaded configuration. Therefore, if you download this configuration file back to the controller, you must add the **config redundancy mobilitymac** *mac_address* command in the config file before download.

Examples

The following example shows how to configure the High Availability mobility MAC address:

```
(Cisco Controller) >config redundancy mobilitymac ff:ff:ff:ff:ff:ff
```

config redundancy mode

To enable or disable redundancy or High Availability (HA), use the **config redundancy mode** command.

config redundancy mode {sso | none}

Syntax Description

sso Enables a stateful switch over (SSO) or hot standby redundancy mode.

none Disables redundancy mode.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

You must configure local and peer redundancy management IP addresses before you configure redundancy.

The following example shows how to enable redundancy:

```
(Cisco Controller) >config redundancy mode sso
```

config redundancy peer-route

To configure the route configurations of the peer or standby controller, use the **config redundancy peer-route** command.

config redundancy peer-route {add | delete} *network_ip_address netmask gateway*

Syntax Description

add Adds a network route.

delete Deletes a network route specific to standby controller.

network_ip_address Network IP address.

netmask Subnet mask of the network.

gateway IP address of the gateway for the route network.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines You can configure this command only from the Active controller. For the HA feature, the service port configurations are made per controller. You will lose these configurations if you change the mode from HA to non-HA and vice-versa.

The following example shows how to configure route configurations of a peer or standby controller.

```
(Cisco Controller) >config redundancy peer-route add 10.1.1.0 255.255.255.0 10.1.1.1
```

config redundancy timer peer-search-timer

To configure the peer search timer, use the **config redundancy timer peer-search-timer** command.

config redundancy timer peer-search-timer *seconds*

Syntax Description *seconds* Value of the peer search timer in seconds. The range is from 60 to 180 secs.

Command Default The default value of the peer search timer is 120 seconds.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines You can use this command to configure the boot up role negotiation timeout value in seconds.

The following example shows how to configure the redundancy peer search timer:

```
(Cisco Controller) >config redundancy timer peer-search-timer 100
```

config redundancy timer keep-alive-timer

To configure the keep-alive timeout value, use the **config redundancy timer keep-alive-timer** command.

config redundancy timer keep-alive-timer *milliseconds*

Syntax Description *milliseconds* Keep-alive timeout value in milliseconds. The range is from 100 to 400 milliseconds.

Command Default The default keep-alive timeout value is 100 milliseconds.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the keep-alive timeout value:

```
(Cisco Controller) >config redundancy timer keep-alive-timer 200
```

config redundancy unit

To configure a controller as a primary or secondary controller, use the **config redundancy unit** command.

config redundancy unit { **primary** | **secondary** }

Syntax Description	
primary	Configures the controller as the primary controller.
secondary	Configures the controller as the secondary controller.

Command Default The default state is as the primary controller.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines When you configure a controller as the secondary controller, it becomes the High Availability Stackable Unit (SKU) without any valid AP licenses.

The following example shows how to configure a controller as the primary controller:

```
(Cisco Controller) >config redundancy unit primary
```

redundancy force-switchover

To trigger a manual switch over on the active Cisco WLC, use the **redundancy force-switchover** command.

redundancy force-switchover

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

When a manual switchover occurs, the active Cisco WLC reboots and the standby Cisco WLC takes over the network. A stateful switchover of access points (AP SSO) is supported. AP SSO ensures that the AP sessions are maintained after the standby Cisco WLC takes over and the APs switch over to the standby Cisco WLC. The clients on the active Cisco WLC deauthenticate and join the new active Cisco WLC.

The following example shows how to trigger a forceful switchover on the Cisco WLC:

```
(Cisco Controller) >redundancy force-switchover
```

config interface address redundancy-management

To configure the management interface IP address, subnet and gateway of the controller, use the **config interface address redundancy-management** command.

config interface address redundancy-management *IP_address netmask gateway*

Syntax Description

<i>IP_address</i>	Management interface IP address of the active controller.
<i>netmask</i>	Network mask.
<i>gateway</i>	IP address of the gateway.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

You can use this command to check the Active-Standby reachability when the keep-alive fails.

The following example shows how to configure the management IP addresses of the controller:

```
(Cisco Controller) > config interface address redundancy-management 209.165.201.31 255.255.0.0
209.165.201.30
```

Related Commands

config redundancy mobilitymac
config redundancy interface address peer-service-port
config redundancy peer-route
config redundancy unit
config redundancy timer
show redundancy timers
show redundancy summary
debug rmgr
debug rsyncmgr

Configure RF-Profile commands

Use the **configure rf-profile** commands to configure RF profiles.

config rf-profile band-select

To configure the RF profile band selection parameters, use the **config rf-profile band-select** command.

```
config rf-profile band-select { client-rssi rsssi | cycle-count cycles | cycle-threshold value | expire
{ dual-band value | suppression value } | probe-response { enable | disable } } profile_name
```

Syntax Description		
client-rssi		Configures the client Received Signal Strength Indicator (RSSI) threshold for the RF profile.
<i>rsssi</i>		Minimum RSSI for a client to respond to a probe. The range is from -20 to -90 dBm.
cycle-count		Configures the probe cycle count for the RF profile. The cycle count sets the number of suppression cycles for a new client.
<i>cycles</i>		Value of the cycle count. The range is from 1 to 10.
cycle-threshold		Configures the time threshold for a new scanning RF Profile band select cycle period. This setting determines the time threshold during which new probe requests from a client come in a new scanning cycle.
<i>value</i>		Value of the cycle threshold for the RF profile. The range is from 1 to 1000 milliseconds.
expire		Configures the expiration time of clients for band select.
dual-band		Configures the expiration time for pruning previously known dual-band clients. After this time elapses, clients become new and are subject to probe response suppression.
<i>value</i>		Value for a dual band. The range is from 10 to 300 seconds.
suppression		Configures the expiration time for pruning previously known 802.11b/g clients. After this time elapses, clients become new and are subject to probe response suppression.
<i>value</i>		Value for suppression. The range is from 10 to 200 seconds.
probe-response		Configures the probe response for a RF profile.
enable		Enables probe response suppression on clients operating in the 2.4-GHz band for a RF profile.
disable		Disables probe response suppression on clients operating in the 2.4-GHz band for a RF profile.
<i>profile name</i>		Name of the RF profile. The profile name can be up to 32 case-sensitive, alphanumeric characters.

Command Default The default value for client RSSI is -80 dBm.

The default cycle count is 2.

The default cycle threshold is 200 milliseconds.

The default value for dual-band expiration is 60 seconds.

The default value for suppression expiration is 20 seconds.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines When you enable band select on a WLAN, the access point suppresses client probes on 2.4-GHz and moves the dual band clients to the 5-GHz spectrum. The band-selection algorithm directs dual-band clients only from the 2.4-GHz radio to the 5-GHz radio of the same access point, and it only runs on an access point when both the 2.4-GHz and 5-GHz radios are up and running. Band selection can be used only with Cisco Aironet 1040, 1140, and 1250 Series and the 3500 series access points.

The following example shows how to configure the client RSSI:

```
(Cisco Controller) >config rf-profile band-select client-rssi -70
```

config rf-profile client-trap-threshold

To configure the threshold value of the number of clients that associate with an access point, after which an SNMP trap is sent to the controller, use the **config rf-profile client-trap-threshold** command.

config rf-profile client-trap-threshold *threshold profile_name*

Syntax Description	<i>threshold</i>	Threshold value of the number of clients that associate with an access point, after which an SNMP trap is sent to the controller. The range is from 0 to 200. Traps are disabled if the threshold value is configured as zero.
	<i>profile_name</i>	Name of the RF profile. The profile name can be up to 32 case-sensitive, alphanumeric characters.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the threshold value of the number of clients that associate with an access point:

```
(Cisco Controller) >config rf-profile client-trap-threshold 150
```

config rf-profile create

To create a RF profile, use the **config rf-profile create** command.

```
config rf-profile create { 802.11a | 802.11b/g } profile-name
```

Syntax Description	802.11a	Configures the RF profile for the 2.4GHz band.
	802.11b/g	Configures the RF profile for the 5GHz band.
	profile-name	Name of the RF profile.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to create a new RF profile:

```
(Cisco Controller) >config rf-profile create 802.11a RFtestgroup1
```

config rf-profile fra client-aware

To configure the RF profile client-aware FRA feature, use the **config rf-profile fra client-aware** command.

```
config rf-profile fra client-aware { client-reset percent rf-profile-name | client-select percent rf-profile-name
| disable rf-profile-name | enable rf-profile-name }
```

Syntax Description	client-reset	Configures the RF profile AP utilization threshold for radio to switch back to Monitor mode.
	percent	Utilization percentage value ranges from 0 to 100. The default is 5%.
	rf-profile-name	Name of the RF Profile.
	client-select	Configures the RF profile utilization threshold for radio to switch to 5GHz.
	percent	Utilization percentage value ranges from 0 to 100. The default is 50%.
	disable	Disables the RF profile client-aware FRA feature.
	enable	Enables the RF profile client-aware FRA feature.

Command Default The default percent value for client-select and client-reset is 50% and 5% respectively.

Command History	Release	Modification
	8.5	This command was introduced.

The following example shows how to configure the RF profile utilization threshold for redundant dual-band radios to switch back from 5GHz client-serving role to Monitor mode:

```
(Cisco Controller) >config rf-profile fra client-aware client-reset 15 profile1
```

The following example shows how to configure the RF profile utilization threshold for redundant dual-band radios to switch from Monitor mode to 5GHz client-serving role:

```
(Cisco Contoller) >config rf-profile fra client-aware client-select 20 profile1
```

The following example shows how to disable the RF profile client-aware FRA feature:

```
(Cisco Contoller) >config rf-profile fra client-aware disable profile1
```

The following example shows how to enable the RF profile client-aware FRA feature:

```
(Cisco Contoller) >config rf-profile fra client-aware enable profile1
```

config rf-profile data-rates

To configure the data rate on a RF profile, use the **config rf-profile data-rates** command.

```
config rf-profile data-rates {802.11a | 802.11b } {disabled | mandatory | supported} data-rate  
profile-name
```

Syntax Description		
802.11a		Specifies 802.11a as the radio policy of the RF profile.
802.11b		Specifies 802.11b as the radio policy of the RF profile.
disabled		Disables a rate.
mandatory		Sets a rate to mandatory.
supported		Sets a rate to supported.
<i>data-rate</i>		802.11 operational rates, which are 1*, 2*, 5.5*, 6, 9, 11*, 12, 18, 24, 36, 48 and 54, where * denotes 802.11b only rates.
<i>profile-name</i>		Name of the RF profile.

Command Default

Default data rates for RF profiles are derived from the controller system defaults, the global data rate configurations. For example, if the RF profile's radio policy is mapped to 802.11a then the global 802.11a data rates are copied into the RF profiles at the time of creation.

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.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the 802.11b transmission of an RF profile at a mandatory rate at 12 Mbps:

```
(Cisco Contoller) >config rf-profile 802.11b data-rates mandatory 12 RFGroup1
```

config rf-profile delete

To delete a RF profile, use the **config rf-profile delete** command.

config rf-profile delete *profile-name*

Syntax Description	<i>profile-name</i>	Name of the RF profile.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete a RF profile:

```
(Cisco Controller) >config rf-profile delete RFGroup1
```

config rf-profile description

To provide a description to a RF profile, use the **config rf-profile description** command.

config rf-profile description *description profile-name*

Syntax Description	<i>description</i>	Description of the RF profile.
	<i>profile-name</i>	Name of the RF profile.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to add a description to a RF profile:

```
(Cisco Controller) >config rf-profile description This is a demo description RFGroup1
```

config rf-profile load-balancing

To configure load balancing on an RF profile, use the **config rf-profile load-balancing** command.

config rf-profile load-balancing { *window clients* | *denial value* } *profile_name*

Syntax Description	window	Configures the client window for load balancing of an RF profile.
---------------------------	---------------	---

<i>clients</i>	<p>Client window size that limits the number of client associations with an access point. The range is from 0 to 20. The default value is 5.</p> <p>The window size is part of the algorithm that determines whether an access point is too heavily loaded to accept more client associations:</p> <p><i>load-balancing window + client associations on AP with lightest load = load-balancing threshold</i></p> <p>Access points with more client associations than this threshold are considered busy, and clients can associate only to access points with client counts lower than the threshold. This window also helps to disassociate sticky clients.</p>
denial	Configures the client denial count for load balancing of an RF profile.
<i>value</i>	<p>Maximum number of association denials during load balancing. The range is from 1 to 10. The default value is 3.</p> <p>When a client tries to associate on a wireless network, it sends an association request to the access point. If the access point is overloaded and load balancing is enabled on the controller, the access point sends a denial to the association request. If there are no other access points in the range of the client, the client tries to associate the same access point again. After the maximum denial count is reached, the client is able to associate. Association attempts on an access point from any client before associating any AP is called a sequence of association. The default is 3.</p>
<i>profile_name</i>	Name of the RF profile. The profile name can be up to 32 case-sensitive, alphanumeric characters.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the client window size for an RF profile:

```
(Cisco Controller) >config rf-profile load-balancing window 15
```

config rf-profile max-clients

To configure the maximum number of client connections per access point of an RF profile, use the **config rf-profile max-clients** commands.

config rf-profile max-clients *clients*

Syntax Description	<i>clients</i> Maximum number of client connections per access point of an RF profile. The range is from 1 to 200.
Command Default	None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines You can use this command to configure the maximum number of clients on access points that are in client dense areas, or serving high bandwidth video or mission critical voice applications.

The following example shows how to set the maximum number of clients at 50:

```
(Cisco Controller) >config rf-profile max-clients 50
```

config rf-profile multicast data-rate

To configure the minimum RF profile multicast data rate, use the **config rf-profile multicast data-rate** command.

config rf-profile multicast data-rate *value profile_name*

Syntax Description		
<i>value</i>	Minimum RF profile multicast data rate. The options are 6, 9, 12, 18, 24, 36, 48, 54. Enter 0 to specify that access points will dynamically adjust the data rate.	
<i>profile_name</i>	Name of the RF profile. The profile name can be up to 32 case-sensitive, alphanumeric characters.	

Command Default The minimum RF profile multicast data rate is 0.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the multicast data rate for an RF profile:

```
(Cisco Controller) >config rf-profile multicast data-rate 24
```

config rf-profile out-of-box

To create an out-of-box AP group consisting of newly installed access points, use the **config rf-profile out-of-box** command.

config rf-profile out-of-box { **enable** | **disable** }

Syntax Description	enable	Enables the creation of an out-of-box AP group. When you enable this command, the following occurs: <ul style="list-style-type: none"> • Newly installed access points that are part of the default AP group will be part of the out-of-box AP group and their radios will be switched off, which eliminates any RF instability caused by the new access points. • All access points that do not have a group name become part of the out-of-box AP group. • Special RF profiles are created per 802.11 band. These RF profiles have default-settings for all the existing RF parameters and additional new configurations.
	disable	Disables the out-of-box AP group. When you disable this feature, only the subscription of new APs to the out-of-box AP group stops. All APs that are subscribed to the out-of-box AP group remain in this AP group. You can move APs to the default group or a custom AP group upon network convergence.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines When an out-of-box AP associates with the controller for the first time, it will be redirected to a special AP group and the RF profiles applicable to this AP Group will control the radio admin state configuration of the AP. You can move APs to the default group or a custom group upon network convergence.

The following example shows how to enable the creation of an out-of-box AP group:

```
(Cisco Controller) >config rf-profile out-of-box enable
```

config rf-profile trap-threshold

To configure the RF profile trap threshold, use the **config rf-profile trap-threshold** command.

```
config rf-profile trap-threshold { clients clients profile name | interference percent profile name | noise dBm profile name | utilization percent profile name }
```

Syntax Description	clients	Configures the RF profile trap threshold for clients.
	<i>clients</i>	The number of clients on an access point's radio for the trap is between 1 and 200. The default is 12 clients.
	<i>profile name</i>	Specifies the name of the RF profile. The profile name can be up to 32 case-sensitive, alphanumeric characters.
	interference	Configures the RF profile trap threshold for interference.
	<i>percent</i>	The percentage of interference threshold for the trap is from 0 to 100 %. The default is 10 %.

noise	Configures the RF profile trap threshold for noise.
<i>dBm</i>	The level of noise threshold for the trap is from -127 to 0 dBm. The default is -17 dBm.
utilization	Configures the RF profile trap threshold for utilization.
<i>percent</i>	The percentage of bandwidth being used by an access point threshold for the trap is from 0 to 100 %. The default is 80 %.

Command Default None

Command History	Release	Modification
	8.0	This command was introduced.

The following example shows how to configure the RF profile trap threshold for clients:

```
(Cisco Controller) >config rf-profile trap-threshold clients 50 admin1
```

config rf-profile tx-power-control-thresh-v1

To configure Transmit Power Control version1 (TPCv1) to an RF profile, use the **config rf-profile tx-power-control-thresh-v1** command.

```
config rf-profile tx-power-control-thresh-v1 tpc-threshold profile_name
```

Syntax Description	<i>tpc-threshold</i>	TPC threshold.
	<i>profile-name</i>	Name of the RF profile.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure TPCv1 on an RF profile:

```
(Cisco Controller) >config rf-profile tx-power-control-thresh-v1 RFGroup1
```

config rf-profile tx-power-control-thresh-v2

To configure Transmit Power Control version 2 (TPCv2) to an RF profile, use the **config rf-profile tx-power-control-thresh-v2** command.

```
config rf-profile tx-power-control-thresh-v2 tpc-threshold profile-name
```

Syntax Description	<i>tpc-threshold</i>	TPC threshold.
---------------------------	----------------------	----------------

<i>profile-name</i>	Name of the RF profile.
---------------------	-------------------------

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure TPCv2 on an RF profile:

```
(Cisco Controller) >config rf-profile tx-power-control-thresh-v2 RFGroup1
```

config rf-profile tx-power-max

To configure maximum auto-rf to an RF profile, use the **config rf-profile tx-power-max** command.

config rf-profile tx-power-max *profile-name*

Syntax Description	<i>tx-power-max</i>	Maximum auto-rf tx power.
	<i>profile-name</i>	Name of the RF profile.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure tx-power-max on an RF profile:

```
(Cisco Controller) >config rf-profile tx-power-max RFGroup1
```

config rf-profile tx-power-min

To configure minimum auto-rf to an RF profile, use the **config rf-profile tx-power-min** command.

config rf-profile tx-power-min *tx-power-min profile-name*

Syntax Description	<i>tx-power-min</i>	Minimum auto-rf tx power.
	<i>profile-name</i>	Name of the RF profile.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure tx-power-min on an RF profile:

```
(Cisco Controller) >config rf-profile tx-power-min RFGroup1
```

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 I234_aps | }
```

```
config rogue adhoc {delete {all | mac-address mac-address} | classify {friendly state {external | internal} mac-address | malicious state {alert | contain} mac-address | unclassified state {alert | contain} mac-address}
```

Syntax Description

enable	Globally enables detection and reporting of ad-hoc rogues.
disable	Globally disables detection and reporting of ad-hoc rogues.
external	Configure external state on the rogue access point that is outside the network and poses no threat to WLAN security. The controller acknowledges the presence of this rogue access point.
<i>rogue_MAC</i>	MAC address of the ad-hoc rogue access point.
alert	Generates an SNMP trap upon detection of the ad-hoc rogue, and generates an immediate alert to the system administrator for further action.
all	Enables alerts for all ad-hoc rogue access points.
auto-contain	Contains all wired ad-hoc rogues detected by the controller.
<i>monitor_ap</i>	(Optional) IP address of the ad-hoc rogue access point.
contain	Contains the offending device so that its signals no longer interfere with authorized clients.
<i>I234_aps</i>	Maximum number of Cisco access points assigned to actively contain the ad-hoc rogue access point (1 through 4, inclusive).
delete	Deletes ad-hoc rogue access points.
all	Deletes all ad-hoc rogue access points.

mac-address	Deletes ad-hoc rogue access point with the specified MAC address.
<i>mac-address</i>	MAC address of the ad-hoc rogue access point.
classify	Configures ad-hoc rogue access point classification.
friendly state	Classifies ad-hoc rogue access points as friendly.
internal	Configures alert state on rogue access point that is inside the network and poses no threat to WLAN security. The controller trusts this rogue access point.
malicious state	Classifies ad-hoc rogue access points as malicious.
alert	Configures alert state on the rogue access point that is not in the neighbor list or in the user configured friendly MAC list. The controller forwards an immediate alert to the system administrator for further action.
contain	Configures contain state on the rogue access point. Controller contains the offending device so that its signals no longer interfere with authorized clients.
unclassified state	Classifies ad-hoc rogue access points as unclassified.

Command Default

The default for this command is **enabled** and is set to **alert**. The default for auto-containment is **disabled**.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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 the **auto-contain** command with the *monitor_ap* argument to monitor the rogue access point without containing it. Enter the **auto-contain** command without the optional *monitor_ap* to automatically contain all wired ad-hoc rogues detected by the controller.

The following example shows how to enable the detection and reporting of ad-hoc rogues:

```
(Cisco Controller) > config rogue adhoc enable
```

The following example shows how to enable alerts for all ad-hoc rogue access points:

```
(Cisco Controller) > config rogue adhoc alert all
```

The following example shows how to classify an ad-hoc rogue access point as friendly and configure external state on it:

```
(Cisco Controller) > config rogue adhoc classify friendly state internal 11:11:11:11:11:11
```

Related Commands	config rogue auto-contain level 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		
friendly		Classifies a rogue access point as friendly.
state		Specifies a response to classification.
internal		Configures the controller to trust this rogue access point.
external		Configures the controller to acknowledge the presence of this access point.
<i>ap_mac</i>		MAC address of the rogue access point.
malicious		Classifies a rogue access point as potentially malicious.
unclassified		Classifies a rogue access point as unknown.
alert		Configures the controller to forward an immediate alert to the system administrator for further action.

contain	Configures the controller to contain the offending device so that its signals no longer interfere with authorized clients.
----------------	--

Command Default

These commands are disabled by default. Therefore, all unknown access points are categorized as **unclassified** by default.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to classify a rogue access point as friendly and can be trusted:

```
(Cisco Controller) > config rogue ap classify friendly state internal 11:11:11:11:11:11
```

The following example shows how to classify a rogue access point as malicious and to send an alert:

```
(Cisco Controller) > config rogue ap classify malicious state alert 11:11:11:11:11:11
```

The following example shows how to classify a rogue access point as unclassified and to contain it:

```
(Cisco Controller) > config rogue ap classify unclassified state contain 11:11:11:11:11:11
```

Related Commands

config rogue adhoc
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 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		
add		Adds this rogue access point from the friendly MAC address list.
delete		Deletes this rogue access point from the friendly MAC address list.
<i>ap_mac</i>		MAC address of the rogue access point that you want to add or delete.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following 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.

```
(Cisco Controller) > config rogue ap friendly add 11:11:11:11:11:11
```

Related Commands

- config rogue adhoc**
- config rogue ap classify**
- 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 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		
alarm-only		When entered without the optional argument <i>monitor_ap_only</i> , enables RLDP on all access points.
auto-contain		When entered without the optional argument <i>monitor_ap_only</i> , automatically contains all rogue access points.
<i>monitor_ap_only</i>		(Optional) RLDP is enabled (when used with alarm-only keyword), or automatically contained (when used with auto-contain keyword) is enabled only on the designated monitor access point.
initiate		Initiates RLDP on a specific rogue access point.
<i>rogue_mac_address</i>		MAC address of specific rogue access point.
disable		Disables RLDP on all access points.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable RLDP on all access points:

```
(Cisco Controller) > config rogue ap rldp enable alarm-only
```

The following example shows how to enable RLDP on monitor-mode access point ap_1:

```
(Cisco Controller) > config rogue ap rldp enable alarm-only ap_1
```

The following example shows how to start RLDP on the rogue access point with MAC address 123.456.789.000:

```
(Cisco Controller) > config rogue ap rldp initiate 123.456.789.000
```

The following example shows how to disable RLDP on all access points:

```
(Cisco Controller) > config rogue ap rldp disable
```

Related Commands

- config rogue adhoc**
- config rogue ap classify**
- config rogue ap friendly**
- 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 rogue ap ssid

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.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
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.	
	The following example shows how to automatically contain a rogue access point that is advertising your network's SSID:	
	<pre>(Cisco Controller) > config rogue ap ssid auto-contain</pre>	
Related Commands	config rogue adhoc	
	config rogue ap classify	
	config rogue ap friendly	
	config rogue ap rldp	
	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 rogue ap timeout

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	<i>seconds</i>	Value of 240 to 3600 seconds (inclusive), with a default value of 1200 seconds.
Command Default	The default number of seconds after which the rogue access point and client entries expire is 1200 seconds.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set an expiration time for entries in the rogue access point and client list to 2400 seconds:

```
(Cisco Controller) > 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 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 auto-contain level

To configure rogue the auto-containment level, use the **config rogue auto-contain level** command.

config rogue auto-contain level *level* [**monitor_ap_only**]

Syntax Description	<i>level</i>	<p>Rogue auto-containment level in the range of 1 to 4. You can enter a value of 0 to enable the controller to automatically select the number of APs used for auto containment. The controller chooses the required number of APs based on the RSSI for effective containment.</p> <p>Note Up to four APs can be used to auto-contain when a rogue AP is moved to contained state through any of the auto-containment policies.</p>
	monitor_ap_only	(Optional) Configures auto-containment using only monitor AP mode.
Command Default	The default auto-containment level is 1.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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 any of the configured auto-containment policies to start autocontainment. The policies for initiating autocontainment are rogue on wire (detected through RLDP or rogue detector AP), rogue using managed SSID, Valid client on Rogue AP, and AdHoc Rogue.

This table lists the RSSI value associated with each containment level.

Table 9: RSSI Associated with Each Containment Level

Auto-containment Level	RSSI
1	0 to -55 dBm
2	-75 to -55 dBm
3	-85 to -75 dBm
4	Less than -85 dBm



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-GHz 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.

The following example shows how to configure the auto-contain level to 3:

```
(Cisco Controller) > config rogue auto-contain level 3
```

Related Commands

config rogue adhoc
show rogue adhoc summary
show rogue client summary
show rogue ignore-list
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

alarm	Generates only an alarm when a rogue access point is discovered to be associated with a valid client.
auto-contain	Automatically contains a rogue access point to which a trusted client is associated.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to automatically contain a rogue access point that is associated with a valid client:

```
(Cisco Controller) > config rogue ap valid-client auto-contain
```

Related Commands

- `config rogue ap classify`
- `config rogue ap friendly`
- `config rogue ap rldp`
- `config rogue ap timeout`
- `config rogue ap ssid`
- `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 | delete {state  
{alert | any | contained | contained-pending} | all | mac-address client_mac} | mse {enable  
| disable} } }
```

Syntax Description		
aaa		Configures AAA server or local database to validate whether rogue clients are valid clients. The default is disabled.
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.
<i>ap_mac</i>		Access point MAC address.
contain		Configures the controller to contain the offending device so that its signals no longer interfere with authorized clients.
<i>client_mac</i>		MAC address of the rogue client.
delete		Deletes the rogue client.
state		Deletes the rogue clients according to their state.
alert		Deletes the rogue clients in alert state.
any		Deletes the rogue clients in any state.
contained		Deletes all rogue clients that are in contained state.
contained-pending		Deletes all rogue clients that are in contained pending state.
all		Deletes all rogue clients.
mac-address		Deletes a rogue client with the configured MAC address.
mse		Validates if the rogue clients are valid clients using MSE. The default is disabled.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines You cannot validate rogue clients against MSE and AAA at the same time.

The following example shows how to enable the AAA server or local database to check MAC addresses:

```
(Cisco Controller) > config rogue client aaa enable
```

The following example shows how to disable the AAA server or local database from checking MAC addresses:

```
(Cisco Controller) > config rogue client aaa disable
```

Related Commands

config rogue rule
config trapflags rogueap
show rogue ap clients
show rogue ap 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.



Note If an AP itself is configured with the keyword **all**, the **all access points** case takes precedence over the AP that is with the keyword **all**.

```
config rogue detection {enable | disable} {cisco_ap | all}
```

Syntax Description

enable	Enables rogue detection on this access point.
disable	Disables rogue detection on this access point.
<i>cisco_ap</i>	Cisco access point.
all	Specifies all access points.

Command Default

The default rogue detection value is enabled.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable rogue detection on the access point Cisco_AP:

```
(Cisco Controller) > config rogue detection enable Cisco_AP
```

Related Commands
<code>config rogue rule</code>
<code>config trapflags rogueap</code>
<code>show rogue client detailed</code>
<code>show rogue client summary</code>
<code>show rogue ignore-list</code>
<code>show rogue rule detailed</code>
<code>show rogue rule summary</code>

config rogue detection min-rssi

To configure the minimum Received Signal Strength Indicator (RSSI) value at which APs can detect rogues and create a rogue entry in the controller, use the **config rogue detection min-rssi** command.

```
config rogue detection min-rssi rssi-in-dBm
```

Syntax Description	<i>rssi-in-dBm</i>	Minimum RSSI value. The valid range is from -70 dBm to -128 dBm, and the default value is -128 dBm.
Command Default	The default RSSI value to detect rogues in APs is -128 dBm.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines	This feature is applicable to all the AP modes. There can be many rogues with very weak RSSI values that do not provide any valuable information in rogue analysis. Therefore, you can use this option to filter rogues by specifying the minimum RSSI value at which APs should detect rogues.
-------------------------	--

The following example shows how to configure the minimum RSSI value:

```
(Cisco Controller) > config rogue detection min-rssi -80
```

Related Commands
<code>config rogue detection</code>
<code>show rogue ap clients</code>
<code>config rogue rule</code>
<code>config trapflags rogueap</code>

show rogue client detailed
show rogue client summary
show rogue ignore-list
show rogue rule detailed
show rogue rule summary

config rogue detection monitor-ap

To configure the rogue report interval for all monitor mode Cisco APs, use the **config rogue detection monitor-ap** command.

config rogue detection monitor-ap { **report-interval** | **transient-rogue-interval** } *time-in-seconds*

Syntax Description	report-interval	Specifies the interval at which rogue reports are sent.
	transient-rogue-interval	Specifies the interval at which rogues are consistently scanned for by APs after the first time the rogues are scanned.
	<i>time-in-seconds</i>	Time in seconds. The valid range is as follows: <ul style="list-style-type: none"> • 10 to 300 for report-interval • 120 to 1800 for transient-rogue-interval
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

This feature is applicable to APs that are in monitor mode only.

Using the transient interval values, you can control the time interval at which APs should scan for rogues. APs can also filter the rogues based on their transient interval values.

This feature has the following advantages:

- Rogue reports from APs to the controller are shorter.
- Transient rogue entries are avoided in the controller.
- Unnecessary memory allocation for transient rogues are avoided.

The following example shows how to configure the rogue report interval to 60 seconds:

```
(Cisco Controller) > config rogue detection monitor-ap report-interval 60
```

The following example shows how to configure the transient rogue interval to 300 seconds:

```
(Cisco Controller) > config rogue detection monitor-ap transient-rogue-interval 300
```

Related Commands	config rogue detection config rogue detection min-rssi 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** command.

```
config rogue rule {add ap priority priority classify {custom severity-score classification-name | friendly | malicious} notify {all | global | none | local} state {alert | contain | delete | internal | external} rule_name | classify {custom severity-score classification-name | 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 | notify {all | global | none | local} rule_name | state {alert | contain | internal | external} rule_name}
```

Syntax Description	add ap priority	Adds a rule with match any criteria and the priority that you specify.
	<i>priority</i>	Priority of this rule within the list of rules.
	classify	Specifies the classification of a rule.
	custom	Classifies devices matching the rule as custom.
	<i>severity-score</i>	Custom classification severity score of the rule. The range is from 1 to 100.
	<i>classification-name</i>	Custom classification name. The name can be up to 32 case-sensitive, alphanumeric characters.
	friendly	Classifies a rule as friendly.
	malicious	Classifies a rule as malicious.
	notify	Configures type of notification upon rule match.
	all	Notifies the controller and a trap receiver such as Cisco Prime Infrastructure.
	global	Notifies only a trap receiver such as Cisco Prime Infrastructure.

local	Notifies only the controller.
none	Notifies neither the controller nor a trap receiver such as Cisco Prime Infrastructure.
state	Configures state of the rogue access point after a rule match.
alert	Configures alert state on the rogue access point that is not in the neighbor list or in the user configured friendly MAC list. The controller forwards an immediate alert to the system administrator for further action.
contain	Configures contain state on the rogue access point. Controller contains the offending device so that its signals no longer interfere with authorized clients.
delete	Configures delete state on the rogue access point.
external	Configures external state on the rogue access point that is outside the network and poses no threat to WLAN security. The controller acknowledges the presence of this rogue access point.
internal	Configures alert state on rogue access point that is inside the network and poses no threat to WLAN security. The controller trusts this rogue access point.
<i>rule_name</i>	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.

<i>condition_type</i>	Type of the condition to be configured. The condition types are listed below: <ul style="list-style-type: none"> • client-count—Requires that a minimum number of clients be associated to a rogue access point. The valid range is 1 to 10 (inclusive). • duration—Requires that a rogue access point be detected for a minimum period of time. The valid range is 0 to 3600 seconds (inclusive). • managed-ssid—Requires that a rogue access point's SSID be known to the controller. • no-encryption—Requires that a rogue access point's advertised WLAN does not have encryption enabled. • rssi—Requires that a rogue access point have a minimum RSSI value. The range is from -95 to -50 dBm (inclusive). • ssid—Requires that a rogue access point have a specific SSID. • substring-ssid—Requires that a rogue access point have a substring of a user-configured SSID.
<i>condition_value</i>	Value of the condition. This value is dependent upon the <i>condition_type</i> . For instance, if the condition type is <i>ssid</i> , 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.

Command Default No rogue rules are configured.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

For your changes to be effective, you must enable the rule. You can configure up to 64 rules.

Reclassification of rogue APs according to the RSSI condition of the rogue rule occurs only when the RSSI changes more than +/- 2 dBm of the configured RSSI value. Manual and automatic classification override custom rogue rules. Rules are applied to manually changed rogues if their class type changes to unclassified and state changes to alert. Adhoc rogues are classified and do not go to the pending state. You can have up to 50 classification types.

The following example shows how to create a rule called rule_1 with a priority of 1 and a classification as friendly.

```
(Cisco Controller) > config rogue rule add ap priority 1 classify friendly rule_1
```

The following example shows how to enable rule_1.

```
(Cisco Controller) > config rogue rule enable rule_1
```

The following example shows how to change the priority of the last command.

```
(Cisco Controller) > config rogue rule priority 2 rule_1
```

The following example shows how to change the classification of the last command.

```
(Cisco Controller) > config rogue rule classify malicious rule_1
```

The following example shows how to disable the last command.

```
(Cisco Controller) > config rogue rule disable rule_1
```

The following example shows how to delete SSID_2 from the user-configured SSID list in rule-5.

```
(Cisco Controller) > config rogue rule condition ap delete ssid ssid_2 rule-5
```

The following example shows how to create a custom rogue rule.

```
(Cisco Controller) > config rogue rule classify custom 1 VeryMalicious rule6
```

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	ro	rw	name
	Specifies a read-only mode.	Specifies a read/write mode.	SNMP community name.

Command Default Two communities are provided by default with the following settings:

SNMP Community Name	Client IP Address	Client IP Mask	Access Mode	Status
public	0.0.0.0	0.0.0.0	Read Only	Enable
private	0.0.0.0	0.0.0.0	Read/Write	Enable

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure read/write access mode for SNMP community:

```
(Cisco Controller) > 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
```

Syntax Description	name
	SNMP community name of up to 16 characters.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines Use this command to create a new community with the default configuration.

The following example shows how to create a new SNMP community named test:

```
(Cisco Controller) > 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`

Syntax Description	<i>name</i>	SNMP community name.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete an SNMP community named test:

```
(Cisco Controller) > config snmp community delete test
```

Related Commands

- `show snmp community`
- `config snmp community mode`
- `config snmp community accessmode`
- `config snmp community create`
- `config snmp community ipaddr`

config snmp community ipaddr

To configure the IPv4 or IPv6 address of an SNMP community, use the **config snmp community ipaddr** command.

config snmp community ipaddr *IP addr IPv4 mask/IPv6 Prefix lengthname*

Syntax Description		
	<i>IP addr</i>	SNMP community IPv4 or IPv6 address.
	<i>IPv4 mask/IPv6 Prefix length</i>	SNMP community IP mask (IPv4 mask or IPv6 Prefix length). The IPv6 prefix length is from 0 to 128.
	<i>name</i>	SNMP community name.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

Usage Guidelines

- This command is applicable for both IPv4 and IPv6 addresses.
- This command is not applicable for default SNMP community (public, private).

The following example shows how to configure an SNMP community with the IPv4 address 10.10.10.10, IPv4 mask 255.255.255.0, and SNMP community named comaccess:

```
(Cisco Controller) > config snmp community ipaddr 10.10.10.10 255.255.255.0 comaccess
```

The following example shows how to configure an SNMP community with the IPv6 address 2001:9:2:16::1, IPv6 prefix length 64, and SNMP community named comaccess:

```
(Cisco Controller) > config snmp community ipaddr 2001:9:2:16::1 64 comaccess
```

config snmp community mode

To enable or disable an SNMP community, use the **config snmp community mode** command.

config snmp community mode {**enable** | **disable**} *name*

Syntax Description		
	enable	Enables the community.
	disable	Disables the community.
	<i>name</i>	SNMP community name.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the SNMP community named public:

```
(Cisco Controller) > config snmp community mode disable public
```

Related Commands
<code>show snmp community</code>
<code>config snmp community delete</code>
<code>config snmp community accessmode</code>
<code>config snmp community create</code>
<code>config snmp community ipaddr</code>

config snmp engineID

To configure the SNMP engine ID, use the `config snmp engineID` command.

```
config snmp engineID {engine_id | default}
```

Syntax Description	engine_id	Engine ID in hexadecimal characters (a minimum of 10 and a maximum of 24 characters are allowed).
	default	Restores the default engine ID.

Command Default
None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines The SNMP engine ID is a unique string used to identify the device for administration purposes. You do need to specify an engine ID for the device because a default string is automatically generated using Cisco's enterprise number and the MAC address of the first interface on the device.

If you change the engine ID, then a reboot is required for the change to take effect.

Caution If you change the value of the SNMP engine ID, then the password of the user entered on the command line is converted to an MD5 (Message-Digest algorithm 5) or SHA (Secure Hash Algorithm) security digest. This digest is based on both the password and the local engine ID. The command line password is then deleted. Because of this deletion, if the local value of the engine ID changes, the security digests of the SNMP users will become invalid, and the users will have to be reconfigured.

The following example shows how to configure the SNMP engine ID with the value ffffffff:

```
(Cisco Controller) > config snmp engineID ffffffff
```

Related Commands `show snmpengineID`

config snmp syscontact

To set the SNMP system contact name, use the **config snmp syscontact** command.

config snmp syscontact *contact*

Syntax Description	<i>contact</i>	SNMP system contact name. Valid value can be up to 255 printable characters.
---------------------------	----------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the SMNP system contact named Cisco WLAN Solution_administrator:

```
(Cisco Controller) > config snmp syscontact Cisco WLAN Solution_administrator
```

config snmp syslocation

To configure the SNMP system location name, use the **config snmp syslocation** command.

config snmp syslocation *location*

Syntax Description	<i>location</i>	SNMP system location name. Valid value can be up to 255 printable characters.
---------------------------	-----------------	---

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the SNMP system location name to Building_2a:

```
(Cisco Controller) > config snmp syslocation Building_2a
```

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 addr*

Syntax Description	<i>name</i>	SNMP community name. The name contain up to 31 characters.
	<i>IP addr</i>	Configure the IPv4 or IPv6 address of where to send SNMP traps.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

Usage Guidelines The IPv4 or IPv6 address must be valid for the command to add the new server.

The following example shows how to add a new SNMP trap receiver with the SNMP trap receiver named test and IP address 10.1.1.1:

```
(Cisco Controller) > config snmp trapreceiver create test 10.1.1.1
```

The following example shows how to add a new SNMP trap receiver with the SNMP trap receiver named test and IP address 2001:10:1:1::1:

```
(Cisco Controller) > config snmp trapreceiver create test 2001:10:1:1::1
```

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*

Syntax Description	<i>name</i>	SNMP community name. The name can contain up to 16 characters.
---------------------------	-------------	--

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete a server named test from the SNMP trap receiver list:

```
(Cisco Controller) > config snmp trapreceiver delete test
```

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*

Syntax Description	enable	Enables an SNMP trap receiver.
	disable	Disables an SNMP trap receiver.
	<i>name</i>	SNMP community name.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This command enables or disables the Cisco wireless LAN controller from sending the traps to the selected server.

The following example shows how to disable an SNMP trap receiver from sending traps to a server named server1:

```
(Cisco Controller) > 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*]

Syntax Description	<i>username</i>	Version 3 SNMP username.
	ro	Specifies a read-only user privilege.
	rw	Specifies a read-write user privilege.
	none	Specifies if no authentication is required.
	hmacmd5	Specifies Hashed Message Authentication Coding Message Digest 5 (HMAC-MD5) for authentication.
	hmacsha	Specifies Hashed Message Authentication Coding-Secure Hashing Algorithm (HMAC-SHA) for authentication.
	none	Specifies if no encryption is required.

des	Specifies to use Cipher Block Chaining-Digital Encryption Standard (CBC-DES) encryption.
aescfb128	Specifies to use Cipher Feedback Mode-Advanced Encryption Standard-128 (CFB-AES-128) encryption.
<i>auth_key</i>	(Optional) Authentication key for the HMAC-MD5 or HMAC-SHA authentication protocol.
<i>encrypt_key</i>	(Optional) Encryption key for the CBC-DES or CFB-AES-128 encryption protocol.

Command Default SNMP v3 username AccessMode Authentication Encryption

 default Read/Write HMAC-SHA CFB-AES

Command History **Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to add an SNMP username named test with read-only privileges and no encryption or authentication:

```
(Cisco Controller) > config snmp v3user create test ro none none
```

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 *username* Username to delete.

Command Default None

Command History **Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to remove an SNMP user named test:

```
(Cisco Controller) > 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.

config snmp version {v1 | v2 | v3} {enable | disable}

Syntax Description

v1	Specifies an SNMP version to enable or disable.
v2	Specifies an SNMP version to enable or disable.
v3	Specifies an SNMP version to enable or disable.
enable	Enables a specified version.
disable	Disables a specified version.

Command Default

By default, all the SNMP versions are enabled.

Command History

Release Modification

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

The following example shows how to enable SNMP version v1:

```
(Cisco Controller) > 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	off	Disables STP for the specified ports.
	802.1d	Specifies a supported port mode as 802.1D.
	fast	Specifies a supported port mode as fast.
	<i>port</i>	Port number (1 through 12 or 1 through 24).
	all	Configures all ports.

Command Default The default is that port STP is off.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to disable STP for all Ethernet ports:

```
(Cisco Controller) > config spanningtree port mode off all
```

The following example shows how to turn on STP 802.1D mode for Ethernet port 24:

```
(Cisco Controller) > config spanningtree port mode 802.1d 24
```

The following example shows how to turn on fast STP mode for Ethernet port 2:

```
(Cisco Controller) > config spanningtree port mode fast 2
```

config spanningtree port pathcost

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		
<i>cost</i>		Cost in decimal as determined by the network planner.
auto		Specifies the default cost.
<i>port</i>		Port number (1 through 12 or 1 through 24), or all to configure all ports.
all		Specifies to configure all ports.

Command Default The default STP path cost for an Ethernet port is auto.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to have the STP algorithm automatically assign a path cost for all ports:

```
(Cisco Controller) > config spanningtree port pathcost auto all
```

The following example shows how to have the STP algorithm use a port cost of 200 for port 22:

```
(Cisco Controller) > config spanningtree port pathcost 200 22
```

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		
<i>priority_num</i>		Priority number from 0 to 255.
<i>port</i>		Port number (1 through 12 or 1 through 24).

Command Default The default STP priority value is 128.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to set Ethernet port 2 to STP priority 100:

```
(Cisco Controller) > config spanningtree port priority 100 2
```

config spanningtree switch bridgepriority

To set the bridge ID, use the **config spanningtree switch bridgepriority** command.

config spanningtree switch bridgepriority *priority_num*

Syntax Description	<i>priority_num</i>	Priority number between 0 and 65535.
--------------------	---------------------	--------------------------------------

Command Default The default priority number value to set the bridge ID is 32768.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to configure spanning tree values on a per switch basis with the bridge priority 40230:

```
(Cisco Controller) > config spanningtree switch bridgepriority 40230
```

config spanningtree switch forwarddelay

To set the bridge timeout, use the **config spanningtree switch forwarddelay** command.

config spanningtree switch forwarddelay *seconds*

Syntax Description	<i>seconds</i>	Timeout in seconds (between 4 and 30).
Command Default	The default value to set a bridge timeout is 15 seconds.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
Usage Guidelines	The value that all bridges use for forward delay 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.	

The following example shows how to configure spanning tree values on a per switch basis with the bridge timeout as 20 seconds:

```
(Cisco Controller) > config spanningtree switch forwarddelay 20
```

config spanningtree switch hellotime

To set the hello time, use the **config spanningtree switch hellotime** command.

config spanningtree switch hellotime *seconds*

Syntax Description	<i>seconds</i>	STP hello time in seconds.
Command Default	The default hello time value is 15.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
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.	

The following example shows how to configure the STP hello time to 4 seconds:

```
(Cisco Controller) > config spanningtree switch hellotime 4
```

Related Commands	show spanningtree switch
	show 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.

config spanningtree switch maxage *seconds*

Syntax Description	<i>seconds</i>	STP bridge maximum age in seconds.
Command Default	The default value for maximum age is 20.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
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.	

The following example shows how to configure the STP bridge maximum age to 30 seconds:

```
(Cisco Controller) > config spanningtree switch maxage 30
```

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**}

Syntax Description	enable	Enables STP on the switch.
	disable	Disables STP on the switch.
Command Default	The default is that STP is disabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
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.	

The following example shows how to support STP on all Cisco wireless LAN controller ports:

```
(Cisco Controller) > config spanningtree switch mode enable
```


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** *1-3 IP addr port ascii/hex secret* | **delete** *1-3* | **disable** *1-3* | **enable** *1-3* | **server-timeout** *1-3 seconds*}

Syntax Description		
add		Adds a new TACACS+ accounting server.
<i>1-3</i>		Specifies TACACS+ accounting server index from 1 to 3.
<i>IP addr</i>		Specifies IPv4 or IPv6 address of the TACACS+ accounting server.
<i>port</i>		Specifies TACACS+ Server's TCP port.
<i>ascii/hex</i>		Specifies type of TACACS+ server's secret being used (ASCII or HEX).
<i>secret</i>		Specifies secret key in ASCII or hexadecimal characters.
delete		Deletes a TACACS+ server.
disable		Disables a TACACS+ server.
enable		Enables a TACACS+ server.
server-timeout		Changes the default server timeout for the TACACS+ server.
<i>seconds</i>		Specifies the number of seconds before the TACACS+ server times out. The server timeout range is from 5 to 30 seconds.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

The following example shows how to add a new TACACS+ accounting server index 1 with the IPv4 address 10.0.0.0, port number 49, and secret key 12345678 in ASCII:

```
(Cisco Controller) > config tacacs acct add 1 10.0.0.0 10 ascii 12345678
```

The following example shows how to add a new TACACS+ accounting server index 1 with the IPv6 address 2001:9:6:40::623, port number 49, and secret key 12345678 in ASCII:

```
(Cisco Controller) > config tacacs acct add 1 2001:9:6:40::623 10 ascii 12345678
```

The following example shows how to configure the server timeout of 5 seconds for the TACACS+ accounting server:

```
(Cisco Controller) > config tacacs acct server-timeout 1 5
```

config tacacs athr

To configure TACACS+ authorization server settings, use the **config tacacs athr** command.

config tacacs athr {**add** *1-3 IP addr port ascii/hex secret* | **delete** *1-3* | **disable** *1-3* | **enable** *1-3* | **mgmt-server-timeout** *1-3 seconds* | **server-timeout** *1-3 seconds*}

Syntax Description	Description
add	Adds a new TACACS+ authorization server (IPv4 or IPv6).
<i>1-3</i>	TACACS+ server index from 1 to 3.
<i>IP addr</i>	TACACS+ authorization server IP address (IPv4 or IPv6).
<i>port</i>	TACACS+ server TCP port.
<i>ascii/hex</i>	Type of secret key being used (ASCII or HEX).
<i>secret</i>	Secret key in ASCII or hexadecimal characters.
delete	Deletes a TACACS+ server.
disable	Disables a TACACS+ server.
enable	Enables a TACACS+ server.
mgmt-server-timeout <i>1-3seconds</i>	Changes the default management login server timeout for the server. The number of seconds before server times out is from 1 to 30 seconds.
server-timeout <i>1-3 seconds</i>	Changes the default network login server timeout for the server. The number of seconds before server times out is from 5 to 30 seconds.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

The following example shows how to add a new TACACS+ authorization server index 1 with the IPv4 address 10.0.0.0, port number 49, and secret key 12345678 in ASCII:

```
(Cisco Controller) > config tacacs athr add 1 10.0.0.0 49 ascii 12345678
```

The following example shows how to add a new TACACS+ authorization server index 1 with the IPv6 address 2001:9:6:40::623, port number 49, and secret key 12345678 in ASCII:

```
(Cisco Controller) > config tacacs athr add 1 2001:9:6:40::623 49 ascii 12345678
```

The following example shows how to configure the retransmit timeout of 5 seconds for the TACACS+ authorization server:

```
(Cisco Controller) > config tacacs athr server-timeout 1 5
```

config tacacs athr mgmt-server-timeout

To configure a default TACACS+ authorization server timeout for management users, use the **config tacacs athr mgmt-server-timeout** command.

config tacacs athr mgmt-server-timeout *index timeout*

Syntax Description		
<i>index</i>		TACACS+ authorization server index.
<i>timeout</i>		Timeout value. The range is 1 to 30 seconds.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a default TACACS+ authorization server timeout for management users:

```
(Cisco Controller) > config tacacs athr mgmt-server-timeout 1 10
```

Related Commands `config tacacs athr`

config tacacs auth mgmt-server-timeout

To configure a default TACACS+ authentication server timeout for management users, use the **config tacacs auth mgmt-server-timeout** command.

config tacacs auth mgmt-server-timeout *index timeout*

Syntax Description		
<i>index</i>		TACACS+ authentication server index.
<i>timeout</i>		Timeout value. The range is 1 to 30 seconds.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a default TACACS+ authentication server timeout for management users:

```
(Cisco Controller) > config tacacs auth mgmt-server-timeout 1 10
```

Related Commands `config tacacs auth`

config tacacs auth

To configure TACACS+ authentication server settings, use the **config tacacs auth** command.

config tacacs auth { **add** *1-3 IP addr port ascii/hex secret* | **delete** *1-3* | **disable** *1-3* | **enable** *1-3* | **mgmt-server-timeout** *1-3 seconds* | **server-timeout** *1-3seconds* }

Syntax Description		
add		Adds a new TACACS+ accounting server.
<i>1-3</i>		TACACS+ accounting server index from 1 to 3.
<i>IP addr</i>		IP address for the TACACS+ accounting server.
<i>port</i>		Controller port used for the TACACS+ accounting server.
<i>ascii/hex</i>		Type of secret key being used (ASCII or HEX).
<i>secret</i>		Secret key in ASCII or hexadecimal characters.
delete		Deletes a TACACS+ server.
disable		Disables a TACACS+ server.

enable	Enables a TACACS+ server.
mgmt-server-timeout <i>1-3 seconds</i>	Changes the default management login server timeout for the server. The number of seconds before server times out is from 1 to 30 seconds.
server-timeout <i>1-3 seconds</i>	Changes the default network login server timeout for the server. The number of seconds before server times out is from 5 to 30 seconds.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	This command supports both IPv4 and IPv6 address formats.

The following example shows how to add a new TACACS+ authentication server index 1 with the IPv4 address 10.0.0.3, port number 49, and secret key 12345678 in ASCII:

```
(Cisco Controller) > config tacacs auth add 1 10.0.0.3 49 ascii 12345678
```

The following example shows how to add a new TACACS+ authentication server index 1 with the IPv6 address 2001:9:6:40::623, port number 49, and secret key 12345678 in ASCII:

```
(Cisco Controller) > config tacacs auth add 1 2001:9:6:40::623 49 ascii 12345678
```

The following example shows how to configure the server timeout for TACACS+ authentication server:

```
(Cisco Controller) > config tacacs auth server-timeout 1 5
```

config tacacs dns

To retrieve the TACACS IP information from a DNS server, use the **config radius dns** command.

```
config radius dns { global port { ascii | hex } secret | query url timeout | serverip ip_address | disable | enable }
```

Syntax Description

global	Configures the global port and secret to retrieve the TACACS IP information from a DNS server.
<i>port</i>	Port number for authentication. The range is from 1 to 65535. All the DNS servers should use the same authentication port.
<i>ascii</i>	Format of the shared secret that you should set to ASCII.

<i>hex</i>	Format of the shared secret that you should set to hexadecimal.
<i>secret</i>	TACACS server login secret.
query	Configures the fully qualified domain name (FQDN) of the TACACS server and DNS timeout.
<i>url</i>	FQDN of the TACACS server. The FQDN can be up to 63 case-sensitive, alphanumeric characters.
<i>timeout</i>	Maximum time that the controller waits for, in days, before timing out a request and resending it. The range is from 1 to 180.
serverip	Configures the DNS server IP address.
<i>ip_address</i>	DNS server IP address.
disable	Disables the TACACS DNS feature. The default is disabled.
enable	Enables the controller to retrieve the TACACS IP information from a DNS server.

Command Default

You cannot retrieve the TACACS IP information from a DNS server.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

The accounting port is derived from the authentication port. All the DNS servers should use the same secret. When you enable a DNS query, the static configurations will be overridden. The DNS list overrides the static AAA list.

The following example shows how to enable the TACACS DNS feature on the controller:

```
(Cisco Controller) > config tacacs dns enable
```

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 }
```

Syntax Description	enable	Enables sending 802.11 security-related traps.
	disable	Disables sending 802.11 security-related traps.
Command Default	By default, sending the 802.11 security-related traps is enabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the 802.11 security related traps:

```
(Cisco Controller) >
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}
```

Syntax Description	auth	Enables trap sending when an AAA authentication failure occurs for management user, net user, or MAC filter.
	servers	Enables trap sending when no RADIUS servers are responding.
	enable	Enables the sending of AAA server-related traps.
	disable	Disables the sending of AAA server-related traps.
Command Default	By default, the sending of AAA server-related traps is enabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the sending of AAA server-related traps:

```
(Cisco Controller) > config trapflags aaa auth enable
```

Related Commands `show watchlist`

config trapflags ap

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		
register		Enables sending a trap when a Cisco lightweight access point registers with Cisco switch.
interfaceUp		Enables sending a trap when a Cisco lightweight access point interface (A or B) comes up.
enable		Enables sending access point-related traps.
disable		Disables sending access point-related traps.

Command Default By default, the sending of Cisco lightweight access point traps is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to prevent traps from sending access point-related traps:

```
(Cisco Controller) > 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		
enable		Enables sending traps with invalid SNMP access.
disable		Disables sending traps with invalid SNMP access.

Command Default By default, the sending traps with invalid SNMP access is enabled.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to prevent sending traps on invalid SNMP access:

```
(Cisco Controller) > 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-associate 802.11-disassociate | 802.11-deauthenticate | 802.11-authfail
| 802.11-assocfail | authentication | excluded} {enable | disable}
```

Syntax Description

802.11-associate	Enables the sending of Dot11 association traps to clients.
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.
authentication	Enables the sending of authentication success 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.

Command Default

By default, the sending of client-related DOT11 traps is disabled.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the sending of Dot11 disassociation trap to clients:

```
(Cisco Controller) > 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
enable	Enables sending of configuration-saved traps.
disable	Disables the sending of configuration-saved traps.

Command Default By default, the sending of configuration-saved traps is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the sending of configuration-saved traps:

```
(Cisco Controller) > 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** }

Syntax	Description
esp-auth	Enables the sending of IPsec traps when an ESP authentication failure occurs.
esp-reply	Enables the sending of IPsec traps when an ESP replay failure occurs.
invalidSPI	Enables the sending of IPsec traps when an ESP invalid SPI is detected.
ike-neg	Enables the sending of IPsec traps when an IKE negotiation failure occurs.
suite-neg	Enables the sending of IPsec traps when a suite negotiation failure occurs.
invalid-cookie	Enables the sending of IPsec traps when a Isakamp invalid cookie is detected.
enable	Enables sending of IPsec traps.
disable	Disables sending of IPsec traps.

Command Default By default, the sending of IPsec traps is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the sending of IPsec traps when ESP authentication failure occurs:

```
(Cisco Controller) > config trapflags IPsec esp-auth enable
```

Related Commands `show trapflags`

config trapflags linkmode

To enable or disable the controller level link up/down trap flags, use the **config trapflags linkmode** command.

config trapflags linkmode {enable | disable}

Syntax Description	enable	Disables the controller level link up/down trap flags.
	disable	Disables Cisco wireless LAN controller level link up/down trap flags.

Command Default By default, the controller level link up/down trap flags are enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the Cisco wireless LAN controller level link up/down trap:

```
(Cisco Controller) > config trapflags linkmode disable
```

Related Commands `show trapflags`

config trapflags multiusers

To enable or disable the sending of traps when multiple logins are active, use the **config trapflags multiusers** command.

config trapflags multiusers {enable | disable}

Syntax Description	enable	Enables the sending of traps when multiple logins are active.
	disable	Disables the sending of traps when multiple logins are active.

Command Default By default, the sending of traps when multiple logins are active is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the sending of traps when multiple logins are active:

```
(Cisco Controller) > 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}
```

Syntax Description	enable	Disables the sending of rogue access point detection traps.
	disable	Enables the sending of rogue access point detection traps.

Command Default By default, the sending of rogue access point detection traps is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the sending of rogue access point detection traps:

```
(Cisco Controller) > 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}
```

Syntax Description	Parameter	Description
	tx-power	Enables trap sending when the RF manager automatically changes the tx-power level for the Cisco lightweight access point interface.
	channel	Enables trap sending when the RF manager automatically changes the channel for the Cisco lightweight access point interface.
	antenna	Enables trap sending when the RF manager automatically changes the antenna for the Cisco lightweight access point interface.
	enable	Enables the sending of RRM parameter-related traps.
	disable	Disables the sending of RRM parameter-related traps.

Command Default By default, the sending of RRM parameters traps is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the sending of RRM parameter-related traps:

```
(Cisco Controller) > 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	Parameter	Description
	load	Enables trap sending when the load profile maintained by the RF manager fails.
	noise	Enables trap sending when the noise profile maintained by the RF manager fails.
	interference	Enables trap sending when the interference profile maintained by the RF manager fails.
	coverage	Enables trap sending when the coverage profile maintained by the RF manager fails.
	enable	Enables the sending of RRM profile-related traps.

disable	Disables the sending of RRM profile-related traps.
----------------	--

Command Default By default, the sending of RRM profile-related traps is enabled.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the sending of RRM profile-related traps:

```
(Cisco Controller) > 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 {enable | disable}

Syntax Description	enable	disable
	Enables the sending of spanning tree traps.	Disables the sending of spanning tree traps.

Command Default By default, the sending of spanning tree traps is enabled.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the sending of spanning tree traps:

```
(Cisco Controller) > 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	enable	disable
	Enables WPS trap sending.	Disables WPS trap sending.

Command Default By default, the WPS trap sending is enabled.

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the WPS traps sending:

```
(Cisco Controller) > 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	mac <i>MAC</i>	Specifies the MAC address of the wireless LAN.
	username <i>username</i>	Specifies the name of the user to watch.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to add a watchlist entry for the MAC address a5:6b:ac:10:01:6b:

```
(Cisco Controller) >config watchlist add mac a5:6b:ac:10:01:6b
```

config watchlist delete

To delete a watchlist entry for a wireless LAN, use the **config watchlist delete** command.

```
config watchlist delete { mac MAC | username username }
```

Syntax Description	mac <i>MAC</i>	Specifies the MAC address of the wireless LAN to delete from the list.
	username <i>username</i>	Specifies the name of the user to delete from the list.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete a watchlist entry for the MAC address a5:6b:ac:10:01:6b:

```
(Cisco Controller) >config watchlist delete mac a5:6b:ac:10:01:6b
```


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.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable a watchlist entry:

```
(Cisco Controller) >config watchlist enable
```

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.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the client watchlist:

```
(Cisco Controller) >config watchlist disable
```

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.	
<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.	
<i>name</i>	(Optional) WLAN profile name up to 32 alphanumeric characters.	
foreignAp	(Optional) Specifies the third-party access point settings.	
<i>ssid</i>	SSID (network name) up to 32 alphanumeric characters.	
all	(Optional) Specifies all wireless LANs.	
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable wireless LAN identifier 16:

```
(Cisco Controller) >config wlan enable 16
```

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
```

Syntax Description	Parameter	Description
	ap-cac-limit	Supports phones that require client-controlled Call Admission Control (CAC) that expect the Cisco vendor-specific information element (IE).
	client-cac-limit	Supports phones that require access point-controlled CAC that expect the IEEE 802.11e Draft 6 QBSS-load.
	enable	Enables phone support.
	disable	Disables phone support.
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines You cannot enable both WMM mode and client-controlled CAC mode on the same WLAN.

The following example shows how to enable the phone support that requires client-controlled CAC with wireless LAN ID 8:

```
(Cisco Controller) >config wlan 7920-support ap-cac-limit enable 8
```

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	Parameter	Description
	allow	Allows 802.11e-enabled clients on the wireless LAN.
	disable	Disables 802.11e on the wireless LAN.
	require	Requires 802.11e-enabled clients on the wireless LAN.
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to allow 802.11e on the wireless LAN with LAN ID 1:

```
(Cisco Controller) >config wlan 802.11e allow 1
```

config wlan aaa-override

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 a policy override.
	disable	Disables a policy override.
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
	foreignAp	Specifies third-party access points.

Command Default AAA is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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 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 might come from a RADIUS server.

The following example shows how to configure user policy override via AAA on WLAN ID 1:

```
(Cisco Controller) >config wlan aaa-override enable 1
```

config wlan acl

To configure a wireless LAN access control list (ACL), use the **config wlan acl** command.

```
config wlan acl [acl_name | none]
```

Syntax Description	<i>wlan_id</i>	Wireless LAN identifier (1 to 512).
	<i>acl_name</i>	(Optional) ACL name.
	none	(Optional) Clears the ACL settings for the specified wireless LAN.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a WLAN access control list with WLAN ID 1 and ACL named office_1:

```
(Cisco Controller) >config wlan acl 1 office_1
```

config wlan apgroup

To manage access point group VLAN features, use the **config wlan apgroup** command.

```
config wlan apgroup {add apgroup_name [description] | delete apgroup_name | description apgroup_name description | interface-mapping {add | delete} apgroup_name wlan_id interface_name | nac-snmp {enable | disable} apgroup_name wlan_id | nasid NAS-ID apgroup_name | profile-mapping {add | delete} apgroup_name profile_name | wlan-radio-policy apgroup_name wlan-id {802.11a-only | 802.11bg | 802.11g-only | all} | hotspot {venue {type apgroup_name group_codetype_code | name apgroup_name language_codevenue_name} | operating-class {add | delete} apgroup_name operating_class_value}}
```

Syntax Description	add	Creates a new access point group (AP group).
	<i>apgroup_name</i>	Access point group name.
	<i>wlan_id</i>	Wireless LAN identifier from 1 to 512.
	delete	Removes a wireless LAN from an AP group.

description	Describes an AP group.
<i>description</i>	Description of the AP group.
interface-mapping	(Optional) Assigns or removes a Wireless LAN from an access point group.
<i>interface_name</i>	(Optional) Interface to which you want to map an access point group.
nac-snmp	Configures NAC SNMP functionality on given AP group. enable enables Network Admission Control (NAC) out-of-band support on an access point group. disable disables NAC out-of-band support on an AP group.
enable	Enables NAC out-of-band support on an AP group.
disable	Disables NAC out-of-band support on an AP group.
<i>NAS-ID</i>	Network Access Server identifier (NAS-ID) for the access point group. It is sent to the RADIUS server by the controller (as a part of the authentication request, which is used to classify users). You can enter up to 32 alphanumeric characters. Before you enter and later releases, you can configure the NAS-ID on an access point group or an access point group. The order of priority is AP group NAS-ID > WLAN NAS-ID > Interface NAS-ID.
none	Configures the controller system name as the NAS-ID.
profile-mapping	Configures RF profile mapping on an AP group.
<i>profile_name</i>	RF profile name for a specified AP group.
wlan-radio-policy	Configures WLAN radio policy on an AP group.
802.11a-only	Configures WLAN radio policy on an AP group.
802.11bg	Configures WLAN radio policy on an AP group.
802.11g-only	Configures WLAN radio policy on an AP group.
all	Configures WLAN radio policy on an AP group.
hotspot	Configures a HotSpot on an AP group.
venue	Configures venue information for an AP group.
type	Configures the type of venue for an AP group.

group_code

Venue group information for an AP group.

The following options are available:

- 0 : UNSPECIFIED
 - 1 : ASSEMBLY
 - 2 : BUSINESS
 - 3 : EDUCATIONAL
 - 4 : FACTORY-INDUSTRIAL
 - 5 : INSTITUTIONAL
 - 6 : MERCANTILE
 - 7 : RESIDENTIAL
 - 8 : STORAGE
 - 9 : UTILITY-MISC
 - 10 : VEHICULAR
 - 11 : OUTDOOR
-

type_code

Venue type information for an AP group.

For venue group 1 (ASSEMBLY), the following

- 0 : UNSPECIFIED ASSEMBLY
- 1 : ARENA
- 2 : STADIUM
- 3 : PASSENGER TERMINAL
- 4 : AMPHITHEATER
- 5 : AMUSEMENT PARK
- 6 : PLACE OF WORSHIP
- 7 : CONVENTION CENTER
- 8 : LIBRARY
- 9 : MUSEUM
- 10 : RESTAURANT
- 11 : THEATER
- 12 : BAR
- 13 : COFFEE SHOP
- 14 : ZOO OR AQUARIUM
- 15 : EMERGENCY COORDINATION CENTER

For venue group 2 (BUSINESS), the following

- 0 : UNSPECIFIED BUSINESS
- 1 : DOCTOR OR DENTIST OFFICE
- 2 : BANK
- 3 : FIRE STATION
- 4 : POLICE STATION
- 6 : POST OFFICE
- 7 : PROFESSIONAL OFFICE
- 8 : RESEARCH AND DEVELOPMENT
- 9 : ATTORNEY OFFICE

For venue group 3 (EDUCATIONAL), the following

- 0 : UNSPECIFIED EDUCATIONAL
- 1 : PRIMARY SCHOOL
- 2 : SECONDARY SCHOOL

- 3 : UNIVERSITY OR COLLEGE

For venue group 4 (FACTORY-INDUSTRIAL), the following options are available:

- 0 : UNSPECIFIED FACTORY AND INDUSTRIAL
- 1 : FACTORY

For venue group 5 (INSTITUTIONAL), the following options are available:

- 0 : UNSPECIFIED INSTITUTIONAL
- 1 : HOSPITAL
- 2 : LONG-TERM CARE FACILITY
- 3 : ALCOHOL AND DRUG RE-HABILITATION
- 4 : GROUP HOME
- 5 : PRISON OR JAIL

For venue group 6 (MERCANTILE), the following options are available:

- 0 : UNSPECIFIED MERCANTILE
- 1 : RETAIL STORE
- 2 : GROCERY MARKET
- 3 : AUTOMOTIVE SERVICE STATION
- 4 : SHOPPING MALL
- 5 : GAS STATION

For venue group 7 (RESIDENTIAL), the following options are available:

- 0 : UNSPECIFIED RESIDENTIAL
- 1 : PRIVATE RESIDENCE
- 2 : HOTEL OR MOTEL
- 3 : DORMITORY
- 4 : BOARDING HOUSE

For venue group 8 (STORAGE), the following options are available:

- 0 : UNSPECIFIED STORAGE

For venue group 9 (UTILITY-MISC), the following options are available:

- 0 : UNSPECIFIED UTILITY AND MISCELLANEOUS

For venue group 10 (VEHICULAR), the following

- 0 : UNSPECIFIED VEHICULAR
- 1 : AUTOMOBILE OR TRUCK
- 2 : AIRPLANE
- 3 : BUS
- 4 : FERRY
- 5 : SHIP OR BOAT
- 6 : TRAIN
- 7 : MOTOR BIKE

For venue group 11 (OUTDOOR), the following

- 0 : UNSPECIFIED OUTDOOR
- 1 : MINI-MESH NETWORK
- 2 : CITY PARK
- 3 : REST AREA
- 4 : TRAFFIC CONTROL
- 5 : BUS STOP
- 6 : KIOSK

name	Configures the name of venue for an AP group.
<i>language_code</i>	An ISO-639 encoded string defining the language. The language string is a three character language code. For example, "en" for English.
<i>venue_name</i>	Venue name for this AP group. This name is also used for the service set (BSS) and is used in cases where there is not enough information about the venue. The venue name can be up to 252 alphanumeric characters.
add	Adds an operating class for an AP group.
delete	Deletes an operating class for an AP group.
<i>operating_class_value</i>	Operating class for an AP group. The available values are 83, 84, 112, 113, 115, 116, 117, 118, 119, 120, 126, 127.

Command Default AP Group VLAN is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The NAS-ID configured on the controller for AP group or WLAN or interface is used for authentication. The NAS-ID is not propagated across controllers.

The following example shows how to enable the NAC out-of band support on access point group 4:

```
(Cisco Controller) >config wlan apgroup nac enable apgroup 4
```

config wlan band-select allow

To configure band selection on a WLAN, use the **config wlan band-select allow** command.

```
config wlan band-select allow {enable | disable} wlan_id
```

Syntax Description

enable Enables band selection on a WLAN.

disable Disables band selection on a WLAN.

wlan_id Wireless LAN identifier between 1 and 512.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

When you enable band select on a WLAN, the access point suppresses client probes on 2.4-GHz and moves the dual band clients to the 5-GHz spectrum. The band-selection algorithm directs dual-band clients only from the 2.4-GHz radio to the 5-GHz radio of the same access point, and it only runs on an access point when both the 2.4-GHz and 5-GHz radios are up and running. Band selection can be used only with Cisco Aironet 1040, 1140, and 1250 Series and the 3500 series access points.

The following example shows how to enable band selection on a WLAN:

```
(Cisco Controller) >config wlan band-select allow enable 6
```

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
```

Syntax Description

enable Enables SSID broadcasts on a wireless LAN.

disable	Disables SSID broadcasts on a wireless LAN.
<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.

Command Default Broadcasting of SSID is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure an SSID broadcast on wireless LAN ID 1:

```
(Cisco Controller) >config wlan broadcast-ssid enable 1
```

config wlan call-snoop

To enable or disable Voice-over-IP (VoIP) snooping for a particular WLAN, use the **config wlan call-snoop** command.

```
config wlan call-snoop {enable | disable} wlan_id
```

Syntax Description		
enable	Enables VoIP snooping on a wireless LAN.	
disable	Disables VoIP snooping on a wireless LAN.	
<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.	

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines WLAN should be with Platinum QoS and it needs to be disabled while invoking this CLI

The following example shows how to enable VoIP snooping for WLAN 3:

```
(Cisco Controller) >config wlan call-snoop 3 enable
```

config wlan chd

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}
```

Syntax Description		
<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.	
enable	Enables SSID broadcasts on a wireless LAN.	

disable	Disables SSID broadcasts on a wireless LAN.
----------------	---

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable CHD for WLAN 3:

```
(Cisco Controller) >config wlan chd 3 enable
```

config wlan ccx aironet-ie

To enable or disable Aironet information elements (IEs) for a WLAN, use the **config wlan ccx aironet-ie** command.

config wlan ccx aironet-ie { **enable** | **disable** }

Syntax Description		
enable	Enables the Aironet information elements.	
disable	Disables the Aironet information elements.	

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable Aironet information elements for a WLAN:

```
(Cisco Controller) >config wlan ccx aironet-ie enable
```

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		
<i>priority</i>	User priority value (0 to 7).	
enable	(Optional) Enables packet at given priority to defer off channel scanning.	
disable	(Optional) Disables packet at given priority to defer off channel scanning.	
<i>wlan_id</i>	Wireless LAN identifier (1 to 512).	

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines The priority value should be set to 6 on the client and on the WLAN.

The following 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:

```
(Cisco Controller) >config wlan channel-scan defer-priority 6 enable 30
```

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 msec wlan_id
```

Syntax Description	<i>msecs</i>	Deferral time in milliseconds (0 to 60000 milliseconds).
	<i>wlan_id</i>	Wireless LAN identifier from 1 to 512.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines The time value in milliseconds should match the requirements of the equipment on your WLAN.

The following example shows how to assign the scan defer time to 40 milliseconds for WLAN with ID 50:

```
(Cisco Controller) >config wlan channel-scan defer-time 40 50
```

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	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
	foreignAp	Specifies third-party access points.
	<i>ip_address</i>	IP address of the internal DHCP server (this parameter is required).
	required	(Optional) Specifies whether DHCP address assignment is required.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to configure an IP address 10.10.2.1 of the internal DHCP server for wireless LAN ID 16:

```
(Cisco Controller) >config wlan dhcp_server 16 10.10.2.1
```

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		
enable	(Optional)	Enables the wireless LAN diagnostic channel.
disable	(Optional)	Disables the wireless LAN diagnostic channel.
<i>wlan_id</i>		Wireless LAN identifier (1 to 512).

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the wireless LAN diagnostic channel for WLAN ID 1:

```
(Cisco Controller) >config wlan diag-channel enable 1
```

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*

Syntax Description		
802.11a		Configures DTIM for the 802.11a radio network.
802.11b		Configures DTIM for the 802.11b radio network.

<i>dtim</i>	Value for DTIM (between 1 to 255 inclusive).
<i>wlan_id</i>	Number of the WLAN to be configured.

Command Default The default is DTIM 1.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure DTIM for 802.11a radio network with DTIM value 128 and WLAN ID 1:

```
(Cisco Controller) >config wlan dtim 802.11a 128 1
```

config wlan exclusionlist

To configure the wireless LAN exclusion list, use the **config wlan exclusionlist** command.

config wlan exclusionlist {*wlan_id* [**enabled** | **disabled** | *time*] | **foreignAp** [**enabled** | **disabled** | *time*] }

Syntax Description	
<i>wlan_id</i>	Wireless LAN identifier (1 to 512).
enabled	(Optional) Enables the exclusion list for the specified wireless LAN or foreign access point.
disabled	(Optional) Disables the exclusion list for the specified wireless LAN or a foreign access point.
<i>time</i>	(Optional) Exclusion list timeout in seconds. A value of zero (0) specifies infinite time.
foreignAp	Specifies a third-party access point.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This command replaces the **config wlan blacklist** command.

The following example shows how to enable the exclusion list for WLAN ID 1:

```
(Cisco Controller) >config wlan exclusionlist 1 enabled
```

config wlan flexconnect ap-auth

To configure local authentication of clients associated with FlexConnect on a locally switched WLAN, use the **config wlan flexconnect ap-auth** command.

```
config wlan flexconnect ap-auth wlan_id {enable | disable}
```

Syntax Description	ap-auth	Configures local authentication of clients associated with an FlexConnect on a locally switched WLAN.
	wlan_id	Wireless LAN identifier between 1 and 512.
	enable	Enables AP authentication on a WLAN.
	disable	Disables AP authentication on a WLAN.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines Local switching must be enabled on the WLAN where you want to configure local authentication of clients associated with FlexConnect.

The following example shows how to enable authentication of clients associated with FlexConnect on a specified WLAN:

```
(Cisco Controller) >config wlan flexconnect ap-auth 6 enable
```

config wlan flexconnect learn-ipaddr

To enable or disable client IP address learning for the Cisco WLAN controller, use the **config wlan flexconnect learn-ipaddr** command.

```
config wlan flexconnect learn-ipaddr wlan_id {enable | disable}
```

Syntax Description	wlan_id	Wireless LAN identifier between 1 and 512.
	enable	Enables client IPv4 address learning on a wireless LAN.
	disable	Disables client IPv4 address learning on a wireless LAN.

Command Default Disabled when the **config wlan flexconnect local-switching** command is disabled. Enabled when the **config wlan flexconnect local-switching** command is enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Release	Modification
8.0	This command supports only IPv4 address format.

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 This command is valid only for IPv4.



Note The ability to disable IP address learning is not supported with FlexConnect central switching.

The following example shows how to disable client IP address learning for WLAN 6:

```
(Cisco Controller) >config wlan flexconnect learn-ipaddr disable 6
```

Related Commands

show wlan

config wlan flexconnect vlan-central-switching

To configure central switching on a locally switched WLAN, use the **config wlan flexconnect vlan-central-switching** command.

```
config wlan flexconnect vlan-central-switching wlan_id { enable | disable }
```

Syntax Description

<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
enable	Enables central switching on a locally switched wireless LAN.
disable	Disables central switching on a locally switched wireless LAN.

Command Default

Central switching is disabled.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

You must enable Flexconnect local switching to enable VLAN central switching. When you enable WLAN central switching, the access point bridges the traffic locally if the WLAN is configured on the local IEEE 802.1Q link. If the VLAN is not configured on the access point, the AP tunnels the traffic back to the controller and the controller bridges the traffic to the corresponding VLAN.

WLAN central switching does not support:

- FlexConnect local authentication.

- Layer 3 roaming of local switching client.

The following example shows how to enable WLAN 6 for central switching:

```
(Cisco Controller) >config wlan flexconnect vlan-central-switching 6 enable
```

config wlan flexconnect local-switching

To configure local switching, central DHCP, NAT-PAT, or the override DNS option on a FlexConnect WLAN, use the **config wlan flexconnect local switching** command.

```
config wlan flexconnect local-switching wlan_id { enable | disable } { { central-dhcp { enable | disable } nat-pat { enable | disable } } | { override option dns { enable | disable } } }
```

Syntax Description

<i>wlan_id</i>	Wireless LAN identifier from 1 to 512.
enable	Enables local switching on a FlexConnect WLAN.
disable	Disables local switching on a FlexConnect WLAN.
central-dhcp	Configures central switching of DHCP packets on the local switch. When you enable this feature, the DHCP packets received from the client are sent to the controller and forwarded to the corresponding VLAN base on the controller.
enable	Enables central DHCP on a FlexConnect WLAN.
disable	Disables central DHCP on a FlexConnect WLAN.
nat-pat	Configures Network Address Translation (NAT) and Port Address Translation (PAT) on local switching FlexConnect WLAN.
enable	Enables NAT-PAT on the FlexConnect WLAN.
disable	Disables NAT-PAT on the FlexConnect WLAN.
override	Specifies the DHCP override options on the FlexConnect WLAN.
option dns	Specifies the override DNS option on the FlexConnect WLAN. When enabled, the clients get their DNS server IP address from the AP, not from the controller.
enable	Enables the override DNS option on the FlexConnect WLAN.
disable	Disables the override DNS option on the FlexConnect WLAN.

Command Default

This feature is disabled.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	This command supports only IPv4 address format.

Usage Guidelines

When you enable the **config wlan flexconnect local-switching** command, the **config wlan flexconnect learn-ipaddr** command is enabled by default.



Note This command is valid only for IPv4.



Note The ability to disable IP address learning is not supported with FlexConnect central switching.

The following example shows how to enable WLAN 6 for local switching and enable central DHCP and NAT-PAT:

```
(Cisco Controller) >config wlan flexconnect local-switching 6 enable central-dhcp enable nat-pat enable
```

The following example shows how to enable the override DNS option on WLAN 6:

```
(Cisco Controller) >config wlan flexconnect local-switching 6 override option dns enable
```

config wlan override-rate-limit

To override the bandwidth limits for upstream and downstream traffic per user and per service set identifier (SSID) defined in the QoS profile, use the **config wlan override-rate-limit** command.

```
config wlan override-rate-limit wlan_id { average-data-rate | average-realtime-rate | burst-data-rate | burst-realtime-rate } { per-ssid | per-client } { downstream | upstream } rate
```

Syntax Description

<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
average-data-rate	Specifies the average data rate for TCP traffic per user or per SSID. The range is from 0 to 51,200 Kbps.
average-realtime-rate	Specifies the average real-time data rate for UDP traffic per user or per SSID. The range is from 0 to 51,200 Kbps.
burst-data-rate	Specifies the peak data rate for TCP traffic per user or per SSID. The range is from 0 to 51,200 Kbps.
burst-realtime-rate	Specifies the peak real-time data rate for UDP traffic per user or per SSID. The range is from 0 to 51,200 Kbps.
per-ssid	Configures the rate limit for an SSID per radio. The combined traffic of all clients will not exceed this limit.
per-client	Configures the rate limit for each client associated with the SSID.
downstream	Configures the rate limit for downstream traffic.

upstream	Configures the rate limit for upstream traffic.
<i>rate</i>	Data rate for TCP or UDP traffic per user or per SSID. The range is form 0 to 51,2000 Kbps. A value of 0 imposes no bandwidth restriction on the QoS profile.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

The rate limits are enforced by the controller and the AP. For central switching, the controller handles the downstream enforcement of per-client rate limit and the AP handles the enforcement of the upstream traffic and per-SSID rate limit for downstream traffic. When the AP enters standalone mode it handles the downstream enforcement of per-client rate limits too.

In FlexConnect local switching and standalone modes, per-client and per-SSID rate limiting is done by the AP for downstream and upstream traffic. However, in FlexConnect standalone mode, the configuration is not saved on the AP, so when the AP reloads, the configuration is lost and rate limiting does not happen after reboot.

For roaming clients, if the client roams between the APs on the same controller, same rate limit parameters are applied on the client. However, if the client roams from an anchor to a foreign controller, the per-client downstream rate limiting uses the parameters configured on the anchor controller while upstream rate limiting uses the parameters of the foreign controller.

The following example shows how to configure the burst real-time actual rate 2000 Kbps for the upstream traffic per SSID:

```
(Cisco Controller) >config wlan override-rate-limit 2 burst-realtime-rate per-ssid upstream 2000
```

config wlan interface

To configure a wireless LAN interface or an interface group, use the **config wlan interface** command.

```
config wlan interface {wlan_id | foreignAp} {interface-name | interface-group-name}
```

Syntax Description	
<i>wlan_id</i>	(Optional) Wireless LAN identifier (1 to 512).
foreignAp	Specifies third-party access points.
<i>interface-name</i>	Interface name.
<i>interface-group-name</i>	Interface group name.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure an interface named VLAN901:

```
(Cisco Controller) >config wlan interface 16 VLAN901
```

config wlan ipv6 acl

To configure IPv6 access control list (ACL) on a wireless LAN, use the **config wlan ipv6 acl** command.

config wlan ipv6 acl *wlan_id* *acl_name*

Syntax Description		
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
	<i>acl_name</i>	IPv6 ACL name.

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure an IPv6 ACL for local switching:

```
(Cisco Controller) >config wlan ipv6 acl 22 acl_sample
```

config wlan kts-cac

To configure the Key Telephone System-based CAC policy for a WLAN, use the **config wlan kts-cac** command.

config wlan kts-cac {**enable** | **disable**} *wlan_id*

Syntax Description		
	enable	Enables the KTS-based CAC policy.
	disable	Disables the KTS-based CAC policy.
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

To enable the KTS-based CAC policy for a WLAN, ensure that you do the following:

- Configure the QoS profile for the WLAN to Platinum by entering the following command:
config wlan qos *wlan-id* platinum
- Disable the WLAN by entering the following command:
config wlan disable *wlan-id*
- Disable FlexConnect local switching for the WLAN by entering the following command:
config wlan flexconnect local-switching *wlan-id* disable

The following example shows how to enable the KTS-based CAC policy for a WLAN with the ID 4:

```
(Cisco Controller) >config wlan kts-cac enable 4
```

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

add	Adds a link to a configured LDAP server.
<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
<i>server_id</i>	LDAP server index.
delete	Removes the link to a configured LDAP server.
all	Specifies all LDAP servers.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to add a link to a configured LDAP server with the WLAN ID 100 and server ID 4:

```
(Cisco Controller) >config wlan ldap add 100 4
```

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	enable	Enables band selection on a wireless LAN.
	disable	Disables band selection on a wireless LAN.
	wlan_id	Wireless LAN identifier between 1 and 512.
Command Default	Load balancing is enabled by default.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable band selection on a wireless LAN with WLAN ID 3:

```
(Cisco Controller) >config wlan load-balance allow enable 3
```

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 from 1 to 512.
	foreignAp	Specifies third-party access points.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the MAC filtering on WLAN ID 1:

```
(Cisco Controller) >config wlan mac-filtering enable 1
```

config wlan max-associated-clients

To configure the maximum number of client connections on a wireless LAN, guest LAN, or remote LAN, use the **config wlan max-associated-clients** command.

config wlan max-associated-clients *max_clients wlan_id*

Syntax Description	<i>max_clients</i>	Maximum number of client connections to be accepted.
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to specify the maximum number of client connections on WLAN ID 2:

```
(Cisco Controller) >config wlan max-associated-clients 25 2
```

config wlan max-radio-clients

To configure the maximum number of WLAN client per access point, use the **config wlan max-radio-clients** command.

config wlan max-radio-clients *max_radio_clients wlan_id*

Syntax Description	<i>max_radio_clients</i>	Maximum number of client connections to be accepted per access point radio. The valid range is from 1 to 200.
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to specify the maximum number of client connections per access point radio on WLAN ID 2:

```
(Cisco Controller) >config wlan max-radio-clients 25 2
```

config wlan media-stream

To configure multicast-direct for a wireless LAN media stream, use the **config wlan media-stream** command.

```
config wlan media-stream multicast-direct { wlan_id | all } { enable | disable }
```

Syntax Description	multicast-direct	Configures multicast-direct for a wireless LAN media stream.
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
	all	Configures the wireless LAN on all media streams.
	enable	Enables global multicast to unicast conversion.
	disable	Disables global multicast to unicast conversion.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable the global multicast-direct media stream with WLAN ID 2:

```
(Cisco Controller) >config wlan media-stream multicast-direct 2 enable
```

config wlan mfp

To configure management frame protection (MFP) options for the wireless LAN, use the **config wlan mfp** command.

```
config wlan mfp { client [enable | disable] wlan_id | infrastructure protection [enable | disable] wlan_id }
```

Syntax Description	client	Configures client MFP for the wireless LAN.
	enable	(Optional) Enables the feature.
	disable	(Optional) Disables the feature.
	<i>wlan_id</i>	Wireless LAN identifier (1 to 512).

infrastructure protection (Optional) Configures the infrastructure MFP for the wireless LAN.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure client management frame protection for WLAN ID 1:

```
(Cisco Controller) >config wlan mfp client enable 1
```

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_addr priority priority-number*

Syntax Description		
add		Enables MAC filtering on a wireless LAN.
delete		Disables MAC filtering on a wireless LAN.
<i>wlan_id</i>		Wireless LAN identifier between 1 and 512.
<i>ip_addr</i>		Member switch IPv4 address for anchoring the wireless LAN.
priority		Sets priority to the anchored wireless LAN IP address.
<i>priority-number</i>		Range between 1 to 3.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports only IPv4 address format.
	8.1	priority <i>priority number</i> parameter introduced.

The following example shows how to configure and set priority to the mobility wireless LAN anchor list with WLAN ID 4 and IPv4 address 192.168.0.14

```
(Cisco Controller) >config wlan mobility anchor add 4 192.168.0.14 priority 1
```

Related Commands `show wlan`

config wlan mobility foreign-map

To configure interfaces or interface groups for foreign controllers, use the **config wlan mobility foreign-map** command.

```
config wlan mobility foreign-map {add | delete} wlan_id foreign_mac_address {interface_name | interface_group_name}
```

Syntax Description	add	delete	wlan_id	foreign_mac_address	interface_name	interface_group_name
	Adds an interface or interface group to the map of foreign controllers.	Deletes an interface or interface group from the map of foreign controllers.	Wireless LAN identifier from 1 to 512.	Foreign switch MAC address on a WLAN.	Interface name up to 32 alphanumeric characters.	Interface group name up to 32 alphanumeric characters.
Command Default	None					
Command History	Release	Modification				
	7.6	This command was introduced in a release earlier than Release 7.6.				

The following example shows how to add an interface group for foreign controllers with WLAN ID 4 and a foreign switch MAC address on WLAN 00:21:1b:ea:36:60:

```
(Cisco Controller) >config wlan mobility foreign-map add 4 00:21:1b:ea:36:60 mygroup1
```

config wlan multicast buffer

To configure the radio multicast packet buffer size, use the **config wlan multicast buffer** command.

```
config wlan multicast buffer {enable | disable} buffer-size
```

Syntax Description	enable	disable	buffer-size	wlan_id
	Enables the multicast interface feature for a wireless LAN.	Disables the multicast interface feature on a wireless LAN.	Radio multicast packet buffer size. The range is from 30 to 60. Enter 0 to indicate APs will dynamically adjust the number of buffers allocated for multicast.	Wireless LAN identifier between 1 and 512.
Command Default	The default buffer size is 30			

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure radio multicast buffer settings:

```
(Cisco Controller) >config wlan multicast buffer enable 45 222
```

config wlan multicast interface

To configure a multicast interface for a wireless LAN, use the **config wlan multicast interface** command.

config wlan multicast interface *wlan_id* {**enable** | **disable**} *interface_name*

Syntax Description		
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
	enable	Enables multicast interface feature for a wireless LAN.
	delete	Disables multicast interface feature on a wireless LAN.
	<i>interface_name</i>	Interface name.
	Note	The interface name can only be specified in lower case characters.

Command Default Multicast is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the multicast interface feature for a wireless LAN with WLAN ID 4 and interface name myinterface1:

```
(Cisco Controller) >config wlan multicast interface 4 enable myinterface1
```

config wlan nac

To enable or disable Network Admission Control (NAC) out-of-band support for a WLAN, use the **config wlan nac** command.

config wlan nac {**snmp** | **radius**} {**enable** | **disable**} *wlan_id*

Syntax Description		
	snmp	Configures SNMP NAC support.
	radius	Configures RADIUS NAC support.
	enable	Enables NAC for the WLAN.

disable	Disables NAC for the WLAN.
----------------	----------------------------

<i>wlan_id</i>	WLAN identifier from 1 to 512.
----------------	--------------------------------

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

You should enable AAA override before you enable the RADIUS NAC state. You also should disable FlexConnect local switching before you enable the RADIUS NAC state.

The following example shows how to configure SNMP NAC support for WLAN 13:

```
(Cisco Controller) >config wlan nac snmp enable 13
```

The following example shows how to configure RADIUS NAC support for WLAN 34:

```
(Cisco Controller) >config wlan nac radius enable 20
```

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

enable	Enables the passive-client feature on a WLAN.
disable	Disables the passive-client feature on a WLAN.
<i>wlan_id</i>	WLAN identifier between 1 and 512.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to configure the passive client on wireless LAN ID 2:

```
(Cisco Controller) >config wlan passive-client enable 2
```

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	disable	Disables peer-to-peer blocking and bridge traffic locally within the controller whenever possible.
	drop	Causes the controller to discard the packets.
	forward-upstream	Causes the packets to be forwarded on the upstream VLAN. The device above the controller decides what action to take regarding the packets.
	<i>wlan_id</i>	WLAN identifier between 1 and 512.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the peer-to-peer blocking for WLAN ID 1:

```
(Cisco Controller) >config wlan peer-blocking disable 1
```

config wlan profiling

To configure client profiling on a WLAN, use the **config wlan profiling** command.

```
config wlan profiling { local | radius } { all | dhcp | http } { enable | disable } wlan_id
```

Syntax Description	local	Configures client profiling in Local mode for a WLAN.
	radius	Configures client profiling in RADIUS mode on a WLAN.
	all	Configures DHCP and HTTP client profiling in a WLAN.
	dhcp	Configures DHCP client profiling alone in a WLAN.
	http	Configures HTTP client profiling in a WLAN.

enable	Enables the specific type of client profiling in a WLAN. When you enable HTTP profiling, the controller collects the HTTP attributes of clients for profiling. When you enable DHCP profiling, the controller collects the DHCP attributes of clients for profiling.
disable	Disables the specific type of client profiling in a WLAN.
<i>wlan_id</i>	Wireless LAN identifier from 1 to 512.

Usage Guidelines

Ensure that you have disabled the WLAN before configuring client profiling on the WLAN.

Command Default

Client profiling is disabled.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

Only clients connected to port 80 for HTTP can be profiled. IPv6 only clients are not profiled.

If a session timeout is configured for a WLAN, clients must send the HTTP traffic before the configured timeout to get profiled.

This feature is not supported on the following:

- FlexConnect Standalone mode
- FlexConnect Local Authentication

The following example shows how to enable both DHCP and HTTP profiling on a WLAN:

```
(Cisco Controller) >config wlan profiling radius all enable 6
                        HTTP Profiling successfully enabled.
                        DHCP Profiling successfully enabled.
```

config wlan qos

To change the quality of service (QoS) for a wireless LAN, use the **config wlan qos** command.

```
config wlan qos wlan_id {bronze | silver | gold | platinum}
config wlan qos foreignAp {bronze | silver | gold | platinum}
```

Syntax Description

<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
bronze	Specifies the bronze QoS policy.
silver	Specifies the silver QoS policy.
gold	Specifies the gold QoS policy.
platinum	Specifies the platinum QoS policy.

foreignAp	Specifies third-party access points.
------------------	--------------------------------------

Command Default

The default QoS policy is silver.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the highest level of service on wireless LAN 1:

```
(Cisco Controller) >config wlan qos 1 gold
```

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

<i>wlan_id</i>	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.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the wireless LAN on all radio bands:

```
(Cisco Controller) >config wlan radio 1 all
```

config wlan radius_server acct

To configure RADIUS accounting servers of a WLAN, use the **config wlan radius_server acct** command.

config wlan radius_server acct { **enable** | **disable** } *wlan_id* | **add** *wlan_id server_id* | **delete** *wlan_id* { **all** | *server_id* } | **framed-ipv6** { **address** | **both** | **prefix** } *wlan_id* }

Syntax Description

enable	Enables RADIUS accounting for the WLAN.
---------------	---

disable	Disables RADIUS accounting for the WLAN.
<i>wlan_id</i>	Wireless LAN identifier from 1 to 512.
add	Adds a link to a configured RADIUS accounting server.
<i>server_id</i>	RADIUS server index.
delete	Deletes a link to a configured RADIUS accounting server.
address	Configures an accounting framed IPv6 attribute to an IPv6 address.
both	Configures the accounting framed IPv6 attribute to an IPv6 address and prefix.
prefix	Configures the accounting framed IPv6 attribute to an IPv6 prefix.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable RADIUS accounting for the WLAN 2:

```
(Cisco Controller) >config wlan radius_server acct enable 2
```

The following example shows how to add a link to a configured RADIUS accounting server:

```
(Cisco Controller) > config wlan radius_server acct add 2 5
```

config wlan radius_server acct interim-update

To configure the interim update of a RADIUS accounting server of a WLAN, use the **config wlan radius_server acct interim-update** command.

config wlan radius_server acct interim-update { **enable** | **disable** | *interval* } *wlan_id*

Syntax Description

interim-update	Configures the interim update of the RADIUS accounting server.
enable	Enables interim update of the RADIUS accounting server for the WLAN.
disable	Disables interim update of the RADIUS accounting server for the WLAN.
<i>interval</i>	Interim update interval that you specify. The valid range is 60 to 3600 seconds.
<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.

Command Default

Interim update of a RADIUS accounting sever is set at 600 seconds.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to specify an interim update of 200 seconds to a RADIUS accounting server of WLAN 2:

```
(Cisco Controller) >config wlan radius_server acct interim-update 200 2
```

config wlan radius_server auth

To configure RADIUS authentication servers of a WLAN, use the **config wlan radius_server auth** command.

config wlan radius_server auth { **enable** *wlan_id* | **disable** *wlan_id* } { **add** *wlan_id server_id* | **delete** *wlan_id* { **all** | *server_id* } }

Syntax Description		
auth		Configures a RADIUS authentication
enable		Enables RADIUS authentication for this WLAN.
<i>wlan_id</i>		Wireless LAN identifier from 1 to 512.
disable		Disables RADIUS authentication for this WLAN.
add		Adds a link to a configured RADIUS server.
<i>server_id</i>		RADIUS server index.
delete		Deletes a link to a configured RADIUS server.
all		Deletes all links to configured RADIUS servers.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to add a link to a configured RADIUS authentication server with WLAN ID 1 and Server ID 1:

```
(Cisco Controller) >config wlan radius_server auth add 1 1
```

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 { **apgroup** | **enable** | **disable** | **wlan** } *wlan_id*

Syntax Description	apgroup	Enables AP group's interface for all RADIUS traffic on the WLAN.
	enable	Enables RADIUS dynamic interface for this WLAN.
	disable	Disables RADIUS dynamic interface for this WLAN.
	wlan	Enables WLAN's interface for all RADIUS traffic on the WLAN.
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable RADIUS dynamic interface for a WLAN with an ID 1:

```
(Cisco Controller) >config wlan radius_server overwrite-interface enable 1
```

config wlan roamed-voice-client re-anchor

To configure a roamed voice client's reanchor policy, use the **config wlan roamed-voice-client re-anchor** command.

config wlan roamed-voice-client re-anchor { **enable** | **disable** } *wlan_id*

Syntax Description	enable	Enables the roamed client's reanchor policy.
	disable	Disables the roamed client's reanchor policy.
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.

Command Default	The roamed client reanchor policy is disabled.
------------------------	--

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable a roamed voice client's reanchor policy where WLAN ID is 1:

```
(Cisco Controller) >config wlan roamed-voice-client re-anchor enable 1
```

config wlan sip-cac disassoc-client

To enable client disassociation in case of session initiation protocol (SIP) call admission control (CAC) failure, use the **config wlan sip-cac disassoc-client** command.

```
config wlan sip-cac disassoc-client {enable | disable} wlan_id
```

Syntax Description	enable	Enables a client disassociation on a SIP CAC failure.
	disable	Disables a client disassociation on a SIP CAC failure.
	wlan_id	Wireless LAN identifier between 1 and 512.
Command Default	Client disassociation for SIP CAC is disabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable a client disassociation on a SIP CAC failure where the WLAN ID is 1:

```
(Cisco Controller) >config wlan sip-cac disassoc-client enable 1
```

config wlan sip-cac send-486busy

To configure sending session initiation protocol (SIP) 486 busy message if a SIP call admission control (CAC) failure occurs, use the **config wlan sip-cac send-486busy** command:

```
config wlan sip-cac send-486busy {enable | disable} wlan_id
```

Syntax Description	enable	Enables sending a SIP 486 busy message upon a SIP CAC failure.
	disable	Disables sending a SIP 486 busy message upon a SIP CAC failure.
	wlan_id	Wireless LAN identifier between 1 and 512.
Command Default	Session initiation protocol is enabled by default.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable sending a SIP 486 busy message upon a SIP CAC failure where the WLAN ID is 1:

```
(Cisco Controller) >config wlan sip-cac send-busy486 enable 1
```

config wlan security wpa3

To configure WPA3 on a WLAN, use the **config wlan security wpa wpa3** command.

```
config wlan security wpa wpa3 {enable | disable} wlan-id
```

Syntax Description	enable	Enables WPA3 on a WLAN.
	disable	Disables WPA3 on a WLAN.
<i>wlan-id</i>	Wireless LAN identifier between 1 and 512.	
Command Default	None	
Command History	Release	Modification
	8.10	This command was introduced.

Examples

The following example shows you how to enable WPA3 on a WLAN whose ID is 4:

```
(Cisco Controller) > config wlan security wpa wpa3 enable 4
```

config wlan session-timeout

To change the timeout of wireless LAN clients, use the **config wlan session-timeout** command.

```
config wlan session-timeout {wlan_id | foreignAp} seconds
```

Syntax Description	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
	foreignAp	Specifies third-party access points.

seconds Timeout or session duration in seconds. A value of zero is equivalent to no timeout.

Note The range of session timeout depends on the security type:

- Open system: 0-65535 (sec)
- 802.1x: 300-86400 (sec)
- static wep: 0-65535 (sec)
- cranite: 0-65535 (sec)
- fortress: 0-65535 (sec)
- CKIP: 0-65535 (sec)
- open+web auth: 0-65535 (sec)
- web pass-thru: 0-65535 (sec)
- wpa-psk: 0-65535 (sec)
- disable: To disable reauth/session-timeout timers.

Command Default

None

Usage Guidelines

For 802.1X client security type, which creates the PMK cache, the maximum session timeout that can be set is 86400 seconds when the session timeout is disabled. For other client security such as open, WebAuth, and PSK for which the PMK cache is not created, the session timeout value is shown as infinite when session timeout is disabled.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the client timeout to 6000 seconds for WLAN ID 1:

```
(Cisco Controller) >config wlan session-timeout 1 6000
```

config wlan user-idle-threshold

To configure the threshold data sent by the client during the idle timeout for client sessions for a WLAN, use the **config wlan user-idle-threshold** command.

config wlan user-idle-threshold *bytes wlan_id*

Syntax Description

bytes Threshold data sent by the client during the idle timeout for the client session for a WLAN. If the client send traffic less than the defined threshold, the client is removed on timeout. The range is from 0 to 10000000 bytes.

wlan_id Wireless LAN identifier between 1 and 512.

Command Default The default timeout for threshold data sent by client during the idle timeout is 0 bytes.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the threshold data sent by the client during the idle timeout for client sessions for a WLAN:

```
(Cisco Controller) >config wlan user-idle-threshold 100 1
```

config wlan usertimeout

To configure the timeout for idle client sessions for a WLAN, use the **config wlan usertimeout** command.

config wlan usertimeout *timeout wlan_id*

Syntax Description	<i>timeout</i>	Timeout for idle client sessions for a WLAN. If the client sends traffic less than the threshold, the client is removed on timeout. The range is from 15 to 100000 seconds.
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.

Command Default The default client session idle timeout is 300 seconds.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines The timeout value that you configure here overrides the global timeout that you define using the command **config network usertimeout**.

The following example shows how to configure the idle client sessions for a WLAN:

```
(Cisco Controller) >config wlan usertimeout 100 1
```

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** }

Syntax Description	<i>wlan_id</i>	Wireless LAN identifier (1 to 512).
	enable	Enables web authentication exclusion.
	disable	Disables web authentication exclusion.

Command Default Disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable the web authentication exclusion for WLAN ID 5:

```
(Cisco Controller) >config wlan webauth-exclude 5 enable
```

config wlan wmm

To configure Wi-Fi Multimedia (WMM) mode on a wireless LAN, use the **config wlan wmm** command.

```
config wlan wmm {allow | disable | require} wlan_id
```

Syntax Description	allow	Allows WMM on the wireless LAN.
	disable	Disables WMM on the wireless LAN.
	require	Specifies that clients use WMM on the specified wireless LAN.
	<i>wlan_id</i>	Wireless LAN identifier (1 to 512).

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to configure wireless LAN ID 1 to allow WMM:

```
(Cisco Controller) >config wlan wmm allow 1
```

The following example shows how to configure wireless LAN ID 1 to specify that clients use WMM:

```
(Cisco Controller) >config wlan wmm require 1
```

Configure Wireless LAN HotSpot Commands

Use the **config wlan hotspot** commands to configure HotSpot and 802.11u parameters on a WLAN.

config wlan hotspot

To configure a HotSpot on a WLAN, use the **config wlan hotspot** command.

config wlan hotspot { **clear-all** *wlan_id* | **dot11u** | **hs2** | **msap** }

Syntax Description	
clear-all	Clears the HotSpot configurations on a WLAN.
<i>wlan_id</i>	Wireless LAN identifier from 1 to 512.
dot11u	Configures an 802.11u HotSpot on a WLAN.
hs2	Configures HotSpot2 on a WLAN.
msap	Configures the Mobility Services Advertisement Protocol (MSAP) on a WLAN.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines You can configure up to 32 HotSpot WLANs.

The following example shows how to configure HotSpot2 for a WLAN:

```
(Cisco Controller) >config wlan hotspot hs2 enable 2
```

config wlan hotspot dot11u

To configure an 802.11u HotSpot on a WLAN, use the **config wlan hotspot dot11u** command.

config wlan hotspot dot11u { **3gpp-info** | **auth-type** | **enable** | **disable** | **domain** | **hessid** | **ipaddr-type** | **nai-realm** | **network-type** | **roam-oi** }

Syntax Description	
3gpp-info	Configures 3GPP cellular network information.
auth-type	Configures the network authentication type.
disable	Disables 802.11u on the HotSpot profile.
domain	Configures a domain.
enable	Enables 802.11u on the HotSpot profile. IEEE 802.11u enables automatic WLAN offload for 802.1X devices at the HotSpot of mobile or roaming partners.

hessid	Configures the Homogenous Extended Service Set Identifier (HESSID). The HESSID is a 6-octet MAC address that uniquely identifies the network.
ipaddr-type	Configures the IPv4 address availability type.
nai-realm	Configures a realm for 802.11u enabled WLANs.
network-type	Configures the 802.11u network type and Internet access.
roam-oi	Configures the roaming consortium Organizational Identifier (OI) list.

Command Default

None.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	This command supports only IPv4 address format.

The following example shows how to enable 802.11u on a HotSpot profile:

```
(Cisco Controller) >config wlan hotspot dot11u enable 6
```

config wlan hotspot dot11u ipaddr-type

To configure the type of IP address available on an 802.11u HotSpot WLAN, use the **config wlan hotspot dot11u ipaddr-type** command.

config wlan hotspot dot11u ipaddr-type *IPv4Type* {0 - 7} *IPv6Type* {0 - 2} *wlan_id*

Syntax Description

<i>IPv4Type</i>	IPv4 type address. Enter one of the following values: 0—IPv4 address not available. 1—Public IPv4 address available. 2—Port restricted IPv4 address available. 3—Single NAT enabled private IPv4 address available. 4—Double NAT enabled private IPv4 address available. 5—Port restricted IPv4 address and single NAT enabled IPv4 address available. 6—Port restricted IPv4 address and double NAT enabled IPv4 address available. 7— Availability of the IPv4 address is not known.
<i>IPv6Type</i>	IPv6 type address. Enter one of the following values: 0—IPv6 address not available. 1—IPv6 address available. 2—Availability of the IPv6 address is not known.
<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.

Command Default The default values for IPv4 type address is 1.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports only IPv4 address format.

The following example shows how to configure the IP address availability type on an 802.11u HotSpot WLAN:

```
(Cisco Controller) >config wlan hotspot dot11u ipaddr-type 6 2 6
```

Related Commands show wlan

config wlan hotspot dot11u 3gpp-info

To configure 3GPP cellular network information on an 802.11u HotSpot WLAN, use the **config wlan hotspot dot11u 3gpp-info** command.

config wlan hotspot dot11u 3gpp-info {**add** | **delete**} *index country_code network_code wlan_id*

Syntax Description		
add		Adds mobile cellular network information.
delete		Deletes mobile cellular network information.
<i>index</i>		Cellular index. The range is from 1 to 32.
<i>country_code</i>		Mobile Country Code (MCC) in Binary Coded Decimal (BCD) format. The country code can be up to 3 characters. For example, the MCC for USA is 310.
<i>network_code</i>		Mobile Network Code (MNC) in BCD format. An MNC is used in combination with a Mobile Country Code (MCC) to uniquely identify a mobile phone operator or carrier. The network code can be up to 3 characters. For example, the MNC for T-Mobile is 026.
<i>wlan_id</i>		Wireless LAN identifier between 1 and 512.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines Number of mobile network codes supported is 32 per WLAN.

The following example shows how to configure 3GPP cellular network information on a WLAN:

```
(Cisco Controller) >config wlan hotspot dot11u 3gpp-info add
```

config wlan hotspot dot11u auth-type

To configure the network authentication type on an 802.11u HotSpot WLAN, use the **config wlan hotspot dot11u auth-type** command.

config wlan hotspot dot11u auth-type *network-auth wlan_id*

Syntax Description	<i>network-auth</i>	Network authentication that you would like to configure on the WLAN. The available values are as follows: <ul style="list-style-type: none"> • 0—Acceptance of terms and conditions • 1—On-line enrollment • 2—HTTP/HTTPS redirection • 3—DNS Redirection • 4—Not Applicable
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines The DNS redirection option is not supported in Release 7.3.

The following example shows how to configure HTTP/HTTPS redirection as the network authentication type on an 802.11u HotSpot WLAN:

```
(Cisco Controller) >config wlan hotspot dot11u auth-type 2 1
```

config wlan hotspot dot11u disable

To disable an 802.11u HotSpot on a WLAN, use the **config wlan hotspot dot11u disable** command.

config wlan hotspot dot11u disable *wlan_id*

Syntax Description	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable an 802.11u HotSpot on a WLAN:

```
(Cisco Controller) >config wlan hotspot dot11u disable 6
```

config wlan hotspot dot11u domain

To configure a domain operating in the 802.11 access network, use the **config wlan hotspot dot11u domain** command.

```
config wlan hotspot dot11u domain { add wlan_id domain-index domain_name | delete wlan_id domain-index | modify wlan_id domain-index domain_name }
```

Syntax Description

add	Adds a domain.
<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
<i>domain-index</i>	Domain index in the range 1 to 32.
<i>domain_name</i>	Domain name. The domain name is case sensitive and can be up to 255 alphanumeric characters.
delete	Deletes a domain.
modify	Modifies a domain.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to add a domain in the 802.11 access network:

```
(Cisco Controller) >config wlan hotspot dot11u domain add 6 30 domain1
```

config wlan hotspot dot11u enable

To enable an 802.11u HotSpot on a WLAN, use the **config wlan hotspot dot11u enable** command.

```
config wlan hotspot dot11u enable wlan_id
```

Syntax Description

<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
----------------	--

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable an 802.11u HotSpot on a WLAN:

```
(Cisco Controller) >config wlan hotspot dot11u enable 6
```


config wlan hotspot dot11u hessid

To configure a Homogenous Extended Service Set Identifier (HESSID) on an 802.11u HotSpot WLAN, use the **config wlan hotspot dot11u hessid** command.

config wlan hotspot dot11u hessid *hessid wlan_id*

Syntax Description	<i>hessid</i>	MAC address that can be configured as an HESSID. The HESSID is a 6-octet MAC address that uniquely identifies the network. For example, Basic Service Set Identification (BSSID) of the WLAN can be used as the HESSID.
	<i>wlan_id</i>	Wireless LAN identifier between 1 and 512.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure an HESSID on an 802.11u HotSpot WLAN:

```
(Cisco Controller) >config wlan hotspot dot11u hessid 00:21:1b:ea:36:60 6
```

config wlan hotspot dot11u nai-realm

To configure realms for an 802.11u HotSpot WLANs, use the **config wlan hotspot dot11u nai-realm** command.

config wlan hotspot dot11u nai-realm {**add** | **delete** | **modify**} {**auth-method** *wlan_id realm-index eap-index auth-index auth-method auth-parameter* | **eap-method** *wlan_id realm-index eap-index eap-method* | **realm-name** *wlan_id realm-index realm*}

Syntax Description	add	Adds a realm.
	delete	Deletes a realm.
	modify	Modifies a realm.
	auth-method	Specifies the authentication method used.
	<i>wlan_id</i>	Wireless LAN identifier from 1 to 512.
	<i>realm-index</i>	Realm index. The range is from 1 to 32.
	<i>eap-index</i>	EAP index. The range is from 1 to 4.
	<i>auth-index</i>	Authentication index value. The range is from 1 to 10.

<i>auth-method</i>	Authentication method to be used. The range is from 1 to 4. The following options are available: <ul style="list-style-type: none"> • 1—Non-EAP Inner Auth Method • 2—Inner Auth Type • 3—Credential Type • 4—Tunneled EAP Method Credential Type
<i>auth-parameter</i>	Authentication parameter to use. This value depends on the authentication method used. See the following table for more details.
eap-method	Specifies the Extensible Authentication Protocol (EAP) method used.
<i>eap-method</i>	EAP Method. The range is from 0 to 7. The following options are available: <ul style="list-style-type: none"> • 0—Not Applicable • 1—Lightweight Extensible Authentication Protocol (LEAP) • 2—Protected EAP (PEAP) • 3—EAP-Transport Layer Security (EAP-TLS) • 4—EAP-FAST (Flexible Authentication via Secure Tunneling) • 5—EAP for GSM Subscriber Identity Module (EAP-SIM) • 6—EAP-Tunneled Transport Layer Security (EAP-TTLS) • 7—EAP for UMTS Authentication and Key Agreement (EAP-AKA)
realm-name	Specifies the name of the realm.
<i>realm</i>	Name of the realm. The realm name should be RFC 4282 compliant. For example, Cisco. The realm name is case-sensitive and can be up to 255 alphanumeric characters.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This table lists the authentication parameters.

Table 10: Authentication Parameters

Non-EAP Inner Method(1)	Inner Authentication EAP Method Type(2)	Credential Type(3)/Tunneled EAP Credential Type(4)
0—Reserved	1—LEAP	1—SIM
1—Password authentication protocol (PAP)	2—PEAP	2—USIM
2—Challenge-Handshake Authentication Protocol (CHAP)	3—EAP-TLS	3—NFC Secure Element
3—Microsoft Challenge Handshake Authentication Protocol (MS-CHAP)	4—EAP-FAST	4—Hardware Token
4—MSCHAPV2	5—EAP-SIM	5—Soft Token
	6—EAP-TTLS	6—Certificate
	7—EAP-AKA	7—Username/Password
		8—Reserver
		9—Anonymous
		10—Vendor Specific

The following example shows how to add the Tunneled EAP Method Credential authentication method on WLAN 4:

```
(Cisco Controller) >config wlan hotspot dot11u nai-realm add auth-method 4 10 3 5 4 6
```

config wlan hotspot dot11u network-type

To configure the network type and internet availability on an 802.11u HotSpot WLAN, use the **config wlan hotspot dot11u network-type** command.

config wlan hotspot dot11u network-type *wlan_id network-type internet-access*

Syntax Description

<i>wlan_id</i>	Wireless LAN identifier from 1 to 512.
<i>network-type</i>	Network type. The available options are as follows: <ul style="list-style-type: none"> • 0—Private Network • 1—Private Network with Guest Access • 2—Chargeable Public Network • 3—Free Public Network • 4—Personal Device Network • 5—Emergency Services Only Network • 14—Test or Experimental • 15—Wildcard

internet-access Internet availability status. A value of zero indicates no Internet availability and 1 indicates Internet availability.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the network type and Internet availability on an 802.11u HotSpot WLAN:

```
(Cisco Controller) >config wlan hotspot dot11u network-type 2 1
```

config wlan hotspot dot11u roam-oi

To configure a roaming consortium Organizational Identifier (OI) list on a 802.11u HotSpot WLAN, use the **config wlan hotspot dot11u roam-oi** command.

config wlan hotspot dot11u roam-oi { **add** *wlan_id oi-index oi is-beacon* | **modify** *wlan_id oi-index oi is-beacon* | **delete** *wlan_id oi-index* }

Syntax Description		
add	Adds an OI.	
<i>wlan-id</i>	Wireless LAN identifier from 1 to 512.	
<i>oi-index</i>	Index in the range 1 to 32.	
<i>oi</i>	Number that must be a valid 6 digit hexadecimal number and 6 bytes in length. For example, 004096 or AABBDf.	
<i>is-beacon</i>	Beacon flag used to add an OI to the beacon. 0 indicates disable and 1 indicates enable. You can add a maximum of 3 OIs for a WLAN with this flag set.	
modify	Modifies an OI.	
delete	Deletes an OI.	

Command Default None.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the roaming consortium OI list:

```
(Cisco Controller) >config wlan hotspot dot11u roam-oi add 4 10 004096 1
```

config wlan hotspot hs2

To configure the HotSpot2 parameters, use the **config wlan hotspot hs2** command.

```
config wlan hotspot hs2 { disable wlan_id | enable wlan_id | operator-name { add wlan_id index operator_name language-code | delete wlan_id index | modify wlan_id index operator_name language-code } | port-config { add wlan_id port_config_index ip-protocol port-number status | delete wlan_id port-config-index | modify wlan_id port-config-index ip-protocol port-number status } | wan-metrics wlan_id link-status symet-link downlink-speed uplink-speed }
```

Syntax Description

disable	Disables HotSpot2.
<i>wlan-id</i>	Wireless LAN identifier from 1 to 512.
enable	Enables HotSpot2.
operator-name	Specifies the name of the 802.11 operator.
add	Adds the operator name, port configuration, or WAN metrics parameters to the WLAN configuration.
<i>index</i>	Index of the operator. The range is from 1 to 32.
<i>operator-name</i>	Name of the operator.
<i>language-code</i>	Language used. An ISO-14962-1997 encoded string that defines the language. This string is a three character language code. Enter the first three letters of the language in English. For example, eng for English.
delete	Deletes the operator name, port configuration, or WAN metrics parameters from the WLAN.
modify	Modifies the operator name, port configuration, or WAN metrics parameters of the WLAN.
port-config	Configures the port configuration values.
<i>port_config_index</i>	Port configuration index. The range is from 1 to 32. The default value is 1.
<i>ip-protocol</i>	Protocol to use. This parameter provides information on the connection status of the most commonly used communication protocols and ports. The following options are available: 1—ICMP 6—FTP/SSH/TLS/PPTP-VPN/VoIP 17—IKEv2 (IPSec-VPN/VoIP/ESP) 50—ESP (IPSec-VPN)

<i>port-number</i>	Port number. The following options are available: 0—ICMP/ESP (IPSec-VPN) 20—FTP 22—SSH 443—TLS-VPN 500—IKEv2 1723—PPTP-VPN 4500—IKEv2 5060—VoIP
<i>status</i>	Status of the IP port. The following options are available: 0—Closed 1—Open 2—Unknown
wan-metrics	Configures the WAN metrics.
<i>link-status</i>	Link status. The following options are available: <ul style="list-style-type: none"> • 0—Unknown • 1—Link up • 2—Link down • 3—Link in test state
<i>symet-link</i>	Symmetric link status. The following options are available: <ul style="list-style-type: none"> • 0—Link speed is different for uplink and downlink. For example: ADSL • 1—Link speed is the same for uplink and downlink. For example: DS1
<i>downlink-speed</i>	Downlink speed of the WAN backhaul link in kbps. Maximum value is 4,194,304 kbps.
<i>uplink-speed</i>	Uplink speed of the WAN backhaul link in kbps. The maximum value is 4,194,304 kbps.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the WAN metrics parameters:

```
(Cisco Controller) >config wlan hotspot hs2 wan-metrics add 345 1 0 3333
```

config wlan hotspot msap

To configure the Mobility Service Advertisement Protocol (MSAP) parameters on a WLAN, use the **config wlan hotspot msap** command.

```
config wlan hotspot msap { enable | disable | server-id server_id } wlan_id
```

Syntax Description	enable	Enables MSAP on the WLAN.
	disable	Disables MSAP on the WLAN.
	server-id	Specifies the MSAP server id.
	<i>server_id</i>	MSAP server ID. The range is from 1 to 10.
	<i>wlan_id</i>	Wireless LAN identifier from 1 to 512.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable MSAP on a WLAN:

```
(Cisco Controller) >config wlan hotspot msap enable 4
```

Configure Wireless LAN Mobile Concierge Commands

Use the **config wlan mobile-concierge** commands to enable 802.11u on a WLAN and configure the 802.11u parameters.

config wlan mobile-concierge dot11u

To enable or disable 802.11u on a WLAN, use the **config wlan mobile-concierge dot11u** command.

```
config wlan mobile-concierge dot11u {3gpp-info {add index country_code network_code wlan_id | delete index wlan_id} | disable wlan_id domain {add wlan_id domain-index domain-name | delete wlan_id | modify wlan_id domain-index domain-name} enable wlan_id hessid ip-addr-type {add ipv4_type ipv6_type wlan_id | delete wlan_id | net-auth-type network_auth_type_value wlan_id oui {add wlan_id | delete wlan_id | modify wlan_id oui-index oui-name is-beacon | params wlan_id network-type internet-bit realm {add | delete | modify}}
```

Syntax Description

3gpp-info	Configures 3GPP cellular information on the network.
add	Adds mobile cellular network information.
<i>index</i>	3GPP index in the range 1 to 32.
<i>country_code</i>	Mobile country code (BCD format).
<i>network_code</i>	Mobile network code (BCD format).
<i>wlan_id</i>	WLAN id.
delete	Deletes mobile cellular network information.
disable	Disables 802.11u.
domain	Configures a domain.
add	Adds a domain.
delete	Deletes a domain.
modify	Modifies a domain.
<i>domain-index</i>	Domain index in the range 1 to 32.
<i>domain-name</i>	Domain name.
enable	Enables 802.11u.
hessid	Configures HESSID
ip-addr-type	Configures IP address availability type.
add	Adds IP address available type information.

<i>ipv4_type</i>	IPv4 type address. Enter one of the following values: 0—IPv4 address not available 1—Public IPv4 address available 2—Port-restricted IPv4 address available 3—Single NAT enabled private IPv4 address available 4—Double NAT enabled private IPv4 address available 5—Port-restricted IPv4 address and single NAT enabled IPv4 address available 6—Port-restricted IPv4 address and double NAT enabled IPv4 address available 7— Availability of the IPv4 address is not known
<i>ipv6_type</i>	IPv6 type address. Enter one of the following values: 0—IPv6 address not available 1—IPv6 address available 2—Availability of the IPv6 address is not known
delete	Deletes the IP address available type information.
net-auth-type	Configures the Network authentication type.
<i>network-auth-type-value</i>	Network authentication that you would like to configure for this WLAN. Enter one of the following values: 0—Acceptance of terms and conditions 1—On-line enrollment 2—HTTP/HTTPS redirection
oui	Configures the Organizational Unique Identifier (OUI).
add	Adds an OUI.
delete	Deletes an OUI.
modify	Modifies an OUI.
<i>oui-index</i>	OUI index in the range 1–32.
<i>oui-name</i>	OUI name. The OUI must be a valid 6 digit number.
<i>is-beacon</i>	OUI presence that should contain the beacon. Valid values are 0 (disable) and 1 (enable).
params	Configures 802.11u parameters.

<i>network-type</i>	Network type. Enter one of the following values: 0—Private Network 1—Private Network with Guest Access 2—Chargeable Public Network 3—Free Public Network 4—Personal Device Network 5—Emergency Services Only Network 14—Test or Experimental 15—Wildcard
<i>internet-bit</i>	If Internet is available. Valid values are 0 (no) and 1 (yes).
realm	Configures the realm.

Command Default

None.

This example shows how to configure client management frame protection for WLAN ID 1:

```
> config wlan mobile-concierge dot11u enable 1
```

Related Commands

config wlan mobile-concierge dot11u realm

config wlan mobile-concierge hotspot2

config wlan mobile-concierge msap

config wlan mobile-concierge dot11u realm

To configure realms for your 802.11u enabled WLANs, use the **config wlan mobile-concierge dot11u realm** command.

```
config wlan mobile-concierge dot11u realm { add | delete | modify } { auth-method wlan_id realm-index eap-index auth-index auth-method auth-parameter | eap-method wlan_id realm-index eap-index eap-method | realm-name wlan_id realm-index realm }
```

Syntax Description

add	Adds a realm.
delete	Deletes a realm.
modify	Modifies a realm.
auth-method	Specifies the authentication method used.
eap-method	Specifies the EAP method used.
realm-name	Specifies the name of the realm to add, delete, or modify.

<i>wlan_id</i>	WLAN ID.
<i>realm-index</i>	Realm index. The range is 1-32
<i>eap-index</i>	EAP index. The range is 1-4.
<i>auth-index</i>	Authentication index value. The range is 1-10.
<i>auth-method</i>	Authentication method to be used. The range is 1-4. The following options are available: 1—Non-Eap Inner Auth Method 2—Inner Auth Type 3—Credential Type 4—Tunneled EAP Method Credential Type
<i>auth-parameter</i>	Authentication parameter to use. This value depends on the auth-method used.

Command Default

None.

This example shows how to add a new realm with EAP-Method and inner authentication type as EAP-TLS for WLAN ID 3:

```
> config wlan mobile-concierge dot11u realm add eap-method 3 22 2 3
```

Related Commands

config wlan mobile-concierge dot11u
config wlan mobile-concierge hotspot2
config wlan mobile-concierge msap

config wlan mobile-concierge hotspot2

To configure the hotspot2 parameters, use the **config wlan mobile-concierge hotspot2** command.

```
config wlan mobile-concierge hotspot2 {disable | enable | operator-name {add wlan_id index operator_name language-code | delete wlan_id index-name | modify wlan_id index operator_name language-code} | port-config {add wlan_id index ip-protocol port-number status | delete wlan_id port-config-index | modify wlan_id port-config-index ip-protocol port-number status} | wan-metrics {add wlan_id link-status symet-link downlink-speed uplink-speed | delete wlan_id}}
```

Syntax Description

disable	Disables HotSpot2.
enable	Enables HotSpot2.
operator-name	Specifies the name of the 802.11an operator.
add	Adds the operator-name, port-config, or wan-metrics parameters on the WLAN.

<i>wlan-id</i>	WLAN identifier.
<i>index</i>	Index of the operator. The range is 1-32.
<i>operator-name</i>	Name of the operator.
<i>language-code</i>	Language used. An ISO-14962-1997 encoded string that defines the language. This string is a three character language code. Enter the first three letters of the language in English (for example, eng for English).
delete	Deletes the operator-name, port-config, or wan-metrics parameters on the WLAN.
modify	Modifies the operator-name, port-config, or wan-metrics parameters on the WLAN.
port-config	Configures the port configuration values.
<i>ip-protocol</i>	Protocol to use. The following options are available: 1—ICMP 6—FTP/SSH/TLS/PPTP-VPN/VoIP 17—IKEv2 (IPSec-VPN/VoIP/ESP) 50—ESP (IPSec-VPN)
<i>port-number</i>	Port number. The following options are available: 0—ICMP/ESP (IPSec-VPN) 20—FTP 22—SSH 443—TLS-VPN 500—IKEv2 1723—PPTP-VPN 4500—IKEv2 5060—VoIP
<i>status</i>	Sets the status. The following options are available: 0—Closed 1—Open 2—Unknown
<i>port-config-index</i>	Port config index. The range is 1–10.
wan-metrics	Configures the WAN metrics.

<i>link-status</i>	Link status. The following options are available: <ul style="list-style-type: none"> • Link up • Link down • Link in test state
<i>symet-link</i>	Specifies the symmetric link status. The following options are available: <ul style="list-style-type: none"> • 0—link speed is different for the uplink and downlink. For example: ADSL • 1—link speed for the same in uplink and downlink. For example: DS1
<i>downlink-speed</i>	Speed of the WAN backhaul link in kbps. Maximum value is 4,194,304 kbps.
<i>uplink-speed</i>	Speed of the WAN backhaul link in kbps. The maximum value is 4,194,304 kbps.

This example shows how to configure the WAN metrics parameters:

```
> config wlan mobile-concierge hotspot2 wan-metrics add 345 1 0 3333
```

Related Commands

- config wlan mobile-concierge dot11u
- config wlan mobile-concierge msap

config wlan mobile-concierge msap

To configure the Mobility Service Advertisement Protocol (MSAP) parameters on a WLAN, use the **config wlan mobile-concierge msap** command.

```
config wlan mobile-concierge msap {enable | disable | server-id server-id} wlan-id
```

Syntax Description	enable	Enables MSAP on the WLAN.
	disable	Disables MSAP on the WLAN.
	<i>server-id</i>	Server ID to assign.
	<i>wlan-id</i>	WLAN identifier.

Command Default None.

This example show how to configure an MSAP server ID for WLAN 331.

```
> config wlan mobile-concierge msap server-id 32 331
```

Related Commands config wlan mobile-concierge dot11u
 config wlan mobile-concierge hotspot2

Configure Wireless LAN Proxy Mobility IPv6 (PMIPv6) Commands

Use the **config wlan pmipv6** commands to configure PMIPv6 on WLANs.

config wlan pmipv6 default-realm

To configure a default realm for a PMIPv6 WLAN, use the **config wlan pmipv6 default-realm** command.

```
config wlan pmipv6 default-realm { default-realm-name | none } wlan_id
```

Syntax Description

default-realm-name Default realm name for the WLAN.

none Clears the realm name for the WLAN.

wlan_id Wireless LAN identifier between 1 and 512.

Command Default

None.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a default realm name on a PMIPv6 WLAN:

```
(Cisco Controller) >config wlan pmipv6 default-realm XYZ 6
```

config wlan pmipv6 mobility-type

To configure the mobility type on a WLAN, use the **config wlan pmipv6 mobility-type** command.

```
config wlan pmipv6 mobility-type { none | pmipv6 } { wlan_id | all }
```

Syntax Description

none Configures a WLAN with Simple IP mobility.

pmipv6 Configures a WLAN with PMIPv6 mobility.

all Enables the specified type of mobility for all WLANs.

wlan_id WLAN identifier between 1 and 512.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines You must disable the WLAN when you configure the mobility type.

The following example shows how to configure the mobility type as PMIPv6 on a WLAN:

```
(Cisco Controller) >config wlan pmipv6 mobility-type pmipv6 16
```

config wlan pmipv6 profile_name

To configure a profile name for the PMIPv6 WLAN, use the **config wlan pmipv6 profile_name** command.

```
config wlan pmipv6 profile_name profile_name wlan_id
```

Syntax Description	
<i>profile_name</i>	Profile name for the PMIPv6 WLAN.
<i>wlan_id</i>	Wireless LAN identifier from 1 to 512.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This command binds a profile name to the PMIPv6 WLAN or SSID. Each time that a mobile node associates with the controller, it uses the profile name and NAI in the trigger to the PMIPV6 module. The PMIPV6 module extracts all the profile specific parameters such as LMA IP, APN, and NAI and sends the PBU to the ASR5K.

The following example shows how to create a profile named ABC01 on a PMIPv6 WLAN:

```
(Cisco Controller) >config wlan pmipv6 profile_name ABC01 16
```


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.

config wps ap-authentication [**enable** | **disable** **threshold** *threshold_value*]

Syntax Description		
enable		(Optional) Enables WMM on the wireless LAN.
disable		(Optional) Disables WMM on the wireless LAN.
threshold		(Optional) Specifies that WMM-enabled clients are on the wireless LAN.
<i>threshold_value</i>		Threshold value (1 to 255).

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the access point neighbor authentication:

```
(Cisco Controller) > config wps ap-authentication threshold 25
```

Related Commands `show wps ap-authentication summary`

config wps auto-immune

To enable or disable protection from Denial of Service (DoS) attacks, use the **config wps auto-immune** command.

config wps auto-immune {**enable** | **disable** | **stop**}

Syntax Description		
enable		Enables the auto-immune feature.
disable		Disables the auto-immune feature.
stop		Stops dynamic auto-immune feature.

Command Default Disabled

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to configure the auto-immune mode:

```
(Cisco Controller) > config wps auto-immune enable
```

The following example shows how to stop the auto-immune mode:

```
(Cisco Controller) > config wps auto-immune stop
Dynamic Auto Immune by WIPS is stopped
```

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 sha1 fingerprint] }
```

Syntax Description		
add		(Optional) Configures a new IDS sensor.
<i>index</i>		IDS sensor internal index.
<i>ip_address</i>		IDS sensor IP address.
<i>username</i>		IDS sensor username.
<i>password</i>		IDS sensor password.
delete		(Optional) Deletes an IDS sensor.
enable		(Optional) Enables an IDS sensor.
disable		(Optional) Disables an IDS sensor.
port		(Optional) Configures the IDS sensor's port number.

802.1x-auth	Specifies that the controller excludes clients on the sixth 802.11X authentication attempt, after five consecutive failures.
ip-theft	Specifies that the control excludes clients if the IP address is already assigned to another device.
web-auth	Specifies that the controller excludes clients on the fourth web authentication attempt, after three consecutive failures.
all	Specifies that the controller excludes clients for all of the above reasons.
enable	Enables client exclusion policies.
disable	Disables client exclusion policies.

Command Default All policies are enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable clients on the 802.11 association attempt after five consecutive failures:

```
(Cisco Controller) > config wps client-exclusion 802.11-assoc disable
```

Related Commands show wps summary

config wps client-exclusion 802.1x-auth

To configure client exclusion policies, use the **config wps client-exclusion 802.1x-auth** command.

config wps client-exclusion 802.11x-auth { enable | disable | max-1x-aaa-fail-attempts }

Syntax Description	802.1x-auth	
	Specifies that the controller excludes clients on the fourth 802.11X authentication attempt, after five three failures.	
	enable	Enables client exclusion policies.
	disable	Disables client exclusion policies.

max-1x-aaa-fail-attempts	Specifies the controller to exclude clients that reaches the maximum failure 802.1X authentication attempt with the RADIUS server. The maximum failure 802.1X authentication attempt is from 1 to 3 and the default value is 3.
---------------------------------	--

Command Default All policies are enabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable clients on the 802.11 association attempt after five consecutive failures:

```
(Cisco Controller) > config wps client-exclusion 802.1x-auth max-1x-aaa-fail-attempts 2
```

Related Commands `show wps summary`

config wps mfp

To configure Management Frame Protection (MFP), use the **config wps mfp** command.

```
config wps mfp {infrastructure | ap-impersonation} {enable | disable}
```

Syntax Description		
infrastructure		Configures the MFP infrastructure.
ap-impersonation		Configures ap impersonation detection by MFP.
enable		Enables the MFP feature.
disable		Disables the MFP feature.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the infrastructure MFP:

```
(Cisco Controller) > config wps mfp infrastructure enable
```

Related Commands `show wps mfp`

config wps shun-list re-sync

To force the controller to synchronization with other controllers in the mobility group for the shun list, use the **config wps shun-list re-sync** command.

config wps shun-list re-sync

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

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the controller to synchronize with other controllers for the shun list:

```
(Cisco Controller) > 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.

config wps signature {standard | custom} state signature_id {enable | disable}

Syntax Description	standard	Configures a standard IDS signature.
	custom	Configures a standard IDS signature.
	state	Specifies the state of the IDS signature.
	<i>signature_id</i>	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.

Command Default	IDS signature processing is enabled by default.
------------------------	---

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

If IDS signature processing is disabled, all signatures are disabled, regardless of the state configured for individual signatures.

The following example shows how to enable IDS signature processing, which enables the processing of all IDS signatures:

```
(Cisco Controller) >config wps signature enable
```

The following example shows how to disable a standard individual IDS signature:

```
(Cisco Controller) > 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*

Syntax Description

<i>signature_id</i>	Identifier for the signature to be configured.
<i>frequency</i>	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.

Command Default

The *frequency* default value varies per signature.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

If IDS signature processing is disabled, all signatures are disabled, regardless of the state configured for individual signatures.

The following 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:

```
(Cisco Controller) > config wps signature frequency 4 1800
```

Related Commands	<ul style="list-style-type: none"> 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 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	<i>signature_id</i>	Identifier for the signature to be configured.
	<i>interval</i>	Number of seconds that must elapse before the signature frequency threshold is reached. The range is 1 to 3,600 seconds.

Command Default The default value of *interval* varies per signature.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines If IDS signature processing is disabled, all signatures are disabled, regardless of the state configured for individual signatures.

The following example shows how to set the number of seconds to elapse before reaching the signature frequency threshold to 200 for signature ID 1:

```
(Cisco Controller) > config wps signature interval 1 200
```

Related Commands	<ul style="list-style-type: none"> config wps signature frequency config wps signature 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*

Syntax Description	<i>signature_id</i>	Identifier for the signature to be configured.
	<i>mac_frequency</i>	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.

Command Default The *mac_frequency* default value varies per signature.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines If IDS signature processing is disabled, all signatures are disabled, regardless of the state configured for individual signatures.

The following 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:

```
(Cisco Controller) > config wps signature mac-frequency 3 50
```

Related Commands

config wps signature frequency
config wps signature interval
config wps signature
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	<i>signature_id</i>	Identifier for the signature to be configured.
	<i>quiet_time</i>	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.
Command Default	The default value of <i>quiet_time</i> varies per signature.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines If IDS signature processing is disabled, all signatures are disabled, regardless of the state configured for individual signatures.

The following 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:

```
(Cisco Controller) > 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**}

Syntax Description	<i>signature_id</i>	Identifier for the specific IDS signature to be reset.
---------------------------	---------------------	--

all	Resets all IDS signatures.
------------	----------------------------

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

If IDS signature processing is disabled, all signatures are disabled, regardless of the state configured for individual signatures.

The following example shows how to reset the IDS signature 1 to default values:

```
(Cisco Controller) > 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**

Other Config Commands

This section lists the other **config** commands to configure the controller settings.

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_type1 | aaa_server_type2]
```

Syntax Description	mgmt	Configures 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.
	<i>aaa_server_type</i>	(Optional) AAA authentication server type (local , radius , or tacacs). The local setting specifies the local database, the radius setting specifies the RADIUS server, and the tacacs setting specifies the TACACS+ server.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
Usage Guidelines	<p>You can enter two AAA server types as long as one of the server types is local. You cannot enter radius and tacacs together.</p> <p>The following example shows how to configure the AAA authentication search order for controller management users by the authentication server type local:</p> <pre>(Cisco Controller) > config aaa auth radius local</pre>	
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]
```

Syntax Description	radius	(Optional) Configures the order of authentication for RADIUS servers.
	tacacs	(Optional) Configures the order of authentication for TACACS servers.

Command Default None

Command History	Release	Modification
		7.6

The following example shows how to configure the order of authentication for the RADIUS server:

```
(Cisco Controller) > config aaa auth mgmt radius
```

The following example shows how to configure the order of authentication for the TACACS server:

```
(Cisco Controller) > 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	<i>rule_name</i>	ACL name that contains up to 32 alphanumeric characters.
Command Default	None	
Command History	Release	Modification
		7.6

Example

The following example shows how to apply an ACL to the data path:

```
(Cisco Controller) > config acl apply ac101
```

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** }

Syntax Description	start	Enables ACL counters on your controller.
	stop	Disables ACL counters on your controller.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines ACL counters are available only on the following controllers: 4400 series, Cisco WiSM, and Catalyst 3750G Integrated Wireless LAN Controller Switch.

The following example shows how to enable ACL counters on your controller:

```
(Cisco Controller) > config acl counter start
```

Related Commands

- clear acl counters**
- show acl detailed**

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	<i>rule_name</i>	Specifies the ACL name.
	wired	Specifies an ACL on wired traffic.
	wireless	Specifies an ACL on wireless traffic.
	both	Specifies an ACL on both wired and wireless traffic.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This command allows you to control the type of packets reaching the CPU.

The following example shows how to create an ACL named `acl101` on the CPU and apply it to wired traffic:

```
(Cisco Controller) > config acl cpu acl101 wired
```

Related Commands `show acl cpu`

config acl create

To create a new access control list (ACL), use the **config acl create** command.

config acl create *rule_name*

Syntax Description	<i>rule_name</i>	ACL name that contains up to 32 alphanumeric characters.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to create a new ACL:

```
(Cisco Controller) > config acl create acl101
```

Related Commands `show acl`

config acl delete

To delete an access control list (ACL), use the **config acl delete** command.

config acl delete *rule_name*

Syntax Description	<i>rule_name</i>	ACL name that contains up to 32 alphanumeric characters.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to delete an ACL named acl101 on the CPU:

```
(Cisco Controller) > config acl delete acl101
```

Related Commands `show acl`

config acl rule

To configure ACL rules, use the **config acl rule** command.

```
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	action	Configures whether to permit or deny access.
	<i>rule_name</i>	ACL name that contains up to 32 alphanumeric characters.
	<i>rule_index</i>	Rule index between 1 and 32.
	permit	Permits the rule action.
	deny	Denies the rule action.
	add	Adds a new rule.
	change	Changes a rule's index.
	index	Specifies a rule index.
	delete	Deletes a rule.

destination address	Configures a rule's destination IP address and netmask.
destination port range	Configure a rule's destination port range.
<i>ip_address</i>	IP address of the rule.
<i>netmask</i>	Netmask of the rule.
<i>start_port</i>	Start port number (between 0 and 65535).
<i>end_port</i>	End port number (between 0 and 65535).
direction	Configures a rule's direction to in, out, or any.
in	Configures a rule's direction to in.
out	Configures a rule's direction to out.
any	Configures a rule's direction to any.
dscp	Configures a rule's DSCP.
<i>dscp</i>	Number between 0 and 63, or any .
protocol	Configures a rule's DSCP.
<i>protocol</i>	Number between 0 and 255, or any .
source address	Configures a rule's source IP address and netmask.
source port range	Configures a rule's source port range.
swap	Swaps two rules' indices.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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 pre-authentication ACL under Web Policy. However, you do not need to configure any preauthentication ACL for Cisco 4400 Series Wireless LAN Controllers.

The following example shows how to configure an ACL to permit access:

```
(Cisco Controller) > config acl rule action lab1 4 permit
```

Related Commands

show acl

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]
```

Syntax Description	mic	Specifies that the access point has a manufacture-installed certificate.
	ssc	Specifies that the access point has a self-signed certificate.
	<i>AP_MAC</i>	MAC address of a Cisco lightweight access point.
	<i>AP_key</i>	(Optional) Key hash value that is equal to 20 bytes or 40 digits.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to create an authorized access point entry with a manufacturer-installed certificate on MAC address 00:0b:85:02:0d:20:

```
(Cisco Controller) > config auth-list add 00:0b:85:02:0d:20
```

Related Commands

- config auth-list delete
- config auth-list ap-policy

config auth-list delete

To delete an access point entry, use the **config auth-list delete** command.

```
config auth-list delete AP_MAC
```

Syntax Description	<i>AP_MAC</i>	MAC address of a Cisco lightweight access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete an access point entry for MAC address 00:1f:ca:cf:b6:60:

```
(Cisco Controller) > config auth-list delete 00:1f:ca:cf:b6:60
```

Related Commands

- config auth-list delete
- config auth-list add
- config auth-list ap-policy

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		
authorize-ap enable		Enables the authorization policy.
authorize-ap disable		Disables the AP authorization policy.
ssc enable		Allows the APs with self-signed certificates to connect.
ssc disable		Disallows the APs with self-signed certificates to connect.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable an access point authorization policy:

```
(Cisco Controller) > config auth-list ap-policy authorize-ap enable
```

The following example shows how to enable an access point with a self-signed certificate to connect:

```
(Cisco Controller) > config auth-list ap-policy ssc disable
```

Related Commands

- config auth-list delete
- config auth-list add

config boot

To change a Cisco wireless LAN controller boot option, use the **config boot** command.

```
config boot {primary | backup}
```

Syntax Description	primary	Sets the primary image as active.
	backup	Sets the backup image as active.

Command Default The default boot option is **primary**.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to set the primary image as active so that the LAN controller can boot off the primary, last loaded image:

```
(Cisco Controller) > config boot primary
```

The following example shows how to set the backup image as active so that the LAN controller can boot off the backup, earlier loaded OS image:

```
(Cisco Controller) > config boot backup
```

Related Commands [show boot](#)

config cdp

To configure the Cisco Discovery Protocol (CDP) on the controller, use the **config cdp** command.

```
config cdp {enable | disable | advertise-v2 {enable | disable} | timerseconds | holdtime
holdtime_interval}
```

Syntax Description	enable	Enables CDP on the controller.
	disable	Disables CDP on the controller.
	advertise-v2	Configures CDP version 2 advertisements.
	timer	Configures the interval at which CDP messages are to be generated.
	<i>seconds</i>	Time interval at which CDP messages are to be generated. The range is from 5 to 254 seconds.
	holdtime	Configures the amount of time to be advertised as the time-to-live value in generated CDP packets.
	<i>holdtime_interval</i>	Maximum hold timer value. The range is from 10 to 254 seconds.

Command Default The default value for CDP timer is 60 seconds.
The default value for CDP holdtime is 180 seconds.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the CDP maximum hold timer to 150 seconds:

```
(Cisco Controller) > config cdp timer 150
```

Related Commands

config ap cdp
show cdp
show ap cdp

config certificate

To configure Secure Sockets Layer (SSL) certificates, use the **config certificate** command.

config certificate {**generate** {**webadmin** | **webauth**} | **compatibility** {**on** | **off**}}

Syntax Description

generate	Specifies authentication certificate generation settings.
webadmin	Generates a new web administration certificate.
webauth	Generates a new web authentication certificate.
compatibility	Specifies the compatibility mode for inter-Cisco wireless LAN controller IPsec settings.
on	Enables the compatibility mode.
off	Disables the compatibility mode.

Command Default

None

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to generate a new web administration SSL certificate:

```
(Cisco Controller) > config certificate generate webadmin
Creating a certificate may take some time. Do you wish to continue? (y/n)
```

The following example shows how to configure the compatibility mode for inter-Cisco wireless LAN controller IPsec settings:

```
(Cisco Controller) > 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** command.

```
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

enable	Enables LSC certificates on the controller.
disable	Disables LSC certificates on the controller.
ca-server	Specifies the Certificate Authority (CA) server settings.
<i>http://url:port/path</i>	Domain name or IP address of the CA server.
ca-cert	Specifies CA certificate database settings.
add	Obtains a CA certificate from the CA server and adds it to the controller's certificate database.
delete	Deletes a CA certificate from the controller's certificate database.
subject-params	Specifies the device certificate settings.
<i>country state city orgn dept email</i>	Country, state, city, organization, department, and email of the certificate authority.
	Note The common name (CN) is generated automatically on the access point using the current MIC/SSC format <i>Cxxx-MacAddr</i> , where <i>xxx</i> is the product number.
other-params	Specifies the device certificate key size settings.
<i>keysize</i>	Value from 384 to 2048 (in bits); the default value is 2048.
ap-provision	Specifies the access point provision list settings.
auth-list	Specifies the provision list authorization settings.
<i>ap_mac</i>	MAC address of access point to be added or deleted from the provision list.
revert-cert	Specifies the number of times the access point attempts to join the controller using an LSC before reverting to the default certificate.

<i>retries</i>	Value from 0 to 255; the default value is 3.
Note	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.

Command Default

The default value of *keysize* is 2048 bits. The default value of *retries* is 3.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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.

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.

The following example shows how to enable the LSC settings:

```
(Cisco Controller) >config certificate lsc enable
```

This example shows how to enable the LSC settings for Certificate Authority (CA) server settings:

```
(Cisco Controller) >config certificate lsc ca-server http://10.0.0.1:8080/caserver
```

The following example shows how to add a CA certificate from the CA server and add it to the controller's certificate database:

```
(Cisco Controller) >config certificate lsc ca-cert add
```

The following example shows how to configure an LSC certificate with the keysize of 2048 bits:

```
(Cisco Controller) >config certificate lsc keysize 2048
```

config certificate ssc

To configure Self Signed Certificates (SSC) certificates, use the **config certificate ssc** command.

config certificate ssc hash validation {enable | disable}

Syntax Description

hash	Configures the SSC hash key.
validation	Configures hash validation of the SSC certificate.
enable	Enables hash validation of the SSC certificate.
disable	Disables hash validation of the SSC certificate.

Command Default The SSC certificate is enabled by default..

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines When you enable the SSC hash validation, an AP validates the SSC certificate of the virtual controller. When an AP validates the SSC certificate, it checks if the hash key of the virtual controller matches the hash key stored in its flash. If a match is found, the validation passes and the AP moves to the Run state. If a match is not found, the validation fails and the AP disconnects from the controller and restarts the discovery process. By default, hash validation is enabled. Hence, an AP must have the virtual controller hash key in its flash before associating with the virtual controller. If you disable hash validation of the SSC certificate, the AP bypasses the hash validation and directly moves to the Run state.

APs can associate with a physical controller, download the hash keys and then associate with a virtual controller. If the AP is associated to a physical controller and if hash validation is disabled, it joins any virtual controller without hash validation.

The following example shows how to enable hash validation of the SSC certificate:

```
(Cisco Controller) > config certificate ssc hash validation enable
```

Related Commands

- show certificate ssc
- show mobility group member
- config mobility group member hash
- config certificate
- show certificate compatibility
- show certificate lsc
- show certificate summary
- show local-auth certificates

config certificate use-device-certificate webadmin

To use a device certificate for web administration, use the **config certificate use-device-certificate webadmin** command.

config certificate use-device-certificate webadmin

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to use a device certificate for web administration:

```
(Cisco Controller) > config certificate use-device-certificate webadmin
Use device certificate for web administration. Do you wish to continue? (y/n) y
Using device certificate for web administration.
Save configuration and restart controller to use new certificate.
```

Related Commands

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

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}
```

Syntax Description

enable	Enables the controller to generate a core dump file.
disable	Disables the controller to generate a core dump file.

Command Default

None

Command History

Release Modification

7.6	This command was introduced in a release earlier than Release 7.6.
------------	--

The following example shows how to enable the controller to generate a core dump file following a crash:

```
(Cisco Controller) > 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*

Syntax Description	<i>server_ip_address</i>	IP address of the FTP server to which the controller sends its core dump file.
	<i>filename</i>	Name given to the controller core dump file.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports only IPv4 address format.

Usage Guidelines The controller must be able to reach the FTP server to use this command.

The following 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*:

```
(Cisco Controller) > 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*

Syntax Description	<i>ftp_username</i>	FTP server login username.
	<i>ftp_password</i>	FTP server login password.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines The controller must be able to reach the FTP server to use this command.

The following example shows how to specify a FTP server username of *admin* and password *adminpassword* for the core dump file upload:

```
(Cisco Controller) > config coredump username admin password adminpassword
```

Related Commands

- config coredump ftp
- config coredump
- show coredump summary

config country

To configure the controller's country code, use the **config country** command.

```
config country country_code
```

Syntax Description	<i>country_code</i>	Two-letter or three-letter country code.
Command Default	<i>us</i> (country code of the United States of America).	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

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 ensure proper unit functionality. See the related product guide for the most recent country codes and regulatory domains.

You can use the **show country** command to display a list of supported countries.

The following example shows how to configure the controller's country code to DE:

```
(Cisco Controller) >config country DE
```

config cts sxp

To configure Cisco TrustSec SXP (CTS) connections on the controller, use the **config cts sxp** command.

```
config cts sxp {enable | disable | connection {delete | peer} | default password password | retry period time-in-seconds}
```

Syntax Description	enable	Enables CTS connections on the controller.
	disable	Disables CTS connections on the controller.
	connection	Configures CTS connection on the controller.
	delete	Deletes the CTS connection on the controller.

peer	Configures the next hop switch with which the controller is connected.
<i>ip-address</i>	Only IPv4 address of the peer.
default password	Configures the default password for MD5 authentication of SXP messages.
<i>password</i>	Default password for MD5 Authentication of SXP messages. The password should contain a minimum of six characters.
retry period	Configures the SXP retry period.
<i>time-in-seconds</i>	Time after which a CTS connection should be again tried for after a failure to connect.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines For release 8.0, only IPv4 is supported for TrustSec SXP configuration.

The following example shows how to enable CTS on the controller:

```
(Cisco Controller) > config cts sxp enable
```

The following example shows how to configure a peer for a CTS connection:

```
> config cts sxp connection peer 209.165.200.224
```

Related Commands `debug cts sxp`

config cts sxp connection

To configure the CTS SXP connection on the controller, use the **config cts sxp connection** command.

```
config cts sxp connection {delete | peer} ipv4-addr
```

Syntax Description	
delete	Deletes the SXP connection
peer	Configures the next hop switch with which the controller is connected
<i>ipv4-addr</i>	IPv4 address of the SXP connection

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

config cts sxp default password

To configure the default password for CTS SXP, use the **config cts sxp default password** command.

config cts sxp default password *password*

Syntax Description	<i>password</i> Default password for MD5 Authentication of SXP messages. The password should contain a minimum of six characters.
--------------------	---

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

config cts sxp retry period

To configure the interval between CTS SXP connection reattempts, use the **config cts sxp retry period** command.

config cts sxp retry period *time-in-seconds*

Syntax Description	<i>time-in-seconds</i> Time after which a CTS SXP connection should be attempted again for after a failure to connect. Valid range is between 0 and 64000 seconds.
--------------------	--

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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** }

Syntax Description	enable Enables the external URL web-based client authorization.
--------------------	--

disable	Disables the external URL we-based client authentication.
----------------	---

Command Default	None
------------------------	------

Command History	Release Modification
	7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the external URL web-based client authorization:

```
(Cisco Controller) > config custom-web ext-webauth-mode enable
```

Related Commands	config custom-web redirectUrl config custom-web weblogo config custom-web webmessage config custom-web webtitle config custom-web ext-webauth-url show custom-web
-------------------------	--

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	<i>URL</i> URL used for web-based client authorization.
---------------------------	---

Command Default	None
------------------------	------

Command History	Release Modification
	7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the complete external web authentication URL `http://www.AuthorizationURL.com/` for the web-based client authorization:

```
(Cisco Controller) > config custom-web ext-webauth-url http://www.AuthorizationURL.com/
```

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* }

Syntax Description	add	Adds an external web server.
	<i>index</i>	Index of the external web server in the list of external web server. The index must be a number between 1 and 20.
	<i>IP_address</i>	IP address of the external web server.
	delete	Deletes an external web server.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports only IPv4 address format.

The following 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:

```
(Cisco Controller) > 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 webtitle
- config custom-web ext-webauth-mode
- config custom-web ext-webauth-url
- show custom-web

config custom-web logout-popup

To enable or disable the custom web authentication logout popup, use the **config custom-web logout-popup** command.

config custom-web logout-popup { **enable** | **disable** }

Syntax Description	enable	Enables the custom web authentication logout popup. This page appears after a successful login or a redirect of the custom web authentication page.
--------------------	--------	---

disable Disables the custom web authentication logout popup.

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the custom web authentication logout popup:

```
(Cisco Controller) > config custom-web logout-popup disable
```

Related Commands

- config custom-web redirectUrl
- config custom-web weblogo
- config custom-web webmessage
- config custom-web webtitle
- config custom-web ext-webauth-url show custom-web

config custom-web radiusauth

To configure the RADIUS web authentication method, use the **config custom-web radiusauth** command.

```
config custom-web radiusauth { chap | md5chap | pap }
```

Syntax Description

chap	Configures the RADIUS web authentication method as Challenge Handshake Authentication Protocol (CHAP).
md5chap	Configures the RADIUS web authentication method as Message Digest 5 CHAP (MD5-CHAP).
pap	Configures the RADIUS web authentication method as Password Authentication Protocol (PAP).

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the RADIUS web authentication method as MD5-CHAP:

```
(Cisco Controller) > config custom-web radiusauth md5chap
```

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 redirectUrl

To configure the redirect URL for the custom-web authentication page, use the **config custom-web redirectUrl** command.

```
config custom-web redirectUrl URL
```

Syntax Description	<i>URL</i> URL that is redirected to the specified address.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

The following example shows how to configure the URL that is redirected to abc.com:

```
(Cisco Controller) > config custom-web redirectUrl abc.com
```

Related Commands	<pre> 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 </pre>
-------------------------	---

config custom-web sleep-client

To delete a web-authenticated sleeping client, use the **config custom-web sleep-client** command.

```
config custom-web sleep-client delete mac_address
```

Syntax Description	<pre>delete</pre> <p>Deletes a web-authenticated sleeping client with the help of the client MAC address.</p> <pre><i>mac_address</i></pre> <p>MAC address of the sleeping client.</p>
Command Default	The web-authenticated sleeping client is not deleted.

Command History	Release	Modification
	7.5	This command was introduced.

The following example shows how to delete a web-authenticated sleeping client:

```
(Cisco Controller) > config custom-web sleep-client delete 0:18:74:c7:c0:90
```

config custom-web webauth-type

To configure the type of web authentication, use the **config custom-web webauth-type** command.

```
config custom-web webauth-type {internal | customized | external}
```

Syntax Description		
	internal	Configures the web authentication type to internal.
	customized	Configures the web authentication type to customized.
	external	Configures the web authentication type to external.

Command Default The default web authentication type is **internal**.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the type of the web authentication type to internal:

```
(Cisco Controller) > 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}
```

Syntax Description		
	enable	Enables the web authentication logo settings.

disable	Enable or disable the web authentication logo settings.
----------------	---

Command Default	None
------------------------	------

Command History	Release Modification
	7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the web authentication logo:

```
(Cisco Controller) > 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	<i>message</i> Message text for web authentication.
---------------------------	---

Command Default	None
------------------------	------

Command History	Release Modification
	7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the message text Thisistheplace for webauthentication:

```
(Cisco Controller) > 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

config custom-web webtitle

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	<i>title</i>	Custom title text for web authentication.
---------------------------	--------------	---

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the custom title text Helpdesk for web authentication:

```
(Cisco Controller) > 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 size** command.

config database size *count*

Syntax Description	<i>count</i>	Database size value between 512 and 2040
---------------------------	--------------	--

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

Use the **show database** command to display local database configuration.

The following example shows how to configure the size of the local database:

```
(Cisco Controller) > 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] | networkscope network netmask }
```

```
config dhcpopt-82 remote-id {ap_mac | ap_mac:ssid | ap-ethmac | apname:ssid | ap-group-name
| flex-group-name | ap-location | apmac-vlan_id | apname-vlan_id | ap-ethmac-ssid }
```

Syntax Description

address-pool <i>scope start end</i>	Configures an address range and specifies the scope name and addresses of the address range.
create-scope <i>name</i>	Creates a new DHCP scope and specifies the scope name.
default-router <i>scope router_1</i> [<i>router_2</i>] [<i>router_3</i>]	Configures the default routers and specifies the IP address of the routers. You can specify the IP address of up to three tertiary routers.
delete-scope <i>scope</i>	Deletes the specified DHCP scope.
disable <i>scope</i>	Disables the specified DHCP scope.
dns-servers <i>scope dns1</i> [<i>dns2</i>] [<i>dns3</i>]	Configures the name servers and specifies the IP addresses of the name servers. You must also specify at least one name server. Optionally, you can specify up to three name servers.
domain <i>scope domain</i>	Configures the DNS domain and specifies the scope and domain name.
enable <i>scope</i>	Enables the specified DHCP scope.
lease <i>scope lease_duration</i>	Configures the lease duration and specifies the scope and lease duration.

netbios-name-server <i>scope wins1 [wins2] [wins3]</i>	Configures the netbios name server. You can specify the scope name and the IP address of the server. Optionally, you can specify the IP address of secondary and tertiary name servers.
network <i>scope network netmask</i>	Configures the network and netmask. You can specify the scope name, the network address, and the network mask.
opt-82 remote-id	Configures the DHCP option 82 remote ID format. DHCP option 82 provides additional information. When DHCP is used to allocate network addresses, a DHCP controller acts as a DHCP relay agent. The DHCP controller adds option 82 information to the DHCP client requests from clients before forwarding them to the DHCP server.
<i>ap_mac</i>	MAC address of the access point interface. This is the option 82 payload.
<i>ap_mac:ssid</i>	MAC address and SSID of the access point interface. This is the DHCP option 82 payload.
<i>ap-ethmac</i>	Remote ID format as AP Ethernet MAC address.
<i>apname:ssid</i>	Remote ID format as AP name and SSID.
<i>ap-group-name</i>	Remote ID format as AP group name.
<i>flex-group-name</i>	Remote ID format as FlexConnect group name.
<i>ap-location</i>	Remote ID format as AP location.
<i>apmac-vlan_id</i>	Remote ID format as AP radio MAC address:VLAN_ID.
<i>apname-vlan_id</i>	Remote ID format as AP Name:VLAN_ID.
<i>ap-ethmac-ssid</i>	Remote ID format as AP Ethernet MAC address and SSID.

Command Default

The default value for *ap-group-name* is *default-group*, and for *ap-location*, the default value is *default location*. If *ap-group-name* and *flex-group-name* are null, the system MAC is sent as the remote ID field.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

Use the **show dhcp** command to display the internal DHCP configuration.

The following example shows how to configure the DHCP lease for the scope 003:

```
(Cisco Controller) >config dhcp lease 003
```

config dhcp proxy

To specify the level at which DHCP packets are modified, use the **config dhcp proxy** command.

```
config dhcp proxy { enable | disable { bootp-broadcast [enable | disable] }
```

Syntax Description	enable	Allows the controller to modify the DHCP packets without a limit.
	disable	Reduces the DHCP packet modification to the level of a relay.
	bootp-broadcast	Configures DHCP BootP broadcast option.
Command Default	DHCP is enabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

Use the **show dhcp proxy** command to display the status of DHCP proxy handling.

To enable third-party WGB support, you must enable the passive-client feature on the wireless LAN by entering the **config wlan passive-client enable** command.

The following example shows how to disable the DHCP packet modification:

```
(Cisco Controller) >config dhcp proxy disable
```

The following example shows how to enable the DHCP BootP broadcast option:

```
(Cisco Controller) >config dhcp proxy disable bootp-broadcast enable
```

config dhcp timeout

To configure a DHCP timeout value, use the **config dhcp timeout** command. If you have configured a WLAN to be in DHCP required state, this timer controls how long the controller will wait for a client to get a DHCP lease through DHCP.

```
config dhcp timeout timeout-value
```

Syntax Description	<i>timeout-value</i>	Timeout value in the range of 5 to 120 seconds.
Command Default	The default timeout value is 120 seconds.	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the DHCP timeout to 10 seconds:

```
(Cisco Controller) >config dhcp timeout 10
```

config exclusionlist

To create or delete an exclusion list entry, use the **config exclusionlist** command.

```
config exclusionlist {add MAC [description] | delete MAC | description MAC [description] }
```

Syntax Description		
config exclusionlist		Configures the exclusion list.
add		Creates a local exclusion-list entry.
delete		Deletes a local exclusion-list entry
description		Specifies the description for an exclusion-list entry.
<i>MAC</i>		MAC address of the local Excluded entry.
<i>description</i>		(Optional) Description, up to 32 characters, for an excluded entry.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to create a local exclusion list entry for the MAC address *xx:xx:xx:xx:xx:xx*:

```
(Cisco Controller) > config exclusionlist add xx:xx:xx:xx:xx:xx lab
```

The following example shows how to delete a local exclusion list entry for the MAC address *xx:xx:xx:xx:xx:xx*:

```
(Cisco Controller) > config exclusionlist delete xx:xx:xx:xx:xx:xx lab
```

Related Commands `show exclusionlist`

config flexconnect [ipv6] acl

To apply access control lists that are configured on a FlexConnect access point, use the **config flexconnect [ipv6] acl** command. Use the **ipv6** keyword to configure IPv6 FlexConnect ACLs .


```
config flexconnect [ipv6] acl {apply | create | delete} acl_name
```

Syntax Description	Option	Description
	ipv6	Use this option to configure IPv6 FlexConnect ACLs. If you don't use this option, then IPv4 FlexConnect ACLs will be configured.
	apply	Applies an ACL to the data path.
	create	Creates an ACL.
	delete	Deletes an ACL.
	<i>acl_name</i>	ACL name that contains up to 32 alphanumeric characters.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.8	IPv6 ACL option was introduced.

The following example shows how to apply the IPv4 ACL configured on a FlexConnect access point:

```
(Cisco Controller) >config flexconnect acl apply acl1
```

config flexconnect [ipv6] acl rule

To configure access control list (ACL) rules on a FlexConnect access point, use the **config flexconnect [ipv6] acl rule** command.

```
config flexconnect [ipv6] 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	Option	Description
	ipv6	Use this option to configure IPv6 FlexConnect ACL rules. If you don't use this option, then IPv4 FlexConnect ACL rules will be configured.
	action	Configures whether to permit or deny access.
	<i>rule_name</i>	ACL name that contains up to 32 alphanumeric characters.
	<i>rule_index</i>	Rule index between 1 and 32.
	permit	Permits the rule action.
	deny	Denies the rule action.
	add	Adds a new rule.
	change	Changes a rule's index.

index	Specifies a rule index.
delete	Deletes a rule.
destination address	Configures a rule's destination IP address and netmask.
<i>ip_address</i>	IP address of the rule.
<i>netmask</i>	Netmask of the rule.
<i>start_port</i>	Start port number (between 0 and 65535).
<i>end_port</i>	End port number (between 0 and 65535).
direction	Configures a rule's direction to in, out, or any.
in	Configures a rule's direction to in.
out	Configures a rule's direction to out.
any	Configures a rule's direction to any.
dscp	Configures a rule's DSCP.
<i>dscp</i>	Number between 0 and 63, or any .
protocol	Configures a rule's DSCP.
<i>protocol</i>	Number between 0 and 255, or any .
source address	Configures a rule's source IP address and netmask.
source port range	Configures a rule's source port range.
swap	Swaps two rules' indices.
<i>index_1</i>	The rule first index to swap.
<i>index_2</i>	The rule index to swap the first index with.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.8	IPv6 ACL option was introduced.

This example shows how to configure an ACL to permit access:

```
(Cisco Controller) >config flexconnect acl rule action lab1 4 permit
```

config flexconnect [ipv6] acl url-domain

To configure a URL domain-based rule for a FlexConnect ACL, use the **config flexconnect acl [ipv6] url-domain** command.

config flexconnect [ipv6]acl url-domain {action acl-name index action | add acl-name index | delete acl-name index | url acl-name index url-name}

Syntax Description	Option	Description
	ipv6	Use this option to configure URL domain-based rules for IPv6 FlexConnect ACLs. If you don't use this option, then IPv4 FlexConnect ACL rules will be configured.
	action acl-name index action	Configures the action for the FlexConnect ACL rule, whether to permit or deny access.
	add acl-name index	Adds URL domain to the FlexConnect ACL.
	delete acl-name index	Deletes the URL domain from the FlexConnect ACL.
	url acl-name index url-name	Configures the URL name in the FlexConnect ACL.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.8	IPv6 ACL option was introduced.

This example shows how to configure URL-based rule for an IPv6 FlexConnect ACL:

```
(Cisco Controller) >config flexconnect ipv6 acl url-domain action acls-to-allow 2 permit
```

config flexconnect group vlan

To configure VLAN for a FlexConnect group, use the **config flexconnect group vlan** command.

config flexconnect group group_name vlan { add vlan-id acl in-aclname out-aclname | delete vlan-id }

Syntax Description	Option	Description
	group_name	FlexConnect group name.
	add	Adds a VLAN for the FlexConnect group.
	vlan-id	VLAN ID.
	acl	Specifies an access control list.
	in-aclname	In-bound ACL name.
	out-aclname	Out-bound ACL name.

delete	Deletes a VLAN from the FlexConnect group.
---------------	--

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to add VLAN ID 1 for the FlexConnect group myflexacl where the in-bound ACL name is in-acl and the out-bound ACL is out-acl:

```
(Cisco Controller) >config flexconnect group vlan myflexacl vlan add 1 acl in-acl out-acl
```

config flexconnect group web-auth

To configure Web-Auth ACL for a FlexConnect group, use the **config flexconnect group web-auth** command.

```
config flexconnect group group_name web-auth wlan wlan-id acl acl-name {enable | disable}
```

Syntax Description

<i>group_name</i>	FlexConnect group name.
<i>wlan-id</i>	WLAN ID.
<i>acl-name</i>	ACL name.
enable	Enables the Web-Auth ACL for a FlexConnect group.
disable	Disables the Web-Auth ACL for a FlexConnect group.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable Web-Auth ACL webauthacl for the FlexConnect group myflexacl on WLAN ID 1:

```
(Cisco Controller) >config flexconnect group myflexacl web-auth wlan 1 acl webauthacl enable
```

config flexconnect group web-policy

To configure Web Policy ACL for a FlexConnect group, use the **config flexconnect group web-policy** command.

```
config flexconnect group group_name web-policy acl {add | delete} acl-name
```

Syntax Description

<i>group_name</i>	FlexConnect group name.
add	Adds the Web Policy ACL.
delete	Deletes the Web Policy ACL.

<i>acl-name</i>	Name of the Web Policy ACL.
-----------------	-----------------------------

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to add the Web Policy ACL mywebpolicyacl to the FlexConnect group myflexacl:

```
(Cisco Controller) >config flexconnect group myflexacl web-policy acl add mywebpolicyacl
```

config flexconnect join min-latency

To enable or disable the access point to choose the controller with the least latency when joining, use the **config flexconnect join min-latency** command.

```
config flexconnect join min-latency {enable | disable} cisco_ap
```

Syntax Description

enable	Enables the access point to choose the controller with the least latency when joining.
disable	Disables the access point to choose the controller with the least latency when joining.
<i>cisco_ap</i>	Cisco lightweight access point.

Command Default

The access point cannot choose the controller with the least latency when joining.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

When you enable this feature, the access point calculates the time between the discovery request and discovery response and joins the controller that responds first. This command is supported only on the following controller releases:

- Cisco 2500 Series Controller
- Cisco 5500 Series Controller
- Cisco Flex 7500 Series Controllers
- Cisco 8500 Series Controllers
- Cisco Wireless Services Module 2

This configuration overrides the HA setting on the controller, and is applicable only for OEAP access points.

The following example shows how to enable the access point to choose the controller with the least latency when joining:

```
(Cisco Controller) >config flexconnect join min-latency enable CISCO_AP
```

config flexconnect office-extend

To configure FlexConnect mode for an OfficeExtend access point, use the **config flexconnect office-extend** command.

config flexconnect office-extend { {**enable** | **disable**} *cisco_ap* | **clear-personalssid-config** *cisco_ap*}

Syntax Description		
enable		Enables the OfficeExtend mode for an access point.
disable		Disables the OfficeExtend mode for an access point.
clear-personalssid-config		Clears only the access point's personal SSID.
<i>cisco_ap</i>		Cisco lightweight access point.

Command Default OfficeExtend mode is enabled automatically when you enable FlexConnect mode on the access point.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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** 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** 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** or **config ap ssh** 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** command.

The following example shows how to enable the office-extend mode for the access point Cisco_ap:

```
(Cisco Controller) >config flexconnect office-extend enable Cisco_ap
```

The following example shows how to clear only the access point's personal SSID for the access point Cisco_ap:

```
(Cisco Controller) >config flexconnect office-extend clear-personalssid-config Cisco_ap
```

config interface acl

To configure access control list of an interface, use the **config interface acl** command.

```
config interface acl {ap-manager | management | interface_name} {ACL | none}
```

Syntax Description		
	ap-manager	Configures the access point manager interface.
	management	Configures the management interface.
	<i>interface_name</i>	Interface name.
	<i>ACL</i>	ACL name up to 32 alphanumeric characters.
	none	Specifies none.

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to configure an access control list with a value None:

```
(Cisco Controller) > config interface acl management none
```

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		
	<i>interface_name</i>	Interface name.
	<i>vlan-id</i>	VLAN identifier.

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to create a dynamic interface with the interface named lab2 and VLAN ID 6:

```
(Cisco Controller) > config interface create lab2 6
```

config interface delete

To delete a dynamic interface, use the **config interface delete** command.

config interface delete *interface-name*

Syntax Description	<i>interface-name</i>	<i>interface-name</i> Interface name.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete a dynamic interface named VLAN501:

```
(Cisco Controller) > config interface delete VLAN501
```

config interface address

To configure interface addresses, use the **config interface address** command.

config interface address { **dynamic-interface** *dynamic_interface netmask gateway* | **management** | **redundancy-management** *IP_address peer-redundancy-management* | **service-port** *netmask* | **virtual** } *IP_address*

Syntax Description	dynamic-interface	Configures the dynamic interface of the controller.
	<i>dynamic_interface</i>	Dynamic interface of the controller.
	<i>IP_address</i>	IP address of the interface.
	<i>netmask</i>	Netmask of the interface.
	<i>gateway</i>	Gateway of the interface.
	management	Configures the management interface IP address.
	redundancy-management	Configures redundancy management interface IP address.
	peer-redundancy-management	Configures the peer redundancy management interface IP address.
	service-port	Configures the out-of-band service port.
	virtual	Configures the virtual gateway interface.
Command Default	None	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines Ensure that the management interfaces of both controllers are in the same subnet. Ensure that the redundant management IP address for both controllers is the same and that the peer redundant management IP address for both the controllers is the same.

The following example shows how to configure a redundancy management interface on the controller:

```
(Cisco Controller) >config interface address redundancy-management 209.4.120.5
peer-redundancy-management 209.4.120.6
```

The following example shows how to configure a virtual interface:

```
(Cisco Controller) > config interface address virtual 10.10.10.1
```

Related Commands

- show interface group summary
- show interface summary

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		
management		Specifies the management interface.
<i>interface_name</i>		Dynamic interface name.
enable		Enables access point manager features on a dynamic interface.
disable		Disables access point manager features on a dynamic interface.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to disable an access point manager myinterface:

```
(Cisco Controller) > config interface ap-manager myinterface disable
```

config interface group

To add an interface to the existing interface group, use the **config interface group** command.

```
config interface group { create interface-group-name interface-group-description } | { delete interface-group-name } | { interface { add | delete } interface-group-name interface-name } | { description interface-group-name interface-group-description }
```

Syntax Description

create	Adds a new interface group.
<i>interface-group-name</i>	Interface group's name.
<i>interface-group-description</i>	Interface group's description to be entered within double quotation marks. You can enter up to 32 characters.
delete	Deletes an interface group.
interface	Edits the list of interface represented by the interface group.
add	Adds a new interface to the interface group.
delete	Deletes an interface from the interface group.
description	Configures the description for an interface group.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a new interface group with the name int-grp-10:

```
(Cisco Controller) > config interface group create int-grp-10 "for wlan1"
```

config interface group

To add an interface to the existing interface group, use the **config interface group** command.

config interface group { **create** *interface-group-name interface-group-description* } | { **delete** *interface-group-name* } | { **interface** { **add** | **delete** } *interface-group-name interface-name* } | { **description** *interface-group-name interface-group-description* }

Syntax Description		
create	Adds a new interface group.	
<i>interface-group-name</i>	Interface group's name.	
<i>interface-group-description</i>	Interface group's description to be entered within double quotation marks. You can enter up to 32 characters.	
delete	Deletes an interface group.	
interface	Edits the list of interface represented by the interface group.	
add	Adds a new interface to the interface group.	
delete	Deletes an interface from the interface group.	
description	Configures the description for an interface group.	
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a new interface group with the name int-grp-10:

```
(Cisco Controller) > config interface group create int-grp-10 "for wlan1"
```

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		
virtual	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 192.0.2.1, to be used by Layer 3 security and mobility managers.	
<i>DNS_host</i>	DNS hostname.	

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure virtual gateway interface to use the specified virtual address of the fully qualified DNS hostname DNS_Host:

```
(Cisco Controller) > config interface hostname virtual DNS_Host
```

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		
management		Specifies the management interface.
dynamic-interface <i>interface_name</i>		Specifies the dynamic interface name.
enable		Enables one-to-one mapping NAT on the interface.
disable		Disables one-to-one mapping NAT on the interface.
<i>public_IP_address</i>		External NAT IP address.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable one-to-one mapping NAT on the management interface:

```
(Cisco Controller) > config interface nat-address management enable
```

The following example shows how to set the external NAP IP address 10.10.10.10 on the management interface:

```
(Cisco Controller) > config interface nat-address management set 10.10.10.10
```

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 | redundancy-management } primary_port [secondary_port]
```

Syntax Description		
	management	Specifies the management interface.
	<i>interface_name</i>	Interface name.
	redundancy-management	Specifies the redundancy management interface.
	<i>primary_port</i>	Primary physical port number.
	<i>secondary_port</i>	(Optional) Secondary physical port number.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines You can use the **management** option for all controllers except the Cisco 5500 Series Controllers.

The following example shows how to configure the primary port number of the LAb02 interface to 3:

```
(Cisco Controller) > config interface port lab02 3
```

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		
	<i>interface-name</i>	Interface's name.
	<i>vlan_id</i>	VLAN identifier.
	Note	Enter 0 to disable quarantine processing.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a quarantine VLAN on the quarantine interface with the VLAN ID 10:

```
(Cisco Controller) > config interface quarantine vlan quarantine 10
```

config interface vlan

To configure an interface VLAN identifier, use the **config interface vlan** command.

config interface vlan { **ap-manager** | **management** | *interface-name* | **redundancy-management** } *vlan*

Syntax Description		
ap-manager		Configures the access point manager interface.
management		Configures the management interface.
<i>interface_name</i>		Interface name.
<i>vlan</i>		VLAN identifier.
redundancy-management		Specifies the redundancy management interface.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines You cannot change the redundancy management VLAN when the system redundancy management interface is mapped to the redundancy port. You must configure the redundancy management port first.

The following example shows how to configure VLAN ID 10 on the management interface:

```
(Cisco Controller) > config interface vlan management 10
```

config known ap

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to add a new access point entry ac:10:02:72:2f:bf on a known access point:

```
(Cisco Controller) >config known ap add ac:10:02:72:2f:bf 12
```

config lag

To enable or disable link aggregation (LAG), use the **config lag** command.

config lag {enable | disable}

Syntax Description	enable	Enables the link aggregation (LAG) settings.
	disable	Disables the link aggregation (LAG) settings.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable LAG settings:

```
(Cisco Controller) > 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.
```

The following example shows how to disable LAG settings:

```
(Cisco Controller) > 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.
```

config ldap

To configure the Lightweight Directory Access Protocol (LDAP) server settings, use the **config ldap** command.

```
config ldap {add | delete | enable | disable | retransmit-timeout | retry | user |
security-mode | simple-bind} index
```

```
config ldap add index server_ip_address port user_base user_attr user_type [ secure ]
```

```
config ldap retransmit-timeout index retransmit-timeout
```

```
config ldap retry attempts
```

```
config ldap user {attr index user-attr | base index user-base | typeindex user-type}
```

```
config ldap security-mode {enable | disable}index
```

```
config ldap simple-bind {anonymous index | authenticated index username password}
```

Syntax Description

add	Specifies that an LDAP server is being added.
delete	Specifies that an LDAP server is being deleted.
enable	Specifies that an LDAP server is enabled.
disable	Specifies that an LDAP server is disabled.
retransmit-timeout	Changes the default retransmit timeout for an LDAP server.
retry	Configures the retry attempts for an LDAP server.
user	Configures the user search parameters.
security-mode	Configures the security mode.
simple-bind	Configures the local authentication bind method.
anonymous	Allows anonymous access to the LDAP server.
authenticated	Specifies that a username and password be entered to secure access to the LDAP server.
<i>index</i>	LDAP server index. The range is from 1 to 17.
<i>server_ip_address</i>	IP address of the LDAP server.

<i>port</i>	Port number.
<i>user_base</i>	Distinguished name for the subtree that contains all of the users.
<i>user_attr</i>	Attribute that contains the username.
<i>user_type</i>	ObjectType that identifies the user.
secure	(Optional) Specifies that Transport Layer Security (TLS) is used.
<i>retransmit-timeout</i>	Retransmit timeout for an LDAP server. The range is from 2 to 30.
<i>attempts</i>	Number of attempts that each LDAP server is retried.
attr	Configures the attribute that contains the username.
base	Configures the distinguished name of the subtree that contains all the users.
type	Configures the user type.
<i>username</i>	Username for the authenticated bind method.
<i>password</i>	Password for the authenticated bind method.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
7.6	The secure keyword was added to support secure LDAP.

Usage Guidelines

When you enable secure LDAP, the controller does not validate the server certificate.

The following example shows how to enable LDAP server index 10:

```
(Cisco Controller) > 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 secure*

Syntax Description		
	<i>index</i>	LDAP server index.
	<i>server_ip_address</i>	IP address of the LDAP server.
	<i>port</i>	Port number.
	<i>user_base</i>	Distinguished name for the subtree that contains all of the users.
	<i>user_attr</i>	Attribute that contains the username.
	<i>user_type</i>	ObjectType that identifies the user.
	secure	Secure mode.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	7.6	The secure keyword was added to support secure LDAP.

The following example shows how to configure a LDAP server with the index10, server IP address 209.165.201.30, port number 2:

```
(Cisco Controller) > config ldap add 10 209.165.201.30 2 base_name attr_name type_name
```

The following example shows how to configure a LDAP server with the index10, server IP address 209.165.201.30, port number 2 with secure mode:

```
(Cisco Controller) > config ldap add 10 209.165.201.30 2 base_name attr_name type_name
secure
```

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 password* }

Syntax Description		
	anonymous	Allows anonymous access to the LDAP server.

<i>index</i>	LDAP server index.
authenticated	Specifies that a username and password be entered to secure access to the LDAP server.
<i>username</i>	Username for the authenticated bind method.
<i>password</i>	Password for the authenticated bind method.

Command Default The default bind method is **anonymous**.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the local authentication bind method that allows anonymous access to the LDAP server:

```
(Cisco Controller) > config ldap simple-bind anonymous
```

Related Commands

- config ldap add**
- config ldap**
- 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_name] {max-message size [none]}} {max-session sessions} {notify {disable | url} username password}
```

Syntax Description	
default	Specifies the default license agent.
disable	Disables the feature.
authenticate	Enables authentication.
none	(Optional) Disables authentication.
listener http	Configures the license agent to receive license requests from the Cisco License Manager (CLM).
plaintext	Disables encryption (HTTP).
encrypt	Enables encryption (HTTPS).
<i>url</i>	URL where the license agent receives the requests.

acl	(Optional) Specifies the access control list.
<i>acl_name</i>	Specifies the access control list for license requests.
max-message	Specifies the maximum message size for license requests.
<i>size</i>	Maximum message size for license request is from 0 to 65535.
max-session	Specifies the maximum number of sessions allowed.
<i>sessions</i>	Maximum number of sessions allowed for the license agent is from 1 to 25.
notify	Configures the license agent to send license notifications to the CLM.
<i>username</i>	Username used in license agent notification.
<i>password</i>	Password used in license agent notification.

Command Default

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.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

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/c/en/us/products/cloud-systems-management/license-manager/index.html>

The following example shows how to authenticate the default license agent settings:

```
(Cisco Controller) > config license agent default authenticate
```

The following example shows how to configure the license agent with the number of maximum sessions allowed as 5:

```
(Cisco Controller) > 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	base	Specifies the base boot level.
	wplus	Specifies the wplus boot level.
	auto	Specifies the auto boot level.

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to set the license boot settings to wplus:

```
(Cisco Controller) > config license boot wplus
```

Related Commands

- license install
- show license in-use
- license modify priority

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 }
```

```
config load-balancing uplink-threshold traffic_threshold
```

Syntax Description		
window		Specifies the aggressive load balancing client window.
<i>client_count</i>		Aggressive load balancing client window with the number of clients from 1 to 20.
status		Sets the load balancing status.
enable		Enables load balancing feature.
disable		Disables load balancing feature.
denial		Specifies the number of association denials during load balancing.
<i>denial_count</i>		Maximum number of association denials during load balancing, from 0 to 10.
uplink-threshold		Specifies the threshold traffic for an access point to deny new associations.
<i>traffic_threshold</i>		Threshold traffic for an access point to deny new associations. This value is a percentage of the WAN utilization measured over a 90 second interval. For example, the default threshold value of 50 triggers the load balancing upon detecting an utilization of 50% or more on an access point WAN interface.

Command Default By default, the aggressive load balancing is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

Clients can only be load balanced across access points joined to the same controller. The WAN utilization is calculated as a percentage using the following formula: (Transmitted Data Rate (per second) + Received Data Rate (per second))/(1000Mbps TX + 1000Mbps RX) * 100

The following example shows how to enable the aggressive load-balancing settings:

```
(Cisco Controller) > config load-balancing aggressive enable
```

Related Commands

- show load-balancing
- config wlan load-balance

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*

Syntax Description	<i>timeout</i>	Timeout measured in seconds. The range is from 1 to 3600.
Command Default	The default timeout value is 100 seconds.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to specify the active timeout to authenticate wireless clients using EAP to 500 seconds:

```
(Cisco Controller) > 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 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.
<i>profile_name</i>	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.
<i>method</i>	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.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to create a local EAP profile named FAST01:

```
(Cisco Controller) > config local-auth eap-profile add FAST01
```

The following example shows how to add the EAP-FAST method to a local EAP profile:

```
(Cisco Controller) > config local-auth eap-profile method add fast FAST01
```

The following example shows how to specify Cisco as the issuer of the certificates that will be sent to the client for an EAP-FAST profile:

```
(Cisco Controller) > config local-auth eap-profile method fast cert-issuer cisco
```

The following example shows how to specify that the incoming certificate from the client be validated against the CA certificates on the controller:

```
(Cisco Controller) > 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**
- debug aaa local-auth**
- show local-auth certificates**
- show local-auth config**
- show local-auth statistics**

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

anon-prov	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.
enable	(Optional) Specifies that the parameter is enabled.
disable	(Optional) Specifies that the parameter is disabled.
authority-id	Configures the authority identifier of the local EAP-FAST server.
<i>auth_id</i>	Authority identifier of the local EAP-FAST server (2 to 32 hexadecimal digits).
pac-ttl	Configures the number of days for the Protected Access Credentials (PAC) to remain viable (also known as the time-to-live [TTL] value).
<i>days</i>	Time-to-live value (TTL) value (1 to 1000 days).
server-key	Configures the server key to encrypt or decrypt PACs.
<i>key_value</i>	Encryption key value (2 to 32 hexadecimal digits).

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to disable the controller to allows anonymous provisioning:

```
(Cisco Controller) > config local-auth method fast anon-prov disable
```

The following example shows how to configure the authority identifier 0125631177 of the local EAP-FAST server:

```
(Cisco Controller) > config local-auth method fast authority-id 0125631177
```

The following example shows how to configure the number of days to 10 for the PAC to remain viable:

```
(Cisco Controller) > config local-auth method fast pac-ttl 10
```

Related Commands

clear stats local-auth
config local-auth eap-profile
config local-auth active-timeout

```

config local-auth user-credentials
debug aaa local-auth
show local-auth certificates
show local-auth config
show local-auth statistics

```

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	local	Specifies that the local database is searched for the user credentials.
	ldap	(Optional) Specifies that the Lightweight Directory Access Protocol (LDAP) database is searched for the user credentials.

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines The order of the specified database parameters indicate the database search order.

The following example shows how to specify the order in which the local EAP authentication database is searched:

```
(Cisco Controller) > config local-auth user credentials local lda
```

In the above example, the local database is searched first and then the LDAP database.

Related Commands	<pre> clear stats local-auth config local-auth eap-profile config local-auth method fast config local-auth active-timeout debug aaa local-auth show local-auth certificates show local-auth config show local-auth statistics </pre>
------------------	--

config location

To configure a location-based system, use the **config location** command.

```
config location {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	algorithm	Note	We recommend that you do not use or modify the config location algorithm command. It is set to optimal default values.
			Configures the algorithm used to average RSSI and SNR values.
	simple		Specifies a faster algorithm that requires low CPU overhead but provides less accuracy.
	rss i-average		Specifies a more accurate algorithm but requires more CPU overhead.
	rss i-half-life	Note	We recommend that you do not use or modify the config location rss i-half-life command. It is set to optimal default values.
			Configures the half-life when averaging two RSSI readings.
	expiry	Note	We recommend that you do not use or modify the config location expiry command. It is set to optimal default values.
			Configures the timeout for RSSI values.
	client		(Optional) Specifies the parameter applies to client devices.
	calibrating-client		(Optional) Specifies the parameter is used for calibrating client devices.
	tags		(Optional) Specifies the parameter applies to radio frequency identification (RFID) tags.
	rogue-aps		(Optional) Specifies the parameter applies to rogue access points.
	<i>seconds</i>		Time value (0, 1, 2, 5, 10, 20, 30, 60, 90, 120, 180, 300 seconds).
	notify-threshold	Note	We recommend that you do not use or modify the config location notify-threshold command. It is set to optimal default values.
			Specifies the NMSP notification threshold for RSSI measurements.
	<i>threshold</i>		Threshold parameter. The range is 0 to 10 dB, and the default value is 0 dB.
	interface-mapping		Adds or deletes a new location, wireless LAN, or interface mapping element.
	<i>wlan_id</i>		WLAN identification name.
	<i>interface_name</i>		Name of interface to which mapping element applies.

plm	Specifies the path loss measurement (S60) request for normal clients or calibrating clients.
client	Specifies normal, noncalibrating clients.
<i>burst_interval</i>	Burst interval. The range is from 1 to 3600 seconds, and the default value is 60 seconds.
calibrating	Specifies calibrating clients.
uniband	Specifies the associated 802.11a or 802.11b/g radio (uniband).
multiband	Specifies the associated 802.11a/b/g radio (multiband).

Command Default See the “Syntax Description” section for default values of individual arguments and keywords.

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to specify the simple algorithm for averaging RSSI and SNR values on a location-based controller:

```
(Cisco Controller) > config location algorithm simple
```

Related Commands

config location info rogue
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	<i>security_level</i>	<p>Security level. Choose one of the following:</p> <ul style="list-style-type: none"> • 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
---------------------------	-----------------------	--

Command Default	None
------------------------	------

Command History	<table border="1"> <thead> <tr> <th style="text-align: left;">Release</th> <th style="text-align: left;">Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

The following example shows how to set the controller buffer severity level for logging messages to 4:

```
(Cisco Controller) > config logging buffered 4
```

Related Commands	<p>config logging syslog facility</p> <p>config logging syslog level</p> <p>show logging</p>
-------------------------	---

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*

Syntax Description	<i>severity_level</i>	Severity level. Choose one of the following: <ul style="list-style-type: none"> • 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
---------------------------	-----------------------	---

Command Default	None
------------------------	------

Command History	Release Modification
	7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the controller console severity level for logging messages to 3:

```
(Cisco Controller) > 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	buffered	Saves debug messages to the controller buffer.
	console	Saves debug messages to the controller console.
	syslog	Saves debug messages to the syslog server.
	enable	Enables logging of debug messages.
	disable	Disables logging of debug messages.

Command Default The **console** command is enabled and the **buffered** and **syslog** commands are disabled by default.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to save the debug messages to the controller console:

```
(Cisco Controller) > config logging debug console enable
```

Related Commands show logging

config logging fileinfo

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	enable	disable
	Includes information about the source file in the message logs.	Prevents the controller from displaying information about the source file in the message logs.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the controller to include information about the source file in the message logs:

```
(Cisco Controller) > 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}

Syntax Description	enable	disable
	Includes process information in the message logs.	Prevents the controller from displaying process information in the message logs.

Command Default	None
------------------------	------

Command History	Release Modification
------------------------	------------------------------------

7.6	This command was introduced in a release earlier than Release 7.6.
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The following example shows how to enable the controller to include the process information in the message logs:

```
(Cisco Controller) > config logging procinfo enable
```

Related Commands	show logging
-------------------------	--------------

config logging syslog facility ap

To configure the syslog facility to AP, use the **config logging syslog facility ap** { **associate** | **disassociate** } { **enable** | **disable** } command.

config logging syslog facility *AP*

Syntax Description	<i>AP</i>	Facility AP. Has the following functions: <ul style="list-style-type: none"> • associate—Association syslog for AP • disassociate—Disassociation syslog for AP
---------------------------	-----------	--

Command Default	None
------------------------	------

Command History	Release Modification
------------------------	------------------------------------

7.5	This command was introduced in a release earlier than Release 7.5.
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The following example shows how to configure syslog facility for AP:

```
cisco controller config logging syslog facility ap
```

Related Commands	show logging flags ap
-------------------------	-----------------------

config logging syslog host

To configure a remote host for sending syslog messages, use the **config logging syslog host** command.

config logging syslog host *ip_addr*

Syntax Description	<i>ip_addr</i>	IP address for the remote host.
---------------------------	----------------	---------------------------------

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

Usage Guidelines

- To configure a remote host for sending syslog messages, use the **config logging syslog host ip_addr** command.
- To remove a remote host that was configured for sending syslog messages, use the **config logging syslog host ip_addr delete** command.
- To display the configured syslog servers on the controller, use the **show logging** command.

The following example shows how to configure two remote hosts 10.92.125.52 and 2001:9:6:40::623 for sending the syslog messages and displaying the configured syslog servers on the controller:

```
(Cisco Controller) > config logging syslog host 10.92.125.52
System logs will be sent to 10.92.125.52 from now on

(Cisco Controller) > config logging syslog host 2001:9:6:40::623
System logs will be sent to 2001:9:6:40::623 from now on

(Cisco Controller) > show logging
Logging to buffer :
- Logging of system messages to buffer :
  - Logging filter level..... errors
  - Number of system messages logged..... 1316
  - Number of system messages dropped..... 6892
- Logging of debug messages to buffer ..... Disabled
  - Number of debug messages logged..... 0
  - Number of debug messages dropped..... 0
- Cache of logging ..... Disabled
- Cache of logging time (mins) ..... 10080
- Number of over cache time log dropped ..... 0
Logging to console :
- Logging of system messages to console :
  - Logging filter level..... disabled
  - Number of system messages logged..... 0
  - Number of system messages dropped..... 8243
- 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 console :
  - Logging filter level..... disabled
  - Number of system messages logged..... 0
  - Number of system messages dropped..... 8208
- Logging of debug messages to console ..... Enabled
  - Number of debug messages logged..... 0
  - Number of debug messages dropped..... 0
- Logging of system messages to syslog :
  - Logging filter level..... errors
  - Number of system messages logged..... 1316
  - Number of system messages dropped..... 6892
- Logging of debug messages to syslog ..... Disabled
```

```

- Number of debug messages logged..... 0
- Number of debug messages dropped..... 0
- Number of remote syslog hosts..... 2
- syslog over tls..... Disabled
  - Host 0..... 10.92.125.52
  - Host 1..... 2001:9:6:40::623
  - Host 2.....
Logging of RFC 5424..... Disabled
Logging of Debug messages to file :
- Logging of Debug messages to file..... Disabled
- Number of debug messages logged..... 0
- Number of debug messages dropped..... 0
Logging of traceback..... Enabled

```

The following example shows how to remove two remote hosts 10.92.125.52 and 2001:9:6:40::623 that were configured for sending syslog messages and displaying that the configured syslog servers were removed from the controller:

```
(Cisco Controller) > config logging syslog host 10.92.125.52 delete
System logs will not be sent to 10.92.125.52 anymore
```

```
(Cisco Controller) > config logging syslog host 2001:9:6:40::623 delete
System logs will not be sent to 2001:9:6:40::623 anymore
```

```
(Cisco Controller) > show logging
```

```

Logging to buffer :
- Logging of system messages to buffer :
  - Logging filter level..... errors
  - Number of system messages logged..... 1316
  - Number of system messages dropped..... 6895
- Logging of debug messages to buffer ..... Disabled
  - Number of debug messages logged..... 0
  - Number of debug messages dropped..... 0
- Cache of logging ..... Disabled
- Cache of logging time(mins) ..... 10080
- Number of over cache time log dropped ..... 0
Logging to console :
- Logging of system messages to console :
  - Logging filter level..... disabled
  - Number of system messages logged..... 0
  - Number of system messages dropped..... 8211
- 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..... 1316
  - Number of system messages dropped..... 6895
- 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
- syslog over tls..... Disabled
  - Host 0.....
  - Host 1.....
  - Host 2.....
Logging of RFC 5424..... Disabled
Logging of Debug messages to file :
- Logging of Debug messages to file..... Disabled
- Number of debug messages logged..... 0

```

```

- Number of debug messages dropped..... 0
Logging of traceback..... Enabled
- Traceback logging level..... errors
Logging of source file informational..... Enabled
Timestamping of messages.....
- Timestamping of system messages..... Enabled
- Timestamp format..... Date and Time

```

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*

Syntax Description

severity_level

Severity level. Choose one of the following:

- 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

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the severity level for syslog messages to 3:

```
(Cisco Controller) > config logging syslog level 3
```

Related Commands

config logging syslog host
config logging syslog facility
show logging

config loginsession close

To close all active Telnet sessions, use the **config loginsession close** command.

config loginsession close {*session_id* | **all**}

Syntax Description	<i>session_id</i>	ID of the session to close.
	all	Closes all Telnet sessions.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to close all active Telnet sessions:

```
(Cisco Controller) > config loginsession close all
```

Related Commands show loginsession

config lsc mesh

To enable the locally significant certificate (LSC) on mesh access points, use the **config lsc mesh** command.

config lsc mesh {**enable** | **disable**}

Syntax Description	enable	Enables LSC on mesh access points.
	disable	Disables LSC on mesh access points.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable LSC on mesh access point:

```
(Cisco Controller) >config lsc mesh enable
```

config nmosp 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 nmosp notify-interval measurement** command.

config nmosp notify-interval measurement {**client** | **rfid** | **rogue**} *interval*

Syntax Description	client	Modifies the interval for clients.
	rfid	Modifies the interval for active radio frequency identification (RFID) tags.

rogue	Modifies the interval for rogue access points and rogue clients.
<i>interval</i>	Time interval. The range is from 1 to 30 seconds.

Command Default None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to modify the NMSP notification interval for the active RFID tags to 25 seconds:

```
(Cisco Controller) > config nmsp notify-interval measurement rfid 25
```

Related Commands

- clear loep statistics**
- clear nmsp statistics**
- show nmsp notify-interval summary**
- show nmsp statistics**
- show nmsp status**

config paging

To enable or disable scrolling of the page, use the **config paging** command.

```
config paging {enable | disable}
```

Syntax Description

enable	Enables the scrolling of the page.
disable	Disables the scrolling of the page.

Command Default By default, scrolling of the page is enabled.

Usage Guidelines Commands that produce a huge number of lines of output with the scrolling of the page disabled might result in the termination of SSH/Telnet connection or user session on the console.

The following example shows how to enable scrolling of the page:

```
(Cisco Controller) > config paging enable
```

Related Commands **show run-config**

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	enable	Enables the display of passwords in plain text.
	disable	Disables the display of passwords in plain text.
Command Default	By default, temporary display of passwords in plain text is disabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
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.	
The following example shows how to enable display of passwords in plain text:		
<pre>(Cisco Controller) > config passwd-cleartext enable The way you see your passwds will be changed You are being warned. Enter admin password:</pre>		
Related Commands	show run-config	

config prompt

To change the CLI system prompt, use the **config prompt** command.

config prompt *prompt*

Syntax Description	<i>prompt</i>	New CLI system prompt enclosed in double quotes. The prompt can be up to 31 alphanumeric characters and is case sensitive.
Command Default	The system prompt is configured using the startup wizard.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
Usage Guidelines	Because the system prompt is a user-defined variable, it is omitted from the rest of this documentation.	
	The following example shows how to change the CLI system prompt to Cisco 4400:	

```
(Cisco Controller) > config prompt "Cisco 4400"
```

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}
```

Syntax Description

enable Enables an automatic timeout.

disable Disables an automatic timeout.

Command Default

None

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable an automatic timeout of RFID tags:

```
(Cisco Controller) > 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}
```

Syntax Description

enable Enables RFID tag tracking.

disable Enables RFID tag tracking.

Command Default

None

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure RFID tag tracking settings:


```
(Cisco Controller) > config rfid status enable
```

Related Commands	show rfid summary
	config rfid auto-timeout
	config rfid 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	<i>seconds</i>	Timeout in seconds (from 60 to 7200).
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a static RFID tag data timeout of 60 seconds:

```
(Cisco Controller) > config rfid timeout 60
```

Related Commands	show rfid summary
	config rfid statistics

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	<i>ip_address</i>	Network IP address.
	<i>netmask</i>	Subnet mask for the network.
	<i>gateway</i>	IP address of the gateway for the route network.
Command Default	None	
Usage Guidelines	As on release 7.6, <i>IP_address</i> supports only IPv4 addresses.	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6. This command supports only IPv4 address format.

The following 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:

```
(Cisco Controller) > config route add 10.1.1.0 255.255.255.0 10.1.1.1
```

config route delete

To remove a network route from the service port, use the **config route delete** command.

config route delete *ip_address*

Syntax Description		
	<i>ip_address</i>	Network IP address.

Command Default None

Usage Guidelines As on release 7.6, *IP_address* supports only IPv4 addresses.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports only IPv6 address format.

The following example shows how to delete a route from the network IP address 10.1.1.0:

```
(Cisco Controller) > config route delete 10.1.1.0
```

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}

Syntax Description		
	1200	Specifies the supported connection speeds to 1200.
	2400	Specifies the supported connection speeds to 2400.
	4800	Specifies the supported connection speeds to 4800.
	9600	Specifies the supported connection speeds to 9600.

19200	Specifies the supported connection speeds to 19200.
38400	Specifies the supported connection speeds to 38400.
57600	Specifies the supported connection speeds to 57600.

Command Default The default serial port baud rate is 9600.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure a serial baud rate with the default connection speed of 9600:

```
(Cisco Controller) > config serial baudrate 9600
```

config serial timeout

To set the timeout of a serial port session, use the **config serial timeout** command.

config serial timeout *minutes*

Syntax Description	<i>minutes</i>	Timeout in minutes from 0 to 160. A value of 0 indicates no timeout.
Command Default	0 (no timeout)	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
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.	

The following example shows how to configure the timeout of a serial port session to 10 minutes:

```
(Cisco Controller) > config serial timeout 10
```

config service timestamps

To enable or disable time stamps in message logs, use the **config service timestamps** command.

config service timestamps {**debug** | **log**} {**datetime** | **disable**}

Syntax Description	debug	Configures time stamps in debug messages.
	log	Configures time stamps in log messages.
	datetime	Specifies to time-stamp message logs with the standard date and time.
	disable	Specifies to prevent message logs being time-stamped.

Command Default By default, the time stamps in message logs are disabled.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure time-stamp message logs with the standard date and time:

```
(Cisco Controller) > config service timestamps log datetime
```

The following example shows how to prevent message logs being time-stamped:

```
(Cisco Controller) > config service timestamps debug disable
```

Related Commands **show logging**

config sessions maxsessions

To configure the number of Telnet CLI sessions allowed by the controller, use the **config sessions maxsessions** command.

config sessions maxsessions *session_num*

Syntax Description	<i>session_num</i>	Number of sessions from 0 to 5.
---------------------------	--------------------	---------------------------------

Command Default The default number of Telnet CLI sessions allowed by the controller is 5.

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

Up to five sessions are possible while a setting of zero prohibits any Telnet CLI sessions.

The following example shows how to configure the number of allowed CLI sessions to 2:

```
(Cisco Controller) > config sessions maxsessions 2
```

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		
<i>slot_id</i>	Slot downlink radio to which the channel is assigned. Beginning in Release 7.5 and later releases, you can configure 802.11a on slot 1 and 802.11ac/ax on slot 2.	
enable	Enables the slot.	
disable	Disables 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.	
<i>antenna_gain</i>	External antenna gain value in .5 dBi units (such as 2.5 dBi = 5).	
rts	Configures RTS/CTS for an access point.	
<i>cisco_ap</i>	Name of the Cisco access point on which the channel is configured.	
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable slot 3 for the access point abc:

```
(Cisco Controller) >config slot 3 enable abc
```

The following example shows how to configure RTS for the access point abc:

```
(Cisco Controller) >config slot 2 rts abc
```

config switchconfig boot-break

To enable or disable the breaking into boot prompt by pressing the Esc key at system startup, use the **config switchconfig boot-break** command.

```
config switchconfig boot-break {enable | disable}
```

Syntax Description	enable	Enables the breaking into boot prompt by pressing the Esc key at system startup.
	disable	Disables the breaking into boot prompt by pressing the Esc key at system startup.

Command Default By default, the breaking into boot prompt by pressing the Esc key at system startup is disabled.

Usage Guidelines You must enable the features that are prerequisites for the Federal Information Processing Standard (FIPS) mode before enabling or disabling the breaking into boot prompt.

The following example shows how to enable the breaking into boot prompt by pressing the Esc key at system startup:

```
(Cisco Controller) > config switchconfig boot-break enable
```

Related Commands

- show switchconfig
- config switchconfig flowcontrol
- config switchconfig mode
- config switchconfig secret-obfuscation
- config switchconfig fips-prerequisite
- config switchconfig strong-pwd

config switchconfig fips-prerequisite

To configure Federal Information Processing Standard (FIPS) on the controller, use the **config switchconfig wlnance** command.

```
config switchconfig fips-prerequisite {enable | disable}
```

Syntax Description	enable	Enables FIPS on the controller.
	disable	Disables FIPS on the controller.

Command Default None

Command History	Release	Modification
	8.0	This command was introduced.

The following example shows how to enable FIPS on the controller:

```
(Cisco Controller) > config switchconfig fips-prerequisite enable
```

config switchconfig flowcontrol

To enable or disable 802.3x flow control, use the **config switchconfig flowcontrol** command.

config switchconfig flowcontrol {enable | disable}

Syntax Description	enable	Disables 802.3x flow control.
	disable	Enables 802.3x flow control.

Command Default By default, 802.3x flow control is disabled.

The following example shows how to enable 802.3x flow control on Cisco wireless LAN controller parameters:

```
(Cisco Controller) > config switchconfig flowcontrol enable
```

Related Commands show switchconfig

config switchconfig mode

To configure Lightweight Access Port Protocol (LWAPP) transport mode for Layer 2 or Layer 3, use the **config switchconfig mode** command.

config switchconfig mode {L2 | L3}

Syntax Description	L2	Specifies Layer 2 as the transport mode.
	L3	Specifies Layer 3 as the transport mode.

Command Default The default transport mode is L3.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure LWAPP transport mode to Layer 3:

```
(Cisco Controller) > 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}

Syntax Description	enable	Enables secret obfuscation.
	disable	Disables secret obfuscation.

Command Default Secrets and user passwords are obfuscated in the exported XML configuration file.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to enable secret obfuscation:

```
(Cisco Controller) > config switchconfig secret-obfuscation enable
```

Related Commands `show switchconfig`

config switchconfig ucapl

To configure US Department of Defense (DoD) Unified Capabilities Approved Product List (APL) certification on the controller, use the **config switchconfig wlanca** command.

config switchconfig ucapl { **enable** | **disable** }

Syntax Description	enable	disable
	Enables UCAPL on the controller.	Disables UCAPL on the controller.

Command Default None

Command History	Release	Modification
	8.0	This command was introduced.

The following example shows how to enable UCAPL on the controller:

```
(Cisco Controller) > config switchconfig ucapl enable
```

config switchconfig ucapl

To configure US Department of Defense (DoD) Unified Capabilities Approved Product List (APL) certification on the controller, use the **config switchconfig wlanca** command.

config switchconfig ucapl { **enable** | **disable** }

Syntax Description	enable	disable
	Enables UCAPL on the controller.	Disables UCAPL on the controller.

Command Default	None
------------------------	------

Command History	Release	Modification
	8.0	This command was introduced.

The following example shows how to enable UCAPL on the controller:

```
(Cisco Controller) > config switchconfig ucapl enable
```

config switchconfig wlancc

To configure WLAN Common Criteria (CC) on the controller, use the **config switchconfig wlancc** command.

config switchconfig wlancc {enable | disable}

Syntax Description	enable	Enables WLAN CC on the controller.
	disable	Disables WLAN CC on the controller.

Command Default	None
------------------------	------

Command History	Release	Modification
	8.0	This command was introduced.

The following example shows how to enable WLAN CC on the controller:

```
(Cisco Controller) > config switchconfig wlancc enable
```

config switchconfig password-encryption

To configure type-6 password encryption with a master key, use the **config switchconfig password-encryption** command.

config switchconfig password-encryption {enable | disable}

Syntax Description	enable	Enables type-6 password encryption with a master key.
	disable	Disables type-6 password encryption with a master key.

Command Default	Disabled
------------------------	----------

Usage Guidelines	Ensure that you have configured a master key before you enable password encryption.
-------------------------	---

Command History	Release	Modification
	8.10	This command was introduced.

The following example shows how to enable type-6 password encryption with a master key:

```
(Cisco Controller) > config switchconfig password-encryption enable
```

config switchconfig password-encryption key

To configure the master key that is used to encrypt all secrets, use the **config switchconfig password-encryption key** command.

config switchconfig password-encryption key *master-key-value*

Syntax Description	<i>master-key-value</i>	Enables type-6 password encryption with a master key. Use at least three of the following four classes in the password: letters, uppercase letters, digits, or special characters. The master key length should be between 16 to 127 alphanumeric characters.

Command Default	None

Command History	Release	Modification
	8.10	This command was introduced.

The following example shows how to configure the master key that is used to encrypt all secrets:

```
(Cisco Controller) > config switchconfig password-encryption key Te5tPa$$w0rd123456
```

config switchconfig strong-pwd

To enable or disable your controller to check the strength of newly created passwords, use the **config switchconfig strong-pwd** command.

config switchconfig strong-pwd { **case-check** | **consecutive-check** | **default-check** | **username-check** | **position-check** | **case-digit-check** | **minimum** { **upper-case** | **lower-case** | **digits** | **special-chars** } *no_of_characters* | **min-length** | *password_length* | **lockout** { **mgmtuser** | **snmpv3user** | **time** | **attempts** } | **lifetime** { **mgmtuser** | **snmpv3user** } *lifetime* | **all-checks** } { **enable** | **disable** }

Syntax Description	case-check	Checks at least three combinations: lowercase characters, uppercase characters, digits, or special characters.

consecutive-check	Checks the occurrence of the same character three times.
default-check	Checks for default values or use of their variants.
username-check	Checks whether the username is specified or not.
position-check	Checks whether the password has a four-character change from the old password.
case-digit-check	Checks whether the password has all the four combinations: lower, upper, digits, or special characters.
minimum	Checks whether the password has a minimum number of upper case and lower case characters, digits, or special characters.
upper-case	Checks whether the password has a minimum number of upper case characters.
lower-case	Checks whether the password has a minimum number of lower case characters.
digits	Checks whether the password has a minimum number of digits.
special-chars	Checks whether the password has a minimum number of special characters.
min-length	Configures the minimum length for the password.
<i>password_length</i>	Minimum length for the password. The range is from 3 to 24 case-sensitive characters.
lockout	Configures the lockout feature for a management user or Simple Network Management Protocol version 3 (SNMPv3) user.
mgmtuser	Locks out a management user when the number of successive failed attempts exceed the management user lockout attempts.
snmpv3user	Locks out a SNMPv3 user when the number of successive failed attempts exceeds the SNMPv3 user lockout attempts.
time	Configures the time duration after the lockout attempts when the management user or SNMPv3 user is locked.
attempts	Configures the number of successive incorrect password attempts after which the management user or SNMPv3 user is locked.

lifetime	Configures the number of days before the management user or SNMPv3 user requires a change of password due to the age of the password.
mgmtuser	Configures the number of days before the management user requires a change of password due to the password age.
snmpv3user	Configures the number of days before the SNMPv3 user requires a change of password due to the age of the password.
<i>lifetime</i>	Number of days before the management user or SNMPv3 user requires a change of password due to the age of the password.
all-checks	Checks all the cases.
enable	Enables a strong password check for the access point and controller.
disable	Disables a strong password check for the access point and controller.

Command Default

None

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the Strong Password Check feature:

```
(Cisco Controller) > config switchconfig strong-pwd case-check enable
```

Related Commands

show switchconfig
config switchconfig flowcontrol
config switchconfig mode
config switchconfig secret-obfuscation
config switchconfig fips-prerequisite
config switchconfig boot-break

config switchconfig restore-password

To configure restore password option for management users, use the **config switchconfig restore-password** command.

```
config switchconfig restore-password { enable | disable }
```

Syntax Description	enable	Enables password of management users to be restored.
	disable	Disables password of management users from being restored.

Command Default By default, this feature is in enabled state.

Usage Guidelines Before Release 8.10, this feature was enabled by default and was nonconfigurable. In 8.10 and later releases, you are given the option to enable or disable it.

Command History	Release	Modification
	8.10	This command was introduced.

Examples

The following example shows how to disable password of management users from being restored:

```
(Cisco Controller) > config switchconfig restore-password disable
```

```
Warning! By disabling this option, there would be no way to
restore the access to the box without clearing the configuration.
Are you sure you want to continue? (y/n)
```

config sysname

To set the Cisco wireless LAN controller system name, use the **config sysname** command.

config sysname *name*

Syntax Description	<i>name</i>	System name. The name can contain up to 24 alphanumeric characters.
---------------------------	-------------	---

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the system named Ent_01:

```
(Cisco Controller) > config sysname Ent_01
```

Related Commands **show sysinfo**

config time manual

To set the system time, use the **config time manual** command.

config time manual *MM* | *DD* | *YYHH:MM:SS*

Syntax Description	<i>MM/DD/YY</i>	Date.
	<i>HH:MM:SS</i>	Time.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the system date to 04/04/2010 and time to 15:29:00:

```
(Cisco Controller) > 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 {**auth** {**enable** *server-index* *key-index* | **disable** *server-index*} | **interval** *interval* | **key-auth** {**add** *key-index* **md5** {**ascii** | **hex**} *key*} | **delete** *key-index*} | **pollinterval** *maxpoll* *minpoll**server-index* | **server** *index* *IP Address*}

Syntax Description		
auth		Configures the NTP authentication.
enable		Enables the NTP authentication.
<i>server-index</i>		NTP server index.
<i>key-index</i>		Key index between 1 and 4294967295.
disable		Disables the NTP authentication.
interval		Configures the NTP version 3 polling interval.
<i>interval</i>		NTP polling interval in seconds. The range is from 3600 and 604800 seconds.
key-auth		Configures the NTP authentication key.
add		Adds an NTP authentication key.
md5		Specifies the authentication protocol.
ascii		Specifies the ASCII key type.
hex		Specifies the hexadecimal key type.
<i>key</i>		Specifies the ASCII key format with a maximum of 16 characters or the hexadecimal key format with a maximum of 32 digits.

delete	Deletes an NTP server.
pollinterval	Configures the Network Time Protocol version 4 Polling Interval.
<i>maxpoll</i> / <i>minpoll</i>	Enter maximum and minimum NTP polling interval in (power of 2) seconds.
<i>server-index</i>	Enter the NTP server index number.
server	Configures the NTP servers.
<i>IP Address</i>	NTP server's IP address. Use 0.0.0.0 or :: to delete entry.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	This command supports both IPv4 and IPv6 address formats.
8.6	This command was enhanced in this release. The new keywords added are <code>pollinterval</code> , <code>maxpoll</code> , <code>minpoll</code> .
8.6	The NTP server delete option is available with config time ntp delete <i>server-index</i>

Usage Guidelines

- To add the NTP server to the controller, use the **config time ntp server** *index IP Address* command.
- To display configured NTP server on the controller, use the **show time** command.

The following example shows how to configure the NTP polling interval to 7000 seconds:

```
(Cisco Controller) > config time ntp interval 7000
```

The following example shows how to enable NTP authentication where the server index is 4 and the key index is 1:

```
(Cisco Controller) > config time ntp auth enable 4 1
```

The following example shows how to add an NTP authentication key of value ff where the key format is in hexadecimal characters and the key index is 1:

```
(Cisco Controller) > config time ntp key-auth add 1 md5 hex ff
```

The following example shows how to add an NTP authentication key of value ff where the key format is in ASCII characters and the key index is 1:

```
(Cisco Controller) > config time ntp key-auth add 1 md5 ascii ciscokey
```

The following example shows how to add NTP servers and display the servers configured to controllers:

```
(Cisco Controller) > config time ntp server 1 10.92.125.52
(Cisco Controller) > config time ntp server 2 2001:9:6:40::623
(Cisco Controller) > show time
Time..... Fri May 23 12:04:18 2014

Timezone delta..... 0:0
Timezone location..... (GMT +5:30) Colombo, New Delhi, Chennai,
Kolkata

NTP Servers
NTP Polling Interval..... 3600

Index NTP Key Index  NTP Server NTP      Msg Auth Status
-----
1          1      10.92.125.52    AUTH SUCCESS
2          1      2001:9:6:40::623 AUTH SUCCESS
```

The following example shows how to delete an NTP server:

```
(Cisco Controller) > config time ntp delete 1
```

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	enable	Enables daylight saving time.
	disable	Disables daylight saving time.
	<i>delta_hours</i>	Local hour difference from the Universal Coordinated Time (UCT).
	<i>delta_mins</i>	Local minute difference from UCT.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the daylight saving time:

```
(Cisco Controller) > 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*

Syntax Description	<i>location_index</i>	Number representing the time zone required. The time zones are as follows:
		<ul style="list-style-type: none"> • (GMT-12:00) International Date Line West • (GMT-11:00) Samoa • (GMT-10:00) Hawaii • (GMT-9:00) Alaska • (GMT-8:00) Pacific Time (US and Canada) • (GMT-7:00) Mountain Time (US and Canada) • (GMT-6:00) Central Time (US and Canada) • (GMT-5:00) Eastern Time (US and Canada) • (GMT-4:00) Atlantic Time (Canada) • (GMT-3:00) Buenos Aires (Argentina) • (GMT-2:00) Mid-Atlantic • (GMT-1:00) Azores • (GMT) London, Lisbon, Dublin, Edinburgh (default value) • (GMT +1:00) Amsterdam, Berlin, Rome, Vienna • (GMT +2:00) Jerusalem • (GMT +3:00) Baghdad • (GMT +4:00) Muscat, Abu Dhabi • (GMT +4:30) Kabul • (GMT +5:00) Karachi, Islamabad, Tashkent • (GMT +5:30) Colombo, Kolkata, Mumbai, New Delhi • (GMT +5:45) Katmandu • (GMT +6:00) Almaty, Novosibirsk • (GMT +6:30) Rangoon • (GMT +7:00) Saigon, Hanoi, Bangkok, Jakarta • (GMT +8:00) Hong Kong, Beijing, Chongqing • (GMT +9:00) Tokyo, Osaka, Sapporo • (GMT +9:30) Darwin • (GMT+10:00) Sydney, Melbourne, Canberra • (GMT+11:00) Magadan, Solomon Is., New Caledonia • (GMT+12:00) Kamchatka, Marshall Is., Fiji • (GMT+12:00) Auckland (New Zealand)

Command Default	None
------------------------	------

Command History	Release	Modification
------------------------	----------------	---------------------

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

The following example shows how to set the location of the time zone in order to set the daylight saving time to location index 10 automatically:

```
(Cisco Controller) > config time timezone location 10
```

Related Commands	show time
-------------------------	-----------

config wgb vlan

To configure the Workgroup Bridge (WGB) VLAN client support, use the **config wgb vlan** command.

config wgb vlan {enable | disable}

Syntax Description	enable	Enables wired clients behind a WGB to connect to an anchor controller in a Data Management Zone (DMZ).
	disable	Disables wired clients behind a WGB from connecting to an anchor controller in a DMZ.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable WGB VLAN client support:

```
(Cisco Controller) >config wgb vlan enable
```




Other Commands

- [capwap ap Commands, on page 820](#)
- [lwapp ap controller ip address, on page 826](#)
- [save config, on page 827](#)
- [Clearing Configurations, Log files, and Other Actions, on page 828](#)
- [Resetting the System Reboot Time, on page 846](#)
- [Uploading and Downloading Files and Configurations, on page 849](#)
- [Installing and Modifying Licenses, on page 862](#)
- [Right to Use Licensing Commands, on page 867](#)
- [Integrated Management Module Commands in Cisco Flex 7500 Series Controllers, on page 871](#)
- [Troubleshooting Commands, on page 874](#)

capwap ap 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.

capwap ap controller ip address *A.B.C.D*

Syntax Description	<i>A.B.C.D</i>	IP address of the controller.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
Usage Guidelines	This command must be entered from an access point's console port. This command is applicable for IPv4 addresses only.	



Note The access point must be running Cisco IOS Release 12.3(11)JX1 or later releases.

The following example shows how to configure the controller IP address 10.23.90.81 into the CAPWAP access point:

```
ap_console >capwap ap controller ip address 10.23.90.81
```

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*

Syntax Description	<i>user_name</i>	Dot1x username.
	<i>password</i>	Dot1x password.
Command Default	None	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This command must be entered from an access point's console port.



Note The access point must be running Cisco Access Point IOS Release 12.3(11)JX1 or later releases.

This example shows how to configure the dot1x username ABC and password pass01:

```
ap_console >capwap ap dot1x username ABC password pass01
```

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	<i>host_name</i>	Hostname of the access point.
--------------------	------------------	-------------------------------

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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 later releases. This command is available only for the Cisco Lightweight AP IOS Software recovery image (rcvk9w8) without any private-config. You can remove the private-config by using the **clear capwap private-config** command.

This example shows how to configure the hostname controller into the CAPWAP access point:

```
ap_console >capwap ap hostname controller
```

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.

capwap ap controller ip address *A.B.C.D*

Syntax Description	<i>A.B.C.D</i>	IP address of the controller.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
Usage Guidelines	This command must be entered from an access point's console port. This command is applicable for IPv4 addresses only.	



Note The access point must be running Cisco IOS Release 12.3(11)JX1 or later releases.

The following example shows how to configure the controller IP address 10.23.90.81 into the CAPWAP access point:

```
ap_console >capwap ap controller ip address 10.23.90.81
```

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 *A.B.C.D*

Syntax Description	<i>A.B.C.D</i>	Default gateway address of the capwap access point.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
Usage Guidelines	This command must be entered from an access point's console port. This command supports only IPv4 address format.	



Note The access point must be running Cisco Access Point IOS Release 12.3(11)JX1 or later releases.

This example shows how to configure the CAPWAP access point with the default gateway address 10.0.0.1:


```
ap_console >capwap ap ip default-gateway 10.0.0.1
```

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 A.B.C.D
```

Syntax Description	<i>A.B.C.D</i>	IP address of the syslog server.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
Usage Guidelines	This command must be entered from an access point's console port. This command supports only IPv4 address format.	



Note The access point must be running Cisco Access Point IOS Release 12.3(11)JX1 or later releases.

This example shows how to configure the syslog server with the IP address 10.0.0.1:

```
ap_console >capwap ap log-server 10.0.0.1
```

capwap ap ipv6 primary-base

To configure the primary controller name and IPv6 address into the CAPWAP access point from the Cisco Wave 1 access point's console port, use the **capwap ap ipv6 primary-base** command.

```
capwap ap ipv6 primary-base WORD ipv6_addr
```

Syntax Description	<i>WORD</i>	Name of the primary controller.
	<i>ipv6_addr</i>	IPv6 address of the primary controller.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports IPv6 address format.

Usage Guidelines This command must be entered from the Cisco Wave 1 access point's console port in config mode.

This example shows how to configure the primary controller name WLC1 and primary controller IPv6 address 2001:DB8::1 into the CAPWAP access point:

```
ap_console >capwap ap ipv6 primary-base WLC1 2001:DB8::1
```

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}
```

Syntax Description	enable	Enables the primed timer settings
	disable	Disables the primed timer settings.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This command must be entered from an access point's console port.



Note The access point must be running Cisco Access Point IOS Release 12.3(11)JX1 or later releases.

This example shows how to enable the primed-timer settings:

```
ap_console >capwap ap primed-timer enable
```

capwap ap secondary-base

To configure the name and IP address of the secondary controller 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	<i>controller_name</i>	Name of the secondary controller.
	<i>controller_ip_address</i>	IP address of the secondary controller.
Command Default	None	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports only IPv4 address format.

Usage Guidelines This command must be entered from an access point's console port. This command supports only IPv4 address format.



Note The access point must be running Cisco Access Point IOS Release 12.3(11)JX1 or later releases.

This example shows how to configure the secondary controller name as WLC2 and secondary controller IP address 209.165.200.226 into the CAPWAP access point:

```
ap_console >capwap ap secondary-base WLC2 209.165.200.226
```

capwap ap tertiary-base

To configure the name and IP address of the tertiary controller into the CAPWAP access point from the access point's console port, use the **capwap ap tertiary-base** command.

capwap ap tertiary-base *WORD.A.B.C.D*

Syntax Description	<i>WORD</i>	Name of the tertiary controller.
	<i>A.B.C.D</i>	IP address of the tertiary controller.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports only IPv4 address format.

Usage Guidelines This command must be entered from an access point's console port. This command supports only IPv4 address format.



Note The access point must be running Cisco IOS Release 12.3(11)JX1 or later releases.

This example shows how to configure the tertiary controller with the name WLC3 and secondary controller IP address 209.165.200.227 into the CAPWAP access point:

```
ap_console >capwap ap tertiary-base WLC3 209.165.200.227
```

lwapp ap controller ip address

To configure the controller IP address into the FlexConnect access point from the access point's console port, use the **lwapp ap controller ip address** command.

lwapp ap controller ip address *A.B.C.D*

Syntax Description	<i>A.B.C.D</i>	IP address of the controller.
---------------------------	----------------	-------------------------------

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports only IPv4 address format.

Usage Guidelines	This command must be entered from an access point's console port. This command is applicable for IPv4 addresses only.
-------------------------	---

Prior to changing the FlexConnect 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.
-------------	--

The following example shows how to configure the controller IP address 10.92.109.1 into the FlexConnect access point:

```
ap_console > lwapp ap controller ip address 10.92.109.1
```

save config

To save the controller configurations, use the **save config** command.

save config

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to save the controller settings:

```
(Cisco Controller) > save config  
Are you sure you want to save? (y/n) y  
Configuration Saved!
```

Clearing Configurations, Log files, 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	<i>acl_name</i>	ACL name.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the current counters for acl1:

```
(Cisco Controller) >clear acl counters acl1
```

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	<i>ap_name</i>	Access point name.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines Entering this command does not clear the static IP address of the access point.

The following example shows how to clear the access point's configuration settings for the access point named ap1240_322115:

```
(Cisco Controller) >clear ap config ap1240_322115
Clear ap-config will clear ap config and reboot the AP. Are you sure you want continue?
(y/n)
```

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.
	<i>ap_name</i>	Name of the access point for which the event log file is emptied.
	all	Deletes the event log for all access points joined to the controller.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete the event log for all access points:

```
(Cisco Controller) >clear ap eventlog all
This will clear event log contents for all APs. Do you want continue? (y/n) :y
All AP event log contents have been successfully cleared.
```

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}
```

Syntax Description	all	Specifies all access points.
	<i>ap_mac</i>	Access point MAC address.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the join statistics of all the access points:

```
(Cisco Controller) >clear ap join stats all
```

clear ap tsm

To clear the Traffic Stream Metrics (TSM) statistics of clients associated to an access point, use the **clear ap tsm** command.

```
clear ap tsm {802.11a | 802.11b} cisco_ap all
```

Syntax Description	802.11a	802.11b	<i>cisco_ap</i>	all
	Clears 802.11a TSM statistics of clients associated to an access point.			
	Clears 802.11b TSM statistics of clients associated to an access point.			
	Cisco lightweight access point.			
	Clears TSM statistics of clients associated to the access point.			

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear 802.11a TSM statistics for all clients of an access point:

```
(Cisco Controller) >clear ap tsm 802.11a AP3600_1 all
```

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to reset the configuration data to factory defaults:

```
(Cisco Controller) >clear config
Are you sure you want to clear the configuration? (y/n)
n
Configuration not 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 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the external web authentication URL:

```
(Cisco Controller) >clear ext-webauth-url
URL 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 license agent

To clear the license agent's counter or session statistics, use the **clear license agent** command.

clear license agent { **counters** | **sessions** }

Syntax Description	counters	Clears the counter statistics.
	sessions	Clears the session statistics.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the license agent's counter settings:

```
(Cisco Controller) > 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	<i>mac_address</i>	MAC address of a specific RFID tag.
	all	Specifies all the RFID tags in the database.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear all the RFID tags in the database:

```
(Cisco Controller) >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.

clear location statistics rfid

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

Command Default	None
------------------------	------

Command History	Release Modification
	7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear RFID statistics:

```
(Cisco Controller) >clear location statistics rfid
```

Related Commands	config location
	show location
	show location statistics rfid

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.
---------------------------	--

Command Default	None
------------------------	------

Command History	Release Modification
	7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the statistics related to LOCP:

```
(Cisco Controller) >clear locp statistics
```

Related Commands
<code>clear nmsp statistics</code>
<code>config nmsp notify-interval measurement</code>
<code>show nmsp notify-interval summary</code>
<code>show nmsp statistics</code>
<code>show nmsp status</code>

clear login-banner

To remove the login banner file from the controller, use the **clear login-banner** command.

clear login-banner

Syntax Description
This command has no arguments or keywords.

Command Default
None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the login banner file:

```
(Cisco Controller) >clear login-banner
```

Related Commands
<code>transfer download datatype</code>

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.

Command Default
None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

Enter the command on the access point console port.

Prior to changing the FlexConnect 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 Access Point IOS Release 12.3(11)JX1 or later releases.

The following example shows how to clear an access point's current LWAPP private configuration:

```
ap_console >clear lwapp private-config
removing the reap config file flash:/lwapp_reap.cfg
```

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.

Command Default

None

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to delete the NMSP statistics log file:

```
(Cisco Controller) >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 acc statistics** command.

clear radius acct statistics [index | all]

Syntax Description

index (Optional) Specifies the index of the RADIUS accounting server.

all	(Optional) Specifies all RADIUS accounting servers.
------------	---

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the RADIUS accounting statistics:

```
(Cisco Controller) >clear radius acc 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 tacacs auth statistics [**index** | **all**]

Syntax Description	index	(Optional) Specifies the index of the RADIUS authentication server.
	all	(Optional) Specifies all RADIUS authentication servers.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the RADIUS authentication server statistics:

```
(Cisco Controller) >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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the custom web authentication redirect URL:

```
(Cisco Controller) >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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the WLAN configuration elements of the access point `cisco_ap`:

```
(Cisco Controller) >clear stats ap wlan cisco_ap
WLAN statistics cleared.
```

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the local EAP statistics:

```
(Cisco Controller) >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.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear mobility manager statistics:

```
(Cisco Controller) >clear stats mobility
      Mobility stats cleared.
```

clear stats port

To clear statistics counters for a specific port, use the **clear stats port** command.

clear stats port *port*

Syntax Description	<i>port</i>	Physical interface port number.
---------------------------	-------------	---------------------------------

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the statistics counters for port 9:

```
(Cisco Controller) >clear stats port 9
```

Related Commands	<p>clear transfer</p> <p>clear download datatype</p> <p>clear download datatype</p> <p>clear download filename</p> <p>clear download mode</p> <p>clear download serverip</p> <p>clear download start</p> <p>clear upload datatype</p> <p>clear upload filename</p> <p>clear upload mode</p> <p>clear upload path</p>
-------------------------	---

clear upload serverip

clear upload start

clear stats port

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		
	auth	Clears statistics regarding authentication.
	acct	Clears statistics regarding accounting.
	index	Specifies the index number of the RADIUS server to be cleared.
	all	Clears statistics for all RADIUS servers.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the statistics for all RADIUS authentication servers:

```
(Cisco Controller) >clear stats radius auth all
```

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 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	(Optional) Specifies index of the TACACS+ server.
	all	(Optional) Specifies all TACACS+ servers.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the TACACS+ accounting server statistics for index 1:

```
(Cisco Controller) >clear stats tacacs acct 1
```

Related Commands **show tacacs summary**

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.	
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear all switch statistics counters:

```
(Cisco Controller) >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 transfer

To clear the transfer information, use the **clear transfer** command.

clear transfer

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

Command Default	None
------------------------	------

Command History	Release Modification
	7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the transfer information:

```
(Cisco Controller) >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 pac transfer upload password transfer upload port transfer upload path transfer upload username transfer upload datatype transfer upload serverip
-------------------------	---

transfer upload start

clear traplog

To clear the trap log, use the **clear traplog** command.

clear traplog

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command History

Release Modification

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the trap log:

```
(Cisco Controller) >clear traplog
Are you sure you want to clear the trap log? (y/n) y
Trap Log 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 webimage

To clear the custom web authentication image, use the **clear webimage** command.

clear webimage

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the custom web authentication image:

```
(Cisco Controller) >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 webtitle

To clear the custom web authentication title, use the **clear webtitle** command.

clear webtitle

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to clear the custom web authentication title:

```
(Cisco Controller) >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	Parameter	Description
	YYYY-MM-DD	Specifies the date.
	HH:MM:SS	Specifies the time in a 24-hour format.
	image	Configures the image to be rebooted.
	swap	Changes the active boot image; boots the non-active image and sets the default flag on it on the next reboot.
	no-swap	Boots from the active image.
	reset-aps	Resets all access points during the system reset.
	save-config	(Optional) Saves the configuration before the system reset.

Command Default None

Command History

Release	Modification
---------	--------------

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

The following example shows how to reset the system at 2010-03-29 and 12:01:01 time:

```
(Cisco Controller) > 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	Parameter	Description
	HH:MM:SS	Specifies a delay in duration.
	image	Configures the image to be rebooted.
	swap	Changes the active boot image; boots the non-active image and sets the default flag on it on the next reboot.

reset-aps	Resets all access points during the system reset.
save-config	Saves the configuration before the system reset.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to reset the system after a delay of 00:01:01:

```
(Cisco Controller) > reset system in 00:01:01 image swap reset-aps save-config
```

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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to cancel a scheduled reset:

```
(Cisco Controller) > reset system cancel
```

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.

Command Default The default time period to configure the trap generation prior to scheduled resets is 10 minutes.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the trap generation to 10 minutes before the scheduled resets:

```
(Cisco Controller) > reset system notify-time 55
```

reset peer-system

To reset the peer controller, use the **reset peer-system** command.

reset peer-system

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to reset the peer controller:

```
(Cisco Controller) >> reset peer-system
```

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	<i>private_key_password</i> Certificate's private key password.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

The following example shows how to transfer a file to the switch with the certificate's private key password certpassword:

```
(Cisco Controller) > transfer download certpassword
Clearing password
```

transfer download datatype

To set the download file type, use the **transfer download datatype** command.

transfer download datatype {*avc-protocol-pack* | *code* | *config* | *eapdevcert* | *eapcacert* | *icon* | *image* | *ipseccacert* | *ipsecdevcert* | *login-banner* | *radius-avplist* | *signature* | *webadmincert* | *webauthbundle* | *webauthcert*}

Syntax Description	avc-protocol-pack Downloads an AVC protocol pack to the system.
	code Downloads an executable image to the system.
	config Downloads the configuration file.
	eapcacert Downloads an EAP ca certificate to the system.
	eapdevcert Downloads an EAP dev certificate to the system.
	icon Downloads an executable image to the system.
	image Downloads a web page login to the system.

ipseccacert	Downloads an IPSec Certificate Authority (CA) certificate to the system.
ipseccdevcert	Downloads an IPSec dev certificate to the system.
login-banner	Downloads the controller login banner. Only text file is supported with a maximum of 1500 bytes.
radius-avplist	Downloads the RADIUS AVPs in the XML file format from the FTP server.
signature	Downloads a signature file to the system.
webadmincert	Downloads a certificate for web administration to the system.
webauthbundle	Downloads a custom webauth bundle to the system.
webauthcert	Downloads a web certificate for the web portal to the system.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	The ipseccacert , ipseccdevcert , and radius-avplist options were introduced.

The following example shows how to download an executable image to the system:

```
(Cisco Controller) > transfer download datatype code
```

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.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

You cannot use special characters such as \ : * ? " <> | for the filename.

The following example shows how to transfer a file named build603:

```
(Cisco Controller) > transfer download filename build603
```

transfer download mode

To set the transfer mode, use the **transfer download mode** command.

transfer download mode { **ftp** | **tftp** | **sftp** }

Syntax Description	ftp	Sets the transfer mode to FTP.
	tftp	Sets the transfer mode to TFTP.
	sftp	Sets the transfer mode to SFTP.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to transfer a file using the TFTP mode:

```
(Cisco Controller) > transfer download mode tftp
```

transfer download password

To set the password for an FTP transfer, use the **transfer download password** command.

transfer download password *password*

Syntax Description	<i>password</i>	Password.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the password for FTP transfer to pass01:

```
(Cisco Controller) > transfer download password pass01
```

transfer download path

To set a specific FTP or TFTP path, use the **transfer download path** command.

transfer download path *path*

Syntax Description	<i>path</i>	Directory path.
		Note Path names 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 "/".
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
Usage Guidelines	You cannot use special characters such as \ : * ? " < > for the file path.	

The following example shows how to transfer a file to the path c:\install\version2:

```
(Cisco Controller) > transfer download path c:\install\version2
```

transfer download port

To specify the FTP port, use the **transfer download port** command.

transfer download port *port*

Syntax Description	<i>port</i>	FTP port.
Command Default	The default FTP <i>port</i> is 21.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to specify FTP port number 23:

```
(Cisco Controller) > transfer download port 23
```

transfer download serverip

To configure the IPv4 or IPv6 address of the TFTP server from which to download information, use the **transfer download serverip** command.

transfer download serverip *IP addr*

Syntax Description	<i>IP addr</i>	TFTP server IPv4 or IPv6 address.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

The following example shows how to configure the IPv4 address of the TFTP server:

```
(Cisco Controller) > transfer download serverip 175.34.56.78
```

The following example shows how to configure the IPv6 address of the TFTP server:

```
(Cisco Controller) > transfer download serverip 2001:10:1:1::1
```

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.	
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to initiate a download:

```
(Cisco Controller) > transfer download start
Mode..... TFTP
Data Type..... 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.

transfer download tftpMaxRetries

To specify the number of allowed TFTP packet retries, use the **transfer download tftpMaxRetries** command.

transfer download tftpMaxRetries *retries*

Syntax Description	<i>retries</i>	Number of allowed TFTP packet retries between 1 and 254 seconds.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the number of allowed TFTP packet retries to 55:

```
(Cisco Controller) > transfer download tftpMaxRetries 55
```

transfer download tftpPktTimeout

To specify the TFTP packet timeout, use the **transfer download tftpPktTimeout** command.

transfer download tftpPktTimeout *timeout*

Syntax Description	<i>timeout</i>	Timeout in seconds between 1 and 254.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to transfer a file with the TFTP packet timeout of 55 seconds:

```
(Cisco Controller) > transfer download tftpPktTimeout 55
```

transfer download username

To specify the FTP username, use the **transfer download username** command.

transfer download username *username*

Syntax Description	<i>username</i>	Username.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the FTP username to ftp_username:

```
(Cisco Controller) > transfer download username ftp_username
```

transfer encrypt

To configure encryption for configuration file transfers, use the **transfer encrypt** command.

transfer encrypt {**enable** | **disable** | **set-key** *key*}

Syntax Description	enable	Enables the encryption settings.
	disable	Disables the encryption settings.
	set-key	Specifies the encryption key for configuration file transfers.
	<i>key</i>	Encryption key for config file transfers.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the encryption settings:

```
(Cisco Controller) > transfer encrypt enable
```

transfer upload filename

To upload a specific file, use the **transfer upload filename** command.

transfer upload filename *filename*

Syntax Description	<i>filename</i>	Filename that contains up to 16 alphanumeric characters.
---------------------------	-----------------	--

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines You cannot use special characters such as \ : * ? " <> | for the filename.

The following example shows how to upload a file build603:

```
(Cisco Controller) > transfer upload filename build603
```

transfer upload password

To configure the password for FTP transfer, use the **transfer upload password** command.

Syntax Description *password* Password needed to access the FTP server.

transfer upload password *password*

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the password for the FTP transfer to pass01:

```
(Cisco Controller) > transfer upload password pass01
```

transfer upload peer-start

To upload a file to the peer controller, use the **transfer upload peer-start** command.

transfer upload peer-start

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to start uploading a file to the peer controller:

```
(Cisco Controller) >transfer upload peer-start
Mode..... FTP
FTP Server IP..... 209.165.201.1
FTP Server Port..... 21
FTP Path..... /builds/nimm/
FTP Filename..... AS_5500_7_4_1_20.aes
FTP Username..... wnbu
FTP Password..... *****
Data Type..... Error Log

Are you sure you want to start upload from standby? (y/N) n

Transfer Canceled
```

transfer upload serverip

To configure the IPv4 or IPv6 address of the TFTP server to upload files to, use the **transfer upload serverip** command.

transfer upload serverip *IP addr*

Syntax Description	<i>IP addr</i>	TFTP Server IPv4 or IPv6 address.
Command Default	None	
Command History	Release Modification	
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports both IPv4 and IPv6 address formats.

The following example shows how to set the IPv4 address of the TFTP server to 175.31.56.78:

```
(Cisco Controller) > transfer upload serverip 175.31.56.78
```

The following example shows how to set the IPv6 address of the TFTP server to 175.31.56.78:

```
(Cisco Controller) > transfer upload serverip 2001:10:1:1::1
```

transfer upload datatype

To set the controller to upload specified log and crash files, use the **transfer upload datatype** command.

```
transfer upload datatype { ap-crash-data | config | coredump | crashfile | debug-file
| eapcert | eapdevcert | errorlog | invalid-config | ipseccert | ipsecdevcert |
pac | packet-capture | panic-crash-file | radio-core-dump | radius-avplist | rrm-log
| run-config | signature | systemtrace | traplog | watchdog-crash-file webadmincert
| webauthbundle | webauthcert | webauth-ca-cert | yang-bundle }
```

Syntax	Description
ap-crash-data	Uploads the AP crash files.
config	Uploads the system configuration file.
coredump	Uploads the core-dump file.
crashfile	Uploads the system crash file.
debug-file	Uploads the system's debug log file.
eapcacert	Uploads an EAP CA certificate.
eapdevcert	Uploads an EAP Dev certificate.
errorlog	Uploads the system error log file.
invalid-config	Uploads the system invalid-config file.
ipseccacert	Uploads CA certificate file.
ipsecddevcert	Uploads device certificate file.
pac	Uploads a Protected Access Credential (PAC).
packet-capture	Uploads a packet capture file.
panic-crash-file	Uploads the kernel panic information file.
radio-core-dump	Uploads the system error log.
radius-avplist	Uploads the XML file from the controller to the RADIUS server.
rrm-log	Uploads the system's trap log.
run-config	Upload the controller's running configuration
signature	Uploads the system signature file.
systemtrace	Uploads the system trace file.
traplog	Uploads the system trap log.
watchdog-crash-file	Uploads a console dump file resulting from a software-watchdog-initiated controller reboot following a crash.
webadmincert	Uploads Web Admin certificate.
webauthbundle	Uploads a Web Auth bundle.
webauthcert	Upload a web certificate
webauth-ca-cert	Upload a Webhook CA certificate
yang-bundle	Upload the YANG files

Command Default

None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	The ipseccacert , ipseccdevcert , and radius-avplist options were introduced.
	8.8	The webauth-ca-cert and yang-bundle options were introduced.

The following example shows how to upload the system error log file:

```
(Cisco Controller) > transfer upload datatype errorlog
```

transfer upload username

To specify the FTP username, use the **transfer upload username** command.

transfer upload username

Syntax Description	<i>username</i>	Username required to access the FTP server. The username can contain up to 31 characters.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the FTP username to ftp_username:

```
(Cisco Controller) > transfer upload username ftp_username
```

transfer upload mode

To configure the transfer mode, use the **transfer upload mode** command.

transfer upload mode {ftp | tftp | sftp}

Syntax Description	ftp	Sets the transfer mode to FTP.
	tftp	Sets the transfer mode to TFTP.
	sftp	Sets the transfer mode to SFTP.
Command Default	None	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the transfer mode to TFTP:

```
(Cisco Controller) > transfer upload mode tftp
```

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*

Syntax Description		
<i>username</i>		User identity of the PAC.
<i>validity</i>		Validity period (days) of the PAC.
<i>password</i>		Password to protect the PAC.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines The client upload process uses a TFTP or FTP server.

The following example shows how to upload a PAC with the username user1, validity period 53, and password pass01:

```
(Cisco Controller) > transfer upload pac user1 53 pass01
```

transfer upload path

To set a specific upload path, use the **transfer upload path** command.

transfer upload path *path*

Syntax Description	<i>path</i>	
		Server path to file.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines You cannot use special characters such as \ : * ? " < > | for the file path.

The following example shows how to set the upload path to c:\install\version2:

```
(Cisco Controller) > transfer upload path c:\install\version2
```

transfer upload start

To initiate an upload, use the **transfer upload start** command.

transfer upload start

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to initiate an upload of a file:

```
(Cisco Controller) > 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
```

Installing and Modifying Licenses

Use the **license** commands to install, remove, modify, or rehost licenses.



Note Some license commands are available only on the Cisco 5500 Series Controller. Right to Use (RTU) licensing is not supported on Cisco 5500 Series Controllers.



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*

Syntax Description

license_name Name of the license.

Command Default

None

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to remove the license settings of the license named wplus-ap-count:

```
(Cisco Controller) > license clear wplus-ap-count
```

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

add Adds a comment.

delete Deletes a comment.

<i>license_name</i>	Name of the license.
---------------------	----------------------

<i>comment_string</i>	License comment.
-----------------------	------------------

Command Default	None
------------------------	------

Command History	Release Modification
------------------------	------------------------------------

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

The following example shows how to add a comment “wplus ap count license” to the license name wplus-ap-count:

```
(Cisco Controller) > license comment add wplus-ap-count Comment for wplus ap count license
```

license install

To install a license on the Cisco 5500 Series Controller, use the **license install** command.

license install *url*

Syntax Description	<i>url</i>	URL of the TFTP server (tftp://server_ip/path/filename).
---------------------------	------------	--

Command Default	None
------------------------	------

Command History	Release Modification
------------------------	------------------------------------

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

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.

The following example shows how to install a license on the controller from the URL tftp://10.10.10.10/path/license.lic:

```
(Cisco Controller) > license install tftp://10.10.10.10/path/license.lic
```

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**}

Syntax Description	<i>license_name</i>	Ap-count evaluation license.
	high	Modifies the priority of an ap-count evaluation license.
	low	Modifies the priority of an ap-count evaluation license.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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.

The following example shows how to set the priority of the wplus-ap-count to high:

```
(Cisco Controller) > license modify priority wplus-ap-count high
```

license revoke

To rehost a license on a Cisco 5500 Series Wireless Controller, use the **license revoke** command.

license revoke {*permission_ticket_url* | **rehost** *rehost_ticket_url*}

Syntax Description		
<i>permission_ticket_url</i>	URL of the TFTP server (tftp://server_ip/path/filename) where you saved the permission ticket.	
rehost	Specifies the rehost license settings.	
<i>rehost_ticket_url</i>	URL of the TFTP server (tftp://server_ip/path/filename) where you saved the rehost ticket.	

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

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/LicensingUI/Quickstart>. 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 the *Cisco Wireless LAN Controller Configuration Guide*.

The following example shows how to revoke the license settings from the saved permission ticket URL tftp://10.10.10.10/path/permit_ticket.lic:

```
(Cisco Controller) > license revoke tftp://10.10.10.10/path/permit_ticket.lic
```

The following example shows how to revoke the license settings from the saved rehost ticket URL tftp://10.10.10.10/path/rehost_ticket.lic:

```
(Cisco Controller) > license revoke rehost tftp://10.10.10.10/path/rehost_ticket.lic
```

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

credential Device credential information.

url URL of the TFTP server (tftp://server_ip/path/filename).

Command Default

None

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

Save the device credentials before you revoke the license by using the **license revoke** command.

The following example shows how to save a backup copy of all installed licenses or license credentials on tftp://10.10.10.10/path/cred.lic:

```
(Cisco Controller) > license save credential tftp://10.10.10.10/path/cred.lic
```

Right to Use Licensing Commands

Use the **license** commands to configure Right to Use (RTU) licensing on Cisco Flex 7500 Series and 8500 Series controllers. This feature allows you to enable an AP license count on the controller without using any external tools after accepting an End User License Agreement (EULA).

license activate ap-count eval

To activate an evaluation access point license on the Cisco Flex 7500 Series and Cisco 8500 Series Wireless LAN Controllers, use the **license activate ap-count eval** command.

license activate ap-count eval

Syntax Description	This command has no arguments or keywords.				
Command Default	By default, in release 7.3 Cisco Flex 7500 Series Controllers and Cisco 8500 Series Wireless LAN Controllers support 6000 APs.				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				
Usage Guidelines	When you activate this license, the controller prompts you to accept or reject the End User License Agreement (EULA) for the given license. If you activate a license that supports a smaller number of APs than the current number of APs connected to the controller, the activation command fails.				

The following example shows how to activate an evaluation AP-count license on a Cisco Flex 7500 Series controller:

```
(Cisco Controller) > license activate ap-count eval
```

license activate feature

To activate a feature license on Cisco Flex 7500 Series and Cisco 8500 Series Wireless LAN Controllers, use the **license activate feature** command.

license activate feature *license_name*

Syntax Description	<i>license_name</i> Name of the feature license. The license name can be up to 50 case-sensitive characters.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

The following example shows how to activate a data DTLS feature license on a Cisco Flex 7500 Series controller:

```
(Cisco Controller) > license activate feature data-DTLS
```

license add ap-count

To configure the number of access points (APs) that an AP license can support on Cisco Flex 7500 and 8500 Series Wireless LAN controllers, use the **license add ap-count** command.

license add ap-count *count*

Syntax Description	<i>count</i> Number of APs that the AP license supports. The range is from 1 to the maximum number of APs that the controller can support. The count must be a multiple of 5.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

Usage Guidelines

Right to Use (RTU) licensing allows you to enable a desired AP license count on the controller after accepting the End User License Agreement (EULA). You can now easily add AP counts on a controller without using external tools. RTU licensing is available only on Cisco Flex 7500 and 8500 series Wireless LAN controllers.

You can use this command to increase the count of an existing AP license. When you activate a license that supports a smaller number of APs than the current number of APs connected to the controller, the activation command fails.

The following example shows how to configure the count of an AP license on a Cisco Flex 7500 Series controller:

```
(Cisco Controller) > license add ap-count 5000
```

license add feature

To add a license for a feature on the Cisco 5520 Wireless Controller, Cisco Flex 7510 Wireless Controller, Cisco 8510 Wireless Controller, Cisco 8540 Wireless Controller, and Cisco Virtual Controller, use the **license add feature** command.

license add feature *license_name*

Syntax Description	<i>license_name</i> Name of the feature license. The license name can be up to 50 case-sensitive characters. For example, data_encryption.
Command Default	None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6. This command is applicable to Cisco Flex 7510 Wireless Controller and Cisco 8510 Wireless Controller.
	8.1	This command is applicable to Cisco 5520 Wireless Controller, Cisco Flex 7510 Wireless Controller, Cisco 8510 Wireless Controller, Cisco 8540 Wireless Controller, and Cisco vWLC.

The following example shows how to add a `data_encryption` feature license:

```
(Cisco Controller) > license add feature data_encryption
```

license deactivate ap-count eval

To deactivate an evaluation access point license on the Cisco Flex 7500 Series and Cisco 8500 Series Wireless LAN Controllers, use the **license deactivate ap-count eval** command.

license deactivate ap-count eval

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to deactivate an evaluation AP license on a Cisco Flex 7500 Series controller:

```
(Cisco Controller) > license deactivate ap-count eval
```

license deactivate feature

To deactivate a feature license on Cisco Flex 7500 Series and Cisco 8500 Series Wireless LAN controllers, use the **license deactivate feature** command.

license deactivate feature *license_name*

Syntax Description *license_name* Name of the feature license. The license name can be up to 50 case-sensitive characters.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to deactivate a data DTLS feature license on a Cisco Flex 7500 Series controller:

```
(Cisco Controller) > license deactivate feature data_DTLS
```

license delete ap-count

To delete an access point (AP) count license on the Cisco Flex 7500 Series and Cisco 8500 Series Wireless LAN Controllers, use the **license delete ap-count** command.

license delete ap-count *count*

Syntax Description	<i>count</i> Number of APs that the AP license supports. The range is from 1 to the maximum number of APs that the controller can support. The count must be a multiple of 5.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

The following example shows how to delete an AP count license on a Cisco Flex 7500 Series controller:

```
(Cisco Controller) > license delete ap-count 5000
```

license delete feature

To delete a license for a feature on Cisco Flex 7500 Series and Cisco 8500 Series Wireless LAN controllers, use the **license delete feature** command.

license delete feature *license_name*

Syntax Description	<i>license_name</i> Name of the feature license.				
Command Default	None				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>7.6</td> <td>This command was introduced in a release earlier than Release 7.6.</td> </tr> </tbody> </table>	Release	Modification	7.6	This command was introduced in a release earlier than Release 7.6.
Release	Modification				
7.6	This command was introduced in a release earlier than Release 7.6.				

The following example shows how to delete the High Availability feature license on a Cisco Flex 7500 Series controller:

```
(Cisco Controller) > license delete feature high_availability
```


Integrated Management Module Commands in Cisco Flex 7500 Series Controllers

Use the **imm** commands to manage the Integrated Management Module (IMM) in the Cisco Flex 7500 Series Controllers.

imm address

To configure the static IP address of the IMM, use the **imm address** command.

imm address *ip-addr netmask gateway*

Syntax Description		
	<i>ip-addr</i>	IP address of the IMM
	<i>netmask</i>	Netmask of the IMM
	<i>gateway</i>	Gateway of the IMM
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports only IPv4 address format.

The following example shows how to set the static IP address of an IMM:

```
(Cisco Controller) >imm address 209.165.200.225 255.255.255.224 10.1.1.1
```

imm dhcp

To configure DHCP for the IMM, use the **imm dhcp** command.

imm dhcp {**enable** | **disable** | **fallback**}

Syntax Description		
	enable	Enables DHCP for the IMM
	disable	Disables DHCP for the IMM
	fallback	Enables DHCP for the IMM, but if it fails, then uses static IP of the IMM
Command Default	DHCP for IMM is enabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable DHCP for the IMM:

```
(Cisco Controller) >imm dhcp enable
```

imm mode

To configure the IMM mode, use the **imm mode** command.

```
imm mode {shared | dedicated}
```

Syntax Description	shared	Sets IMM in shared mode
	dedicated	Sets IMM in dedicated mode
Command Default	Dedicated	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the IMM in shared mode:

```
(Cisco Controller) >imm mode
```

imm restart

To restart the IMM, use the **imm restart** command.

```
imm restart
```

Syntax Description	restart	Saves your settings and restarts the IMM
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

imm summary

To view the IMM parameters, use the **imm summary** command.

```
imm summary
```

Syntax Description	summary	Lists the IMM parameters
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Command Default	None
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Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows a typical summary of the IMM:

```
(Cisco Controller) >imm summary
User ID.....username1
Mode..... Shared
DHCP..... Enabled
IP Address..... 209.165.200.225
Subnet Mask..... 255.255.255.224
Gateway..... 10.1.1.1
```

imm username

To configure the logon credentials for an IMM user, use the **imm username** command.

imm username *username password*

Syntax Description		
<i>username</i>		Username for the user
<i>password</i>		Password for the user

Command Default	None
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Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to set the logon credentials of an IMM user:

```
(Cisco Controller) >imm username username1 password1
```

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 the debugging of AAA settings, use the **debug aaa** command.

```
debug aaa { [all | detail | events | packet | local-auth | tacacs] [enable | disable] }
```

Syntax Description

all	(Optional) Configures the debugging of all AAA messages.
avp-xml	(Optional) Configures debug of AAA Avp xml events.
detail	(Optional) Configures the debugging of AAA errors.
events	(Optional) Configures the debugging of AAA events.
packet	(Optional) Configures the debugging of AAA packets.
local-auth	(Optional) Configures the debugging of the AAA local Extensible Authentication Protocol (EAP) events.
tacacs	(Optional) Configures the debugging of the AAA TACACS+ events.
enable	(Optional) Enables the debugging.
disable	(Optional) Disables the debugging.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

Related Commands

debug aaa local-auth eap
show running-config

debug aaa local-auth

To configure the debugging of 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	Configures the debugging of the AAA local authentication back-end messages and events.
shim	Configures the debugging of the AAA local authentication shim layer events.
eap	Configures the debugging of the AAA local Extensible Authentication Protocol (EAP) authentication.
framework	Configures the debugging of the local EAP framework.
method	Configures the debugging of local EAP methods.
all	Configures the debugging of local EAP messages.
errors	Configures the debugging of local EAP errors.
events	Configures the debugging of local EAP events.
packets	Configures the debugging of local EAP packets.
sm	Configures the debugging of the local EAP state machine.
enable	Starts the debugging.
disable	Stops the debugging.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of the AAA local EAP authentication:

```
(Cisco Controller) > debug aaa local-auth eap method all enable
```

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
show local-auth certificates
show local-auth config
show local-auth statistics

```

debug airewave-director

To configure the debugging of Airewave Director software, 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
all	Configures the debugging of all Airewave Director logs.
channel	Configures the debugging of the Airewave Director channel assignment protocol.
detail	Configures the debugging of the Airewave Director detail logs.
error	Configures the debugging of the Airewave Director error logs.
group	Configures the debugging of the Airewave Director grouping protocol.
manager	Configures the debugging of the Airewave Director manager.
message	Configures the debugging of the Airewave Director messages.
packet	Configures the debugging of the Airewave Director packets.
power	Configures the debugging of the Airewave Director power assignment protocol and coverage hole detection.
profile	Configures the debugging of the Airewave Director profile events.
radar	Configures the debugging of the Airewave Director radar detection/avoidance protocol.
rf-change	Configures the debugging of the Airewave Director rf changes.
enable	Enables the Airewave Director debugging.

disable	Disables the Airewave Director debugging.
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Command Default	None
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Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of Airewave Director profile events:

```
(Cisco Controller) > debug airewave-director profile enable
```

Related Commands	debug disable-all show sysinfo
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debug ap

To configure the 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		
enable	Enables the debugging on a lightweight access point.	
	Note	The debugging information is displayed only to the controller console and does not send output to a controller Telnet/SSH CLI session.
disable	Disables the debugging on a lightweight access point.	
	Note	The debugging information is displayed only to the controller console and does not send output to a controller Telnet/SSH CLI session.
command	Specifies that a CLI command is to be executed on the access point.	
<i>cmd</i>	Command to be executed.	
	Note	The command to be executed must be enclosed in double quotes, such as debug ap command "led flash 30" AP03 . The output of the command displays only to the controller console and does not send output to a controller Telnet/SSH CLI session.
<i>cisco_ap</i>	Name of a Cisco lightweight access point.	

Command Default	The remote debugging of Cisco lightweight access points is disabled.
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Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the remote debugging on access point AP01:

```
(Cisco Controller) >debug ap enable AP01
```

The following example shows how to execute the **config ap location** command on access point AP02:

```
(Cisco Controller) >debug ap command "config ap location "Building 1" AP02"
```

The following example shows how to execute the flash LED command on access point AP03:

```
(Cisco Controller) >debug ap command "led flash 30" AP03
```

debug ap enable

To configure the 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*

Syntax Description		
enable	Enables the remote debugging.	
	Note	The debugging information is displayed only to the controller console and does not send output to a controller Telnet/SSH CLI session.
disable	Disables the remote debugging.	
command	Specifies that a CLI command is to be executed on the access point.	
<i>cmd</i>	Command to be executed.	
	Note	The command to be executed must be enclosed in double quotes, such as debug ap command "led flash 30" AP03 . The output of the command displays only to the controller console and does not send output to a controller Telnet/SSH CLI session.
<i>cisco_ap</i>	Cisco lightweight access point name.	
Command Default	None	

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the remote debugging on access point AP01:

```
(Cisco Controller) >debug ap enable AP01
```

The following example shows how to disable the remote debugging on access point AP02:

```
(Cisco Controller) >debug ap disable AP02
```

The following example shows how to execute the flash LED command on access point AP03:

```
(Cisco Controller) >debug ap command "led flash 30" AP03
```

debug ap packet-dump

To configure the debugging of Packet Capture, use the **debug ap packet-dump** command.

```
debug ap packet-dump { enable | disable }
```

Syntax Description	
enable	Enables the debugging of Packet Capture of an access point.
disable	Disables the debugging of Packet Capture of an access point.

Command Default Debugging of Packet Capture is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines Packet Capture does not work during inter-controller roaming.
The controller does not capture packets created in the radio firmware and sent out of the access point, such as beacon or probe response. Only packets that flow through the radio driver in the Tx path will be captured.

The following example shows how to enable the debugging of Packet Capture from an access point:

```
(Cisco Controller) >debug ap packet-dump enable
```

debug ap show stats

To debug video messages and statistics of Cisco lightweight access points, use the **debug ap show stats** command.

debug ap show stats {**802.11a** | **802.11b**} *cisco_ap* {**tx-queue** | **packet** | **load** | **multicast** | **client** {*client_MAC* | **video** | **all**} | **video metrics**}

debug ap show stats video *cisco_ap* {**multicast mgid** *mgid_database_number* | **admission** | **bandwidth**}

Syntax Description		
802.11a		Specifies the 802.11a network.
802.11b		Specifies the 802.11b/g network.
<i>cisco_ap</i>		Cisco lightweight access point name.
tx-queue		Displays the transmit queue traffic statistics of the AP.
packet		Displays the packet statistics of the AP.
load		Displays the QoS Basic Service Set (QBSS) and other statistics of the AP.
multicast		Displays the multicast supported rate statistics of the AP.
client		Displays the specified client metric statistics.
<i>client_MAC</i>		MAC address of the client.
video		Displays video statistics of all clients on the AP.
all		Displays statistics of all clients on the AP.
video metrics		Displays the video metric statistics.
mgid		Displays detailed multicast information for a single multicast group ID (MGID).
<i>mgid_database_number</i>		Layer 2 MGID database number.
admission		Displays video admission control on the AP.
bandwidth		Displays video bandwidth on the AP.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to troubleshoot the access point AP01's transmit queue traffic on an 802.11a network:

```
(Cisco Controller) >debug ap show stats 802.11a AP01 tx-queue
```

The following example shows how to troubleshoot the access point AP02's multicast supported rates on an 802.11b/g network:

```
(Cisco Controller) >debug ap show stats 802.11b AP02 multicast
```

The following example shows how to troubleshoot the metrics of a client identified by its MAC address, associated with the access point AP01 on an 802.11a network:

```
(Cisco Controller) >debug ap show stats 802.11a AP01 client 00:40:96:a8:f7:98
```

The following example shows how to troubleshoot the metrics of all clients associated with the access point AP01 on an 802.11a network:

```
(Cisco Controller) >debug ap show stats 802.11a AP01 client all
```

debug ap show stats video

To configure the debugging of video messages and statistics of Cisco lightweight access points, use the **debug ap show stats video** command.

```
debug ap show stats video cisco_ap { multicast mgid mgid_value | admission | bandwidth }
```

Syntax Description

<i>cisco_ap</i>	Cisco lightweight access point name.
multicast mgid	Displays multicast database related information for the specified MGID of an access point.
<i>mgid_value</i>	Layer 2 MGID database number from 1 to 4095.
admission	Displays the video admission control.
bandwidth	Displays the video bandwidth.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the debugging of an access point AP01's multicast group that is identified by the group's Layer 2 MGID database number:

```
(Cisco Controller) >debug ap show stats video AP01 multicast mgid 50
```

This example shows how to configure the debugging of an access point AP01's video bandwidth:

```
(Cisco Controller) >debug ap show stats video AP01 bandwidth
```

debug arp

To configure the debugging of Address Resolution Protocol (ARP) options, use the **debug arp** command.

debug arp { **all** | **detail** | **events** | **message** } { **enable** | **disable** }

Syntax Description

all	Configures the debugging of all ARP logs.
detail	Configures the debugging of ARP detail messages.
error	Configures the debugging of ARP errors.
message	Configures the debugging of ARP messages.
enable	Enables the ARP debugging.
disable	Disables the ARP debugging.

Command Default

None

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable ARP debug settings:

```
(Cisco Controller) > debug arp error enable
```

The following example shows how to disable ARP debug settings:

```
(Cisco Controller) > debug arp error disable
```

Related Commands

debug disable-all
show sysinfo

debug avc

To configure the debugging of Application Visibility and Control (AVC) options, use the **debug avc error** command.

debug avc { **events** | **error** } { **enable** | **disable** }

Syntax Description

events	Configures the debugging of AVC events.
error	Configures the debugging of AVC errors.
enable	Enables the debugging of AVC events or errors.
disable	Disables the debugging of AVC events or errors.

Command Default By default, the debugging of AVC options is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of AVC errors:

```
(Cisco Controller) > debug avc error enable
```

Related Commands

- config avc profile delete
- config avc profile rule
- config wlan avc
- show avc profile
- show avc applications
- show avc statistics

debug bcast

To configure the debugging of broadcast options, use the **debug bcast** command.

```
debug bcast {all | error | message | igmp | detail} {enable | disable}
```

Syntax Description		
all		Configures the debugging of all broadcast logs.
error		Configures the debugging of broadcast errors.
message		Configures the debugging of broadcast messages.
igmp		Configures the debugging of broadcast IGMP messages.
detail		Configures the debugging of broadcast detailed messages.
enable		Enables the broadcast debugging.
disable		Disables the broadcast debugging.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of broadcast messages:

```
(Cisco Controller) > debug bcast message enable
```

The following example shows how to disable the debugging of broadcast messages:

```
(Cisco Controller) > debug bcast message disable
```

Related Commands

- debug disable-all**
- show sysinfo**

debug cac

To configure the debugging of Call Admission Control (CAC) options, use the **debug cac** command.

```
debug cac {all | event | packet} {enable | disable}
```

Syntax Description

all	Configures the debugging options for all CAC messages.
event	Configures the debugging options for CAC events.
packet	Configures the debugging options for selected CAC packets.
kts	Configures the debugging options for KTS-based CAC messages.
enable	Enables the debugging of CAC settings.
disable	Disables the debugging of CAC settings.

Command Default

By default, the debugging of CAC options is disabled.

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable debugging of CAC settings:

```
(Cisco Controller) > debug cac event enable
```

```
(Cisco Controller) > debug cac packet enable
```

Related Commands

- config 802.11 cac video acm**
- config 802.11 cac video max-bandwidth**
- config 802.11 video roam-bandwidth**
- config 802.11 cac video tspec-inactivity-timeout**
- config 802.11 cac voice load-based**
- config 802.11 cac voice roam-bandwidth**

config 802.11cac voice stream-size

config 802.11cac voice tspec-inactivity-timeout

debug call-control

To configure the debugging of the SIP call control settings, use the **debug call-control** command.

debug call-control {all | event} {enable | disable}

Syntax Description	all	Configures the debugging options for all SIP call control messages.
	event	Configures the debugging options for SIP call control events.
	enable	Enables the debugging of SIP call control messages or events.
	disable	Disables the debugging of SIP call control messages or events.
Command Default	Disabled.	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of all SIP call control messages:

```
(Cisco Controller) >debug call-control all enable
```

debug capwap

To configure the debugging of 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 | mfp} {enable | disable}

Syntax Description	detail	Configures the debugging for CAPWAP detail settings.
	dtls-keepalive	Configures the debugging for CAPWAP DTLS data keepalive packets settings.
	errors	Configures the debugging for CAPWAP error settings.
	events	Configures the debugging for CAPWAP events settings.
	hexdump	Configures the debugging for CAPWAP hexadecimal dump settings.
	info	Configures the debugging for CAPWAP info settings.
	packet	Configures the debugging for CAPWAP packet settings.
	payload	Configures the debugging for CAPWAP payload settings.

mfp	Configures the debugging for CAPWAP mfp settings.
enable	Enables the debugging of the CAPWAP command.
disable	Disables the debugging of the CAPWAP command.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of CAPWAP details:

```
(Cisco Controller) >debug capwap detail enable
```

debug capwap reap

To configure the debugging of Control and Provisioning of Wireless Access Points (CAPWAP) settings on a FlexConnect access point, use the **debug capwap reap** command.

debug capwap reap [**mgmt** | **load**]

Syntax Description	
mgmt	(Optional) Configures the debugging for client authentication and association messages.
load	(Optional) Configures the debugging for payload activities, which is useful when the FlexConnect access point boots up in standalone mode.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the debugging of FlexConnect client authentication and association messages:

```
(Cisco Controller) >debug capwap reap mgmt
```

debug client

To configure the debugging for a specific client, use the **debug client** command.

debug client *mac_address*

Syntax Description	<i>mac_address</i>	MAC address of the client.
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Command Default None

Usage Guidelines After entering the **debug client** *mac_address* command, if you enter the **debug aaa events enable** command, then the AAA events logs are displayed for that particular client MAC address.

Command History

Release Modification

7.6 This command was introduced.

The following example shows how to debug a specific client:

```
(Cisco Controller) > debug client 01:35:6x:yy:21:00
```

debug crypto

To configure the debugging of the hardware cryptographic options, use the **debug crypto** command.

debug crypto {all | sessions | trace | warning} {enable | disable}

Syntax Description

all	Configures the debugging of all hardware crypto messages.
sessions	Configures the debugging of hardware crypto sessions.
trace	Configures the debugging of hardware crypto sessions.
warning	Configures the debugging of hardware crypto sessions.
enable	Enables the debugging of hardware cryptographic sessions.
disable	Disables the debugging of hardware cryptographic sessions.

Command Default None

Command History

Release Modification

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of hardware crypto sessions:

```
(Cisco Controller) > debug crypto sessions enable
```

Related Commands

debug disable-all
show sysinfo

debug dhcp

To configure the debugging of DHCP, use the **debug dhcp** command.

debug dhcp { **message** | **packet** } { **enable** | **disable** }

Syntax Description		
message		Configures the debugging of DHCP error messages.
packet		Configures the debugging of DHCP packets.
enable		Enables the debugging DHCP messages or packets.
disable		Disables the debugging of DHCP messages or packets.

Command Default None

The following example shows how to enable the debugging of DHCP messages:

```
(Cisco Controller) >debug dhcp message enable
```

debug dhcp service-port

To enable or disable debugging of the Dynamic Host Configuration Protocol (DHCP) packets on the service port, use the **debug dhcp service-port** command.

debug dhcp service-port { **enable** | **disable** }

Syntax Description		
enable		Enables the debugging of DHCP packets on the service port.
disable		Disables the debugging of DHCP packets on the service port.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of DHCP packets on a service port:

```
(Cisco Controller) >debug dhcp service-port enable
```

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.

Command Default Disabled.

Command History**Release Modification**

7.6	This command was introduced in a release earlier than Release 7.6.
-----	--

The following example shows how to disable all debug messages:

```
(Cisco Controller) > debug disable-all
```

debug dot11

To configure the debugging of 802.11 events, use the **debug dot11** command.

```
debug dot11 {all | load-balancing | management | mobile | nmosp | probe | rldp | rogue | state} {enable | disable}
```

Syntax Description

all	Configures the debugging of all 802.11 messages.
load-balancing	Configures the debugging of 802.11 load balancing events.
management	Configures the debugging of 802.11 MAC management messages.
mobile	Configures the debugging of 802.11 mobile events.
nmosp	Configures the debugging of the 802.11 NMSP interface events.
probe	Configures the debugging of probe.
rldp	Configures the debugging of 802.11 Rogue Location Discovery.
rogue	Configures the debugging of 802.11 rogue events.
state	Configures the debugging of 802.11 mobile state transitions.
enable	Enables the 802.11 debugging.
disable	Disables the 802.11 debugging.

Command Default

None

Command History**Release****Modification**

7.6

This command was introduced in a release earlier than Release 7.6.
--

The following example shows how to enable the debugging of 802.11 settings:

```
(Cisco Controller) > debug dot11 state enable
(Cisco Controller) > debug dot11 mobile enable
```

debug dot11 mgmt interface

To configure debugging of 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to debug 802.11 management interface events:

```
(Cisco Controller) >debug dot11 mgmt interface
```

debug dot11 mgmt msg

To configure debugging of 802.11 management messages, use the **debug dot11 mgmt msg** command.

debug dot11 mgmt msg

Syntax Description This command has no arguments or keywords.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

This example shows how to debug dot11 management messages:

```
(Cisco Controller) >debug dot11 mgmt msg
```

debug dot11 mgmt ssid

To configure debugging of 802.11 SSID management events, use the **debug dot11 mgmt ssid** command.

debug dot11 mgmt ssid

Syntax Description This command has no arguments or keywords.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the debugging of 802.11 SSID management events:

```
(Cisco Controller) >debug dot11 mgmt ssid
```

debug dot11 mgmt station

To configure the debugging of the management station settings, use the **debug dot11 mgmt station** command.

debug dot11 mgmt station

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

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the debugging of the management station settings:

```
(Cisco Controller) >debug dot11 mgmt station
```

debug dot1x

To configure debugging of the 802.1X options, use the **debug dot1x** command.

debug dot1x {aaa | all | events | packets | states} {enable | disable}

Syntax Description		
aaa		Configures debugging of the 802.1X AAA interactions.
all		Configures debugging of all the 802.1X messages.
events		Configures debugging of the 802.1X events.
packets		Configures debugging of the 802.1X packets.
states		Configures debugging of the 802.1X state transitions.
enable		Enables debugging of the 802.1X options.
disable		Disables debugging of the 802.1X options.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable 802.1X state transitions debugging:

```
(Cisco Controller) > debug dot1x states enable
```

debug group

To configure the debugging of access point groups, use the **debug group** command.

debug group {enable | disable}

Syntax Description	enable	Disables the debugging of access point groups.
	disable	Enables the debugging of access point groups.

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of access point groups:

```
(Cisco Controller) > debug group enable
```

debug flexconnect aaa

To configure debugging of FlexConnect backup RADIUS server events or errors, use the **debug flexconnect aaa** command.

debug flexconnect aaa {event | error} {enable | disable}

Syntax Description	event	Configures the debugging for FlexConnect RADIUS server events.
	error	Configures the debugging for FlexConnect RADIUS server errors.
	enable	Enables the debugging of FlexConnect RADIUS server settings.
	disable	Disables the debugging of FlexConnect RADIUS server settings.

Command Default	None
-----------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of FlexConnect RADIUS server events:

```
(Cisco Controller) >debug flexconnect aaa event enable
```

debug flexconnect acl

Configures debugging of FlexConnect access control lists (ACLs), use the **debug flexconnect acl** command.

debug flexconnect acl {enable | disable}

Syntax Description	enable	disable
	Enables the debugging of FlexConnect ACLs.	Disables the debugging of FlexConnect ACLs.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of FlexConnect ACLs:

```
(Cisco Controller) >debug flexconnect acl enable
```

debug flexconnect group

To configure debugging of FlexConnect access point groups, use the **debug flexconnect group** command.

debug flexconnect group {enable | disable}

Syntax Description	enable	disable
	Enables the debugging of FlexConnect access point groups.	Disables the debugging of FlexConnect access point groups.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of FlexConnect access point groups:

```
(Cisco Controller) >debug flexconnect group enable
```

debug hotspot

To configure debugging of HotSpot events or packets, use the **debug hotspot** command.

debug hotspot {events | packets} {enable | disable} {enable | disable}

Syntax Description		
events		Configures debugging of HotSpot events.
packets		Configures debugging of HotSpot packets.
enable		Enables the debugging of HotSpot options.
disable		Disables the debugging of HotSpot options.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable debugging of hotspot events:

```
(Cisco Controller) >debug hotspot events enable
```

debug hotspot packets

To configure the debugging of HotSpot packets, use the **debug hotspot packets** command.

debug hotspot packets {enable | disable}

Syntax Description		
enable		Enables the debugging of HotSpot packets.
disable		Disables the debugging of HotSpot packets.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of HotSpot packets:

```
(Cisco Controller) >debug hotspot packets enable
```

debug l2age

To configure the debugging of Layer 2 age timeout messages, use the **debug l2age** command.

debug l2age {enable | disable}

Syntax Description	enable	Enables the debugging of Layer2 age settings.
	disable	Disables the debugging Layer2 age settings.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of Layer2 age settings:

```
(Cisco Controller) > debug l2age enable
```

Related Commands debug disable-all

debug lwapp console cli

To configure the debugging of 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.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines This access point CLI command must be entered from the access point console port.

The following example shows how to configure the debugging of the access point console:

```
AP# debug lwapp console cli
LWAPP console CLI allow/disallow debugging is on
```

debug mac

To configure the debugging of the client MAC address, use the **debug mac** command.

debug mac { **disable** | **addr** *MAC* }

Syntax Description	disable	Disables the debugging of the client using the MAC address.
	addr	Configures the debugging of the client using the MAC address.

<i>MAC</i>	MAC address of the client.
------------	----------------------------

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the debugging of the client using the MAC address:

```
(Cisco Controller) > debug mac addr 00.0c.41.07.33.a6
```

Related Commands `debug disable-all`

debug media-stream

To configure the debugging of media stream, use the **debug media-stream** command.

debug media-stream {**admission** | **config** | **errors** | **event** | **history** | **rrc**} {**enable** | **disable**}

Syntax Description		
admission		Configures the debugging of the media stream admission.
config		Configures the debugging of the media stream configuration.
errors		Configures the debugging of the media stream errors.
event		Configures the debugging of the media stream events.
history		Configures the debugging of the media stream history.
rrc		Configures the debugging of the media stream radio resource management.
enable		Enables the debugging of the media stream.
disable		Disables the debugging of the media stream.

Command Default None.

This example shows how to enable the debugging of the media stream history:

```
> debug media-stream history enable
```

Related Commands `show media-stream group summary`
`config media-stream multicast direct`

debug memory

To enable or disable the debugging of errors or events during the memory allocation of the controller, use the **debug memory** command.

```
debug memory { errors | events } { enable | disable }
```

Syntax Description	errors	Configures the debugging of memory leak errors.
	events	Configures debugging of memory leak events.
	enable	Enables the debugging of memory leak events.
	disable	Disables the debugging of memory leak events.

Command Default By default, the debugging of errors or events during the memory allocation of the controller is disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of memory leak events:

```
(Cisco Controller) > debug memory events enable
```

Related Commands	config memory monitor errors
	show memory monitor
	config memory monitor leaks

debug mesh security

To configure the debugging of mesh security issues, use the **debug mesh security** command.

```
debug mesh security { all | events | errors } { enable | disable }
```

Syntax Description	all	Configures the debugging of all mesh security messages.
	events	Configures the debugging of mesh security event messages.
	errors	Configures the debugging of mesh security error messages.
	enable	Enables the debugging of mesh security error messages.
	disable	Disables the debugging of mesh security error messages.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of mesh security error messages:

```
(Cisco Controller) >debug mesh security errors enable
```

debug mobility

To configure the debugging of wireless mobility, use the **debug mobility** command.

debug mobility {**ap-list** | **config** | **directory** | **dtls** | **handoff** | **keep-alive** | **multicast** | **oracle** | **packet** | **peer-ip** *IP-address* | **pmk** | **pmtu-discovery** | **redha**} {**enable** | **disable**}

Syntax Description		
ap-list		Configures the debugging of wireless mobility access point list.
config		Configures the debugging of wireless mobility configuration.
directory		Configures the debugging of wireless mobility error messages.
dtls		Configures the debugging of wireless mobility Datagram Transport Layer Security (DTLS) options.
handoff		Configures the debugging of wireless mobility handoff messages.
keep-alive		Configures the debugging of wireless mobility CAPWAP data DTLS keep-alive packets.
multicast		Configures the debugging of multicast mobility packets.
oracle		Starts the debugging of wireless mobility oracle options.
packet		Configures the debugging of wireless mobility packets.
peer-ip		Configures IP address of the mobility peer for which incoming and outgoing mobility messages should be displayed.
<i>IP-address</i>		IP address of the mobility peer for which incoming and outgoing mobility messages should be displayed.
pmk		Configures the debugging of wireless mobility pairwise master key (PMK).

pmtu-discovery	Configures the debugging of the wireless mobility path MTU discovery.
redha	Configures the debugging of the multicast mobility high availability.
enable	Enables the debugging of the wireless mobility feature.
disable	Disables the debugging of the wireless mobility feature.

Command Default

None

Command History

Release	Modification
7.6	This command was introduced in a release earlier than Release 7.6.
8.0	This command supports both IPv4 and IPv6 address formats.

The following example shows how to enable the debugging of wireless mobility packets.

```
(Cisco Controller) >debug mobility handoff enable
```

debug nmosp

To configure the debugging of the Network Mobility Services Protocol (NMSP), use the **debug nmosp** command.

debug nmosp {all | connection | detail | error | event | message | packet}

Syntax Description

all	Configures the debugging for all NMSP messages.
connection	Configures the debugging for NMSP connection events.
detail	Configures the debugging for NMSP events in detail.
error	Configures the debugging for NMSP error messages.
event	Configures the debugging for NMSP events.
message	Configures the debugging for NMSP transmit and receive messages.
packet	Configures the debugging for NMSP packet events.

Command Default

None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the debugging of NMSP connection events:

```
(Cisco Controller) > debug nmosp connection
```

Related Commands
clear nmosp statistics
debug disable-all
config nmosp notify-interval measurement

debug ntp

To configure the debugging of the Network Time Protocol (NTP), use the **debug ntp** command.

```
debug ntp {detail | low | packet} {enable | disable}
```

Syntax Description	detail	Configures the debugging of detailed NTP messages.
	low	Configures the debugging of NTP messages.
	packet	Configures the debugging of NTP packets.
	enable	Enables the NTP debugging.
	disable	Disables the NTP debugging.

Command Default
None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of NTP settings:

```
(Cisco Controller) > debug ntp packet enable
```

Related Commands
debug disable-all

debug packet error

To configure debugging of the packets sent to the controller CPU , use the **debug packet error** command.

```
debug packet error {enable | disable}
```

Syntax Description	enable	Enables debugging of the packets sent to the controller CPU.
--------------------	--------	--

disable Disables debugging of the packets sent to the controller CPU.

Command Default None

Command History **Release** **Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of the packets sent to the controller CPU:

```
(Cisco Controller) > debug packet error enable
```

debug packet logging

To configure logging of the 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* | **lwapp-dot11** *rule_index action dst src bssid type* | **lwapp-ip** *rule_index action src dst proto src_port dst_port*}

Syntax Description		
acl		Filters the displayed packets according to a rule.
disable		Disables logging of all the packets.
enable		Enables logging of all the packets.
rx		Displays all the received packets.
tx		Displays all the transmitted packets.
all		Displays both the transmitted and the received packets.
<i>packet_count</i>		Maximum number of packets to be logged. The range is from 1 to 65535. The default value is 25.
<i>display_size</i>		Number of bytes to be displayed when printing a packet. By default, the entire packet is displayed.
format		Configures the format of the debug output.
hex2pcap		Configures the output format to be compatible with the hex2pcap format. The standard format used by Cisco IOS supports the use of hex2pcap and can be decoded using an HTML front end.

text2pcap	Configures the output format to be compatible with the text2pcap format. In this format, the sequence of packets can be decoded from the same console log file. .
clear-all	Clears all the existing rules pertaining to the packets.
driver	Filters the packets based on an incoming port or a Network Processing Unit (NPU) encapsulation type.
<i>rule_index</i>	Index of the rule that is a value between 1 and 6 (inclusive).
<i>action</i>	Action for the rule, which can be permit , deny , or disable .
<i>npu_encap</i>	NPU encapsulation type that determines how the packets are filtered. The possible values are <i>dhcp</i> , <i>dot11-mgmt</i> , <i>dot11-probe</i> , <i>dot1x</i> , <i>eoip-ping</i> , <i>iapp</i> , <i>ip</i> , <i>lwapp</i> , <i>multicast</i> , <i>orphan-from-sta</i> , <i>orphan-to-sta</i> , <i>rbc</i> , <i>wired-guest</i> , or <i>any</i> .
<i>port</i>	Physical port for packet transmission or reception.
eoip-eth	Filters packets based on the Ethernet II header in the Ethernet over IP (EoIP) payload.
<i>dst</i>	Destination MAC address.
<i>src</i>	Source MAC address.
<i>type</i>	Two-byte type code, such as 0x800 for IP, 0x806 for Address Resolution Protocol (ARP). You can also enter a few common string values such as <i>ip</i> (for 0x800) or <i>arp</i> (for 0x806).
<i>vlan</i>	Two-byte VLAN identifier.
eoip-ip	Filters packets based on the IP header in the EoIP payload.
<i>proto</i>	Protocol. Valid values are: <i>ip</i> , <i>icmp</i> , <i>igmp</i> , <i>ggp</i> , <i>ipencap</i> , <i>st</i> , <i>tcp</i> , <i>egp</i> , <i>pup</i> , <i>udp</i> , <i>hmp</i> , <i>xns-idp</i> , <i>rdp</i> , <i>iso-tp4</i> , <i>xtp</i> , <i>ddp</i> , <i>idpr-cmt</i> , <i>rspf</i> , <i>vmt</i> , <i>ospf</i> , <i>ipip</i> , and <i>encap</i> .
<i>src_port</i>	User Datagram Protocol or Transmission Control Protocol (UDP or TCP) two-byte source port, such as <i>telnet</i> , <i>23</i> , or <i>any</i> . The controller supports the following strings: <i>tcpmux</i> , <i>echo</i> , <i>discard</i> , <i>systat</i> , <i>daytime</i> , <i>netstat</i> , <i>qotd</i> , <i>msh</i> , <i>chargen</i> , <i>ftp-data</i> , <i>ftp</i> , <i>fsp</i> , <i>ssh</i> , <i>telnet</i> , <i>smtp</i> , <i>time</i> , <i>rlp</i> , <i>nameserver</i> , <i>whois</i> , <i>re-mail-ck</i> , <i>domain</i> , <i>mtp</i> , <i>bootps</i> , <i>bootpc</i> , <i>tftp</i> , <i>gopher</i> , <i>rje</i> , <i>finger</i> , <i>www</i> , <i>link</i> , <i>kerberos</i> , <i>supdup</i> , <i>hostnames</i> , <i>iso-tsap</i> , <i>csnet-ns</i> , <i>3com-tsmux</i> , <i>rtelnet</i> , <i>pop-2</i> , <i>pop-3</i> , <i>sunrpc</i> , <i>auth</i> , <i>sftp</i> , <i>uucp-path</i> , <i>nntp</i> , <i>ntp</i> , <i>netbios-ns</i> , <i>netbios-dgm</i> , <i>netbios-ssn</i> , <i>imap2</i> , <i>snmp</i> , <i>snmp-trap</i> , <i>cmip-man</i> , <i>cmip-agent</i> , <i>xmcp</i> , <i>nextstep</i> , <i>bgp</i> , <i>prospero</i> , <i>irc</i> , <i>smux</i> , <i>at-rtmp</i> , <i>at-nbp</i> , <i>at-echo</i> , <i>at-zis</i> , <i>qntp</i> , <i>z3950</i> , <i>ipx</i> , <i>imap3</i> , <i>ulistserv</i> , <i>https</i> , <i>snpp</i> , <i>saft</i> , <i>npmp-local</i> , <i>npmp-gui</i> , and <i>hmmp-ind</i> .
<i>dst_port</i>	UDP or TCP two-byte destination port, such as <i>telnet</i> , <i>23</i> , or <i>any</i> . The controller supports the same strings as those for the <i>src_port</i> .

eth	Filters packets based on the values in the Ethernet II header.
ip	Filters packets based on the values in the IP header.
lwapp-dot11	Filters packets based on the 802.11 header in the Lightweight Access Point Protocol (LWAPP) payload.
<i>bssid</i>	Basic Service Set Identifier of the VLAN.
lwapp-ip	Filters packets based on the IP header in the LWAPP payload.

Command Default

None

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable logging of a packet:

```
(Cisco Controller) > debug packet logging enable
```

debug pem

To configure debugging of the access policy manager, use the **debug pem** command.

```
debug pem {events | state} {enable | disable}
```

Syntax Description

events	Configures the debugging of the policy manager events.
state	Configures the debugging of the policy manager state machine.
enable	Enables the debugging of the access policy manager.
disable	Disables the debugging of the access policy manager.

Command Default

None

Command History**Release Modification**

7.6 This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of the access policy manager:

```
(Cisco Controller) > debug pem state enable
```

debug poe

To configure the debugging of Power over Ethernet (PoE), use the **debug poe** command.

debug poe { **detail** | **message** | **error** } { **enable** | **disable** }

Syntax Description		
	detail	Configures the debugging of PoE detail logs.
	error	Configures the debugging of PoE error logs.
	message	Configures the debugging of PoE messages.
	enable	Enables the debugging of PoE logs.
	disable	Disables the debugging of PoE logs.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the PoE debugging:

```
(Cisco Controller) > debug poe message enable
```

Related Commands **debug disable-all**

debug profiling

To configure the debugging of client profiling, use the **debug profiling** command.

debug profiling { **enable** | **disable** }

Syntax Description		
	enable	Enables the debugging of client profiling (HTTP and DHCP profiling).
	disable	Disables the debugging of client profiling (HTTP and DHCP profiling).

Command Default Disabled.

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of client profiling:

```
(Cisco Controller) >debug profiling enable
```

debug rbc

To configure Router Blade Control (RBCP) debug options, use the **debug rbc** command.

debug rbcp { **all** | **detail** | **errors** | **packet** } { **enable** | **disable** }

Syntax Description	all	Configures the debugging of RBCP.
	detail	Configures the debugging of RBCP detail.
	errors	Configures the debugging of RBCP errors.
	packet	Configures the debugging of RBCP packet trace.
	enable	Enables the RBCP debugging.
	disable	Disables the RBCP debugging.

Command Default None

The following example shows how to enable the debugging of RBCP settings:

```
(Cisco Controller) > debug rbc
```

Related Commands **debug disable-all**

debug rfac

To configure the debugging of the Redundancy Framework (RFAC), use the **debug rfac** command.

debug rfac { [**packet** | **events** | **errors** | **detail**] [**enable** | **disable**] }

Syntax Description	packet	Configures the debugging of Redundancy Framework packets.
	events	Configures the debugging of Redundancy Framework events.
	errors	Configures the debugging of Redundancy Framework errors.
	detail	Configures the debugging of Redundancy Framework details.
	enable	(Optional) Enables the debugging of Redundancy Framework.
	disable	(Optional) Disables the debugging of Redundancy Framework.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of Redundancy Framework packets:

```
(Cisco Controller) >debug rfac packet enable
```

debug rfid

To configure radio frequency identification (RFID) debug options, use the **debug rfid** command.

debug rfid { **all** | **detail** | **errors** | **nmosp** | **receive** } { **enable** | **disable** }

Syntax Description

all	Configures the debugging of all RFID.
detail	Configures the debugging of RFID detail.
errors	Configures the debugging of RFID error messages.
nmosp	Configures the debugging of RFID Network Mobility Services Protocol (NMSP) messages.
receive	Configures the debugging of incoming RFID tag messages.
enable	Enables the RFID debugging.
disable	Disables the RFID debugging.

Command Default

None

The following example shows how to enable the debugging of RFID error messages:

```
(Cisco Controller) > debug rfid errors enable
```

Related Commands

debug disable-all

debug rmgr

To configure the debugging of Redundancy Manager (RMGR), use the **debug rmgr** command.

debug rmgr { **packet** | **events** | **errors** | **detail** } { **enable** | **disable** }

Syntax Description

packet	Configures the debugging of Redundancy Manager packets.
events	Configures the debugging of Redundancy Manager events.
errors	Configures the debugging of Redundancy Manager errors.
detail	Configures the debugging of Redundancy Manager details.
enable	Enables the debugging of Redundancy Manager.
disable	Disables the debugging of Redundancy Manager.

Command Default

None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

Redundancy Manager determines the role of the Cisco WLCs, maintains the keepalive messages between the peers, and initiates the switchover.

The following example shows how to enable the debugging of Redundancy Manager packets:

```
(Cisco Controller) >debug rmgr packet enable
```

debug rsyncmgr

To configure the debugging of the Redundancy Sync Manager (RSYNCMGR), use the **debug rsyncmgr** command.

```
debug rsyncmgr {packet | events | errors | detail} {enable | disable}
```

Syntax Description		
packet		Configures the debugging of Redundancy Sync Manager packets.
events		Configures the debugging of Redundancy Sync Manager events.
errors		Configures the debugging of Redundancy Sync Manager errors.
detail		Configures the debugging of Redundancy Sync Manager details.
enable		Enables the debugging of Redundancy Sync Manager.
disable		Stops the debugging Redundancy Sync Manager.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Usage Guidelines

Redundancy Synchronization Manager synchronizes the configurations of the active and standby Cisco WLCs.

The following example shows how to enable the debugging of Redundancy Sync Manager packets:

```
(Cisco Controller) >debug rsyncmgr packet enable
```

debug service ap-monitor

To debug the access point monitor service, use the **debug service ap-monitor** command.

debug service ap-monitor {**all** | **error** | **event** | **nmsp** | **packet**} {**enable** | **disable**}

Syntax Description		
	all	Configures the debugging of all access point status messages.
	error	Configures the debugging of access point monitor error events.
	event	Configures the debugging of access point monitor events.
	nmsp	Configures the debugging of access point monitor Network Mobility Services Protocol (NMSP) events.
	packet	Configures the debugging of access point monitor packets.
	enable	Enables the debugging for access point monitor service.
	disable	Disables the debugging for access point monitor service.

Command Default None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to configure the debugging of access point monitor NMSP events:

```
(Cisco Controller) >debug service ap-monitor events
```

debug snmp

To configure SNMP debug options, use the **debug snmp** command.

debug snmp {**agent** | **all** | **mib** | **trap**} {**enable** | **disable**}

Syntax Description		
	agent	Configures the debugging of the SNMP agent.
	all	Configures the debugging of all SNMP messages.
	mib	Configures the debugging of the SNMP MIB.
	trap	Configures the debugging of SNMP traps.
	enable	Enables the SNMP debugging.
	disable	Disables the SNMP debugging.

Command Default None

The following example shows how to enable the SNMP debugging:

```
(Cisco Controller) > 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}
```

Syntax Description

all	Configures the debugging of all transfer messages.
tftp	Configures the debugging of TFTP transfers.
trace	Configures the debugging of transfer messages.
enable	Enables the debugging of transfer messages.
disable	Disables the debugging of transfer messages.

Command Default None

The following example shows how to enable the debugging of transfer messages:

```
(Cisco Controller) > debug transfer trace enable
```

Related Commands `debug disable-all`

debug voice-diag

To trace call or packet flow, use the **debug voice-diag** command.

```
debug voice-diag {enable client_mac1 [client_mac2] [verbose] | disable}
```

Syntax Description

enable	Enables the debugging of voice diagnostics for voice clients involved in a call.
<i>client_mac1</i>	MAC address of a voice client.
<i>client_mac2</i>	(Optional) MAC address of an additional voice client.
Note	Voice diagnostics can be enabled or disabled for a maximum of two voice clients at a time.

verbose	(Optional) Enables debug information to be displayed on the console. Note When voice diagnostics is enabled from the NCS or Prime Infrastructure, the verbose option is not available.
disable	Disables the debugging of voice diagnostics for voice clients involved in a call.

Command Default

None

Usage Guidelines

Follow these guidelines when you use the **debug voice-diag** command:

- When the command is entered, the validity of the clients is not checked.
- A few output messages of the command are sent to the NCS or Prime Infrastructure.
- The command expires automatically after 60 minutes.
- The command provides the details of the call flow between a pair of client MACs involved in an active call.



Note Voice diagnostics can be enabled for a maximum of two voice clients at a time.

The following example shows how to enable transfer/upgrade settings:

```
(Cisco Controller) > debug voice-diag enable 00:1a:a1:92:b9:5c 00:1a:a1:92:b5:9c verbose
```

Related Commands

show client voice-diag
show client calls

debug web-auth

To configure debugging of web-authenticated clients, use the **debug web-auth** command.

```
debug web-auth { redirect { enable mac mac_address | disable } | webportal-server { enable | disable } }
```

Syntax Description

redirect	Configures debugging of web-authenticated and redirected clients.
enable	Enables the debugging of web-authenticated clients.
mac	Configures the MAC address of the web-authenticated client.
<i>mac_address</i>	MAC address of the web-authenticated client.
disable	Disables the debugging of web-authenticated clients.
webportal-server	Configures the debugging of portal authentication of clients.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of a web authenticated and redirected client:

```
(Cisco Controller) > debug web-auth redirect enable mac xx:xx:xx:xx:xx:xx
```

debug wcp

To configure the debugging of WLAN Control Protocol (WCP), use the **debug wcp** command.

```
debug wcp {events | packet} {enable | disable}
```

Syntax Description		
events		Configures the debugging of WCP events.
packet		Configures the debugging of WCP packets.
enable		Enables the debugging of WCP settings.
disable		Disables the debugging of WCP settings.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of WCP settings:

```
(Cisco Controller) >debug wcp packet enable
```

debug wps sig

To configure the debugging of Wireless Provisioning Service (WPS) signature settings, use the **debug wps sig** command.

```
debug wps sig {enable | disable}
```

Syntax Description		
enable		Enables the debugging for WPS settings.
disable		Disables the debugging for WPS settings.

Command Default	None
------------------------	------

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of WPS signature settings:

```
(Cisco Controller) > debug wps sig enable
```

Related Commands
debug wps mfp
debug disable-all

debug wps mfp

To configure the debugging of WPS Management Frame Protection (MFP) settings, use the **debug wps mfp** command.

debug wps mfp { **client** | **capwap** | **detail** | **report** | **mm** } { **enable** | **disable** }

Syntax Description		
client		Configures the debugging for client MFP messages.
capwap		Configures the debugging for MFP messages between the controller and access points.
detail		Configures the detailed debugging for MFP messages.
report		Configures the debugging for MFP reporting.
mm		Configures the debugging for MFP mobility (inter-controller) messages.
enable		Enables the debugging for WPS MFP settings.
disable		Disables the debugging for WPS MFP settings.

Command Default
None

Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

The following example shows how to enable the debugging of WPS MFP settings:

```
(Cisco Controller) > 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.

eping *mobility_peer_IP_address*

Syntax Description	<i>mobility_peer_IP_address</i>	IP address of a controller that belongs to a mobility group.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.
	8.0	This command supports only IPv4 address format.
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.

The IPv6 address format for this command is not supported.

The following 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:

```
(Cisco Controller) >eping 172.12.35.31
```

mping

To test mobility UDP control packet communication between two controllers, use the **mping** command.

mping *mobility_peer_IP_address*

Syntax Description	<i>mobility_peer_IP_address</i>	IP address of a controller that belongs to a mobility group.
Command Default	None	
Command History	Release	Modification
	7.6	This command was introduced in a release earlier than Release 7.6.

Release	Modification
8.0	This command supports both IPv4 and IPv6 address formats.

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.

The following 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:

```
(Cisco Controller) >mping 172.12.35.31
```