



## **Cisco Wireless LAN Controller Radio Resource Management Command Reference, Release 7.4**

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## Preface

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

- [Audience, page ix](#)
- [Document Organization, page ix](#)
- [Document Conventions, page ix](#)
- [Related Documentation, page xii](#)
- [Obtaining Documentation and Submitting a Service Request, page xii](#)

## Audience

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

## Document Organization

This document is organized into the following chapters:

Chapter	Description
Overview	Describes how to use the command-line interface (CLI) on the controller.
CLI Commands	Provides detailed information about the CLI commands for the controller.

## Document Conventions

This document uses the following conventions:

Convention	Indication
<b>bold font</b>	Commands and keywords and user-entered text appear in <b>bold font</b> .
<i>italic font</i>	Document titles, new or emphasized terms, and arguments for which you supply values are in <i>italic font</i> .
[ ]	Elements in square brackets are optional.
{x   y   z }	Required alternative keywords are grouped in braces and separated by vertical bars.
[ x   y   z ]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
<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 lichamelijk letsel 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.)
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").

Warning Title	Description
¡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.")
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 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*

## Obtaining Documentation and Submitting a Service Request

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

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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



## Overview

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The Radio Resource Management (RRM) software embedded in the controller acts as a built-in RF engineer to consistently provide real-time RF management of your wireless network. RRM enables controllers to continually monitor their associated lightweight access points for traffic load, interference, noise, and coverage.

- [CLI Command Keyboard Shortcuts, page 1](#)
- [Using the Interactive Help Feature, page 3](#)
- [Using the Help Command, page 3](#)
- [Using the ? command, page 4](#)
- [Using the partial? command, page 4](#)
- [Using the partial command<tab>, page 5](#)
- [Using the command ?, page 5](#)
- [command keyword ?, page 6](#)

## 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

Action	Description	Keyboard Shortcut
	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
	The word to the left of the cursor.	Ctrl-w or Esc Backspace
Display MORE output	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 an 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
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 following table lists the interactive help feature list.

**Table 2: Interactive Help Feature List**

Command	
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?).

### Examples

```
> help
HELP:
Special keys:
  DEL, BS... delete previous character
  Ctrl-A .... go to beginning of line
  Ctrl-E .... go to end of line
  Ctrl-F .... go forward one character
  Ctrl-B .... go backward one character
```

```

Ctrl-D .... delete current character
Ctrl-U, X. delete to beginning of line
Ctrl-K .... delete to end of line
Ctrl-W .... delete previous word
Ctrl-T .... transpose previous character
Ctrl-P .... go to previous line in history buffer
Ctrl-N .... go to next line in history buffer
Ctrl-Z .... return to root command prompt
Tab, <SPACE> command-line completion
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.

### Examples

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

```

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

```

```

advanced

```

## Using the partial command<tab>

### 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>.

### Examples

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

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

## Using the command ?

### Examples

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

There should be 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 ?

## Usage Guidelines

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

## Examples

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

```
> controller>config acl cpu ?
```

Information similar to the following appears:

```
none          None - Disable the CPU ACL  
<name>       <name> - Name of the CPU ACL
```



## CLI Commands

---

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

- [Show Commands, page 7](#)
- [Config Commands, page 24](#)
- [Debug Commands, page 121](#)

## Show Commands

## 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<i>extended</i>	Displays the 802.11a/b radio extended configurations.

### Command Default

None.

### Examples

This example shows how to display radio extended configurations:

```
> 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
```

## 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.

### Command Default

None.

### Examples

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

```
> show advanced 802.11a channel
Automatic Channel Assignment
Channel Assignment Mode..... AUTO
Channel Update Interval..... 600 seconds [startup]
Anchor time (Hour of the day)..... 0
Channel Update Contribution..... 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
```

### Related Commands

**config advanced 802.11 channel add**  
**config advanced 802.11 channel cleanair-event**  
**config advanced 802.11 channel dca anchor-time**  
**config advanced 802.11 channel dca chan-width-11n**  
**config advanced 802.11 channel dca interval**  
**config advanced 802.11 channel dca sensitivity**  
**config advanced 802.11 channel foreign**  
**config advanced 802.11 channel load**

## 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.

### Command Default

None.

### Examples

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

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

### Related Commands

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

## show advanced 802.11 group

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

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

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.

### Command Default

None.

### Examples

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

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

### Related Commands

**config advanced 802.11 group-mode**

## show advanced 802.11 l2roam

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

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

### Syntax Description

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

### Command Default

None.

### Examples

This example shows how to display 802.11b Layer 2 client roaming information:

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

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

### Related Commands

**config 802.11 l2roam rf-params**

## show advanced 802.11 logging

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

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

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.

### Command Default

None.

### Examples

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

```
> show advanced 802.11b logging
RF Event and Performance Logging
Channel Update Logging..... Off
Coverage Profile Logging..... Off
Foreign Profile Logging..... Off
Load Profile Logging..... Off
Noise Profile Logging..... Off
Performance Profile Logging..... Off
TxPower Update Logging..... Off
```

### Related Commands

**config advanced 802.11 logging channel**  
**config advanced 802.11 logging coverage**  
**config advanced 802.11 logging foreign**  
**config advanced 802.11 logging load**  
**config advanced 802.11 logging noise**  
**config advanced 802.11 logging performance**  
**show advanced 802.11 channel**

## show advanced 802.11 monitor

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

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

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.

### Command Default

None.

### Examples

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

```
> show advanced 802.11b monitor
Default 802.11b AP monitoring
802.11b Monitor Mode..... enable
802.11b Monitor Channels..... Country channels
802.11b 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
```

### Related Commands

**config advanced 802.11 monitor load**  
**config advanced 802.11 monitor mode**  
**config advanced 802.11 monitor noise**  
**config advanced 802.11 monitor signal**

## show advanced 802.11 profile

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

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

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>global</b>	Specifies all Cisco lightweight access points.
<i>cisco_ap</i>	Name of a specific Cisco lightweight access point.

### Command Default

None.

### Examples

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

```
> 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
```

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

```
> 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.

### Related Commands

```
config advanced 802.11 profile clients
config advanced 802.11 profile customize
config advanced 802.11 profile foreign
config advanced 802.11 profile noise
```

## show advanced 802.11 receiver

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

**show advanced 802.11 {a | b} receiver**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.

### Command Default

None.

### Examples

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

```
> 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
```

### Related Commands

**config advanced 802.11 profile clients**

## show advanced 802.11 summary

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

**show advanced 802.11 {a | b} summary**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.

### Command Default

None.

### Examples

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

```
> 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.

### Related Commands

**config advanced 802.11 7920VSIEConfig**  
**config advanced 802.11 channel add**  
**config advanced 802.11 channel**

## show advanced 802.11 txpower

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

**show advanced 802.11 {a | b} txpower**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.

### Command Default

None.

### Examples

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

```
> show advanced 802.11b txpower
Automatic Transmit Power Assignment
Transmit Power Assignment Mode..... AUTO
Transmit Power Update Interval..... 600 seconds
Transmit Power Threshold..... -65 dBm
Transmit Power Neighbor Count..... 3 APs
Transmit Power Update Contribution..... SN.
Transmit Power Assignment Leader..... xx:xx:xx:xx:xx:xx
Last Run..... 384 seconds ago
```

### Related Commands

**config advanced 802.11 txpower-update**

## 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.

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

```
> show advanced dot11-padding
dot11-padding..... Disabled
```

**Related Commands**

- config advanced dot11-padding**
- debug dot11**
- debug dot11 mgmt interface**
- debug dot11 mgmt msg**
- debug dot11 mgmt ssid**
- debug dot11 mgmt state-machine**
- debug dot11 mgmt station**

## show client ccx rm

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

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

### Syntax Description

<i>client_MAC</i>	Client MAC address.
<b>status</b>	Displays the client CCX radio management status information.
<b>report</b>	Displays the client CCX radio management report.
<b>chan-load</b>	Displays radio management channel load reports.
<b>noise-hist</b>	Displays radio management noise histogram reports.
<b>beacon</b>	Displays radio management beacon load reports.
<b>frame</b>	Displays radio management frame reports.
<b>pathloss</b>	Displays radio management path loss reports.

### Command Default

None.

### Examples

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

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

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

```
> show client ccx rm 00:40:96:15:21:ac report chan-load
Channel Load Report
Client Mac Address..... 00:40:96:ae:53:bc
Timestamp..... 788751121
Incapable Flag..... On
Refused Flag..... On
Chan CCA Busy Fraction
-----
1 194
2 86
3 103
4 0
5 178
```

```
6 82
7 103
8 95
9 13
10 222
11 75
```

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

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

#### Related Commands

**config client ccx default-gw-ping**

**config client ccx dhcp-test**

## show client 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.

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

```
> show client location-calibration summary
MAC Address Interval
-----
10:10:10:10:10:10 60
21:21:21:21:21:21 45
```

**Related Commands**

- show client summary**
- show client summary guest-lan**

## 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.

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

```
> show wps ap-authentication summary
AP neighbor authentication is <disabled>.
Authentication alarm threshold is 1.
RF-Network Name: <B1>
```

**Related Commands** **config wps ap-authentication**

## show 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.

**Examples** This example shows how to display the network details:

```
> show network
```

**Related Commands**

- `config network`
- `show network summary`
- `show network multicast mgid detail`
- `show network multicast mgid summary`

## Config Commands

### 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** commands.

```
config {802.11-a49 | 802.11-a58} {enable | disable} cisco_ap
```

### Syntax Description

<b>802.11-a49</b>	Specifies the 4.9-GHz public safety channel.
<b>802.11-a58</b>	Specifies the 5.8-GHz public safety channel.
<b>enable</b>	Enables the use of this frequency on the designated access point.
<b>disable</b>	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

Disabled.

### Examples

This example shows how to enable the *4.9-GHz* public safety channel on *ap\_24* access point:

```
> config 802.11-a
```

### Related Commands

```
show mesh public-safety
config 802.11-a antenna extAntGain
config 802.11-a txpower ap
config 802.11-a channel ap
```

## 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

<b>802.11-a49</b>	Specifies the 4.9-GHz public safety channel.
<b>802.11-a58</b>	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.
<b>global</b>	Specifies the antenna gain value to all channels.
<i>channel_no</i>	Antenna gain value for a specific channel.

### Command Default

Disabled.

### Usage Guidelines

Before you enter the **config 802.11-a antenna extAntGain** command, disable the 802.11 Cisco radio with the **config 802.11-a disable** command.

After you configure the external antenna gain, use the **config 802.11-a enable** command to re-enable the 802.11 Cisco radio.

### Examples

This example shows how to configure an *802.11-a49* external antenna gain of *10 dBi* for *AP1*:

```
> config 802.11-a antenna extAntGain 10 AP1
```

### Related Commands

```
config 802.11-a
config 802.11-a channel ap
config 802.11-a txpower ap
show 802.11a
```

## 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

<b>802.11-a49</b>	Specifies the 4.9-GHz public safety channel.
<b>802.11-a58</b>	Specifies the 5.8-GHz public safety channel.
<i>cisco_ap</i>	Name of the access point to which the command applies.
<b>global</b>	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

Disabled.

### Examples

This example shows how to set the channel properties:

```
> config 802.11-a channel ap
```

### Related Commands

```
config 802.11-a
config 802.11-a antenna extAntGain
config 802.11-a txpower ap
```

## config 802.11-a txpower ap

To configure the transmission power properties for the 4.9-GHz and 5.8-GHz public safety channels on an access point, use the **config 802.11-a txpower ap** command.

```
config {802.11-a49 | 802.11-a58} txpower ap cisco_ap {global | power_level}
```

### Syntax Description

<b>802.11-a49</b>	Specifies the 4.9-GHz public safety channel.
<b>802.11-a58</b>	Specifies the 5.8-GHz public safety channel.
<b>txpower</b>	Configures transmission power properties.
<b>ap</b>	Configures access point channel settings.
<i>cisco_ap</i>	Name of the access point to which the command applies.
<b>global</b>	Applies the transmission power value to all channels.
<i>power_level</i>	Transmission power value to the designated mesh access point. Valid values are 1 through 5, inclusive.

### Command Default

Disabled.

### Examples

This example shows how to configure an *802.11-a49* transmission power level of 4 for *AP1*:

```
> config 802.11-a txpower ap 4 AP1
```

### Related Commands

```
config 802.11-a
config 802.11 channel ap
config 802.11 antenna extAntGain
```

## config 802.11-abgn

To configure dual-band radio parameters on an access point, use the **config 802.11-abgn** command.

```
config 802.11-abgn {cleanair {enable | disable} {cisco_ap band band} | {enable | disable} {cisco_ap}}
```

### Syntax Description

<b>cleanair</b>	Configures CleanAir on the dual-band radio.
<b>enable</b>	Enables CleanAir for both 2.4-GHz and 5-GHz radios.
<b>disable</b>	Disables CleanAir for both 2.4-GHz and 5-GHz radios.
<i>cisco_ap</i>	Name of the access point to which the command applies.
<b>band</b>	Configures the radio band.
<i>band</i>	Radio band that can be 2.4-GHz or 5-GHz.
<b>enable</b>	Enables dual-band radio on an access point.
<b>disable</b>	Disables dual-band radio on an access point.

### Command Default

None.

### Usage Guidelines

Only Cisco CleanAir-enabled access point radios can be configured for Cisco CleanAir.

### Examples

This example shows how to enable Cisco CleanAir on an access point:

```
> config 802.11-abgn cleanair enable AP3600 band 5
```

### Related Commands

[config 802.11-a49](#)  
[config 802.11-a58](#)  
[config 802.11a](#)  
[config 802.11b](#)  
[config 802.11h](#)

## 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

<b>enable</b>	Enables the 802.11g network.
<b>disable</b>	Disables the 802.11g network.

### Command Default

Enabled.

### Usage Guidelines

Before you enter the **config 802.11b 11gSupport {enable | disable}** command, disable the 802.11 Cisco radio with the **config 802.11 disable** command.

After you configure the support for the 802.11g network, use the **config 802.11 enable** command to enable the 802.11 radio.



### Note

To disable an 802.11a, 802.11b and/or 802.11g network for an individual wireless LAN, use the **config wlan radio** command.

### Examples

This example shows how to enable the 802.11g network:

```
> config 802.11b 11gSupport enable
Changing the 11gSupport will cause all the APs to reboot when you enable 802.11b network.
Are you sure you want to continue? (y/n) n
11gSupport not changed!
```

### Related Commands

**show sysinfo**  
**show 802.11b**  
**config 802.11b enable**  
**config wlan radio**  
**config 802.11b disable**  
**config 802.11a disable**  
**config 802.11a enable**

## config 802.11b preamble

To change the 802.11b preamble as defined in subclause 18.2.2.2 to **long** (slower, but more reliable) or **short** (faster, but less reliable), use the **config 802.11b preamble** command.

**config 802.11b preamble** {**long** | **short**}

### Syntax Description

<b>long</b>	Specifies the long 802.11b preamble.
<b>short</b>	Specifies the short 802.11b preamble.

### Command Default

Short.

### Usage Guidelines

#### Note

You must reboot the Cisco Wireless LAN Controller (reset system) with save to implement this command.

This parameter must be set to **long** to optimize this Cisco wireless LAN controller for some clients, including SpectraLink NetLink telephones.

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

### Examples

This example shows how to change the 802.11b preamble to short:

```
> config 802.11b preamble short
> (reset system with save)
```

### Related Commands

**show 802.11b**

## Configure 802.11h Commands

Use the **config 802.11h** commands to configure settings specifically for an 802.11h network.

## config 802.11h channelswitch

To configure a 802.11h channel switch announcement, use the **config 802.11h channelswitch** command.

**config 802.11h channelswitch** {**enable** *mode value* | **disable**}

### Syntax Description

<b>enable</b>	Enables the 802.11h channel switch announcement.
<i>mode</i>	802.11h channel switch announcement mode.
<i>value</i>	802.11h channel announcement value.
<b>disable</b>	Disables the 802.11h channel switch announcement.

### Command Default

None.

### Examples

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

```
> config 802.11h channelswitch disable
```

### Related Commands

**show 802.11h**

## config 802.11h powerconstraint

To configure the 802.11h power constraint value, use the **config 802.11h powerconstraint** command.

**config 802.11h powerconstraint** *value*

---

**Syntax Description**

<i>value</i>	802.11h power constraint value.
--------------	---------------------------------

---

**Command Default**

None.

**Examples**

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

```
> config 802.11h powerconstraint 5
```

**Related Commands**

**show 802.11h**

## config 802.11h setchannel

To configure a new channel using 802.11h channel announcement, use the **config 802.11h setchannel** command.

```
config 802.11h setchannel cisco_ap
```

---

### Syntax Description

---

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

---

### Command Default

None.

### Examples

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

```
> config 802.11h setchannel ap02
```

### Related Commands

**show 802.11h**

## Configure 802.11 11n Support Commands

Use the **config 802.11 11nsupport** commands to configure settings for an 802.11n network.

## config 802.11 11nsupport

To enable 802.11n support on the network, use the **config 802.11 11nsupport** command.

**config 802.11 {a | b} 11nsupport {enable | disable}**

### Syntax Description

<b>a</b>	Specifies the 802.11a network settings.
<b>b</b>	Specifies the 802.11b/g network settings.
<b>enable</b>	Enables the 802.11n support.
<b>disable</b>	Disables the 802.11n support.

### Command Default

None.

### Examples

This example shows how to enable the 802.11n support on an 802.11a network:

```
> config 802.11a 11nsupport enable
```

### Related Commands

**config 802.11 11nsupport mcs tx**  
**config 802.11 11nsupport a-mpdu tx priority**  
**config 802.11a disable network**  
**config 802.11a disable**  
**config 802.11a channel ap**  
**config 802.11a txpower ap**  
**config 802.11a chan\_width**

## config 802.11 11nsupport a-mpdu tx priority

To specify the aggregation method used for 802.11n packets, use the **config 802.11 11nsupport a-mpdu tx priority** command.

**config 802.11 {a | b} 11nsupport a-mpdu tx priority {0-7 | all} {enable | disable}**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>0-7</b>	Specifies the aggregated MAC protocol data unit priority level between 0 through 7.
<b>all</b>	Configures all of the priority levels at once.
<b>enable</b>	Specifies the traffic associated with the priority level uses A-MPDU transmission.
<b>disable</b>	Specifies the traffic associated with the priority level uses A-MSDU transmission.

### Command Default

By 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.

**Examples**

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

```
> config 802.11a 11nsupport a-mpdu tx priority all enable
```

**Related Commands**

**config 802.11 11nsupport mcs tx**

**config 802.11a disable network**

**config 802.11a disable**

**config 802.11a channel ap**

**config 802.11a txpower ap**

## config 802.11 11nsupport 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

<b>enable</b>	Enables the 802.11n-5 GHz A-MPDU transmit aggregation scheduler.
<b>disable</b>	Disables the 802.11n-5 GHz A-MPDU transmit aggregation scheduler.
<b>timeout rt</b>	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.

### Examples

This example shows how to configure the A-MPDU transmit aggregation scheduler realtime traffic timeout of 100 milliseconds:

```
> config 802.11 11nsupport a-mpdu tx scheduler timeout rt 100
```

### Related Commands

```
config 802.11 11nsupport mcs tx
config 802.11a disable network
config 802.11a channel ap
config 802.11a txpower ap
config 802.11a chan_width
```

## config 802.11 11nsupport antenna

To configure an access point to use a specific antenna, use the **config 802.11 11nsupport antenna** command.

```
config 802.11 {a | b} 11nsupport antenna cisco_ap {A | B | C | D} {enable | disable}
```

### Syntax Description

<b>a</b>	Specifies the 802.11a/n network.
<b>b</b>	Specifies the 802.11b/g/n network.
<i>cisco_ap</i>	Access point.
<b>A/B/C/D</b>	Specifies an antenna port.
<b>enable</b>	Enables the configuration.
<b>disable</b>	Disables the configuration.

### Command Default

None.

### Examples

This example shows how to configure transmission to a single antenna for legacy orthogonal frequency-division multiplexing:

```
> config 802.11 11nsupport antenna AP1 C enable
```

### Related Commands

```
config 802.11 11nsupport mcs tx
config 802.11a disable network
config 802.11a disable
config 802.11a channel ap
config 802.11a txpower ap
config 802.11a chan_width
```

## config 802.11 11nsupport 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

<b>any</b>	Enables either a short or a long guard interval.
<b>long</b>	Enables only a long guard interval.

### Command Default

None.

### Examples

This example shows how to configure a long guard interval:

```
> config 802.11 11nsupport guard-interval long
```

### Related Commands

```
config 802.11 11nsupport mcs tx  
config 802.11a disable network  
config 802.11a channel ap  
config 802.11a txpower ap  
config 802.11a chan_width
```

## config 802.11 11nsupport mcs tx

To specify the modulation and coding scheme (MCS) rates at which data can be transmitted between the access point and the client, use the **config 802.11 11nsupport mcs tx** command.

**config 802.11 {a | b} 11nsupport mcs tx {0-15} {enable | disable}**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>11nsupport</b>	Specifies support for 802.11n devices.
<b>mcs tx</b>	Specifies the modulation and coding scheme data rates as follows: <ul style="list-style-type: none"> <li>• 0 (7 Mbps)</li> <li>• 1 (14 Mbps)</li> <li>• 2 (21 Mbps)</li> <li>• 3 (29 Mbps)</li> <li>• 4 (43 Mbps)</li> <li>• 5 (58 Mbps)</li> <li>• 6 (65 Mbps)</li> <li>• 7 (72 Mbps)</li> <li>• 8 (14 Mbps)</li> <li>• 9 (29 Mbps)</li> <li>• 10 (43 Mbps)</li> <li>• 11 (58 Mbps)</li> <li>• 12 (87 Mbps)</li> <li>• 13 (116 Mbps)</li> <li>• 14 (130 Mbps)</li> <li>• 15 (144 Mbps)</li> </ul>
<b>enable</b>	Enables this configuration.
<b>disable</b>	Disables this configuration.

### Command Default

None.

**Examples**

This example shows how to specify MCS rates:

```
> config 802.11a 11nsupport mcs tx 5 enable
```

**Related Commands**

```
config 802.11 11nsupport  
config wlan wmm required  
config 802.11 11nsupport a-mpdu tx priority  
config 802.11a disable network  
config 802.11a disable  
config 802.11a channel ap  
config 802.11a txpower ap  
config 802.11a chan_width
```

## config 802.11 11n support rifs

To configure the Reduced Interframe Space (RIFS) between data frames and its acknowledgment, use the **config 802.11 11n support rifs** command.

**config 802.11 {a | b} 11n support rifs {enable | disable}**

### Syntax Description

<b>enable</b>	Enables RIFS for the 802.11 network.
<b>disable</b>	Disables RIFS for the 802.11 network.

### Command Default

None.

### Examples

This example shows how to enable RIFS:

```
> config 802.11a 11n support rifs enable
```

### Related Commands

**config 802.11 11n support mcs tx**  
**config 802.11a disable network**  
**config 802.11a disable**  
**config 802.11a channel ap**  
**config 802.11a txpower ap**  
**config 802.11a chan\_width**

## 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>enable</b>	Enables the diversity.
<b>sideA</b>	Specifies the diversity between the internal antennas and an external antenna connected to the Cisco lightweight access point left port.
<b>sideB</b>	Specifies the diversity between the internal antennas and an external antenna connected to the Cisco lightweight access point right port.
<i>cisco_ap</i>	Cisco lightweight access point name.

### Command Default

None.

### Examples

This example shows how to enable antenna diversity for AP01 on an 802.11b network:

```
> config 802.11a antenna diversity enable AP01
```

This example shows how to enable diversity for AP01 on an 802.11a network, using an external antenna connected to the Cisco lightweight access point left port (sideA):

```
> config 802.11a antenna diversity sideA AP01
```

### Related Commands

**config 802.11 disable**  
**config 802.11 enable**  
**config 802.11 antenna extAntGain**  
**config 802.11 antenna mode**  
**config 802.11 antenna selection**  
**show 802.11a**  
**show 802.11b**

## 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

<b>a</b>	Specifies the 802.11a network.
<b>b</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.

### Usage Guidelines

Before you enter the **config 802.11 antenna extAntGain** command, disable the 802.11 Cisco radio with the **config 802.11 disable** command.

After you configure the external antenna gain, use the **config 802.11 enable** command to enable the 802.11 Cisco radio.

### Examples

This example shows how to configure an *802.11a* external antenna gain of *0.5 dBm* for *AP1*:

```
> config 802.11 antenna extAntGain 1 AP1
```

### Related Commands

```
config 802.11 disable
config 802.11 enable
config 802.11 antenna mode
config 802.11 antenna selection
show 802.11a
show 802.11b
```

## 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>omni</b>	Specifies to use both internal antennas.
<b>sectorA</b>	Specifies to use only the side A internal antenna.
<b>sectorB</b>	Specifies to use only the side B internal antenna.
<i>cisco_ap</i>	Cisco lightweight access point name.

### Command Default

None.

### Examples

This example shows how to configure access point AP01 antennas for a 360-degree omnidirectional pattern on an 802.11b network:

```
> config 802.11 antenna mode omni AP01
```

### Related Commands

**config 802.11 disable**  
**config 802.11 enable**  
**config 802.11 antenna extAntGain**  
**config 802.11 antenna diversity**  
**config 802.11 antenna selection**  
**show 802.11a**  
**show 802.11b**

## 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>internal</b>	Specifies the internal antenna.
<b>external</b>	Specifies the external antenna.
<i>cisco_ap</i>	Cisco lightweight access point name.

### Command Default

None.

### Examples

This example shows how to configure access point AP02 on an 802.11b network to use the internal antenna:

```
> config 802.11a antenna selection internal AP02
```

### Related Commands

**config 802.11 disable**  
**config 802.11 enable**  
**config 802.11 antenna extAntGain**  
**config 802.11 antenna mode**  
**config 802.11 antenna diversity**  
**show 802.11a**  
**show 802.11b**

## Configure 802.11 Commands

## config 802.11 channel

To configure an 802.11 network or a single access point for automatic or manual channel selection, use the **config 802.11 channel** command.

```
config 802.11 {a | b} channel {global [auto | once | off]} | ap {ap_name [global | channel]}
```

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>global</b>	Specifies the 802.11a operating channel that is automatically set by RRM and overrides the existing configuration setting.
<b>auto</b>	(Optional) Specifies that the channel is automatically set by Radio Resource Management (RRM) for the 802.11a radio.
<b>once</b>	(Optional) Specifies that the channel is automatically set once by RRM.
<b>off</b>	(Optional) Specifies that the automatic channel selection by RRM is disabled.
<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.

### Usage Guidelines

When configuring 802.11 channels for a single lightweight access point, enter the **config 802.11 disable** command to disable the 802.11 network. Enter the **config 802.11 channel** command to set automatic channel selection by Radio Resource Management (RRM) or manually set the channel for the 802.11 radio, and enter the **config 802.11 enable** command to enable the 802.11 network.



### Note

See the Channels and Maximum Power Settings for Cisco Aironet Lightweight Access Points document for the channels supported by your access point. The power levels and available channels are defined by the country code setting and are regulated on a country-by-country basis.

### Examples

This example shows how to have RRM automatically configure the 802.11a channels for automatic channel configuration based on the availability and interference:

```
> config 802.11a channel global auto
```

This example shows how to configure the 802.11b channels one time based on the availability and interference:

```
> config 802.11b channel global once
```

This example shows how to turn 802.11a automatic channel configuration off:

```
> config 802.11a channel global off
```

This example shows how to configure the 802.11b channels in access point AP01 for automatic channel configuration:

```
> config 802.11b AP01 channel global
```

This example shows how to configure the 802.11a channel 36 in access point AP01 as the default channel:

```
> config 802.11a channel AP01 36
```

### **Related Commands**

**show 802.11a**

**show 802.11a disable**

**show 802.11a enable**

**show 802.11b channel**

**config country**

## config 802.11 channel ap

To set the operating radio channel for an access point, use the **config 802.11 channel ap** command.

```
config 802.11 {a | b} channel ap cisco_ap {global | channel_no}
```

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<i>cisco_ap</i>	Name of the Cisco access point.
<b>global</b>	Enables auto-RF on the designated access point.
<i>channel_no</i>	Default channel from 1 to 26, inclusive.

### Command Default

None.

### Examples

This example shows how to enable auto-RF for access point AP01 on an 802.11b network:

```
> config 802.11b channel ap AP01 global
```

### Related Commands

```
show 802.11a
show 802.11a disable
show 802.11a enable
config 802.11b channel
config country
```

## config 802.11 chan\_width

To configure the channel width for a particular access point, use the **config 802.11 chan\_width** command.

```
config 802.11 {a | b} chan_width cisco_ap {20 | 40}
```

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<i>cisco_ap</i>	Access point.
<b>20</b>	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.
<b>40</b>	Allows 40-MHz 802.11n radios to communicate using two adjacent 20-MHz channels bonded together.

### Command Default

The default channel width is 20.

### Usage Guidelines

This parameter can be configured only if the primary channel is statically assigned.



#### Caution

We recommend that you do not configure 40-MHz channels in the 2.4-GHz radio band because severe co-channel interference can occur.

Statically configuring an access point's radio for 20- or 40-MHz mode overrides the globally configured DCA channel width setting (configured by using the **config advanced 802.11 channel dca chan-width-11n** command). If you change the static configuration back to global on the access point radio, the global DCA configuration overrides the channel width configuration that the access point was previously using.

### Examples

This example shows how to configure the channel width for access point AP01 on an 802.11 network using 40-MHz channels:

```
> config 802.11 chan_width AP01 40
```

### Related Commands

```
config 802.11 11nsupport
config wlan wmm required
config 802.11 11nsupport a-mpdu tx priority
```

```
config 802.11a disable network
config 802.11a disable
config 802.11a channel ap
config 802.11b disable
config 802.11b channel ap
config 802.11a txpower ap
```

## 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>global</b>	Configures the 802.11 transmit power level for all lightweight access points.
<b>auto</b>	(Optional) Specifies the power level is automatically set by Radio Resource Management (RRM) for the 802.11 Cisco radio.
<b>once</b>	(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.
<b>ap</b>	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.

### Usage Guidelines

The supported power levels depends on the specific access point used and the regulatory region. For example, the 1240 series access point supports eight levels and the 1200 series access point supports six levels. See the Channels and Maximum Power Settings for Cisco Aironet Lightweight Access Points document for the maximum transmit power limits for your access point. The power levels and available channels are defined by the country code setting and are regulated on a country-by-country basis.

### Examples

This example shows how to automatically set the 802.11a radio transmit power level in all lightweight access points:

```
> config 802.11a txPower auto
```

This example shows how to manually set the 802.11b radio transmit power to level 5 for all lightweight access points:

```
> config 802.11b txPower global 5
```

This example shows how to automatically set the 802.11b radio transmit power for access point AP1:

```
> config 802.11b txPower AP1 global
```

This example shows how to manually set the 802.11a radio transmit power to power level 2 for access point AP1:

```
> config 802.11b 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>call-admission-limit</b>	Configures the call admission limit for the 7920s.
<b>G711-CU-Quantum</b>	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.

### Examples

This example shows how to configure the call admission limit for 7920 VISE parameters:

```
> config advanced 802.11 7920VSIEConfig call-admission-limit 4
```

## Configure Advanced 802.11 Channel Commands

Use the **config advanced 802.11 channel** commands to configure Dynamic Channel Assignment (DCA) settings on supported 802.11 networks.

## config advanced 802.11 channel add

To add channel to the 802.11 networks auto RF channel list, use the **config advanced 802.11 channel add** command.

**config advanced 802.11** {a | b} **channel add** *channel\_number*

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>add</b>	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.

### Examples

This example shows how to add a channel to the 802.11a network auto RF channel list:

```
> config advanced 802.11 channel add 132
```

### Related Commands

**show advanced 802.11a channel**  
**config advanced 802.11b channel update**

## config advanced 802.11 channel cleanair-event

To configure cleanair event driven Radio Resource Management (RRM) parameters for all 802.11 Cisco lightweight access points, use the **config advanced 802.11 channel cleanair-event** command.

**config advanced 802.11 {a | b} channel cleanair-event {enable | disable | sensitivity [low | medium | high] | custom threshold *threshold\_value*}**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>enable</b>	Enables the cleanair event-driven RRM parameters.
<b>disable</b>	Disables the cleanair event-driven RRM parameters.
<b>sensitivity</b>	Sets the sensitivity for cleanair event-driven RRM.
<b>low</b>	(Optional) Specifies low sensitivity.
<b>medium</b>	(Optional) Specifies medium sensitivity
<b>high</b>	(Optional) Specifies high sensitivity
<b>custom</b>	Specifies custom sensitivity.
<b>threshold</b>	Specifies the EDRRM AQ threshold value.
<i>threshold_value</i>	Number of custom threshold.

### Command Default

None.

### Examples

This example shows how to enable the cleanair event-driven RRM parameters:

```
> config advanced 802.11 channel cleanair-event enable
```

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

```
> config advanced 802.11 channel cleanair-event sensitivity high
```

### Related Commands

**show advanced 802.11a channel**

**config advanced 802.11b channel update**

## 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

<b>a</b>	Specifies the 802.11a network.
<b>b</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.

### Examples

This example shows how to configure the time of delay when the dynamic channel assignment algorithm starts:

```
> 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}
```

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>20</b>	Sets the channel width for 802.11n radios to 20 MHz.
<b>40</b>	Sets the channel width for 802.11n radios to 40 MHz.

### Command Default

The default channel width is 20.

### Usage Guidelines

If you choose 40, be sure to set at least two adjacent channels in the **config advanced 802.11 channel {add | delete} channel\_number** command (for example, a primary channel of 36 and an extension channel of 40). If you set only one channel, that channel is not used for 40-MHz channel width.

To override the globally configured DCA channel width setting, you can statically configure an access point's radio for 20- or 40-MHz mode using the **config 802.11 chan\_width** command. If you then change the static configuration to global on the access point radio, the global DCA configuration overrides the channel width configuration that the access point was previously using.

### Examples

This example shows how to add a channel to the 802.11a network auto channel list:

```
> config advanced 802.11 channel dca chan-width-11n 40
```

### Related Commands

```
config 802.11 chan_width
config advanced 802.11 dca interval
config advanced 802.11 dca sensitivity
show advanced 802.11 channel
```

## config advanced 802.11 channel dca interval

To specify how often the Dynamic Channel Assignment (DCA) is allowed to run, use the **config advanced 802.11 channel dca interval** command.

**config advanced 802.11 {a | b} channel dca interval *value***

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</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

0 (10 minutes).

### Usage Guidelines

If your controller supports only OfficeExtend access points, we recommend that you set the DCA interval to 6 hours for optimal performance. For deployments with a combination of OfficeExtend access points and local access points, the range of 10 minutes to 24 hours can be used.

### Examples

This example shows how often the DCA algorithm is allowed to run:

```
> config advanced 802.11 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

```
config advanced 802.11 {a | b} channel dca RSSI_value
```

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</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

-95 dBm.

### Examples

This example shows how to configure the minimum 5 GHz RSSI energy metric for DCA:

```
> 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 dca sensitivity {low | medium | high}**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>low</b>	Specifies the DCA algorithm is not particularly sensitive to environmental changes. See the “Usage Guidelines” section for more information.
<b>medium</b>	Specifies the DCA algorithm is moderately sensitive to environmental changes. See the “Usage Guidelines” section for more information.
<b>high</b>	Specifies the DCA algorithm is highly sensitive to environmental changes. See the “Usage Guidelines” section for more information.

### Command Default

None.

### Usage Guidelines

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

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

**Table 3: 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

### Examples

This example shows how to configure the value of DCA algorithm’s sensitivity to low:

```
> 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>enable</b>	Enables the foreign access point 802.11a interference avoidance in the channel assignment.
<b>disable</b>	Disables the foreign access point 802.11a interference avoidance in the channel assignment.

### Command Default

Enabled.

### Examples

This example shows how to have RRM consider foreign 802.11a interference when making channel selection updates for all 802.11a Cisco lightweight access points:

```
> config advanced 802.11a channel foreign enable
```

### Related Commands

**show advanced 802.11a channel**  
**config advanced 802.11b channel foreign**

## config advanced 802.11 channel load

To have Radio Resource Management (RRM) consider or ignore the traffic load in making channel selection updates for all 802.11a Cisco lightweight access points, use the **config advanced 802.11 channel load** command.

**config advanced 802.11 {a | b} channel load {enable | disable}**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>enable</b>	Enables the Cisco lightweight access point 802.11a load avoidance in the channel assignment.
<b>disable</b>	Disables the Cisco lightweight access point 802.11a load avoidance in the channel assignment.

### Command Default

Disabled.

### Examples

This example shows how to have RRM consider the traffic load when making channel selection updates for all 802.11a Cisco lightweight access points:

```
> config advanced 802.11 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>enable</b>	Enables non-802.11a noise avoidance in the channel assignment. or ignore.
<b>disable</b>	Disables the non-802.11a noise avoidance in the channel assignment.

### Command Default

Disabled.

### Examples

This example shows how to have RRM consider non-802.11a noise when making channel selection updates for all 802.11a Cisco lightweight access points:

```
> config advanced 802.11 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-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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>enable</b>	Enables 802.11 network dca list option for outdoor access point.
<b>disable</b>	Disables 802.11 network dca list option for outdoor access point.

### Command Default

Disabled.

### Usage Guidelines

The **config advanced 802.11 {a | b} channel outdoor-ap-dca {enable | disable}** command is applicable only for deployments having outdoor access points such as 1522 and 1524.

### Examples

This example shows how to enable the 802.11a dca list option for outdoor access point:

```
> config advanced 802.11a channel outdoor-ap-dca enable
```

### Related Commands

```
show advanced 802.11a channel
config advanced 802.11b channel noise
```

## config advanced 802.11 channel 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>enable</b>	Enables the 802.11 network DCA list option for the outdoor access point.
<b>disable</b>	Disables the 802.11 network DCA list option for the outdoor access point.

### Command Default

Disabled.

### Examples

This example shows how to enable or disable propagation of persistent devices:

```
> 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.

#### Command Default

None.

#### Examples

This example shows how to initiate a channel selection update for all 802.11a network access points:

```
> config advanced 802.11a channel update
```

#### Related Commands

**show advanced 802.11a channel**  
**config advanced 802.11b channel update**

## Configure Advanced 802.11 Coverage Commands

Use the **config advanced 802.11 coverage** commands to configure coverage hole detection settings on supported 802.11 networks.

## config advanced 802.11 coverage

To enable or disable coverage hole detection, use the **config advanced 802.11 coverage** command.

```
config advanced 802.11 {a | b} coverage {enable | disable}
```

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>enable</b>	Enables the coverage hole detection.
<b>disable</b>	Disables the coverage hole detection.

### Command Default

Enabled.

### Usage Guidelines

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

If both the number and percentage of failed packets exceed the values that you entered in the **config advanced 802.11 coverage packet-count** and **config advanced 802.11 coverage fail-rate** commands for a 5-second period, the client is considered to be in a pre-alarm condition. The controller uses this information to distinguish between real and false coverage holes and excludes clients with poor roaming logic. A coverage hole is detected if both the number and percentage of failed clients meet or exceed the values entered in the **config advanced 802.11 coverage level global** and **config advanced 802.11 coverage exception global** commands over a 90-second period. The controller determines whether the coverage hole can be corrected and, if appropriate, mitigates the coverage hole by increasing the transmit power level for that specific access point.

### Examples

This example shows how to enable coverage hole detection on 802.11a network:

```
> config advanced 802.11a coverage enable
```

### Related Commands

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

## 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<i>percent</i>	Percentage of clients. Valid values are from 0 to 100%.

### Command Default

25%.

### Usage Guidelines

If both the number and percentage of failed packets exceed the values that you entered in the **config advanced 802.11 coverage packet-count** and **config advanced 802.11 coverage fail-rate** commands for a 5-second period, the client is considered to be in a pre-alarm condition. The controller uses this information to distinguish between real and false coverage holes and excludes clients with poor roaming logic. A coverage hole is detected if both the number and percentage of failed clients meet or exceed the values entered in the **config advanced 802.11 coverage level global** and **config advanced 802.11 coverage exception global** commands over a 90-second period. The controller determines whether the coverage hole can be corrected and, if appropriate, mitigates the coverage hole by increasing the transmit power level for that specific access point.

### Examples

This example shows how to specify the percentage of clients for all 802.11a access points that are experiencing a low signal level:

```
> config advanced 802.11 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 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>data</b>	Specifies the threshold for data packets.
<b>voice</b>	Specifies the threshold for voice packets.
<i>percent</i>	Failure rate as a percentage. Valid values are from 1 to 100 percent.

### Command Default

20.

### Usage Guidelines

If both the number and percentage of failed packets exceed the values that you entered in the **config advanced 802.11 coverage packet-count** and **config advanced 802.11 coverage fail-rate** commands for a 5-second period, the client is considered to be in a pre-alarm condition. The controller uses this information to distinguish between real and false coverage holes and excludes clients with poor roaming logic. A coverage hole is detected if both the number and percentage of failed clients meet or exceed the values entered in the **config advanced 802.11 coverage level global** and **config advanced 802.11 coverage exception global** commands over a 90-second period. The controller determines whether the coverage hole can be corrected and, if appropriate, mitigates the coverage hole by increasing the transmit power level for that specific access point.

### Examples

This example shows how to configure the threshold count for minimum uplink failures for data packets:

```
> config advanced 802.11 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 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<i>clients</i>	Minimum number of clients. Valid values are from 1 to 75.

### Command Default

3.

### Usage Guidelines

If both the number and percentage of failed packets exceed the values that you entered in the **config advanced 802.11 coverage packet-count** and **config advanced 802.11 coverage fail-rate** commands for a 5-second period, the client is considered to be in a pre-alarm condition. The controller uses this information to distinguish between real and false coverage holes and excludes clients with poor roaming logic. A coverage hole is detected if both the number and percentage of failed clients meet or exceed the values entered in the **config advanced 802.11 coverage level global** and **config advanced 802.11 coverage exception global** commands over a 90-second period. The controller determines whether the coverage hole can be corrected and, if appropriate, mitigates the coverage hole by increasing the transmit power level for that specific access point.

### Examples

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

```
> config advanced 802.11 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>data</b>	Specifies the threshold for data packets.
<b>voice</b>	Specifies the threshold for voice packets.
<i>packets</i>	Minimum number of packets. Valid values are from 1 to 255 packets.

### Command Default

10.

### Usage Guidelines

If both the number and percentage of failed packets exceed the values that you entered in the **config advanced 802.11 coverage packet-count** and **config advanced 802.11 coverage fail-rate** commands for a 5-second period, the client is considered to be in a pre-alarm condition. The controller uses this information to distinguish between real and false coverage holes and excludes clients with poor roaming logic. A coverage hole is detected if both the number and percentage of failed clients meet or exceed the values entered in the **config advanced 802.11 coverage level global** and **config advanced 802.11 coverage exception global** commands over a 90-second period. The controller determines whether the coverage hole can be corrected and, if appropriate, mitigates the coverage hole by increasing the transmit power level for that specific access point.

### Examples

This example shows how to configure the failure count threshold for uplink data packets:

```
> config advanced 802.11 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>data</b>	Specifies the threshold for data packets.
<b>voice</b>	Specifies the threshold for voice packets.
<i>rssi</i>	Valid values are from -60 to -90 dBm.

### Command Default

- Data packets: -80 dBm.
- Voice packets: -75 dBm.

### Usage Guidelines

The *rssi* value that you enter is used to identify coverage holes (or areas of poor coverage) within your network. If the access point receives a packet in the data or voice queue with an RSSI value that is below the value that you enter, a potential coverage hole has been detected.

The access point takes RSSI measurements every 5 seconds and reports them to the controller in 90-second intervals.

If both the number and percentage of failed packets exceed the values that you entered in the **config advanced 802.11 coverage packet-count** and **config advanced 802.11 coverage fail-rate** commands for a 5-second period, the client is considered to be in a pre-alarm condition. The controller uses this information to distinguish between real and false coverage holes and excludes clients with poor roaming logic. A coverage hole is detected if both the number and percentage of failed clients meet or exceed the values entered in the **config advanced 802.11 coverage level global** and **config advanced 802.11 coverage exception global** commands over a 90-second period. The controller determines whether the coverage hole can be corrected and, if appropriate, mitigates the coverage hole by increasing the transmit power level for that specific access point.

### Examples

This example shows how to configure the minimum receive signal strength indication threshold value for data packets that are received by an 802.11a access point:

```
> config advanced 802.11a coverage 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
```

## Configure Advanced 802.11 Logging Commands

Use the **config advanced 802.11 logging** commands to configure report log settings on supported 802.11 networks.

## config advanced 802.11 logging channel

To turn the channel change logging mode on or off, use the **config advanced 802.11 logging channel** command.

**config advanced 802.11 {a | b} logging channel {on | off}**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>logging channel</b>	Logs channel changes.
<b>on</b>	Enables the 802.11 channel logging.
<b>off</b>	Disables 802.11 channel logging.

### Command Default

Off (disabled).

### Examples

This example shows how to turn the 802.11a logging channel selection mode on:

```
> config advanced 802.11a logging channel on
```

### Related Commands

**show advanced 802.11a logging**  
**config advanced 802.11b logging channel**

## config advanced 802.11 logging coverage

To turn the coverage profile logging mode on or off, use the **config advanced 802.11 logging coverage** command.

**config advanced 802.11 {a | b} logging coverage {on | off}**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>on</b>	Enables the 802.11 coverage profile violation logging.
<b>off</b>	Disables the 802.11 coverage profile violation logging.

### Command Default

Off (disabled).

### Examples

This example shows how to turn the 802.11a coverage profile violation logging selection mode on:

```
> config advanced 802.11a logging coverage on
```

### Related Commands

**show advanced 802.11a logging**  
**config advanced 802.11b logging coverage**

## config advanced 802.11 logging foreign

To turn the foreign interference profile logging mode on or off, use the **config advanced 802.11 logging foreign** command.

```
config advanced 802.11 {a | b} logging foreign {on | off}
```

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>on</b>	Enables the 802.11 foreign interference profile violation logging.
<b>off</b>	Disables the 802.11 foreign interference profile violation logging.

### Command Default

Off (disabled).

### Examples

This example shows how to turn the 802.11a foreign interference profile violation logging selection mode on:

```
> config advanced 802.11a logging foreign on
```

### Related Commands

```
show advanced 802.11a logging  
config advanced 802.11b logging foreign
```

## 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>on</b>	Enables the 802.11 load profile violation logging.
<b>off</b>	Disables the 802.11 load profile violation logging.

### Command Default

Off (disabled).

### Examples

This example shows how to turn the 802.11a load profile logging mode on:

```
> 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>on</b>	Enables the 802.11 noise profile violation logging.
<b>off</b>	Disables the 802.11 noise profile violation logging.

### Command Default

Off (disabled).

### Examples

This example shows how to turn the 802.11a noise profile logging mode on:

```
> config advanced 802.11a logging noise on
```

### Related Commands

**show advanced 802.11a logging**  
**config advanced 802.11b logging noise**

## config advanced 802.11 logging performance

To turn the 802.11a performance profile logging mode on or off, use the **config advanced 802.11 logging performance** command.

**config advanced 802.11 {a | b} logging performance {on | off}**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>on</b>	Enables the 802.11 performance profile violation logging.
<b>off</b>	Disables the 802.11 performance profile violation logging.

### Command Default

Off (disabled).

### Examples

This example shows how to turn the 802.11a performance profile logging mode on:

```
> config advanced 802.11a logging performance on
```

### Related Commands

**show advanced 802.11a logging**  
**config advanced 802.11b logging performance**

## config advanced 802.11 logging txpower

To turn the 802.11a transmit power change logging mode on or off, use the **config advanced 802.11 logging txpower** command.

```
config advanced 802.11 {a | b} logging txpower {on | off}
```

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>on</b>	Enables the 802.11 transmit power change logging.
<b>off</b>	Disables the 802.11 transmit power change logging.

### Command Default

Off (disabled).

### Examples

This example shows how to turn the 802.11a transmit power change mode on:

```
> config advanced 802.11 logging txpower off
```

### Related Commands

```
show advanced 802.11 logging  
config advanced 802.11b logging power
```

## Configure Advanced 802.11 Monitor Commands

Use the **config advanced 802.11 monitor** commands to configure monitor settings on supported 802.11 networks.

## config advanced 802.11 monitor channel-list

To set the 802.11a noise, interference, and rogue monitoring channel list, use the **config advanced 802.11 monitor channel-list** command.

```
config advanced 802.11 {a | b} monitor channel-list {all | country | dca}
```

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>all</b>	Monitors all channels.
<b>country</b>	Monitors the channels used in the configured country code.
<b>dca</b>	Monitors the channels used by the automatic channel assignment.

### Command Default

Country.

### Examples

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

```
> 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<i>seconds</i>	Coverage measurement interval between 60 and 3600 seconds.

### Command Default

180 seconds.

### Examples

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

```
> 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<i>seconds</i>	Load measurement interval between 60 and 3600 seconds.

### Command Default

60 seconds.

### Examples

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

```
> 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 mode

To enable or disable 802.11a access point monitoring, use the **config advanced 802.11 monitor mode** command.

**config advanced 802.11 {a | b} monitor mode {enable | disable}**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>enable</b>	Enables the 802.11 access point monitoring.
<b>disable</b>	Disables the 802.11 access point monitoring.

### Command Default

Enabled.

### Examples

This example shows how to enable the 802.11a access point monitoring:

```
> config advanced 802.11a monitor mode enable
```

### Related Commands

**show advanced 802.11a monitor**  
**config advanced 802.11b monitor mode**

## config advanced 802.11 monitor ndp-type

To configure 802.11 access point radio resource management neighbor discovery protocol type, use the **config advanced 802.11 monitor ndp-type** command:

```
config advanced 802.11 {a | b} monitor ndp-type {protected | transparent}
```

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>protected</b>	Specifies the Tx RRM protected neighbor discovery protocol.
<b>transparent</b>	Specifies the Tx RRM transparent neighbor discovery protocol.

### Command Default

None.

### Usage Guidelines

Before you configure the 802.11 access point RRM neighbor discovery protocol type, ensure that you have disabled the network by entering the **config 802.11 disable network** command.

### Examples

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

```
> 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<i>seconds</i>	Noise measurement interval between 60 and 3600 seconds.

### Command Default

180 seconds.

### Examples

This example shows how to set the noise measurement interval to 120 seconds:

```
> 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<i>seconds</i>	Signal measurement interval between 60 and 3600 seconds.

### Command Default

60 seconds.

### Examples

This example shows how to set the signal measurement interval to 120 seconds:

```
> config advanced 802.11 monitor signal 120
```

### Related Commands

**show advanced 802.11a monitor**  
**config advanced 802.11b monitor signal**

## Configure Advanced 802.11 Profile Commands

This section lists the **config advanced 802.11 profile** commands.

## 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>global</b>	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

10.

### Examples

This example shows how to set the foreign 802.11a transmitter interference threshold for all Cisco lightweight access points to 50 percent:

```
> config advanced 802.11a profile foreign global 50
```

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

```
> config advanced 802.11 profile foreign AP1 0
```

### Related Commands

**show advanced 802.11a profile**

**config advanced 802.11b profile foreign**

## config advanced 802.11 profile noise

To set the 802.11a foreign noise threshold between  $-127$  and  $0$  dBm, use the **config advanced 802.11 profile noise** command.

**config advanced 802.11 {a | b} profile noise {global | cisco\_ap} dBm**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>global</b>	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

$-70$  dBm.

### Examples

This example shows how to set the 802.11a foreign noise threshold for all Cisco lightweight access points to  $-127$  dBm:

```
> config advanced 802.11a profile noise global -127
```

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

```
> config advanced 802.11a profile noise AP1 0
```

### Related Commands

**show advanced 802.11 profile**

**config advanced 802.11b profile noise**

## config advanced 802.11 profile throughput

To set the Cisco lightweight access point data-rate throughput threshold between 1000 and 10000000 bytes per second, use the **config advanced 802.11 profile throughput** command.

**config advanced 802.11** {a | b} **profile throughput** {global | cisco\_ap} value

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>global</b>	Configures all 802.11a Cisco lightweight access point specific profiles.
<i>cisco_ap</i>	Cisco lightweight access point name.
<i>value</i>	802.11a Cisco lightweight access point throughput threshold between 1000 and 10000000 bytes per second.

### Command Default

1,000,000 bytes per second.

### Examples

This example shows how to set all Cisco lightweight access point data-rate thresholds to 1000 bytes per second:

```
> config advanced 802.11 profile throughput global 1000
```

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

```
> config advanced 802.11 profile throughput AP1 10000000
```

### Related Commands

**show advanced 802.11 profile**

**config advanced 802.11b profile data-rate**

## config advanced 802.11 profile utilization

To set the RF utilization threshold between 0 and 100 percent, use the **config advanced 802.11 profile utilization** command. The operating system generates a trap when this threshold is exceeded.

**config advanced 802.11 {a | b} profile utilization {global | cisco\_ap} percent**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>global</b>	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

80 percent.

### Examples

This example shows how to set the RF utilization threshold for all Cisco lightweight access points to 0 percent:

```
> config advanced 802.11 profile utilization global 0
```

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

```
> config advanced 802.11 profile utilization AP1 100
```

### Related Commands

**show advanced 802.11a profile**  
**config advanced 802.11b profile utilization**

## Configuring 802.11k and Assisted Roaming

This section lists the commands for configuring, displaying, and debugging 802.11k and assisted roaming settings on the controller.

## config assisted-roaming

To configure assisted roaming parameters on the controller, use the **config assisted-roaming** command.

**config assisted-roaming** {**denial-maximum** *count* | **floor-bias** *RSSI* | **prediction-minimum** *number\_of\_APs*}

### Syntax Description

<b>denial-maximum</b>	Configures maximum number of counts for association denial.
<i>count</i>	Maximum number of times a client is denied for association when the association request sent to an access point does not match any access point on the prediction list. The range is from 1 to 10.
<b>floor-bias</b>	Configures RSSI bias for access points on the same floor.
<i>RSSI</i>	RSSI bias for access points on the same floor. The range is from 5 to 25. Access points on the same floor have more preference.
<b>prediction-minimum</b>	Configures minimum number of optimized access points for the assisted roaming feature.
<i>number_of_APs</i>	Minimum number of optimized access points for the assisted roaming feature. The range is from 1 to 6. If the number of access points in the prediction assigned to the client is less than this number, the assisted roaming feature does not work.

### Command Default

The default RSSI bias for access points on the same floor is 15 dBm.

### Usage Guidelines

802.11k allows a client to request a neighbor report that contains information about known neighbor access points, which can be used for a service set transition. The neighbor list reduces the need for active and passive scanning.

### Examples

This example shows how to configure the minimum number of optimized access points for the assisted roaming feature:

```
> config assisted-roaming prediction-minimum 4
```

### Related Commands

**config wlan assisted-roaming**  
**show assisted-roaming**  
**debug 11k**

## config wlan assisted-roaming

To configure assisted roaming on a WLAN, use the **config wlan assisted-roaming** command.

```
config wlan assisted-roaming {neighbor-list | dual-list | prediction} {enable | disable} wlan_id
```

### Syntax Description

<b>neighbor-list</b>	Configures an 802.11k neighbor list for a WLAN.
<b>dual-list</b>	Configures a dual band 802.11k neighbor list for a WLAN. The default is the band that the client is currently associated with.
<b>prediction</b>	Configures assisted roaming optimization prediction for a WLAN.
<b>enable</b>	Enables the configuration on the WLAN.
<b>disable</b>	Disables the configuration on the WLAN.
<i>wlan_id</i>	Wireless LAN identifier between 1 and 512 (inclusive).

### Command Default

The 802.11k neighbor list is enabled for all WLANs.

By default, dual band list is enabled if the neighbor list feature is enabled for the WLAN.

### Usage Guidelines

When you enable the assisted roaming prediction list, a warning appears and load balancing is disabled for the WLAN, if load balancing is already enabled on the WLAN.

### Examples

This example shows how to enable an 802.11k neighbor list for a WLAN:

```
> config wlan assisted-roaming neighbor-list enable 1
```

### Related Commands

```
config assisted-roaming  
show assisted-roaming  
debug 11k
```

## show assisted-roaming

To display assisted roaming and 802.11k configurations, use the **show assisted-roaming** command.

**show assisted-roaming**

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

**Command Default** None.

**Examples** This example shows how to display assisted roaming and 802.11k configurations:

```
> show assisted-roaming
Assisted Roaming and 80211k Information:
Floor RSSI Bias..... 15 dBm
Maximum Denial..... 2 counts
Minimum Optimized Neighbor Assigned..... 2 neighbors

Assisted Roaming Performance Chart:
Matching Assigned Neighbor..... [0] = 0
Matching Assigned Neighbor..... [1] = 0
Matching Assigned Neighbor..... [2] = 0
Matching Assigned Neighbor..... [3] = 0
Matching Assigned Neighbor..... [4] = 0
Matching Assigned Neighbor..... [5] = 0
Matching Assigned Neighbor..... [6] = 0
Matching Assigned Neighbor..... [7] = 0
No Matching Neighbor..... [8] = 0
No Neighbor Assigned..... [9] = 0
```

**Related Commands**

- config assisted-roaming**
- config wlan assisted-roaming**
- debug 11k**

## debug 11k

To configure 802.11k debug options, use the **debug 11k** command.

**debug 11k** {all | detail | errors | events | history | optimization | simulation} {enable | disable}

### Syntax Description

<b>all</b>	Configures debug of all 802.11k messages.
<b>detail</b>	Configures debug of 802.11k details.
<b>errors</b>	Configures debug of 802.11k errors.
<b>events</b>	Configures debug of all 802.11k events.
<b>history</b>	Configures debug of all 802.11k history. The controller collects roam history of the client.
<b>optimization</b>	Configures debug of 802.11k optimizations. You can view optimization steps of neighbor lists.
<b>simulation</b>	Configures debug of 802.11k simulation data. You can view details of client roaming parameters and import them for offline simulation.
<b>enable</b>	Enables the 802.1k debug.
<b>disable</b>	Disables the 802.1k debug.

### Command Default

None.

### Examples

This example shows how to enable debug of 802.11k simulation data:

```
> debug 11k simulation enable
```

### Related Commands

**config assisted-roaming**  
**config wlan assisted-roaming**  
**show assisted-roaming**

## Other Configure Commands

This section lists the other **config** commands to configure Radio Resource Management (RRM).

## 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	
<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>receiver</b>	Specifies the receiver configuration.
<b>default</b>	Specifies the default advanced receiver configuration.
<b>rxstartjumpThreshold</b>	Specifies the receiver start signal.
<i>value</i>	Jump threshold configuration value between 0 and 127.

**Command Default** None.

**Examples** This example shows how to prevent changes to receiver parameters while the network is enabled:

```
> config advanced 802.11 receiver default
```

**Related Commands** **config advanced 802.11b receiver**

## config advanced 802.11 edca-parameters

To enable a specific enhanced distributed channel access (EDCA) profile on the 802.11a network, use the **config advanced 802.11 edca-parameters** command.

**config advanced 802.11 {a | b} edca-parameters {wmm-default | svp-voice | optimized-voice | optimized-video-voice | custom-voice}**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>wmm-default</b>	Enables the Wi-Fi Multimedia (WMM) default parameters. Choose this option when voice or video services are not deployed on your network.
<b>svp-voice</b>	Enables Spectralink voice priority parameters. Choose this option if Spectralink phones are deployed on your network to improve the quality of calls.
<b>optimized-voice</b>	Enables EDCA voice-optimized profile parameters. Choose this option when voice services other than Spectralink are deployed on your network.
<b>optimized-video-voice</b>	Enables EDCA voice- and video-optimized profile parameters. Choose this option when both voice and video services are deployed on your network.  <b>Note</b> If you deploy video services, admission control (ACM) must be disabled.
<b>custom-voice</b>	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.

### Command Default

**wmm-default**

### Examples

This example shows how to enable Spectralink voice priority parameters:

```
> config advanced 802.11 edca-parameters svp-voice
```

### Related Commands

**show 802.11a**  
**config advanced 802.11b edca-parameters**

## config advanced 802.11 factory

To reset 802.11a advanced settings back to the factory defaults, use the **config advanced 802.11 factory** command.

**config advanced 802.11 {a | b} factory**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.

### Command Default

None.

### Examples

This example shows how to return all the 802.11a advanced settings to their factory defaults:

```
> config advanced 802.11a factory
```

### Related Commands

**show advanced 802.11a channel**

## config advanced 802.11 group-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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>add</b>	Adds a controller to the static RF group.
<b>remove</b>	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.

### Examples

This example shows how to add a controller in the 802.11a automatic RF group:

```
> 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 group-mode

To set the 802.11a automatic RF group selection mode on or off, use the **config advanced 802.11 group-mode** command.

**config advanced 802.11 {a | b} group-mode {auto | leader | off | restart}**

### Syntax Description

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<b>auto</b>	Sets the 802.11a RF group selection to automatic update mode.
<b>leader</b>	Sets the 802.11a RF group selection to static mode, and sets this controller as the group leader.
<b>off</b>	Sets the 802.11a RF group selection to off.
<b>restart</b>	Restarts the 802.11a RF group selection.

### Command Default

Auto.

### Examples

This example shows how to turn the 802.11a automatic RF group selection mode on:

```
> config advanced 802.11a group-mode auto
```

This example shows how to turn the 802.11a automatic RF group selection mode off:

```
> config advanced 802.11a group-mode off
```

### Related Commands

**show advanced 802.11a group**

**config advanced 802.11 group-member**

## 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	Specifies the TPC version 1 that offers strong signal coverage and stability.
2	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.

### Examples

This example shows how to configure the TPC version as 1 for the 802.11a radio:

```
> 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g/n network.
<i>threshold</i>	Threshold value between –50 dBm to –80 dBm.

### Examples

This example shows how to configure the threshold as –60 dBm for TPC version 1 of the 802.11a radio:

```
> 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g/n network.
<i>intensity</i>	Computational intensity value between 1 to 100.

### Examples

This example shows how to configure the computational intensity as 50 for TPC version 2 of the 802.11a radio:

```
> 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

<b>enable</b>	Enables the configuration of TPC version 2 on a per-channel basis.
<b>disable</b>	Disables the configuration of TPC version 2 on a per-channel basis.

### Examples

This example shows how to enable TPC version 2 on a per-channel basis for the 802.11a radio:

```
> 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.
<i>threshold</i>	Threshold value between –50 dBm to –80 dBm.

### Examples

This example shows how to configure the threshold as –60 dBm for TPC version 2 of the 802.11a radio:

```
> 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

<b>a</b>	Specifies the 802.11a network.
<b>b</b>	Specifies the 802.11b/g network.

### Command Default

None.

### Examples

This example shows how to initiate updates of 802.11a transmit power for an 802.11a access point:

```
> config advanced 802.11 txpower-update
```

### Related Commands

**config advance 802.11b txpower-update**

## 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

<b>enable</b>	Enables this command.
<b>disable</b>	Disables this command.

### Command Default

Disabled.

### Examples

This example shows how to enable over-the-air frame padding:

```
> 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 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

<b>enable</b>	(Optional) Specifies that client location calibration is enabled.
<i>mac_address</i>	MAC address of the client.
<i>interval</i>	Measurement interval in seconds.
<b>disable</b>	(Optional) Specifies that client location calibration is disabled.

### Command Default

None.

### Examples

This example shows how to enable the client location calibration for the client 37:15:85:2a with a measurement interval of 45 seconds:

```
> config client location-calibration enable 37:15:86:2a:Bc:cf 45
```

### Related Commands

**show client location-calibration summary**

## config network rf-network-name

To set the RF-Network name, use the **config network rf-network-name** command.

**config network rf-network-name** *name*

---

**Syntax Description**

*name* RF-Network name. The name can contain up to 19 characters.

---

**Command Default**

None.

**Examples**

This example shows how to set the RF-network name to travelers:

```
> config network rf-network-name travelers
```

**Related Commands**

**show network summary**

## Debug Commands

This section lists the **debug** commands to manage Radio Resource Management (RRM) settings of the controller.

**Caution**

---

Debug commands are reserved for use only under the direction of Cisco personnel. Do not use these commands without direction from Cisco-certified staff.

---

## debug airewave-director

To configure the Airewave Director software debug options, use the **debug airewave-director** command.

**debug airewave-director** {**all** | **channel** | **detail** | **error** | **group** | **manager** | **message** | **packet** | **power** | **profile** | **radar** | **rf-change**} {**enable** | **disable**}

### Syntax Description

<b>all</b>	Configures debugging of all Airewave Director logs.
<b>channel</b>	Configures debugging of the Airewave Director channel assignment protocol.
<b>detail</b>	Configures debugging of the Airewave Director detail logs.
<b>error</b>	Configures debugging of the Airewave Director error logs.
<b>group</b>	Configures debugging of the Airewave Director grouping protocol.
<b>manager</b>	Configures debugging of the Airewave Director manager.
<b>message</b>	Configures debugging of the Airewave Director messages.
<b>packet</b>	Configures debugging of the Airewave Director packets.
<b>power</b>	Configures debugging of the Airewave Director power assignment protocol and coverage hole detection.
<b>profile</b>	Configures debugging of the Airewave Director profile events.
<b>radar</b>	Configures debugging of the Airewave Director radar detection/avoidance protocol.
<b>rf-change</b>	Configures debugging of the Airewave Director rf changes.
<b>enable</b>	Enables the Airewave Director debug setting.
<b>disable</b>	Disables the Airewave Director debug setting.

### Command Default

None.

### Examples

This example shows how to enable the debugging of Airewave Director profile events:

```
> debug airewave-director profile enable
```

**Related Commands**

- debug disable-all
- show sysinfo

## debug dot11

To configure dot11 events debug options, use the **debug dot11** command.

**debug dot11** {all | load-balancing | management | mobile | nmosp | probe | rldp | rogue | state} {enable | disable}

### Syntax Description

<b>all</b>	Configures debugging of all 802.11 messages.
<b>load-balancing</b>	Configures debugging of 802.11 load balancing events.
<b>management</b>	Configures debugging of 802.11 MAC management messages.
<b>mobile</b>	Configures debugging of 802.11 mobile events.
<b>nmosp</b>	Configures debugging of the 802.11 NMSP interface events.
<b>probe</b>	Configures debugging of probe.
<b>rldp</b>	Configures debugging of 802.11 Rogue Location Discovery.
<b>rogue</b>	Configures debugging of 802.11 rogue events.
<b>state</b>	Configures debugging of 802.11 mobile state transitions.
<b>enable</b>	Enables dot11 debugging.
<b>disable</b>	Disables dot11 debugging.

### Command Default

None.

### Examples

This example shows how to enable dot11 debug settings:

```
> debug dot11 state enable
> debug dot11 mobile enable
```

### Related Commands

**debug disable-all**  
**debug dot11 mgmt interface**  
**debug dot11 mgmt msg**  
**debug dot11 mgmt ssid**  
**debug dot11 mgmt state-machine**  
**debug dot11 mgmt station**