Radio Resource Management Commands

airtime-fairness dot11 mode (apgroup)

To configure ATF for an AP group, use the **airtime-fairness dot11 mode** command in ap group submode. Use the **no** form of the command to disable ATF for a AP group.

airtime-fairness dot11 {**24ghz**| **5ghz**} **mode** {**enforce-policy**| **monitor**}

no airtime-fairness dot11 {**24ghz**| **5ghz**} **mode** {**enforce-policy**| **monitor**}

Syntax Description

24ghz	Configures 802.11b parameters
5ghz	Configures 802.11a parameters
enforce-policy	Configure airtime-fairness in enforce-policy mode
monitor	Configure airtime-fairness in monitor mode

Command Default

None

Command Modes

config apgroup

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure ATF for an AP group.

```
Switch#configure terminal
Switchconfig# ap group testap
Switchconfig-apgroup# airtime-fairness dot11 24ghz mode monitor
```

airtime-fairness dot11 optimization (apgroup)

To configure ATF optimization for an AP group, use the **airtime-fairness dot11 optimization** command. Use the **no** form of the command to disable ATF for a AP group

airtime-fairness dot11 {**24ghz**| **5ghz**} **optimization**

no airtime-fairness dot11 {**24ghz**| **5ghz**} **optimization**

Syntax Description

24ghz	Configures 802.11b parameters
5ghz	Configures 802.11a parameters

Command Default

None

Command Modes

config apgroup

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure ATF optimization for an AP group.

```
Switch#configure terminal
Switchconfig# ap group testap
Switchconfig-apgroup# airtime-fairness dot11 24ghz optimization
```

airtime-fairness dot11 policy

To override a globally applied policy on a WLAN AP group, use the **airtime-fairness dot11 policy** command. Use the **no** form of the command to disable applied policy override.

airtime-fairness dot11 {**24ghz**| **5ghz**}**policy** *policy-name*

no airtime-fairness dot11 {**24ghz**| **5ghz**}**policy** *policy-name*

Syntax Description

24ghz	Configures 2.4 GHz airtime-fairness policy
5ghz	Configures 5 GHz airtime-fairness policy
policy-name	name of the airtime-fairness policy to assign

Command Default

None

Command Modes

config wlan apgroup

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to override applied policy on a WLAN AP group.

```
Switchconfig#ap group testapgroup
Switch(config-apgroup)# wlan testwlan
Switch(config-wlan-apgroup)# airtime-fairness dot11 24ghz policy testpolicy
```

airtime-fairness policy (wlan)

To configure the ATF policy for a WLAN, use the **airtime-fairness policy** command.

airtime-fairness policy *policy-name*

Syntax Description

policy-name	Enter the policy name

Command Default

None

Command Modes

config wlan

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure the ATF policy for a WLAN.

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#wlan wlan-name
Switch(config-wlan)#airtime-fairness policy policy-name
```

ap dot11 rf-profile

To configure an RF-Profile for a selected band, use the **ap dot11 rf-profile** command. To delete an RF-Profile, use the **no** form of this command.

ap dot11 {**24GHz | 5GHz**} **rf-profile** *profile name*

Syntax Description

24ghz	Displays the 2.4-GHz band
5ghz	Displays the 5-GHz band
profile name	Name of the RF profile

Command Default

None

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure an RF profile for a selected band.

```
Switch#ap dot11 24GHz rf-profile doctest
```

ap dot11 rrm

To configure basic and advanced radio resource management settings for 802.11 devices, use the **ap dot11 rrm** command.

ap dot11 {**24ghz**| **5ghz**} **rrm** {**ccx location-measurement** *sec*| **channel** {**cleanair-event**| **dca**| **device**| **foreign**| **load**| **noise**| **outdoor-ap-dca**}| **coverage** {**data fail-percentage** *pct*| **data packet-count** *count*| **data rssi-threshold** *threshold*}| **exception global** *percentage*| **level global** *number*| **voice** {**fail-percentage** *percentage*| **packet-count** *number*| **rssi-threshold** *threshold*}}

Syntax Description

ccx	Configures Advanced (RRM) 802.11 CCX options.
location-measurement	Specifies 802.11 CCX Client Location Measurements in seconds. The range is between 10 and 32400 seconds.
channel	Configure advanced 802.11-channel assignment parameters.
cleanair-event	Configures cleanair event-driven RRM parameters.
dca	Configures 802.11-dynamic channel assignment algorithm parameters.
device	Configures persistent non-WiFi device avoidance in the 802.11-channel assignment.
foreign	Enables foreign AP 802.11-interference avoidance in the channel assignment.
load	Enables Cisco AP 802.11-load avoidance in the channel assignment.
noise	Enables non-802.11-noise avoidance in the channel assignment.
outdoor-ap-dca	Configures 802.11 DCA list option for outdoor AP.

coverage	Configures 802.11 coverage Hole-Detection.
data fail-percentage *pct*	Configures 802.11 coverage failure-rate threshold for uplink data packets. The range is between 1 and 100
data packet-count *count*	Configures 802.11 coverage minimum-failure-count threshold for uplinkdata packets.
data rssi-threshold *threshold*	Configures 802.11 minimum-receive-coverage level for voice packets.
exception global *percentage*	Configures 802.11 Cisco APs coverage-exception level. The range is between 0 and 100 percent.
level global *number*	Configures 802.11 Cisco AP client-minimum-exception level between 1 and 75 clients.
voice	Configures 802.11 coverage Hole-Detection for voice packets.
fail-percentage *percentage*	Configures 802.11 coverage failure rate threshold for uplink voice packets.
packet-count *number*	Configures 802.11 coverage minimum-uplink-failure count threshold for voice packets.
rssi-threshold *threshold*	Configures 802.11 minimum receive coverage level for voice packets.

Command Default

Disabled

Command Modes

Interface configuration

Command History

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

Usage Guidelines

This command applies for both 802.11a and 802.11b bands. But the appropriate commands must be chosen for configuring the parameter.

Examples

This example shows how to configure various RRM settings.

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#ap dot11 5ghz rrm ?
  ccx            Configure Advanced(RRM) 802.11a CCX options
  channel        Configure advanced 802.11a channel assignment parameters
  coverage       802.11a Coverage Hole Detection
  group-member   Configure members in 802.11a static RF group
  group-mode     802.11a RF group selection mode
  logging        802.11a event logging
  monitor        802.11a statistics monitoring
  ndp-type       Neighbor discovery type Protected/Transparent
  profile        802.11a performance profile
  tpc-threshold  Configures the Tx Power Control Threshold used by RRM for auto
                 power assignment
  txpower        Configures the 802.11a Tx Power Level
```

ap dot11 rrm ccx

To configure radio resource management CCX options for 2.4 GHz and 5GHz devices, use the **ap dot11 rrm ccx** command.

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

Syntax Description

location-measurement *interval*	Specifies the CCX client-location measurement interval value. The range is between 10 and 32400 seconds.

Command Default

None.

Command Modes

Interface configuration.

Command History

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

Usage Guidelines

None.

Examples

This example shows how to set CCX location-measurement interval for a 5-GHz device.

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#ap dot11 5ghz rrm ccx location-measurement 10
```

ap dot11 rrm channel

To enable radio resource management channel for 2.4 GHz and 5GHz devices, use the **ap dot11 rrm channel** command. To disable the radio resource mangement for 2.4 GHz and 5 GHz devices, use the **no** form of the command.

ap dot11 {**24ghz**| **5ghz**} **rrm channel** {**cleanair-event**| **dca**| **device**| **foreign**| **load**| **noise**}

no ap dot11 {**24ghz**| **5ghz**} **rrm channel** {**cleanair-event**| **dca**| **device**| **foreign**| **load**| **noise**}

Syntax Description

cleanair-event	Specifies the cleanair event-driven RRM parameters
dca	Specifies the 802.11 dynamic channel assignment algorithm parameters
device	Specifies the persistent non-WiFi device avoidance in the 802.11-channel assignment.
foreign	Enables foreign AP 802.11-interference avoidance in the channel assignment.
load	Enables Cisco AP 802.11-load avoidance in the channel assignment.
noise	Enables non-802.11-noise avoidance in the channel assignment.

Command Default

None.

Command Modes

Interface configuration.

Command History

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

Usage Guidelines

None.

Examples

This example shows all the parameters available for **Channel**.

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#ap dot11 24ghz rrm channel ?
  cleanair-event  Configure cleanair event-driven RRM parameters
  dca             Config 802.11b dynamic channel assignment algorithm
                  parameters
  device          Configure persistent non-WiFi device avoidance in the 802.11b
                  channel assignment
  foreign         Configure foreign AP 802.11b interference avoidance in the
```

```
                channel assignment
load            Configure Cisco AP 802.11b load avoidance in the channel
                assignment
noise           Configure 802.11b noise avoidance in the channel assignment
```

ap dot11 24ghz rrm channel cleanair-event rogue-contribution

To configure cleanair event driven Radio Resource Management (RRM) rogue contribution parameters, use the **ap dot11 24ghz rrm channel cleanair-event rogue-contribution** command.

ap dot11 24ghz rrm channel cleanair-event rogue-contribution duty-cycle *threshold-value*

Syntax Description

duty-cycle	Sets event-driven RRM rogue contribution duty cycle.
threshold-value	Custom ED-RRM rogue contribution duty cycle threshold value. Valid value ranges from 1 -99 percent.

Command Default

The rogue contribution duty cycle is not set.

Command History

Release	Modification
16.1	This command was introduced.

Usage Guidelines

This command sets event-driven RRM rogue contribution duty cycle.

Examples

This example shows how to configure cleanair event driven RRM rogue contribution parameters:

```
 Cisco Controller(config)# ap dot11 24ghz rrm channel cleanair-event rogue-contribution
duty-cycle 1
```

ap dot11 24ghz or 5ghz rrm channel dca add

To add non-default radio resource management DCA channels to the DCA channel list for 2.4 GHz or 5 GHz devices, use the **ap dot11** {**24ghz** | **5ghz** } **rrm channel dca add** command. To remove a default channel from the DCA list, use the **no** form of the command. The DCA channel list contains standard channels matching your country of operation. For example, a regulatory default channel list contains channels 1, 6, and 11.

ap dot11 [**24ghz**| **5ghz**] **rrm channel dca add** *number*

no ap dot11 [**24ghz**| **5ghz**] **rrm channel dca add** *number*

Syntax Description

number	DCA channel number.

Command Default

None.

Command Modes

Global configuration

Command History

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

Usage Guidelines

None.

Examples

This example shows how to add a non-default radio resource management DCA channel to the DCA list for a 2.4 GHz device, using the **ap dot11 24ghz rrm channel dca add 10** command:

```
Switch(config)# ap dot11 24ghz rrm channel dca add 10
```

ap dot11 24ghz or 5ghz rrm channel dca remove

To remove a default radio resource management DCA channels from the DCA channel list for 2.4 GHz or 5 GHz devices, use the **ap dot11** {**24ghz** | **5ghz**} **rrm channel dca remove** *number* command. To add a default DCA channel back to the DCA channel list, use the **no** form of the command.

ap dot11 [**24ghz**| **5ghz**] **rrm channel dca remove** *number*

no ap dot11 [**24ghz**| **5ghz**] **rrm channel dca remove** *number*

Syntax Description

number	Specifies the radio resource management DCA channel.

Command Default

None.

Command Modes

Global configuration.

Command History

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

Usage Guidelines

None.

Examples

This example shows how to remove default radio resource management DCA channel from the DCA list for a 2.4 GHz device, using the **ap dot11 24ghz rrm channel dca remove** command:

```
Switch(config)#ap dot11 24ghz rrm channel dca remove 11
```

ap dot11 5ghz rrm channel dca chan-width-11n

To configure DCA channel width for all 802.11n radios in the 5-GHz band, enter the **ap dot11 5ghz rrm channel dca chan-width-11n** *width* command. To disable DCA channel width for all 802.11n radios in the 5-GHz band, use the **no** form of the command.

ap dot11 5ghzrrm channel dca chan-width-11n {**20**|**40**}

noap dot11 5ghzrrm channel dca chan-width-11n {**20**|**40**}

Syntax Description

chan-width-11n	Specifies DCA channel width for all 802.11n radios in the 5-GHz band.
20	Sets the channel width for 802.11n radios to 20 MHz.
40	Sets the channel width for 802.11n radios to 40 MHz.

Command Default

The default channel width is 20.

Command Modes

Global configuration.

Command History

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

Usage Guidelines

None.

Examples

This example shows how to set the channel width for the 802.11n radios to 40 MHz, using the **ap dot11 5ghz rrm channel dca chan-width-11n** command:

```
Switch(config)#ap dot11 5ghz rrm channel dca chan-width-11n 40
```

ap dot11 rrm coverage

To enable 802.11 coverage hole detection, use the **ap dot11 rrm coverage** command.

ap dot11 {**24ghz**| **5ghz**} **rrm coverage** [**data** {**fail-percentage** *percentage*| **packet-count** *count*| **rssi-threshold** *threshold*}| **exceptional global** *value*| **level global** *value*| **voice** {**fail-percentage** *percentage*| **packet-count** *packet-count*| **rssi-threshold** *threshold*}]

Syntax Description

data	Specifies 802.11 coverage hole-detection data packets.
fail-percentage *percentage*	Specifies 802.11 coverage failure-rate threshold for uplink data packets. The range is between 1 and 100
packet-count *count*	Specifies 802.11 coverage minimum-failure-count threshold for uplink data packets.
rssi-threshold *threshold*	Specifies 802.11 minimum-receive-coverage level for voice packets.
exceptional global *value*	Specifies 802.11 Cisco APs coverage-exception level. The range is between 0 and 100 percent.
level global *value*	Specifies 802.11 Cisco AP client-minimum-exception level between 1 and 75 clients.
voice	Specifies 802.11 coverage Hole-Detection for voice packets.
fail-percentage *percentage*	Specifies 802.11 coverage failure rate threshold for uplink voice packets.
packet-count *packet-count*	Specifies 802.11 coverage minimum-uplink-failure count threshold for voice packets.
rssi-threshold *threshold*	Specifies 802.11 minimum receive coverage level for voice packets.

Command Default

None.

Command Modes

Interface configuration.

Command History

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

Usage Guidelines

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

If both the number and percentage of failed packets exceed the values that you entered in the **ap dot11 {24ghz | 5ghz} rrm coverage packet-count** and **ap dot11 {24ghz | 5ghz} rrm coverage fail-percentage** commands for a 5-second period, the client is considered to be in a pre-alarm condition. The switch uses this information to distinguish between real and false coverage holes and excludes clients with poor roaming logic. A coverage hole is detected if both the number and percentage of failed clients meet or exceed the values entered in the **ap dot11 {24ghz | 5ghz} rrm coverage level-global** and **ap dot11 {24ghz | 5ghz} rrm coverage exceptional-global** commands over a 90-second period. The switch determines whether the coverage hole can be corrected and, if appropriate, mitigate the coverage hole by increasing the transmit power level for that specific access point.

Examples

This example shows how to set the RSSI-threshold for data in 5-GHz band.

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#ap dot11 5ghz rrm coverage data rssi-threshold -80
```

ap dot11 rrm group-member

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

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

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

Syntax Description

controller-name	Specifies the name of the controller to be added.
controller-ip	Specifies the IP address of the controller to be added.

Command Default

None.

Command Modes

Interface configuration.

Command History

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

Usage Guidelines

None.

Examples

This example shows how to add a controller in the 5-GHz automatic-RF group

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#ap dot11 5ghz rrm group-member ABC 10.1.1.1
```

ap dot11 rrm monitor

To monitor the 802.11-band statistics, use the **ap dot11 rrm monitor** command. To disable, use the **no** form of the command.

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

no ap dot11 {**24ghz**| **5ghz**} **rrm monitor** {**channel-list**| **coverage**| **load**| **noise**| **signal**}

Syntax Description

channel-list	Sets the 802.11 noise/interference/rogue monitoring channel-list.
all	Specifies to monitor all the channels.
country	Specifies to monitor channels used in configured country code
dca	Specifies to monitor channels used by dynamic channel assignment.
coverage	Specifies 802.11 coverage measurement interval. The range is between 60 and 3600 in seconds
load	Specifies 802.11 load measurement interval. The range is between 60 and 3600 in seconds
noise	Specifies 802.11 noise measurement interval (channel scan interval). The range is between 60 and 3600 in seconds
signal	Specifies 802.11 signal measurement interval (neighbor packet frequency). The range is between 60 and 3600 in seconds

Command Default

None.

Command Modes

Interface Configuration

Command History

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

Usage Guidelines

None.

Examples

This example shows how to enable monitoring all the 5-GHz band channels.

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#ap dot11 5ghz rrm monitor channel-list all
```

ap dot11 rrm profile

To configure Cisco lightweight access point profile settings on supported 802.11 networks, use the **ap dot11 rrm profile** command.

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

Syntax Description

customize	Enables performance profiles.
foreign *value*	Specifies the 802.11 foreign 802.11 interference threshold value. The range is between 0 and 100 percent.
noise *value*	Specifies the 802.11 foreign noise threshold value. The range is between -127 and 0 dBm
throughput *value*	Specifies the 802.11a Cisco AP throughput threshold value. The range is between 1000 and 10000000 bytes per second
utilization *value*	Specifies the 802.11a RF utilization threshold value. The range is between 0 and 100 percent

Command Default

Disabled.

Command Modes

Interface configuration.

Command History

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

Usage Guidelines

None.

Examples

This example shows how to set the threshold value for the noise parameter.

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#ap dot11 5ghz rrm profile noise -50
```

ap dot11 rrm tpc-threshold

To configure the tx-power control threshold used by RRM for auto power assignment, use the **ap dot11 rrm tpc-threshold** command. To disable, use the **no** form of the command.

ap dot11 {**24ghz**| **5ghz**} **rrm tpc-threshold** *value*

no ap dot11 {**24ghz**| **5ghz**} **rrm tpc-threshold**

Syntax Description

value	Specifies the power value. The range is between -80 and -50.

Command Default

None.

Command Modes

Interface configuration.

Command History

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

Usage Guidelines

None.

Examples

This example shows how to configure the tx-power control threshold used by RRM for auto power assignment.

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#ap dot11 5ghz rrm tpc-threshold -60
```

ap dot11 rrm txpower

To configure the 802.11 tx-power level, use the **ap dot11 rrm txpower** command. To disable the 802.11 tx-power level, use the **no** form of the command.

ap dot11 {**24ghz**| **5ghz**} **rrm txpower** {**auto**| **max** *powerLevel*| **min** *powerLevel*| **once**| *power-level*}

noap dot11 {**24ghz**| **5ghz**} **rrm txpower** {**auto**| **max** *powerLevel*| **min** *powerLevel*| **once**| *power-level*}

Syntax Description

auto	Enables auto-RF.
max *powerLevel*	Configures maximum auto-RF tx power. The range is between -10 to -30.
min *powerLevel*	Configures minimum auto-RF tx power. The range is between -10 to -30.
once	Enables one-time auto-RF.

Command Default

None.

Command Modes

Interface configuration.

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.
Cisco IOS XE 3.3SE	The **no** form of the command is introduced.

Usage Guidelines

None.

Examples

This example shows how to enables auto-RF once.

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#ap dot11 5ghz rrm txpower once
```

ap dot11 airtime-fairness mode

To enable AirTime-Fairness in Enforce policy or Monitor mode, use the **ap dot11 airtime-fairness mode** command. To disable Enforce policy or Monitor mode in AirTime Fairness, use the **no** form of the command.

ap dot11 {**24ghz**| **5ghz**}**airtime-fairness mode** {**enforce-policy**| **monitor**}

no ap dot11 {**24ghz**| **5ghz**}**airtime-fairness mode** {**enforce-policy**| **monitor**}

Syntax Description

24ghz	Configures 802.11b parameters
5ghz	Configures 802.11a parameters
enforce-policy	Configure airtime-fairness in enforce-policy mode
monitor	Configure airtime-fairness in monitor mode

Command Default

None

Command Modes

Global Configuration

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows all the parameters available for **AirTime Fairness mode**.

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#ap dot11 24ghz airtime-fairness mode ?
 enforce-policy  Configure airtime-fairness in enforce-policy mode
 monitor         Configure airtime-fairness in monitor mode
```

ap dot11 airtime-fairness policy-name

To create a new Air Time Fairness (ATF) policy, use the **ap dot11 airtime-fairness policy-name** command.

ap dot11 airtime-fairness policy-name *policy-name policy-id*

Syntax Description

policy-name	Enter the ATF policy name.
policy-id	Enter ATF policy ID to create new policy.

Command Default

None

Command Modes

Global Configuration

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Usage Guidelines

All ATF policies require a policy weight value. To add the policy weight use the **policy weight** command in config-airtime-fairness policy mode. If no policy weight is added, default value of 10 is applied. For more information about adding policy weight, see policy-weight, on page 29.

Examples

This example shows .

```
Switch#ap dot11 airtime-fairness policy-name testpolicy 12
```

policy-weight

To apply policy weight to an Air Time Fairness (ATF) policy, use the **policy-weight** command.

policy-weight *policy-weight*

Syntax Description

policy-weight	Policy weight for ATF policy. The range is from 5 to 100. Default is 10.

Command Default

None

Command Modes

config-airtime-fairness policy

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Usage Guidelines

If you do not apply a policy to the WLAN, then the default policy (with ID 0) with the policy weight of 10 is applied automatically. For more information about ATF policy creation, see ap dot11 airtime-fairness policy-name, on page 28.

Examples

This example shows how to apply policy weight to an ATF policy.

```
Switch#ap dot11 airtime-fairness policy-name testpolicy 12
Switch(config-airtime-fairness policy)# policy-weight 35
```

ap group

To configure an ap group, use the **ap group** command.

ap group *group-name*

Syntax Description

group-name	Name of the AP group.

Command Default

None

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure an ap group.

```
Switchconfig# ap group docgroup
```

ap name dot11 airtime-fairness mode

To enable Air Time-Fairness in Enforce policy or Monitor mode for a specific AP, use the **ap namedot11 airtime-fairness mode** command. Use **no** form of the command to disable Air Time-Fairness from either of the two modes for a specific AP.

ap name *ap-name* **dot11** {**24ghz**| **5ghz**} **airtime-fairness mode** {**enforce-policy**| **monitor**}

ap name *ap-name* **no dot11** {**24ghz**| **5ghz**} **airtime-fairness mode** {**enforce-policy**| **monitor**}

Syntax Description

ap-name	Enter access point name
24ghz	Configures 802.11b parameters
5ghz	Configures 802.11a parameters
enforce-policy	Configure airtime-fairness in enforce-policy mode
monitor	Configure airtime-fairness in monitor mode

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to disable Air Time-Fairness from either enforce-policy or monitor mode for a specific AP.

```
Switch# ap name testap no dot11 24ghz airtime-fairness mode
```

ap name dot11 airtime-fairness optimization

To enable ATF optimization for a specific AP, use the **ap name dot11 airtime-fairness optimization** command. Use **no** to disable ATF optimization for a specific AP.

ap name *ap-name* **dot11** {**24ghz**| **5ghz**} **airtime-fairness optimization**

ap name *ap-name* **no dot11** {**24ghz**| **5ghz**} **airtime-fairness optimization**

Syntax Description

ap-name	Enter access point name
24ghz	Configures 802.11b parameters
5ghz	Configures 802.11a parameters

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Examples

This example shows how to enable ATF optimization for a specific AP.

```
Switch#ap name doctestap dot11 24ghz airtime-fairness optimization
```

ap name no dot11 airtime-fairness wlan-name policy-name

To disable the ATF policy override on WLAN specific to a WLAN, use the **ap name no dot11 airtime-fairness wlan-name** command.

ap name *ap-name* **no dot11** {**24ghz**| **5ghz**}**airtime-fairness wlan-name** *wlan-name*

Syntax Description

ap-name	Enter access point name
24ghz	Configures 802.11b parameters
5ghz	Configures 802.11a parameters
wlan-name	Configure the airtime-fairness policy for this WLAN under Cisco AP
wlan-name	Enter the wlan profile name

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to disable ATF policy override on WLAN specific to a WLAN .

```
Switch#ap name testap no dot11 24ghz airtime-fairness wlan-name testwlan
```

ap name dot11 airtime-fairness wlan-name policy

To override the ATF policy on WLAN specific to one AP, use the **ap name dot11 airtime-fairness wlan-name policy-name** command.

ap name *ap-name* **dot11** {**24ghz**| **5ghz**} **airtime-fairness wlan-name** *wlan-name* **policy-name** *policy-name*

Syntax Description

ap-name	Access Point name
24ghz	Configures 802.11b parameters
5ghz	Configures 802.11a parameters
wlan-name	Configure the airtime-fairness policy for this wlan under Cisco
wlan-name	Enter the wlan profile name
policy-name	Configure airtime-fairness policy
policy-name	Enter the airtime-fairness profile name

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to override the ATF policy on WLAN specific to one AP.

```
Switch# ap name testap dot11 24ghz airtime-fairness wlan-name testwlan policy-name testpolicy
```

band-select client

To configure the client threshold minimum dB for the selected band, use the **band-select client** command. To reset the client threshold minimum dB for the selected band, use the **no** form of this command.

band-select client {**mid-rssi** | **rssi** } *dBm value*

Syntax Description

mid-rssi	Minimum dBm of a client RSSI start to respond to probe
rssi	Minimum dBm of a client RSSI to respond to probe
dBm value	Minimum dBm of a client RSSI to respond to probe. Valid range is between –90 and –20 dBm.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

This command is enabled only for 2.4-GHz band.

Examples

This example shows how to set the client threshold to minimum dB for a selected band.

```
Switch(config-rf-profile)#band-select client rssi -50
```

band-select cycle

To configure the band cycle parameters, use the **band-select cycle** command. To reset the threshold value, use the **no** form of this command.

band-select cycle { **count** |**threshold** } *value*

Syntax Description

count	Sets the Band Select probe cycle count.
value	Maximum number of cycles not responding. The range is between 1 and 10.
threshold	Sets the time threshold for a new scanning cycle.
value	Set the threshold value in milliseconds. The valid is between 1and 1000.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure the probe cycle count in an RF profile for a selected band.

```
Switch(config-rf-profile)#band-select cycle count 5
```

band-select expire

To configure the expiry time for the RF profile for the selected band, use the **band-select expire** command. To reset the value, use the **no** form of this command.

band-select expire { **dual-band** | **suppression** } *value*

no band-select expire { **dual-band** | **suppression** }

Syntax Description

dual-band	Configures the RF Profile Band Select Expire Dual Band.
value	Setting the time to expire for pruning previously known dual-band clients. The range is between 10 and 300.
suppression	Configures the RF Profile Band Select Expire Suppression.
value	Setting the time to expire for pruning previously known 802.11b/g clients. The range is between 10 and 200.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure the time to expire for a dual-band of an RF profile in a selected band.

```
Switch(config-rf-profile)#band-select expire dual-band 15
```

band-select probe-response

To configure the probe responses to the clients for a selected band, use the **band-select probe-response** command. To disable the probe-response, use the **no** form of this command.

band-select probe-response

Syntax Description

probe-response	Probe responses to clients.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to enable probe response to the clients.

```
Switch(config-rf-profile)#band-select probe-response
```

channel

To configure a channel for the RF profile DCA channel list, use the **channel** command. To disable the channel, use the **no** form of this command.

channel { **add** | **remove** } *channel-number*

Syntax Description

add	Adds channel to the RF Profile DCA channel list.
remove	Removes the channel from the RF Profile DCA channel list.
channel-number	Channel number.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to add a channel to the RF profile DCA channel list.

```
Switch(config-rf-profile)#channel add 3
```

channel foreign

To configure the RF Profile DCA foreign AP contribution, use the **channel foreign** command. To disable the DCA Foreign AP Contribution, use the **no** form of this command.

channel foreign

Syntax Description

foreign	Configures the RF Profile DCA foreign AP contribution.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure the RF profile DCA foreign AP contribution.

```
Switch(config-rf-profile)#channel foreign
```

channel width

To configure the RF Profile DCA channel width, use the **channel width** command. To revert to default value, use the **no** form of this command.

channel width {**20** | **40** | **80** | **best** }

Syntax Description

20	Channel width in MHz
40	Channel width in MHz
80	Channel width in MHz
best	Channel width in MHz

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

This command is enabled only on 5-GHz band.

Examples

This example shows how to configure the channel width to 40-MHz.

```
Switch(config-rf-profile)#channel width 40
```

coverage

To configure the voice and data coverage, use the **coverage** command. To reset the minimum RSSI value use the **no** form of this command.

coverage {**data** | **voice**} **rssi threshold** *value*

Syntax Description

data	Configure Coverage Hole Detection for data packets.
voice	Configure Coverage Hole Detection for voice packets.
value	Minimum RSSI value for the packets received by the access point. The valid rage is between –90 and –60 dBm.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure the coverage hole detection for data packets.

```
Switch(config-rf-profile)#coverage data rssi threshold –85
```

coverage exception

To configure the Cisco AP coverage exception level, use the **coverage exception** command. To reset the exception-level percentage use the **no** form of this command.

coverage exception *exception-level*

Syntax Description

exception-level	Cisco AP coverage exception level with valid range between 0 and 100 percent.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to set the Cisco AP coverage exception level.

```
Switch(config-rf-profile)#coverage exception 70
```

coverage level

To configure Cisco AP client minimum coverage level, use the **coverage level** command. To reset the coverage client value use the **no** form of this command.

coverage level *clients*

Syntax Description

clients	Minimum coverage level. Range is between 1 and 200 clients.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure the Cisco AP client minimum level.

```
Switch(config-rf-profile)#coverage level 180
```

clear wireless airtime-fairness statistics

To clear the wireless airtime-fairness statistics, use the **clear wireless airtime-fairness statistics** command.

clear clear wireless airtime-fairness statistics

Syntax Description

airtime-fairness	Clears the airtime-fairness statistics

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Examples

This example shows how to clear the wireless airtime-fairness statistics.

```
Switch#clear wireless airtime-fairness statistics
```

dot11n-only

To enable 802.11n client only mode of the RF profile, use the **dot11n-only** command. To disable the 802.11n client only mode use the **no** form of this command.

dot11n-only

Syntax Description

dot11n-only	802.11n client only mode of the RF Profile.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to enable 802.11n client only mode of the RF Profile.

```
Switch(config-rf-profile)#dot11n-only
```

load-balancing

To configure the RF Profile Load Balance, use the **load-balancing** command. To reset RF profile load balance value, use the **no** form of this command.

load-balancing {**denial** | **window**} *value*

Syntax Description

denial	Configures the number of load balancing denial.
value	Enter the load balancing denial count. The range is between 1 and 10.
window	Set Aggressive Load Balancing client window.
value	Number of clients. The range is between 0 and 20.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure the number of load balancing denial.

```
Switch#load-balancing denial 4
```

high-density clients count

To configure the RF profile max clients, use the **high-density clients count** command. To reset the RF profile max clients use the **no** form of this command.

high-density clients count *value*

Syntax Description

value	Maximum client connections per AP radio. The range is between 0 and 200.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure the RF profile max clients.

```
Switch(config-rf-profile)#high-density clients count 25
```

high-density clients wlan

To configure the maximum clients per AP on a WLAN, use the **high-density clients wlan** command. To reset the count use the **no** form of this command.

high-density clients wlan *wlan name* **count** *count*

Syntax Description

wlan name	Enter the name of the WLAN to limit clients per AP.
count	Maximum client connections per AP per WLAN. The range is between 0 and 200.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure the maximum clients per AP on a WLAN

```
Switch(config-rf-profile)#high-density clients wlan doctest count 20
```

high-density multicast data-rate

To configure the value for RF profile Multicast Data Rate, use the **high-density multicast data-rate** command. To reset the data date to auto, use the **no** form of this command.

high-density multicast data-rate {**RATE_12M| RATE_18M| RATE_24M| RATE_36M| RATE_48M| RATE_54M| RATE_6M| RATE_9M**}

Syntax Description

multicast	Configures the RF Profile multicast.
data-rate	The value for RF Profile Multicast Data Rate.
RATE_12M	802.11 12M Rate
RATE_18M	802.11 18M Rate
RATE_24M	802.11 24M Rate
RATE_36M	802.11 36M Rate
RATE_48M	802.11 48M Rate
RATE_54M	802.11 54M Rate
RATE_6M	802.11 6M Rate
RATE_9M	802.11 9M Rate

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure the value for RF profile Multicast Data Rate.

```
Switch(config-rf-profile)#high-density multicast data-rate RATE_9M
```

high-density rx-sop threshold

To configure the value for RF Profile Rx SOP threshold, use the **high-density rx-sop threshold** command. To revert the Rx SOP to auto, use the **no** form of this command.

high-density rx-sop threshold {**auto** | **high** | **low** | **medium** }

Syntax Description

rx-sop	Configures the RF Profile Rx SOP threshold.
threshold	Configures the value for RF Profile Rx SOP threshold.
auto	Reverts radio receiver SOP threshold to auto.
high	Sets radio receiver SOP threshold to high.
low	Sets radio receiver SOP threshold to low.
medium	Sets radio receiver SOP threshold to medium.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure radio receiver SOP threshold for an RF Profile to high.

```
Switch(config-rf-profile)#high-density rx-sop threshold high
```

rate

To configure 802.11 operational rates, use the **rate** command. To revert to the rate default state, use the **no** form of this command.

rate {**RATE_12M**| **RATE_18M**| **RATE_24M**| **RATE_36M**| **RATE_48M**| **RATE_54M**| **RATE_6M**| **RATE_9M**}{**disable**| **mandatory**| **supported**}

Syntax Description

RATE_12M	802.11 12M Rate.
RATE_18M	802.11 18M Rate.
RATE_24M	802.11 24M Rate.
RATE_36M	802.11 36M Rate.
RATE_48M	802.11 48M Rate.
RATE_54M	802.11 54M Rate.
RATE_6M	802.11 6M Rate.
RATE_9M	802.11 9M Rate.
disable	Disables a rate.
mandatory	Configures a rate to mandatory.
supported	Configures a rate to supported.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples This example shows how to disable 802.11 9M operational rate.

```
Switch(config-rf-profile)#rate RATE_9M disable
```

rate mcs

To enable the RF profile MCS data rates, use the **rate mcs** command. To disable the RF profile MCS data rates use the **no** form of this command.

rate mcs *index-number*

Syntax Description

index-number	Enter index number of RF Profile MCS Data Rates. The range is between 0 and 31.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to enable the RF Profile mcs data rate.

```
Switch(config-rf-profile)#rate mcs 5
```

trap threshold

To configure the RF Profile Trap Threshold parameters, use the **trap threshold** command. To revert to default value, use the **no** form of this command.

trap threshold {**clients | interference | noise | utilization** } *value*

Syntax Description

clients	Configures the RF Profile Trap for Threshold Clients.
value	Number of clients that associate with an access point, after which the trap is sent. The range is between 1 and 200.
interference	Configures the RF Profile Trap Threshold for Interference.
value	Configures the percentage value for Rf Profile Trap Threshold Interference. The range is between 0 and 100.
noise	Configures the RF Profile Trap Threshold for Noise.
value	Configures the value for Rf Profile Trap Threshold Noise in dbm. The range is between –127 and 0.
utilization	Configures the RF Profile Trap Threshold for Utilization.
value	Configures the percentage value for RF Profile Trap Threshold Utilization. The range is between 0 and 100.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to set the RF Profile Threshold Trap for the clients.

```
Switch(config-rf-profile)#trap threshold clients 10
```

tx-power

To configure Tx Power levels, use the **tx-power** command. To revert to default value, use the **no** form of this command.

tx-power { **min** | **max** } *dBm value*

Syntax Description

max	Configures maximum Auto-RF transmit power.
min	Configures maximum Auto-RF transmit power.
dBm value	Enter value in dBm. The range is between –10 and 30.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to set the Tx power level to min.

```
Switch(config-rf-profile)#tx-power min –14
```

tx-power v1 threshold

To configure the Transmit Power Control (TPC) version 1 threshold, use the **tx-power v1 threshold** command. To revert to default dBm value, use the **no** form of this command.

tx-power v1 threshold *dBm value*

Syntax Description

dBm value	Transmit Power Control version 1 threshold value. The range is between –80 and –50 dBm.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to set the TPCv1 threshold to –75dBm.

```
Switch#tx-power v1 threshold –75
```

no ap dot11 airtime-fairness policy-name

To delete a AirTime Fairness policy, use the **no ap dot11 airtime-fairness policy-name** command.

no ap dot11 airtime-fairness policy-name *policy-name*

Syntax Description

policy-name	Enter the airtime-fairness policy name

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to delete a AirTime Fairness policy.

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch# no ap dot11 airtime-fairness policy-name testpol
```

remote-lan

To configure an remote-lan to an ap group, use the **remote-lan** command. To delete the remote-lan from the ap group, use the **no** form of this command.

remote-lan *name*

Syntax Description

name	Enter the name of the remote-lan

Command Default

None

Command Modes

config-apgroup

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure an remote-lan to an ap group.

```
Switch(config-apgroup)#remote-lan rlantest
```

rf-profile dot11 24ghz

To assign the RF Profile to the 2.4GHz band AP group, use the **rf-profile dot11 24ghz** command.

rf-profile dot11 24ghz *name*

Syntax Description

name	Enter the name of the RF Profile to be assigned to the current AP group.

Command Default

None

Command Modes

config-apgroup

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to assign the RF Profile to the 2.4GHz band AP group.

```
Switch(config-apgroup)#rf-profile dot11 24ghz doctest
```

rf-profile dot11 5ghz

To assign the RF Profile to the 5GHz band AP group, use the **rf-profile dot11 5ghz** command.

rf-profile dot11 5ghz *name*

Syntax Description

name	Enter the name of the RF Profile to be assigned to the current AP group.

Command Default

None

Command Modes

config-apgroup

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to assign the RF Profile to the 5GHz band AP group.

```
Switch(config-apgroup)#rf-profile dot11 24ghz doc5test
```

show ap airtime-fairness ap-group

To view ATF configuration for a specific AP group, use the **show ap airtime-fairness ap-group** command.

show ap airtime-fairness ap-group *group-name*

Syntax Description

group-name	Enter AP-group name

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Examples

This example shows ATF configuration for a specific AP group .

```
Switch#show ap airtime-fairness ap-group ?
Site Description:
Airtime-fairness 2.4GHz Mode:: Disable
Airtime-fairness 2.4GHz Optimization : n/a
Airtime-fairness 5GHz Mode:: Disable
Airtime-fairness 5GHz Optimization : n/a

WLAN ID   WLAN Name                       Interface            ATF Policy(2.4GHz)    ATF
 Policy(5GHz)
--------------------------------------------------------------------------------------------------
```

show ap airtime-fairness (ap)

To view ATF configuration for a specific AP, use the **show ap airtime-fairness** command.

show ap name*ap-name* **airtime-fairness**

Syntax Description

ap-name	Enter access point name

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Examples

This example shows how to view ATF configuration for a specific AP.

```
Switch# show ap name testap airtime-fairness
```

show ap airtime-fairness (per radio)

To view AP list with Air Time Fairness configuration per radio, use the **show ap airtime-fairness** command.

show ap airtime-fairness

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Examples This example shows AP list with AirTime-Fairness per radio.

```
Switch#show ap airtime-fairness
```

show ap airtime-fairness policy (all)

To view all configured policies, use the **show ap airtime-fairness policy** command.

show ap airtime-fairness policy

Syntax Description

policy	Shows Airtime Fairness policy information

Command Default

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Examples

This example shows all the configured airtime-fairness policies.

```
Switch#show ap airtime-fairness policy
Policy ID   Policy Name         Weight
---------------------------------------
23           f                    10
12           asd                  10
13           pol                  10
50           meaw                 45
20           pocy                 10
0            Default              10
```

show ap airtime-fairness wlan

To view the complete list of configured WLANs with Air Time Fairness policies applied, use the **show ap airtime-fairness wlan** command.

show ap airtime-fairness wlan

Syntax Description

wlan	Display airtime-fairness configuration for all wlans

Command Default

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Examples

This example shows the complete list of configured WLANs and ATF policies applied.

```
Switch#show ap airtime-fairness wlan

WLAN ID     Profile Name                        ATF Profile Name         Weight
-------------------------------------------------------------------------------
12          doctestlan                          Default                  10
```

show ap dot11 24ghz

To display the 2.4 GHz RRM parameters, use the **show ap dot11 24ghz** command.

show ap dot11 24ghz {**ccx**| **channel**| **coverage**| **group**| **l2roam**| **logging**| **monitor**| **profile**| **receiver**| **summary**| **txpower**}

Syntax Description

ccx	Displays the 802.11b CCX information for all Cisco APs.
channel	Displays the configuration and statistics of the 802.11b channel assignment.
coverage	Displays the configuration and statistics of the 802.11b coverage.
group	Displays the configuration and statistics of the 802.11b grouping.
l2roam	Displays 802.11b l2roam information.
logging	Displays the configuration and statistics of the 802.11b event logging.
monitor	Displays the configuration and statistics of the 802.11b monitoring.
profile	Displays 802.11b profiling information for all Cisco APs.
receiver	Displays the configuration and statistics of the 802.11b receiver.
summary	Displays the configuration and statistics of the 802.11b Cisco APs.
txpower	Displays the configuration and statistics of the 802.11b transmit power control.

Command Default

None.

Command Modes

Global configuration.

Command History

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

Usage Guidelines

None.

Examples This example shows how to display configuration and statistics of the 802.11b coverage.

```
Switch#show ap dot11 24ghz coverage

Coverage Hole Detection
  802.11b Coverage Hole Detection Mode            : Enabled
  802.11b Coverage Voice Packet Count             : 100 packet(s)
  802.11b Coverage Voice Packet Percentage        : 50%
  802.11b Coverage Voice RSSI Threshold           : -80 dBm
  802.11b Coverage Data Packet Count              : 50 packet(s)
  802.11b Coverage Data Packet Percentage         : 50%
  802.11b Coverage Data RSSI Threshold            : -80 dBm
  802.11b Global coverage exception level         : 25 %
  802.11b Global client minimum exception level   : 3 clients
```

show ap dot11 5ghz

To display the 5GHz RRM parameters, use the **show ap dot11 5ghz** command.

show ap dot11 5ghz {**ccx**| **channel**| **coverage**| **group**| **l2roam**| **logging**| **monitor**| **profile**| **receiver**| **summary**| **txpower**}

Syntax Description

ccx	Displays the 802.11a CCX information for all Cisco APs.
channel	Displays the configuration and statistics of the 802.11a channel assignment.
coverage	Displays the configuration and statistics of the 802.11a coverage.
group	Displays the configuration and statistics of the 802.11a grouping.
l2roam	Displays 802.11a l2roam information.
logging	Displays the configuration and statistics of the 802.11a event logging.
monitor	Displays the configuration and statistics of the 802.11a monitoring.
profile	Displays 802.11a profiling information for all Cisco APs.
receiver	Displays the configuration and statistics of the 802.11a receiver.
summary	Displays the configuration and statistics of the 802.11a Cisco APs.
txpower	Displays the configuration and statistics of the 802.11a transmit power control.

Command Default

None.

Command Modes

Global configuration.

Command History

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

Usage Guidelines

None.

Examples

This example shows configuration and statistics of 802.11a channel assignment.

```
Switch#show ap dot11 5ghz channel

Automatic Channel Assignment
  Channel Assignment Mode                     : AUTO
  Channel Update Interval                     : 12 Hours
  Anchor time (Hour of the day)               : 20
  Channel Update Contribution                 : SNI..
  Channel Assignment Leader                   : web (9.9.9.2)
  Last Run                                    : 16534 seconds ago
  DCA Sensitivity Level                       : MEDIUM (15 dB)
  DCA 802.11n Channel Width                   : 40 Mhz
  Channel Energy Levels
      Minimum                                 : unknown
      Average                                 : unknown
      Maximum                                 : unknown
  Channel Dwell Times
      Minimum                                 : unknown
      Average                                 : unknown
      Maximum                                 : unknown
  802.11a 5 GHz Auto-RF Channel List
  Allowed Channel List                        : 36,40,44,48,52,56,60,64,149,153,1

                57,161
  Unused Channel List                         : 100,104,108,112,116,132,136,140,1

                65
  802.11a 4.9 GHz Auto-RF Channel List
  Allowed Channel List                        :
  Unused Channel List                         : 1,2,3,4,5,6,7,8,9,10,11,12,13,14,

                15,16,17,18,19,20,21,22,23,24,25,26
  DCA Outdoor AP option                       : Disabled
```

show ap dot11 airtime-fairness (radio bands)

To view AP list with ATF configured radio bands, use the **show ap dot11 airtime-fairness** command.

show ap dot11 {**24ghz**| **5ghz**} **airtime-fairness**

Syntax Description

24ghz	Show 802.11b configuration
5ghz	Show 802.11a configuration

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to view AP list with ATF configured radio bands.

```
Switch#show ap dot 24ghz airtime-fairness
```

show ap dot11 24ghz rf-profile summary

To display the 2.4GHz RF Profiles summary, use the **show ap dot11 24ghz rf-profile summary** command.

show ap dot11 24ghz rf-profile summary

Syntax Description

summary	Show RF Profiles summary.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows the 24GHz AP-Profile summary.

```
Switch(config-rf-profile)#show ap dot11 24ghz rf-profile summaryNumber of RF Profiles : 1

RF Profile Name                  Band      Description           Applied   State
------------------------------------------------------------------------------
doctest                          2.4 GHz                         No        Down
```

show ap dot11 5ghz rf-profile summary

To display the 5GHz ap RF-Profiles, use the **show ap dot11 5ghz rf-profile summary** command.

show ap dot11 5ghz rf-profile summary

Syntax Description

summary	Show RF Profiles summary.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to display the 5GHz ap RF-Profile summary.

```
Switch#show ap dot11 5ghz rf-profile summary
Number of RF Profiles : 1

RF Profile Name                  Band      Description           Applied   State
------------------------------------------------------------------------------
doc5test                         5 GHz                           No        Down
```

show ap name dot11 airtime-fairness summary

To view the ATF statistics for a specific AP, use the **show ap name dot11 airtime-fairness summary** command.

show ap name *ap-name* **dot11** {**24ghz**| **5ghz**} **airtime-fairness summary**

Syntax Description

ap-name	Display the stats of 24GHz | 5GHz airtime-fairness
24ghz	Show 802.11b configuration
5ghz	Show 802.11a configuration

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to view the ATF statistics for a specific AP.

```
Switch#show ap ame testap dot11 24ghz airtime-fairness summary
```

show ap name dot11 airtime-fairness policy statistics

To view statistics for each ATF policy, use the **show ap name dot11 airtime-fairness policy statistics** command.

show ap name *ap-name* **dot11** {**24ghz**| **5hz**} **airtime-fairness policy** *policy-name* **statistics**

Syntax Description

ap-name	Enter access point name
24ghz	Show 802.11b configuration
5hz	Show 802.11a configuration
policy-name	Enter policy name

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Examples

This example shows how to view statistics for each ATF policy.

```
Switch#show ap name testap dot11 24ghz airtime-fairness policy testpolicy statistics
```

show ap name dot11 airtime-fairness wlan name statistics

To view ATF statistics per WLAN active on specific AP, use the **show ap name dot11 airtime-fairness wlan name statistics** command.

show ap name dot11 {**24ghz**| **5ghz**} **airtime-fairness wlan name** *wlan-name* **statistics**

Syntax Description

name	Display airtime-fairness stats by profile name
wlan-name	Enter WLAN name
statistics	Display the stats of 24GHz | 5GHz airtime-fairness

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.2.1	This command was introduced.

Examples

This example shows how to view ATF statistics per WLAN active on specific AP.

```
Switch#show ap name testap dot11 24ghz airtime-fairness wlan name testwlan statistics
```

show ap rf-profile summary

To display the ap RF-Profile summary, use the **show ap rf-profile summary** command.

show ap rf-profile summary

Syntax Description

summary	Show summary of RF Profiles

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to display the ap RF-Profile summary .

```
Switch#show ap rf-profile summary
Number of RF Profiles : 1

RF Profile Name                  Band      Description           Applied   State
------------------------------------------------------------------------------
doctest                          2.4 GHz                         No        Down
```

show ap rf-profile name

To display the selected ap RF-Profile details, use the **show ap rf-profile name** command.

show ap rf-profile name *profile-name* **detail**

Syntax Description

profile-name	Name of the RF-Profile.
detail	Show detail of selected RF Profile.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to display the details of the selected RF-Profile.

```
Switch#show ap rf-profile name doctest detail
Description :
AP Group Names :
RF Profile Name : doctest
Band : 2.4 GHz
802.11n client only : Disabled
Transmit Power Threshold v1: -70 dBm
Min Transmit Power: -10 dBm
Max Transmit Power: 30 dBm
Operational Rates
  802.11b 1M Rate : Mandatory
  802.11b 2M Rate : Mandatory
  802.11b 5.5M Rate : Mandatory
  802.11b 11M Rate : Mandatory
  802.11b 6M Rate : Mandatory
  802.11b 9M Rate : Supported
  802.11b 12M Rate : Supported
  802.11b 18M Rate : Supported
  802.11b 24M Rate : Supported
  802.11b 36M Rate : Supported
  802.11b 48M Rate : Supported
  802.11b 54M Rate : Supported
Max Clients : 200
Wlan name                       Max Clients
----------------------------------------

Trap Threshold
```

```
  Clients:  12 clients
  Interference:  10%
  Noise:  -70 dBm
  Utilization:  80%
Multicast Data Rate: auto
Rx SOP Threshold : auto
Band Select
  Probe Response:  Disabled
  Cycle Count:  2 cycles
  Cycle Threshold:  200 milliseconds
  Expire Suppression:  20 seconds
  Expire Dual Band:  60 seconds
  Client RSSI:  -80 dBm
  Client Mid RSSI:  -80 dBm
Load Balancing
  Window:  5 clients
  Denial:  3 count
Coverage Data
  Data: -80 dBm
  Voice: -80 dBm
 Minimum Client Level: 3 clients
  Exception Level: 25%
DCA Channel List  : 1,5,9,13
DCA Foreign AP Contribution : Enabled
802.11n MCS Rates
  MCS 0 : Enabled
  MCS 1 : Enabled
  MCS 2 : Enabled
  MCS 3 : Enabled
  MCS 4 : Enabled
  MCS 5 : Enabled
  MCS 6 : Enabled
  MCS 7 : Enabled
  MCS 8 : Enabled
  MCS 9 : Enabled
  MCS 10 : Enabled
  MCS 11 : Enabled
  MCS 12 : Enabled
  MCS 13 : Enabled
  MCS 14 : Enabled
  MCS 15 : Enabled
  MCS 16 : Enabled
  MCS 17 : Enabled
  MCS 18 : Enabled
  MCS 19 : Enabled
  MCS 20 : Enabled
  MCS 21 : Enabled
  MCS 22 : Enabled
  MCS 23 : Enabled
  MCS 24 : Enabled
  MCS 25 : Enabled
  MCS 26 : Enabled
  MCS 27 : Enabled
  MCS 28 : Enabled
  MCS 29 : Enabled
  MCS 30 : Enabled
  MCS 31 : Enabled
State : Down
```

show wireless mobility controller ap

To display the list of access points which have joined the sub-domain, use the **wireless mobility controller ap** command.

show wireless mobility controller ap

Syntax Description

ap	Show joined Access Point in sub-domain.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to list the access points which have joined the sub-domain.

```
Switch#show wireless mobility controller ap
Number of AP entries in the sub-domain     : 2

AP name                          AP radio MAC      Controller IP     Location
-------------------------------------------------------------------------------------------
bos2kk                           00f2.8c42.f520    default-group     default-group
IosAP1                           34ed.522f.7e60    default-group     default-group
```

shutdown

To close the RF Profile and disable the network, use the **shutdown** command. To disable shutdown execution, use the **no** form of this command.

shutdown

Syntax Description

shutdown	Shuts down the profile and disables network.

Command Default

None

Command Modes

config-rf-profile

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to close a RF Profile and disable the network.

```
Switch(config-rf-profile)#shutdown
```

wlan

To configure an WLAN to an ap group, use the **wlan** command. To delete the WLAN from the ap group, use the **no** form of this command.

wlan *wlan-name*

Syntax Description

wlan-name	Enter the name of the WLAN to be configured to an AP group.

Command Default

None

Command Modes

config-apgroup

Command History

Release	Modification
Cisco IOS XE Denali 16.3.1	This command was introduced.

Usage Guidelines

None

Examples

This example shows how to configure an WLAN to an ap group.

```
Switch(config-apgroup)#wlan docwlan
```