

Configure Cisco Clean-Air on Mobility Express AP's

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Introduction

This document describes the steps to configure Cisco Clean-Air on the Cisco mobility express Access Point (APs).

Prerequisites

Requirements

Cisco recommends that you have knowledge of Cisco Mobility Express that runs code 8.3 and higher.

Components Used

The information in this document is based on the Cisco 2802 AP that runs Mobility Express Software Release 8.5.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Background Information

Wireless LAN systems operate in unlicensed 2.4- and 5-GHz industrial, scientific, and medical (ISM) bands. Many devices such as microwave ovens, cordless phones, and Bluetooth devices also operate in these bands and can negatively affect Wi-Fi operations. Cisco CleanAir is a

spectrum intelligence solution which can detect non-Wi-Fi interference sources in your network. It also enables you or your network to act upon this information.

For example, you could manually remove the device that interferes, or the system could automatically change the channel away from the interference. CleanAir provides spectrum management and Radio Frequency (RF) visibility.

The Clean-Air enabled APs collect information about all devices that operate in the ISM bands, identify and evaluate the information as a potential interference source, and forward it to the Cisco WLC. For every device that operates in the unlicensed band, Cisco CleanAir tells you what it is, where it is and how it impacts your wireless network.

For detailed information about the Clean-Air feature refer this whitepaper.

https://www.cisco.com/c/en/us/solutions/collateral/enterprise-networks/cleanair-technology/white_paper_c11-599260.html

Configure

Enable Clean-Air

Clean-Air can be enabled at the network level or at an AP specific level. In order to enable it globally, run the command **config {802.11a | 802.11b} cleanair enable network**.

For ex:
(Cisco Controller) >config 802.11a cleanair enable network

It can also be enabled at as per AP level with the command **config{802.11a | 802.11b}cleanair enable ap_name**.

For ex:
(Cisco Controller) >config 802.11a cleanair enable AP-3702

Specify Interference Devices to be Detected

APs that are associated to the Cisco WLC send interference reports only for the interference types that have been enabled. This functionality allows you to filter out interferers that can flood the network and cause performance problems. In order to configure interference detection and specify sources of interference that needs to be detected, run the command **config {802.11a | 802.11b} cleanair device {enable | disable} device_type**.

For example:
(Cisco Controller) >config 802.11a cleanair device enable all

Enable Clean-Air Alarms

Cisco CleanAir technology provides a lot of detailed information about interference sources detected. But to facilitate an at a glance understanding of where interference problems impact the

network, it rolls up the detailed information into a high-level, easy-to-understand metric referred to as Air Quality (AQ). A value of 100 means that the air quality is the highest and a value of 1 represents the worst air quality. Clean-Air can be configured to send alarms when air-quality of a particular AP falls below a particular threshold. In order to configure the triggers of air quality alarms run the command **config {802.11a | 802.11b} cleanair alarm air-quality {enable | disable}**. The default value is enabled.

- The user can specify the threshold at which air quality alarms need to be triggered. For this run the command **config {802.11a | 802.11b} cleanair alarm air-quality threshold threshold**, where threshold is a value between 1 and 100 (inclusive). When the air quality falls below the threshold level, the alarm is triggered.
- You can Enable the triggers of an interferer alarms. Run the command **config {802.11a | 802.11b} cleanair alarm device {enable | disable}**. The default value is enable.
- In order to specify sources of interference that trigger alarms run the command **config {802.11a | 802.11b} cleanair alarm device type {enable | disable}**.

For example:

```
(Cisco Controller) >config 802.11a cleanair alarm device enable all
```

Event-Driven Radio Resource Management (EDRRM)

EDRRM is a feature of clean-air that can trigger a channel change based on the severity of the interference source. For example, a cordless phone with a continuous FM signal can cause an outage of several minutes (as long as the phone is active). This can cause a dramatic drop in air quality of any nearby AP. EDRRM causes the system to immediately evaluate and change the channel for the affected AP. If feasible it goes ahead and changes its channel. Due to the lack of additional channels on the 802.11b radio, it is recommended to have this feature enabled only on the 802.11a band. EDRRM can be enabled with the command **config advanced {802.11a | 802.11b} channel cleanair-event {enable | disable}**. The default value is disabled.

You can also specify the threshold at which you want RRM to be triggered. When the interference level for the AP rises above the threshold level, RRM initiates a local Dynamic Channel Assignment (DCA) run and changes the channel of the affected AP radio if possible to improve network performance. Low represents a decreased sensitivity to changes in the environment while high represents an increased sensitivity. You can also set the sensitivity to a custom level of your choice. The default value is medium. **config advanced {802.11a | 802.11b} channel cleanair-event sensitivity {low | medium | high | custom}**

If you set the threshold sensitivity as custom, you must set a custom threshold value. The default is 35. **config advanced {802.11a | 802.11b} channel cleanair-event sensitivity threshold thresholdvalue**

Verify

Use this section in order to confirm that your configuration works properly.

You can view the Cisco CleanAir configuration for the 802.11a/n or 802.11b/g/n network. Run the command **show {802.11a | 802.11b} cleanair config**. Information similar to this appears.

```

(Cisco Controller) >show 802.11a cleanair config
Clean Air Solution..... Enabled
Air Quality Settings:
  Air Quality Reporting..... Enabled
  Air Quality Reporting Period (min)..... 15
  Air Quality Alarms..... Enabled
    Air Quality Alarm Threshold..... 35
    Unclassified Interference..... Disabled
    Unclassified Severity Threshold..... 20
Interference Device Settings:
  Interference Device Reporting..... Enabled
  Interference Device Types:
    TDD Transmitter..... Enabled
    Jammer..... Enabled
    Continuous Transmitter..... Enabled
  Interference Device Alarms..... Enabled
  Interference Device Types Triggering Alarms:
    TDD Transmitter..... Disabled
    Jammer..... Enabled
    Continuous Transmitter..... Disabled
Additional Clean Air Settings:
  CleanAir ED-RRM State..... Disabled
  CleanAir ED-RRM Sensitivity..... Medium
  CleanAir ED-RRM Custom Threshold..... 50
  CleanAir Persistent Devices state..... Disabled
  CleanAir Persistent Device Propagation..... Enabled

```

You can also view clean-air specific config and status for an individual AP. Run the command **show ap config {802.11a | 802.11b} ap_name**.

For ex:

```

(Cisco Controller) >show ap config 802.11a AP-3702
CleanAir Management Information
  CleanAir Capable..... Yes
  CleanAir Management Administration St.... Enabled
  CleanAir Management Operation State..... Up
  Rapid Update Mode..... Off
  Spectrum Expert connection..... Enabled
    CleanAir NSI Key..... ED1EF0A5BCD83D2BE7124DCB3D975555
    Spectrum Expert Connections counter.... 0
  CleanAir Sensor State..... Configured

```

You can have a look at the air-quality information of all AP's. Run the command **show {802.11a | 802.11b} cleanair air-quality summary**.

For ex:

```

(Cisco Controller) >show 802.11a cleanair air-quality summary

```

AQ = Air Quality

DFS = Dynamic Frequency Selection

AP Name	Channel	Avg AQ	Min AQ	Interferers	DFS
AP-3702	153	99	99	0	

In order to view detailed information about interference devices detected by a particular AP, run the command **show {802.11a | 802.11b} cleanair device ap ap_name**.

In order to view details about each interference device type seen, run the command **show {802.11a | 802.11b} cleanair device type device_type**.

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.