WLC version 8.6 Spectrum Intelligence on Cisco Wave 2 APs

WLC version 8.6 Spectrum Intelligence on Cisco Wave 2 Aps 2

Spectrum Intelligence Restrictions 2

Configuring Spectrum Intelligence 3

Viewing and Understanding SI information 5

Tunning SI 6

Revised: February 1, 2018,

WLC version 8.6 Spectrum Intelligence on Cisco Wave 2 Aps

This feature enables non-wifi interference scanning at the chipset software level to detect the presence of certain Non-WiFi waveforms/devices.

The following Cisco APs support Spectrum Intelligence:

- Cisco 1542 Series APs
- Cisco 1800 Series APs
- Cisco 1810 Series APs
- Cisco 1815 Series APs
- Cisco 1832 Series APs
- Cisco 1852 Series APs

Spectrum Intelligence should not be confused with Cisco CleanAir feature set. SI is based on the inherent abilities of the QCA chipset. SI is supported in both Standalone and ME controllers running version 8.6 with AP's connected in either Local or Flex mode.

Spectrum Intelligence Restrictions

SI is not the same as CleanAir, but it is easy to think of SI as similar or even the same as CleanAir as they both do similar tasks. It is very important to understand the limitations that come with SI vs CleanAir. SI is derived from completely different hardware and software than CleanAir - and the following caveats should be understood in order to correctly set expectations.

- There is no integrated mitigation of interference - normal RRM management of noise is expected to manage this
- Only 3 Interference types are detected
    - Microwave Oven (2.4 GHz only)
    - Continuous Wave (2.4 and 5 GHz)
    - SI-FHSS (2.4 and 5 GHz)
- SI cannot differentiate between multiple devices of the same type - BlueTooth, Dect Phone, and FHSS are all SI-FHSS and only one alert will be displayed regardless if there is 1 device or 10
- Device classifications are limited to presence - the waveform is present, or it is not
- SI does not calculate Air Quality (AQ)
- SI does not provide a Severity or Duty Cycle metric
- SI information is only visible at the controller - it is not sent off the controller to CPI, CMX, or MSE and is not coordinated between controllers

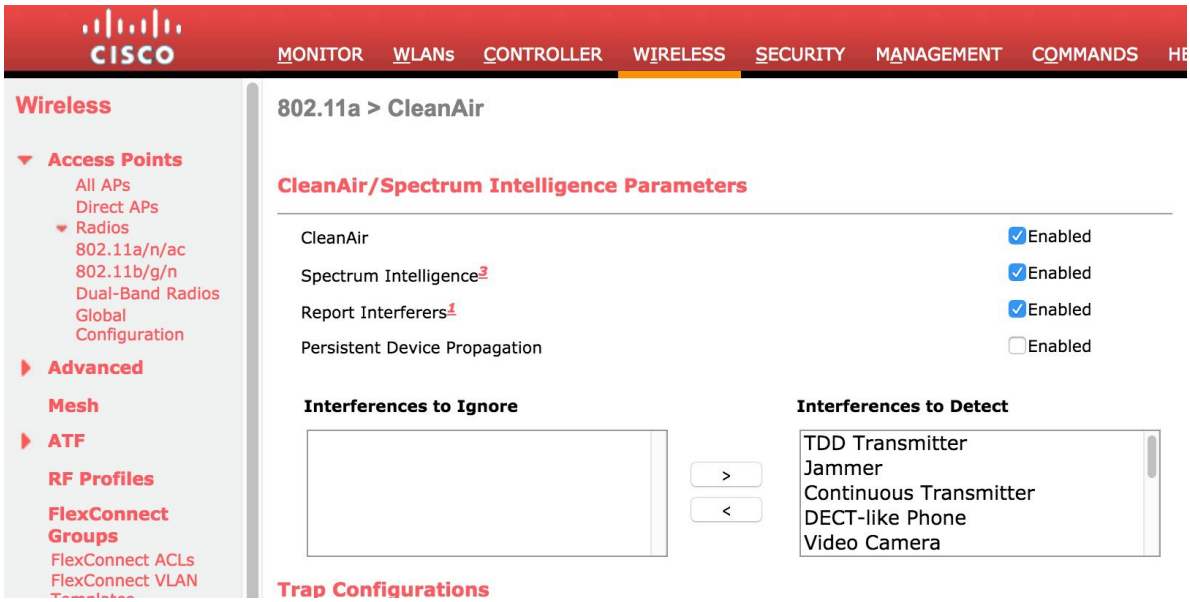
- SI information is 1 for 1 reporting - every AP that hears a device will report. There is no grouping algorithm to coordinate multiple reports into a single alert as CleanAir does
- An AP in client serving mode (local or Flex connect) will only report 1 interference type even if multiples are present
- An AP in Monitor Mode can report all 3 types if present

Configuring Spectrum Intelligence

Spectrum Intelligence as a new feature – is disabled by default. In order to use SI you will need to enable it Globally as well as on the radio interfaces themselves. For ME installations, see CLI configuration below.

From the GUI

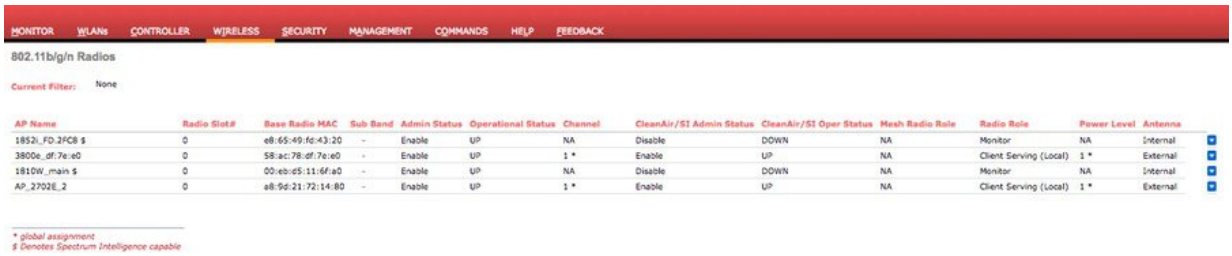
1 Navigate to Wireless > 802.11a/b > CleanAir



2 Select Spectrum Intelligence–Enable for both the 802.11a and the 802.11b band – this enables SI reporting at the global WLC level

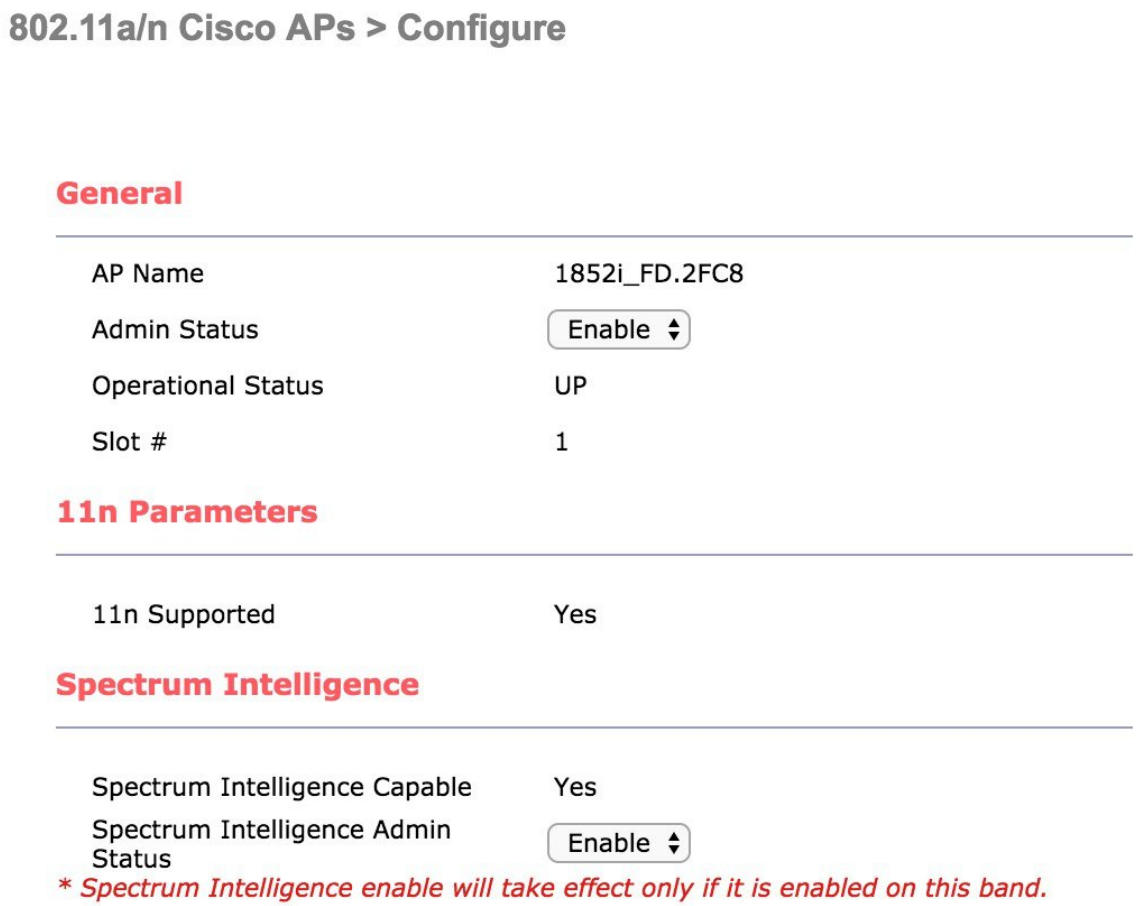
Next you will need to enable SI on the radio interface of your SI capable AP's

1 Navigate to Wireless > Access Points 802.11a/b



Note Spectrum Intelligence Capable interfaces are identified by the presence of a $ sign placed after the AP name

2 Select the radio button on the far-right side of the screen for the desired interface and choose configure



3 Set the Spectrum Intelligence Admin Status to “Enable”

Spectrum Intelligence should now be enabled for SI capable AP's on your WLC.

To configure from CLI:

- Configure global radio or AP radio by entering this command:

  ```
  config {802.11a | 802.11b} SI {enable | disable} network | ap-name
  ```

- View global admin status by entering this command:

  ```
  show {802.11a | 802.11b} SI config
  ```

- View interferences by AP by entering this command:

  ```
  show {802.11a | 802.11b} SI device ap ap-name
  ```

- View interferences by interferer type by entering this command:

```
show {802.11a | 802.11b} SI device-type interferer_type_name
```

Note ME configuration of SI is strictly from the CLI.

Viewing and Understanding SI information

SI detections will be presented in the same screens on the controller that CleanAir is reported in today. Spectrum Intelligence AP's are differentiated from CleanAir AP's by the addition of a $ to the AP name. No Severity or Duty Cycle will be reported as SI cannot calculate these values.

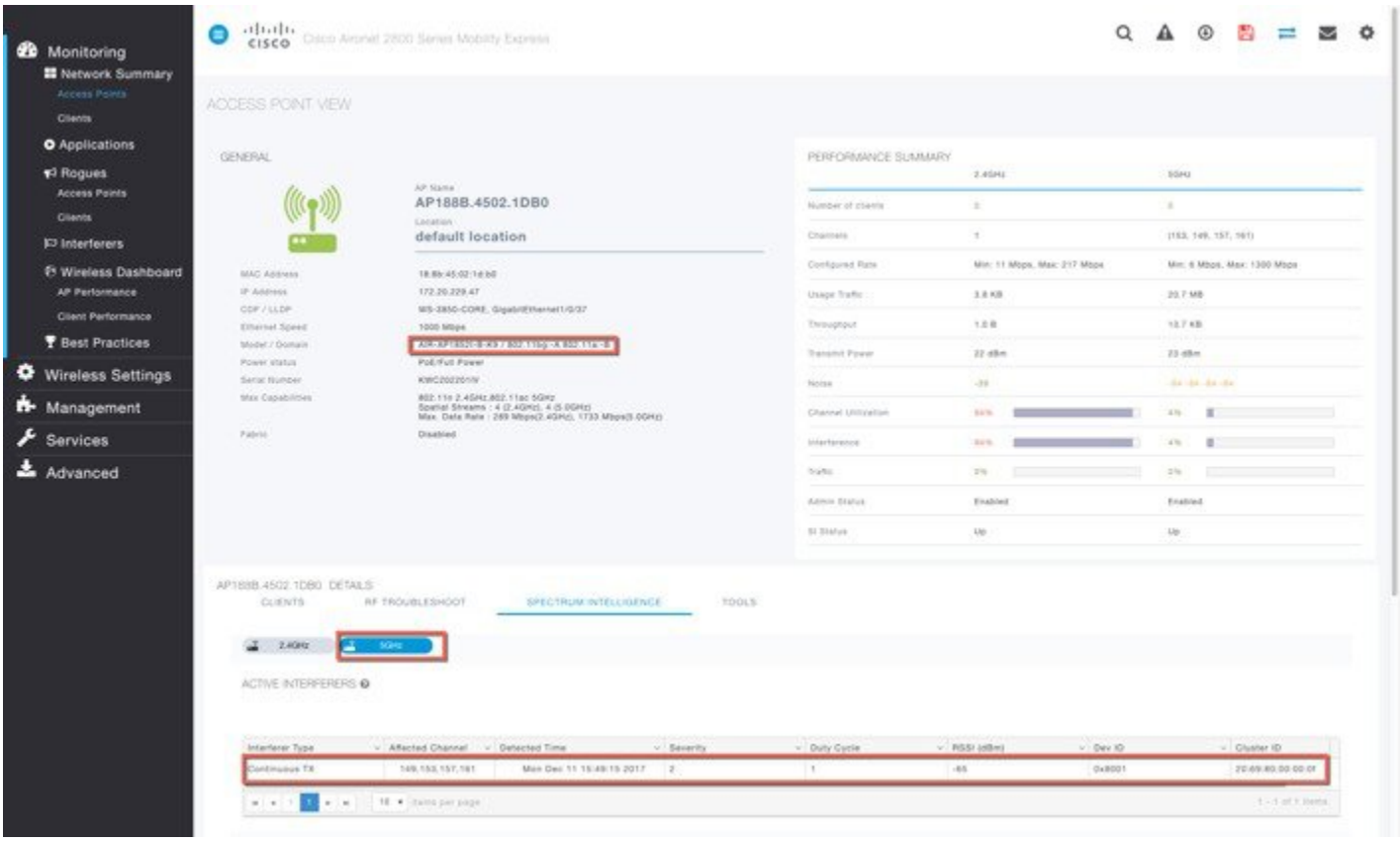
To view SI reports, navigate to in the GUI:

Monitor/CleanAir/802.11a/b/Interference devices

The above display shows both CleanAir and SI detections. Note that there are 5 interference sources being displayed for the 2702E CleanAir output. There is one each of SI-FHSS for the SI AP's. Both Dect Phone and Bluetooth are Frequency Hopping Spread Spectrum (FHSS) waveforms. In this screenshot - it is reasonable to assume that the SI-FHSS detections are both capturing the DECT Phone, since we know that the DECT Phone is positively classified by CleanAir and has an RSSI of -39 dBm.

SI provides a binary indication of a type of waveform (non-WiFi) that is present. Detection depends on the signal to noise ratio, and the relative Channel Utilization in the environment - as it also does in CleanAir. The busier the network, the less steady the detection will likely be. It is useful information to know.

In ME, SI Interference information is displayed in the main menu-Access Point View.



Tunning SI

In certain environments, there will always be certain waveforms - and while they consume some of the same airtime that we want to use for Wi-Fi, they are not necessarily destructive. For instance,

- Many retail locations will see many SI-FHSS detections (BlueTooth) from customers in their or others nearby facilities.
- A restaurant will have commercial Microwave ovens in the kitchen – and they will run most of the time.

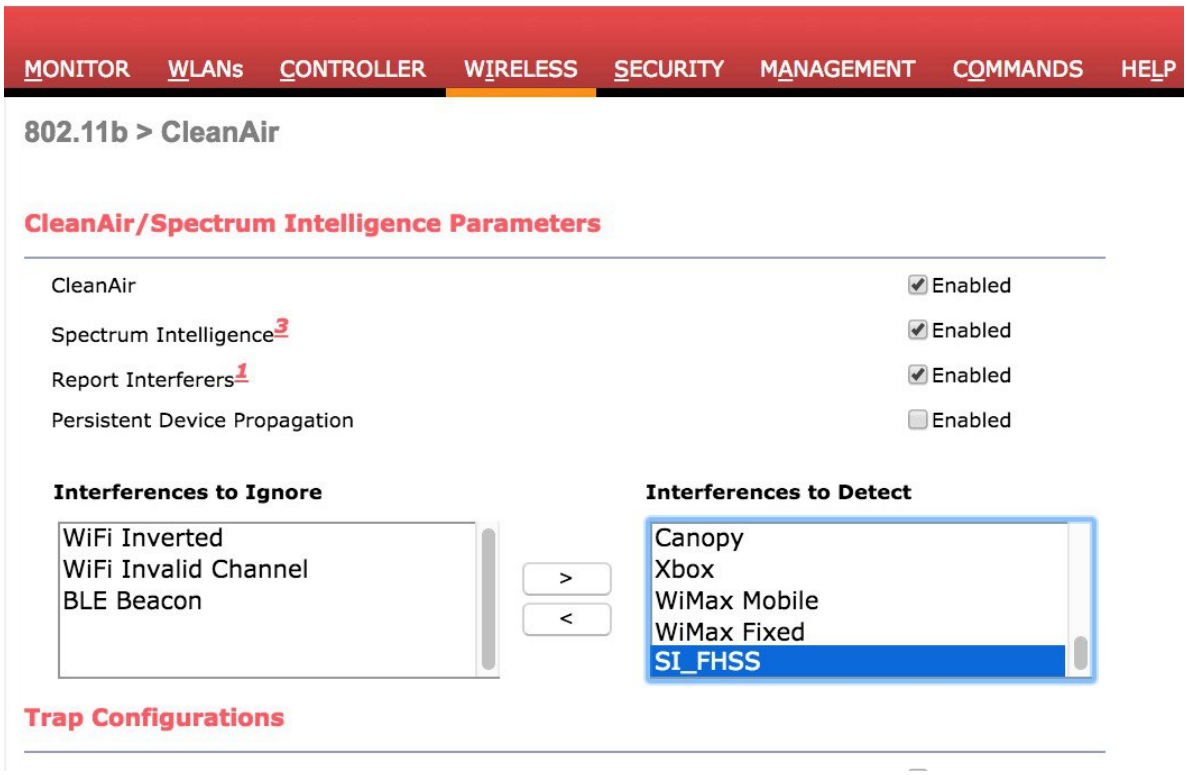
To manage this, SI allows you to configure what interference sources you want reported Just like in Cleanair. Note that some of the interference types are shared between CleanAir and SI - and disabling that type for one - will also disable it for the other.

SI-FHSS–Unique to SI 2.4 and 5 Ghz

Microwave Oven–Shared, 2.4 GHz only

Continuos TX–Shared

To disable an interference type for reporting to the controller, go to Wireless=>802.11a/b=>Cleanair



And select the interference type you wish to suppress and add it to the interference to ignore column. This will suppress any reports of interference of this type from AP's attached to this controller moving forward.

Note If you have both CleanAir and SI capable AP's - de-selecting Continuous TX or Microwave Oven works against both AP types.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA 95134-1706
USA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.