



RF Profile

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RF Tag Profiles

RF Profiles allows you to group set of APs that share a common coverage zone together and selectively change how RRM operates the APs within that coverage zone. For example, a university might deploy a high density of APs in an area where a high number of users congregate or meet. This situation requires that you manipulate both data rates and power to address the cell density while managing the co-channel interference. In adjacent areas, normal coverage is provided and such manipulation would result in a loss of coverage.

Using RF profiles and RF tags allows you to optimize the RF settings for set of APs that operate in different environments or coverage zones. RF profiles are created for the IEEE 802.11 radios and are applied to all APs that are mapped to an RF tag, where all APs with that RF tag have the same profile settings.

Configuring an AP Tag (GUI)

Before you begin

Ensure that you have configured an AP Join Profile prior to configuring the primary and backup controllers.

Procedure

- Step 1** Choose **Configuration > Tags & Profiles > Tags**.
- Step 2** On the **Manage Tags** page, click the AP tab.
- Step 3** In the **Tag Source** tab, drag and drop the tag sources to change priorities.
- Step 4** Check the **Revalidate Tag Sources on APs** check box, if required.

- Step 5** Click **Apply**.
- Step 6** In the **Static** tab, click **Add**.
- Step 7** In the **Associate Tags to AP** window, enter a MAC address.
- Step 8** Choose the appropriate **Policy Tag Name**, **Site Tag Name**, and **RF Tag Name**.
- Step 9** Click **Save & Apply to Device**.
- Step 10** In the **Filter** tab, click **Add**.
- Step 11** In the **Associate Tags to AP** window, enter a rule and AP name regex.
- Step 12** Use the slider to enable **Active**.
- Step 13** Enter the **Priority**. The valid range is from 0 to 127.
- Step 14** Choose the appropriate **Policy Tag Name**, **Site Tag Name**, and **RF Tag Name**.
- Step 15** Click **Save & Apply to Device**.

Configuring AP Tag (CLI)

Follow the procedure given below to create an AP tag:

Before you begin

Ensure that you use the same AP tag created here in Wireless RF tag.

Procedure

	Command or Action	Purpose
Step 1	configure terminal Example: Device# configure terminal	Enters the global configuration mode.
Step 2	ap mac-address Example: Device(config)# ap 188b.9dbe.6eac	Enters the AP tag configuration mode. Important Use only AP MAC address. Do not use Ethernet MAC address.
Step 3	rf-tag rf-tag Example: Device(config-ap-tag)# rf-tag rftag1	Configures a named RF tag and adds the AP mac-address to the tag.
Step 4	end Example: Device(config-ap-tag)# end	Exits the configuration mode and returns to privileged EXEC mode.
Step 5	show ap tag summary Example: Device# show ap tag summary	Displays the tag summary of available APs.

What to do next

Configure Wireless RF tag.

Configuring RF Profile (GUI)

Procedure

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- Step 1** Choose **Configuration > Tags & Profiles > RF**.
- Step 2** On the **RF Profile** page, click **Add** to configure the following:
- General
 - 802.11
 - RRM
 - Advanced
- Step 3** In the **General** tab, proceed as follows:
- a) Enter a name and description for the RF profile.
 - b) Choose the appropriate radio band.
 - c) To enable the profile, set the status as *Enable*.
 - d) Click **Save & Apply to Device**.
- Step 4** In the **802.11** tab, proceed as follows:
- a) Choose the required operational rates.
 - b) Select the required 802.11n MCS Rates by checking the corresponding check boxes.
 - c) Click **Save & Apply to Device**.
- Step 5** In the **RRM > General** tab, proceed as follows:
- a) Enter the foreign interference threshold between 0 and 100 percent in the Interference field. The default is 10.
 - b) In the **Clients** field, enter the client threshold between 1 and 75 clients. The default is 12.
 - c) In the **Noise** field, enter the foreign noise threshold between -127 and 0 dBm. The default is -70.
 - d) In the **Utilization** percentage field, enter the RF utilization threshold between 0 and 100 percent. The default is 80.
- Step 6** In the **RRM > Coverage** tab, proceed as follows:
- a) Enter the client level in the Minimum Client Level field.
 - b) In the **Data RSSI Threshold** field, enter the actual value in dBm. Value ranges from -60 to -90 dBm and the default value is -80 dBm.
 - c) In the **Voice RSSI Threshold** field, enter the actual value in dBm. Value ranges from -60 to -90 dBm and the default value is -75.
 - d) In the **Exception Level** field, enter the maximum desired percentage of clients on an AP's radio operating below the desired coverage threshold. Value ranges from 0 to 100% and the default value is 25%.
- Step 7** In the **RRM > TPC** tab, proceed as follows:

- a) Enter the power level assignment on this radio in the **Maximum Power Level** field. If you configure maximum transmit power, RRM does not allow any access point attached to the device to exceed this transmit power level (whether the power is set by RRM TPC or by coverage hole detection).
- b) In the **Minimum Power Level** field, enter the minimum power level assignment on this radio.
- c) In the **Power Threshold V1** field, enter the cutoff signal level used by RRM when determining whether to reduce an access point's power.

Step 8 In the **RRM > DCA** tab, proceed as follows:

- a) Check the **Avoid AP Foreign AP Interference** check box to cause the controller's RRM algorithms to consider 802.11 traffic from foreign access points (those not included in your wireless network) when assigning channels to lightweight access points, or unselect it to disable this feature. For example, RRM may adjust the channel assignment to have access points avoid channels close to foreign access points. The default value is selected.
- b) Choose the appropriate channel width.
- c) In the **DCA Channels** section, the DCA Channels field shows the channels that are currently selected. To choose a channel, select the appropriate check box. Extended UNII-2 channels in the 802.11a/n/ac band do not appear in the channel list: 100, 104, 108, 112, 116, 132, 136, and 140. To include these channels in the channel list, select the Extended UNII-2 Channels check box.
- d) Click **Save & Apply to Device**.

Step 9 In the **Advanced** tab, enter the following information in the **High Density Parameters** section:

- a) In the **Max Clients** field, set the maximum number of clients allowed globally.
- b) Use the **Multicast Data Rate** drop-down to choose the data rate for multicast traffic.
Choose auto to configure the device to use the radio's default data rate.
- c) Use the **Rx SOP Threshold** drop-down to set the Receiver Start of Packet Detection Threshold (Rx SOP) to determine the Wi-Fi signal level in dBm at which AP radios will demodulate and decode a packet. The higher the RXSOP level, the less sensitive the radio is and the smaller the receiver cell size will be. Reducing the cell size ensures that clients connect to the nearest access point using highest possible data rates. Choose auto to configure the device to use the radio's default threshold.

Step 10 In the **Client Distribution** section, enter the following:

- **Load Balancing Window**—Enter a value between 1 and 20 to specify the load-balancing window and the number of client associations on the AP with the lightest load.
- **Load Balancing Denial Count**—Enter a value between 0 and 10 to specify the number of times the client associations will be rejected for a particular AP.

Step 11 In the **High Speed Roam** section, check the **Mode Enable** check box to enable the mode.

Step 12 In the **Neighbor Timeout** field, enter the neighbor timeout value.

Step 13 From the **Client Network Preference** drop-down list, choose the client network preference.

Step 14 In the **ATF Configuration** section, use the slider to enable or disable **Status** and **Bridge Client Access**.

Step 15 Click **Save & Apply to Device**.

Configuring an RF Profile (CLI)

Follow the procedure given below to configure an RF profile:

Before you begin

Ensure that you use the same RF profile name that you create here, when configuring the wireless RF tag too. If there is a mismatch in the RF profile name (for example, if the RF tag contains an RF profile that does not exist), the corresponding radios will not come up.

Procedure

	Command or Action	Purpose
Step 1	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 2	ap dot11 24ghz rf-profile <i>rf-profile</i> Example: Device(config)# ap dot11 24ghz rf-profile rfprof24_1	Configures an RF profile and enters RF profile configuration mode. Note Use the 24ghz command to configure the 802.11b parameters. Use the 5ghz command to configure the 802.11a parameters.
Step 3	default Example: Device(config-rf-profile)# default	(Optional) Enables default parameters for the RF profile.
Step 4	no shutdown Example: Device(config-rf-profile)# no shutdown	Enables the RF profile on the device.
Step 5	end Example: Device(config-rf-profile)# end	Exits configuration mode and returns to privileged EXEC mode.
Step 6	show ap rf-profile summary Example: Device# show ap rf-profile summary	(Optional) Displays the summary of the available RF profiles.
Step 7	show ap rf-profile name <i>rf-profile</i> detail Example: Device# show ap rf-profile name rfprof24_1 detail	(Optional) Displays detailed information about a particular RF profile.

Configuring Wireless RF Tag (GUI)

Procedure

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- Step 1** a) Choose **Configuration > Tags & Profiles > Tags > RF**.
- Step 2** Click **Add** to view the **Add RF Tag** window.
- Step 3** Enter a name and description for the RF tag. The name can be ASCII characters from 32 to 126, without leading and trailing spaces.
- Step 4** Choose the required **5 GHz Band RF Profile** and **2.4 GHz Band RF Profile** to be associated with the RF tag.
- Step 5** Click **Update & Apply to Device**.
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Configuring Wireless RF Tag (CLI)

Follow the procedure given below to configure a wireless RF tag:

Before you begin

- You can use only two profiles (2.4-GHz and 5-GHz band RF profiles) in an RF tag.
- Ensure that you use the same AP tag name that you created when configuring the AP tag task too.

Procedure

	Command or Action	Purpose
Step 1	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 2	wireless tag rf <i>rf-tag</i> Example: Device(config)# wireless tag rf rftag1	Creates an RF tag and enters wireless RF tag configuration mode.
Step 3	24ghz-rf-policy <i>rf-policy</i> Example: Device(config-wireless-rf-tag)# 24ghz-rf-policy rfprof24_1	Attaches an IEEE 802.11b RF policy to the RF tag. To configure a dot11a policy, use the 5ghz-rf-policy command.
Step 4	description <i>policy-description</i> Example: Device(config-wireless-rf-tag)# description Test	Adds a description for the RF tag.

	Command or Action	Purpose
Step 5	end Example: Device(config-wireless-rf-tag)# end	Exits configuration mode and returns to privileged EXEC mode.
Step 6	show wireless tag rf summary Example: Device# show wireless tag rf summary	Displays the available RF tags.
Step 7	show wireless tag rf detailed <i>rf-tag</i> Example: Device# show wireless tag rf detailed rftag1	Displays detailed information of a particular RF tag.

