



Bluesocket vWLAN Best Practices & Recommended Settings

Configuration Guide

6PCDCG0004-29B

December 2021



To the Holder of this Document

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1. Overview

There are certain default settings recommended for use with any generalized deployment of a (Virtual Wireless Local Area Network) vWLAN. This guide lists the ADTRAN recommended settings for AP templates, SSIDs, wireless domains, and other vWLAN features, explaining why a setting is recommended and providing instructions for configuring the settings in the wireless access point (AP).

2. AP Template Settings

AP templates are templates used to configure multiple APs to the same parameters. Large installations or multi-site deployments of vWLAN require the ability to group APs to apply a similar configuration to them, which is accomplished in vWLAN by AP templates. Each template has its own unique configuration for settings, radios, firmware, and SSIDs. Each AP is associated to an AP template, and inherits the configuration contained within in the template. If an AP is moved to a different template, then the AP inherits the configuration from the new template. By default, each AP connected to the vWLAN is configured with a default template.

The following sections cover the recommended settings for specific portions of AP template configuration. Included in this section are the recommended Minimum Transmit Rate, Beacon, Packet Aggregation, and AP mode settings. All AP template configurations are accessed by navigating to the **Configuration** tab, and then selecting **Wireless > AP Templates**.

Minimum Transmit Rate (MTR)

The MTR should be set to **No Minimum** on each radio. MTR can have large impacts on roaming behavior, but not all client devices work well with this setting. A minimum rate should only be set in specific circumstances when there are roaming behavior problems on site. Unless a distinct benefit is observed when a minimum rate is set, it should be disabled.

From the **Configuration** tab, select **Wireless > AP Templates**, and select the name of the AP template assigned to the target APs. Under **Per Radio Settings** is a row labeled **Minimum Transmit Rate**, and a corresponding drop-down selection box in each of the 2.4 GHz and 5 GHz columns. Select **No Minimum** as shown below.

Per Radio Setting		802.11b/g/n (2.4 GHz)	802.11a/n/ac (5 GHz)
Attribute			
Radio Mode		AP Mode	AP Mode
DynamicRF Profile		Disabled	Disabled
Wireless Mode		802.11g/n	802.11a/n/ac
		<small>802.11a/n/ac is treated as 802.11a/n for 1800 and 1900 series APs.</small>	
Minimum Transmit Rate		No Minimum	No Minimum
		<small>For 2000/2100 Series APs, any value is treated as 'No Minimum'</small>	
Channel Width			20 MHz
		<small>A value that is larger than the AP supports will be treated as the highest value the AP supports.</small>	
Enable Packet Aggregation			<input checked="" type="checkbox"/>
		<small>Aggregation is always enabled on the 5 GHz radio for 2000/2100 series APs</small>	
Beacon Interval (ms)		200	200
Max Associations Load		64	64
		<small>For 1800 Series APs the max is 64 - any value higher than 64 is treated as 64.</small>	



NOTE

It is also recommended that the **Wireless Mode** for the 2.4 GHz radio be set to **802.11g/n** (disabling 802.11b).

NOTE

Enabling *DynamicSteering* and having smaller coverage cells will have a more positive effect on roaming than this setting in most cases.

Beacon Settings

The **Beacon Interval** should be set to 200 ms on the 2.4 GHz range and 100 ms on the 5 GHz range. Some clients are influenced by this behavior and will lean towards connecting in the 5 GHz range, which provides a better overall experience for all wireless users in a given area. Connecting in the 5GHz range generally results in better performance and a more stable connection.

NOTE

Only set the beacon interval to 100 if you do not have three or more SSIDs.

From the **Configuration** tab, select **Wireless > AP Templates**, and then select the AP template assigned to the target APs. Under **Per Radio Settings** is a row labeled **Beacon Interval (ms)** and a corresponding text box in each of the 2.4 GHz and 5 GHz columns. Enter the values into the fields as shown below.

Per Radio Setting		
Attribute	802.11b/g/n (2.4 GHz)	802.11a/n/ac (5 GHz)
Radio Mode	AP Mode	AP Mode
DynamicRF Profile	Disabled	Disabled
Wireless Mode	802.11b/g/n	802.11a/n/ac
		<small>802.11a/n/ac is treated as 802.11a/n for 1800 and 1900 series APs.</small>
Minimum Transmit Rate	No Minimum	No Minimum
		<small>For 2000/2100 Series APs, any value is treated as 'No Minimum'</small>
Channel Width	20 MHz	20 MHz
		<small>A value that is larger than the AP supports will be treated as the highest value the AP supports.</small>
Enable Packet Aggregation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<small>Aggregation is always enabled on the 5 GHz radio for 2000/2100 series APs</small>
Beacon Interval (ms)	200	100
Max Associations Load	64	64
	<small>For 1800 Series APs the max is 64 - any value higher</small>	<small>For 1800 Series APs the max is 64 - any value higher than 64 is</small>

Packet Aggregation

ADTRAN recommends that packet aggregation always be enabled. Disabling packet aggregation can significantly reduce the throughput of wireless client connections. From the **Configuration** tab, select **Wireless > AP Templates >** and then select the AP template assigned to the target APs. Under **Per Radio**

Setting is a row labeled **Enable Packet Aggregation** and a corresponding check box in each of the 2.4 GHz and 5 GHz columns. Ensure that both check boxes are filled in, as shown below,

Per Radio Setting		
Attribute	802.11b/g/n (2.4 GHz)	802.11a/n/ac (5 GHz)
Radio Mode	AP Mode	AP Mode
DynamicRF Profile	Disabled	Disabled
Wireless Mode	802.11b/g/n	802.11a/n/ac
Minimum Transmit Rate	No Minimum	No Minimum
Channel Width	20 MHz	20 MHz
Enable Packet Aggregation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Beacon Interval (ms)	200	200

802.11a/n/ac is treated as 802.11a/n for 1800 and 1900 series APs.
For 2000/2100 Series APs, any value is treated as 'No Minimum'
A value that is larger than the AP supports will be treated as the highest value the AP supports.
Aggregation is always enabled on the 5 GHz radio for 2000/2100 series APs

AP Mode

The radio mode for both radios on the AP should be set to **AP Mode**, indicating that the radio services clients in the 802.11 infrastructure. In some cases, the AP radio may be set to **AP/Sensor Client Aware Mode** by default, so ADTRAN recommends that you verify the radio setting in the AP template is set to **AP Mode**.

From the **Configuration** tab, select **Wireless > AP Templates >** and then select the AP template assigned to the target APs. In the **Per Radio Setting** menu, verify that the **Radio Mode** is set to **AP Mode** as shown below. If a different radio mode is specified, select **AP Mode** from the **Radio Mode** drop-down menu to change the radio mode. The radio modes are set independently for each radio and will need to be specified in each of the 2.4 GHz and 5 GHz columns.

Per Radio Setting		
Attribute	802.11b/g/n (2.4 GHz)	802.11a/n/ac (5 GHz)
Radio Mode	AP Mode	AP Mode
DynamicRF Profile	default	default
Wireless Mode	802.11b/g/n	802.11a/n/ac
Minimum Transmit Rate	No Minimum	No Minimum
Channel Width	20 MHz	40 MHz

304X Series BSAP always operates in AP mode.304X Series BSAP has a dedicated 3rd radio for scanning both 2.4Ghz and 5Ghz bands.
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802.11a/n/ac is treated as 802.11a/n for 1800 and 1900 series APs.
For 2000/3000 Series APs, any value is treated as 'No Minimum'.
A value that is larger than the AP supports will be treated as the highest value the AP supports.
If the secondary subchannel is not available, radio will automatically switch to smaller Channel Width settings.

3. SSID Settings

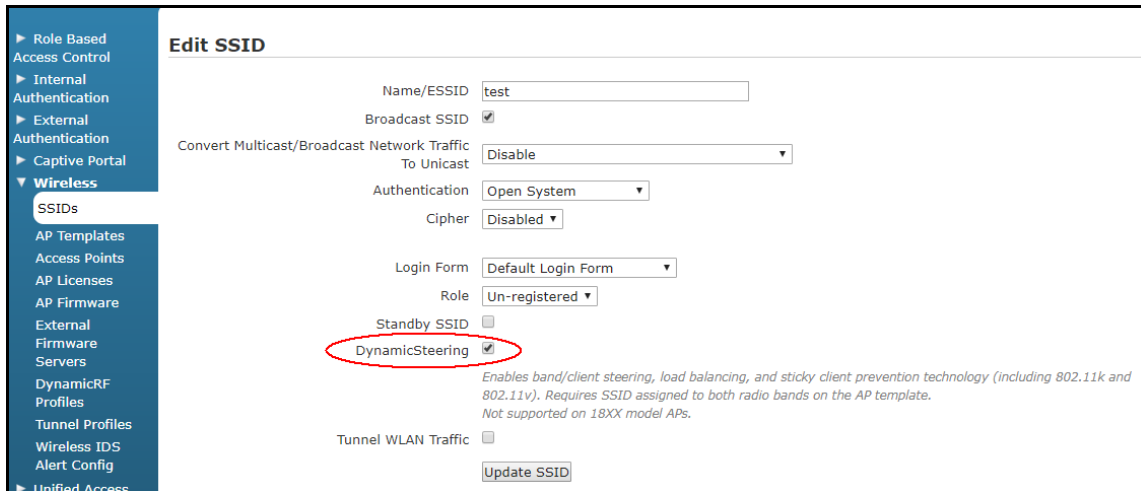
SSIDs represent a particular 802.11 wireless LAN. In vWLAN, there can be up to 16 SSIDs per AP (8 per radio). An SSID provides a unique set of connection parameters by broadcasting independent security attributes. An SSID can be configured for both radios, for the 2.4 GHz radio only, for the 5 GHz radio only, or for neither radio. In addition, SSIDs can be linked to the login page viewed by customers, allowing you to specify a specific login page based on SSID.

The following sections cover the recommended settings for specific portions of SSID configuration. Included in this section are the recommended DynamicSteering and Multicast to Unicast conversion settings. All AP template configurations are accessed by navigating to the **Configuration** tab, and then selecting **Wireless > SSIDs**.

DynamicSteering

DynamicSteering is ADTRAN's band steering technology. This feature helps clients make dual band radio load balancing decisions based on channel utilization and can help roaming situations where clients are sticking to an AP with a low signal.

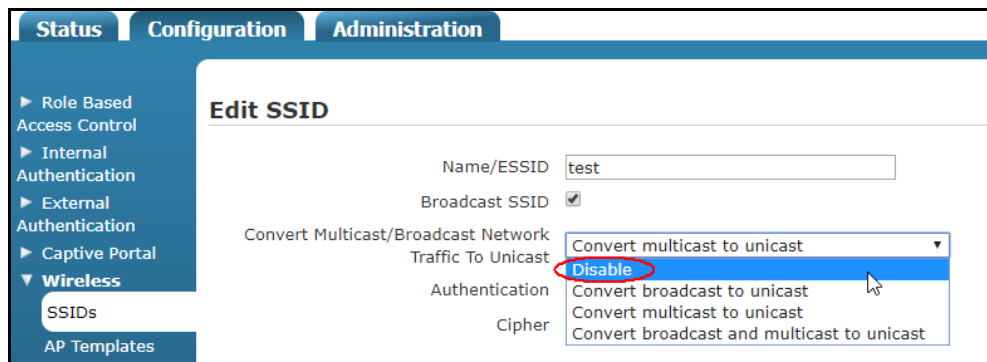
From the **Configuration** tab, select **Wireless > SSIDs**, and select the name of the SSID you want to configure. Ensure that there is a check mark next to the option **DynamicSteering**.



Multicast to Unicast Conversion

The **Convert Multicast/Broadcast Network Traffic to Unicast** setting should be disabled. ADTRAN recommends that this setting be disabled because it can have a detrimental impact on client connectivity and throughput.

From the **Configuration** tab, select **Wireless > SSIDs**, and select the name of the SSID you want to configure. Select **Disable** from the drop-down menu next to **Convert Multicast/Broadcast Network Traffic to Unicast**.



NOTE

Refer to the [Enabling Multicast Support for vWLAN 2.3 and Later](#) configuration guide available in the [ADTRAN Support Community](#) for more in depth information regarding this feature.

4. Domain System Settings

Domains are separate management domain partitions within the vWLAN instance that are used to subdivide the vWLAN management. You can specify certain actions based on whether users or devices are authenticated or not within each domain.

The following sections cover the recommended settings for specific portions of domain system configurations. Included in this section are the recommended internal status timer and HTTPS redirect settings. All domain system configurations are accessed by navigating to the **Configuration** tab, and selecting **System > Settings**, and then selecting the **Domain** tab.

Internal Status Timer

This internal status timer is related to the frequency that the vWLAN server polls the APs for client statistics. The recommended setting and default value for the internal status timer is 5 minutes. The only time this setting should be increased is for heavily utilized servers. If a server has more than 500 APs or is servicing more than 1000 clients, and there is noticeable sluggishness in the UI, then it may be beneficial to increase this value to 10 or 15 minutes.



NOTE

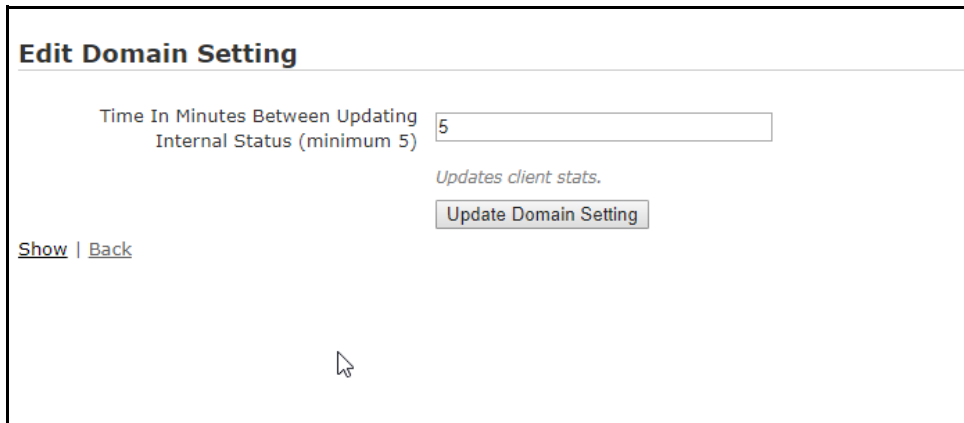
If you increase the status timer interval and is there is no noticeable change, then ADTRAN recommends that this setting be reverted back to 5 minutes.

From the **Configuration** tab, select **System > Settings**. Under the **Domain** tab, select the entry titled **Time in minutes between updating internal status (minimum 5)**.

Name	Value *	Hint
record?		
AP Control Channel Timeout	14400	Time in seconds before APs reboot if control channel is confirmed to be lost to the vWLAN (defaults to four hours - meaning, APs would reboot four hours after confirming that the control channel has been lost).
DHCP Lease Time for Un-registered Clients	10	An aggressive lease time brings clients on faster after authentication, but may not be compatible with all handheld devices.
Display Setup Wizard	Disabled	Enables setup wizard.
Post Login Redirect	Disabled	If enabled, users will be redirected to the Post Login Redirect URL after web based authentication instead of their original destination.
Post Login Redirect URL	http://www.adtran.com	The Post Login Redirect URL is the URL that the user will be redirected to after web based authentication instead of their original destination.
Redirect HTTPS traffic for Unregistered clients	Enabled	Redirects HTTPS to the captive portal.
Time in minutes between updating internal status (minimum 5)	5	Updates client stats.
Time in seconds before inactive connections are dropped	600	Inactive connections will be dropped once this time out has been reached.

Showing 1 to 9 of 9 entries

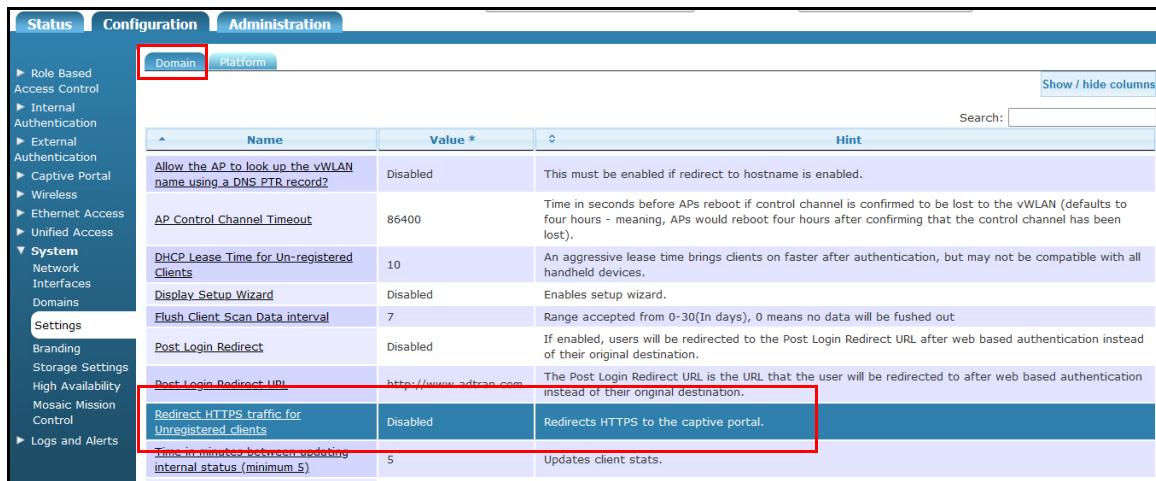
Verify that the value for the internal status time is set to 5.



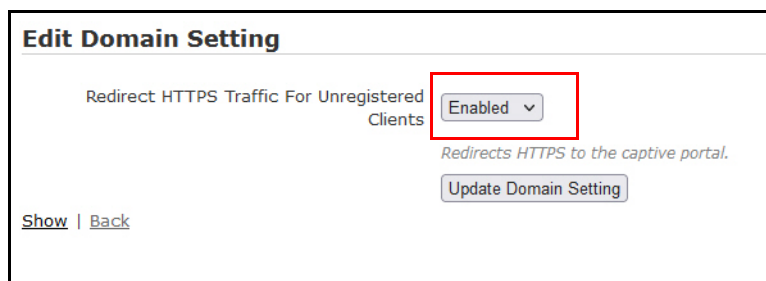
Redirect HTTPS Traffic for Unregistered Clients

ADTRAN recommends that redirection of HTTPS traffic for unregistered clients be enabled. When HTTPS redirects are enabled, unregistered clients will be redirected to a configured Captive Portal before being allowed to connect to the wireless network.

From the **Configuration** tab, select **System > Settings**. Under the **Domain** tab, select the entry titled **Redirect HTTPS traffic for Unregistered clients**.



Verify that the Redirect HTTPS Traffic for Unregistered Clients is set to **Enabled**. If it is set to **Disabled** (default value), select **Enabled** from the drop-down menu and then select **Update Domain Setting** to save the changes.



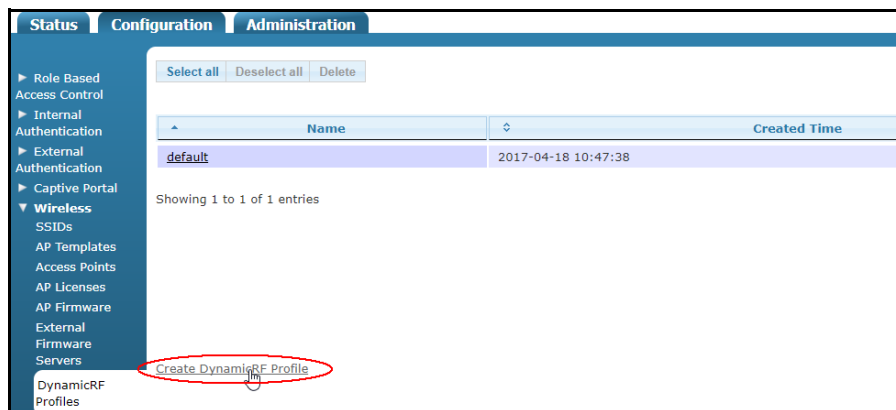
5. DynamicRF Template Settings



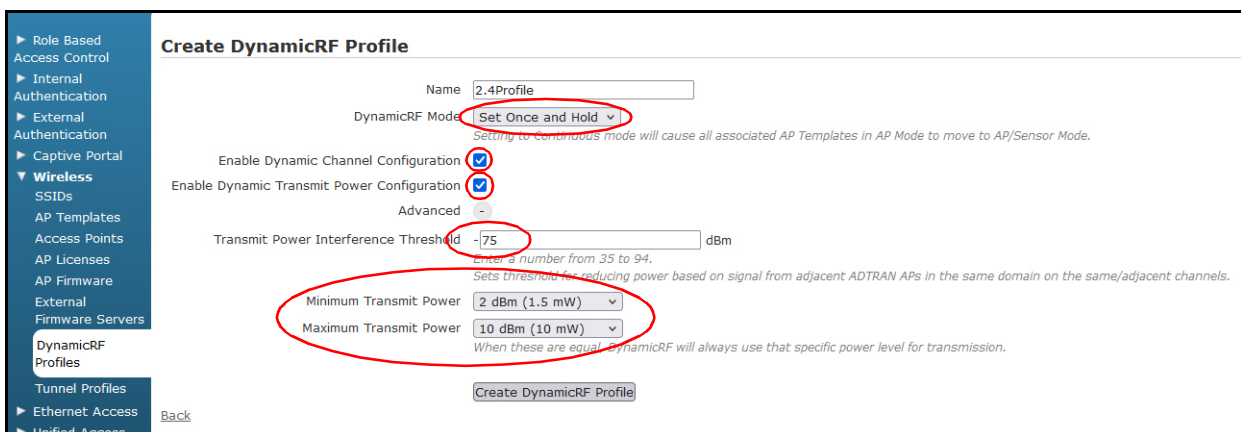
CAUTION!

ADTRAN does not recommend using DynamicRF if you already have a stable wireless plan including static channel assignments and transmit power levels. DynamicRF is not intended to replace any intentional design plans.

By default ADTRAN recommends a DynamicRF Profile be defined for the 2.4 GHz and 5 GHz radios independently. You will need to create two separate profiles. Start with the profile for 2.4G Hz. From the **Configuration** tab, select **Wireless > DynamicRF Profiles > Create DynamicRF Profile** (or select the name of an existing profile that you would like to modify).



DynamicRF Mode should be set to **Set Once and Hold**, and both **Dynamic Channel Configuration** and **Dynamic Transmit Power Configuration** should be enabled. Under the **Advanced** section for the 2.4 GHz Profile, it is recommended to set the **Transmit Power Interference Threshold** to **-75dB**, the **Minimum Transmit Power** to **2 dBm** and the **Maximum Transmit Power** to **10 dBm**.



Repeat the previous process to create a 5 GHz profile. Under the **Advanced** section for the 5 GHz Profile, it is recommended to set the **Transmit Power Interference Threshold** to -75dBm, the **Minimum Transmit Power** to **5 dBm** and the **Maximum Transmit Power** to **15 dBm**.

Create DynamicRF Profile

Name: 5Profile

DynamicRF Mode: Set Once and Hold

Enable Dynamic Channel Configuration:

Enable Dynamic Transmit Power Configuration:

Advanced

Transmit Power Interference Threshold: -75 dBm

Minimum Transmit Power: 5 dBm (3 mW)

Maximum Transmit Power: 15 dBm (32 mW)

Create DynamicRF Profile



NOTE

The recommended values for the Dynamic RF profiles have been specified based on suggestions from independent vendor-neutral sources and are designed to provide the best potential outcome for the algorithm. Alterations beyond what is specified should only be made on an AP-by-AP basis. If the maximum value does not provide an adequate result at your site, ADTRAN recommends reaching out to your local sales resource to inquire about our Predictive Analysis and Site Survey offerings.