

Wireless Management for the TQR Series using the Device GUI

Feature Overview and Configuration Guide

Introduction

The TQR Series Wireless AP Routers deliver high-speed Wi-Fi 6/6E connectivity for wireless devices and secure Internet access via a built-in VPN router. Their single-unit design offers a streamlined yet comprehensive network solution—ideal for small businesses or enterprises with multiple locations, such as retail stores, cafés, and more.

Secure WAN routing ensures reliable connectivity to the Internet, head office, and other branch locations. A zone-based firewall protects critical data, while secure IPsec VPNs enable remote access to cloud-based or head-office business applications.

Products and software version that apply to this guide

This guide applies to the following Allied Telesis TQR Series Wireless AP Routers:

- TQ6702 GEN2-R running AlliedWare Plus™ software version 5.5.3-1.1 or later
- TQ7403-R running AlliedWare Plus™ software version 5.5.4-1.5 or later

The TQ7403-R uses the same wireless configuration and features as the TQ6702 GEN2-R but differs in the following ways:

- Supports Wi-Fi 6E
- Includes a third radio (Radio 3 - 6GHz)
- Supports two external antennas

Feature support may change in later software versions. For the latest information, see the following documents:

- The product's [Datasheet](#)
- The product's [Command Reference](#)



These documents are available from the above links on our website at alliedtelesis.com.

From software version 5.5.4-0.1 onwards, AlliedWare Plus supports the following wireless enhancements for the TQ6702 GEN2-R wireless AP router:

- Device GUI version 2.18.0
- Passpoint, see ["Passpoint" on page 29](#)
- More Radio Mode options, see ["Basic Radio1 settings" on page 38](#)
- Multicast to Unicast conversion, see ["Multicast to Unicast conversion" on page 49](#)
- Airtime Fairness for each VAP, see ["Airtime Fairness for each VAP" on page 50](#)

From software version 5.5.4-2.3 onwards, AlliedWare Plus supports the following wireless enhancements for the TQ6702 GEN2-R wireless AP router:

- Device GUI version 2.19.0
- New cipher parameter CCMP for WPA3, see ["Edit VAP 0 - Advanced Settings Security" on page 47](#)
- Removal of requirement to specify a basic rate for Radio 1, see ["Advanced Radio settings" on page 40](#)
- Dynamic VLAN with MAC Authentication supported, see ["MAC Authentication with Dynamic VLAN" on page 20](#)

From software version 5.5.5-0.2 onwards, AlliedWare Plus supports the following wireless enhancements for the TQR Series (i.e. TQ6702 GEN2-R and TQ7403-R).

- Device GUI version 2.20.0
- TQR Series RFScan Improvements, see ["Radio scanning" on page 43](#)
- Proxy ARP option to allow ARP packets from unknown addresses, see ["Proxy ARP handling" on page 52](#)
- Two-step authentication with MAC and Captive Portal, see ["Two-step authentication with MAC authentication and Captive Portal" on page 53](#)

Related documents

You also may find the following AlliedWare Plus Feature Guides useful:

- [Getting Started with the TQ6702 GEN2-R Wireless Router using the Device GUI](#)
- [Link Aggregation and Ethernet Bonding Feature Overview and Configuration Guide](#)

Acronyms

The following acronyms are used in this document:

Table 1: Acronyms used in Wireless Management

ACRONYM	DESCRIPTION
BSSID	Basic Service Set Identifier - or the APs physical MAC address.
SSID	Service Set Identifier - a unique name for the wireless network.
VAP	Virtual Access Point is a concept of assigning multiple wireless networks to a wireless radio configuration.
WAP or AP	Wireless Access Point or Access Point is a networking hardware device that allows a Wi-Fi device to connect to a wired network.
WDS	Wireless Distribution System. It enables wireless interconnection of access points in an IEEE 802.11 network.
WEP	Wired Equivalent Privacy.
WPA	Wi-Fi Protected Access.

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Connecting to the wireless AP router

This section describes how to connect to your router using the Device GUI. Your router will have a GUI already loaded.

Supported web browsers for connecting to the Device GUI are:

- Google Chrome™
- Mozilla Firefox™
- Microsoft Edge™
- Apple Safari™

Connecting to the GUI

To connect to the GUI, use the following steps:

Note: You will need to manually assign your device an IP address in the 192.168.1.0/24 network.

1. Connect to LAN1 (referred to as eth1 in the firmware).
2. Open a web browser and browse to the default IP address for eth1.
 - The default IP address is 192.168.1.1
3. Log in with the default username of ***manager*** and the default password of ***friend***.

Applying and saving your configuration

Use the following procedure to save your configuration to the device.

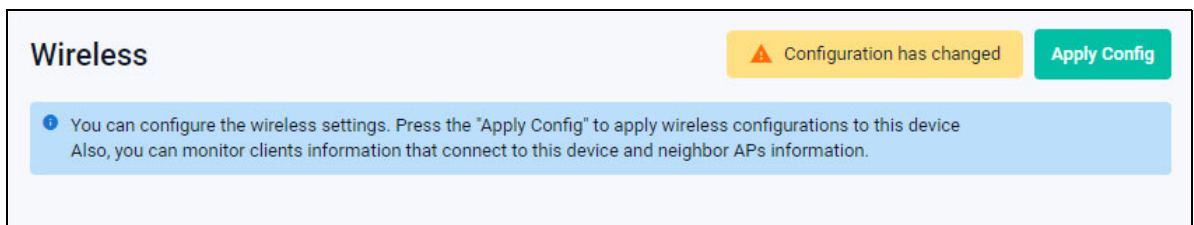
When you configure the wireless router through its GUI, the configuration becomes part of its running-configuration. Once you are sure your configuration changes work, you need to make them part of the boot configuration, so they can be backed up and will survive a reboot of the wireless router.

Caution: Back up the default configuration before you save and apply your configuration.

Once you are happy with the functionality of your configuration, you can then save it.

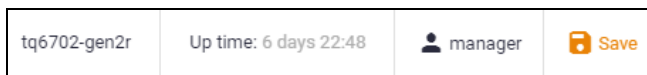
1. Click the **Apply Config** button to apply the settings to your device.

This step saves the wireless configuration to your device. Notice that the button is orange colored when the configuration requires saving:



2. Click the **Save** button at the top right of the GUI screen (you may need to scroll up to see it).

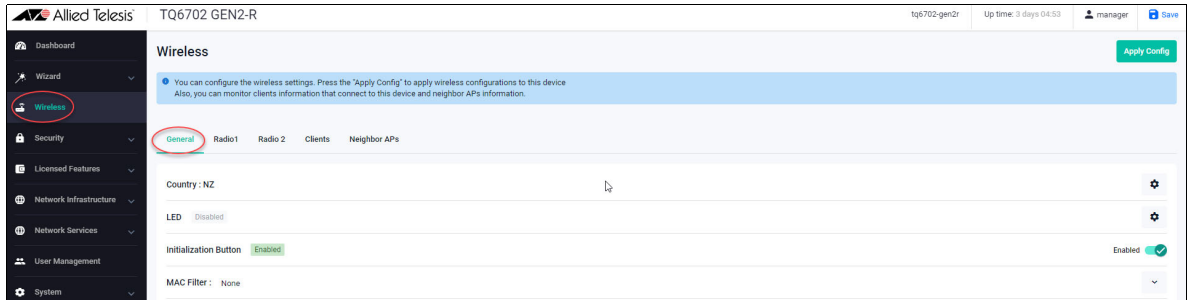
The **Save** button will be orange if there is unsaved configuration and blue when it is saved:



Setting up security for your wireless network

This section shows you how to set up your wireless network, which includes setting up your security.

To set up security on your wireless network, click on **Wireless** from the menu bar. The Wireless page is displayed, opening at the **General** tab:



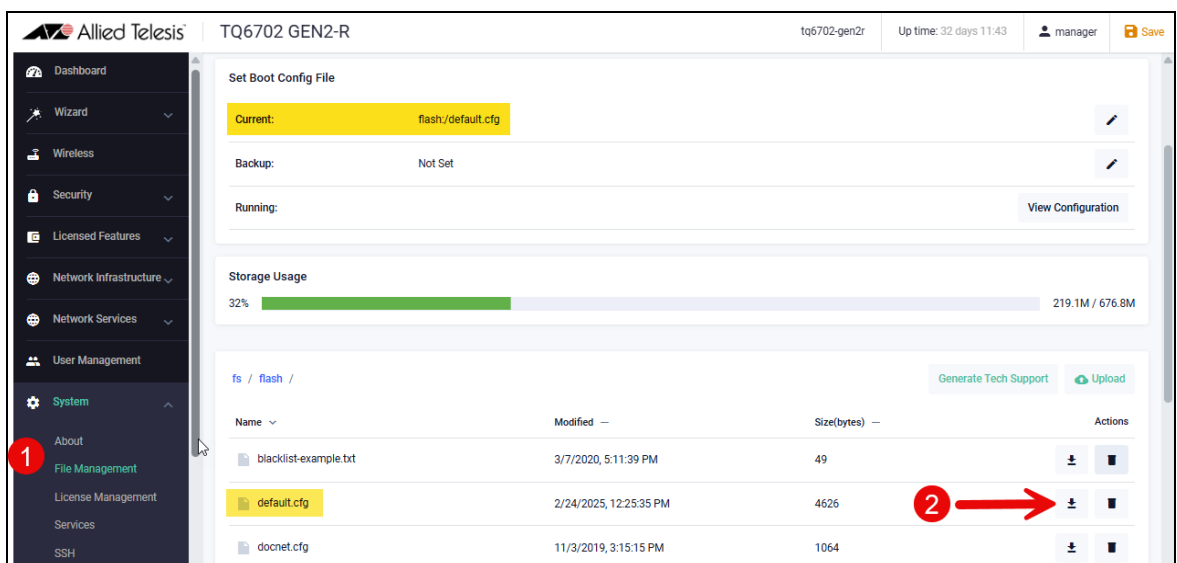
This section shows you how to set up the security for your wireless router using the following features:

1. "WPA Personal" on page 8
2. "WPA Enterprise with a RADIUS server" on page 9
3. "WPA Enterprise with Dynamic VLANs" on page 13
4. "MAC Authentication" on page 18

Make a backup configuration file

Before you start configuring the wireless router, back up its current configuration file.

1. Go to **System > File Management**
2. Select the current configuration file and download it.
3. Save it to a location where you can access it if needed.



WPA Personal

The following steps show you how to configure WPA Personal to secure your wireless network for a home or remote access environment.

1. Click on a **Radio** tab to display the **Radio** and **VAP** settings.
2. Click on the VAP 0 **Edit** button.

The screenshot shows the network configuration interface. At the top, there are tabs for 'General', 'Radio 1', 'Radio 2', 'Clients', and 'Neighbor APs'. The 'Radio 1' tab is selected and highlighted with a red circle and the number 1. Below the tabs, there are two sections: 'Radio' and 'VAP'. The 'Radio' section has a table with columns: Status, Mode, Channel, Bandwidth, Power, and Tx / Rx. The 'VAP' section has a table with columns: VAP, SSID, Description, Security, and Tx / Rx. In the 'VAP' table, the 'VAP 0' row is selected, and the 'Edit' button (a pencil icon) is highlighted with a red circle and the number 2.

3. Select the **Basic Settings** tab.
4. Enter the **SSID** and optional Description.
5. In the **Security** field, select **WPA Personal** and enter a **Key**.
6. Click **Save**.

The screenshot shows the 'Edit VAP 0' dialog box. At the top, there are two tabs: 'Basic Settings' and 'Advanced Settings'. The 'Basic Settings' tab is selected and highlighted with a red circle and the number 3. Below the tabs, there are several fields: 'WDS Mode' with buttons for 'None', 'Parent', and 'Child'; 'SSID' with a text input field containing 'My-company-name Guest' and a red circle and the number 4; 'Description (Optional)' with a text input field containing 'Office reception'; 'Passpoint' with a toggle switch set to 'Disabled'; 'Security' with a dropdown menu set to 'WPA Personal' and a red circle and the number 5; and 'Key' with a text input field containing 'mysecretkey'. At the bottom, there are two buttons: 'Cancel' and 'Save', with the 'Save' button highlighted with a red circle and the number 6.

7. Apply and then save the configuration. See "[Applying and saving your configuration](#)" on page 6 for instructions.

Table 2: Options for VAP0 Basic settings

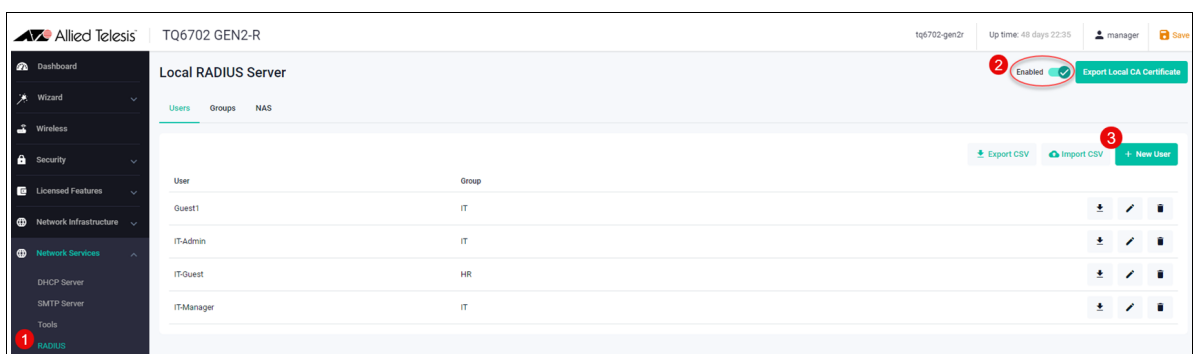
FIELD	DESCRIPTION
WDS Mode	<p>The Wireless Distribution System (WDS) enables wireless interconnection of access points in an IEEE 802.11 network. WDS Mode defaults to None. Use the default option unless you need to configure WDS.</p> <p>WDS allows you to expand a wireless network using multiple access points without needing a wired backbone between them. WDS connections are based on MAC addresses. A key advantage of WDS over other solutions is that it preserves the MAC addresses of client frames across the wireless links between access points. WDS is typically used for wireless bridging between APs.</p> <p>WDS mode options:</p> <ul style="list-style-type: none"> ■ None – The AP operates independently (not controlled by or controlling another AP). ■ Parent – The AP controls one or more child APs. ■ Child – The AP is controlled by a parent AP.
SSID	Service Set Identifier - a unique name for the wireless network. Give this field a meaningful name because it is how clients devices identify your network. For example, My-company-name Guest .
Description	Optional. Enter a meaningful description, for example Office Reception .
Security	Select WPA Personal from the drop down options. The options are WPA Personal or WPA Enterprise. The default is None .
Key	Enter a secure key, for example mysecurekey .

WPA Enterprise with a RADIUS server

This section explains how to set up WPA Enterprise with a RADIUS server to secure your wireless network in a business environment. Follow the steps below to configure it:

Enable the RADIUS server

1. From the **Network Services** menu select **RADIUS**.
2. Click on the local RADIUS server **toggle switch** to turn it on (it defaults to off).
3. Click **+New User**.



- Add user** 4. From the **New User** dialog enter a username, password and optionally a group. If you want to add a user to a group, create the group from the **Groups** tab first and then select it from the **Group** drop down list.
5. Click **Apply**.

New User

Username
IT-Manager

Password 4
mysecretkey

Group
IT

Cancel Apply 5

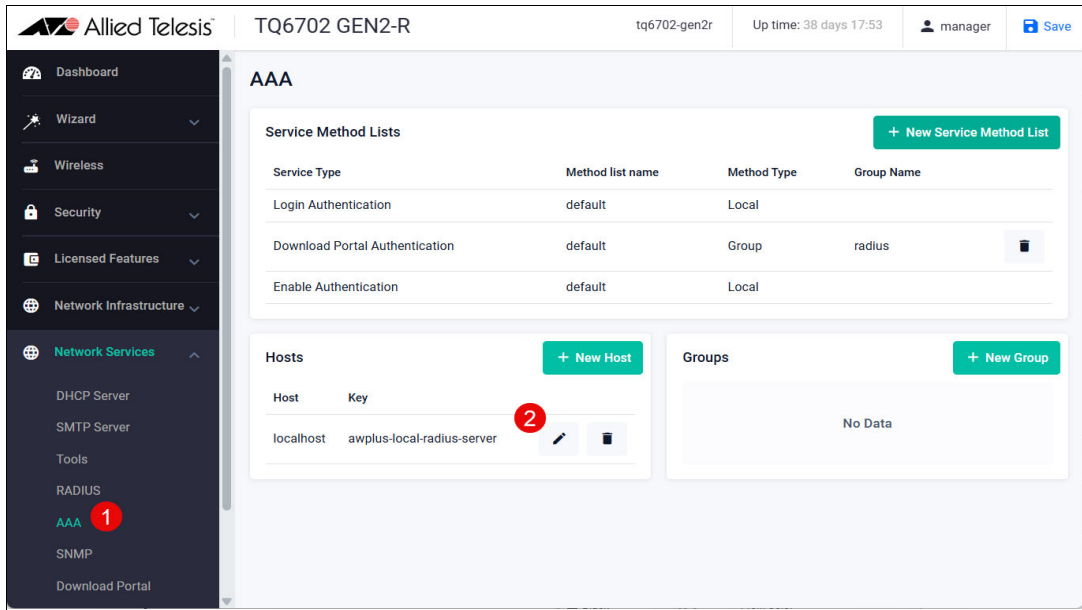
You can see and edit the Users from this window:

User	Group
IT-Manager	IT

From the **NAS** (Network Access Server) tab, notice that the **NAS** and **Key** fields automatically populate for the user you added:

NAS	Key
127.0.0.1	awplus-local-radius-server

- Set up AAA**
1. From **Network Services**, select **AAA**.
 2. Notice the fields populate automatically. If you need to edit the host information, click on the **Edit** button.



3. Edit the host if necessary and click **Apply**:

The 'Edit Host' dialog box contains the following fields and buttons:

- Radius Server Host: localhost
- Key (Optional): awplus-local-radius-server
- Authentication Port (Optional): 1812
- Accounting Port (Optional): 1813
- Buttons: Cancel, Apply (circled in red with a '3')

Set up WPA Enterprise

1. From the **Wireless** page, click on a **Radio** tab to display the **Radio** and **VAP** settings.
2. Click the **Edit** button for VAP 0.

The screenshot shows the 'Wireless' configuration page. At the top, there's a notification 'Configuration has changed' and an 'Apply Config' button. Below that, a blue banner provides instructions on applying configurations. The main content is divided into tabs: 'General', 'Radio 1', 'Radio 2', 'Clients', and 'Neighbor APs'. The 'Radio 1' tab is selected. Under the 'Radio' section, there's a table with columns: Status, Mode, Channel, Bandwidth, Power, and Tx / Rx. Below this is the 'VAP' section with a table: VAP, SSID, Description, Security, and Tx / Rx. The 'VAP 0' row is highlighted, and its 'Security' column shows 'WPA2/WPA3 Enterprise'. A red circle highlights the 'Edit' button (pencil icon) for VAP 0.

3. Configure **WPA Enterprise**.

In the **Edit VAP 0** dialog from the **Basic Settings** tab, select:

- **WPA Enterprise** from the **Security** drop down list.
- **radius** from the **RADIUS Authentication Group** drop down list.

4. Click **Save**.

The screenshot shows the 'Edit VAP 0' dialog box with the 'Basic Settings' tab selected. The 'WDS Mode' is set to 'None'. The 'SSID' is 'My-company-name Guest' and the 'Description (Optional)' is 'Office reception'. The 'Passpoint' is disabled. The 'Security' dropdown is set to 'WPA Enterprise' (circled in red with a red '3'). The 'RADIUS Authentication Group' dropdown is set to 'radius' (circled in red). The 'RADIUS Accounting Group' is set to 'Disabled'. At the bottom, the 'Save' button is highlighted with a red '4'.

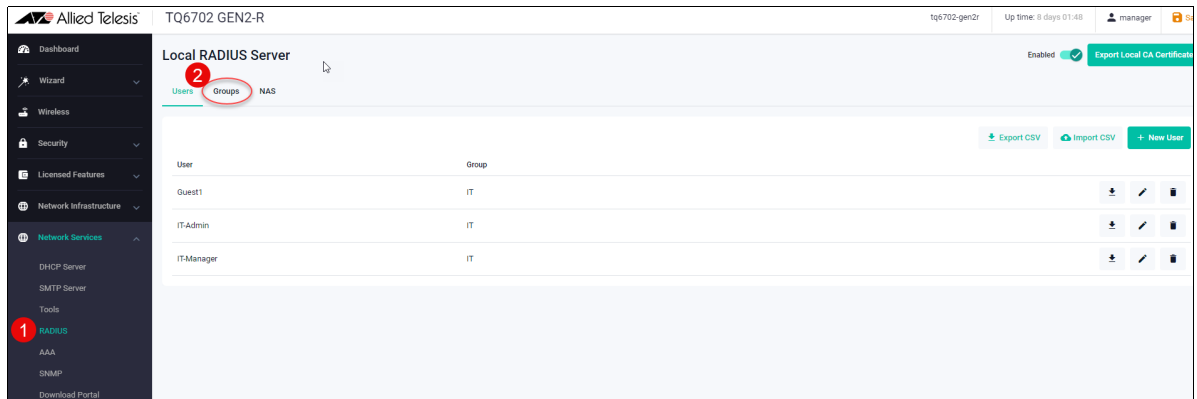
5. Apply and then save the configuration. See "[Applying and saving your configuration](#)" on page 6 for instructions.

WPA Enterprise with Dynamic VLANs

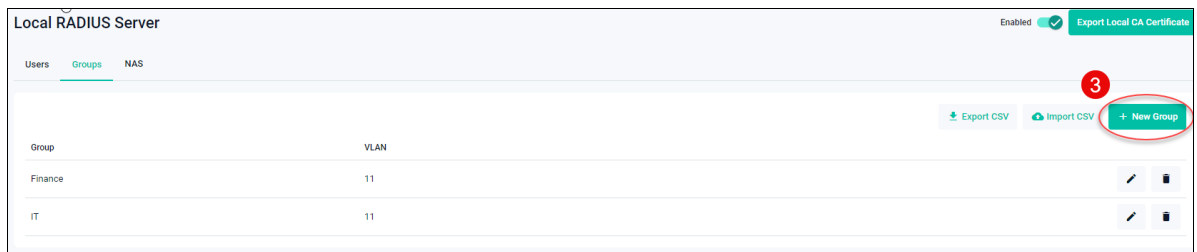
This section shows you how to set up WPA enterprise with Dynamic VLANs to secure your wireless network in a business environment.

Set up a new group for your VLAN

1. From **Network Services**, click on **RADIUS** to display the **Local RADIUS Server** page.
2. Click on the **Groups** tab.



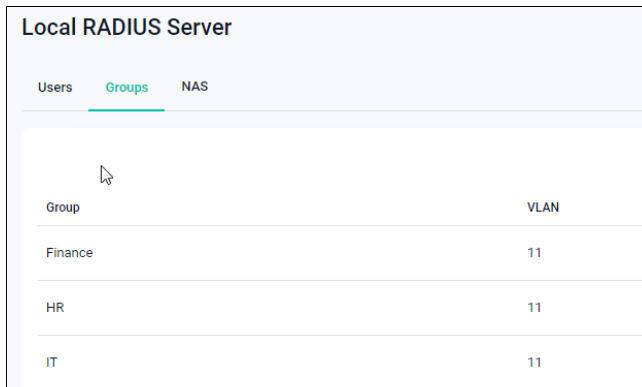
3. From the **Groups** tab, click **+New Group**.



4. Enter your Group Name and VLAN, for example **HR** and VLAN **11**.
5. Click **Apply**.

The 'New Group' dialog box is shown with two input fields. The 'Group Name' field contains the text 'HR' and is highlighted with a red circle and the number '4'. The 'VLAN' field contains the text '11'. At the bottom right, there are 'Cancel' and 'Apply' buttons, with the 'Apply' button highlighted by a red circle and the number '5'.

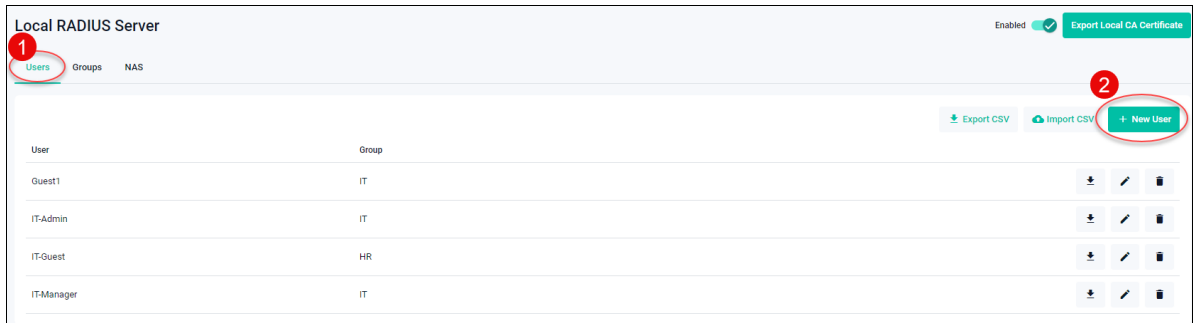
You can see the group that you have added. You can edit the group later if required.



Group	VLAN
Finance	11
HR	11
IT	11

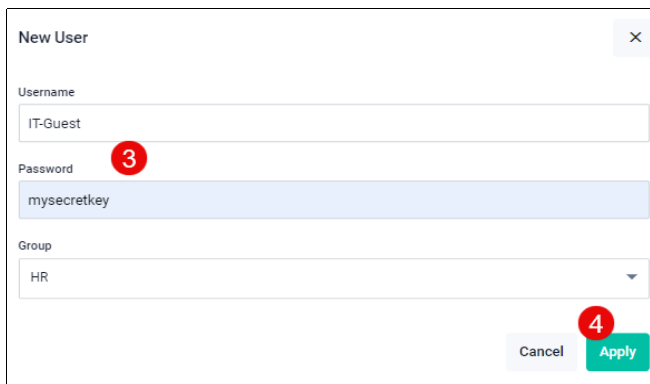
Set up new users for your VLAN

1. From the **Local RADIUS Server** page, click on the **Users** tab.
2. From the **Users** tab, click **+New User**.



User	Group
Guest1	IT
IT-Admin	IT
IT-Guest	HR
IT-Manager	IT

3. Enter the Username and Password. Choose the VLAN group that you created earlier in the Group field. In the example, the user **IT-Guest** with the password **mysecretkey** has been added to the **HR** group.
4. Click **Apply**.



New User

Username
IT-Guest

Password **3**
mysecretkey

Group
HR

Cancel **4** Apply

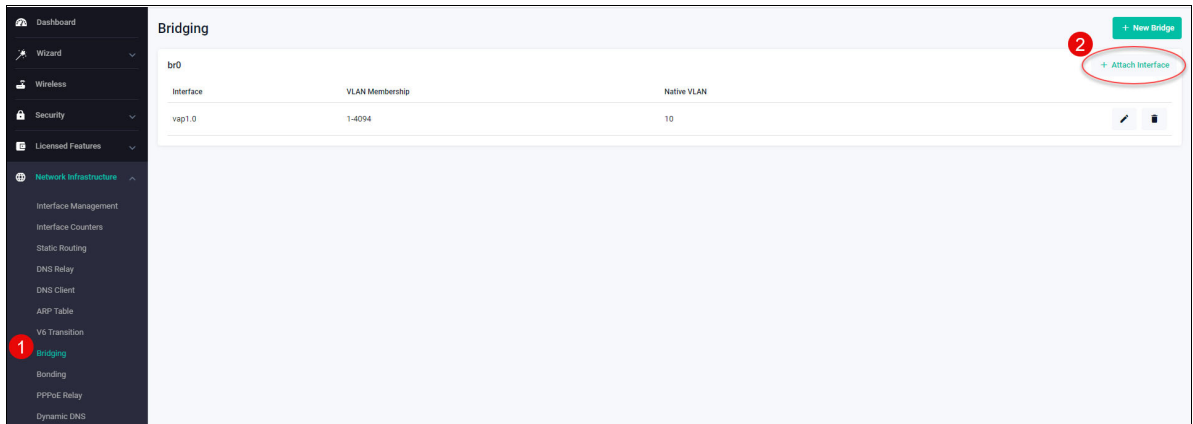
You can see the users that you have added. You can edit users later if required.

User	Group
Guest1	IT
IT-Admin	IT
IT-Guest	HR
IT-Manager	IT

Add a bridge

Set up the VLAN-aware bridge and add the VAP interface to it to enable the use of multiple VLANs on a single VAP. Follow the steps below to add a bridge:

1. From **Network Infrastructure** select **Bridging** to display the **Bridging** page.
2. From the **Bridging** page click **+Attach Interface** to display the **Add Interface** dialog.



3. Enter the Name, Interface, VLAN Membership and Native VLAN. In this example:

- the bridge is br0.
- VLANs 10 and 11 are bridged to the native VLAN, VLAN10.
- vap1.0 is added to the bridge.

Add Interface

Name
br0

Interfaces
eth1

VLAN Membership
10-11

Native VLAN
10

Cancel Apply

Set up WPA security

1. From the **Wireless** page, click on the **Radio1** tab to display the **Radio** and **VAP** settings.
2. Click on the **Edit** button for VAP 0.

The screenshot shows the 'Wireless' configuration page. At the top, there is a notification 'Configuration has changed' and an 'Apply Config' button. Below this, a blue banner provides instructions on configuring wireless settings. The main content area has tabs for 'General', 'Radio1', 'Radio 2', 'Clients', and 'Neighbor APs'. The 'Radio1' tab is active. Under the 'Radio' section, there is a table with columns: Status, Mode, Channel, Bandwidth, Power, and Tx / Rx. Below this is the 'VAP' section with a table with columns: VAP, SSID, Description, Security, and Tx / Rx. The 'VAP 0' row is selected, and its 'Security' dropdown menu is open, with 'WPA2/WPA3 Enterprise' selected. A red circle highlights the dropdown menu, and a red '2' is placed next to it.

3. Select **WPA Enterprise** from **Security**.

The screenshot shows the 'Edit VAP 0' dialog box. It has two tabs: 'Basic Settings' and 'Advanced Settings'. The 'Basic Settings' tab is active. There are three radio buttons for 'WDS Mode': 'None', 'Parent', and 'Child'. Below that is a text field for 'SSID' containing 'Virtual Access Point 0'. A text field for 'Description (Optional)' contains 'Reception'. A 'Passpoint' toggle switch is set to 'Disabled'. The 'Security' dropdown menu is open, and 'WPA Enterprise' is selected, highlighted with a red circle. Below that are two more dropdown menus: 'RADIUS Authentication Group' set to 'radius' and 'RADIUS Accounting Group' set to 'Disabled'. At the bottom, there are 'Cancel' and 'Save' buttons.

4. Click on the **Advanced Settings** tab and then click on the **Security** tab.
5. **Enable** Dynamic VLAN.
6. Click **Save**.

Edit VAP 0 ×

Basic Settings **Advanced Settings**

General **Security** Fast Roaming

Broadcast Key Refresh Interval

Dynamic VLAN Enabled

Pre Authentication Enabled

Session Key Refresh Interval

Session Key Refresh Action Reauthentication Disconnection

WPA Versions
WPA2 WPA3

Encryption Protocol

7. Click **Save**.
8. Apply and then save the configuration. See "[Applying and saving your configuration](#)" on page 6 for instructions.

MAC Authentication

This section shows you how to set up MAC Authentication to secure your wireless network. You can use this in conjunction with WPA personal and WPA Enterprise.

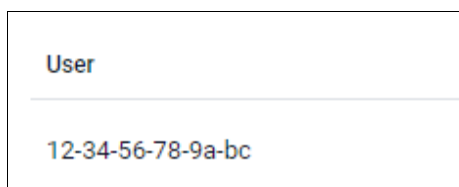
1. From **Network Services** click on **RADIUS** to display the **Local RADIUS Server** page.
2. Enable the server with the **toggle** button to turn it on:



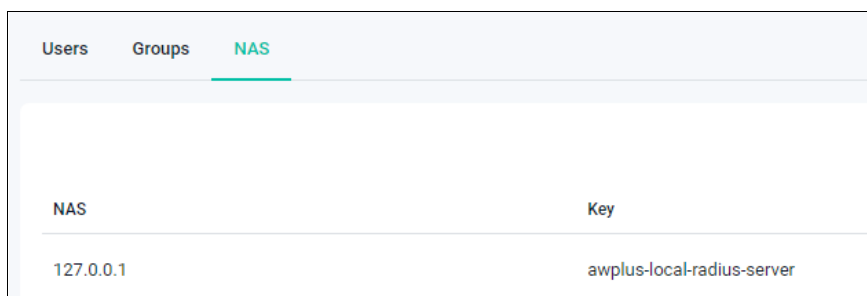
- Add user**
3. From the **Users** tab, click **+New User**.
 4. Enter your device's MAC address as the username and password. For example, if you add a printer with MAC address 12-34-56-78-9a-bc, then the password is also the same MAC address.
 5. Click **Apply**.

A screenshot of a 'New User' dialog box. It has a title bar with 'New User' and a close button. There are three input fields: 'Username' with '12-34-56-78-9a-bc', 'Password' with '12-34-56-78-9a-bc', and 'Group' which is a dropdown menu. At the bottom right, there are 'Cancel' and 'Apply' buttons.

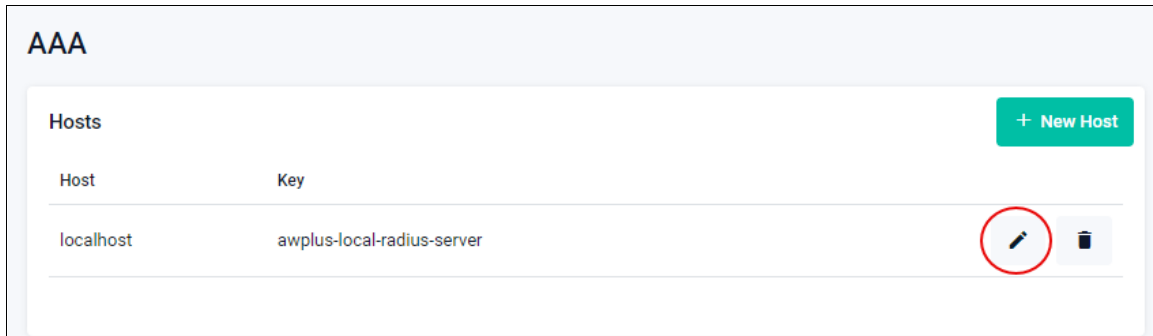
You can see the user that you added. You can edit it later if required:



From the **NAS** tab notice that the **NAS** and **Key** fields automatically populate for the user you added:

A screenshot of the 'NAS' tab in the configuration interface. The tabs 'Users', 'Groups', and 'NAS' are visible at the top, with 'NAS' selected. Below the tabs, there is a table with two columns: 'NAS' and 'Key'. The 'NAS' column contains the value '127.0.0.1' and the 'Key' column contains the value 'awplus-local-radius-server'.

6. From **Network Services > AAA**, check the Host is pointing to the RADIUS server. If required click the **Edit** button to make changes.



7. Apply and then save the configuration. See "[Applying and saving your configuration](#)" on page 6 for instructions.

MAC Authentication with Dynamic VLAN

From AlliedWare Plus version 5.5.4-2.3 and Device GUI version 2.19.0 onwards, Dynamic VLAN is supported for MAC Authentication.

This enables dynamic VLAN assignment based on authentication, achieved through coordination between the TQR (authenticator) and the RADIUS server. When the RADIUS server sends a RADIUS Access-Accept message to the authenticator, it can include attributes specifying the VLAN to which the authenticated device should be assigned.

Previously, with MAC authentication, VLAN assignment was based on the VAP the client connected to. In contrast, Dynamic VLAN allows each client to be assigned a specific VLAN individually.

To enable MAC Authentication with Dynamic VLAN, select the required VAP as follows:

1. From **Wireless > Radio > Edit VAP**.
2. Click **Advanced Settings > Security**.
3. Select **radius** from the drop-down list for MAC Authentication.
4. Enable the **Dynamic VLAN for MAC Auth**.

This example shows the MAC Authentication field with the radius server selected, and the Dynamic VLAN for MAC Auth enabled:

MAC Authentication

radius

Verify RADIUS packets for MAC Auth Disabled Required

MAC Auth Username Separator

hyphen (00-15-77-ab-cd-ef)

MAC Auth Username Case

Lower Case

MAC Auth Password

Username

Unassociated Client List Acquire Disabled

MAC Auth RADIUS Send Service-Type Disabled

MAC Auth RADIUS Dynamic Authorization Client

IP address

Password

Dynamic VLAN for MAC Auth Enabled

Captive Portal

A Captive Portal allows wireless users to log in or accept terms before they can access the Internet or the wireless network.

The most standard use for a Captive Portal is to provide a gateway to allow an outside guest access to a Wi-Fi network. This is typical for any office or business that wants to keep visiting guests on a separate network from their internal business network. This is a security feature that ensures the main business network is safe. It prevents guests who may knowingly or unknowingly download a malicious program or virus from spreading to the main business network, while also allowing a business to potentially restrict access.

This is how it works

Wireless AP's monitor traffic from wireless clients. When they detect the first HTTP/HTTPS packets from each client, they redirect HTTP/HTTPS traffic from that client to a page called Captive Portal.

There are three types of Captive Portal:

- **RADIUS Authentication** - this method authenticates wireless clients. Use this if you want guests to log into the guest network using a username and password that you provide them with.
- **Click-through** - this method only asks clients to agree to the terms of use (click-through agreement) before allowing them to connect to the wireless network. The click-through page does not require authentication with a username/password pair, but can be configured to show an arbitrary 'Terms of Use' that clients have to accept before use, or to redirect to an external page. Use this if you don't need guests to log in.
- **External Page Redirect** - this method redirects the authentication page to a user configured URL such as a third-party Captive Portal vendor page. Use this if you want guests to login via the third-party vendor.

The next section describes how to use the device GUI to configure Captive Portal.

Configuring Captive Portal

This section describes how to configure Captive Portal.

Before you start, if you intend to use a RADIUS server with Captive Portal, you need to configure the RADIUS server first. See "[WPA Enterprise with a RADIUS server](#)" on page 9.

Selecting the type of Captive Portal installation

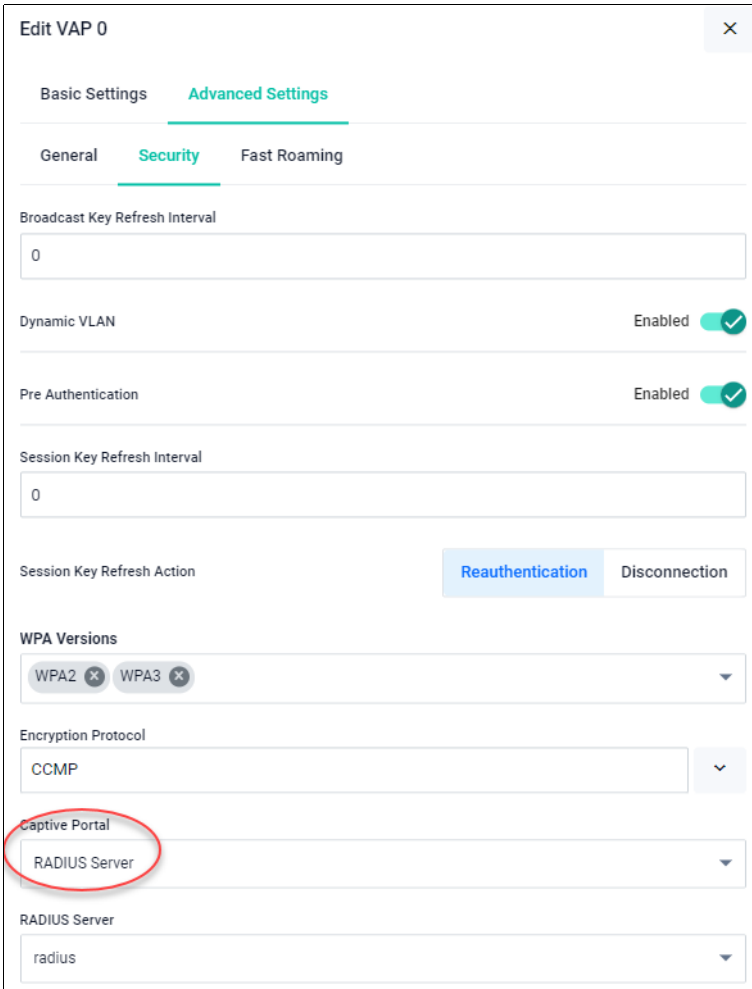
1. Click **Wireless** from the menu on the left, and then select the Radio you want to enable Captive Portal on. Click **Edit VAP 0**.
2. Click **Advanced Settings**.
3. Click the **Security** tab
4. Click on the **Captive Portal** options list to display the different types of installation. Notice that Captive Portal defaults to Disabled.

The screenshot shows the 'Edit VAP 0' configuration page. At the top, there are two tabs: 'Basic Settings' and 'Advanced Settings', with 'Advanced Settings' selected and circled in red. Below the tabs, there are three sub-tabs: 'General', 'Security', and 'Fast Roaming', with 'Security' selected and circled in red. The 'Broadcast Key Refresh Interval' is set to 0. 'Dynamic VLAN' is enabled with a green checkmark. 'Pre Authentication' is also enabled with a green checkmark. 'Session Key Refresh Interval' is set to 0. 'Session Key Refresh Action' has two options: 'Reauthentication' (selected) and 'Disconnection'. Under 'WPA Versions', 'WPA2' and 'WPA3' are selected. 'Encryption Protocol' is set to 'CCMP'. The 'Captive Portal' dropdown menu is open, showing 'Disabled' as the selected option, which is circled in red. Other options in the dropdown include 'RADIUS Server', 'Click Through', and 'External Page Redirect'. At the bottom, there is a 'MAC Auth Username Case' field.

Configuring RADIUS server

RADIUS uses the AP's local RADIUS server to authenticate clients.

1. Select RADIUS Server:



The screenshot shows the 'Edit VAP 0' configuration page with the 'Advanced Settings' tab selected. Under the 'Security' sub-tab, the 'Captive Portal' dropdown menu is highlighted with a red circle and set to 'RADIUS Server'. Below it, the 'RADIUS Server' dropdown menu is set to 'radius'. Other settings include 'Broadcast Key Refresh Interval' (0), 'Dynamic VLAN' (Enabled), 'Pre Authentication' (Enabled), 'Session Key Refresh Interval' (0), and 'Session Key Refresh Action' (Reauthentication).

2. (Optional) Select the RADIUS group. The default group is named 'radius'. If you want to use another RADIUS group that you have created, select that instead.
3. (Optional) Enable RADIUS Accounting if desired.

When accounting is enabled, the access point sends client information such as usage time to the RADIUS server.

4. (Optional) Configure Page Proxy if desired.

Page Proxy lets you display a customized authentication page. To use this, enable Page Proxy and then enter the URL that the proxy will use. When someone wants to login to the wireless network, the proxy will display the login page that is at URL/radius_login.html. You need to create the radius_login.html page, and failure and success pages; see "[Configuring the Page Proxy](#)" on [page 27](#) for details.

5. (Optional) Configure Redirect Mode if desired.

Redirect Mode specifies what page the user will be shown after authentication.

- **Disabled** (the default): Do not redirect the browser after successful web authentication. The client will stay on the authentication page.
- **Fixed**: Always redirects to a fixed URL. Specify the URL in the Redirect URL field.
- **Session Keep**: Shows the page that was entered in the client's browser before web authentication. For example, if the client is trying to access the airport departures page from the airport Wi-Fi network, they will be redirected back to that departures page.

6. (Optional) Change the Session Timeout setting if desired.

You can change the timeout interval (how long before the client's session ends) and specify whether to ask the client to re-authenticate or to end their session.

7. (Optional) Configure Walled Garden if desired.

A walled garden limits clients to accessing only a selection of web pages. Specify the IP, network, or FQDN address of the walled garden, and change other settings if required.

Configuring Click Through

Click Through requires clients to agree to terms of use, and then allows them to connect to the wireless network without authentication.

1. Select Click Through:

The screenshot shows the Captive Portal configuration interface. The 'Captive Portal' dropdown menu is set to 'Click Through'. The 'Page Proxy' toggle is disabled. The 'Redirect Mode' dropdown menu is set to 'Disabled'. The 'Session Timeout Interval' is set to 3600. The 'Session Timeout Action' is set to 'Reauthentication'. The 'Walled Garden' dropdown menu is empty. The 'DNS Proxy for Walled Garden' toggle is disabled.

2. (Optional) Configure Page Proxy if desired.

Page Proxy lets you display a customized authentication page. To use this, enable Page Proxy and then enter the URL that the proxy will use. When someone goes to login to the wireless network, the proxy will display the login page that is at URL/radius_login.html. You need to create the

radius_login.html page, and failure and success pages; see "[Configuring the Page Proxy](#)" on [page 27](#) for details.

3. (Optional) Configure Redirect Mode if desired.

Redirect Mode specifies what page the user will be shown after authentication.

- **Disabled (the default):** Do not redirect the browser after successful web authentication. The client will stay on the authentication page.
- **Fixed:** Always redirects to a fixed URL. Specify the URL in the Redirect URL field.
- **Session Keep:** Shows the page that was entered in the client's browser before web authentication. For example, if the client is trying to access the airport departures page from the airport Wi-Fi network, they will be redirected back to that departures page.

4. (Optional) Change the Session Timeout settings if desired.

You can change the timeout interval (how long before the client's session ends) and specify whether to ask the client to re-authenticate or to end their session.

5. (Optional) Configure Walled Garden if desired.

A walled garden limits clients to accessing only a selection of web pages. Specify the IP, network, or FQDN address of the walled garden, and change other settings if required.

Configuring External Page Redirect

External Page Redirect gets clients to login via a third-party service.

1. Select External Page Redirect:

The screenshot shows the Captive Portal configuration interface. The 'Captive Portal' dropdown is set to 'External Page Redirect'. The 'External Page URL' field contains 'Enter URL'. The 'RADIUS Server' dropdown is set to 'radius'. The 'RADIUS Accounting' toggle is 'Disabled'. The 'Redirect Mode' dropdown is set to 'Disabled'. The 'Session Timeout Interval' field contains '3600'. The 'Session Timeout Action' has two buttons: 'Reauthentication' (selected) and 'Disconnection'. The 'Walled Garden' dropdown is empty. The 'DNS Proxy for Walled Garden' toggle is 'Disabled'.

2. Enter the External Page URL of the third-party service.
3. Configure the RADIUS settings. The third party service will provide the settings to use.
4. (Optional) Configure Redirect Mode if desired.

Redirect Mode specifies what page the user will be shown after authentication.

- **Disabled (the default):** Do not redirect the browser after successful web authentication. The client will stay on the authentication page.
- **Fixed:** Always redirects to a fixed URL. Specify the URL in the Redirect URL field.
- **Session Keep:** Shows the page that was entered in the client's browser before web authentication. For example, if the client is trying to access the airport departures page from the airport Wi-Fi network, they will be redirected back to that departures page.

5. (Optional) Change the Session Timeout settings if desired.

You can change the timeout interval (how long before the client's session ends) and specify whether to ask the client to re-authenticate or to end their session.

6. (Optional) Configure Walled Garden if desired.

A walled garden limits clients to accessing only a selection of web pages. Specify the IP, network, or FQDN address of the walled garden, and change other settings if required.

Configuring the Page Proxy

If you configure a Page Proxy so you can use a customized authentication page, you need to create login, failure, and success pages. This section describes the requirements for these pages.

Authentication login page

- Filename

The filename of the external authentication page must be 'radius_login.html'.

For example, when you specify 'http://www.example.com/captive_portal' in the Page Proxy URL field, APs will present the content of the page at 'http://www.example.com/captive_portal/radius_login.html' to connecting clients.

- HTML File Content

The authentication page on the external Web server should contain the following HTML form elements:

```
<form method="POST">
<input type="text" name="userid">
<input type="password" name="password">
<input type="submit" value="Connect">
</form>
```

The value of the **submit** button does not have to be 'Connect'. Also, the submit button can be a <button> element instead of <input type="submit">.

Authentication login failure page

- Filename

The external authentication failure page must be named 'radius_login_fail.html'. For example, if the Page Proxy URL is 'http://www.example.com/captive_portal', APs will serve 'http://www.example.com/captive_portal/radius_login_fail.html' to clients."

- HTML File Content

This is the same as the Authentication Login Page. The authentication page on the external Web server should contain the following HTML form elements:

```
<form method="POST">
<input type="text" name="userid">
<input type="password" name="password">
<input type="submit" value="Connect">
</form>
```

The value of the submit button does not have to be 'Connect'. Also, the submit button can be a <button> element instead of <input type="submit">.

Authentication success page (welcome)

- **Filename**

The filename of the external successful authentication page must be 'welcome.html'.

For example, if you specify 'http://www.example.com/captive_portal' in the 'Page Proxy URL', APs will present the content of the page at 'http://www.example.com/captive_portal/welcome.html' to connecting clients.

- **HTML File Content**

There is no special HTML form requirement for the authentication success page.

Passpoint

Introduction

You can enable Passpoint on your wireless networks from the Device GUI version 2.18.0 and AlliedWare Plus software version 5.5.4-1.1 or later.

Passpoint™, also known as Hotspot 2.0, is the open standard for public Wi-Fi, introduced by the [Wi-Fi Alliance™](#). Passpoint brings seamless, secure Wi-Fi connectivity to any network employing Passpoint enabled Wi-Fi hotspots. It also provides user connections with WPA3™ security protection, enabling users to feel confident that their data is safe.

How does it work?

Passpoint lets users sign in to a Wi-Fi hotspot once, then uses their credentials as their devices hop from one access point to the next. Users' authentication occurs every time they connect. Of course, the hotspot (i.e., router) must support Passpoint for this connectivity transfer to happen.

Once a user accesses the Wi-Fi network offered at a location, the Passpoint-enabled client device will automatically connect upon subsequent visits. This eliminates the need for users to search for and choose a network, request Wi-Fi access, and re-enter authentication credentials each time they visit.

Passpoint improves the mobile user experience by offering:

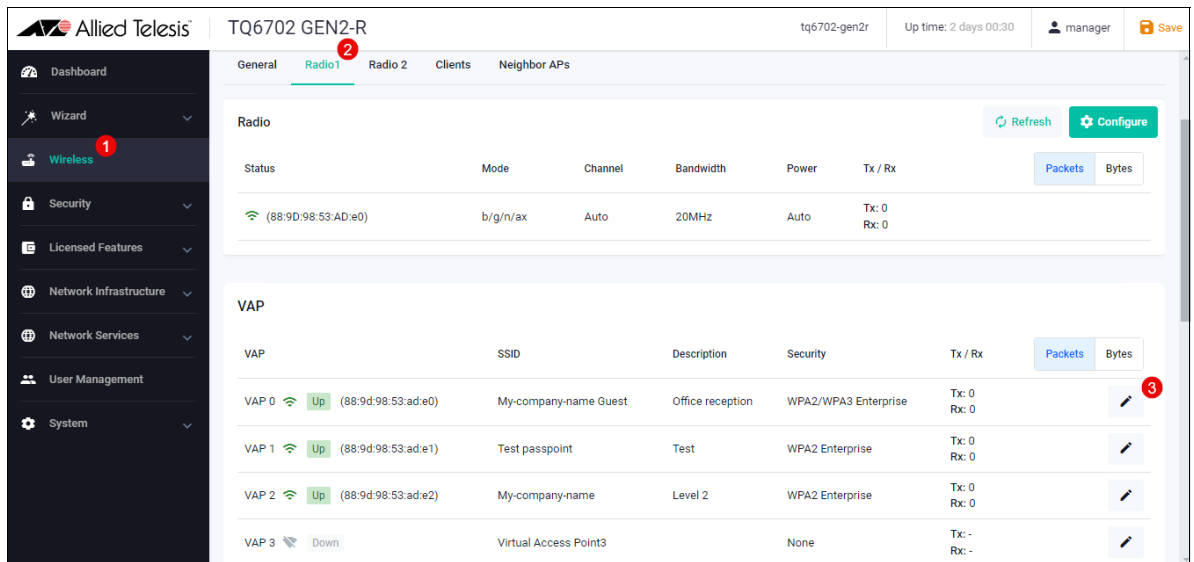
- Automatic network discovery and selection
- Simplified online sign-up and instant account provisioning
- Seamless network access and cellular-like roaming between hotspots
- Enhanced security.

Configuring Passpoint

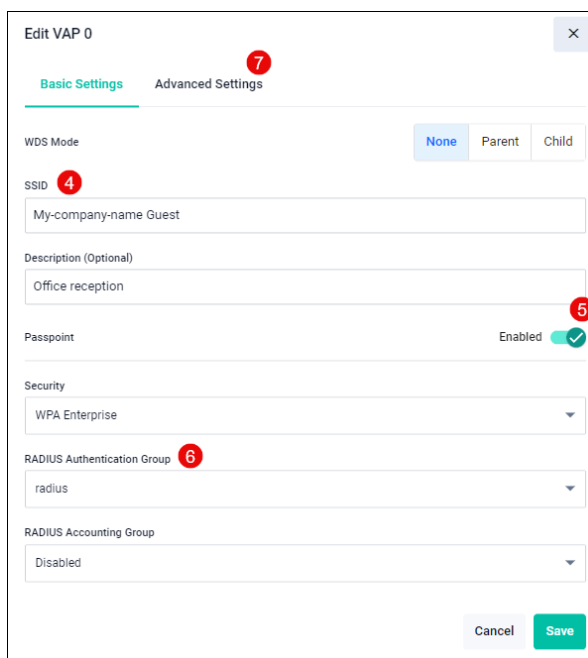
Step 1: Enable Passpoint

Follow these steps to enable Passpoint on a VAP. You can edit an existing VAP or create a new one.

1. Click on **Wireless** from the menu bar.
2. Select the Radio tab to configure one of the radios (The default is Radio1).
3. Click on the **Edit** button to select a VAP to configure (The default is VAP0).



4. Enter the **SSID** and optional **Description** if required.
5. Enable Passpoint (**WPA Enterprise** automatically populates the **Security** field).
6. Select **radius** from the RADIUS Authentication Group drop down list.
7. Click on the **Advanced Settings** tab to configure 802.11u and Passpoint.



Step 2: Configure 802.11u

1. Click on the **802.11u** tab.
2. Select the **Access Network Type** from the drop down list.
3. Enter the **Domain Name**.
4. Enter the **NAI Realm information**.

See the table **Basic options for 802.11u settings** for field descriptions.

Table 3: Basic options for 802.11u settings

FIELD	DESCRIPTION
Access Network Type	<p>Specify any of the following 802.11u network types.</p> <p>Private network — This network is accessible for authorized users only. For example, home networks or enterprise networks that require user authentication.</p> <p>Private network with guest access— This network is accessible to guest users based on guest authentication methods. For example, enterprise networks that allow guest users with captive portal authentication.</p> <p>Chargeable public network — This network provides access to the Internet based on payment. For example, a subscription-based Internet access in a coffee shop or a hotel offering chargeable in-room Internet access service.</p> <p>Free public network —This network is accessible to all without any charges applied. For example, a hotspot in airport or other public places that provide Internet access with no additional cost.</p> <p>Personal device network — This network is accessible for personal devices. For example, a laptop or camera configured with a printer for the purpose of printing.</p> <p>Emergency service only network —This network is limited to accessing emergency services only.</p> <p>Test or experimental — This network is used for test purposes only.</p> <p>Wildcard —This network indicates a wildcard network.</p>
Domain Name	Domain name of the access network operator, which is the identifier of the operated Hotspot2.0 network. For example, 'example.com, example.net.'

Table 3: Basic options for 802.11u settings (continued)

FIELD	DESCRIPTION
NAI Realm information	<p>The Network Access Identifier (NAI) Realm information.</p> <p>The realm in the NAI format is represented after the @ symbol, which is specified as domain.com. For example: user@realm.example.com.</p> <p>The EAP method is the method that this NAI realm uses for authentication:</p> <ul style="list-style-type: none"> ■ TLS (the default) ■ TTLS ■ SIM ■ AKA

If you want to configure Advanced settings for 802.11u, click on the **Advanced** button to expand more settings. See the table **Advanced options for 802.11u settings** for field descriptions.

The screenshot shows the 'Edit VAP 0' configuration window. The 'Advanced Settings' tab is selected. Under the '802.11u' sub-tab, the 'Advanced' button is circled in red. Other visible settings include 'Access Network Type' (Free public network), 'Domain name' (example.com), 'NAI Realm information' (Realm.Example.Com : TLS), 'Roaming Consortium List' (HEX string separated by comma(), e.g. '506f9a,1122334455'), 'Internet Access' (Enabled), and 'Additional Step Required for Access' (Disabled).

Table 4: Advanced options for 802.11u settings

FIELD	DESCRIPTION
Roaming Consortium List	<p>A group of subscription service providers (SSPs) having inter-SSP roaming agreements. The Roaming Consortium list tells a mobile device which roaming consortiums or service providers are available through an AP.</p> <p>The list must be in Hexadecimal format. For example, '506f9a, 001aeb, 1122334455'.</p>
Internet Access	Internet access, enable or disable.
Additional Step Required for Access (ASRA)	<p>Enable or disable.</p> <p>The ASRA field tells the higher layer protocols on the client device what steps to take (e.g. URL redirection, terms and conditions, etc.) after the connection is made.</p>
Emergency services reachable	<p>Enable or disable.</p> <p>802.11u provides a means for the client devices to learn about emergency services prior to association and then to support them at the link-level.</p>

Table 4: Advanced options for 802.11u settings (continued)

FIELD	DESCRIPTION
Unauthenticated emergency service accessible	<p>Controls whether the VAP can supply access to unauthenticated individuals to emergency services. Here are the settings:</p> <p>Enabled: The VAP can provide access to unauthenticated individuals to emergency services.</p> <p>Disabled: The VAP cannot provide access to emergency services. This is the default</p>
Venue Group	<p>The general class of venue, such as:</p> <ul style="list-style-type: none"> ■ Assembly ■ Business ■ Educational ■ Industrial ■ Residential ■ Vehicular ■ Outdoor <p>Specifies the venue group code, which identifies the general category of the physical site of the access point. The default is 7, Residential.</p>
Venue Type	<p>The code of the specific type of venue within each group. For example, venue types in the 'Assembly' group include:</p> <ul style="list-style-type: none"> ■ Arena ■ Stadium ■ Place of Worship ■ Library ■ Restaurant <p>The default is 1, Hotel or motel.</p>
Homogeneous ESS Identifier HEISS	<p>Homogeneous Extended Service Set Identifier.</p> <p>The device MAC address in a hexadecimal format separated by colons. For example, 10:22:33:44:55:66.</p>
Network Authentication Type	<p>Network Authentication Type Information — if this is an unsecured network, specify the additional steps required for access (ASRA):</p> <ul style="list-style-type: none"> ■ Terms and conditions ■ Online enrollment ■ Redirect http/https ■ Redirect DNS ■ Redirect URL - For each Network Authentication Type you can enter a re-direct URL. <p>The maximum length is 128 characters with ASCII. The following symbols are not permitted: { } \ ^ []</p>

Table 4: Advanced options for 802.11u settings (continued)

FIELD	DESCRIPTION
IP Address Type Availability	<p>IPv4 and IPv6 address type availability information.</p> <p>Options include:</p> <ul style="list-style-type: none"> ■ Exist ■ No exist ■ Public ■ Port restrict ■ Private Nat1 and Nat 2 ■ Port private Nat1 and Nat 2 ■ Unknown
Venue Name	<p>Venue Name information — a pair of name and language code (as defined in ISO 639). This indicates the name of the venue for the network, which may be useful to a user for network selection.</p>
3GPP Cellular Network Information	<p>The cellular network identifier.</p> <p>This is a string concatenated Mobile Country Code (MCC) and comma(,) and Mobile Network Code (MNC). The MCC code is three digits, and the MNC is two or three digits. For example: '440,10' means 'NTT DoCoMo, Inc' which is a mobile network in Japan. Each 'MCC, MNC' pair is separated by a semi-colon(;).</p> <p>For example: '440,10;440,50'</p> <p>For more information on mobile network codes, see: Mobile Network Codes</p>
Arbitrary ANQP-element configuration	<p>ANQP (Access Network Query Protocol), consists of a pair of ID (1-99) and payload (Hex) elements.</p> <p>For more information, see IEEE specification 802.11-2016.pdf.</p> <p>You can find information on this in Table 9-271—ANQP-element definitions, page 1127. ANQP is a query and response protocol used by stations to discover information about the network.</p> <p>GAS frames are used to transport the Access Network Query Protocol.</p>
GAS Address 3 behavior	<p>The Generic Advertisement Service (GAS) is a framework that provides transport for advertisement services like ANQP. GAS is used as a container for ANQP elements sent between clients and APs.</p> <p>Select one of the following options:</p> <ul style="list-style-type: none"> ■ P2P Specification ■ IEEE 802.11 Standard ■ Force Non-Compliant Behavior
GAS Comeback Delay	<p>The GAS Comeback Delay is the delay, in milliseconds, between the initial GAS response and the first comeback request. (0-65535)</p>

Table 4: Advanced options for 802.11u settings (continued)

FIELD	DESCRIPTION
QoS Map Set	<p>The QoS Map Set Information element. This element contains a list of 802.11 user priorities (UP), to which a range of DSCP (i.e. IP QoS) values are mapped.</p> <p>When 802.11u-compatible client stations receive the QoS map, they use it to map the IP layer priority (i.e. DSCP field) to an 802.11 priority. As frames are passed from the IP layer of the device's networking stack to the MAC layer, they are mapped according to the 802.11u policy provided by the AP.</p> <p>Likewise, APs follow these maps on downlink QoS frames received from the wired network and sent to the client. This mapping enables the consistent end-to-end policies desired by service providers.</p> <p>Example data: 53,2,22,6,8,15,0,7,255,255,16,31,32,39,255,255,40,47,255,255</p> <p>Format: [<DSCP Exceptions[DSCP,UP]>,<UP 0 range[low,high]>,...<UP 7 range[low,high]></p> <p>DSCP Exception 1: 53,2 (The DSCP Value 53 would use User Priority 2 exceptionally)</p> <p>DSCP Exception 2: 22,6 (The DSCP Value 22 would use User Priority 6 exceptionally)</p> <p>User Priority 0 : 8,15 (The DSCP Range is 8 to 15)</p> <p>User Priority 1 : 0,7 (The DSCP Range is 0 to 7)</p> <p>User Priority 2 : 255,255 (Unuse)</p> <p>User Priority 3 : 16,31 (The DSCP Range is 16 to 31)</p> <p>User Priority 4 : 32,39 (The DSCP Range is 32 to 39)</p> <p>User Priority 5 : 255,255 (Unuse)</p> <p>User Priority 6 : 40,47 (The DSCP Range is 40 to 47)</p> <p>User Priority 7 : 255,255 (Unuse)</p>

Step 3: Configure Passpoint

1. Click on the **Passpoint** tab.
2. Enter the **Operator Friendly Name**.
3. Click **Save**.

See the table [Basic Options for Passpoint settings](#) for field descriptions.

Edit VAP 0 ×
 Basic Settings Advanced Settings
 General Security Fast Roaming **Passpoint** 802.11u
 Downstream Group-Addressed Forwarding (DGAF) Enabled
 Layer 2 Traffic (L2TIF) Disabled
 Operator Friendly Name 2
 Allied Telesis, Inc : Eng
 Advanced Settings ^
 Cancel Save 3

Table 5: Basic Options for Passpoint settings

Field	Description
Downstream Group-Address Forwarding (DGAF)	Select Enabled to disable Downstream Group-Addressed Forwarding.
L2 Traffic Inspection and Filtering	If you want to discard L2 traffic between VAPs, enable L2 Traffic Injection and Filtering. The packets that TQ restricts are: ARP, ICMP, and TDLS.
Operator Friendly Name	Friendly Name: the name of the operator you are providing. Language Code: the language code For example: <friendly name><language code> Allied Telesis Inc.eng

If you want to configure Advanced settings for Passpoint, click on the **Advanced** button to expand more settings. See the table [Advanced Options for Passpoint settings](#) for field descriptions.

Edit VAP 0 ×
 Basic Settings Advanced Settings
 General Security Fast Roaming **Passpoint** 802.11u
 Downstream Group-Addressed Forwarding (DGAF) Enabled
 Layer 2 Traffic (L2TIF) Disabled
 Operator Friendly Name
 Allied Telesis, Inc : Eng
Advanced Settings ^
 Operating Class Indication
 Hex in 16 words or less
 ANQP Domain ID
 0

Table 6: Advanced Options for Passpoint settings

Field	Description
Operating Class Indication	The HEX number of the radio information. For example, '517376' means using 1-13ch and 36-64ch(20MHz). The default is blank.
ANQP Domain ID	Configures the Hotspot 2.0 ANQP (Access Network Query Protocol) domain identifier. Optional - If you don't configure this, the default '0' is set.
Deauthentication Request Timeout	Optional - If you don't configure this, the default '60' is set.
Connection Capabilities	Optional, and includes the following fields: <ul style="list-style-type: none"> ■ IP Protocol Number ■ Port Number ■ Port Status
WAN Metrics	Optional, and includes the following fields: <ul style="list-style-type: none"> ■ At Capacity ■ Symmetric Link ■ Link Status ■ Uplink Load ■ Downlink Load ■ Uplink Speed ■ Downlink Speed ■ Load Measure Duration

Optional advanced features

Radio settings

The following basic and advanced radio settings are available from the **Wireless > Radio 1** and **Radio 2** tabs for the TQ6702 GEN2-R. For the TQ7403-R, Radio 3 options are available from the **Wireless > Radio 3** tab.

Radio 1 settings

1. Click the **Configure** button from **Radio** settings.

From the **Radio 1 Settings** dialog **Basic Settings** tab, the following options are available:

The screenshot shows the 'Radio 1 Settings' dialog box with the 'Basic Settings' tab selected. The 'Status' is 'Enabled' with a green checkmark. 'Mode' is set to 'b/g/n/ax', 'Bandwidth' to '20MHz', 'Channel' to 'Auto', 'Auto Channel Selection' to 'all', and 'Power' to 'Auto'. 'Cancel' and 'Apply' buttons are at the bottom right.

Table 7: Basic Radio1 settings

FIELD	DESCRIPTION
Status	The default is Enabled and displays the Up or Down status and MAC address for each VAP. The Status can be enabled or disabled.
Mode	The mode can be set to b/g, b/g/n or b/g/n/ax. The default is b/g/n/ax. When you select the mode, the bandwidth displays what is available for each mode.
Bandwidth	The bandwidth can be set to 20MHz or 40MHz. The default is 20MHz.
Channel	The default is auto. You can select different channels if required.
Auto Channel Selection	The default is all. You can select specific channels if required.
Power	The default is auto. You can select from Max, High, Middle, Low or Min if required.

2. Click the **Apply** button to apply any changes you have made.

3. Click on the **Advanced Settings** tab.

From the **Radio 1 Settings** dialog **Advanced Settings** tab, the following options are available:

The screenshot shows the 'Radio 1 Settings' dialog with the 'Advanced Settings' tab selected. The settings are as follows:

- Wireless Client Isolation:** Disabled (VAP) is selected.
- Max Clients:** 500
- Airtime Fairness:** Manual is selected.
- Neighbor AP Detection:** Enabled (checked).
- Legacy Rates:** all
- MU MIMO:** Disabled
- OFDMA:** Disabled
- RTS Threshold:** 2347
- Multicast Tx Rate:** 11Mbps

Buttons for 'Cancel' and 'Apply' are located at the bottom right of the dialog.

Table 8: Advanced Radio settings

FIELD	DESCRIPTION
Wireless Client isolation	The default is disabled.
Max Clients	The maximum number of clients defaults to 500.
Airtime Fairness	Airtime fairness defaults to disabled.
Neighbor AP Detection	Neighbor AP detection defaults to disabled.
Legacy Rates	From release 5.5.4-2.3 onwards, you are no longer required to specify a basic rate for Radio 1. The legacy rates defaults to all. You can select one or more legacy rates from the drop down list if required. The selection is one or more of 54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2 or 1.
MU MIMO	MU MIMO defaults to disabled.
OFDMA	OFDMA defaults to disabled.
RTS Threshold	The RTS Threshold defaults to 2347.
Multicast Tx Rate	The Multicast Transmission Rate defaults to 11Mbps. You can select 54 Mbps, 48Mbps, 36Mbps, 24Mbps, 18Mbps, 12Mbps, 11Mbps, 9Mbps, 6Mbps, 5.5Mbps, 2Mbps, or 1Mbps if required.

4. Click the **Apply** button to apply any changes you have made.

Radio 2 settings

Basic and advanced radio settings are also available from **Wireless > Radio 2**.

From the **Radio 2 Settings** dialog **Basic Settings** tab, the options are the same as for Radio1 except the options listed in the table below:

The screenshot shows the 'Radio 2 Settings' dialog with the 'Basic Settings' tab selected. The 'Status' is 'Disabled'. The 'Mode' is set to 'a/n/ac/ax', 'Bandwidth' is '20MHz', 'Channel' is 'Auto', 'Auto Channel Selection' is 'all', and 'Power' is 'Auto'. There are 'Cancel' and 'Apply' buttons at the bottom right.

Table 9: Basic Radio settings

FIELD	DESCRIPTION
Mode	The mode can be set to a, a/n, a/n/ac or a/n/ac/ax. The default is a/n/ac/ax. When you select the mode, the bandwidth displays what is available for each mode.
Bandwidth	The bandwidth can be set to 20MHz, 40MHz, 80MHz or 80+80MHz. The default is 20MHz.

Radio 2 Advanced settings has an additional setting for **Zero Wait DFS** which is not available for Radio1 and the **Multicast Tx Rate** has different options.

From the **Advanced Settings** tab the following options are available:

The screenshot displays the 'Radio 2 Settings' window with the 'Advanced Settings' tab selected. The settings are as follows:

- Wireless Client Isolation:** Enabled (VAP)
- Max Clients:** 500
- Airtime Fairness:** Manual
- Neighbor AP Detection:** Disabled
- Legacy Rates:** all
- MU MIMO:** Disabled
- OFDMA:** Disabled
- Zero Wait DFS:** Disabled
- RTS Threshold:** 2347
- Multicast Tx Rate:** 6Mbps

Buttons for 'Cancel' and 'Apply' are located at the bottom right of the settings panel.

Table 10: Advanced Radio settings

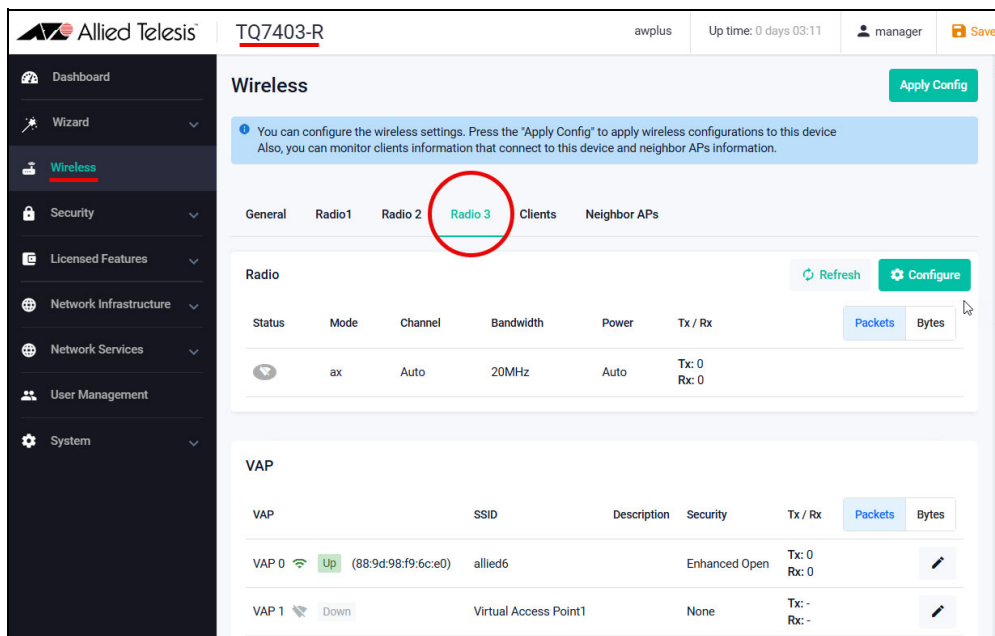
FIELD	DESCRIPTION
Zero Wait DFS	Zero Wait DFS defaults to Disabled.
Multicast Tx Rate	The Multicast Transmission Rate defaults to 6 Mbps. You can select 6 Mbps, 12 Mbps or 24 Mbps if required.

Click the **Apply** button to apply any changes you have made.

Radio 3 settings

Basic and advanced radio settings are also available for **Radio 3** on the **TQ7403-R** wireless router.

The TQ7403-R supports 2.4GHz, 5GHz, and 6GHz radios. The 6Hz band uses an internal antenna for increased efficiency and throughput, while the 2.4GHz and 5GHz bands use an external antenna.



Radio scanning

The RFScan feature is used to detect neighbor APs. The scans in each Radio are performed in parallel. For each Radio, you can select between scanning one channel at a time and scanning all channels at once.

- **All-Channel Scan:** Scans all channels at once.
- **Single-Channel Scan:** Scans one channel at a time, allowing configuration of scan interval, duration, and data retention.

To configure these settings:

1. Go to: **Wireless > Radio X > Configure > Advanced Settings** tab
2. Enable **Neighbor AP Detection**
3. Select Scan Method, **All Channels** or **One Channel**

Radio 1 Settings

Basic Settings **Advanced Settings**

Wireless Client Isolation Disabled Enabled (VAP)

Max Clients
500

Airtime Fairness Disabled Evenly Manual

Neighbor AP Detection Enabled

Scan Method All Channels One Channel

Legacy Rates
all

MU MIMO Disabled

OFDMA Disabled

RTS Threshold
2347

Multicast Tx Rate
11Mbps

Cancel Apply

Radio 1 Settings

Basic Settings **Advanced Settings**

Wireless Client Isolation Disabled Enabled (VAP)

Max Clients
500

Airtime Fairness Disabled Evenly Manual

Neighbor AP Detection Enabled

Scan Method All Channels One Channel

Scan Interval
60

Scan Duration
50

Scan Data Keep Time
3600

Legacy Rates
all

MU MIMO Disabled

OFDMA Disabled

VAP settings

The following optional advanced settings are available from the **Edit VAP 0** dialog **Advanced Settings** tab.

General settings

From the **General** tab:

The screenshot shows the 'Edit VAP 0' dialog box with the 'Advanced Settings' tab selected. Under the 'General' sub-tab, the following settings are visible:

- Hide SSID: Disabled (toggle)
- Band Steering: Disabled (toggle)
- Duplicate AUTH received: Buttons for 'Disconnect' and 'Ignore'
- Association Advertisement: Disabled (toggle)
- Proxy ARP: Disabled (toggle)
- DTIM Period: Input field with value '1'
- Pre-allocated Airtime Percentage: Input field with value '50'
- Inactivity Timer: Input field with value '300'
- BSS Transition Management: Disabled (toggle)
- Client Isolation: Buttons for 'Disabled' and 'Enabled (VAP)'
- Multicast to Unicast Conversion: Enabled (toggle with checkmark)

At the bottom of the dialog are 'Cancel' and 'Save' buttons.

Table 11: Edit VAP 0 - Advanced Settings General

FIELD	DESCRIPTION
Hide SSID	You can enable or disable the SSID from view.
Band Steering	You can enable or disable band steering. Band steering automatically connects your devices to the best available WiFi frequency. For this to work you must have matching configuration between a VAP on Radio 1 (2.4 GHz) and a VAP on Radio 2 (5 GHz).
Duplicate AUTH received	You can disconnect clients on reception or ignore duplicate authentication messages.
Association Advertisement	You can enable or disable advertisements. Notify the previously connected AP that a wireless client has roamed away from it to another AP. This feature must be enabled on all APs in the network.
Proxy ARP	You can enable or disable proxy ARP. The AP will respond to ARP requests on behalf of the wireless client.

Table 11: Edit VAP 0 - Advanced Settings General (continued)

FIELD	DESCRIPTION
DTIM Period	A delivery traffic indication message (DTIM) period value is a number that determines how often a beacon frame includes a DTIM, and this number is included in each beacon frame. The default is 1.
Inactivity Timer	The inactivity timer functionality closes client sessions that have been idle for a specified period of time. This feature is enabled by default and the default time-out value is 300 seconds.
BSS Transition Management	You can enable or disable BSS transmission management. BSS transition management enables an AP to request non-AP wireless client to transition to a specific AP, or to indicate to a non-AP wireless client a set of preferred APs due to network load balancing or BSS Termination.
Client Isolation	You can enable or disable per VAP client isolation. Per VAP client isolation blocks communication between wireless clients that connect to the same VAP.

Security settings

From the **Security** tab:

Edit VAP 0
✕

Basic Settings
Advanced Settings

General
Security
Fast Roaming

Broadcast Key Refresh Interval

Dynamic VLAN Enabled

Pre Authentication Enabled

Session Key Refresh Interval

Session Key Refresh Action

Reauthentication
Disconnection

WPA Versions

WPA2 ✕
WPA3 ✕
▼

Encryption Protocol

CCMP
▼

Captive Portal

Disabled
▼

MAC Authentication

radius
▼

MAC Auth Username Separator

hyphen (00-15-77-ab-cd-ef)
▼

Table 12: Edit VAP 0 - Advanced Settings Security

FIELD	DESCRIPTION
Broadcast Key Refresh Interval	The interval at which the broadcast (group) key is refreshed for clients associated with this VAP. The default is 0 seconds. The valid range is from 0 to 86400 seconds. A value of 0 indicates that the broadcast key is not refreshed.
WPA Versions	You can select the WPA version you want to use. WPA3 is the latest WPA standard. The default is WPA2. WAP3/WPA2 can be selected together and WPA2/WPA can be selected together. The wireless device will connect using the highest version it supports out of the selection.
Encryption Protocol	The default is the GCMP cipher. From version 5.4.4-2.3 onwards, you can select the CCMP cipher for WPA Enterprise version WPA3.
Captive Portal	You can disable captive portal if you do not use it. If you want to use the captive portal feature see " Captive Portal " on page 21.
MAC Authentication	Select from Disabled , radius , MAC Filter , External Radius + MAC Filter , or AMF Application Proxy .
Management Frame Protection	Select from Enable (Capable) or Disabled .

Fast Roaming settings

From the **Fast Roaming** tab:

The screenshot shows the 'Edit VAP 0' configuration window with the following settings:

- Fast Transition:** Disabled (toggle)
- Over-the-DS:** Disabled (toggle)
- Mobility Domain:** a1b2
- PMK-R0 key Lifetime:** 10000
- AES key:** Enter the AES key
- Radio Resource Management:** Disabled (toggle)
- Wireless Network Management:** Disabled (toggle)

Buttons for 'Cancel' and 'Save' are visible at the bottom right.

Table 13: Edit VAP 0 - Advanced Settings Fast Roaming

FIELD	DESCRIPTION
Fast Transition	You can enable or disable this feature. Fast BSS Transition (often abbreviated to Fast Transition or FT) describes mechanisms by which a mobile device can reestablish existing security and/or QoS parameters prior to re-associating to a new AP.
Over-the-DS	You can enable or disable this feature. When Over-the-DS is enabled and a client's data needs to go from this AP to another AP, then the data travels over the wired network between the two APs.
AES key	The encryption key that will be shared with all participating APs.
Radio Resource Management	You can enable or disable this feature. RRM involves sharing of the scarce spectrum among all users of the system. It includes performance gains in terms of efficient energy usage, higher throughput, lower delays, and decreased packet loss.
Wireless Network Management	Enables wireless clients to exchange information for the purpose of improving the overall performance of the wireless network.

Multicast to Unicast conversion

From Device GUI version 2.18.0 onwards and AlliedWare Plus software version 5.5.4-1.1 or later, you can configure an Access Point (AP) to convert multicast packets into unicast packets. These unicast packets are destined for the client connected to the VAP. This conversion allows each client to receive data at the highest possible rate it supports. To configure this feature:

1. Click **Wireless** from the Menu bar.
2. Select the Radio tab to configure (The default is Radio1).
3. Click on the **Edit** button to select a VAP to configure (The default is VAP0).

The screenshot shows the Allied Telesis TQ6702 GEN2-R device GUI. The top navigation bar includes 'General', 'Radio 1', 'Radio 2', 'Clients', and 'Neighbor APs'. The 'Radio 1' tab is selected. Below the navigation bar, there are 'Refresh' and 'Configure' buttons. The main content area is divided into two sections: 'Radio' and 'VAP'. The 'Radio' section shows a table with columns for Status, Mode, Channel, Bandwidth, Power, and Tx / Rx. The 'VAP' section shows a table with columns for VAP, SSID, Description, Security, and Tx / Rx. A red circle with the number '3' highlights the edit icon for VAP 0.

4. Click **Advanced Settings**.
5. Select the **General** tab.
6. Enable **Multicast to Unicast Conversion**.
7. Click **Save**.

The screenshot shows the 'Edit VAP 0' dialog box. The 'Advanced Settings' tab is selected. The 'General' sub-tab is active. The 'Multicast to Unicast Conversion' option is checked and highlighted with a red circle and the number '6'. The 'Save' button is highlighted with a red circle and the number '7'. Other settings include 'Hide SSID' (Disabled), 'Band Steering' (Disabled), 'Duplicate AUTH received' (Disconnect/Ignore), 'Association Advertisement' (Disabled), 'Proxy ARP' (Disabled), 'DTIM Period' (1), 'Pre-allocated Airtime Percentage' (50), 'Inactivity Timer' (300), and 'BSS Transition Management' (Disabled).

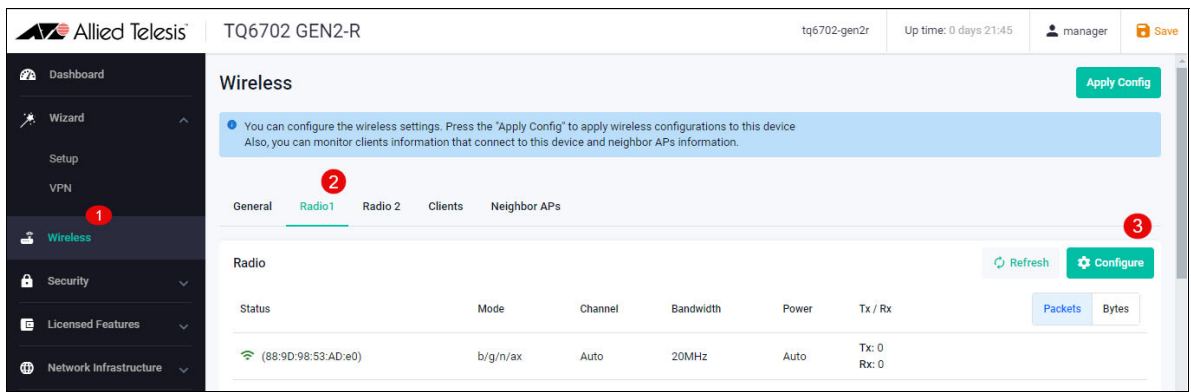
Airtime Fairness for each VAP

From Device GUI version 2.18.0 onwards and AlliedWare Plus software version 5.5.4-1.1 or later, you can configure each VAP's Airtime Fairness percentage manually.

Airtime fairness is a concept and feature designed to ensure that all devices on a wireless network receive a fair share of the available airtime. This is particularly important in environments where devices with varying capabilities and data rates are connected to the same wireless access point.

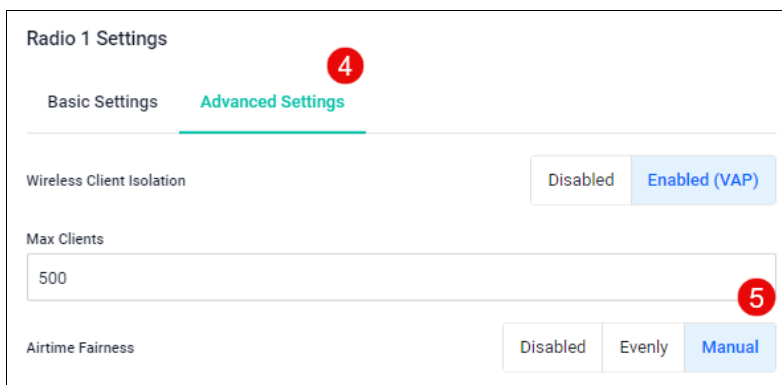
To set Airtime Fairness manually:

1. Click on **Wireless** from the Menu bar.
2. Select the Radio tab to configure (the default is Radio1).
3. Click the **Configure** button from the **Radio** settings.



4. Click on the **Advanced Settings** tab.
5. Click **Manual** from the Airtime Fairness options.







The other options available are to disable Airtime Fairness completely, or to automatically allocate it evenly between VAP's.



6. Click **Apply**.

You can now configure the **Pre-allocated Airtime Percentage** for each VAP individually. For example, you could allocate 60% for VAP 0 and 40% for VAP 1.

1. Click the **Edit** button for the VAP you want to configure.

VAP	SSID	Description	Security	Tx / Rx	Packets	Bytes
VAP 0  Up (88:9d:98:53:ad:e0)	My-company-name Guest	Office reception	WPA2/WPA3 Personal	Tx: 0 Rx: 0		
VAP 1  Up (88:9d:98:53:ad:e1)	Test passpoint	Test	WPA2 Enterprise	Tx: 0 Rx: 0		

2. Click on the **Advanced Settings** tab.
3. Click on the **General** tab.
4. Enter the **Pre-allocated Airtime Percentage** number.

Edit VAP 0

Basic Settings **Advanced Settings**

General Security Fast Roaming

Hide SSID Disabled

Band Steering Disabled

Duplicate AUTH received Disconnect Ignore

Association Advertisement Disabled

Proxy ARP Disabled

DTIM Period
1

Pre-allocated Airtime Percentage **4**
60

Inactivity Timer
300

BSS Transition Management Disabled

Client Isolation Disabled Enabled (VAP)

Multicast to Unicast Conversion Enabled

5
Cancel Save

5. Click **Save**.

Proxy ARP handling

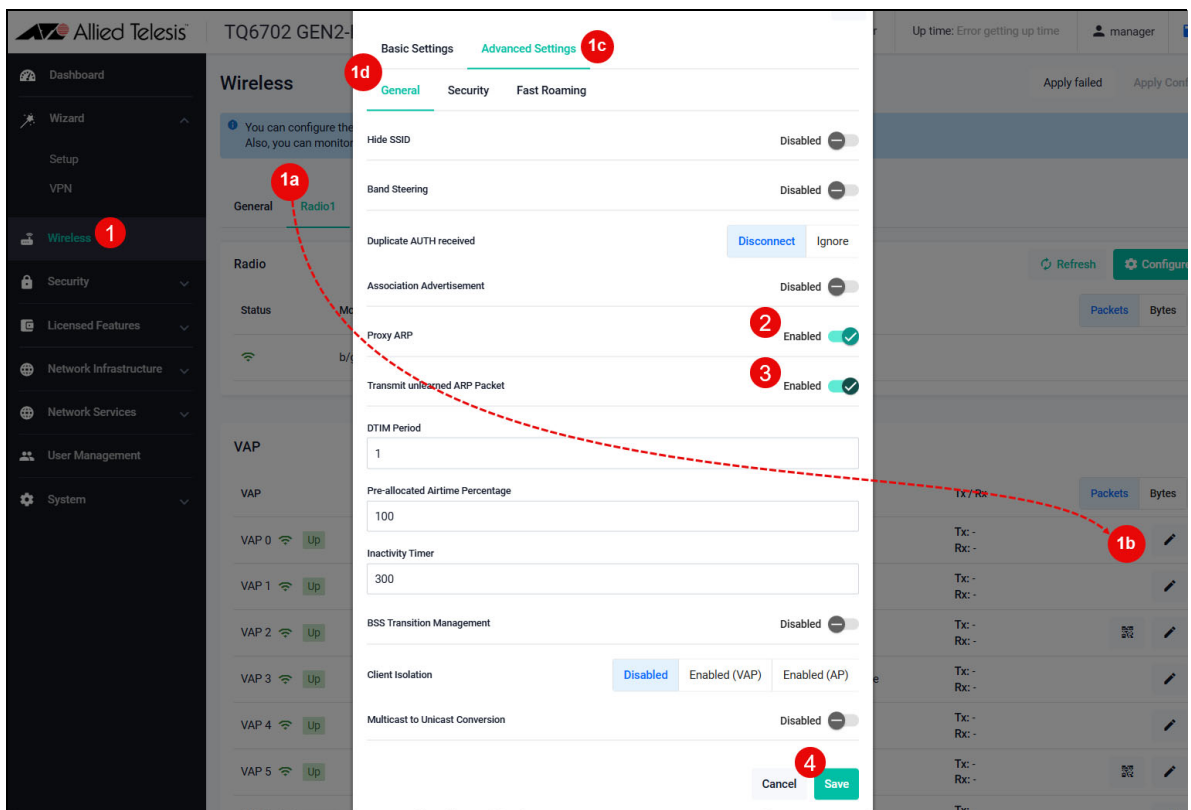
TQR Series wireless AP routers include an option to allow ARP packets from unknown addresses for Proxy ARP instead of dropping them.

How it works

Some devices, such as IP phones, don't send the packets needed for Proxy ARP learning. As a result, the AP may drop ARP requests it can't answer by proxy, causing delays in IP resolution. Enabling this option allows the AP to accept those ARP packets, improving connectivity for such devices.

To configure this:

1. Go to **Wireless > Radio X > Edit VAP Y > Advanced Settings > General**.
2. In that dialog box, enable **Proxy ARP**.
3. The **Transmit unlearned ARP Packet** is displayed. Toggle it to **Enabled**.
4. Click **Save**.



Two-step authentication with MAC authentication and Captive Portal

From AlliedWare Plus version 5.5.5-0.2 onwards two-step authentication allows STAs (stations) to connect using either MAC authentication or Captive Portal authentication.

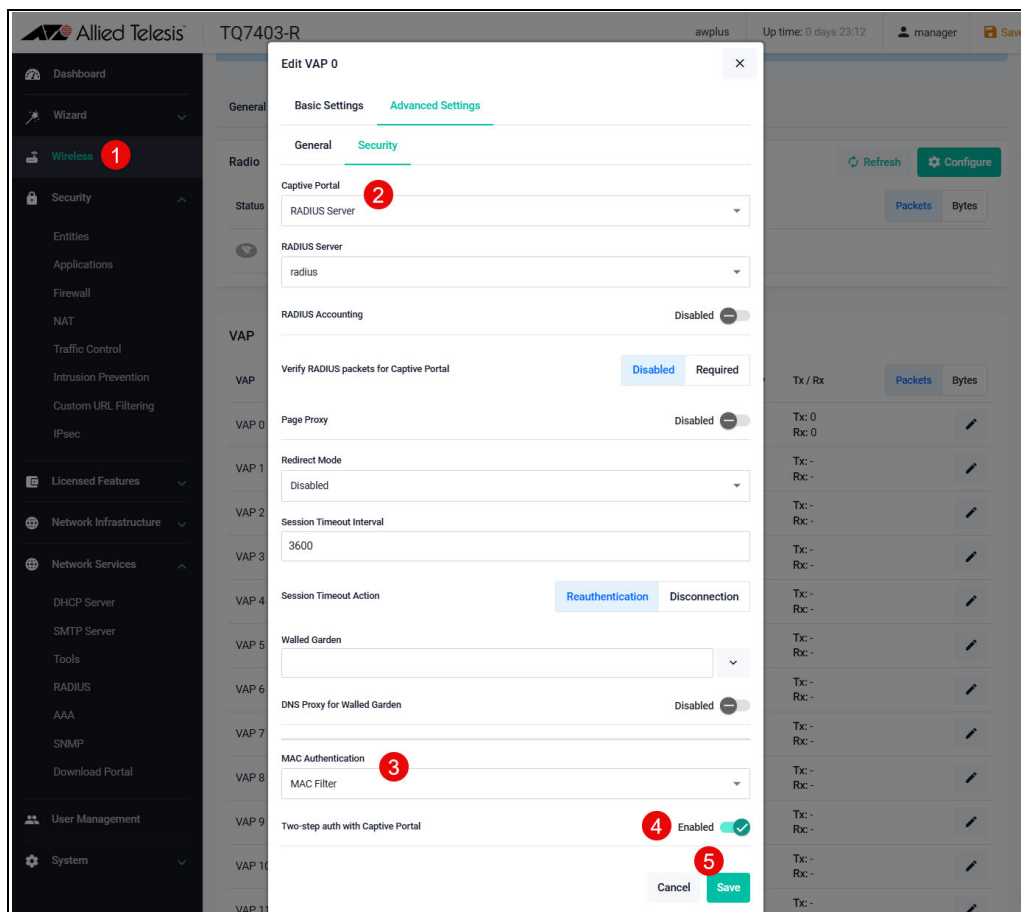
This means that if MAC authentication:

- fails, the STA can still connect using the Captive Portal.
- succeeds, the STA can connect without needing Captive Portal authentication.

This allows web-authenticated devices to stay authenticated, even if they move between different switches.

To configure this:

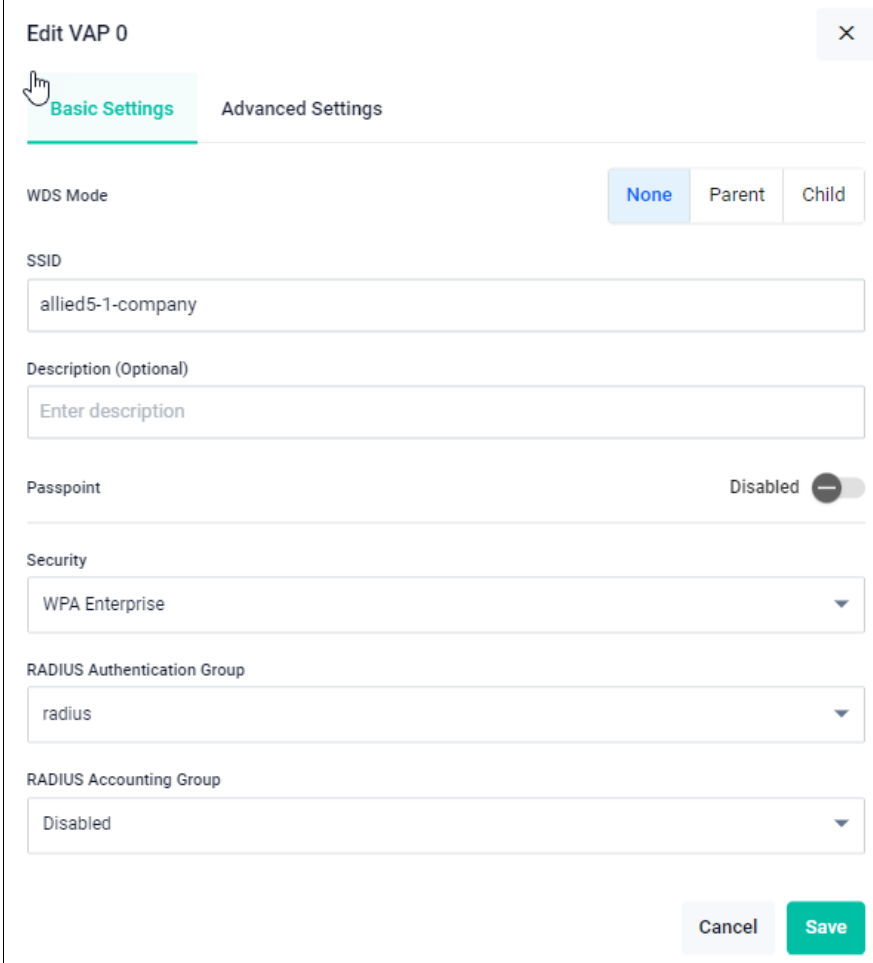
1. Go to **Wireless > Radio X > VAP X > Advanced Settings > Security**
2. Enable **Captive Portal**
3. Select **MAC Authentication > MAC Filter**
4. Enable **Two-step auth with Captive Portal**
5. Click **Save**.



Configuration examples

The following two examples show VAP configuration for a company wireless network and VAP configuration for a guest wireless network.

Example 1 This example shows VAP configuration for a company wireless network called allied5-1-company, using WPA Enterprise security. First configure the recommended Basic Settings:



The screenshot displays the 'Edit VAP 0' configuration window. At the top, there are two tabs: 'Basic Settings' (selected) and 'Advanced Settings'. Below the tabs, the configuration is organized into sections:

- WDS Mode:** Three buttons labeled 'None', 'Parent', and 'Child'. 'None' is highlighted in blue.
- SSID:** A text input field containing 'allied5-1-company'.
- Description (Optional):** A text input field with the placeholder text 'Enter description'.
- Passpoint:** A toggle switch labeled 'Disabled'.
- Security:** A dropdown menu showing 'WPA Enterprise'.
- RADIUS Authentication Group:** A dropdown menu showing 'radius'.
- RADIUS Accounting Group:** A dropdown menu showing 'Disabled'.

At the bottom right of the window, there are two buttons: 'Cancel' and 'Save'.

Next, configure advanced settings. The following example shows the recommended VAP General Advanced Settings for this company wireless network:

The screenshot displays the 'Edit VAP 0' configuration window. At the top, there are tabs for 'Basic Settings' and 'Advanced Settings', with 'Advanced Settings' being the active tab. Under 'Advanced Settings', there are sub-tabs for 'General', 'Security', and 'Fast Roaming', with 'General' selected. The configuration items are as follows:

- Hide SSID: Disabled (toggle)
- Band Steering: Enabled (toggle)
- Duplicate AUTH received: Disconnect (selected), Ignore
- Association Advertisement: Enabled (toggle)
- Proxy ARP: Enabled (toggle)
- DTIM Period: 1 (text input)
- Pre-allocated Airtime Percentage: 50 (text input)
- Inactivity Timer: 300 (text input)
- BSS Transition Management: Disabled (toggle)
- Client Isolation: Disabled (selected), Enabled (VAP)
- Multicast to Unicast Conversion: Disabled (toggle)

At the bottom right, there are 'Cancel' and 'Save' buttons.

In this example above, Band Steering, Association Advertisement and Proxy ARP are enabled.

In this example MAC Authentication is enabled using a RADIUS server:

Edit VAP 0 ✕

Basic Settings **Advanced Settings**

General **Security** Fast Roaming

Broadcast Key Refresh Interval

Dynamic VLAN Disabled

Pre Authentication Enabled

Session Key Refresh Interval

Session Key Refresh Action Reauthentication Disconnection

WPA Versions
WPA2

Encryption Protocol

Captive Portal

MAC Authentication

MAC Auth Username Separator

Example 2 This example shows VAP configuration for a guest wireless network called allied1-5-company-guest, using WPA Personal security. First configure the recommended Basic Settings:

The screenshot displays the 'Edit VAP 0' configuration window. At the top, there are two tabs: 'Basic Settings' (selected) and 'Advanced Settings'. Below the tabs, the 'WDS Mode' is set to 'None'. The 'SSID' field contains 'allied1-5-company-guest'. The 'Description (Optional)' field contains 'Guest'. The 'Passpoint' toggle is set to 'Disabled'. The 'Security' dropdown menu is set to 'WPA Personal'. The 'Key' field contains 'mysecretkey'. At the bottom right, there are 'Cancel' and 'Save' buttons.

Field	Value
WDS Mode	None
SSID	allied1-5-company-guest
Description (Optional)	Guest
Passpoint	Disabled
Security	WPA Personal
Key	mysecretkey

Next, configure advanced settings. The following example shows the recommended VAP General Advanced Settings for this guest network:

The screenshot displays the 'Edit VAP 0' configuration window. The 'Advanced Settings' tab is active, and the 'General' sub-tab is selected. The settings are as follows:

Setting	Value/Status
Hide SSID	Disabled
Band Steering	Disabled
Duplicate AUTH received	Disconnect / Ignore
Association Advertisement	Enabled
Proxy ARP	Enabled
DTIM Period	1
Pre-allocated Airtime Percentage	50
Inactivity Timer	300
BSS Transition Management	Disabled
Client Isolation	Enabled (VAP)
Multicast to Unicast Conversion	Enabled

Buttons: Cancel, Save

In this example Association Advertisement, Proxy ARP and Client Isolation are enabled.

The following example shows the recommended VAP Security Advanced Settings for a guest network:

The screenshot displays the 'Edit VAP 0' configuration interface. At the top, there are tabs for 'Basic Settings' and 'Advanced Settings', with 'Advanced Settings' being the active tab. Below this, there are sub-tabs for 'General', 'Security', and 'Fast Roaming', with 'Security' being the active sub-tab. The configuration fields are as follows:

- Broadcast Key Refresh Interval:** A text input field containing the value '0'.
- WPA Versions:** A dropdown menu showing 'WPA2' and 'WPA3' as selected options.
- Encryption Protocol:** A dropdown menu set to 'CCMP'.
- Captive Portal:** A dropdown menu set to 'RADIUS Server'.
- RADIUS Server:** A dropdown menu set to 'radius'.
- RADIUS Accounting:** A toggle switch labeled 'Disabled'.
- Page Proxy:** A toggle switch labeled 'Disabled'.
- Redirect Mode:** A dropdown menu set to 'Disabled'.
- Session Timeout Interval:** A text input field containing the value '3600'.
- Session Timeout Action:** Two buttons, 'Reauthentication' (highlighted in blue) and 'Disconnection'.

In this example Captive Portal is enabled using a RADIUS server.

Monitoring your wireless network

From the **Wireless** menu you can see the status of wireless APs and connected clients. You can display this information from the **Clients** and **Neighbor APs** tabs.

- Clients**
1. Click on the **Clients** tab to display information about your clients.
 2. Click on the **View** button to display the up-to-date current detail.

Wireless Apply Config

You can configure the wireless settings. Press the 'Apply Config' to apply wireless configurations to this device. Also, you can monitor clients information that connect to this device and neighbor APs information.

General Radio1 Radio2 **Clients** Neighbor APs

Search View Disconnect Clients

Last Update : 2024-08-15 10:54:29 am Total Number of Associated Clients : 4

<input type="checkbox"/>	IP Address	MAC Address	SSID	NetBIOS	Channel	Signal(dBm)	Tx Rate	Rx Rate	Age
<input type="checkbox"/>	192.168.10.10	10f6.0a8d.41c2	allied24-IT	TS06-L11	4	-22	206	195	2m 59s
<input type="checkbox"/>	192.168.10.13	44af.2815.3dda	allied5-Sales	DANIELB-D10	64	-27	172	286	1s
<input type="checkbox"/>	192.168.10.12	72bc.11ce.5bbb	allied24-IT		4	-28	229	206	1m 16s
<input type="checkbox"/>	192.168.10.11	ac12.0315.e479	allied24-IT	SYSTEST23-L10	4	-31	258	175	2m 46s

This updates the client status including the following: IP Address, MAC Address, SSID, netBIOS, Channel, Signal (dBm), Tx Rate (transmitted rate), Tr Rate (received rate) and Age for each client.

3. Click on the **down arrow** beside the field that you want to sort by in ascending or descending order.

The example below shows a selected client 192.168.1.4 with the default sorting which is by IP address:

Wireless Apply Config

You can configure the wireless settings. Press the 'Apply Config' to apply wireless configurations to this device. Also, you can monitor clients information that connect to this device and neighbor APs information.

General Radio1 Radio2 **Clients** Neighbor APs

Search View Disconnect Clients

Last Update : 2024-08-15 10:54:29 am Total Number of Associated Clients : 4

<input type="checkbox"/>	IP Address	MAC Address	SSID	NetBIOS	Channel	Signal(dBm)	Tx Rate	Rx Rate	Age
<input type="checkbox"/>	192.168.10.10	10f6.0a8d.41c2	allied24-IT	TS06-L11	4	-22	206	195	2m 59s
<input type="checkbox"/>	192.168.10.13	44af.2815.3dda	allied5-Sales	DANIELB-D10	64	-27	172	286	1s
<input checked="" type="checkbox"/>	192.168.10.12	72bc.11ce.5bbb	allied24-IT		4	-28	229	206	1m 16s
<input type="checkbox"/>	192.168.10.11	ac12.0315.e479	allied24-IT	SYSTEST23-L10	4	-31	258	175	2m 46s

4. Click the **Disconnect Clients** button to disconnect a selected client.

Disconnect Clients ✕

Are you sure you want to disconnect the selected clients?

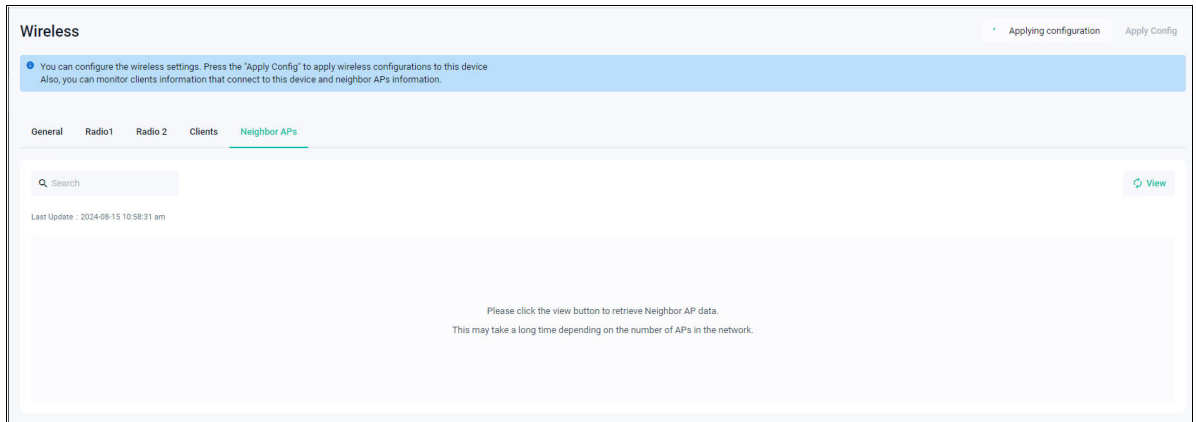
Cancel Disconnect

You cannot use the AP to reconnect a client. Instead, the client has to initiate reconnecting from the client device.

Neighbor APs

To display information about neighboring APs in your wireless network:

1. Click on the **Neighbor APs** tab to display information about your neighboring APs.
2. Click on the **View** button to display up to date current detail:



The BSSID, SSID, Radio, Channel, Signal, Security and Detected time are displayed in a list that you can sort in ascending or descending order.

3. Click on the **down arrow** beside the field that you want to sort by in ascending or descending order.

The example below shows the Neighbor APs sorted by channel strength:

The screenshot shows the 'Neighbor APs' tab with a table of neighboring APs. The table columns are BSSID, SSID, Radio, Channel, Signal, Security, and Detected time. The Signal column is sorted in descending order, with values ranging from 75% to 53%. A green 'Apply Config' button is visible in the top right corner.

BSSID	SSID	Radio	Channel	Signal	Security	Detected time
001a.ebef.9060	DB-TQ-DV	1	12	75%	WPA2 PSK (CCMP)	2024-08-30 12:00 pm
0003.7ba.dbbc	MK-R1V15	1	10	74%	WPA2 Enterprise (CCMP)	2024-08-30 12:00 pm
001a.ebd5.2100	allied24	1	9	73%	WPA2 Enterprise (CCMP)	2024-08-30 12:00 pm
0003.7ba.dbad	MK-R1V0	1	10	73%	None	2024-08-30 11:55 am
00de.adbe.ef10	WART_6702_1017_R2V0	2	136	68%	None	2024-08-30 12:01 pm
000b.6bef.8520	Default-11111111	1	10	64%	None	2024-08-30 11:50 am
000b.6bef.8720	BranchB_R1V0	1	10	64%	Mixed WPA2/WPA3 PSK (CCMP)	2024-08-30 12:00 pm
000b.6bef.8724	BranchB_R1V4_Child	1	10	64%	WPA2 PSK (CCMP)	2024-08-30 12:00 pm
58e4.03d1.d6c0	BranchC_R1V0	1	10	63%	Mixed WPA2/WPA3 PSK (CCMP)	2024-08-30 12:00 pm
58e4.03d1.d6c1	BranchC_R1V1	1	10	63%	WPA2 PSK (CCMP)	2024-08-30 12:00 pm
58e4.03d1.d6c2	test-R1V2	1	10	63%	WPA2 Enterprise (CCMP)	2024-08-30 12:00 pm
58e4.03d1.d6c3	Branch-C-MAX-R1V3	1	10	63%	WPA2 PSK (CCMP)	2024-08-30 12:00 pm
000b.6bef.8723	Branch-B-MAX-R1V3	1	10	63%	WPA2 PSK (CCMP)	2024-08-30 12:00 pm

Reset button

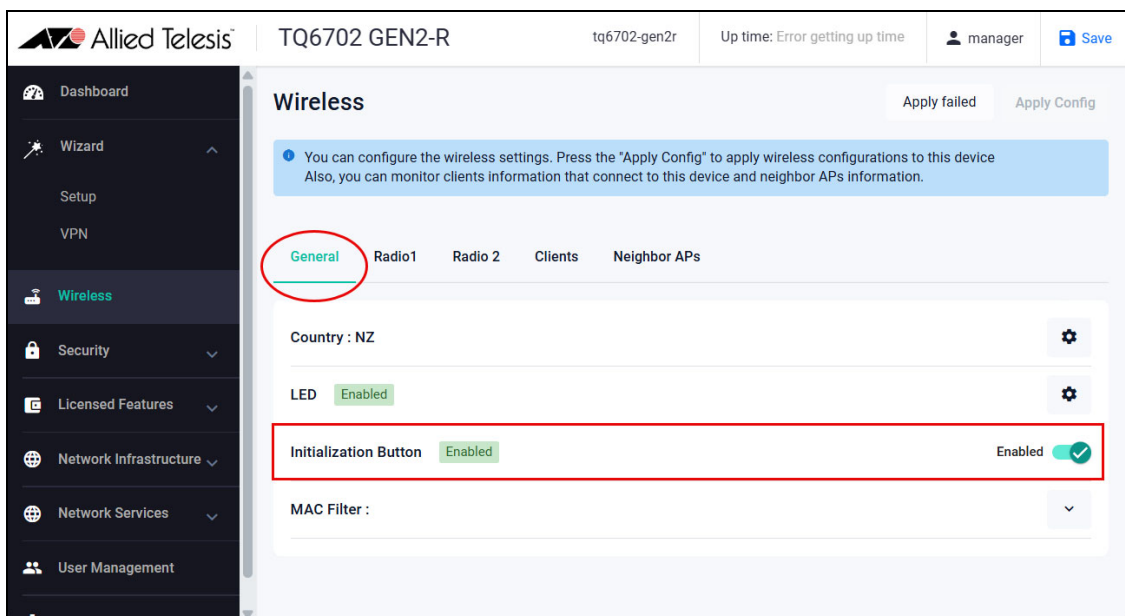
The Reset button is recessed and located to the left of the Power button. To press it, use a small pointed tool, such as a metal pin. Pressing it for:



- **over five seconds**, results in a reboot that will restore the configuration back to the equivalent of a factory reset (ready for an AMF Plus recovery). **This means you will lose your configuration and any files stored on your device.**
- **less than five seconds** reboots your device.



The **Initialization Button** displayed in the Device GUI **Wireless** page performs the same function as the Reset button, (factory reset). By default it is enabled.



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