Grandstream Networks, Inc.

GWN7600 Enterprise 802.11ac Wave-2 WiFi Access Point

User Manual

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The latest electronic version of this guide is available for download here:
http://www.grandstream.com/support

CAUTION

Changes or modifications to this product not expressly approved by Grandstream, or operation of this product in any way other than as detailed by this guide, could void your manufacturer warranty.

WARNING

Please make sure to power adapter with correct electrical specifications. Do not use a different power adaptor with devices as it may cause damage to the products and void the manufacturer warranty.

FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

GNU GPL INFORMATION

GWN7600 firmware contains third-party software licensed under the GNU General Public License (GPL). Grandstream uses software under the specific terms of the GPL. Please see the GNU General Public License (GPL) for the exact terms and conditions of the license.

Grandstream GNU GPL related source code can be downloaded from Grandstream web site:
http://www.grandstream.com/support/faq/gnu-general-public-license

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DOCUMENT PURPOSE

This document describes the basic concept and tasks necessary to use and configure your GWN7600. It covers also how to configure the GWN7600 via Web GUI in standalone mode, with other GWN7600 as Master/Slave architecture and more. The intended audiences of this document are network administrators. Please visit http://www.grandstream.com/support to download the latest "GWN7600 User Manual".

This guide covers following topics:

CHANGE LOG

This section documents significant changes from previous versions of the GWN7600. Only major new features or major document updates are listed here. Minor updates for corrections or editing are not documented here.

Firmware Version 1.0.1.36

- This is the initial version.

WELCOME

Thank you for purchasing Grandstream GWN7600 Enterprise Wireless Access Point. The GWN7600 is a mid-tier 802.11ac Wave-2 WiFi access point for small to medium sized businesses, multiple floor offices, commercial locations and branch offices. It offers dual-band 2x2:2 MU-MIMO with beam-forming technology and a sophisticated antenna design for maximum network throughput and expanded Wi-Fi coverage range. To ensure easy installation and management, the GWN7600 uses a controller-less distributed network management design in which the controller is embedded within the product's web user interface. This allows each access point to manage a network of up to 30 GWN76xx series APs independently without needing separate controller hardware/software and without a single point-of-failure. This wireless access point can be paired with any third party routers as well as Grandstream GWN series routers. With support for advanced QoS, low-latency real-time applications, 450+ concurrent client devices per AP and dual Gigabit network ports with PoE, the GWN7600 is an ideal WiFi access point for medium wireless network deployments with medium-to-high user density.

⚠ **Caution:**

Changes or modifications to this product not expressly approved by Grandstream, or operation of this product in any way other than as detailed by this User Manual, could void your manufacturer warranty.

PRODUCT OVERVIEW

Technical Specifications

Table 1: GWN7600 Technical Specifications

Wi-Fi Standards	IEEE 802.11 a/b/g/n/ac (Wave-2)
Antennas	2x 2.4 GHz, gain 3 dBi, internal antenna 2x 5 GHz, gain 3 dBi, internal antenna
Wi-Fi Data Rates	IEEE 802.11ac: 6.5 Mbps to 867 Mbps IEEE 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE 802.11n: 6.5 Mbps to 300 Mbps; 400 Mbps with 256-QAM on 2.4GHz IEEE 802.11b: 1, 2, 5.5, 11 Mbps IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps *Actual throughput may vary depending on many factors including environmental conditions, distance between devices, radio interference in the operating environment and mix of devices in the network.
Frequency Bands	2.4GHz radio : 2.400 - 2.4835 GHz 5GHz radio: 5.150 - 5.250 GHz, 5.725 - 5.850 GHz
Channel Bandwidth	2.4G: 20 and 40 MHz 5G: 20,40 and 80 MHz
Wi-Fi and System Security	WEP, WPA/WPA2-PSK, WPA/WPA2-Enterprise (TKIP/AES), anti-hacking secure boot and critical data/control lockdown via digital signatures, unique security certificate and random default password per device.
MIMO	2x2:2 2.4GHz (MIMO), 2x2:2 5GHz (MU-MIMO)
Coverage Range	Up to 541ft. (165 meters)
Maximum TX Power	5G: 22dBm 2.4G: 22dBm *Maximum power varies by country, frequency band and MCS rate.
Receiver Sensitivity	**2.4G** 802.11b:-99dBm @1Mbps,-91dBm @11Mbps;802.11g:-93dBm @6Mbps,-75dBm @54Mbps; 80.11n 20MHz:-72dBm @MCS7;802.11n 40MHz:-69dBm @MCS7

	5G 802.11a:-91dBm @6Mbps,-74dBm @54Mbps;802.11ac 20MHz:-67dBm @MCS8;802.11ac HT40:-63dBm @MCS9;802.11ac 80MHz:-60dBm @MCS9
BSSID	16 SSIDs per radio
Concurrent Clients	450+
Network Interfaces	2x autosensing 10/100/1000 Base-T Ethernet Ports
Auxiliary Ports	1x USB 2.0 port, 1x Reset Pinhole, 1x Kensington lock
Mounting	Indoor wall mount or ceiling mount, kits included
LEDs	3 tri-color LEDs for device tracking and status indication
Network Protocols	IPv4, 802.1Q, 802.1p, 802.1x, 802.11e/WMM
QoS	802.11e/WMM, VLAN, TOS
Network Management	Embedded controller in GWN7600 allows it to auto-discover, auto-provision and manage up to 30 GWN76xxs in a network
Power and Green Energy Efficiency	DC Input: 24VDC/1A Power over Ethernet (802.3af) compliant Maximum Power Consumption: 13.8W
Temperature & Humidity	Operation: 0°C to 50°C Storage: -10°C to 60°C Humidity: 10％ to 90% Non-condensing
Physical	Unit Dimension: 205.3 x 205.3 x 45.9mm; Unit Weight: 526g Unit + Mounting Kits Dimension: 205.3 x 205.3 x 53.9mm; Unit + Mounting Kits Weight: 610g Entire Package Dimension: 228.5*220*79mm; Entire Package Weight: 854g
Package Content	GWN7600 Wave-2 802.11ac Wireless AP, Mounting Kits, Quick Installation Guide
Compliance	FCC, CE, RCM, IC

INSTALLATION

Before deploying and configuring the GWN7600, the device needs to be properly powered up and connected to the network. This section describes detailed information on installation, connection and warranty policy of the GWN7600.

Equipment Packaging

Table 2: GWN7600 Equipment Packaging

Main Case	Yes (1)
Mounting Bracket	Yes (1)
Ceiling Mounting Bracket	Yes (1)
Plastic Expansion Bolt	Yes (3)
M3 NUT	Yes (3)
Screw (PM 3 x 50)	Yes (3)
Screw (PM 3.5 x 20)	Yes (3)
Quick Installation Guide	Yes (1)
GPL License	Yes (1)

GWN7600 Access Point Ports

Figure 1: GWN7600 Ports

Table 3: GWN7600 Ports Description

Port	Description
Power	Power adapter connector (24V, 1A).
NET/PoE	Ethernet RJ45 port (10/100/1000Mbps) supporting PoE (802.3af).
NET	Ethernet RJ45 port (10/100/1000Mbps) to your router or another GWN7600 series.
	USB 2.0 port (for future IOT & location based applications).
RESET	Factory reset button. Press for 7 seconds to reset factory default settings. A quick press on reset button will just reboot the unit.

Power and Connect GWN7600 Access Point

Step 1:

Connect one end of a RJ-45 Ethernet cable into the NET or PoE/NET port of the GWN7600.

Step 2:

Connect the other end of the Ethernet cable(s) into a LAN port to your Network.

Step 3:

Connect the 24V DC power adapter into the power jack on the back of the GWN7600. Insert the main plug of the power adapter into a surge-protected power outlet.
Note: GWN7600 can be powered using PoE (802.3af) switch via PoE/NET port. In this scenario, GWN7600 should be connected to the router using NET port.

Step 4:

Wait for the GWN7600 to boot up and acquire an IP address from the DHCP Server.

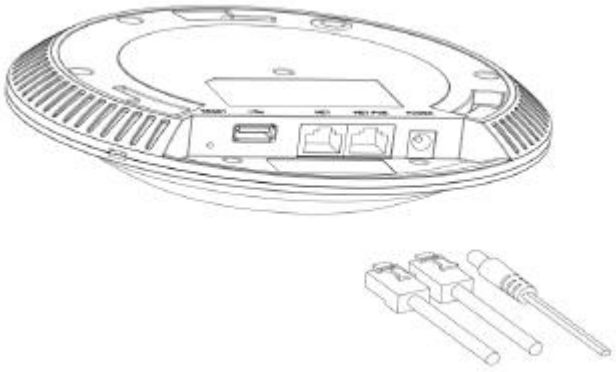


Figure 2: Connecting GWN7600

Warranty

If the GWN7600 Wireless Access Point was purchased from a reseller, please contact the company where the device was purchased for replacement, repair or refund. If the device was purchased directly from Grandstream, contact our Technical Support Team for a RMA (Return Materials Authorization) number before the product is returned. Grandstream reserves the right to remedy warranty policy without prior notification.

Wall and Ceiling Mount Installation

GWN7600 can be mounted on the wall or ceiling, please refer to the following steps for the appropriate installation.

Wall Mount

Step1:

Position the mounting bracket at the desired location on the wall with the arrow pointing up.

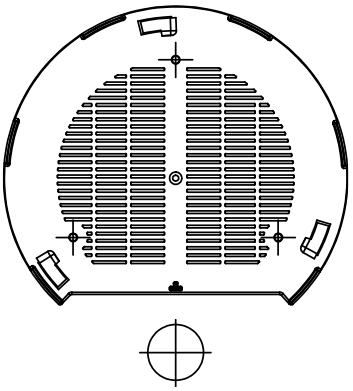


Figure 3: Wall Mount – Steps 1 & 2

Step 2:

Use a pencil to mark the four mounting holes (screw holes DIA 5.5mm, reticle hole DIA 25mm).

Step 3:

Insert screw anchors into the 5.5 mm holes. Attach the mounting bracket to the wall by inserting the screws into the anchors.

Step 4:

Connect the power cable and the Ethernet cable (RJ45) to the correct ports of your GWN7600.

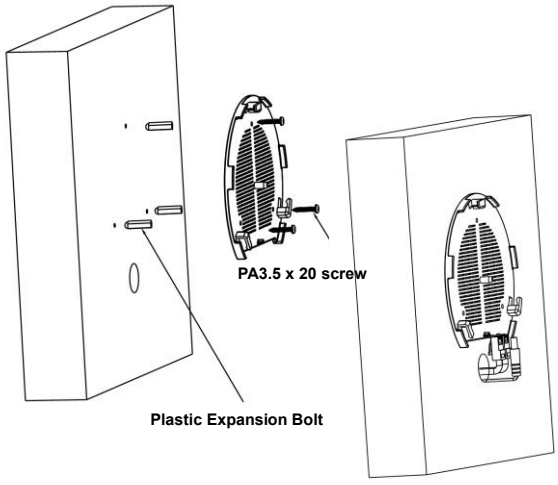


Figure 4: Wall Mount – Steps 3 & 4

Step 5:

Align the arrow on the GWN7600AP with the arrow on the locking tab of the mounting bracket and ensure that your GWN is firmly seated on the mounting bracket.

Step 6:

Turn the GWN clockwise until it locks into place and fits the locking tab.

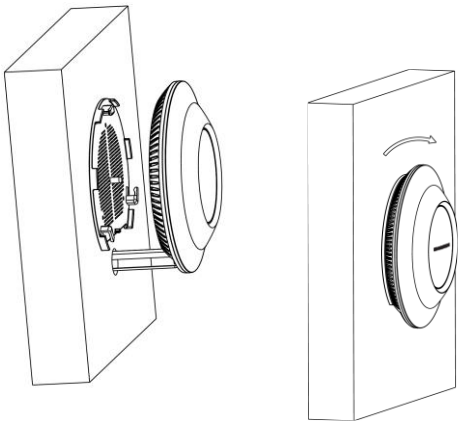


Figure 5: Wall Mount – Steps 5 & 6

Ceiling Mount

Step 1:

Remove the ceiling tile.

Step 2:

Place the ceiling backing plate in the center of the ceiling tile and mark the mounting screw holes (screw holes DIA 5.5mm, reticle hole DIA 25mm).

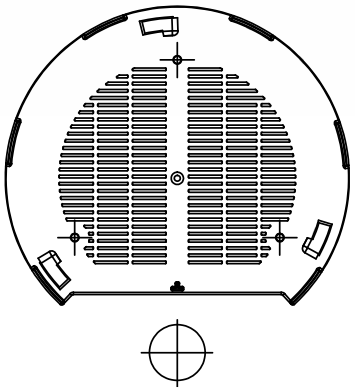


Figure 6: Ceiling Mount – Steps 1 & 2

Step 3:

Insert the screws through the mounting bracket.

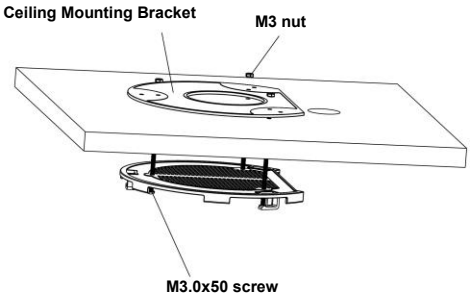


Figure 7: Ceiling Mount – Step 3

Step 4:

Connect the power cable and the Ethernet cable (RJ45) to the correct ports of your GWN7600.

Step 5:

Align the arrow on the GWN7600AP with the arrow on the locking tab of the mounting bracket and ensure that your GWN is firmly seated on the mounting bracket and connect the network and power cables.

Step 6:

Turn the GWN clockwise until it locks into place and fits the locking tab.

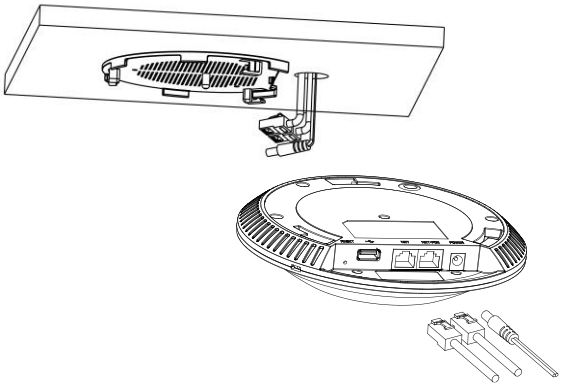


Figure 8: Ceiling Mount – Step 4

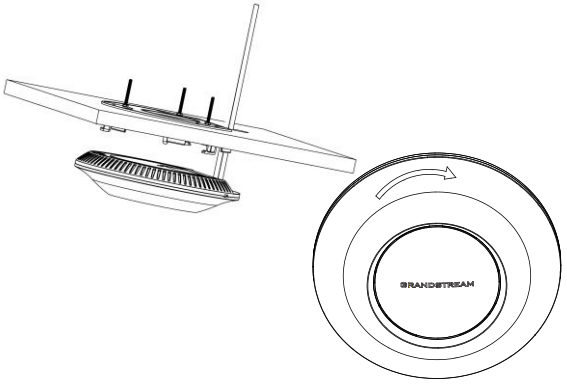


Figure 9: Ceiling Mount – Steps 5 & 6

Note:

Ceiling mounting is recommended for optimal coverage performance.

GETTING STARTED

The GWN7600 Wireless Access Point provides an intuitive web GUI configuration interface for easy management to give users access to all the configurations and options for the GWN7600's setup.

This section provides step-by-step instructions on how to read LED patterns, discover the GWN7600 and use its Web GUI interface.

LED Patterns

The panel of the GWN7600 has different LED patterns for different activities, to help users read the status of the GWN7600 whether it's powered up correctly, provisioned, in upgrading process and more, for more details please refer to the below table.

Table 4: LED Patterns

LED Status	Indication
OFF	Unit is powered off or abnormal power supply.
Solid green	Unit is powered on.
Blinking green	Firmware update in progress.
Solid green	Firmware update successful.
Solid red	Firmware update failed.
Blinking purple	Unit not provisioned.
Blinking blue	Unit provisioning in progress.
Solid blue	Unit is provisioned successfully.

Discover the GWN7600

Once the GWN7600 is powered up and connected correctly to the Network, users can discover the GWN7600 using one of the below methods:

Method1: Discover the GWN7600 using its MAC address

1. Locate the MAC address on the MAC tag of the unit, which is on the underside of the device, or on the package.
2. From a computer connected to same Network as the GWN7600, type in the following address using the GWN7600's MAC address on your browser https://gwn_<mac>.local
   For example, if a GWN7600 has the MAC address **00:0B:82:8B:58:30**, this unit can be accessed by typing https://gwn_000b828b5830.local/ on the browser.

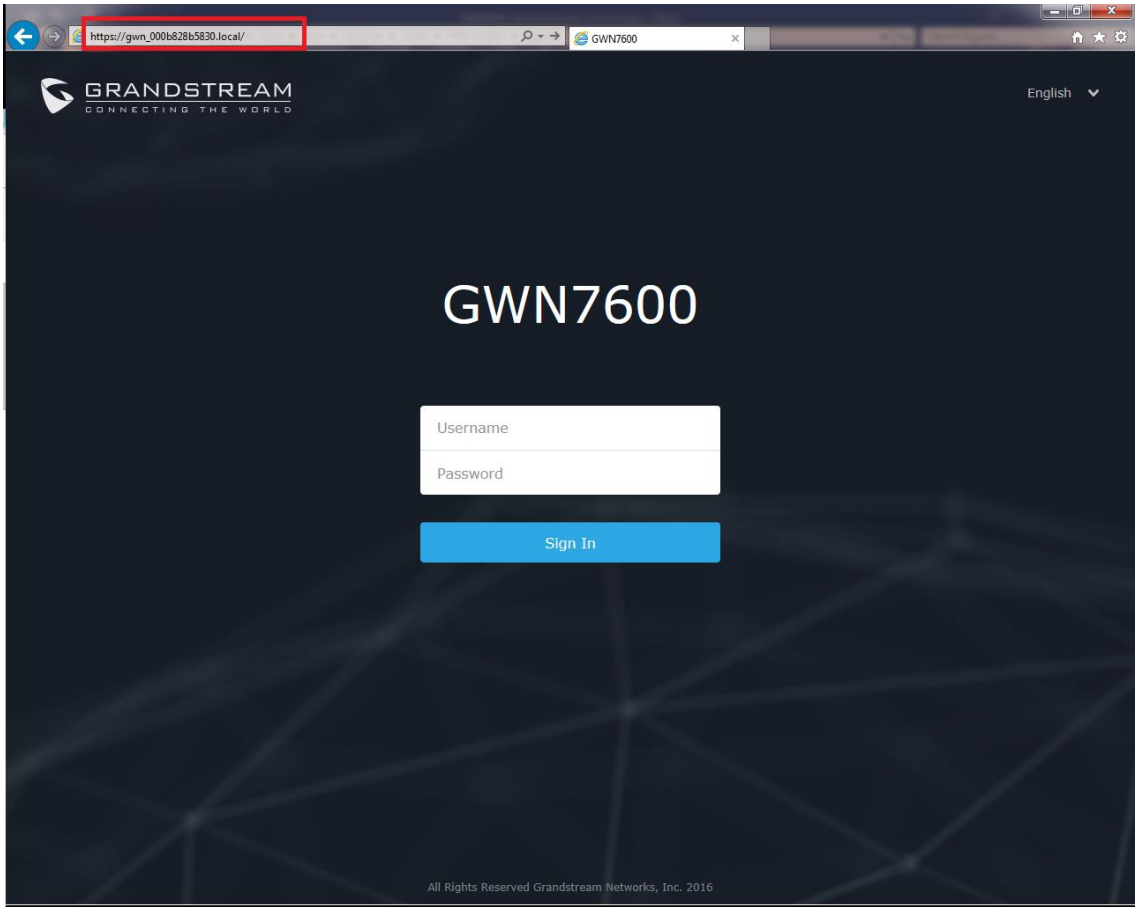


Figure 10: Discover the GWN7600 using its MAC Address

Method 2: Discover the GWN7600 using GWN Discovery Tool

1. Download and install **GWN Discovery Tool** from the following link: http://www.grandstream.com/support/tools
2. Open the GWN Discovery Tool, click on **Select** to define the network interface, then click on **Scan**.
3. The tool will discover all GWN7600 Access Points connected on the network showing their MAC, IP addresses and firmware version.
4. Click on **Manage Device** to be redirected directly to the GWN7600's configuration interface, or type in manually the displayed IP address on your browser.

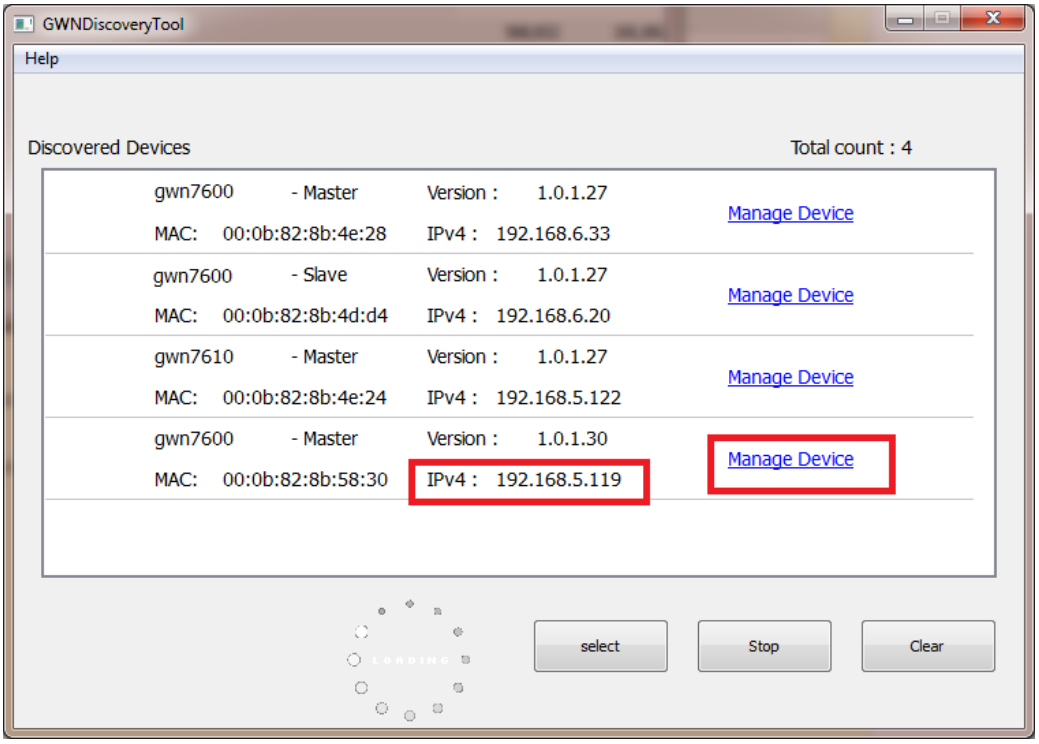


Figure 11: GWN Discovery Tool

Use the Web GUI

Users can access then the GWN7600 using its WebGUI, the following sections will explain how to access and use the Web Interface.

Access Web GUI

The GWN7600 embedded Web server responds to HTTPS GET/POST requests. Embedded HTML pages allow users to configure the device through a Web browser such as Microsoft IE, Mozilla Firefox, Google Chrome and etc.

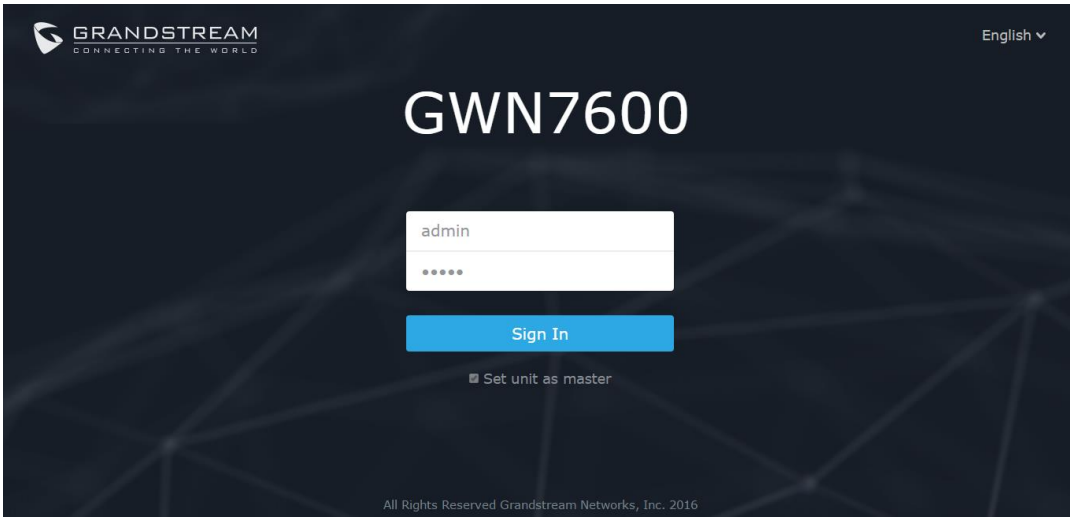


Figure 12: GWN7600 Web GUI Login Page

To access the Web GUI:

1. Make sure to use a computer connected to the same local Network as the GWN7600.
2. Ensure the device is properly powered up.
3. Open a Web browser on the computer and type in the URL using the MAC address as shown in Discover the GWN7600 or the IP address using the following format:

   https://IP_Address

4. Enter the administrator's login and password to access the Web Configuration Menu. The default administrator's username and password are "admin" and "admin".

WEB GUI Languages

Currently the GWN7600 series web GUI supports ***English*** and ***Simplified Chinese.***
Users can select the displayed language at the upper right of the web GUI either before or after logging in.

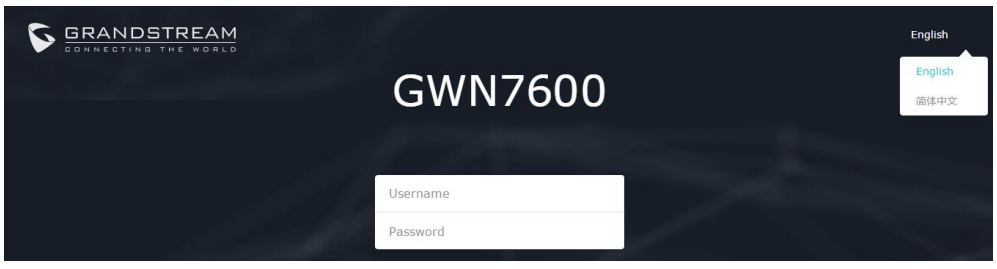


Figure 13: GWN7600 Web GUI Language (Login page)

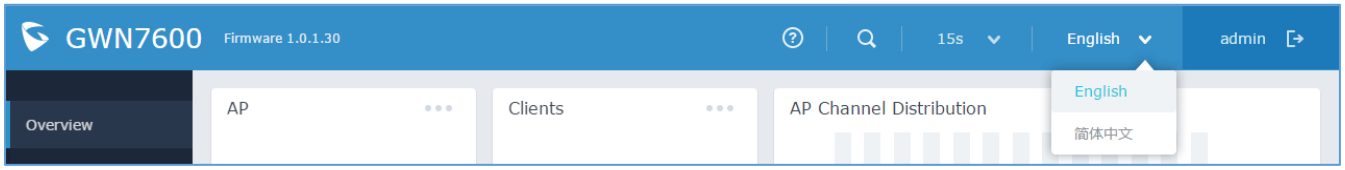


Figure 14: GWN7600 Web GUI Language (Web Interface)

Overview Page

Overview is the first page shown after successful login to the GWN7600's Web Interface. Overview page provides an overall view of the GWN7600's information presented in a Dashboard style for easy monitoring.

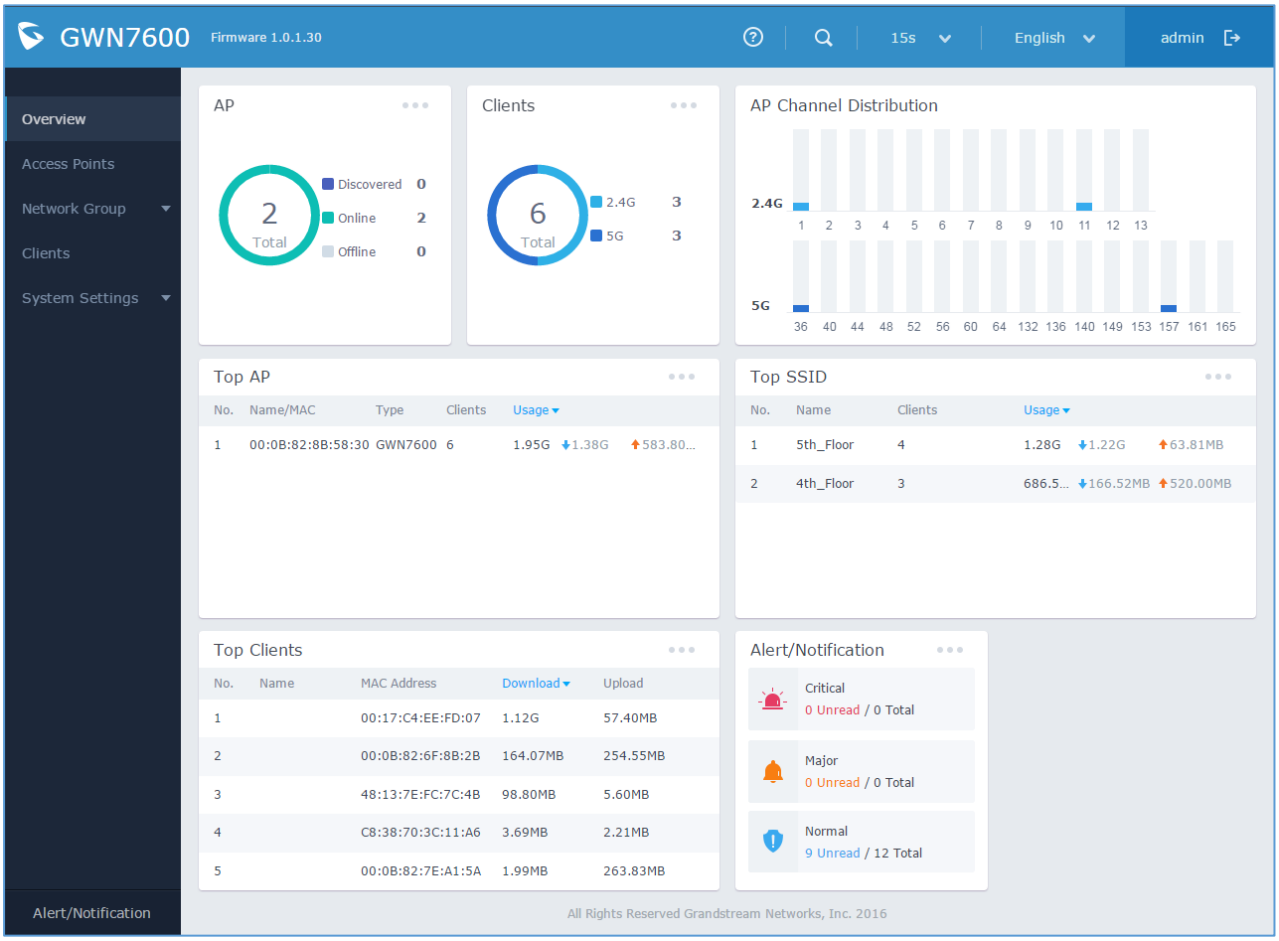


Figure 15: GWN7600's Dashboard

Users can quickly see the status of the GWN7600 for different items, please refer to the following table for each item:

AP	Shows the number of Access Points that are Discovered, Paired(Online) and Offline. Users may click on ••• to go to Access Points page for basic and advanced configuration options for the APs
Clients	Shows the total number of connected clients, and a count for clients connected to each Channel. Users may click on ••• to go to Clients page for more options.
AP Channel Distribution	Shows the Channel used for all APs that are paired with this Access Point.
Top AP	Shows the Top APs list, users may assort the list by number of clients connected to each AP or data usage combining upload and download. Users may click on ••• to go to Access Points page for basic and advanced configuration options for the APs.
Top SSID	Shows the Top SSIDs list, users may assort the list by number of clients connected to each SSID or data usage combining upload and download. Users may click on ••• to go to Network Group page for more options.
Top Clients	Shows the Top Clients list, users may assort the list of clients by their upload or download. Users may click on ••• to go to Clients page for more options.
Alert/Notification	Shows 3 types of Alert/Notifications: Critical, Major and Normal. Users can click ••• to pop up the list of Alert and Notifications.

Note that Overview page in addition to other tabs can be updated each 15s, 1min, 2min, 5min or Never by clicking  in the upper bar menu (Default is 15s).

Save and Apply Changes

When clicking on "Save" button after configuring or changing any option on the web GUI pages. A message mentioning the number of changes will appear on the upper menu (See Figure 16).

Click on  button to apply changes.

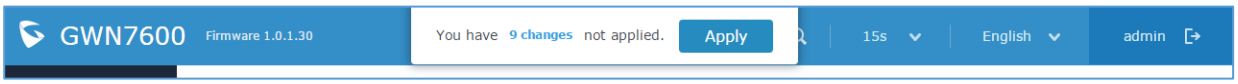


Figure 16: Apply Changes

GWN7600 CONFIGURATION

The GWN7600 can be used in Standalone mode, where it can act as Master Access Point Controller or in Slave mode and managed by another GWN7600/GWN7610 Master.
This section will describe how to use and configure the GWN7600 in standalone mode and in Master/Slaved Architecture.

Using GWN7600 as Standalone Access Point

GWN7600 can be used as standalone access point out of box, or after factory reset with Wi-Fi enabled by default.

Connect to GWN7600 Default Wi-Fi Network

After powering the GWN7600 and connecting it to the network, GWN7600 will broadcast a default SSID based on its MAC address **GWN[MAC's last 6 digits]** and a random password.
Note that GWN7600's default SSID and password information are printed on the MAC tag of the unit as shown on the below figure.

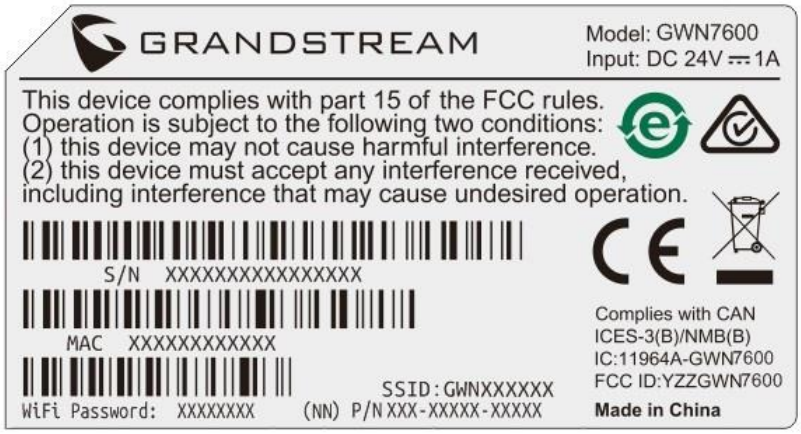


Figure 17: MAC Tag Label

Using GWN7600 as Master Access Point Controller

Master Mode allows a GWN7600 to act as an Access Point Controller managing other GWN76xx access points. This will allow users adding other access points under one controller and managing them in an easy and a centralized way.
Master/Slave mode is helpful with large installations that need more coverage area zones with the same controller.

Figure 18: Login Page

At factory reset, "**Set unit as Master**" will be checked by default, click on "**Sign In**" after typing the admin's username and password.

Warning:

"**Set unit as Master**" option will forbid the GWN7600 Access Point from being paired by other Master GWN76xx, and can only act as a Master Access point controller.
Users will need to perform a factory reset to the GWN7600, or unpair it from the initial GWN76xx in order to make it open to Master Access Point mode again.

Login Page

After login, users can use the Setup Wizard tool to go through the configuration setup, or exit and configure it manually. Setup Wizard can be accessed anytime by clicking on while on the web interface.

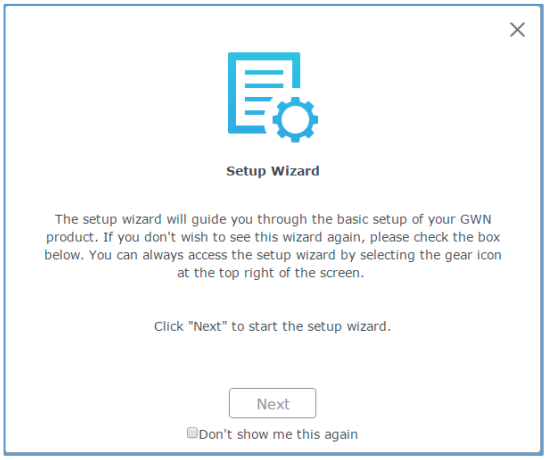


Figure 19: Setup Wizard

Discover and Pair Other GWN7600 Access Point

To Pair a GWN76xx access point connected to the same Network as the GWN7600 follow the below steps:

1. Connect to the GWN7600 Web GUI as Master and go to **Access Points.**

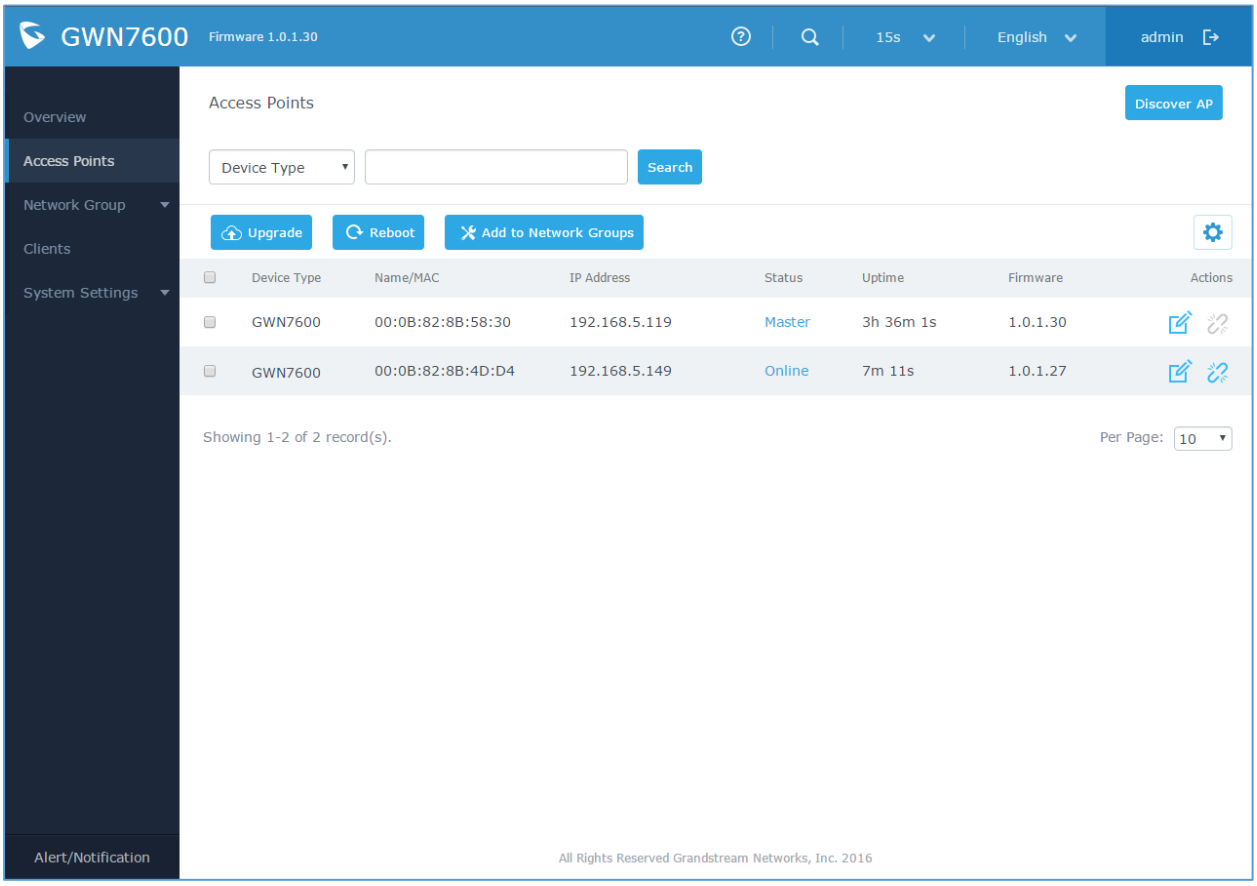


Figure 20: Discover and Pair GWN7600

2. Click on Discover AP to discover access points within GWN7600's Network, the following page will appear.

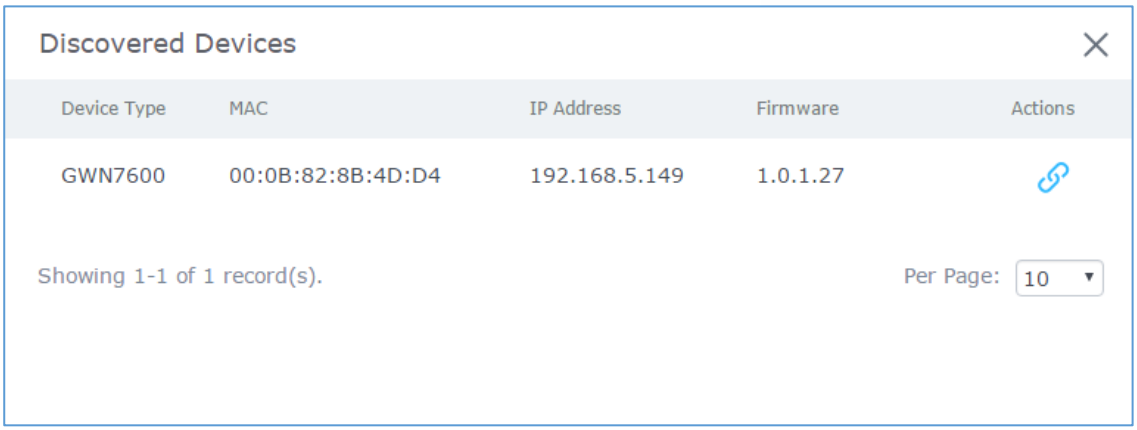


Figure 21: Discovered Devices

3. Click on Pair under Actions to pair the discovered access point as slave with the GWN7600 acting as Master.

4. The paired GWN7600 will appear Online, users can click on to unpair it.

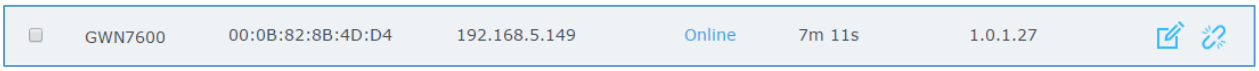


Figure 22:GWN7600 online

5. Users can click on next to Master or paired access point to check device configuration for its status, users connected to it and configuration. Refer to below table for Device Configuration tabs.

Table 5: Device Configuration

Status	Shows the device's status information such as Firmware version, IP Address, Link Speed, Uptime, and Users count via different Radio channels.
Users	Shows the connected users to the GWN7600 access point.
Configuration	• **Device Name:** Set GWN7600's name to be shown next to MAC address. • **Fixed IP:** Set a static IP for the GWN7600, default is unchecked. • **Frequency:** Set the GWN7600's frequency, it can be either 2.4GHz, 5GHz or Dual-band. • **Enable Band Steering:** When Frequency is set to Dual-Band, users can check this option to enable Band Steering on the

	Access Point, this will help redirecting clients to a radio band accordingly for efficient use and to benefit from the maximum throughput supported by the client. • **Mode:** Choose the mode for the frequency band, 802.11n/g/b for 2.4 GHz and 802.11ac for 5GHz. • **Channel Width:** Choose the Channel Width, note that wide channel will give better speed/throughput, and narrow channel will have less interference. 20MHz is suggested in very high density environment. • **40MHz Channel Location:** Configure the 40MHz channel location when using 20MHz/40MHz in Channel Width, users can set it to be Secondary below Primary, Primary below Secondary or Auto. • **Channel:** Select Auto, or a specified channel, default is Auto. Note that the proposed channels depend on **Country** Settings under "System Settings–>Maintenance". • **Enable Short Guard Interval:** Check to activate this option to half the guard interval (from 800ns to 400ns) ensuring that distinct transmissions do not interfere with one another, this will help increasing throughput. • **Active Spatial Streams:** Choose active spatial stream if Auto, 1 or 2 streams. • **Radio Power:** Set the Radio Power, it can be Low, Medium or High. • **Disable Beam Forming:** Check to disable beam forming to broadcast the signal to a wide area. • **Reboot Device:** Reboot the access point. • **Upgrade Device Firmware**: Upgrade the access point's firmware (Appearing only for Slave Access Points).

Note

If a GWN7600 is not being discovered or the pair icon is grey color, make sure that it is not being paired with another GWN76xx Access Point acting as Master Controller, if yes, users will need to unpair it first, or reset it to factory default settings in order to make it available for pairing by other GWN76xx Access Point Controller

Network Groups

When using GWN7600 as Master Access Point, users have the ability to create different Network groups and adding GWN7600 Slave Access Points.
Log in as Master to the GWN7600 WebGUI and go to **Network Group->Network Group.**

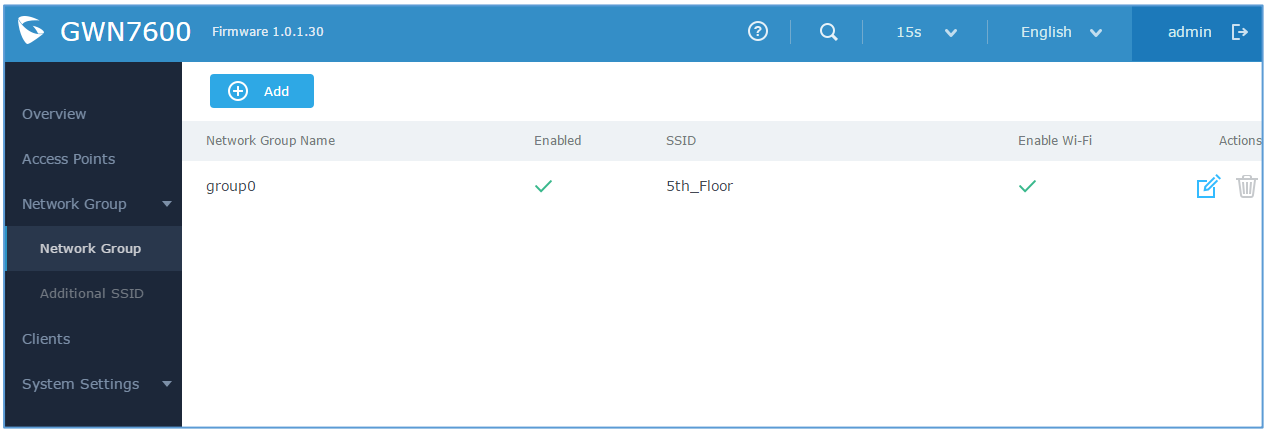


Figure 23: Network Group

The GWN7600 will have a default network group named group0, click on  to edit it, or click on  to add a new network group.

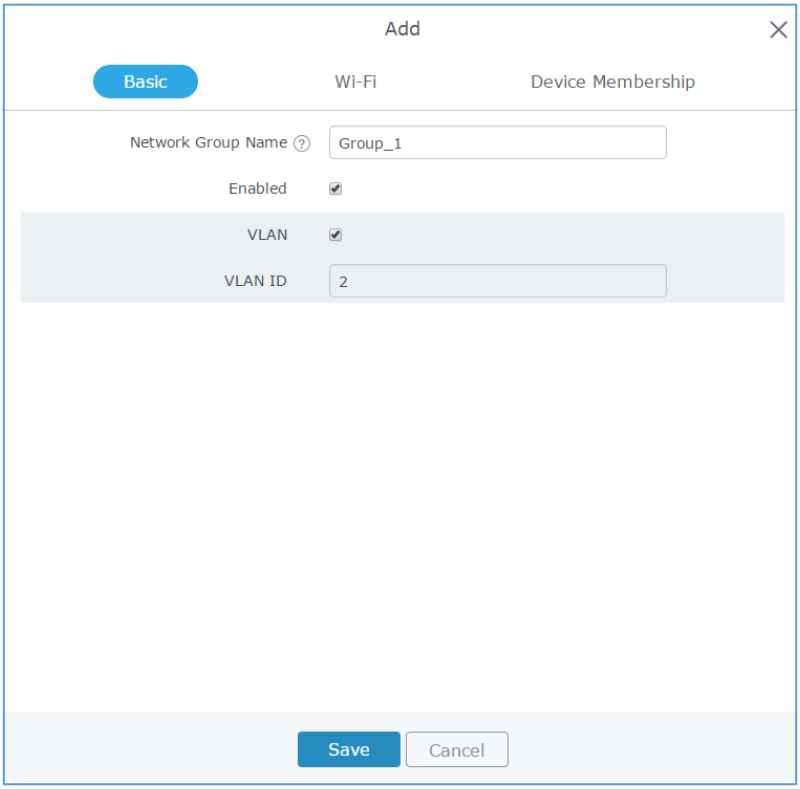


Figure 24: Add a New Network Group

When editing or adding a new network group, users will have three tabs to configure:

- **Basic:** Used to name the network group, and set a VLAN ID if adding a new network group
- **Wi-Fi:** Please refer to the below table for Wi-Fi tab options

Table 6: Wi-Fi

Enable Wi-Fi	Check to enable Wi-Fi for the network group.
SSID	Set or modify the SSID name.
SSID Hidden	Select to hide SSID.
Security Mode	Set the security mode for encryption, 5 options are available: WEP 64-bit, WEP 128-bit, WPA, WPA2 and Open).
Use MAC Filtering	Choose Blacklist/Whitelist to specify MAC addresses to be excluded/included from connecting to the zone's Wi-Fi. Default is Disabled.
Client Isolation	Client isolation feature blocks any TCP/IP connection between connected clients to GWN7600's WiFi access point. Client isolation can be helpful to increase security for Guest networks/Public Wi-Fi. If enabled, the default LAN Gateway's MAC address must be specified under **Gateway MAC Address** field. The clients will not be able to discover, ping or access other wireless devices connected to GWN7600's network groups and only access to the default gateway, which usually means Internet access. If disabled, clients will have full access to any device connected to the network, including wireless clients across network groups. Default is "Disabled".
Gateway MAC Address	This field is required when using **Client Isolation,** so users will not lose access to the Network (usually Internet). Type in the default LAN Gateway's MAC address (router's MAC address for instance) in hexadecimal separated by ":". Example: 00:0B:82:8B:4D:D8
RSSI Enabled	Check to enable RSSI function, this will lead the AP to disconnect users below the configured threshold in **Minimum RSSI (dBm).**

Minimum RSSI (dBm)	Enter the minimum RSSI value in dBm. If the signal value is smaller than the configured minimum value, the client will be disconnected. The input range is from “-94” or “-1”.

- **Device Membership:** Used to add or remove paired access points to the network group.

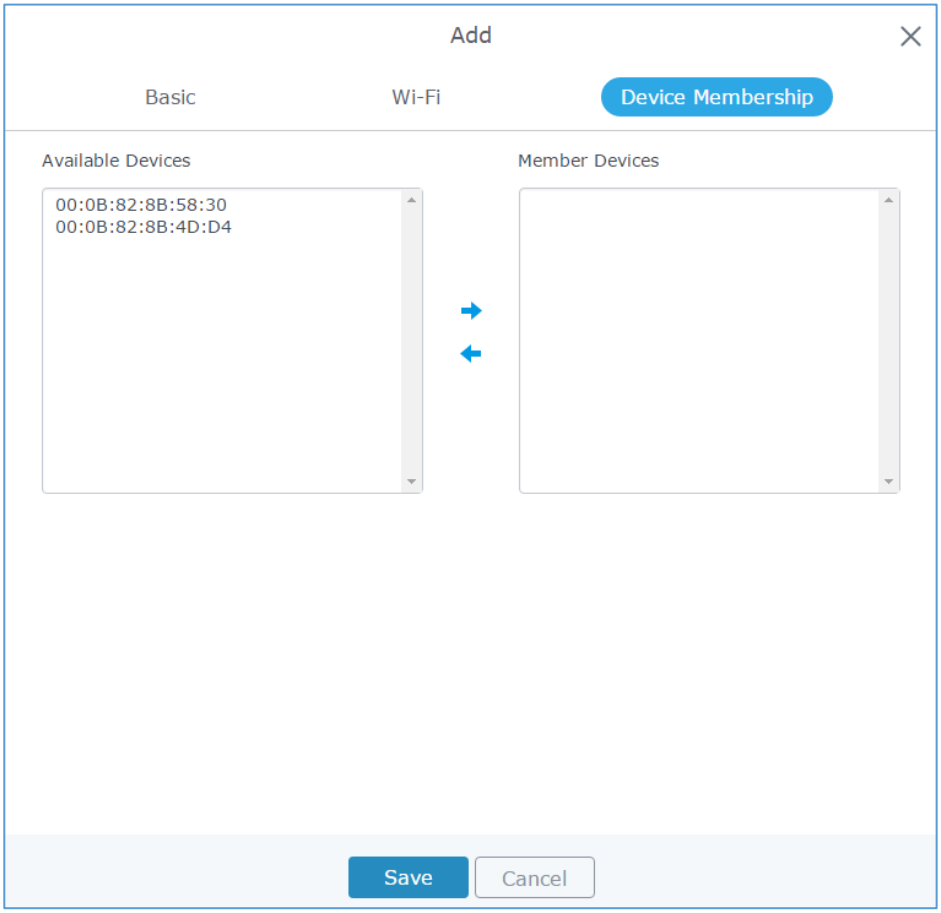


Figure 25: Device Membership

Click on → to add the GWN7600 to the network group, or click on ← to remove it.

❑ Users can also add a device to a Network Group from Access Points Page:

Select the desired AP to add to a Network Group and click on Add to Network Groups .

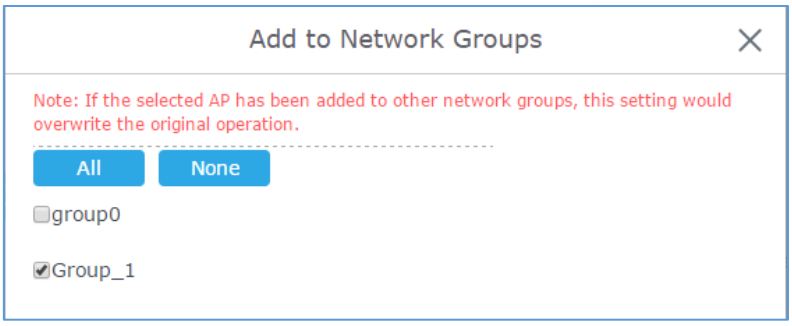


Figure 26: Add AP to Network Group

- Users can also create an additional SSID under the same group.

1. To create an additional SSID go to **Network Group->Additional SSID.**

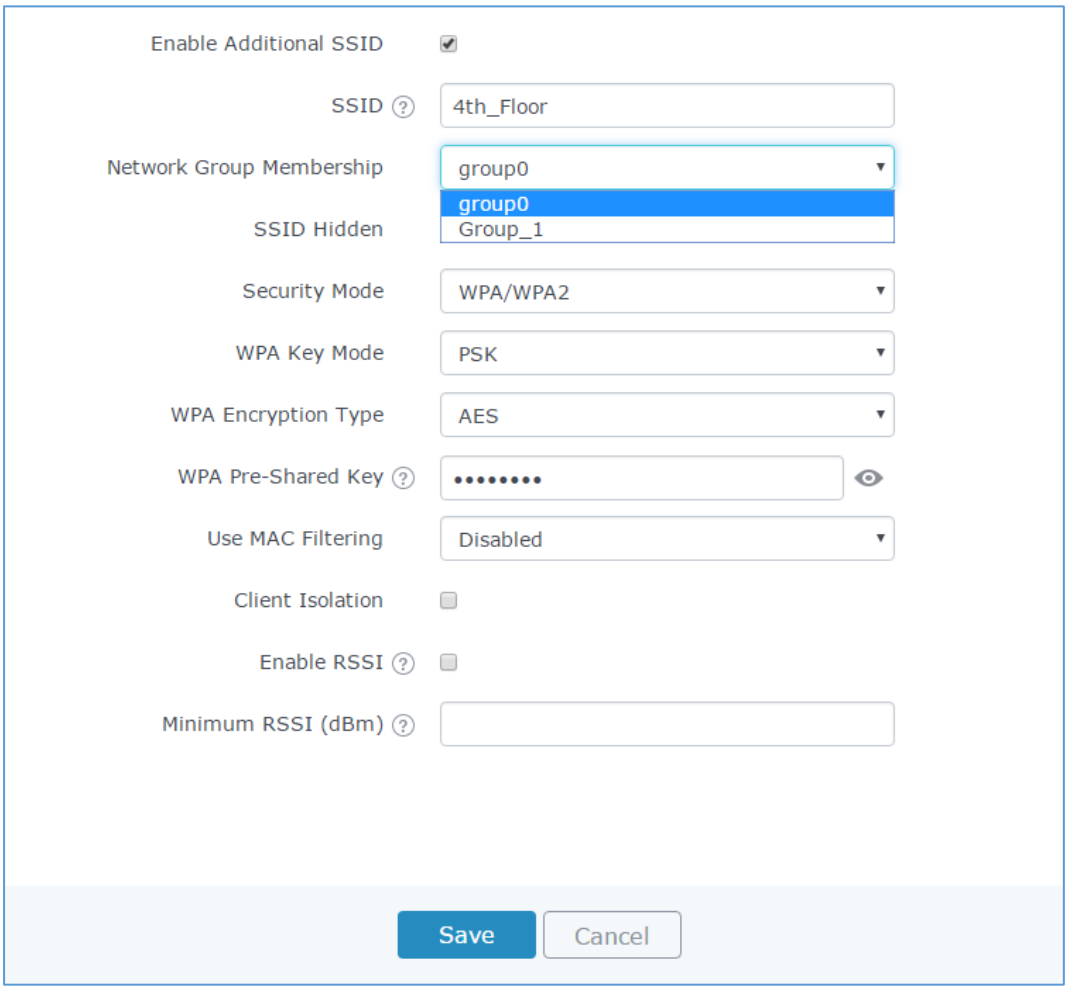


Figure 27: Additional SSID

2. Select one of the available network groups from **Network Group Membership** dropdown menu;

this will create an additional SSID with the same Device Membership configured when creating the main network group.

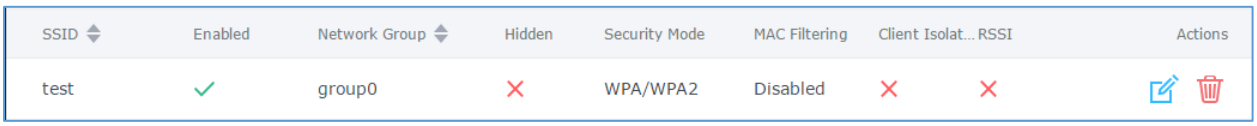


Figure 28: Additional SSID Created

3. Click on to delete the additional SSID, or to edit it.

Advanced Features

GWN7600 offers many features for managing and monitoring connected clients to network groups, as well as debugging and troubleshooting.

Capture

This section is used to capture packet traces from network groups interfaces for troubleshooting purpose or monitoring... Users will need to plug a USB device to one of the USB ports on the back of the GWN7600.

To access Capture page, go to **System Settings->Debug->Capture**

Click on Start to start capturing on a certain device plugged to the USB port.

Click on Stop to stop the capture.

Click on List to show the captured files on a chosen device, users could check the capture files details, click on Clear to delete all files, click on next to a capture file to download it on a local folder, or click on to delete it.

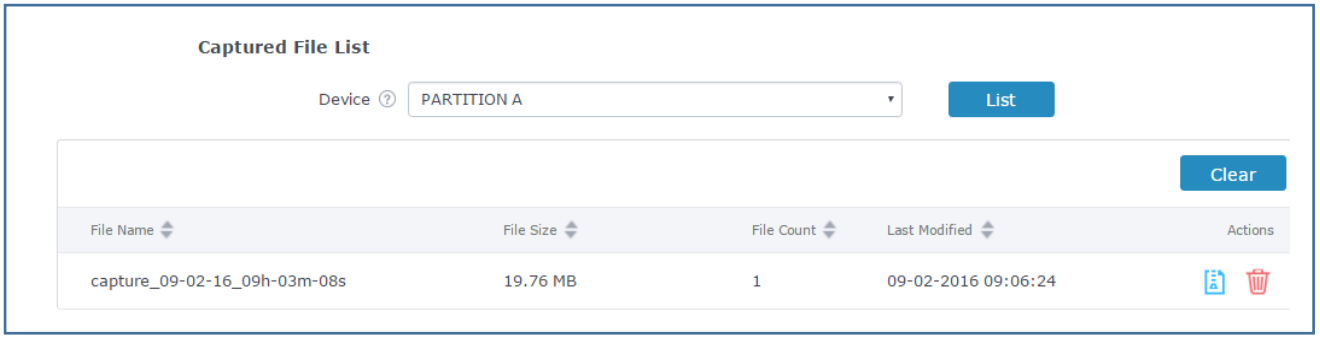


Figure 29: Capture Files

The below table will show different fields used on debug page.

Table 7: Debug

File Name	Enter the name of the capture file that will be generated.
Interface	Choose a network group as Interface on which the traffic will be captured.
Device	Choose a device plugged to USB port to save the capture once started.
File Size	Set a File size that the capture will not exceed (Optional field).
Rotate Count	Set a value for rotating captures (Optional Field).
Direction	Choose if you want to get all traffic or only outgoing or incoming to the choses interface.
Source Port	Set the Source Port to filter capture traffic coming from the defined source port.
Destination Port	Set the Destination Port to filter capture traffic coming from the defined port.
Source IP	Set the Source IP to filter capture traffic coming from the defined source IP.
Dest IP	Set the Destination IP to filter capture traffic coming from the defined destination IP.
Protocol	Choose ALL or a specific protocol to capture (IP, ARP, RARP, TCP, UDP, ICMP, IPv6)

Ping/Traceroute

Ping and Traceroute are useful debugging tools to verify reachability with other clients across the network. The GWN7600 offers both Ping and Traceroute tools for IPv4 and IPv6 protocols.

To use these tools, go to GWN7600 **WebGUI->System Settings->Debug** and click on **Ping/Traceroute.**

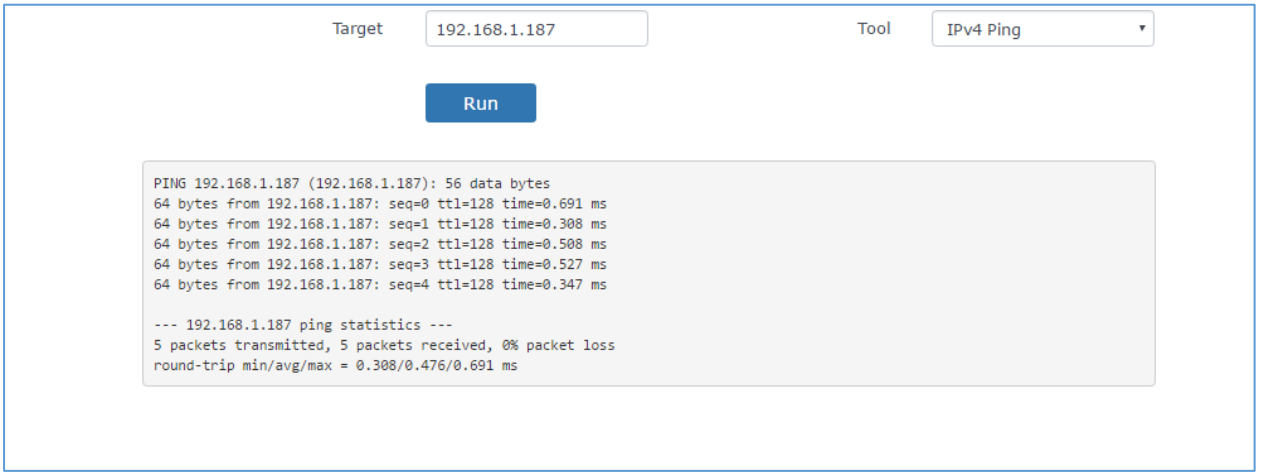


Figure 30: IP Ping

- Next to **Tool** choose from the dropdown menu:
  - IPv4 Ping for an IPv4 Ping test to Target
  - IPv6 Ping for an IPv6 Ping test to Target
  - IPv4 Traceroute for an IPv4 Traceroute to Target
  - IPv6 Traceroute for an IPv6 Traceroute to Target
- Type in the destination's IP address in **Target** field.
- Click on **Run**.

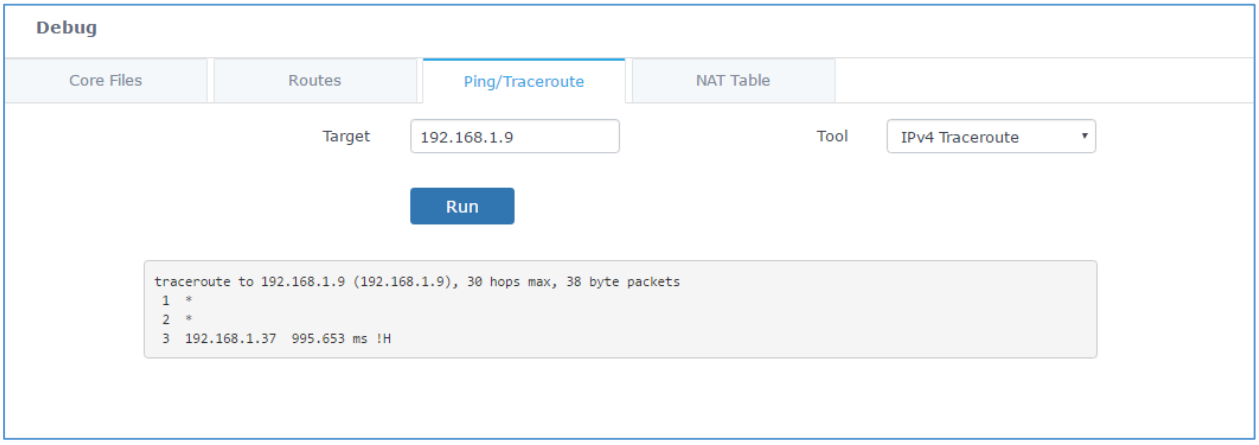
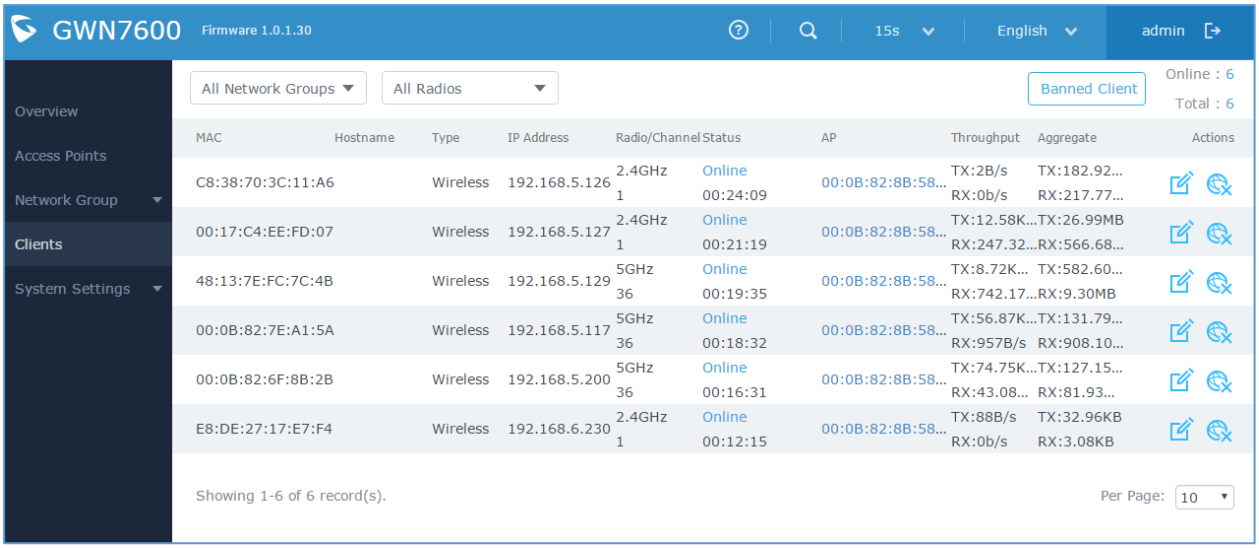


Figure 31: IP Traceroute

Clients Configuration



Users can access clients list connected to GWN7600 zone from GWN7600 **Web GUI** -> **Clients** to perform different actions to wireless clients.

Figure 32: Clients

- Click on  under Actions to check a client's status and modify basic settings such as Device's Name.

- Click on to block a client's MAC address from connecting to the zone's network group.
- Click on Banned Client to add or remove a client from banned client list.

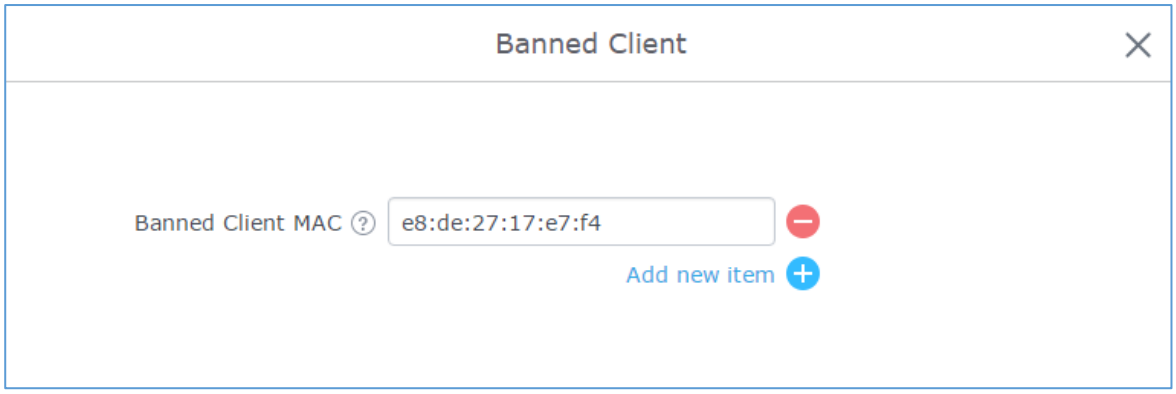


Figure 33: Ban/Unban Client

- Users can scroll down to the down of the client's page to paginate between clients list.

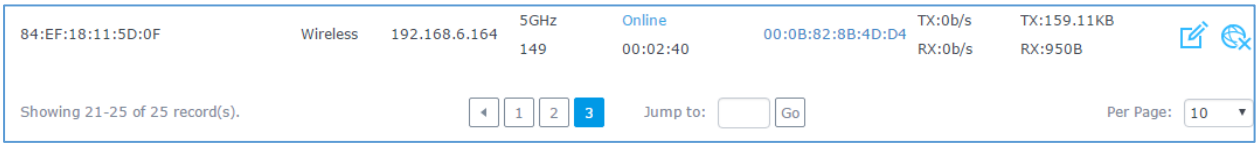


Figure 34: Paginate between client's list

Maintenance

Users can access Maintenance page from GWN7600 WebGUI-> **System Settings-> Maintenance**.

Refer to below table for maintenance tabs and fields:

Table 8: Maintenance

Basic	
Country	Select the country from the drop-down list.
Time Zone	Configure time zone for the GWN7600. Make sure to reboot the device to take effect.
NTP Server	Configure the IP address or URL of the NTP server, the device will obtain the date and time from the configured server.
Date Display Format	Change the Date Display Format, three options are possible YYYY/MM/DD, MM/DD/YYYY and DD/MM/YYYY

Upgrade	
Authenticate Config File	Authenticate configuration file before acceptance. Default is disabled.
XML Config File Password	Enter the password for encrypting the XML configuration file using OpenSSL. The password is used to decrypt the XML configuration file if it is encrypted via OpenSSL.
Upgrade Via	Specify uploading method for firmware and configuration. 3 options are available: HTTP, HTTPS and TFTP.
Firmware Server	Configure the IP address or URL for the firmware upgrade server.
Config Server	Configure the IP address or URL for the configuration file server.
Check Update on Boot	Choose whether to enable or disable automatic upgrade and provisioning after reboot. Default is disabled.
Automatic Upgrade Check Interval(m)	Specify the time period to check for firmware upgrade (in minutes).
Reboot	Click on Reboot button to reboot the device
Download Configuration	Click on Download to download the device's configuration file.
Upgrade Now	Click on Upgrade, to launch firmware/config file provisioning. Please make sure to Save and Apply changes before clicking on Upgrade.
Factory Reset	Click on Reset to restore the GWN7600 to factory default settings
Access	
Current Administrator Password	Enter the current administrator password
New Administrator Password	Change the current password. This field is case sensitive with a maximum length of 32 characters.
Confirm New Administrator Password	Enter the new administrator password one more time to confirm.
User Password	Configure the password for user-level Web GUI access. This field is case sensitive with a maximum length of 32 characters.
User Password Confirmation	Enter the new User password again to confirm.
Syslog	
Syslog Server	Enter the IP address or URL of Syslog server. Please reboot the GWN7000 to take effect.
Syslog Level	Select the level of Syslog, 5 levels are available: **None, Debug, Info, Warning** and **Error**. Please reboot the GWN7000 to take effect.

Syslog

On the GWN7600, users could dump the syslog information to a remote server under **Web GUI** ->**System Settings**->**Maintenance->Syslog**. Enter the syslog server hostname or IP address and select the level for the syslog information. Five levels of syslog are available: None, Debug, Info, Warning, and Error.

Syslog messages are also displayed in real time under Web GUI ->**System Settings->Debug->Syslog.**

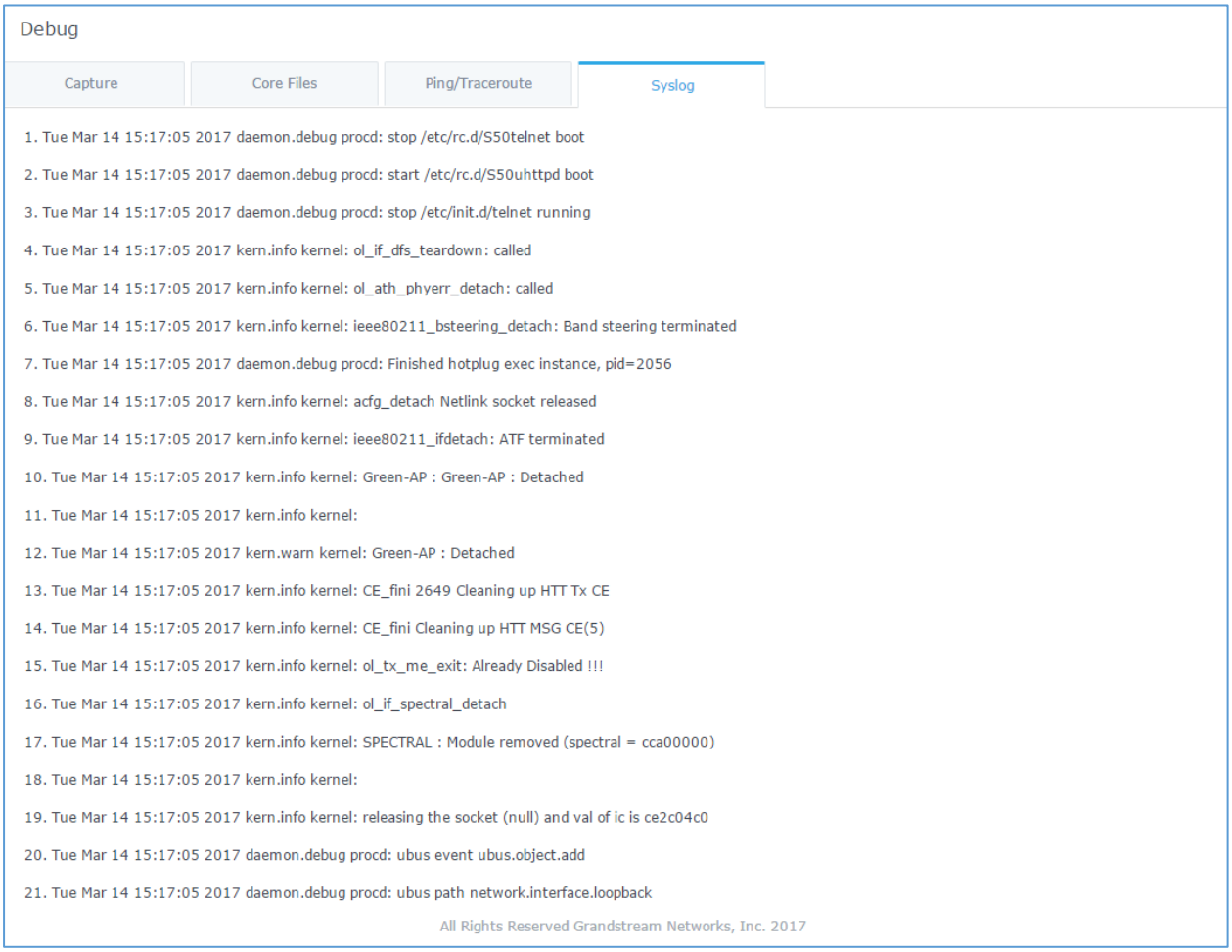


Figure 35: Syslog

UPGRADING AND PROVISIONING

Upgrading Firmware

The GWN7600 can be upgraded to a new firmware version remotely or locally. This section describes how to upgrade your GWN7600.

Upgrading via WEB GUI

The GWN7600 can be upgraded via TFTP/HTTP/HTTPS by configuring the URL/IP Address for the TFTP/HTTP/HTTPS server and selecting a download method. Configure a valid URL for TFTP, HTTP or HTTPS; the server name can be FQDN or IP address.

Examples of valid URLs:
firmware.grandstream.com/BETA
192.168.5.87

The upgrading configuration can be accessed via **Web GUI->System Settings->Maintenance->Upgrade**.

Table 9: Network Upgrade Configuration

Upgrade Via	Allow users to choose the firmware upgrade method: TFTP, HTTP or HTTPS.
Firmware Server	Define the server path for the firmware server.
Check Update on Boot	Allows the device to check if there is a firmware from the configured firmware server at boot.
Automatic Upgrade check interval(m)	Set the value for automatic upgrade check in minutes.
Upgrade Now	Click on Upgrade button to begin the upgrade. Note that the device will reboot after downloading the firmware.

Upgrading Slave Access Points

When the GWN7600 is being paired as slave using another GWN7600 Access Point acting as Controller, users can upgrade their paired access points from the GWN7600 Master Controller.
To upgrade a slave access point, log in to the GWN7600 acting as Master Controller and go to **Access Points.**

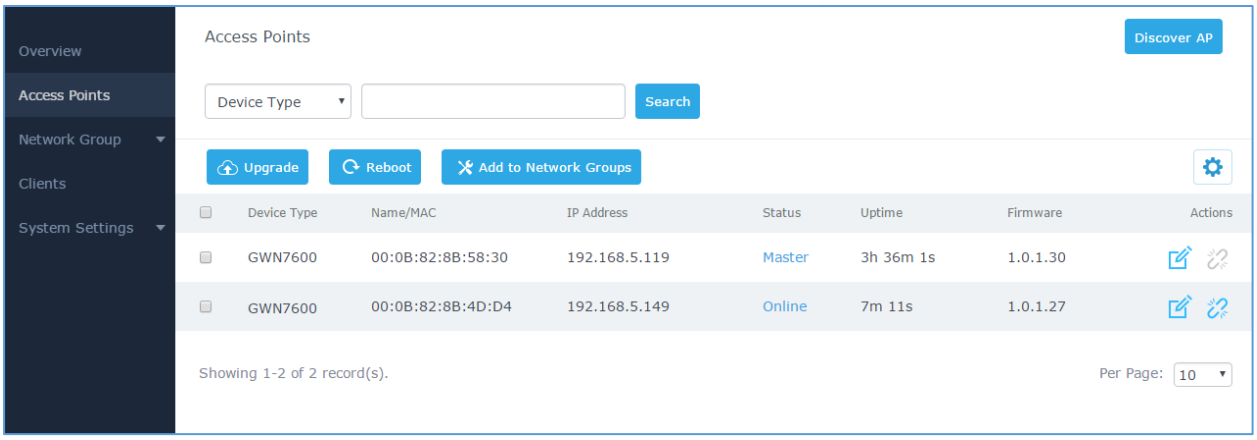


Figure 36: Access Points

Make sure that firmware server path is set correctly under Maintenance, check the desired APs to upgrade, and click on  to upgrade the selected paired access points, or click on  next to the paired device to access its configuration page, and click on  to upgrade the device.

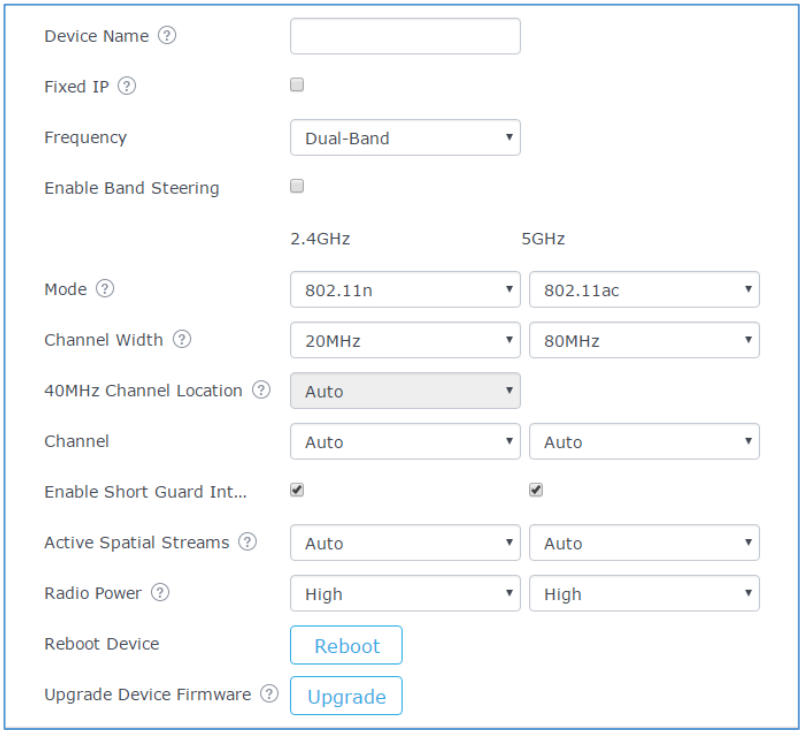


Figure 37: Device Configuration

The status of the device will show Upgrading, wait until it finishes and reboots, then it will appear online again.

⚠ **Notes:**

- Please do not interrupt or power cycle the GWN7600 during upgrading process.
- The Master Access Point needs to be upgraded from **Web GUI->System Settings->Maintenance->Upgrade.** It cannot be upgraded from Access Points page like the Paired Access Points.

Service providers should maintain their own firmware upgrade servers. For users who do not have TFTP/HTTP/HTTPS server, some free windows version TFTP servers are available for download from
http://www.solarwinds.com/products/freetools/free_tftp_server.aspx
http://tftpd32.jounin.net

Please check our website at http://www.grandstream.com/support/firmware for latest firmware.

Instructions for local firmware upgrade via TFTP:

1. Unzip the firmware files and put all of them in the root directory of the TFTP server;
2. Connect the PC running the TFTP server and the GWN7600 to the same LAN segment;
3. Launch the TFTP server and go to the File menu->Configure->Security to change the TFTP server's default setting from "Receive Only" to "Transmit Only" for the firmware upgrade;
4. Start the TFTP server and configure the TFTP server in the GWN7600 web configuration interface;
5. Configure the Firmware Server to the IP address of the PC;
6. Update the changes and reboot the GWN7600.

End users can also choose to download a free HTTP server from http://httpd.apache.org/ or use Microsoft IIS web server.

Provisioning and backup

The GWN7600 configuration can be backed up locally or via network. The backup file will be used to restore the configuration on GWN7600 when necessary.

Download Configuration

Users can download the GWN7600 configuration for restore purpose under **Web GUI->System Settings-> Maintenance->Upgrade**

Click on Download to download locally the configuration file.

Upload Configuration

Users can upload configuration file to the GWN7600 under **Web GUI->System Settings->Maintenance**

Click on Upload to browse for the configuration to upload.

Please note that the GWN7600 will reboot after the configuration file is restored successfully.

Configuration Server (Pending)

Users can download and provision the GWN7600 by putting the config file on a TFTP/HTTP or HTTPS server, and set Config Server to the TFTP/HTTP or HTTPS server used in order for the GWN7600 to be provisioned with that config server file.

Reset and Reboot

Users could perform a reboot and reset the device to factory functions under **Web GUI**->**System Settings**->**Maintenance** by clicking on Reboot button.

Reset Will restore all the GWN7600 itself to factory settings.

EXPERIENCING THE GWN7600 WIRELESS ACCESS POINT

Please visit our website: http://www.grandstream.com to receive the most up- to-date updates on firmware releases, additional features, FAQs, documentation and news on new products.

We encourage you to browse our product related documentation, FAQs and User and Developer Forum for answers to your general questions. If you have purchased our products through a Grandstream Certified Partner or Reseller, please contact them directly for immediate support.

Our technical support staff is trained and ready to answer all of your questions. Contact a technical support member or submit a trouble ticket online to receive in-depth support.

Thank you again for purchasing Grandstream GWN7600 Wireless Access Point, it will be sure to bring convenience and color to both your business and personal life