Grandstream Networks, Inc.

Client Bridge Guide

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SUPPORTED DEVICES

Following table shows Grandstream WiFi Access Points supporting Client Bridge feature:

Model	Supported	Firmware
GWN7610	Yes	1.0.4.20 or higher
GWN7600	Yes	1.0.4.12 or higher
GWN7600LR	Yes	1.0.4.12 or higher
GWN7630	Yes	1.0.9.12 or higher

INTRODUCTION

In today's enterprise network, wireless technology and especially WiFi is gaining more and more ground for its scalability and easy deployment along with the continually enhanced throughput which is competing with wired ethernet technology.

One of the major drawbacks of Ethernet is the complexity of deploying cables over all enterprise locations, and sometimes technicians cannot even run cables to some areas or this can be done but in the expense of losing signal quality. In this situation, the client bridge feature can be a suitable solution where the WiFi access point configured on client bridge mode can bridge a full Ethernet segment over WiFi connection.

Grandstream GWN76XX access point series offer along high-performance networking and WiFi coverage range, the possibility to operate either in access point mode or client bridge mode.

In this guide, we will go through all details and configuration steps to deploy GWN7610 access points as bridges to link remote Ethernet segments.

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GWN MASTER SLAVE ARCHITECTURE

The GWN76xx Wireless Access Points Series can be deployed in a network environment as standalone (using only one GWN76xx to provide wireless network access) or in Master/Slave architecture (using multiple GWN76xx units) to extend wireless network access range.

In Master/Slave configuration, a unique/chosen GWN76xx acts as master/controller and can manage (up to 50 when using GWN7610 as Master and up to 30 when using GWN7600 as Master) other GWN76xx series considered as slaves. Note that master GWN7600 can act as controller and can also be member of SSID(s).

Another option is to have GWN7000 router acting as controller for the wireless APs and manage all WiFi settings.

Before using an access point as client bridge, users need first to pair it with the used controller to set all its WiFi related parameters before deploying it on the distant Ethernet segment where it can bridge the wired clients over the WiFi network.

The figure below shows a sample setup of a GWN7610 master with different slave units, and connected Wi-Fi clients through different SSIDs.
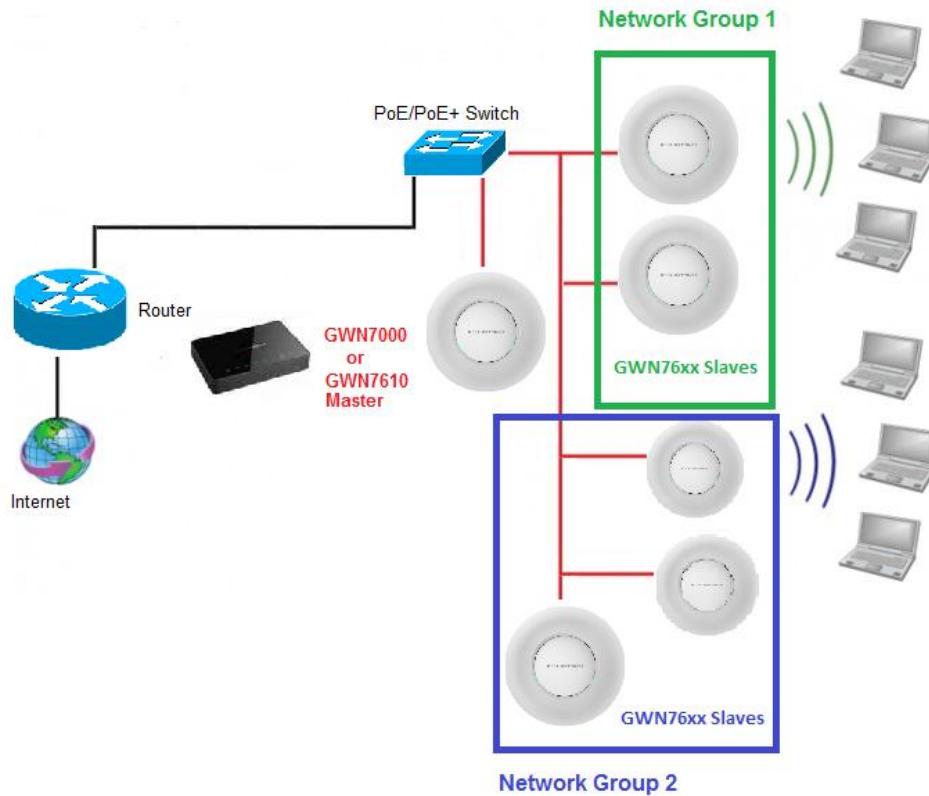

Figure 1: GWN Master Slave Architecture

CLIENT BRIDGE CONFIGURATION

Scenario Overview

We consider the following scenario where the company has on the campus a set of users working on desktop computers with no wireless adapters, and after studying the feasibility to run an Ethernet cable into the remote location the network technicians decided that is better to bridge those users over the WiFi using GWN7610 on client bridge mode.

The diagram below shows the architecture:

Figure 2: Network Architecture

Configuration Steps

In the next sections, we provide the needed configuration steps to enable client bridge feature on GWN access points:

Discover Access Points

Pairing the Access Points

The first step is to discover the access points to pair them with the controller (GWN7000 in our case) and assign them to the SSID:

- Make sure to connect both access points to the same network as the GWN7000 router.
- Access to the router web GUI under **Access Points** and click on **Discover** button.
- Once on the list of discovered APs, click on link button 🔗 to pair them to the GWN.

After this step, the paired access points will be provisioned by the GWN7000 controller and displayed as shown on the following figure:

	Device Type	Name/MAC	IP Address	Status	Uptime	Firmware	Actions
☐	GWN7610	00:0B:82:8B:4D:D8	192.168.1.24	Online	26m 30s	1.0.4.20	
☐	GWN7600	00:0B:82:8B:58:30	192.168.1.176	Online	45m 50s	1.0.3.19	

Figure 3: Paired Access Points List

Add Access Points to the SSID

The next step would be to assign the access points to the SSID, please follow below steps to achieve this:

- Go under **SSID→Device Membership**.

- Select from the list of available devices the access points that would be participating members of this network "SSID", the following figure serve as an example:
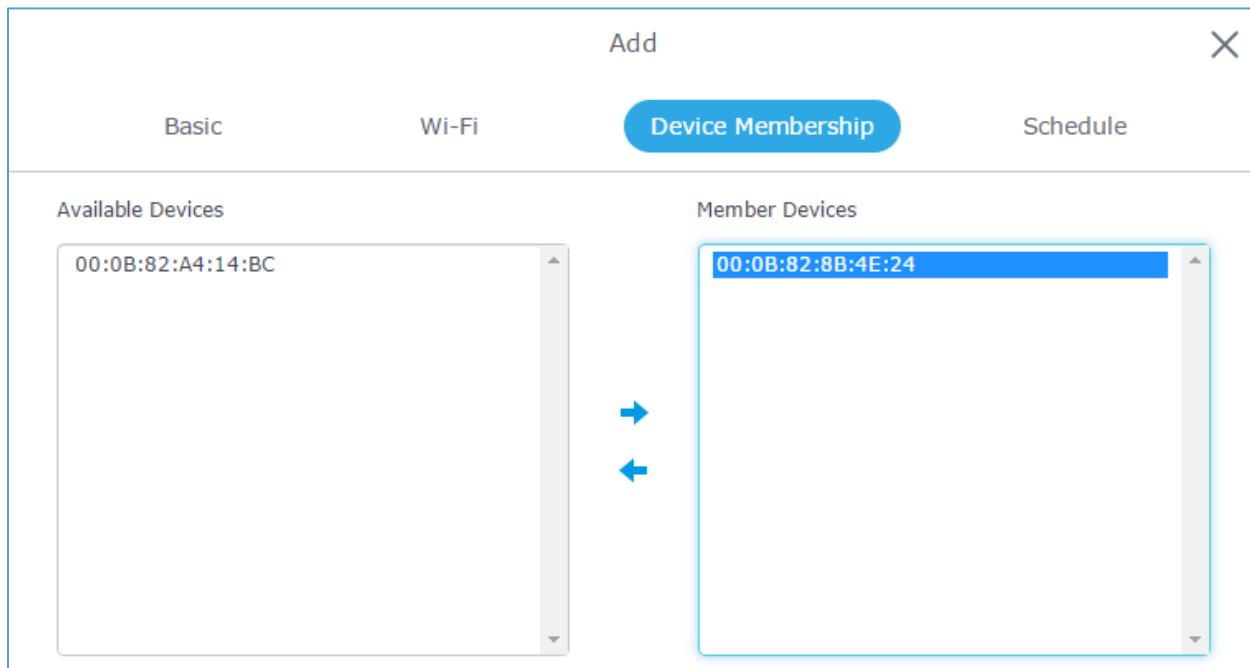

Figure 4: Adding APs to SSID

Once this is done, the GWN7000 router will re-provision the access points accordingly.
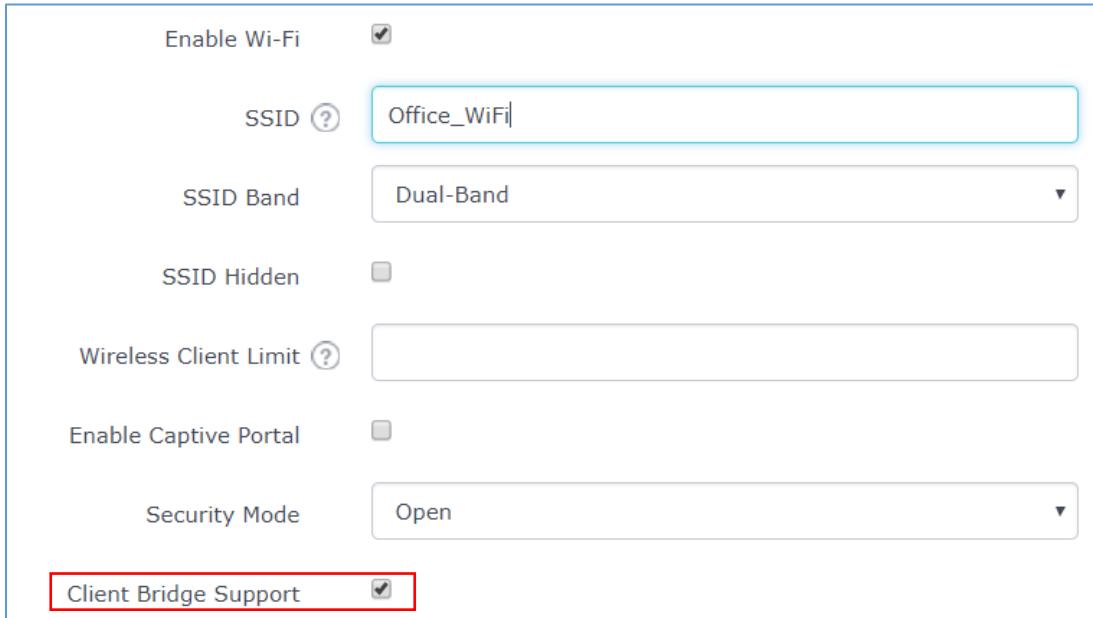
Enabling Client Bridge Feature

At this stage, we need to enable the client bridge feature and assign which access point will be operating on bridge mode before it's taken to its final destination. Please follow next steps:

Enabling Client Bridge on SSID

Go under the web GUI of the controller **SSIDs→WiFi** and enable the option "**Client Bridge Support**".

Figure 5: Enable Client Bridge

Set Fixed IP for AP

The access point that will be operating on bridge mode must be set with a fixed static IP, to this go under **Access Points** list then edit the desired access point and under the configuration tab, enable fixed IP and enter the subnet mask and gateway information as shown on the below figure.
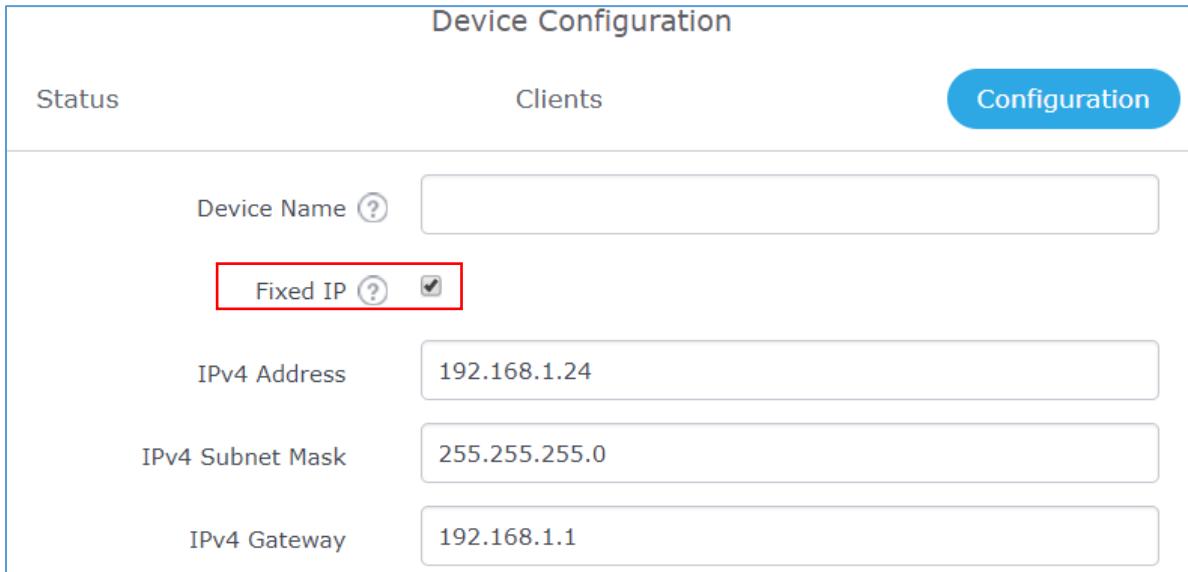
Figure 6: Set Access Point with Fixed IP

Set Access Point to Bridge Mode

1. Go to **Access Points** and locate the slave access point to use as bridge.

   Note: Above steps [Enabling Client Bridge on SSID] and [Set Fixed IP for AP] should be completed before continuing.

2. Press the icon ⊞ next to it as shown in below screenshot.

	Device Type	Name/MAC	IP Address	Status	Uptime	Firmware	Actions
☐	GWN7600	00:0B:82:8B:58:30	192.168.1.176	Online	2m 58s	1.0.3.24	☑ ⇄ ⊞ 👤
☐	GWN7610	00:0B:82:8B:4D:D8	192.168.1.84	Online		1.0.4.20	☑ ⇄ ⊞ 👤

Showing 1-2 of 2 record(s).   Per Page: 10 ▾

Figure 7: Set Access Point to Bridge Mode

3. The following notice will be displayed as shown in next figure. Click **OK** to confirm.

> **Notice**
>
> You need to do factory reset to remove the bridge mode. Are you sure you want to continue?
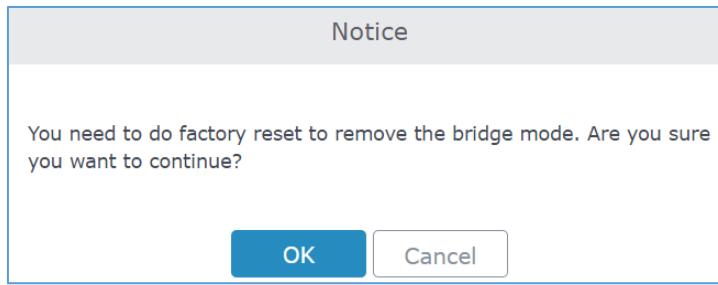>
> **OK**   Cancel

Figure 8: Client Bridge Prompt

Notes:

- As the prompt says, once an access point has been set with bridge mode, then it can no longer be set back to access point mode and a factory reset is needed.
- Also note that wireless clients cannot associate to the access point under bridge mode.

Now that GWN access point has been set with bridge mode and is provisioned with all necessary WiFi settings, we unplug it from the central network and install it on the remote location to bridge the Ethernet segment over WiFi back to the central network 192.168.1.0/24.

Verification

For verification purposes users could go on the controller web GUI under Access Point and check the status of the bridged AP(s) which should be showing **"Client Bridge Mode = Isolated",** see below screenshot.

Figure 9: Client Bridge Status

Also, once the access point has fully booted and online (steady green) it will be joining the WiFi and bridge the remote wired device to the central network, which will operate as if they were connected directly to the central network resources (DHCP, DNS, MAIL, Gateway ….).

The next screenshots show a client getting an IP address from the remote segment on the central network subnet 192.168.1.0/24 and can ping on the gateway of last resort.

Time	Source	Destination	Protocol	Length	Info
288 09:28:42	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x3786243
306 09:28:44	192.168.1.1	192.168.1.48	DHCP	342	DHCP Offer - Transaction ID 0x3786243
307 09:28:44	0.0.0.0	255.255.255.255	DHCP	368	DHCP Request - Transaction ID 0x3786243
309 09:28:44	192.168.1.1	192.168.1.48	DHCP	363	DHCP ACK - Transaction ID 0x3786243

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As a final method for verification, check DHCP clients on the GWN7000 router to see wired clients from the remote Ethernet segment displayed on the list.

MAC	Hostname	Type	IP Address	Radio/Channel	Status	Bridge	AP	Throughput	Aggregate	Actions
A0:8C:FD:C4:6F:8B	DESKTOP-ASA9...	Wired	192.168.1.171		Online	✕	Wired	TX:0B/s RX:0B/s	TX:0B RX:0B	

Online : 1
Total : 1

All Network Groups ▼   Wired & Wireless ▼   All Radios ▼

Figure 10: DHCP Clients on GWN7000

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