

Grandstream Networks, Inc.

GWN76xx Wi-Fi Access Points

Master/Slave Architecture Guide



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INTRODUCTION

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 SSIDs).

This guide covers Master/Slave architecture mode giving steps to successfully configure GWN76xx access points in your network environment; including steps to discover and pair GWN76xx units, create and manage SSIDs.

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

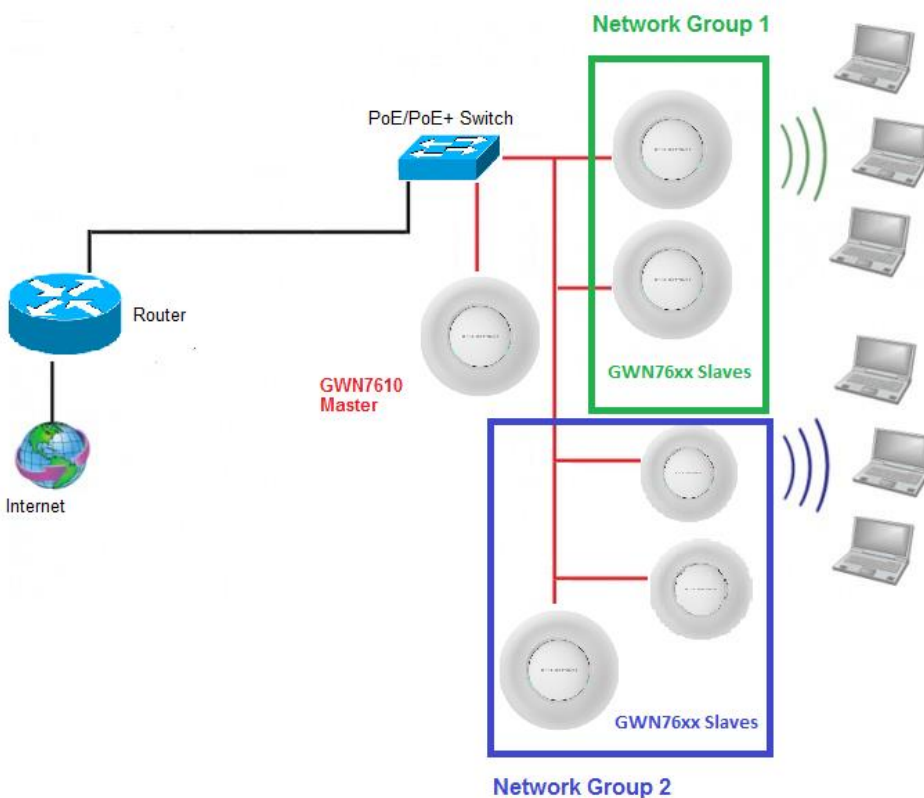


Figure 1: GWN76XXs Setup sample



DISCOVER AND PAIR GWN76XX ACCESS POINTS

In this guide, we will consider an environment where different GWN76xx access points models are installed, one of them will be Master over the remaining ones (Slaves) as shown in Figure 1.

To set a GWN76xx as Master, we need to access to its web interface by discovering it first on the network.

The following chapter describes two methods how to discover a GWN76xx connected to network and configure it as Master.

Discover GWN76xx

Once the GWN76xx is powered up and connected to the network correctly, it can be discovered using one of the following methods:

Method 1: Discover GWN76xx 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 GWN76xx, type in the following address [https://gwn_\[MAC_address\].local/](https://gwn_[MAC_address].local/) using the GWN76xx's MAC address on your browser.

For example, if a GWN7610 has the MAC address **00:0B:82:8B:4E:28**, this unit can be accessed by typing https://gwn_000b828b4e28.local/ on the browser.

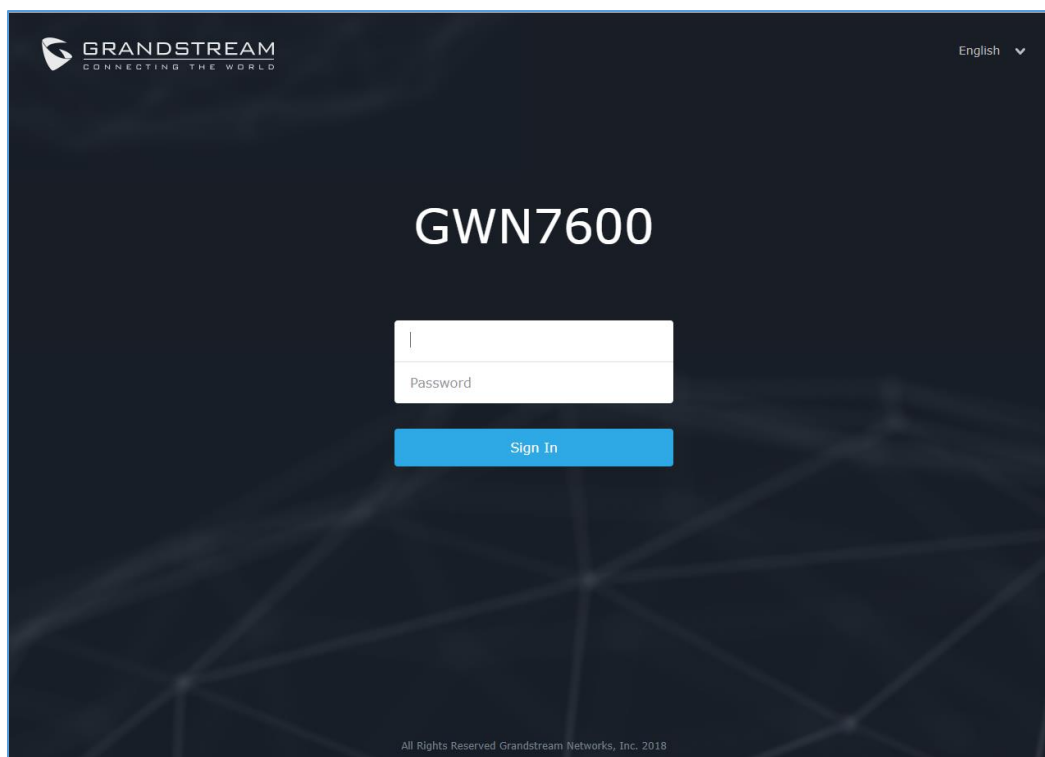


Figure 2: Discover the GWN76xx using its MAC Address



Method 2: Discover GWN76xx using GWN Discovery Tool

1. Download and install **GWN Discovery Tool** from the following link:
<http://www.grandstream.com/sites/default/files/Resources/GWNDiscoveryTool.zip>
2. Open the “GWN Discovery Tool”, click on **Select** to define the network interface, then click on **Scan**.
3. The tool will discover all GWN76xx Access Points models connected on the network showing their MAC, IP addresses and firmware version.
4. Click on **Manage Device** to be redirected directly to the GWN76xx's configuration interface, or type in manually the displayed IP address on your browser.

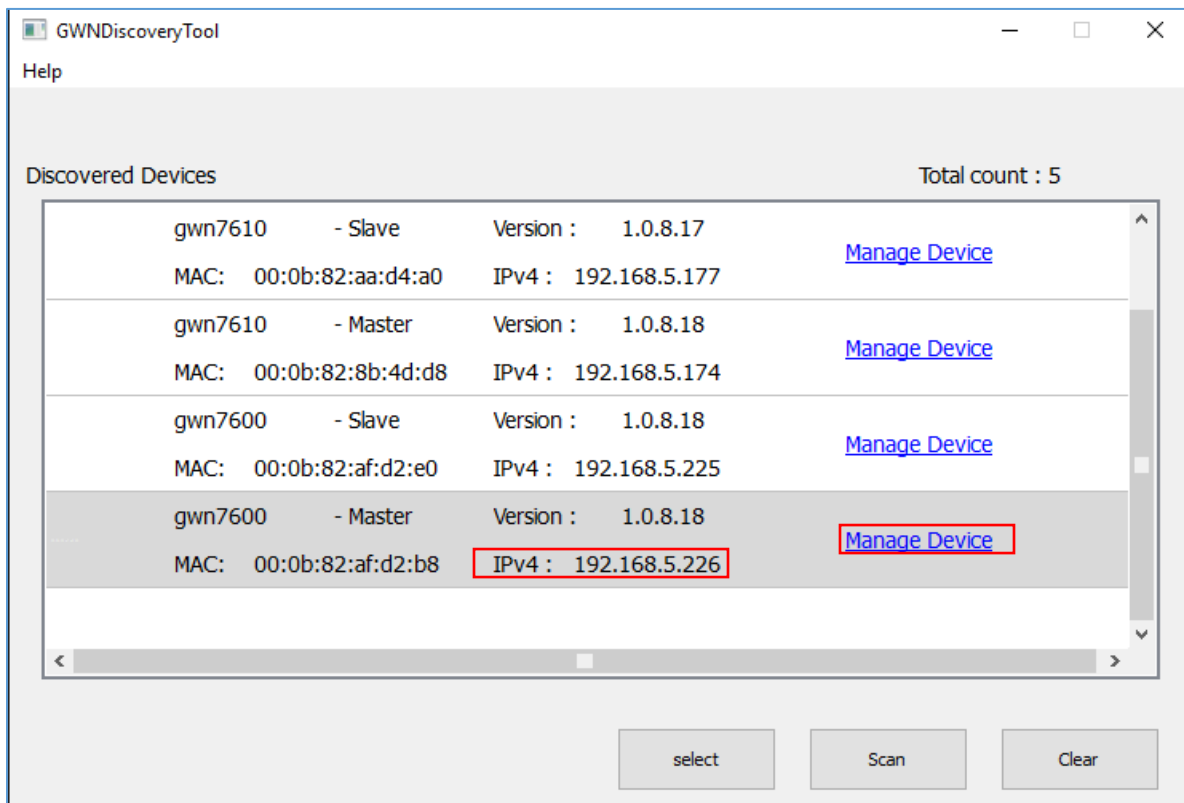


Figure 3: GWN Discovery Tool

Notes:

- At first boot or after factory reset, users will be asked to change the default administrator and user passwords before accessing GWN76xx web interface. The new password fields are case sensitive with a maximum length of 32 characters. Using strong passwords including letters, digits and special characters are recommended for better security.
- On firmware 1.0.9.12 or above, at factory reset, “**Set unit as Master**” will be checked by default, click on “**Sign In**” after typing the admin’s username and unique default Wi-Fi Password available on the sticker on the back of the unit.
- Firmware versions lower than 1.0.9.12 have login credentials as username: admin and password: admin.



Pair Slave GWN76xx Access Points

To pair a GWN76xx access points (slaves) connected to the same network as the Master GWN76xx follow the below steps:

1. Connect to the GWN76xx Web GUI as Master and go to **Access Points**.

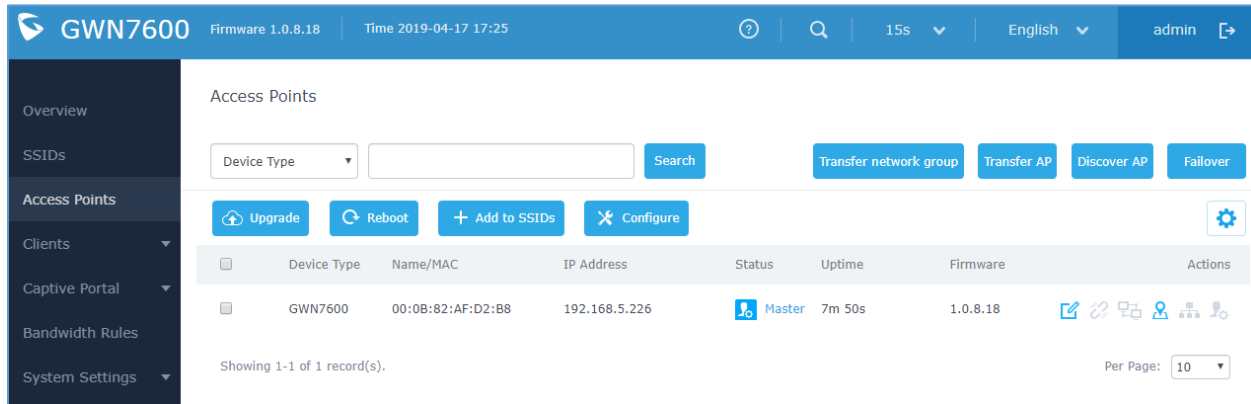


Figure 4: Discover AP

2. Click on **Discover AP** button in order to discover different GWN76xx access points models within GWN76xx's Network, the following page will appear.

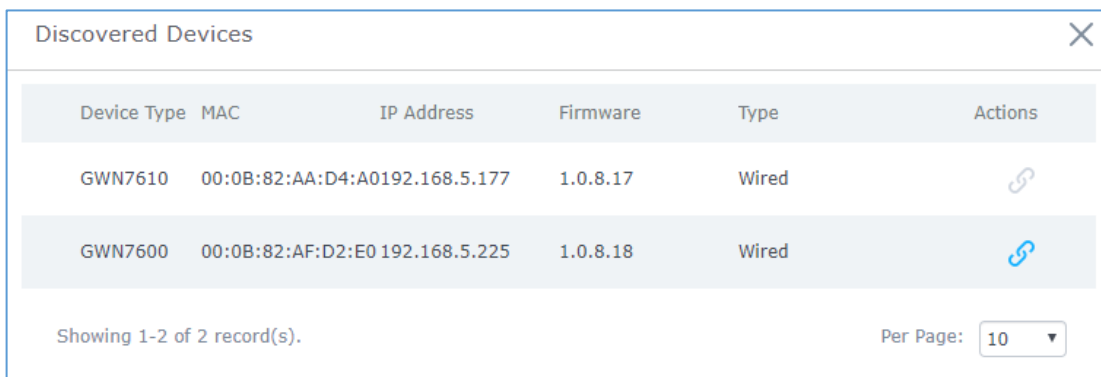




Figure 5: Discovered Devices

3. Click on Pair  under Actions, to pair the discovered Access Point as Slave with the GWN76xx acting as Master.
4. The paired GWN76xx will appear Online, click on  to unpair it.



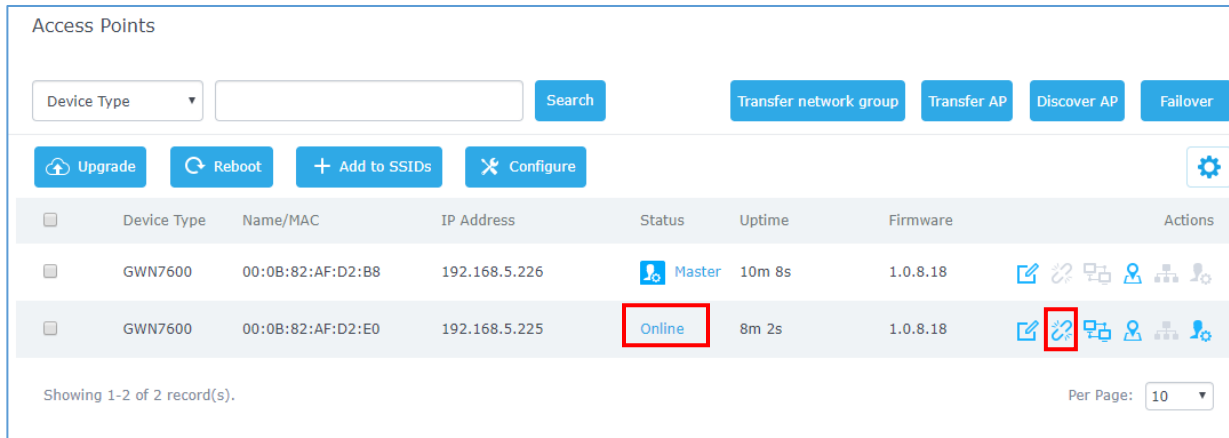


Figure 6: GWN76xx online


- Click on  next to Master or paired access point to check device configuration for its status, clients connected to it and configuration. Refer to below table for Device Configuration tabs.

Table 1: 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.
Clients	Shows the connected users to the GWN76xx access point.
Configuration	<ul style="list-style-type: none"> • Device Name: Set GWN7610/GWN7600/GWN7600LR's name to be shown next to MAC address. • Fixed IP: Set a static IP for the GWN76xx, default is unchecked. • Airtime Fairness: Allow faster clients to have more airtime than slower clients. • 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 increase 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.
- **Custom Wireless Power(dBm):** allows users to set a custom wireless power for both 5GHz/2.4GHz band, the value of this field must be between 1 and 31.
- **Allow Legacy Devices(802.11b):** Check to support 802.11b devices to connect the AP in 802.11n/g mode.
- **Dynamic Channel Assignment:** Once enabled, AP will try to allocate and move the best channel during operation, unlike Auto Channel Selection (ACS) which scan and assign channel when WiFi interface goes up for one time. *This feature is not supported on GWN7610.*
- **Transmit Power Control:** TPC algorithm runs every 10 minutes. AP acquires the RSSI information of the neighbor by wireless scanning and establishes the neighbor table. The algorithm requires that there must be at least 3 neighbor APs with RSSI larger than -70dbm. Otherwise, power will not be adjusted.
- **Coverage Hole Detection:** CHD enables AP to decide whether to increase the AP power by the current SNR and SNR threshold of the connected clients.

Note: If a GWN76xx is not being paired or pair icon is grayed, make sure that it is not already paired with another GWN76xx Master Access Point. If yes, it needs to be unpaired first, or reset to factory default settings in order to make it available for pairing by other GWN76xx Access Point Controller.

Configure Failover Master

Failover Master Overview

For redundancy and backup function, the GWN76XX access points are now supporting Failover Master function, users can specify a slave AP as failover master. Whenever it detects the master is down, it will promote itself to be as failover master.

In order to avoid a single point of failure in a wireless network, and for redundancy and failover function, users are able to configure a slave AP as failover master, this slave AP will be the replacing the Master in its functions, and will promote itself as failover master within a time frame of around 20~30 minutes by entering failover mode, after then, if the master AP comes back, failover master will automatically go back to slave mode.

The Failover architecture is as follow:



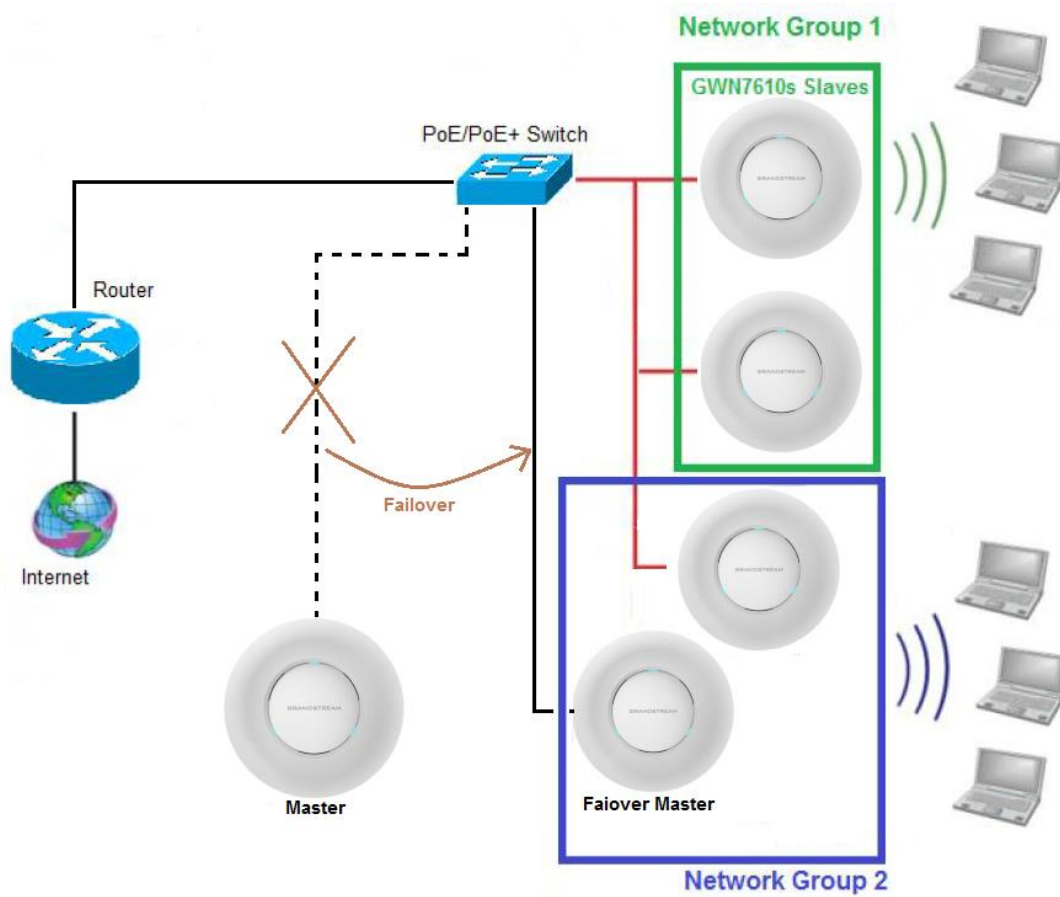


Figure 7 : Failover Architecture

Set a Failover Master

Users can select the failover Master by following below steps:

1. Log into web GUI of the master GWN, and go to **Access Points**, then click on **Failover** as follow:

Device Type	Name/MAC	IP Address	Status	Uptime	Firmware	Actions
GWN7600	00:0B:82:AF:D2:B8	192.168.5.226	Master	10m 8s	1.0.8.18	[Edit] [Refresh] [Add] [Remove] [Share] [Info]
GWN7600	00:0B:82:AF:D2:E0	192.168.5.225	Online	8m 2s	1.0.8.18	[Edit] [Refresh] [Add] [Remove] [Share] [Info]

Figure 8 : Configure Failover

2. Once Failover is pressed, following window will pop up, set one AP as Failover by selecting its MAC Address:

✕
Configure Failover AP

Note: After setting "Failover AP", when the main AP unable to control other APs, you can use the failover account to login the "Failover AP" web page to query for all APs, you can also switch "Failover AP" to "Master AP".

Failover AP

Save
Cancel

Figure 9 : Select MAC for Failover

3. Press **Save** then **Apply Changes**.

Once the Failover master is selected, the Master will provision the selected AP with the needed network configuration as illustrated in the following screenshot:

Access Points							
<input type="text" value="Device Type"/> <input type="text"/> <input type="button" value="Search"/>		<input type="button" value="Transfer network group"/> <input type="button" value="Transfer AP"/> <input type="button" value="Discover AP"/> <input type="button" value="Failover"/>					
<input type="button" value="Upgrade"/> <input type="button" value="Reboot"/> <input type="button" value="+ Add to SSIDs"/> <input type="button" value="✕ Configure"/>						<input type="button" value="⚙️"/>	
<input type="checkbox"/>	Device Type	Name/MAC	IP Address	Status	Uptime	Firmware	Actions
<input type="checkbox"/>	GWN7600	00:0B:82:AF:D2:B8	192.168.5.226	👤 Master	17m 36s	1.0.8.18	<input type="button" value="✎"/> <input type="button" value="🔄"/> <input type="button" value="🗑️"/> <input type="button" value="👤"/> <input type="button" value="👥"/> <input type="button" value="👤"/>
<input type="checkbox"/>	GWN7600	00:0B:82:AF:D2:E0	192.168.5.225	Provisioning		1.0.8.18	<input type="button" value="✎"/> <input type="button" value="🔄"/> <input type="button" value="🗑️"/> <input type="button" value="👤"/> <input type="button" value="👥"/> <input type="button" value="👤"/>

Figure 10 : Provisioning Failover Master

When done, the selected AP status will change to **ONLINE**, this AP will keep monitoring the Master and will be promoted as Failover when the primary Master is no more responding.



Failover Mode

As explained previously, once failover slave has been selected, the primary master will send the configuration of the network to the failover slave, and the slave will start monitoring the status of the primary master to detect any failure for any reason (network connection loss, power outage).

In case of failure, the failover slave will promote itself to a temporary backup master while waiting for the primary master to recover.

During the failover mode, users could access the web GUI of the failover slave using a special failover account with same admin password.

- Username = **failover**
- Password = **admin password**

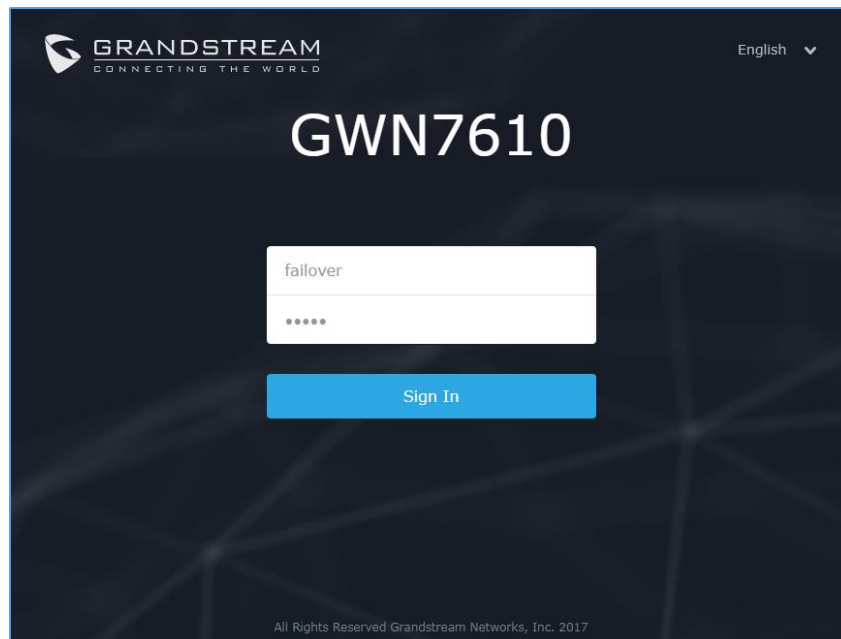


Figure 11 : Failover Mode Web Login

Once done, users will have access to the AP in Failover mode as displayed in the following screenshot:



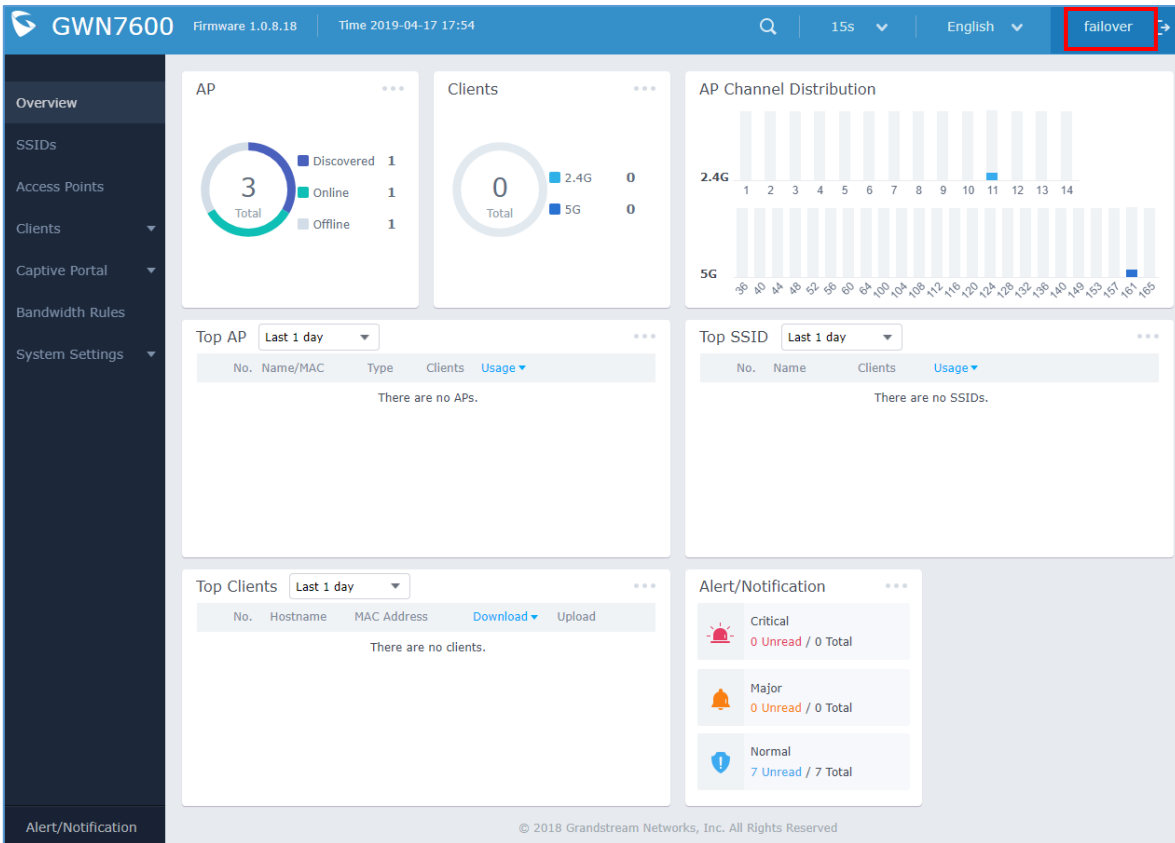


Figure 12 : Failover Overview

The failover mode has only read permission on the configuration and very limited options, users still can reboot other slave Access points in case it is needed.

At this stage, the AP will keep monitoring the primary Master, and will automatically go back to slave mode when it detects the recovery of the primary Master.

The AP is now in Failover mode, and it's acting as the primary Master, this can be illustrated in the AP status when accessing Access Points board, a new option **“Switch to master”** will be added to the board in the top right corner:

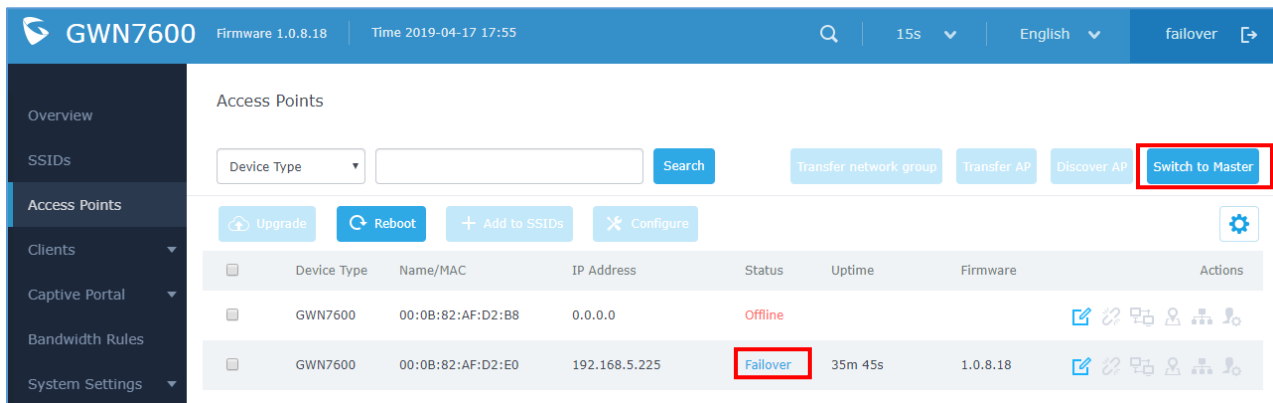
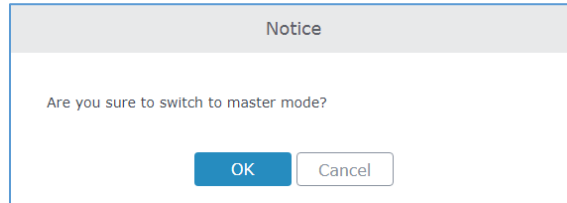


Figure 13 : Switch to Master



The new added button “**Switch to master**” allows users to set the failover slave as the new primary master of the wireless network, once this is done they have full write permission control over the web GUI option as usual.

Note: When the user presses the “**Switch to master**” button, the AP will be set as Master, and will not be able to return to the slave mode automatically, users can set this option when the primary Master is no longer responding. A confirmation message will pop up when the user presses this button:



Once the user confirms and presses OK, the AP will be a Master access point, and users can configure then any option including a new Failover Master:

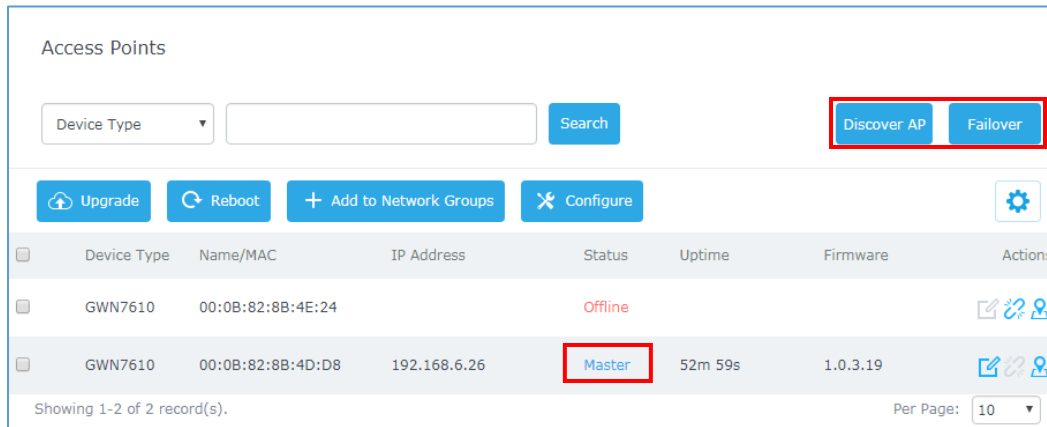


Figure 14 : AP Switched to Master

Notes:

- Once this is done the Failover Slave will have full write permission control over the web GUI option as usual. Use that button to switch to master and takeover the rest of the APs.
- If you click « Switch to Master », this would be become a non-revertible behavior. Failover Slave will become actual master and the prior master can't take back the control anymore.
- When Failover Slave is switched to Master, you will use the Prior Master AP credentials: username: admin, and the admin password.
- Otherwise, when original master comes back online, then Failover Slave will become slave again to prior original Master.

