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## **Review of Grandstream's GWN7610 WiFi Access Point**

By Daniel Noworatzky, CTO of TeleDynamics

### **Overview**

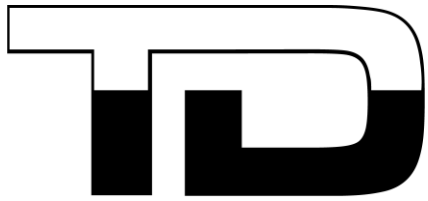
Grandstream, well known throughout the world for their SIP communications solutions, will soon expand those solutions by offering a new line of WiFi devices. Grandstream's entrance into the WiFi market place will feature a WiFi access point, the GWN7610, and they will soon-after launch a Gigabit VPN router, which will be called the GWN7000. This product line will be a new mainstay product category from Grandstream and it will be expanded moving forward to include a variety of routers and access points with various capabilities. These products offer the hardware infrastructure to build wired and wireless networks that can be seamlessly accessed throughout large custom areas. These two devices offer easy centralized management through a single interface, making them easier to deploy and manage than most current WiFi solutions on the market. The GWN7610 AP can be paired with any router, and will obviously pair seamlessly with the GWN7000 for mid-range deployments. This review will offer an in-depth overview of the GWN7610 Wireless Access Point, which will be the first GWN series product launched by Grandstream. We will follow up with a review of the GWN7000 in the coming months.

### **GWN7610**

This is a wireless access point that can be paired with any 3<sup>rd</sup> party router (as well as upcoming GWN series routers from Grandstream), making it ideal for both new WiFi deployments and to replace older APs in existing deployments. The GWN7610 is a high-performance 802.11ac wireless access point for small to medium sized businesses, multiple floor offices, commercial locations and branch offices. One of its best aspects is that the GWN7610 uses a controller-less distributed network management design (controller is embedded in the web user interface) which allows each access point to manage its own network independently without relying on extra dedicated controller hardware/software and without single point-of-failure. It offers dual-band WiFi with tremendous throughput of up to 1.75 Gbps, supports 250+ WiFi clients with encryption and support for up to 16 SSIDs per GWN7610.

### **Noteworthy Features**

- Dual-band WiFi to support and maximize connections on all devices
    - 2.4GHz, maximum throughput of 450Mbps
    - 5 GHz, maximum 1300 Mbps
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- By supporting dual WiFi, the GWN7610 doubles connection speeds by creating 2 separate networks
  - Supports all possible WiFi standards: 802.11b/g/n/ac (802.11ac is also known as Wave 1)
  - Supports 16 SSIDs per GWN7610 (16 wireless networks)
  - Supports 250+ WiFi client devices per GWN7610
  - 3x3 MIMO antennas
    - MIMO allows the device to receive multiple simultaneous data streams
    - 3x3 allows 3 antennas to transmit data and 3 antennas to receive data
  - 2 Gigabit ports
  - Wireless throughput up to 1.75Gbps throughput
  - PoE/PoE+ support
    - Supports auto-adjusting of power consumption based on power source (25.5 W for PoE+, 15.4 W for PoE)
  - Up to 175 meter coverage range

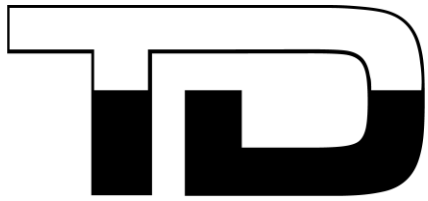
## What Stands Out?

**Embedded controller** – One of the most unique aspects of the GWN7610 is that it has its own embedded provisioning master, or what is commonly referred to as a controller. Not only does Grandstream offer an included controller, but this controller is available very simply through the GWN7610's web user interface. The controller acts as an agent between the network and the AP, allowing APs to be found and provisioned with existing networks, as well as managing each AP. This GWN7610 controller allows auto-discovery and auto-provisioning of any in-network GWN7610 from a designated GWN7610 Provisioning Master. This allows an entire network of GWN7610s to be provisioned and managed from one single GWN7610 interface.

**Range** – Each GWN7610 offers an impressive WiFi range of 175 meters (575 feet). For example, I was able to receive a signal from the GWN7610 on my mobile phone at over 150 meters away from the device, and that was in low power mode. This impressive range allows those deploying it to be able to cover more range with less access points, allowing their deployment to be extremely cost-effective and to cover a very large distance. One access point, for example, can cover the length of almost 2 entire football (soccer) fields.

**High performance throughput** – The GWN7610 was built to be able to transmit extremely large amounts of data for productive and growing businesses. The GWN7610s 2.4G WiFi band can support up to 450 MB per second of wireless transmission, while the 5G band can support up to 1300 Mb per second. Because the device features dual-band WiFi, it can offer simultaneous throughput of up to 1.75Gb per second.

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**16 SSIDs per GWN7610** – Each GWN7610 offers up to 16 different WiFi or VPN networks per device. This simply provides so many options when building and deploying a WiFi or VPN network. Within one coverage area, you can offer up to 16 different networks, allowing you to build separate networks for each department, for example, within a business to maximize bandwidth and throughput for all. This is especially great for offices, commercial or retail settings that want to offer separate networks for employees, customers, management, security personnel and more.

**250+ clients per AP** - Built for growing businesses, each GWN7610 can support up to 250 WiFi clients at a time, easily covering any office, home or commercial location. If you think of each person as using one WiFi client at a time on average (mobile phone, tablet, computer), that allows each GWN7610 to support up to 250+ people within a 175 meter space. Obviously the more GWN7610s you add, the more clients you can support. Two GWN7610s can support 500+ clients, and more.

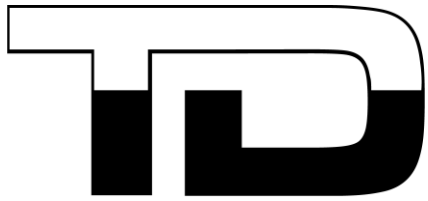
**Works with any 3<sup>rd</sup> party router** – Do you have an existing WiFi access point deployment where you need to add more APs or need to replace existing ones? Are you looking to install a WiFi network in a location where you may already have a router? Might you want to replace your router going forward for any reason? If you said yes to any of those, the GWN7610 is for you. It was made to work with 3<sup>rd</sup> party routers as much as it was made to integrate with Grandstream's upcoming routers. No matter what router you are using now and no matter what router you may use in the future, the GWN7610 will work well for you. When installing the GWN7610 with 3<sup>rd</sup> party routers or access points, management of the GWN7610 APs would be done through the GWN7610 web user interface/embedded controller.

## Security

Network security is always an important subject. The GWN7610 supports 2 high-end security features that many other APs do not support: a unique security certificate per device (based on SHA256 encryption) and random default passwords per device. These 2 features ensure that APs do not share security certificates or passwords and thus adds another level of protection per device and for the whole network.

While the most comprehensive firewall and other security settings would be controlled by the router being used, the GWN7610 supports a wide variety of security encryptions and algorithms (mentioned below).

- **WEP**- a security algorithm that provides data confidentiality.
  - **WPA**- a security standard for those who use computers with a Wi-Fi connection.
  - **WPA/WPA-2 PSK** secures the network using WPA2 along with a PSK authentication - PSK is typically for home users who don't have an authentication server.
  - **WPA/WPA-2 Enterprise** secures the method with a single password but requires a RADIUS authentication server
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- **WPA-AES**- encryption standard used internationally by banks, governments and financial institutions for multiple methods of communication, not just Wi-Fi.
  - **WPA2-TKIP**- Similar to AES, but older and less secure. Works well when used in conjunction with WPA-AES.

## **Installation and Management**

As mentioned throughout this review, the GWN7610 uniquely includes a controller built-in to its web user interface. This prevents users from having to purchase a separate controller, thus saving money, and also makes setting up and installing WiFi networks as easy as a few clicks of the mouse, thus saving time. The following is a step-by-step guide of building WiFi networks using the GWN7610's embedded controller and any device with a DHCP server. If you are installing GWN7610s to create WiFi access to existing networks, than this installation is literally as easy as it gets. If you're creating a deployment from the ground up, you will need a router, but the GWN7610 will be supported by any router. In either case, it takes 3 quick and easy steps to setup any GWN7610 as the master and create an initial SSID, and 3 even easier steps to add additional GWN7610s as slaves on the same network.

- You will need a device that has a DHCP server to give the GWN7610s an IP address. This can be a router or Grandstream's UCM6102 or UCM6200 series IP PBXs.
- You will want to make sure that all of the following setup is done prior to installing the devices in their final location, preferably on a desk or a table. This will ensure that when you mount the devices, they are completely provisioned and ready to go.

### **Configure master AP**

The first AP you access and plug into the network becomes the master. So make sure whatever device you access first is the device you want to be your master.

1. Connect a GWN7610 to any device or network that has a DHCP server to give the AP an IP address. Use a PC that is on the same LAN network as the DHCP server and GWN7610 in order to access the web user interface of the master GWN7610. Get the GWN7610s IP address from the DHCP server you are using and enter that IP address into a web browser.
  2. The Setup Wizard will launch. This will automatically complete the steps needed to set up the device and network settings and will automatically configure the device as the master. The setup wizard will also prompt you to create an initial network group and SSID and name them.
  3. This device is now setup as the master and has an initial SSID. You will now need to secure the access point and create a password for the initial SSID. You do this in the web UI by going to Network Group, click the edit button next to the access point listing, select the WiFi option, and there you will see the name of your initial SSID and you can edit the password (WPA pass key), security mode, key mode, encryption, etc.
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*Note: Make sure to apply changes after each change you make. The very top of the web UI will prompt you to apply changes in case you forget.*

## **Add Additional GWN7610s (as slaves)**

Now you have created a GWN7610 as the master to allow it to provision other GWN7610s as slaves. You have also created an initial Network Group and SSID that will automatically extended to the GWN7610s that you will now add.

1. Plug the GWN7610s you wish to provision into the same network as the master
2. Using the web user interface of the master AP, go to the “Access Points” screen, which will show you all of the discovered GWN7610s. If you don’t see your device, try re-starting that GWN7610. As soon as they are discovered, the LED indicators on the GWN7610 will blink in a purple color.
3. Select the GWN7610 you want to add to the network by clicking the “Actions” button (a paperclip). This will automatically add and provision that GWN7610 with the master and it will extend the network groups and SSIDs set on the master to the newly provisioned GWN7610. You can now enter the Edit page for the paired GWN7610 from the Access Points page in order to view IP address, network settings, MAC address and more.

You can also create additional network groups and SSIDs to extend to different APs or groups of APs provisioned to the master GWN7610 (we will cover that in a future piece).

## **Deployment Examples**

The GWN7610 is ideal for mid-range solutions, including home offices, small offices, multiple floor offices and multiple small to medium brand offices. Here we will break down 3 ideal use case scenarios and why the GWN7610 is ideal for each scenario.

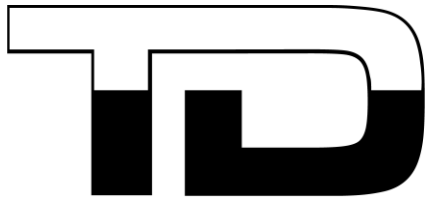
### **Small Offices, Individual Retail stores, Home Offices, Restaurants, Coffee Shops**

The GWN7610 is a great wireless access point for small offices, home offices and individual commercial locations such as retail stores, restaurants and coffee shops because of its ability to share a common SSID. All of these use case scenarios benefit from having one or a few common SSIDs (network names) and access credentials (user name and password) across all GWN7610 access points. For example, the access point in the main office, in the kitchen and in the conference room can all share the same wireless network and access credentials, allowing users to move anywhere within the office and still have access to the same, common network. In this scenario, all access points share the same IP address, the same subnet and the same domain. The other great thing about this deployment example is that all GWN7610s can be managed using the same management tool (the router, the AP controller).

### **Multiple Floor Offices**

The GWN7610 is great for offices that are spread out throughout multiple floors thanks to their ability to support and offer multiple SSIDs and VLANs. This gives businesses the ability to set up many access

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points with up to 16 SSIDs (16 different networks) per access point, including VPN networks. Businesses can setup their office with multiple zones where multiple different networks are available. Create a network for your sales team, a separate network for your customer service team, and a guest network – and make each network available only in the areas you want by configuring them strategically to your access points. All GWN7610 access points can be controlled by one common router, and each GWN7610 can be separately controlled using its' own web user interface.

## **Branch Offices (multiple office locations)**

The GWN7610 is ideal for branch offices or any business with multiple office locations. In this scenario, each set of GWN7610s in each branch office is installed, created to have unique subnet and paired to the network offered by the local router. You could then use a router, such as Grandstream's upcoming GWN routers, to bridge the GWN7610s in each location together through a VPN to merge together the two office networks onto one, shared network.

## **Conclusion**

The GWN series will be a new mainstay in the Grandstream product line and the GWN7610 is just the beginning. Over the following year the GWN series will be expanded to include a variety of routers and WiFi access points from basic to mid-range to high-end models. The GWN7610 specifically is a solid mid-range WiFi access point for small offices, medium and multiple floor offices, and branch offices. It offers tremendous WiFi coverage range, and embedded controller to make installation and management quick and easy, supports outstanding throughput and over 250+ clients per GWN7610 and can be paired with 3<sup>rd</sup> party routers and existing WiFi networks. We have been testing the device for a few weeks here at our TeleDynamics office and have found the devices to be very easy to install and quite powerful compared to similar mid-range WiFi APs. We are excited to offer the GWN7610 and other GWN devices to our customers and would recommend them for any mid-range deployment.

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