

U.S. Robotics®

802.11g Wireless Turbo Multi-Function Access Point

Faster Speed, Greater Compatibility, Better Security



Application Note

Wireless connections to and between Local Area Networks are becoming a critical component of the networking topography of many businesses. The 802.11g Wireless Turbo Multi-Function Access Point was developed to handle a wide variety of circumstances, providing a powerful tool for easily expanding high speed wireless access to a company's network resources.

The entire family of U.S. Robotics 802.11g Wireless Turbo products provides significant advantages over competing technologies, including:

- **Blazing Speed** – Up to twice as fast as competing 802.11g products
- **Greater Compatibility** – Allows 11, 22, 54 and 100 Mbps devices to each connect at their highest speeds
- **Superior Security** – Including 256-bit Wired Equivalent Privacy (WEP) encryption, WiFi Protected Access (WPA), MAC Authentication and more
- **Better Range** – Typically 30% greater range than other 802.11g products

This paper was developed to provide an overview of various scenarios where the unique capabilities of the Multi-Function Access Point apply. The "Multi-Function" in the name refers to its ability to work as:

- **Access Point** – Wireless base station for providing wireless access to an existing network or building an entirely new wireless network
- **Bridge** – For connecting two Ethernet networks
- **Multi-Bridge** – For connecting multiple Ethernet networks
- **Repeater** – For extending the range of a wireless network
- **Client** – Provides wireless access for any Ethernet device

Each of these capabilities will be demonstrated in a bit more detail, along with the key features that support that application.

Wireless LAN Access

Situation

An office has an existing LAN and broadband Internet connection. The firm decides to add several cubicles for their sales staff and want to share their connection with several personnel that up to now had stand-alone PCs.

Solution

This is the most typical use of an Access Point (AP) – basically providing wireless connections to a LAN and through the LAN sharing the broadband connection. Simply plug the AP into an available Ethernet port and it will act as an extension of the LAN, providing connectivity to PCs and laptops equipped with wireless cards (PC OR PCI). This is also useful for broadband enabled homes.

Key Features

- Security Suite – Eliminate the potential for unwanted intrusion
 - 256-bit Encryption
 - MAC Address Authentication
 - Disable Broadcast SSID – AP won't show up on site surveys



Bridging Two Local Area Networks

Situation

An organization has expanded beyond the ability of its existing office space and now has non-contiguous offices. This could be across the street or on another floor. While each space has its own LAN, there is a need to connect them to share a server.

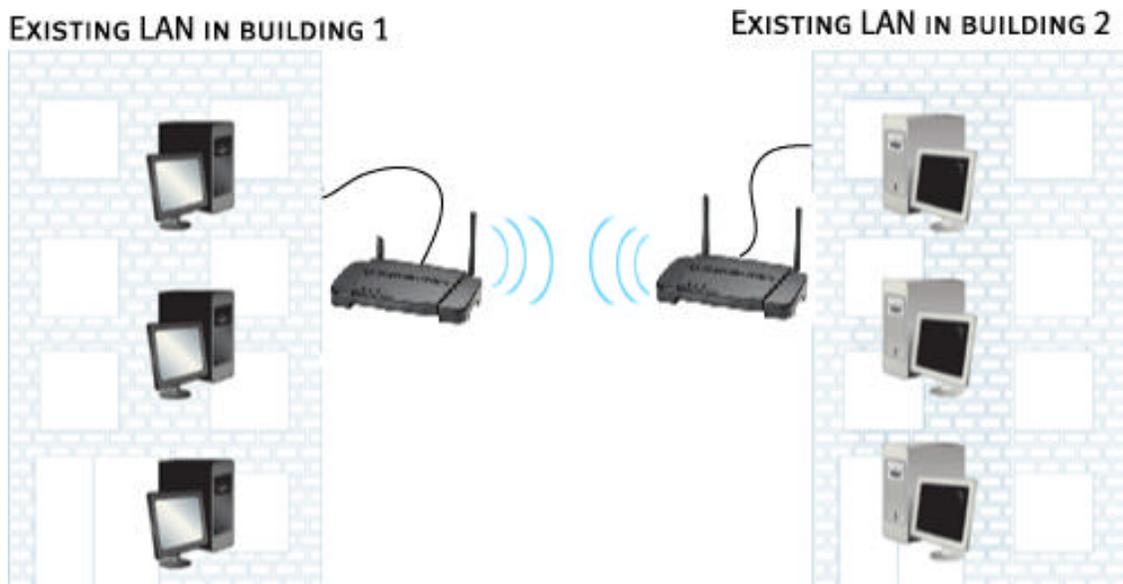
Solution

The 802.11g Turbo Multi-Function Access Point can be configured to serve as a bridge between two LANs. This application would require one AP be connected to each LAN and that they be configured for Wireless Bridge mode. The two Wireless Access Points will talk only with each other, creating a secure, direct connection between the different networks.

Depending on the distance, the job may be complete at this point (for instance, if the office spaces were across an atrium, or one floor up or down). However, if there were a larger distance (across the street or up to several floors away), this AP has removable antennas that allow you to switch them to provide for specialized requirements (i.e. higher gain or directional antennas). Alternative antennas must be 2.4Ghz ISM band antennas with reverse-polarity SMA connectors. In addition, you can also adjust the AP's power to improve coverage and reduce interference.

Key Features

- Wireless Bridge Mode
- Removable Antennas
- Configurable Power
- Security Suite – Eliminate the potential for unwanted intrusion
 - 256-bit Encryption
 - MAC Address Authentication



Bridging Multiple Local Area Networks

Situation

An organization has several office spaces that are non-contiguous — across the street, across an atrium or on another floor. While each space has its own Ethernet LAN, the IT team has implemented a shared server and now needs to connect the LANs to provide access to everyone.

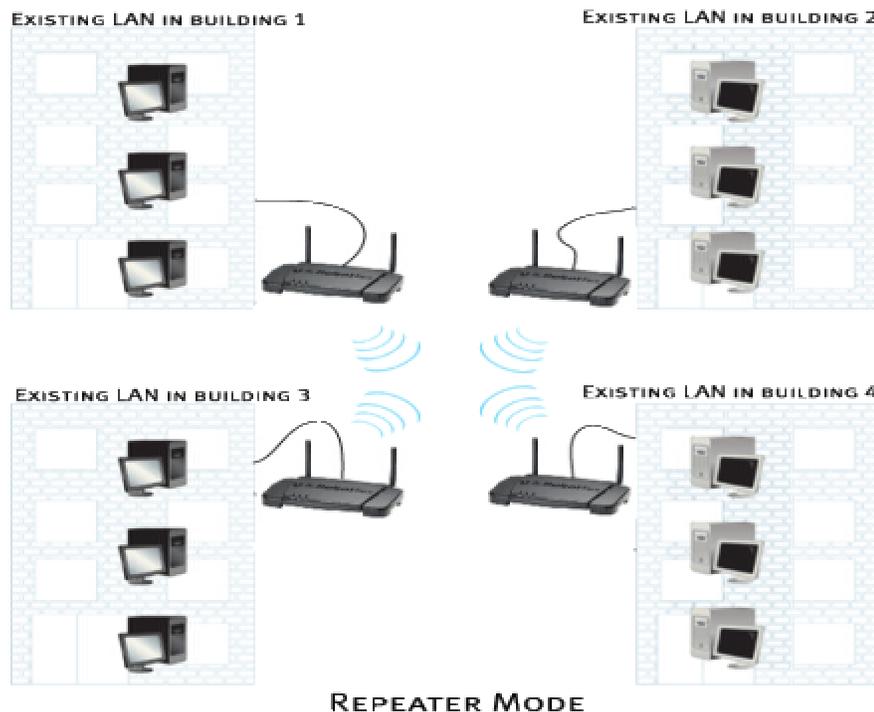
Solution

Similar to the Wireless Bridge solution, the 802.11g Turbo Multi-Function Access Point can be configured in Multi-Bridge mode to support multiple LANs. This application would require one AP be connected to each LAN. This creates secure, direct connections among the APs, facilitating connectivity among the separate LANs. In this configuration, the APs only communicate with each other (i.e. do not provide Wireless LAN access for wired PCs).

If the distance between the various networks is small, the job may be complete at this point (for instance, if they were across an atrium or one floor up or down). To provide connectivity over a larger distance (across the street or up to several floors away), the AP has removable antennas that allow you to switch them to provide for specialized requirements (i.e. higher gain or directional antennas). Alternative antennas must be 2.4Ghz ISM band antennas with reverse-polarity SMA connectors. In addition, you can also adjust the AP's power to improve coverage and reduce interference.

Key Features

- Wireless Multi-Bridge Mode
- Removable Antennas
- Configurable Power
- Security Suite – Eliminate the potential for unwanted intrusion
 - 256-bit Encryption
 - MAC Address Authentication



Enhancing Wireless Coverage with Repeater Mode

Situation

An organization in a large office space or perhaps a warehouse wants to provide wireless LAN connectivity in an area that doesn't currently have Ethernet cabling. The IT team investigated running cable, but the route is difficult and the proposition expensive. From the edge of their existing LAN, they installed a Multi-Function AP, but it either doesn't provide coverage as far as required or the signal (and resulting speed) is not satisfactory.

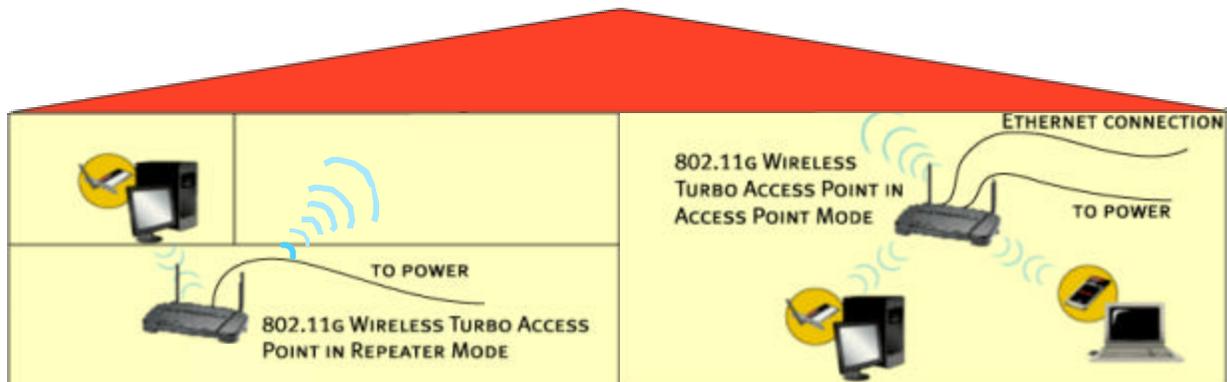
Solution

The 802.11g Turbo Multi-Function Access Point can be installed between the existing AP on the LAN and the area that requires coverage and pass information to and from the LAN and wireless devices. Simply configure the AP using its Ethernet connection in Repeater Mode. Once configured, remove the Ethernet connection and position it where you need it. It will require no Ethernet connection but will serve as a wireless connection to PCs/laptops and other 802.11b/g devices within its range.

If there is a need to fill additional coverage gaps, simply repeat the process and position APs deeper into the required coverage area. With the removable antennas and adjustable power you can optimize the number of required APs (essentially covering a much greater coverage area when signal overlap is not an issue). Alternative antennas must be 2.4Ghz ISM band antennas with reverse-polarity SMA connectors. Using Repeater mode you could provide wireless access to an entire warehouse or even convention center without running Ethernet cabling anywhere.

Key Features

- Repeater Mode
- Removable Antennas
- Configurable Power
- Security Suite
 - 256-bit Encryption
 - MAC Address Authentication
 - Disable Broadcast SSID – AP won't show up on site surveys



Universal Wireless Client

Situation

What if there is a need for wireless access to a LAN or to share a broadband connection with devices or equipment that only has Ethernet ports? It could be a UNIX PC/server with no drivers available to support a wireless card, an Internet appliance or in the home a gaming console.

Solution

The 802.11g Turbo Multi-Function Access Point can also be configured as an Access Point Client (or Client Mode). In this configuration, the AP looks to the client device just like an Ethernet cable but operates like a wireless PC or PCI card connecting to an AP attached to the LAN (in Access Point Mode).

Key Features

- 100 Mbps Accelerator Technology
 - Highest available throughput
 - Up to 30% greater range
- Security Suite
 - 256-bit Encryption
 - MAC Address Authentication

