Meraki MR58

POINT TO POINT AND POINT TO MULTI-POINT
NETWORK DESIGN GUIDE

Meraki's Large Scale Wireless Solution

The Meraki MR58 is a device designed for large scale wireless deployments, spanning long distance point to point installations to high density environments with an larger number of users. It can be deployed in a number of scenarios to bring WiFi areas to hard to reach places or distribute a broadband connection over a large area. Combined with Meraki's Hosted Controller, customers can now build and manage networks at incredible TCO's that were previously not possible.

What Makes Meraki Networks Different

Simple Network Design

Whether in a point to point or a point to multi-point deployment, the MR58 provides an access point, gateway, and mesh repeater all in one device without having to deploy multiple devices at one installation.

Fast Speed

The MR58 uses 3 802.11n radios, allowing for client access and backhaul at line rates up to 300Mbps.

Exceptional Security

The MR58, like all Meraki devices, uses military grade link encryption algorithms to keep data safe while traveling over backhaul or through the mesh. With our Hosted Controller, Meraki automatically handles network management by default, allowing you to focus on your business rather than worrying about systems administration.

Powerful Hosted Controller

The MR58 is supported by Meraki's Hosted Controller, which takes the complexity out of configuring, monitoring, and maintaining your wireless network. It handles complex functions like frequency planning on a network-wide scale, and provides a central location for you to manage your network.

A few features of the Meraki Hosted Controller include:

- Automatic Frequency Planning
- Advanced User Management
- QOS and Bandwidth Throttling
- Network Diagnostics
- Real Time Network Statistics
- Simple security configuration
- Guest/Private Network configuration

MR58: The 802.11n Rugged Mesh Access Point

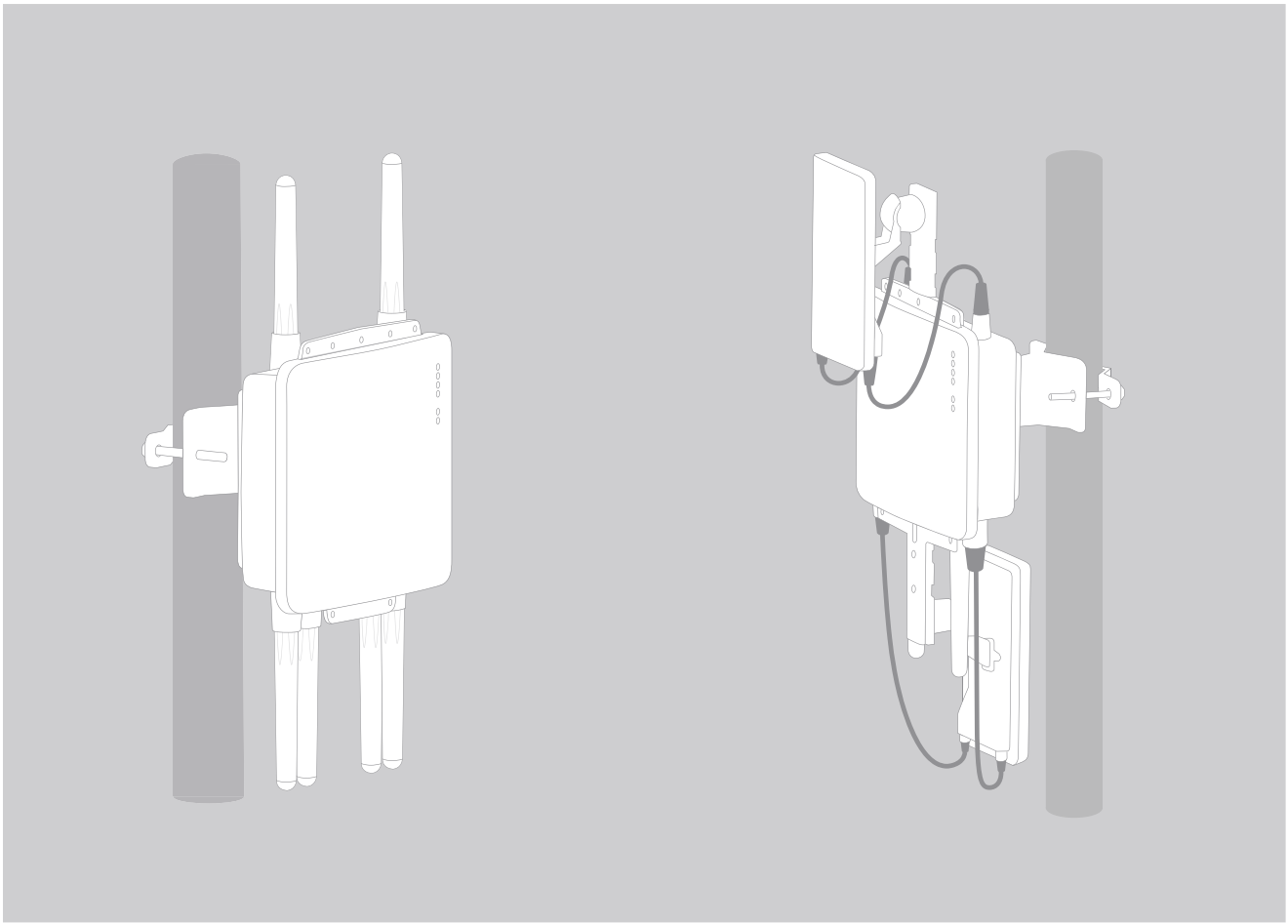
The MR58 is a wireless Meraki device containing 3 802.11n radios which acts as a mesh repeater for other Meraki devices in the area, an access point for client devices, and a backhaul capable device.

802.11n

The 802.11n technology in the MR58 provides up to 300Mbps line rates allowing for more clients and faster links than traditional backhaul equipment. The MR58 provides clients with additional range through advanced beam forming technology as well as increased throughput over 802.11 using advanced features channel bonding and packet aggregation.

Connect over long distances

The MR58 equipped with Meraki's Sector Antennas or 3rd party directional antennas can extend WiFi networks over long distance links. The MR58 has two Ethernet ports for uplink and client access. It automatically detects an internet connection and can operate as an internet gateway or as a repeater.



Deployment Model #1: 802.11n for high performance

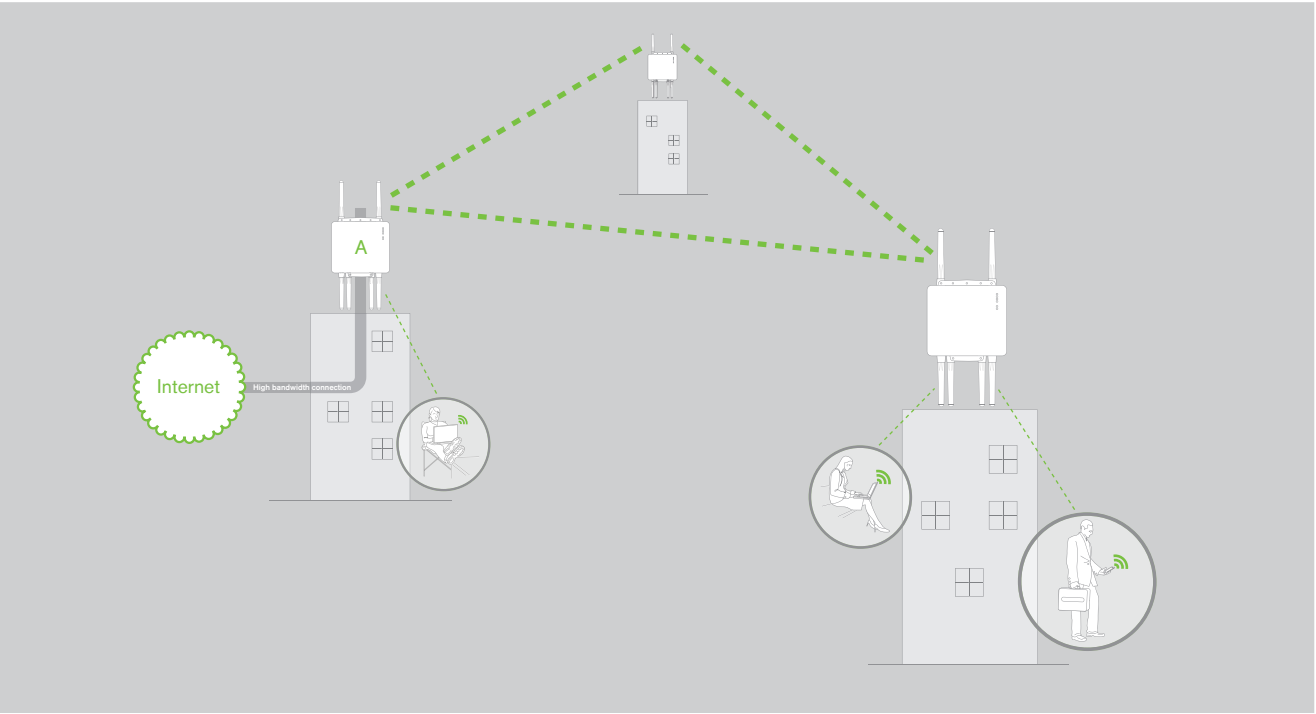
The MR58 is an ideal solution for customers looking to develop high speed high capacity wireless networks. It delivers higher speeds to the end-users than b/g radio devices if the end-users have 802.11n clients. Network users can typically expect a two to three fold performance increase over b/g devices.

Recommended deployments with high bandwidth needs include universities, corporate campuses, student housing, and multiple dwelling units (MDU). To achieve maximum performance we recommend using only MR58s in your network and have at least one MR58 connected to a high bandwidth connection to the internet.

The MR58 is particularlly well designed for use in high performance Point to Multipoint deployments, allowing you to extend the reach of your network without having to lay wires or invest in additional network drops. Applications that these deployment scenarios are appropriate for include:

- Backhaul for several Remote Sites
- Deliver more throughput to a particular location
- Provide a secure stand alone network
- Target a few subscribers over a large area

In this deployment scenario, multiple MR58's are deployed to provide high throughput coverage over a large area. This architecture is depicted below:



In this deployment, one MR58 device (node A) is connected to the internet and acts as a gateway device for other MR58s and other outdoor Meraki devices as well as an access points for any clients in the area.

All other MR58 devices in this deployment scenario should utilize sector and high gain directional antennas and be aimed at node A. This high gain directional antenna significantly boosts the signal.

The sector antenna ensures that all the backhaul links in this network are using 5 GHz spectrum. This spectrum is unlicensed in many countries and primarily used for backhaul; the sector antenna amplifies the signal across the link and blocks out other noise in the area. Using 5 GHz for backhaul like this is preferable to 2 GHz because it does not interfere with any other client connections in the area and can operate simultaneously to any other downstream connections in your network.

The MR58 is an ideal solution for networks with a significant number of users that have heavy bandwidth requirements like universities or corporate compuese. It delivers higher speeds to the end-users than b/g radio devices if the end-users have 802.11n clients. Network users can typically expect a two to three times performance increase over b/g devices.

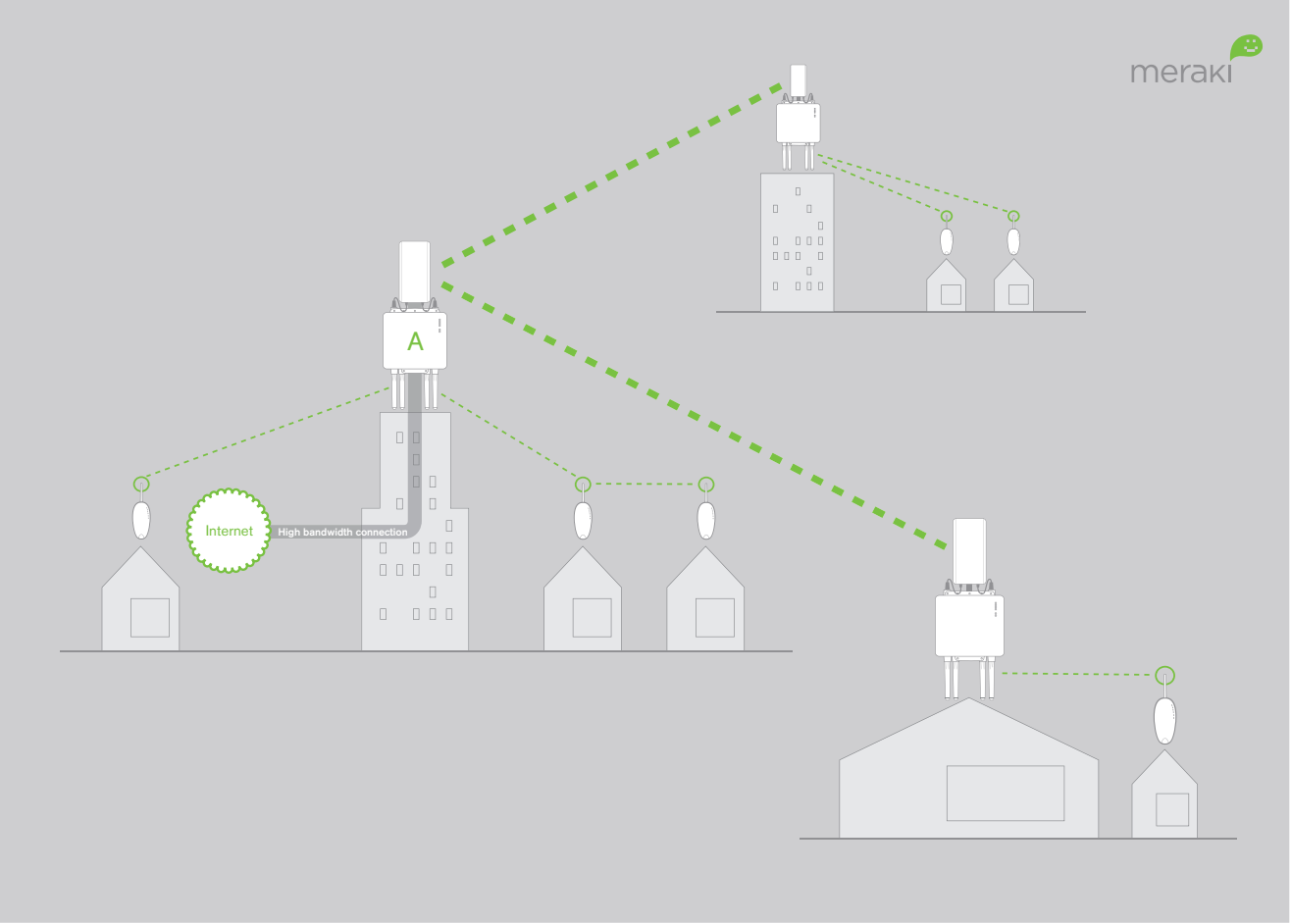
Clients can connect directly to the MR58's using the 802.11 b/g 2.4 GHz radio, which is connected to a Omni-directional antenna. For those without 11n clients, the MR58 offers investment protection. All end user devices will have 11n clients in the near further (assume 2-4 years). For example, all current Mac's are 802.11n clients.

Deployment Model #2: Point to Multi-point + Mesh

The MR58 is designed for use in large mesh deployments, allowing you to dramatically reduce the number of gateways and extend the reach of your network without having to lay wires or invest in additional network drops. Applications that these deployment scenarios are appropriate for include:

- Provide backhaul for large city scale deployments
- Deliver more throughput to a particular location
- Reach remote AP clusters
- Cover subscribers over a large area

In this deployment scenario, multiple MR58's are deployed to provide high throughput coverage over a large area and are used as gateway devices for other Meraki Outdoor products. This architecture is depicted below:



In this deployment, one MR58 device (node A) is connected to the internet and acts as a gateway device for other MR58s and other outdoor Meraki devices as well as an access points for any clients in the area.

All other MR58 devices in this deployment scenario should utilize sector or high gain directional antennas and be aimed at node A. This high gain directional antenna significantly boosts the signal, and allows the MR58 to act as a gateway for other Meraki Outdoor devices.

Sector or directional antennas ensure that all the backhaul links in this network operate at the 5 GHz frequency and do not interfere with other client or mesh traffic, allowing the backhaul to operate simultaneously with any other traffic in your network without interfering. The directional antenna amplifies the signal across the backhaul links and blocks out other noise in the area.

In this deployment scenario, the MR58 can replace expensive network drops and dramatically reduce the Operational Expenses for maintaining a network.

Deployment Model #3: Point to Point

The MR58, coupled with a high gain directional antenna, was designed for applications that require long distance and high throughput. Some use cases include:

- High throughput connection for voice, video, or data
- Backhaul for an Access Network
- Reach remote AP clusters
- Provide a secure stand alone network
- Remote security surveillance

These applications all involve bringing network access from one place to another. In this scenario, the backbone can use the directional antenna to amplify and focus the link's signal at both ends and shut out other interference. 5 GHz links also allow the MR58 to operate a point to point backhaul link without interfering with any local 802.11 traffic operating at 2.4 GHz. A typical deployment is pictured below.

Requirements for deployment:

- Availability and height of mounting location
- Line of sight between mounting locations
- Power availability at both mounting locations (MR58 supports POE, which runs up to 300m)
- Network availability at mounting location