



Meraki Implementation Note:

Extending a LAN wirelessly between
sites using the Meraki MR58

Version 1.0, June 2010

In a multi-site deployment, wired infrastructure may not be available between sites, but LAN connectivity for both sites is still required. In this case, a wireless point-to-point link may be beneficial to connect the two sites together.

Copyright

© 2010 Meraki, Inc. All rights reserved.

Trademarks

Meraki® is a registered trademark of Meraki, Inc.



www.meraki.com

660 Alabama St.
San Francisco, California 94110

Phone: +1 415 632 5800
Fax: +1 415 632 5899

Table of Contents

1	The Benefits of a Wireless Bridge	4
2	Using the Meraki MR58 for your Point-to-Point Link	5
2.1	Setting up the MR58 for Point-to-Point Connectivity	5
2.2	Adding Wired Connectivity to the Remote Site	5
2.3	Adding Meraki AP's to the remote side of the link	6
2.4	VLANs	7
3	Configuring your Point-to-Point link in the Dashboard.....	8
4	Conclusion	9

1 The Benefits of a Wireless Bridge

Wireless bridges can be used to connect geographically distant sites together without the expense of installing wired networking cable. A bridge enables one or more remote sites to appear to be on the same network as a central site, ensuring access to resources such as file shares, Domain services, and so on. Meraki bridges are simple to install, configure, and maintain.

2 Using the Meraki MR58 for your Point-to-Point Link

This chapter summarizes the equipment requirements for setting up a wireless link and how the Meraki MR58 would be configured for this deployment scenario.

2.1 Setting up the MR58 for Point-to-Point Connectivity

While all MR-series Meraki AP's have the capability to extend a LAN wirelessly between buildings, the MR58 is the best choice for this type of deployment. The MR58 is a triple-radio device, with two radios in the 5GHz band and one configured for the 2.4GHz band. In most cases, wireless point-to-point equipment will be mounted outdoors and will require external antennas which can be aimed for optimal connectivity. The Meraki MR58 meets both of these requirements, as well as having full mesh capability and offering client connectivity.

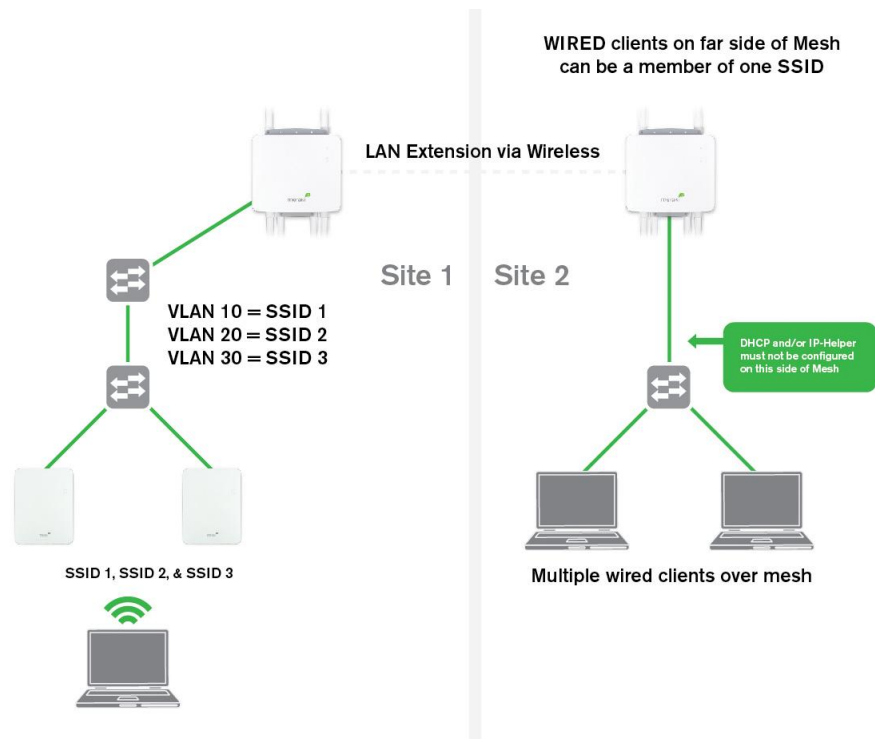
The most common configuration of the unit in a point-to-point scenario is to attach a panel antenna to one of the 5GHz radios on each unit, and point these antennas at each other. This is the connection that will span the distance between the two buildings. The second and third radios have omni-directional antennas attached to them in order to offer wireless client connectivity at both sides of the link.

2.2 Adding Wired Connectivity to the Remote Site

The manner in which a point-to-point link will link sites is to have one unit serve as the Meraki gateway (at the home site) and one unit function as a repeater (at the remote site).

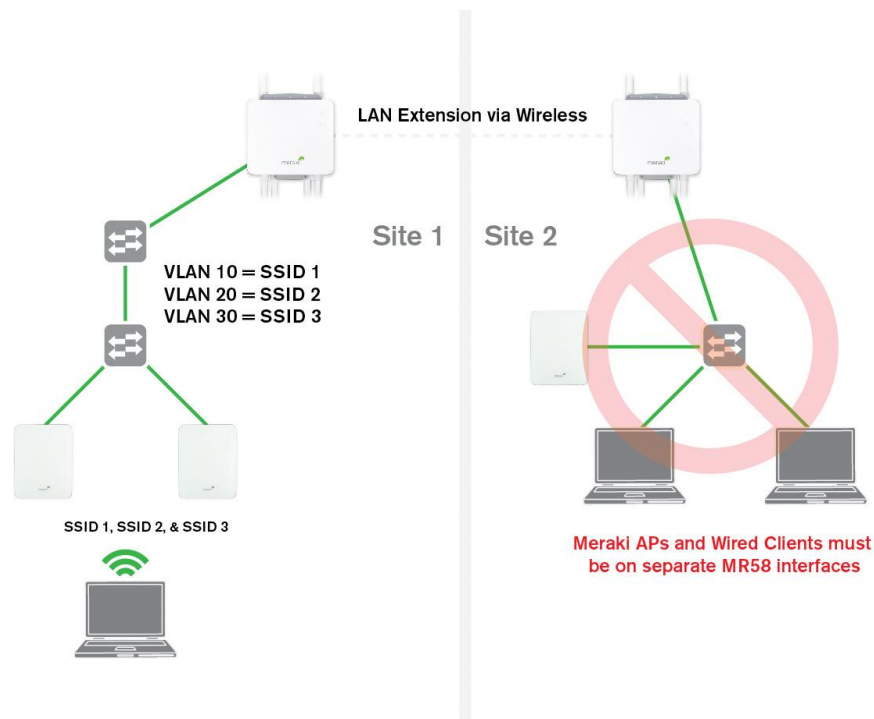
It is important that the Meraki unit at the remote site act as a repeater. The way Meraki determines whether a device should be a repeater or a gateway is that, at boot time, the unit sends out a DHCP request. If it receives a DHCP reply from any device on the wired network, it assumes this is a valid LAN connection and it should use this connection to become a Meraki Gateway. This means that in order for the point-to-point link to establish correctly, no network elements on the remote site should respond to DHCP requests. Note it is not possible to configure a static IP address for the repeater at the remote site because doing so will automatically designate the device as a gateway instead of a repeater.

Once the Meraki Gateway is established, the repeater on the remote side can be configured to accept wired clients on its Ethernet interfaces. At the remote site, a switch can be plugged into the available Ethernet port(s) on the MR58 to provide wired client connectivity to more than one wired client, creating a small office LAN. Note the picture below.



2.3 Adding Meraki AP's to the remote side of the link

Depending on the size of the area that requires coverage, you may require more than one AP on the remote side of the link. The MR58 has two Ethernet interfaces for wired connectivity, both of which can accept either wired client traffic or wired Meraki traffic. Wired Meraki traffic would be generated any time a "wired hop" is created, i.e. when a Meraki AP is plugged into a neighboring Meraki AP for connectivity. So to properly connect multiple Meraki devices to the MR58 repeater's wired interface, a switch must be added that has ONLY Meraki equipment connected to it. A mixture of wired clients and wired Meraki AP's attached to one MR58 interface will not work. This is due to the auto-detection mechanisms that Meraki AP's use to understand if they should function as a gateway or a repeater. The second wired interface can be leveraged for wired client connectivity if appropriate. Note the picture below.



2.4 VLANs

While VLAN configuration remains unaffected at the central site in all cases, the remote site's WIRED connectivity must be a member of one VLAN only (wireless clients will be unaffected). Any VLAN that has been configured for an SSID in the Meraki network can be selected as the remote site VLAN.

3 Configuring your Point-to-Point link in the Dashboard

The two MR58 units forming the point-to-point link must be in the same logical network as the rest of your Meraki equipment. In addition, there are two configuration settings in the Meraki Dashboard that must be applied in order for the wireless link to function properly:

- 1) Under *Configure -> Access control -> Addressing and Traffic*, the *Bridge Mode* radio button should be selected. This will instruct the Meraki network to operate as a wireless extension of your LAN and rely on the LAN configuration for all network connectivity
- 2) Under *Configure -> Network-wide settings -> Device Configuration* select *Clients wired directly to Meraki AP's behave like they are connected to [SSID name]*. This ensures that your point-to-point traffic inherits the settings for the appropriate SSID.

4 Conclusion

The MR58 is an easily deployable solution to link two sites together using a wireless point-to-point bridge. There is no complicated setup such as you might expect with traditional wireless bridging products since the Meraki Mesh automates link creation. Connecting all areas of a campus together on one network simplifies management, leverages existing internal resources, and enables single sign-on for wireless users across the campus.