Broadcast Suppression and Control Technologies for MR Access Points

Proper control of broadcast traffic will ensure that the wireless network is performing at its highest capability. Meraki MR access points employ a number of features to control and suppress broadcast traffic on the wireless network. This article provides some details on these technologies:

Proxy ARP

Proxy ARP allows an AP to answer ARP requests intended for an associated wireless client. An ARP request is sent as a broadcast, which would use one of the basic rates configured for the SSID. Reducing the ARP requests in the wireless medium relieves airtime and improves the overall performance of the wireless network.

Proxy ARP is enabled by default on MR access points.

Broadcast / Multicast suppression

Each access point has a built-in broadcast/multicast suppressor that reduces the overall number of broadcast frames sent from the wired network to the wireless network. This technology reduces the number of small frames sent on the wireless medium at a basic rate.

DHCP and ARP frames are excluded from the suppression engines

Multicast-Unicast Conversion

Multicast transmission is a one-to-many broadcast technology in which an AP forwards all broadcast packets from a multicast server source to a client subnet where multiple client devices are listening. The multicast server sends out a single stream during the transmission, allowing multiple clients to listen in. In this fashion, multicast is a true broadcast - the process is analogous to multiple listeners tuning into a radio station. Therefore, there is no additional overhead on the multicast server if an additional client joins. The multicast source relies on multicast-enabled routers to forward the packets to all client subnets that have clients listening.

Meraki APs will automatically perform a multicast-to-unicast packet conversion using the IGMP protocol, ensuring high-quality video transmission to a large number of clients. This can be especially valuable in instances such as classrooms, where multiple students may be watching HD video as part a classroom learning experience.

Multicast-unicast conversion is enabled on all Meraki APs by default.

Directed Multicast Service

The client requests the access point to transmit the required multicast packet as unicast frames. This allows the client to receive the multicast packets that are ignored in sleep mode and also ensures Layer 2 reliability. The unicast frame is transmitted to the client at a potentially higher wireless link rate, which enables the client to receive the packet quickly by enabling the radio for a shorter duration, thus saves battery power. Since the wireless client does not wake up at each DTIM interval to receive multicast traffic, thus allows longer sleeping intervals.