Conduct a Proof of Concept to Demonstrate the Benefits of Cisco Wi-Fi Optimization for iOS Devices

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How to conduct a proof of concept

Customer is running Cisco AireOS 8.3 or later

This section describes how to set up a POC to demonstrate the benefits of using Optimized Wi-Fi Connectivity for iOS devices on a Cisco network when the customer is running Cisco AireOS 8.3 or later.

Getting demo gear

First, you’ll need POC equipment. Work with Cisco to get one WLAN controller (WLC) and two access points (APs). Connect with Apple partners to request demo devices from Apple’s Seed pool program. If possible, use devices that closely resemble what will be used in the production environment.

Setting up the POC

1. Connect the two APs to the WLC running Cisco AireOS 8.3 or later.
2. Create a BSSID and turn on advanced roaming by enabling 802.11r/k/v.
3. Put one AP in a cabinet or drawer or similar, and the other AP far away.
4. At the edge of both cells, if the client is static, a “show client” summary on the WLC should show the client received signal strength indication (RSSI). It should be below -70 dBm. This is a good indicator that the APs are well spaced. The RSSI shouldn’t be below -78 or -80 dBm.
5. The standalone AP power should be set manually to 3 or 4; otherwise the power output from the APs may swing up and down during the test, yielding inconsistent results.

Apple and Cisco also recommend using AAA/802.1X, because 802.11r is a key differentiator in this case, as it has a lower value with preshared keys (PSK).

Conducting the POC with advanced roaming enabled

Measure client roam time from the last data packet on the old AP to the first data packet on the new AP with a network capture tool such as Wireshark. The reason for this recommendation is that the user experience depends on data packets. Wireshark will accurately capture the interval between the last successful data packet in the last cell and the first successful data packet in the next cell. Capturing this piece of data is critical to determine successful roaming.

If a customer has an existing app with performance issues, try to replicate this scenario from the production network. Also try to simulate in-store traffic or the equivalent.

If the customer does not have an existing app with performance issues, conduct the test with a simple FaceTime video call or Cisco Webex Teams™ call.

In either case, you will likely see stutter and jittery video on a video call between two iOS devices on a Cisco network without advanced roaming enabled, which enables the Optimized Wi-Fi Connectivity capability.
Testing metrics
The Apple and Cisco teams are happy to share a spreadsheet with a testing matrix if the customer is unsure of what metrics to capture. At a high level, we are interested in:

• Capturing the time the device is spending roaming
• Measuring the reduction in lost connections
• Measuring the number of handoffs

Don’t forget to save the testing output after you finish.

Rerun the POC with advanced roaming disabled
Create and run another BSSID and disable 802.11r/k/v. Repeat the same tests as above and observe how disabling advanced roaming makes an app perform much worse, such as a FaceTime video call or Webex Teams call.

Compare the logs for the events between the two WLAN controllers to observe the difference. There should be significant differences in performance between the two tests. These results should be proved not just through visual observations but also by logging in to the WLC.

Reset the environment
At the end of each test, be sure to disable and re-enable the Wi-Fi and choose to “forget” the Wi-Fi network. Otherwise, iOS devices will remember the previously connected APs and subsequently roam faster.

Customer is running Meraki 25.9 or later
Meraki has the same support for advanced roaming and Optimized Wi-Fi Connectivity. You can follow the testing instructions given above, with the exception that settings are changed in the Meraki cloud console as opposed to a WLC.

Additional available resources
Both Apple and Cisco have many additional resources available to support evaluation activities, including:

• Learn more about Apple and Cisco co-developed networking and iOS capabilities at www.cisco.com/go/applewireless.
• Wi-Fi assessment: Apple’s Enterprise Professional Services is available to do Wi-Fi assessments, which can be useful in uncovering potential issues.
• App Dev review: Apple’s Enterprise Consulting Engineering (CE) team and Apple’s Professional Services are available to do App Dev reviews. If these teams are not available, Apple can facilitate a third-party App Dev review with an Apple partner.
• General Wi-Fi troubleshooting: AppleCare’s Enterprise organization and Cisco’s Technical Assistance Center (TAC) are available to assess and help ensure that there are no extraneous issues that can cause network problems.
• Customer-led troubleshooting: For customers comfortable doing troubleshooting on their own, Apple provides many diagnostic profiles that can be found at developer.apple.com.

For more information about the Apple and Cisco partnership, go to www.cisco.com/go/apple.

Conclusion
Apple and Cisco have spent significant resources on co-engineering capabilities that complement each other’s products. By enabling Cisco Optimized Wi-Fi for iOS, customers and independent analytics companies have experienced significantly improved performance for iOS devices connected to Cisco networks during day-to-day activities.