



Wireless IP Telephony Verification

After conducting an RF site survey and configuring the APs and the phones, it is crucial to conduct verification tests to ensure that everything works as desired. These tests should be performed at all of the following locations:

- The primary area of each AP cell (where the phones will most likely connect to that particular AP)
- Any location where there might be high call volume
- Locations where usage might be infrequent but coverage still has to be certified (for example, stairwells, restrooms, and so forth)
- At the fringes of the AP's coverage area

These tests can be performed in parallel or series. If performed in parallel, ensure that phones are powered off between testing points to test full association, authentication, and registration at each location. Roaming and load tests must, of course, be the final tests.

The following sections discuss various wireless network techniques:

- [Association, Authentication, and Registration, page 8-1](#)
- [Phone Calls and Load Testing, page 8-2](#)
- [Ongoing Verification, page 8-3](#)

Association, Authentication, and Registration

The following sections explain how to verify that the Cisco 7920 Wireless IP Phone is associating, authenticating, and registering properly.

Association

At multiple points throughout the environment, power-up the phone and verify association with the AP. If the client does not associate with the AP, perform the following checks:

- Check the phone configuration to ensure proper SSID, authentication type, and so forth.
- Check the AP configuration to ensure proper SSID, authentication type, radio channels, and so forth.
- Check your site survey to ensure the location has adequate RF coverage.

Authentication

At multiple points throughout the environment, ensure that the phone authenticates through the AP successfully. If the client does not authenticate, perform the following checks:

- Check either the WEP key or the LEAP username and password on the phone.
 - If these entries are incorrect, retype them on the phone.
 - If using domains, enter the username as *domain\username*.
- Check either the WEP key or the security configurations on the AP.
- Check the username and password on the AAA server by using a wireless laptop with identical credentials.

Registration

At multiple points throughout the environment, ensure that the phone registers with Cisco CallManager and receives the proper phone number. If the client does not register, perform the following checks:

- Check the Cisco CallManager settings. (Is the phone configured in Cisco CallManager?) You can use a wired IP phone to test the Cisco CallManager configurations.
- Verify that the phone has the correct IP Address, Subnet Mask, Primary Gateway, Primary TFTP, Primary/Secondary DNS, and Cisco CallManager information.
- Use the Trace Route function (see [Advanced Cisco 7920 Commands, page A-1](#)) to check connectivity between the phone and Cisco CallManager, gateway, and so forth.

Phone Calls and Load Testing

The following sections explain how to verify that calls can be placed successfully from the Cisco 7920 Wireless IP Phone with acceptable voice quality.

Stationary Phone Calls

At multiple points throughout the environment, while standing still, make a phone call to a wired phone and conduct 60 to 120-second voice tests to check voice quality. If the voice quality is unacceptable, perform the following checks:

- If you make a call using the wired phone, is the voice quality acceptable? If not, verify the wired network design against the guidelines listed in the *Cisco IP Telephony Solution Reference Network Design (SRND)*, available at <http://www.cisco.com/go/srnd>
- Use the site survey tools to verify that there is no more than one AP per RF channel from that location with a signal strength (RSSI) greater than 35. If there are two APs present on the same channel, ensure that the signal-to-noise ratio (SNR) is as high as possible to minimize interference. For instance, if the stronger AP has an RSSI of 35, ideally the weaker AP should have an RSSI of less than 20. To achieve this goal, you might have to reduce one AP's transmit power or move the AP.
- Check the QoS settings on the AP to confirm proper recommended settings.

Roaming Phone Calls

Place a call to a wired IP phone and continually check voice quality while traversing the total wireless coverage area. Cisco recommends using an earpiece so that you can test the voice quality while still looking at the site survey information on the phone. If the voice quality is insufficient, perform the following checks:

- Listen for all unacceptable changes in voice quality and take note of the values in the phone's site survey.
- Watch and listen for the phone to roam to the next AP.
- Note the other available APs in the site survey to check coverage and interference.

Make adjustments to AP placement and settings to fine-tune the WLAN, and perform the following checks to ensure voice quality:

- Using the site survey tools, verify that there is no more than one AP per channel with an RSSI value greater than 35 in any given location. Ideally, all other APs on the same channel should have RSSI values as low as possible (preferably less than 20). At the border of the coverage area where the RSSI is 35, the RSSI for all other APs on the same channel should ideally be less than 20.
- Use the site survey tools to verify that there are at least two APs (total, on separate channels) visible in all location with sufficient signal strength.
- Check that the APs in a given roaming area are all on a Layer 2 network.

Load Testing

Gather a sampling of all the planned wireless phone users, and equip them with Cisco 7920 Wireless IP Phones. Have seven users begin by making phone calls in a given area. Then have users start to move apart while placing new calls. Continue to check voice quality during this process.

Ongoing Verification

The RF environment will constantly be changing as the number of users increases, types of applications being used changes, and physical changes are made to the environment.

- Periodically check for acceptable environmental conditions (see [Overview of Cisco Wireless IP Telephony, page 1-1](#)), especially in the beginning as you ramp up for full deployment. Pay particular attention to QBSS or AP channel utilization, which will typically be low during a site survey but will increase as more users are added to the wireless network.
- Also continually checking for rogue APs and other sources of RF noise that can interfere with production operations. These issues can occur at any time and must be monitored continually and mitigated quickly. Through the use of the Cisco Structured Wireless-Aware Network (SWAN) architecture, Cisco provides automated tools for detecting rogue APs and 2.4 GHz (non-802.11) noise. For more information about Cisco SWAN, refer to the documentation available at

<http://www.cisco.com>

