



Configuring QoS Enhanced BSS

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Prerequisites for Using QoS Enhanced BSS on Cisco 7921 and 7920 Wireless IP Phones

Follow these guidelines to use Cisco 7921 and 7920 Wireless IP Phones with controllers:

- Aggressive load balancing must be disabled for each controller. Otherwise, the initial roam attempt by the phone may fail, causing a disruption in the audio path.
- The Dynamic Transmit Power Control (DTPC) information element (IE) must be enabled using the **config 802.11b dtpc enable** command. The DTPC IE is a beacon and probe information element that allows the access point to broadcast information on its transmit power. The 7921 or 7920 phone uses this information to automatically adjust its transmit power to the same level as the access point to which it is associated. In this manner, both devices are transmitting at the same level.
- Both the 7921 and 7920 phones and the controllers support Cisco Centralized Key Management (CCKM) fast roaming.
- When configuring WEP, there is a difference in nomenclature for the controller and the 7921 or 7920 phone. Configure the controller for 104 bits when using 128-bit WEP for the 7921 or 7920.
- For standalone 7921 phones, load-based CAC must be enabled, and the WMM Policy must be set to Required on the WLAN.
- The controller supports traffic classification (TCLAS) coming from 7921 phones using firmware version 1.1.1. This feature ensures proper classification of voice streams to the 7921 phones.
- When using a 7921 phone with the 802.11a radio of a 1242 series access point, set the 24-Mbps data rate to Supported and choose a lower Mandatory data rate (such as 12 Mbps). Otherwise, the phone might experience poor voice quality.

Restrictions for QoS Enhanced BSS

- The OEAP 600 Series access points do not support CAC.
- QBSS is disabled by default.
- 7920 phones are non-WMM phones with limited CAC functionality. The phones look at the channel utilization of the access point to which they are associated and compare that to a threshold that is beacons by the access point. If the channel utilization is less than the threshold, the 7920 places a call. In contrast, 7921 phones are full-fledged WMM phones that use traffic specifications (TSPECs) to gain access to the voice queue before placing a phone call. The 7921 phones work well with load-based CAC, which uses the percentage of the channel set aside for voice and tries to limit the calls accordingly.

Because 7921 phones support WMM and 7920 phones do not, capacity and voice quality problems can arise if you do not properly configure both phones when they are used in a mixed environment. To enable both 7921 and 7920 phones to co-exist on the same network, make sure that load-based CAC and 7920 AP CAC are both enabled on the controller and the WMM Policy is set to Allowed. These settings become particularly important if you have many more 7920 users than 7921 users.

- We recommend that aggressive load balancing always be turned off either through the controller GUI or CLI in any wireless network that is supporting voice, regardless of vendor. When aggressive load balancing is turned on, voice clients can hear an audible artifact when roaming, if the handset is refused at its first reassociation attempt.

QoS Enhanced BSS

The QoS Enhanced Basis Service Set (QBSS) information element (IE) enables the access points to communicate their channel usage to wireless devices. Because access points with high channel usage might not be able to handle real-time traffic effectively, the 7921 or 7920 phone uses the QBSS value to determine if they should associate to another access point. You can enable QBSS in these two modes:

- Wi-Fi Multimedia (WMM) mode, which supports devices that meet the 802.11E QBSS standard (such as Cisco 7921 IP Phones)
- 7920 support mode, which supports Cisco 7920 IP Phones on your 802.11b/g network

The 7920 support mode has two options:

- Support for 7920 phones that require call admission control (CAC) to be configured on and advertised by the client device (these are typically older 7920 phones)
- Support for 7920 phones that require CAC to be configured on and advertised by the access point (these are typically newer 7920 phones)

When access point-controlled CAC is enabled, the access point sends out a Cisco proprietary CAC Information Element (IE) and does not send out the standard QBSS IE.

This section contains the following subsections:

Configuring QBSS (GUI)

- Step 1** Choose **WLANs** to open the **WLANs** page.
- Step 2** Click the ID number of the **WLAN** for which you want to configure WMM mode.
- Step 3** When the **WLANs > Edit** page appears, choose the **QoS** tab to open the **WLANs > Edit (Qos)** page.
- Step 4** From the WMM Policy drop-down list, choose one of the following options, depending on whether you want to enable WMM mode for 7921 phones and other devices that meet the WMM standard:
- **Disabled**—Disables WMM on the **WLAN**. This is the default value.
 - **Allowed**—Allows client devices to use WMM on the **WLAN**.
 - **Required**—Requires client devices to use WMM. Devices that do not support WMM cannot join the **WLAN**.
- Step 5** Select the **7920 AP CAC** check box if you want to enable 7920 support mode for phones that require access point-controlled CAC. The default value is unselected.
- Step 6** Select the **7920 Client CAC** check box if you want to enable 7920 support mode for phones that require client-controlled CAC. The default value is unselected.
- Note** You cannot enable both WMM mode and client-controlled CAC mode on the same **WLAN**.
- Step 7** Click **Apply** to commit your changes.
- Step 8** Click **Save Configuration** to save your changes.
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Configuring QBSS (CLI)

- Step 1** Determine the ID number of the **WLAN** to which you want to add QBSS support by entering this command:
- ```
show wlan summary
```
- Step 2** Disable the **WLAN** by entering this command:

```
config wlan disable wlan_id
```

**Step 3** Configure WMM mode for 7921 phones and other devices that meet the WMM standard by entering this command:

```
config wlan wmm {disabled | allowed | required} wlan_id
```

where

  - **disabled** disables WMM mode on the **WLAN**.
  - **allowed** allows client devices to use WMM on the **WLAN**.
  - **required** requires client devices to use WMM. Devices that do not support WMM cannot join the **WLAN**.

**Step 4** Enable or disable 7920 support mode for phones that require client-controlled CAC by entering this command:

```
config wlan 7920-support client-cac-limit {enable | disable} wlan_id
```

**Note** You cannot enable both WMM mode and client-controlled CAC mode on the same WLAN.

**Step 5** Enable or disable 7920 support mode for phones that require access point-controlled CAC by entering this command:

```
config wlan 7920-support ap-cac-limit {enable | disable} wlan_id
```

**Step 6** Reenable the WLAN by entering this command:

```
config wlan enable wlan_id
```

**Step 7** Save your changes by entering this command:

```
save config
```

**Step 8** Verify that the WLAN is enabled and the Dot11-Phone Mode (7920) text box is configured for compact mode by entering this command:

```
show wlan wlan_id
```

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