10.3.2 Wireless Configuration Tasks

To set up a wireless network, configure the wireless APs, network bridges, wireless range extenders, and wireless NICs. Most APs are configured to work right out of the box. However, you may need to perform some configuration to customize settings or enable security.

- Most APs have at least one wired port that you can use to connect to the AP and perform configuration tasks. Many come with a simple web interface that you can use to perform initial configuration tasks.
- Determine if you will require a bridge to connect different segments of your network.
- If your wireless network is not reaching where you need it to, then you may need a wireless range extender to increase the range of your network.
- Depending on the operating system, wireless NICs might be configured automatically, or you might need to install special software before (or after) installing the hardware in the computer. Consult the NIC documentation to identify the necessary installation steps.

How to Configure Wireless Devices

Use the following steps to configure wireless devices on your network.

Task	Description
Configure the Region (AP only)	The region identifies the physical area where the AP operates.
Select the Network Mode	The network mode you choose depends on the type of clients that will connect to your network. For the 5 GHz band, you can typically select: ▪ Mixed, which supports connections from 802.11a or 802.11n clients ▪ 802-11a only ▪ 802.11-11n only ▪ Disabled For the 2.4 GHz band, you can typically select: ▪ Mixed ▪ 802.11-B/G only ▪ 802.11-B only ▪ 802.11-G only ▪ 802.11-N only ▪ Disabled
Set the SSID	The SSID is also referred to as the network name. ▪ All devices on the same network must use the same SSID. ▪ The SSID is case sensitive. ▪ To provide some level of security, consider using a cryptic name for the SSID. Using your business name for your network SSID makes it too easy to identify the network owner and could help hackers gain access.
Configure the Channel	Wireless networks can be configured to use one of several RF channels. ▪ Choose a channel on the AP that is not used by other wireless devices (such as phones or other APs). ▪ On the NIC, the channel is detected automatically and configured to match the channel used by the AP. Many APs detect channels used in the area and automatically configure themselves to use a channel that does not overlap with other channels used in the area.
Configure Security	You should enable some form of security or encryption on the AP and each wireless NIC by completing the following: ▪ Configure a MAC access list. Some APs can restrict wireless access to specific MAC addresses. Only devices whose MAC addresses are identified are allowed to access the wireless AP. ▪ Disable SSID broadcast. That way, wireless devices must be statically configured with the SSID before they can connect because they will be unable to detect the network name.. ▪ Configure the passphrase WPA or WPA2 (the passphrase is case sensitive). When configuring encryption, select the strongest method supported by all devices. ▪ AES is the strongest encryption method currently available, and it is used with WPA2. When using AES, all devices must be WPA2 capable. ▪ TKIP is used with WPA or WPA2. TKIP encryption is not as strong as AES encryption. ▪ Public networks may not use any encryption. Be very cautious when using these networks, as all data transmitted is easily captured and read.

Configure the Beacon	A *beacon* is a frame that is sent out by the AP periodically. The beacon announces the AP and the characteristics of the network, like the SSID, supported speeds, and the signaling method used. ▪ When you turn off SSID broadcast, you prevent the AP from including the SSID in the beacon. ▪ Wireless clients listen for beacons to identify APs in the area. ▪ The beacon is sent at periodic intervals (typically 100 ms by default). ▪ Sending the beacon uses some of the available bandwidth of the wireless network. You can reduce the traffic generated by the beacon by increasing the beacon interval. ▪ Increasing the beacon interval can increase the time it takes wireless clients to locate the wireless network. To improve access times, decrease the beacon interval.

Wireless Connection and Windows

Consider the following wireless connection details when using the Windows operating system.

- When a wireless network adapter is installed and configured on the Windows computer, a wireless network icon appears in the notification area.
- Some devices include a physical switch that turns the integrated wireless network adapter on or off.
  - When the adapter is in the on position, Windows automatically detects wireless networks that are broadcasting the SSID.
  - When the adapter is in the off position, no wireless networks are displayed as available.
- Wireless networks are listed in order of signal strength in the wireless network icon in the notification area.
- To connect to a listed network, select the network from the wireless network icon in the notification area and click **Connect**.
  - You will be prompted to supply a key value (if one is required) before connecting to secured networks.
- To connect to a wireless network that is not broadcasting the SSID, you must create the wireless profile manually. You can:
  - Use the **Manually Create A Network Profile** option to set up each client individually with network information.
  - Use the **Copy this network profile to a USB flash drive** option to save wireless network settings to a USB flash drive. On each additional client, run the utility to copy the profile settings to the client.