Overview

This chapter provides an overview of the Cisco 526 Wireless Express Mobility Controller components and features. It contains these sections:

- System Overview, page 1-1
- WLC526 Controller Overview, page 1-4
- Configuration Options, page 1-6

System Overview

The Cisco 526 Wireless Express Mobility Controller (also referred to as the WLC526 or just the controller) is a network appliance that is optimized for secure transmission of data, voice, and video as part of the Cisco Mobility Express solution of the Cisco Smart Business Communications System (SBCS).

Some of the features available in the controller-based architecture of the Cisco Mobility Express Solution include:

- Centralized management—Cisco Configuration Assistant (also referred to as CCA) enables users to quickly and easily set-up and manage clients, access points, and network policies through a single wizard interface and predefined configuration templates.
- Radio resource management—Features such as quality of service (QoS) and load balancing optimize traffic of voice, video, and data, thus optimizing bandwidth.
- Up to eight virtual networks—This allows one physical infrastructure to be segmented for multiple uses—such as by organization, security level, voice or data requirement, and so on. One network can also be configured as a secure guest network.
- Mobility management—Allows movement from one access point to another without losing a connection.
- Mobility services—Supports advanced mobility services traditionally reserved for enterprise businesses, including:
  - Standards-based security
  - Secure guest access
  - Optimized voice over Wi-Fi
The Cisco Mobility Express Solution

The Cisco Mobility Express solution comprises access points, mobility controllers, and a configuration assistant that is tailored to the needs of businesses with fewer than 250 employees. Figure 1-1 shows the Cisco Mobility Express Solution elements.

Figure 1-1    Cisco Mobility Express Solution Elements

The Cisco 521 Wireless Express Access Point

The Cisco 521 Wireless Express Access Point is a single-band 802.11g access point that features business-class management, security, and scalability. It supports high-performance wireless connectivity in carpeted offices and similar environments. They can be deployed in two modes—standalone or controller-based:

- Standalone (referred to as an AP521 access point)—Up to three AP521 access points can be deployed to provide wireless connectivity between the devices and the rest of the network. In this configuration, the access points are managed individually through the CCA.
- Controller-based (referred to as a lightweight or LAP521 access point)—Up to 12 LAP521 access points (six per wireless LAN controller) can be deployed and become multifunctional. In addition to offering connectivity, the access points allow the controller to monitor all wireless activities through them. In this configuration, they are managed by the controller through the CCA.

Note
Cisco 500 series access points can associate only with Cisco 500 series controllers. Because the needs of Cisco Mobility Express customers are different than those of enterprise customers, these access points do not operate with other controllers.

For more information about Cisco 521 Wireless Express Access Points, refer to the Quick Start Guide: Cisco 521 Wireless Express Access Point.
Chapter 1      Overview

System Overview

The Cisco 526 Wireless Express Mobility Controller

The WLC526 controller is easy to deploy, use, and maintain. The CCA interface and the automated Radio Resources Management (RRM) tool configure the access points automatically to avoid interference or coverage gaps while maximizing the bandwidth available. If the controller detects an access point failure or a point of interference, it immediately takes action tuning the radio power or frequency of surrounding access points to compensate and maintain business continuity without affecting the devices connected to the wireless network.

A single WLC526 controller supports up to six LAP521 access points. A second WLC526 controller can be added to the network to support redundancy or to increase capacity to 12 access points, or both.

Cisco Configuration Assistant

The CCA is a PC-based user interface created specifically for small-to-medium businesses with limited networking resources and IT expertise. CCA manages the entire Smart Business Communications System portfolio, including Cisco Mobility Express devices (see previous section) and these SBCS devices:

- Cisco UC500 series appliances (UC500)—The UC500 includes voice and messaging features, Public Switched Telephone Networks and Internet connectivity, integrated network security, and an optional integrated WLAN access point to provide basic WLAN coverage in a small office space.
- Catalyst Express 500 Series Switches (CE520)—These fixed-configuration, Layer 2-managed Ethernet switches include wire-speed Fast Ethernet and Gigabit Ethernet connectivity, integrated security, QoS, and Power-over-Ethernet (PoE) features.
- Cisco Unified IP Phones—The full Cisco Unified IP Phone portfolio is supported, including the Cisco Unified IP Communicator and wireless IP phones.

Remote Configuring and Monitoring Capability

Cisco Monitor Director and Cisco Monitor Director Agent provide monitoring and reporting tools that give network integrators real-time access to their supported customer networks. CCA supports remote configuration. For more information about Cisco Monitor Director and Agent, refer to the Quick Start Guide for Cisco Monitor Director 1.1 (Cisco Smart Business Communications System Release).
WLC526 Controller Overview

This section outlines the features and specifications of the WLC526 controller.

Features and Benefits

Table 1-1 lists the features and benefits of the WLC526 controller.

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure network access for guest users</td>
<td>Secure guest access enables you to easily create and manage a virtual guest network with a Web login portal page for users such as customers, vendors, and contractors. Visitors can have Internet access while safely partitioned from the sensitive corporate LAN.</td>
</tr>
<tr>
<td>Support for Cisco voice-over-WLAN optimization</td>
<td>Voice-over-WLAN optimization is a package of features that deliver quality of service, call admission control, and fast, secure inter-access-point handoff to improve the quality of a wireless voice infrastructure.</td>
</tr>
<tr>
<td>Easy management tool</td>
<td>Within CCA are Smart Assist features that enable plug-and-play functionality and optimize network settings.</td>
</tr>
<tr>
<td>Support for Cisco Lightweight Access Point Protocol (LWAPP)</td>
<td>Uses Cisco LWAPP for communication between Cisco 500 series access points and WLC526 controllers to simplify deployment and management, and to automate functions required for seamless wireless coverage.</td>
</tr>
<tr>
<td>Support for up to 6 access points per controller and up to 2 controllers per network for a total of 12 access points</td>
<td>The wireless network easily expands as business requirements for additional wireless coverage and mobility services increase.</td>
</tr>
<tr>
<td>Multi-access-point Radio Resource Management (RRM)</td>
<td>RRM automatically optimizes radio coverage and capacity while working around potential points of interference. This real-time radio coordination simplifies deploying multiple access points.</td>
</tr>
<tr>
<td>Secure authentication mechanism support</td>
<td>Supports a wide range of authentication mechanisms to enable scalable security architectures and minimizes security interoperability problems (see the “Security/Authentication Standards” section on page 1-5)</td>
</tr>
<tr>
<td>Wired/wireless network virtualization</td>
<td>Supports the use of up to 8 SSID/VLANs so that one physical WLAN infrastructure can be safely shared by users, applications, or organizations with different network and security requirements.</td>
</tr>
</tbody>
</table>
WLC526 Controller Specifications

Table 1-2 lists product specifications for the WLC526 controller.

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Interfaces</td>
<td>• Two 10/100 Ethernet ports for uplink and management</td>
</tr>
<tr>
<td></td>
<td>• Two USB console ports (future expansion)</td>
</tr>
<tr>
<td></td>
<td>• One RJ-45 serial port for direct console access</td>
</tr>
<tr>
<td>Wired/Switching/Routing protocols</td>
<td>• IEEE 802.3 10BASE-T</td>
</tr>
<tr>
<td></td>
<td>• IEEE 802.3u 100BASE-T</td>
</tr>
<tr>
<td></td>
<td>• IEEE 802.1Q VLAN tagging</td>
</tr>
<tr>
<td>Management Options</td>
<td>• CCA software (recommended primary interface)</td>
</tr>
<tr>
<td></td>
<td>• Controller web-browser interface</td>
</tr>
<tr>
<td></td>
<td>• Limited command-line interface for troubleshooting using Telnet, SSH, or console port access</td>
</tr>
<tr>
<td>Security/Authentication Standards</td>
<td>• None/Open</td>
</tr>
<tr>
<td></td>
<td>• MAC Filtering</td>
</tr>
<tr>
<td></td>
<td>• WPA/Open with EAP</td>
</tr>
<tr>
<td></td>
<td>• WPA/Network EAP</td>
</tr>
<tr>
<td></td>
<td>• WPA2/AES CCMP</td>
</tr>
<tr>
<td></td>
<td>• Cisco LEAP</td>
</tr>
<tr>
<td></td>
<td>• EAP- TLS</td>
</tr>
<tr>
<td></td>
<td>• EAP-SIM</td>
</tr>
<tr>
<td>RADIUS Authentication</td>
<td>• IEEE 802.1x RADIUS authentication (external RADIUS server required)</td>
</tr>
<tr>
<td>Multiple Service Set Identifiers (SSIDs)</td>
<td>• Eight SSIDs supported (each access point may support multiple SSIDs)</td>
</tr>
<tr>
<td></td>
<td>• One SSID broadcast in SSID beacon</td>
</tr>
<tr>
<td>Support for Cisco Secure Guest Access through CCA</td>
<td>• Guest SSID/VLAN</td>
</tr>
<tr>
<td></td>
<td>• Auto-expiring guest user accounts</td>
</tr>
<tr>
<td></td>
<td>• Custom guest login page</td>
</tr>
<tr>
<td>Support for Voice-over-WLAN Optimization</td>
<td>• Quality of service</td>
</tr>
<tr>
<td></td>
<td>• Call admission control</td>
</tr>
<tr>
<td></td>
<td>• Fast inter-access point hand-off</td>
</tr>
<tr>
<td></td>
<td>• Other optimization features designed to improve the quality of a wireless voice infrastructure</td>
</tr>
</tbody>
</table>
Configuration Options

Like many Cisco devices, the WLC526 controller can be configured and operated through more than one interface. They are:

- Cisco Configuration Assistant (CCA)
- Controller web-browser interface (GUI)
- Command-line interface (CLI)

This section explains use and limitations of each interface.

Using the Cisco Configuration Assistant

The CCA is your primary tool to install, set up, configure, and monitor all the Cisco Smart Business Communications System devices. Many common tasks are automated, simplified, or guided to help you to establish and administer a safe, optimized wireless network.

**Note**

There is no charge to download or use this software. For information about downloading and installing CCA, refer to *Getting Started with Cisco Configuration Assistant 1.5*.

The following sections highlight some of the setup and configuration tools available in CCA.

Device Setup Wizard

The CCA Device Setup Wizard guides you through the steps for making devices ready to use and ready for CCA to manage. For more information about using the Device Setup Wizard, see Chapter 2, “Adding a WLC526 Controller and LAP521 Access Points.”

**Note**

The CCA Device Setup Wizard supports WLC526 controllers running software versions 4.2 and above. For controllers running earlier versions, see the “Using the Controller Web-Browser Interface (GUI)” section on page 1-8.

Cisco Smart Assist

CCA includes Cisco Smart Assist features with plug-and-play functionality. Smart Assist features reduce the time it takes to set up devices and applications and optimize your network settings. Cisco Smart Assist features include:

- Default configurations to allow auto discovery of supported devices
- Private branch exchange (PBX) configuration on the Cisco UC500 series appliance
- Firewall activation included in the default configuration
- Automatic assignment of phone extensions
- Password and VLAN synchronization for supported system devices
- Predefined configuration templates that automate SSID policy configuration, minimizing the number of parameters required to complete configuration
• Easy WLAN monitoring through a single-screen snapshot view of all WLAN network elements and statistics
• Extensive online help for configuring common client devices.

CCA Guide Mode and CCA Expert Mode

Most of the choices on the feature bar, toolbar, and popup menus open feature windows or guide steps. Feature windows are compact—all your options are presented together, without explanatory words. To see explanations, click Help. Guide steps, on the other hand, present one option at a time and explain what to do for that option. When you use feature windows, you are in expert mode; when you use guide steps, you are in guide mode.

CCA is in expert mode by default. The features that you see on the feature bar with an icon beside them can also be shown in guide mode (see Figure 1-2). To access guide mode, choose Guide on the Application menu before you select a task. To return to expert mode, choose Expert on the Application menu, then select the task.

**Figure 1-2 Guide Mode Signposts**

| 1 | Examples of features that are available in guide mode and expert mode |
| 2 | Examples of features that are available only in expert mode |
Smartport Support for Catalyst Express 500 Series Switches

CCA recognizes and supports Cisco Smartport technology, a collection of pretested, Cisco-recommended baseline configuration templates for CE520 switches. The Smartports Advisor detects connected Cisco Smart Business Communications System devices and suggests recommended network configuration, QoS, security, and multicast settings.

CCA detects where you have not used Smartports to configure a device connection and alerts you from the Event Notification window. You can configure the connection either manually or based on suggestions provided by CCA. Open the Smartports window to either select a role to apply, or use Smartports to suggest a role to apply.

**Note**
The CCA Smartports option is accessible when there is one or more 520 series switch connected to the network.

Using the Controller Web-Browser Interface (GUI)

The controller web-browser interface (referred to generically as the *GUI*) is part of the embedded software of the WLC526 and has a different but overlapping set of features and capabilities from the CCA. Use the controller GUI for the following tasks:

- **Controller setup**—Use this interface when a WLC526 controller running software versions 4.0 or 4.1 powers on for the first time. The GUI Setup Wizard guides you through the necessary steps for basic controller configuration. For information about this process, refer to the *Quick Start Guide: Cisco 526 Wireless Express Mobility Controller*.

  **Note**
  WLC526 controllers running software releases 4.2 and later can use the CCA Device Setup Wizard.

- **Advanced configuration tasks**—IT professionals who have experience with Cisco GUIs can also use the Wireless Express 500 series controller GUI to perform a number of advanced configuration tasks that cannot be done in the current version of CCA. GUI-only tasks include:
  - Advanced monitor and client statistics
  - Advanced WLAN configuration options
  - Advanced QoS settings
  - Advanced WLAN layer 2 and 3 settings
  - Controller advanced interface settings
  - Controller advanced CDP settings
  - Controller advanced DHCP settings
  - Wireless advanced access point configuration settings
  - Wireless advanced access point QoS, timers, and regulatory settings
  - Wireless advanced RRM configuration
  - Security advanced configuration settings
  - Advanced MAC filtering
  - Advanced security for client management
- Advanced client exclusion policies
- Advanced security for access point management
- Advanced SNMP configuration
- Advanced controller management configuration
- Guest Lobby Administrator configuration
- Advanced controller troubleshooting configuration
- Advanced log configurations
- Advanced controller file management configuration options

For help with these and other advanced configuration tasks, refer to the GUI online help.

Using the Command-Line Interface

Use the controller command line interface (CLI) if you are experienced using Cisco CLI commands and want to display system parameters or access debugging information (see Example 1-1).

Example 1-1  CLI Command Output Example

(Cisco Controller) > show stats switch summary

Packets Received Without Error................... 443557435
Broadcast Packets Received..................... 73998045
PacketsReceived With Error...................... 0
Packets Transmitted Without Error............... 468934
Broadcast Packets Transmitted.................. 2341
Transmit Packet Errors.......................... 0
Address Entries Currently In Use............... 2
VLAN Entries Currently In Use................... 1
Time Since Counters Last Cleared................. 76 day 6 hr 38 min 23 sec

(Cisco Controller) >

Note

The WLC526 controller is simple to install and operate; therefore, the controller CLI consists of a limited number of primarily show and debug commands.