Cisco Unified Wireless Network Solution Overview

This chapter summarizes the benefits and characteristics of the Cisco Unified Wireless Network for the enterprise.

WLAN Introduction

The mobile user requires the same accessibility, security, quality of service (QoS), and high availability currently enjoyed by wired users. Whether you are at work, at home, on the road, locally or internationally, there is a need to connect. The technological challenges are apparent, but to this end, mobility plays a role for everyone. Companies are deriving business value from mobile and wireless solutions. What was once a vertical market technology is now mainstream, and is an essential tool in getting access to voice, real-time information, and critical applications such as e-mail and calendar, enterprise databases, supply chain management, sales force automation, and customer relationship management.

WLAN Solution Benefits

WLANs provide the user with a new way to communicate while accommodating the way business is done now. The benefits achieved by WLANs are the following:

- *Mobility within building or campus*—Facilitates implementation of applications that require an always-on network and that tend to involve movement within a campus environment.
- *Convenience*—Simplifies networking of large, open people areas.
- *Flexibility*—Allows work to be done at the most appropriate or convenient place rather than where a cable drop terminates. Getting the work done is what is important, not where you are.
- *Easier to set-up temporary spaces*—Promotes quick network setup of meeting rooms, war rooms, or brainstorming rooms tailored to variations in the number of participants.
- *Lower cabling costs*—Reduces the requirement for contingency cable plant installation because the WLAN can be employed to fill the gaps.
- *Easier adds, moves, and changes and lower support and maintenance costs*—Temporary networks become much easier to set up, easing migration issues and costly last-minute fixes.
- *Improved efficiency*—Studies show WLAN users are connected to the network 15 percent longer per day than hard-wired users.

- *Productivity gains*—Promotes easier access to network connectivity, resulting in better use of business productivity tools. Productivity studies show a 22 percent increase for WLAN users.
- *Easier to collaborate*—Facilitates access to collaboration tools from any location, such as meeting rooms; files can be shared on the spot and requests for information handled immediately.
- *More efficient use of office space*—Allows greater flexibility for accommodating groups, such as large team meetings.
- *Reduced errors*—Data can be directly entered into systems as it is being collected, rather than when network access is available.
- *Improved efficiency, performance, and security for enterprise partners and guests*—Promoted by implementing guest access networks.
- *Improved business resilience*—Increased mobility of the workforce allows rapid redeployment to other locations with WLANs.

Requirements of WLAN Systems

WLAN systems run either as an adjunct to the existing wired enterprise network or as a free-standing network within a campus or branch, individual tele-worker, or tied to applications in the retail, manufacturing, or health care industries. WLANs must permit secure, encrypted, authorized communication with access to data, communication, and business services as if connected to the resources by wire.

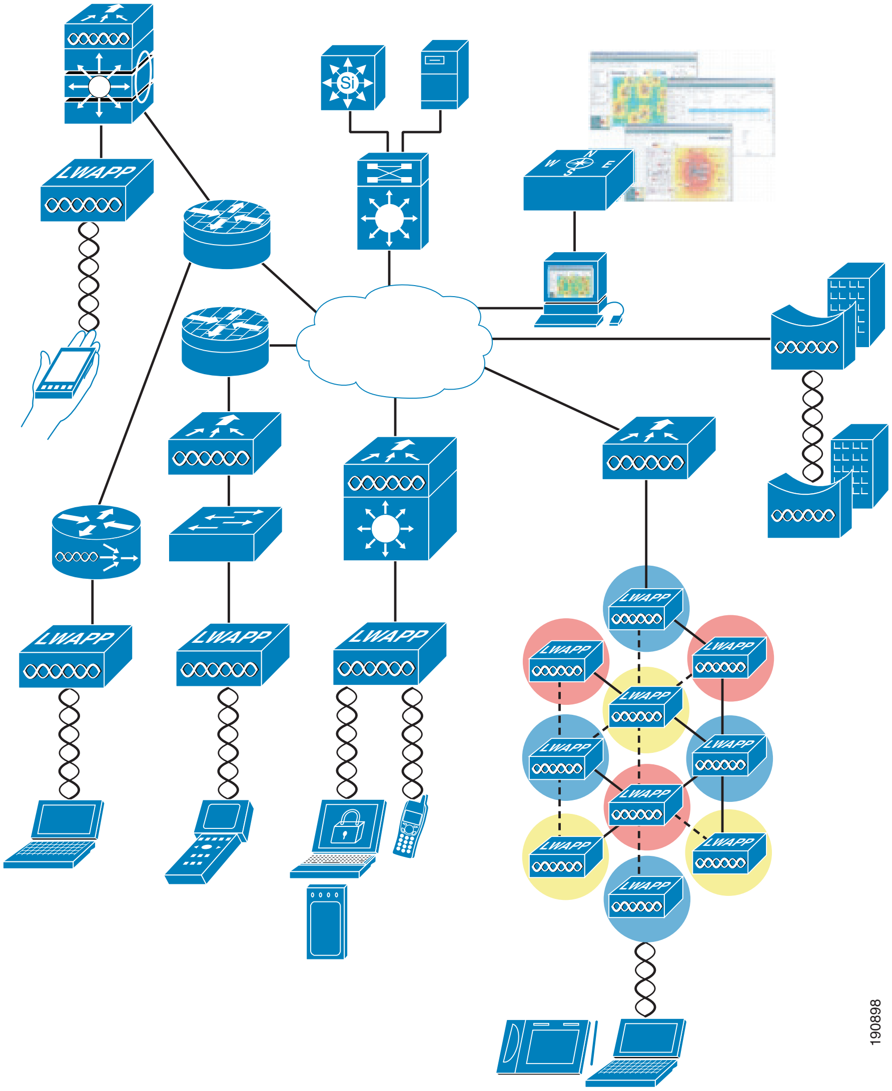
WLANs must be able to do the following:

- *Maintain accessibility to resources while employees are not wired to the network*—This accessibility enables employees to respond more quickly to business needs regardless of whether they are meeting in a conference room with a customer, at lunch with coworkers in the company cafeteria, or collaborating with a teammate in the next building.
- *Secure the enterprise from unauthorized, unsecured, or "rogue" WLAN access points*—IT managers must be able to easily and automatically detect and locate rogue access points and the switch ports to which they are connected, active participation of both access points, and client devices that are providing continuous scanning and monitoring of the RF environment.
- *Extend the full benefits of integrated network services to nomadic users*—IP telephony and IP video-conferencing are supported over the WLAN using QoS, which by giving preferential treatment to real-time traffic, helps ensure that the video and audio information arrives on time. Firewall and Intruder Detection that are part of the enterprise framework are extended to the wireless user.
- *Segment authorized users and block unauthorized users*—Services of the wireless network can be safely extended to guests and vendors. The WLAN must be able to configure support for a separate public network—a guest network.

- *Provide easy, secure network access to visiting employees from other sites*—There is no need to search for an empty cubicle or an available Ethernet port. Users should securely access the network from any WLAN location. Employees are authenticated through IEEE 802.1x and Extensible Authentication Protocol (EAP), and all information sent and received on the WLAN is encrypted.
- *Easily manage central or remote access points*—Network managers must be able to easily deploy, operate, and manage hundreds to thousands of access points within the WLAN campus deployments and branch offices or retail, manufacturing, and health care locations. The desired result is one framework that provides medium-sized to large organizations the same level of security, scalability, reliability, ease of deployment, and management that they have come to expect from their wired LANs.

Wireless LANs in the enterprise have emerged as one of the most effective means for connecting to a network. Figure 1-1 shows the elements of the Cisco Unified Wireless Network.

Figure 1-1 Cisco Unified Wireless Network Architecture in the Enterprise



The following five interconnected elements work together to deliver a unified enterprise-class wireless solution:

- Client devices
- Access points
- Network unification
- World-class network management
- Mobility services

Beginning with a base of client devices, each element adds capabilities as network needs evolve and grow, interconnecting with the elements above and below it to create a comprehensive, secure WLAN solution.

The Cisco Unified Wireless Network cost-effectively addresses the wireless LAN (WLAN) security, deployment, management, and control issues facing enterprises. This framework integrates and extends wired and wireless networks to deliver scalable, manageable, and secure WLANs with the lowest total cost of ownership. The Cisco Unified Wireless Network provides the same level of security, scalability, reliability, ease of deployment, and management for wireless LANs that organizations expect from their wired LANs.

The Cisco Unified Wireless Network includes two secure, enterprise-class WLAN solutions. Customers can choose to deploy either Autonomous Cisco Aironet Access Points running Cisco IOS Software or Lightweight Access Points using a Cisco Wireless LAN Controller (WLC). The primary difference between these two types of access points lies in their implementation of access point control and management.

The devices are available in two versions: those configured for lightweight operation in conjunction with Cisco Wireless LAN Controllers and the Wireless Control System (WCS) as well as those configured for autonomous operation, used independently or in conjunction with the CiscoWorks Wireless LAN Solution Engine (WLSE). Autonomous access points along with the CiscoWorks WLSE deliver a core set of features. Autonomous access points may be field upgraded to lightweight operation and an advanced feature set. Customers can choose the access point that best meets their WLAN deployment needs today knowing that Cisco provides the investment protection and a migration path to evolve their WLAN going forward.

For more information about the Cisco Unified Wireless Network, see the following URL: http://www.cisco.com/en/US/netsol/ns340/ns394/ns348/ns337/networking_solutions_package.html.

Cisco Unified Wireless Network

The core feature set includes autonomous Cisco Aironet access points, the Wireless Control System (WCS), and Wireless LAN Controllers (WLC), including the Cisco Catalyst 6500 Wireless Services Module (WiSM), the 440X, and 2006 controls, the WLCM ISR module, and the WS-C3750G integrated controller.

The core feature set is deployable in the following configurations today:

- APs and WLC
- APs, WLCs, and WCS
- APs, WLC, WCS, and LBS

Adding optional Cisco Compatible Extensions client devices provides additional benefits, including advanced enterprise-class security, extended RF management, and enhanced interoperability.