



SOLUTION OVERVIEW

CISCO INTEGRATED WIRELESS NETWORK

As users become more mobile and business applications become more interactive, innovative services and applications are critical in helping companies maintain agility and differentiation. Cisco® provides wired + wireless integration with the industry's best security and investment protection. This document presents the products, features, benefits, and future migration plans of the Cisco Integrated Wireless Network including the Cisco Distributed WLAN Solution and the Cisco Centralized WLAN Solution.

CHALLENGE

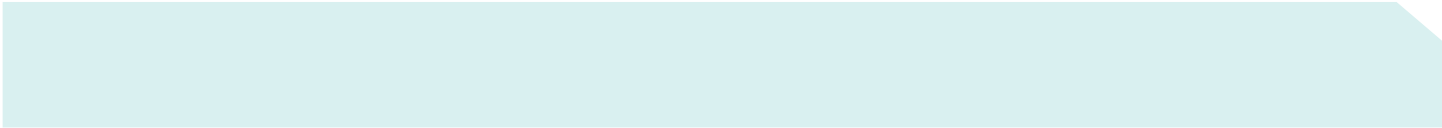
Wireless LANs (WLANs) are now business-critical. Organizations are deploying WLANs to increase employee productivity, enhance collaboration, and improve responsiveness to customers. WLANs are being deployed in corporate offices, hospitals, retail stores, manufacturing floors, warehouse environments, educational institutions, local and national government organizations, airports, public hotspots, and other locations worldwide. WLANs are being deployed across business campuses, branch offices, and remote locations. End users are embracing the freedom and flexibility of wireless connectivity, and business executives are recognizing the competitive advantage of business-critical mobile applications.

The increasing demand for WLANs has created new challenges for today's networking professionals who must respond to the growing demand for WLANs in an era of tight budgets and reduced resources. These network managers need a WLAN solution that takes full advantage of existing tools, knowledge, and network resources to cost-effectively address critical WLAN security, deployment, and control issues. They need a wireless infrastructure that embraces the unique attributes of radio frequency (RF) technology, effectively supports today's business applications, and lays the foundation for the smooth integration of new applications that enhance wireless technology.

SOLUTION

The Cisco Integrated Wireless Network cost-effectively addresses the 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 Integrated 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. It includes innovative radio frequency (RF) technology capabilities that enable real time access to core business applications and delivers enterprise-class secure connectivity.

The Cisco Integrated Wireless Network is an evolution of the Cisco Structured Wireless-Aware Network (SWAN) available from Cisco since 2003. The Cisco Integrated Wireless Network includes two secure, enterprise-class WLAN solutions: the Cisco Distributed WLAN Solution and the Cisco Centralized WLAN Solution. Both solutions address the WLAN security, deployment, management, and control issues facing companies and organizations considering WLANs. Both solutions are supported by Cisco via a smooth migration plan that includes a variety of deployment options, software enhancements, scalability features and security capabilities. Both solutions are available today. Customers can choose to deploy either the Distributed WLAN Solution based on Cisco Aironet® access points running Cisco IOS® Software or the Centralized WLAN Solution based on the recently acquired [Airespace®](#) product portfolio and Cisco Aironet lightweight access points.



With the Cisco Integrated Wireless Network, the best elements of wireless and wired networking are combined to bring mobility to the enterprise in a secure and reliable manner. By integrating the best in access point technology with centralized management and intelligent control, Cisco addresses the deployment and management challenges associated with building business-critical enterprise WLANs. Cisco also provides our customers with solid investment protection via our robust product portfolio and smooth migration path to future enhancements. Customers can confidently choose the solution that best meets their specific business and networking needs knowing that their investment is protected.

The Cisco Integrated Wireless Network also integrates with the [Cisco Self-Defending Network](#). The Cisco Self-Defending Network strategy is the Cisco vision for integrated network security. The Cisco Self-Defending Network helps organizations identify, prevent, and adapt to both known and unknown security threats.

From small businesses to large-scale enterprise multinational companies; within WLAN campus deployments or branch offices; at universities; in retail, manufacturing, or healthcare industries; or at hotspot locations, Cisco WLAN solutions help reduce overall operational expenses by simplifying network deployment, operations, and management. With Cisco, several, hundreds, or thousands of central or remotely located access points can be easily managed from a single management console. The flexibility of the Cisco Integrated Wireless Network allows network managers to design networks to meet their specific needs, whether implementing highly integrated network designs or simple overlay networks.

Building Business Critical Wireless LANs

Wireless networks must focus on four fundamental areas to be suitable for enterprise deployment: applications, access, control, and management.

- **Applications**—Business critical solutions, applications and tools that enhance user productivity, collaboration and communication.
- **Access**—802.11a/b/g connectivity for WLAN clients via access points that facilitate specialized air/RF deployment, management, and performance features. Here, the RF environment is scanned for rogue access points, unauthorized users, and potential intrusions as well as network characteristics that may adversely affect network performance such as interference and coverage holes.
- **Control**—Responsible for system-wide wireless LAN functions, such as security policies, wireless intrusion prevention, RF management, quality of service (QoS), and Layer 2 and Layer 3 mobility, to support business-critical wireless applications. The control component works with access points and a management device to deliver enhanced performance, advanced management capabilities, and network scalability.
- **Management**—Allows IT managers to design, control, and monitor their enterprise wireless network from a centralized location, simplifying operations and reducing the total cost of ownership. This component manages software images, distributes configuration files, and collects information from WLAN infrastructure devices.

Today's Cisco WLAN Product Portfolio

Cisco offers a wide breadth of WLAN products to address the four fundamental areas of wireless networking listed above. These products help enterprises cost effectively build mission critical WLANs. The product portfolio for the Cisco Distributed WLAN Solution and the Cisco Centralized WLAN Solution is presented in Figure 1.

Figure 1. Cisco Wireless LAN Product Portfolio



Cisco Distributed WLAN Solution

The Cisco Distributed WLAN Solution includes Cisco Aironet access points, the CiscoWorks Wireless LAN Solution Engine (WLSE) or CiscoWorks WLSE Express management platforms and the Cisco Catalyst® 6500 Series Wireless LAN Services Module (WLSM). Cisco Aironet access points that use Cisco IOS Software, are components of the Cisco Distributed WLAN Solution. These access points are autonomous and do not need a wireless LAN controller. In a future software release, selected Cisco Aironet autonomous access points will be upgradable to operate as either autonomous access points or lightweight access points.

The Cisco Distributed WLAN Solution is deployable in the following configurations today:

- Access point only deployment for secure WLAN access using Cisco Aironet access points ([1200](#), [1230 AG](#), [1100](#), [1130 AG](#), [1300](#)).
- Access point + centralized management capabilities using Cisco Aironet access points and the [CiscoWorks WLSE](#) or [CiscoWorks WLSE Express](#).
- Access point + centralized management + control through wireless integrated switches using Cisco Aironet access points, the CiscoWorks WLSE or CiscoWorks WLSE Express, and the [Cisco Catalyst 6500 Series WLSM](#) with the [Cisco Catalyst 6500 Series Supervisor Engine 720](#).

Adding optional [Cisco Aironet](#) or [Cisco Compatible Extensions](#) client devices to the Cisco Distributed WLAN Solution provides additional benefits, including advanced enterprise-class security, extended RF management, and enhanced interoperability.

Cisco Centralized WLAN Solution

The Cisco Centralized WLAN Solution includes Cisco Aironet Series lightweight access points with a Cisco Wireless LAN Controller, managed via the Cisco Wireless Control System (WCS), which supports advanced location services using the optional Cisco Wireless Location Appliance. Cisco Aironet lightweight access points support the Lightweight Access Point Protocol (LWAPP) and operate in conjunction with a Cisco Wireless LAN Controller. These products are based on the recently acquired Airespace product portfolio. The [Airespace](#) acquisition helps to accelerate Cisco's goal of wired + wireless integration and RF innovation.

The Cisco Centralized WLAN Solution is deployable in the following configurations today:

- Access point + controller using [Cisco Aironet 1000 Series lightweight access points](#) and Cisco [2000 Series](#), [4100 Series](#) or [4400 Series](#) Wireless LAN Controllers.
- Access point + controller + advanced management capabilities using Cisco Aironet 1000 Series lightweight access points, Cisco 2000 Series, 4100 Series, or 4400 Series Wireless LAN Controllers, and the [Cisco WCS](#) with optional location services.
- Access point + controller + advanced management + real-time location services using Cisco 1000 Series lightweight access points, Cisco 2000 Series, 4100 Series, or 4400 Series Wireless LAN Controllers, the Cisco WCS with location services and the [Cisco 2700 Series Wireless Location Appliance](#).

Future Cisco WLAN Product Portfolio

Cisco's vision is to create a converged WLAN solution that integrates the best of both solutions—Distributed and Centralized. In the future, Cisco will combine selected products from each solution into a single, integrated WLAN solution. This integrated solution will further enhance the breadth of the Cisco WLAN portfolio, providing more deployment options, feature enhancements, scalability, security capabilities, and integration with the wired infrastructure. This integrated solution will provide investment protection and a migration path for the evolution of the Cisco WLAN product portfolio. Please read the Cisco Innovation, Integration, and Investment Protection section for more information about this integrated solution and the planned evolution of Cisco WLAN products.

FEATURES

The Cisco Distributed WLAN Solution and the Cisco Centralized WLAN Solution support similar features and benefits through robust product capabilities. Both solutions provide management centralization with control in the infrastructure. The primary difference between the two solutions is the implementation and deployment of access point control and management.

The following enterprise-class WLAN features and capabilities are supported by these solutions as applicable:

- **Security**—A fundamental best practice of wireless LAN security is the ability to secure and control the RF environment. Cisco leads the industry in delivering enterprise-class RF security and WLAN security policy monitoring. Cisco wireless security features include:
 - Controlled access to the WLAN via numerous authentication and encryption policies, including 802.11i, Wi-Fi Protected Access (WPA), WPA2, and mobile VPNs
 - WLAN Intrusion Protection System (IPS) that detects and mitigates rogue access points, unassociated client devices, and ad-hoc networks, and provides customizable RF attack signatures to protect against common wireless threats
 - Secure management of infrastructure and RF-layer security boundaries
- **Management**—Cisco simplifies WLAN management by providing clear visibility and control of the RF environment. This increases network scalability, improves troubleshooting, and enhances productivity for network administrators, resulting in lower operational expenditures. Cisco management features include:
 - Simplified WLAN management and operations support that demystifies RF and removes the complexity of managing the RF environment.
 - Real-time RF scanning, monitoring, and control integrated directly into the WLAN infrastructure delivering a self-configuring, self-optimizing, and self-healing wireless network.
 - The industry's first location solution that simultaneously tracks thousands of devices from directly within the WLAN infrastructure using Cisco's patent-pending RF fingerprinting technology
 - Advanced WLAN planning, deployment, and management tools
 - Enhanced troubleshooting and diagnostic tools for proactive performance and fault monitoring, including graphical heat maps for easy analysis
 - Centralized policy engines that enable system-level security and QoS policies to be easily configured and enforced
- **Performance**—WLAN coverage must be reliable and RF bandwidth must be optimized to help ensure maximum WLAN performance. Cisco achieves this via the following capabilities:
 - Quality of service (QoS) for voice and delay-sensitive applications, including over the air bandwidth contracts
 - Real-time capacity management with load balancing
 - High-capacity, versatile deployments in office locations or rugged environments, with support for a broad range of operating temperatures
 - Self-healing WLANs for high availability, including coverage hole detection and correction
- **Mobility**—End users need uninterrupted network access when roaming across access points (within and between subnets). Cisco's WLAN solution delivers the following:
 - Seamless secure Layer 2 and Layer 3 roaming
 - "Follow-me VPNs," which enable clients to maintain VPN tunnels when roaming
 - Proactive Key Caching (PKC) or Cisco Centralized Key Management (CKM), helping to ensure fast, scalable roaming in 802.11i environments
 - Context transfer of security and QoS policies, allowing users' identities to follow them as they roam
- **Scalability**—A wireless network must scale to meet current and future business requirements. Cisco provides:
 - Support for WLAN deployment in the campus, branch offices, remote sites, and outdoor locations
 - Support for deployment of several, hundreds, or thousands of central or remotely located access points
 - WLAN resiliency, redundancy, and fault tolerance

- **Integration**—End-to-end wired and wireless network integration minimizes the total cost of ownership. Cisco minimizes the total cost of ownership for WLANs by supporting:
 - An integrated wireless and wired infrastructure, delivering a single point of control for all WLAN traffic
 - Extension of rich, intelligent Cisco infrastructure device features to wireless traffic such as QoS and management policies
 - Infrastructure integration via a standardized Cisco IOS Software command-line interface (CLI)
 - Support for several types of authentication, authorization, and accounting (AAA) servers
 - Client integration with the Cisco Compatible Extensions program
- **Services/Applications**—An enterprise-class WLAN must support numerous advanced services and applications that utilize the unique attributes of mobility. Cisco includes support for:
 - Voice services through a software application or a handset device
 - High-resolution location tracking for users and assets
 - Guest access to enable customers, consultants, contractors, suppliers and vendors
 - Application-specific devices (ASDs), such as those used in retail or manufacturing

BENEFITS

The Cisco Integrated Wireless Network enables enterprises to deploy wireless with confidence. The business benefits of the Cisco Distributed WLAN Solution and the Cisco Centralized WLAN Solution are real and tangible. These benefits are achieved while maintaining business-critical security levels. These benefits include:

- **Reduced TCO**—The Cisco Integrated Wireless Network reduces TCO through minimizing the operational and capital costs associated with managing and deploying the wireless network.
- **Enhanced WLAN visibility and control**—Cisco provides enhanced visibility and control of the wireless LAN helping to ensure that wireless applications are delivered securely and reliably throughout an entire enterprise and managed centrally for greater scalability and ease of use.
- **Dynamic RF management**—Cisco is a leader in RF innovation, creating intelligent WLAN solutions that capitalize on the unique attributes of radio technology. The Cisco Integrated Wireless Network can detect changes in the RF environment and dynamically adapt to these changes in real time creating an environment that is self-configuring, self-optimizing, and self-healing.
- **Advanced WLAN security and network protection**—An integrated wireless LAN IPS protects the network from security breaches and unsecured WLAN connections that put the entire network at risk.
 - Customizable attack signature files can be used to rapidly detect and contain common RF-related attacks, such as Netstumbler, FakeAP, and void11.
 - Advanced RF fingerprinting technology supports high-accuracy device tracking.
 - Wired and wireless rogue access point and client containment to maintain network security and prevent unauthorized users from accessing enterprise resources
 - Cisco Compatible client devices extend air/RF rogue detection capabilities
- **Integrated wired and wireless networks**—Cisco is uniquely positioned to integrate wired and wireless networks for cohesive, robust enterprise-wide networking capabilities.
 - Create and enforce authentication and access control policies
 - The same policies that have evolved for an enterprise's wireline security (NAC, firewall), management (event correlation, VLANs, policy control), and QoS (802.1p, bandwidth management) can now be extended to the wireless world.
 - Integration with the [Cisco Self-Defending Network](#)
- **Mobility for the enterprise**—Mobility becomes an intrinsic component of the enterprise, with Cisco helping IT managers to easily and securely deploy mission-critical WLANs that complement investments in the existing networking infrastructure.
 - Context transfer enables identity specific information to follow users as they roam between Layer 2 or Layer 3 domains.
 - QoS and Wi-Fi Multimedia support for voice over IP (VoIP)

- **Enhanced productivity, collaboration and responsiveness**—With Cisco, employees can accomplish more in every meeting, make faster decisions, and use every minute more effectively whether in the office or on the road.
 - Hospitals can improve patient care.
 - Universities can connect students and teachers.
 - Financial institutions can have real-time access to client data.
 - Government agencies can deliver faster access to information and enhance public safety.
 - Manufacturing can share real-time data from the manufacturing floor and support “just-in-time” manufacturing and assembly.
 - Retail environments can provide data mobility throughout the entire store and warehouse, allowing sales staff to serve customers more effectively.
 - Corporations can better track assets, access critical business information, and enhance employee productivity through real time information exchange.

CISCO INNOVATION, INTEGRATION, AND INVESTMENT PROTECTION

As the worldwide WLAN technology leader and innovator, Cisco offers the industry’s most comprehensive product line for enterprise WLANs. Cisco will continue to lead the acceleration and evolution of WLAN technology into the next generation of enterprise networking. Cisco will evolve the Cisco Integrated Wireless Network to continue to support new business applications, WLAN technology developments, and enterprise-class network demands.

To provide enhanced WLAN capabilities and advanced features, the Cisco roadmap will contain features and products that will further enhance the best attributes of its current WLAN product portfolio with advanced, innovative, integrated capabilities. These integrated enhancements will include several deployment options, software enhancements, scalability features, security capabilities, hardware advancements, and wired + wireless integration.

Cisco innovation, integration, and investment protection will help ensure a secure, mobile, interactive workplace for organizations deploying WLANs. Cisco will help to ensure customer investment protection through field firmware upgrades, software upgrades, and careful attention to future hardware requirements throughout the integration process. The best Cisco wireless features, benefits, and products will be included in the next generation solution via a smooth migration plan.

Cisco will provide solid investment protection for both solutions—Distributed and Centralized. Autonomous access points, lightweight access points, WLAN controllers, and WLAN management products will continue to be supported. Customers will also have the option to continue using fully supported autonomous access points or migrate their Cisco Aironet access points to “hybrid” access points that support both LWAPP and Cisco IOS Software, via a future software release.

Customers can select the Cisco solution that best meets their needs, and can feel confident that their Cisco WLAN investments are protected for whichever Cisco solution they deploy today.

CISCO WLAN FINANCING PROGRAM

Customers can add a Cisco wireless LAN financing package to their Cisco Systems Capital® Corporation lease to make deploying Cisco WLAN solutions easier. A Cisco Systems Capital Corporation lease allows companies to minimize their initial investment, control their budget, and avoid technology obsolescence while increasing employee productivity, improving employee responsiveness to customers, and enhancing employee, partner, and customer collaboration. Read more at the [Cisco Wireless LAN Financing Program](#).



SUMMARY

Wireless LANs increase employee productivity and efficiency, give companies a competitive advantage, and provide network users with a new level of freedom and flexibility. Organizations around the world are rapidly deploying WLANs across their campuses, branch offices, and remote locations. Today's WLANs are improving business operations and enabling real-time access to business-critical applications and network resources.

Cisco allows companies to put the RF environment to work to improve the way they do business. Cisco addresses the deployment, management, and RF challenges associated with building business-critical WLANs. With the Cisco Integrated Wireless Network, overall operational expenses are reduced and network deployment, operations, and management are simplified. Cisco integrates wireless and wired LANs and supports innovative RF technology solutions to deliver the same level of security, scalability, and manageability for wireless LANs that organizations expect in their wired LANs.

Cisco helps IT managers take full advantage of their existing tools, knowledge, and network resources to cost-effectively address critical WLAN security, deployment, and control issues. With a Cisco WLAN, IT managers can identify, prevent, and adapt to both known and unknown security threats, bringing structure, control, and tightened security to their WLANs.

Cisco has the flexibility to meet the requirements of numerous networks, from small businesses to large-scale enterprise multinational companies; within WLAN campus deployments or branch offices; at universities; in the retail, manufacturing, and healthcare industries; or in hot spot locations. Customers can be assured that with Cisco, their existing WLAN investments are protected and will increase in value over time.

FOR MORE INFORMATION

Contact your local account representative or visit the location below for more information.

For more information about the Cisco Integrated Wireless Network, visit: <http://www.cisco.com/go/integratedwireless>

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