

Cisco 5500 Series Wireless Controllers

<p>Maximum Performance and Scalability</p> <ul style="list-style-type: none"> • Support for up to 500 access points and 7000 clients • 802.11n optimized for up to nine times the performance of 802.11a/g networks • Enhanced uptime with the ability to simultaneously configure and manage 500 access points per controller
<p>Improved Mobility and Services</p> <ul style="list-style-type: none"> • Larger mobility domain for more simultaneous client associations • Faster radio resource management (RRM) updates for uninterrupted network access when roaming • Intelligent RF control plane for self-configuration, self-healing, and self-optimization • Efficient roaming improves application performance such as toll quality, voice, and consistent streaming of video and data backup
<p>Licensing Flexibility and Investment Protection</p> <ul style="list-style-type: none"> • Additional access point capacity licenses may be added over time
<p>Cisco OfficeExtend Solution</p> <ul style="list-style-type: none"> • Secure, simple, cost-effective mobile teleworker solution • Up to 500 remote access points per controller • Supports Cisco® Unified IP Phones for reduced cell phone charges
<p>Comprehensive Wired/Wireless Security</p> <ul style="list-style-type: none"> • Full Control and Provisioning of Wireless Access Points (CAPWAP) access-point-to-controller encryption • Supports rogue access point detection and denial-of-service attacks • Management frame protection detects malicious users and alerts network administrators
<p>Enterprise Wireless Mesh</p> <ul style="list-style-type: none"> • Dynamic wireless mesh networks support indoor and outdoor connectivity for areas that are difficult to wire
<p>Environmentally Responsible</p> <ul style="list-style-type: none"> • Support for adaptive power management to turn off access point radios during off-peak hours to reduce power consumption • OfficeExtend solution reduces costs and supports green best practices by reducing commuting time and saving on gas, vehicle mileage, and insurance costs

The Cisco® 5500 Series Wireless Controller, shown in Figure 1, is a highly scalable and flexible platform that enables systemwide services for mission-critical wireless networking in medium-sized to large enterprises and campus environments. Designed for [802.11n](#) performance and maximum scalability, the 5500 Series offers enhanced uptime with:

- RF visibility and protection
- The ability to simultaneously manage up to 500 [access points](#)
- Superior performance for reliable streaming video and toll-quality voice
- Sub-second stateful failover of all access points and clients from the primary to standby controller

Figure 1. Cisco 5500 Series Wireless LAN Controller



Features

Optimized for high-performance [wireless](#) networking, the Cisco 5500 Series Controller offers improved mobility and prepares the business for the next wave of mobile devices and applications. The 5500 Series supports a higher density of clients and delivers more efficient roaming, with at least nine times the throughput of existing 802.11a/g networks.

The 5500 Series automates wireless configuration and management functions and allows network managers to have the visibility and control needed to cost-effectively manage, secure, and optimize the performance of their wireless networks. With integrated Cisco CleanAir® technology, the 5500 Series protects 802.11n performance by providing cross-network access to real-time and historic RF interference information for quick troubleshooting and resolution.

The Cisco 5508 Wireless Controller supports Cisco Application Visibility and Control(AVC), the technology that includes the Network-Based Application Recognition 2 (NBAR-2) engine, Cisco's deep packet inspection (DPI) capability. The NBAR-2 engine can classify applications, applies quality of service (QoS) setting to either drop or mark the traffic, and prioritizes business-critical applications in the network. Cisco AVC uses NetFlow Version 9 to export the flows to [Cisco Prime™ Infrastructure](#) or a third-party NetFlow Collector. The 5508 also supports Bonjour Services Directory to enable Bonjour Services to be advertised and utilized in a separate Layer 3 network. Wireless Policy engine is a wireless profiler and policy feature on the Cisco 5500 Series Wireless Controller that enables profiling of wireless devices and enforcement of policies such as VLAN assignment, QoS, ACL and time-of-day-based access.

As a component of the Cisco Unified Wireless Network, this controller provides real-time communications between Cisco Aironet® access points, the Cisco Wireless Control System (WCS), and the Cisco Mobility Services Engine to deliver centralized security policies, wireless intrusion prevention system (IPS) capabilities, award-winning RF management, and QoS.

Software Licensing Flexibility

Base access point licensing offers flexibility to add up to 500 additional access points as business needs grow. The licensing structure supports a variety of business mobility needs as part of the basic feature set, including the Cisco OfficeExtend solution for secure, mobile teleworking and Cisco Enterprise Wireless Mesh, which allows access points to dynamically establish wireless connections in locations where it may be difficult or impossible to physically connect to the wired network.

Table 1 lists the features of the Cisco 5500 Series [Wireless LAN Controllers](#).

Table 1. Cisco 5500 Series Wireless LAN Controller Features

Feature	Benefits
Scalability	<ul style="list-style-type: none"> Supports 12, 25, 50,100, 250, or 500 access points for business-critical wireless services at locations of all sizes
High Performance	<ul style="list-style-type: none"> Wired speed, nonblocking performance for 802.11n networks
RF Management	<ul style="list-style-type: none"> Provides both real-time and historical information about RF interference impacting network performance across controllers, via systemwide Cisco CleanAir technology integration
OfficeExtend	<ul style="list-style-type: none"> Supports corporate wireless service for mobile and remote workers with secure wired tunnels to the Cisco Aironet® 1130 or 1140 Series Access Points Extends the corporate network to remote locations with minimal setup and maintenance requirements (zero-touch deployment) Improves productivity and collaboration at remote site locations Separate SSID tunnels allow both corporate and personal Internet access Reduced CO2 emissions from decrease in commuting Higher employee job satisfaction from ability to work at home Improves business resiliency by providing continuous, secure connectivity in the event of disasters, pandemics, or inclement weather
Comprehensive End-to-End Security	<ul style="list-style-type: none"> Offers control and provisioning of wireless access points (CAPWAP)-compliant DTLS encryption to help ensure full-line-rate encryption between access points and controllers across remote WAN/LAN links
Enterprise Wireless Mesh	<ul style="list-style-type: none"> Allows access points to dynamically establish wireless connections without the need for a physical connection to the wired network Available on select Cisco Aironet access points, Enterprise Wireless Mesh is ideal for warehouses, manufacturing floors, shopping centers and any other location where extending a wired connection may prove difficult or aesthetically unappealing
High Performance Video	<ul style="list-style-type: none"> Integrates Cisco VideoStream technology as part of the medianet framework to optimize the delivery of video applications across the WLAN

Feature	Benefits
End-to-End Voice	<ul style="list-style-type: none"> • Supports Unified Communications for improved collaboration through messaging, presence, and conferencing • Supports all Cisco Unified IP Phones for cost-effective, real-time voice services
High Availability	<ul style="list-style-type: none"> • An optional redundant power supply that helps to ensure maximum availability
Environmentally Responsible	<ul style="list-style-type: none"> • Organizations may choose to turn off access point radios to reduce power consumption during off peak hours
Mobility, Security and Management for IPv6 & Dual-Stack Clients	<ul style="list-style-type: none"> • Secure, reliable wireless connectivity and consistent end-user experience • Increased network availability through proactive blocking of known threats • Equips administrators for IPv6 troubleshooting, planning, and client traceability from a common wired and wireless management system

Table 2 lists the product specifications for Cisco 5500 Series Wireless Controllers.

Table 2. Product Specifications for Cisco 5500 Series Wireless Controllers

Item	Specifications
Wireless	IEEE 802.11a, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, 802.11k, 802.11n, 802.11r, 802.11u, 802.11w, 802.11ac.
Wired/Switching/Routing	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX specification, 1000BASE-T, 1000BASE-SX, 1000BASE-LH, IEEE 802.1Q Vtagging, and IEEE 802.1AX Link Aggregation.
Data Request For Comments (RFC)	<ul style="list-style-type: none"> • RFC 768 UDP • RFC 791 IP • RFC 2460 IPv6 (pass through Bridging mode only) • RFC 792 ICMP • RFC 793 TCP • RFC 826 ARP • RFC 1122 Requirements for Internet Hosts • RFC 1519 CIDR • RFC 1542 BOOTP • RFC 2131 DHCP • RFC 5415 CAPWAP Protocol Specification • RFC 5416 CAPWAP Binding for 802.11
Security Standards	<ul style="list-style-type: none"> • WPA • IEEE 802.11i (WPA2, RSN) • RFC 1321 MD5 Message-Digest Algorithm • RFC 1851 The ESP Triple DES Transform • RFC 2104 HMAC: Keyed Hashing for Message Authentication • RFC 2246 TLS Protocol Version 1.0 • RFC 2401 Security Architecture for the Internet Protocol • RFC 2403 HMAC-MD5-96 within ESP and AH • RFC 2404 HMAC-SHA-1-96 within ESP and AH • RFC 2405 ESP DES-CBC Cipher Algorithm with Explicit IV • RFC 2406 IPsec • RFC 2407 Interpretation for ISAKMP • RFC 2408 ISAKMP • RFC 2409 IKE • RFC 2451 ESP CBC-Mode Cipher Algorithms • RFC 3280 Internet X.509 PKI Certificate and CRL Profile • RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec • RFC 3686 Using AES Counter Mode with IPsec ESP • RFC 4347 Datagram Transport Layer Security • RFC 4346 TLS Protocol Version 1.1

Item	Specifications
Encryption	<ul style="list-style-type: none"> • WEP and TKIP-MIC: RC4 40, 104 and 128 bits (both static and shared keys) • AES: CBC, CCM, CCMP • DES: DES-CBC, 3DES • SSL and TLS: RC4 128-bit and RSA 1024- and 2048-bit • DTLS: AES-CBC • IPSec: DES-CBC, 3DES, AES-CBC
Authentication, Authorization, and Accounting (AAA)	<ul style="list-style-type: none"> • IEEE 802.1X • RFC 2548 Microsoft Vendor-Specific RADIUS Attributes • RFC 2716 PPP EAP-TLS • RFC 2865 RADIUS Authentication • RFC 2866 RADIUS Accounting • RFC 2867 RADIUS Tunnel Accounting • RFC 2869 RADIUS Extensions • RFC 3576 Dynamic Authorization Extensions to RADIUS • RFC 3579 RADIUS Support for EAP • RFC 3580 IEEE 802.1X RADIUS Guidelines • RFC 3748 Extensible Authentication Protocol • Web-based authentication • TACACS support for management users
Management	<ul style="list-style-type: none"> • SNMP v1, v2c, v3 • RFC 854 Telnet • RFC 1155 Management Information for TCP/IP-Based Internets • RFC 1156 MIB • RFC 1157 SNMP • RFC 1213 SNMP MIB II • RFC 1350 TFTP • RFC 1643 Ethernet MIB • RFC 2030 SNMP • RFC 2616 HTTP • RFC 2665 Ethernet-Like Interface types MIB • RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual Extensions • RFC 2819 RMON MIB • RFC 2863 Interfaces Group MIB • RFC 3164 Syslog • RFC 3414 User-Based Security Model (USM) for SNMPv3 • RFC 3418 MIB for SNMP • RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs • Cisco private MIBs
Management Interfaces	<ul style="list-style-type: none"> • Web-based: HTTP/HTTPS • Command-line interface: Telnet, Secure Shell (SSH) Protocol, serial port • Cisco Wireless Control System (WCS)
Interfaces and Indicators	<ul style="list-style-type: none"> • Uplink: 8 (5508) 1000BaseT, 1000Base-SX and 1000Base-LH transceiver slots • Small Form-Factor Pluggable (SFP) options (only Cisco SFPs supported): GLC-T, GLC-SX-MM, GLC-LH-SM • LED indicators: link • Service Port: 10/100/1000 Mbps Ethernet (RJ45). • Service Port: 10/100/1000 Mbps Ethernet (RJ45) For High Availability for future use • LED indicators: link • Utility Port: 10/100/1000 Mbps Ethernet (RJ45) • LED indicators: link • Expansion Slots: 1 (5508) • Console Port: RS232 (DB-9 male/RJ-45 connector included), mini-USB • Other Indicators: Sys, ACT, Power Supply 1, Power Supply 2

Item	Specifications
Physical and Environmental	<ul style="list-style-type: none"> • Dimensions (WxDxH): 17.30 x 21.20 x 1.75 in. (440 x 539 x 44.5 mm) • Weight: 20 lbs (9.1 kg) with 2 power supplies • Temperature: Operating temperature: 32 to 104°F (0 to 40°C); Storage temperature: -13 to 158°F (-25 to 70°C) • Humidity: Operating humidity: 10 95%, noncondensing. Storage humidity: up to 95% • Input power: 100 to 240 VAC; 50/60 Hz; 1.05 A at 110 VAC, 115W Maximum; 0.523 A at 220 VAC, 115W Maximum; Test Conditions: Redundant Power Supplies, 40C, Full Traffic. • Heat Dissipation: 392 Btu/hour at 110/220 VAC Maximum
Regulatory Compliance	CE Mark Safety: <ul style="list-style-type: none"> • UL 60950-1:2003 • EN 60950:2000 • EMI and susceptibility (Class A) • U.S.: FCC Part 15.107 and 15.109 • Canada: ICES-003 • Japan: VCCI • Europe: EN 55022, EN 55024

Tables 3 and Table 4 list the ordering and accessories information for Cisco 5500 Series Wireless Controllers.

Table 3. Ordering Information for Cisco 5500 Series Wireless Controllers

Part Number	Product Name	Cisco SMARTnet® Service 8x5xNBD
AIR-CT5508-12-K9	5500 Series Wireless Controller for up to 12 Cisco access points	CON-SNT-CT0812
AIR-CT5508-25-K9	5500 Series Wireless Controller for up to 25 Cisco access points	CON-SNT-CT0825
AIR-CT5508-50-K9	5500 Series Wireless Controller for up to 50 Cisco access points	CON-SNT-CT0850
AIR-CT5508-100-K9	5500 Series Wireless Controller for up to 100 Cisco access points	CON-SNT-CT08100
AIR-CT5508-250-K9	5500 Series Wireless Controller for up to 250 Cisco access points	CON-SNT-CT08250
AIR-CT5508-500-K9	5500 Series Wireless Controller for up to 500 Cisco access points	CON-SNT-CT08500
AIR-CT5508-500-2PK	2 Pack 5500 Series Wireless Controller for up to 500 Cisco access points each (1000 access points total)	CON-SNT-AIRC552P
AIR-CT5508-HA-K9	Cisco 5508 Series Wireless Controller for High Availability	CON-SNT-CT5508HA

Table 4. Accessories for Cisco 5500 Series Wireless Controllers

Part Number	Product Name
AIR-PWR-5500-AC=	5500 Series Wireless Controller Redundant AC Power Supply
AIR-FAN-5500=	5500 Series Wireless Controller Fan Tray
AIR-CT5500-RK-MNT	5500 Series Wireless Controller Spare mounting kit

Additive Capacity Upgrade Licenses

Tables 5 and 6 list additive capacity upgrade licenses for the Cisco 5500 Series.

Table 5. Ordering Information for Cisco 5500 Series Wireless Controllers Additive Capacity Licenses (e-Delivery Product Authorization Keys [PAKs])

	Part Number	Product Description	Cisco SMARTnet Service 8x5xNBD
e-License	L-LIC-CT5508-UPG	Primary upgrade SKU: Pick any number or combination of the following options under this SKU to upgrade one or many controllers under one product authorization key	CON-SNT-LCTUPG
	L-LIC-CT5508-5A	5 AP Adder License for the 5508 Controller (eDelivery)	CON-SNT-LICT55A

	Part Number	Product Description	Cisco SMARTnet Service 8x5xNBD
	L-LIC-CT5508-25A	25 AP Adder License for the 5508 Controller (eDelivery)	CON-SNT-LCT25A
	L-LIC-CT5508-50A	50 AP Adder License for the 5508 Controller (eDelivery)	CON-SNT-LCT50A
	L-LIC-CT5508-100A	100 AP Adder License for the 5508 Controller (eDelivery)	CON-SNT-LCT100A
	L-LIC-CT5508-250A	250 AP Adder License for the 5508 Controller (eDelivery)	CON-SNT-LCT250A

Table 6. Ordering Information for Cisco 5500 Series Wireless Controllers Additive Capacity Licenses (Paper PAKs)

	Part Number	Product Description	Cisco SMARTnet Service 8x5xNBD
Paper License	LIC-CT5508-UPG	Primary upgrade SKU: Pick any number or combination of the following options under this SKU, to upgrade one or many controllers under one product authorization key.	CON-SNT-LCTUPG
	LIC-CT5508-5A	5 AP Adder License for the 5508 Controller	CON-SNT-LICT55A
	LIC-CT5508-25A	25 AP Adder License for the 5508 Controller	CON-SNT-LCT25A
	LIC-CT5508-50A	50 AP Adder License for the 5508 Controller	CON-SNT-LCT50A
	LIC-CT5508-100A	100 AP Adder License for the 5508 Controller	CON-SNT-LCT100A
	LIC-CT5508-250A	250 AP Adder License for the 5508 Controller	CON-SNT-LCT250A

The additive capacity licenses allow for the increase in access point capacity supported by the controller up to a maximum of 500 access points. As an example, if a controller was initially ordered with support for 250 access points, that capacity could be later increased to up to 500 access points by purchasing a 250-access-point additive capacity license (1x-LIC-CT5508-250A).

A certificate with a PAK is required to add additional access point capacity on the Cisco 5500 Series Wireless Controller.

The certificate may be expedited via email. If a paper certificate is required for customs, it should be ordered to ship via U.S. mail. Each additive capacity license and PAK must be registered prior to installation.

Ordering and installing the Cisco 5500 Series Wireless Controller additive capacity licenses is a three-step process:

1. Select the correct SKU for email or paper delivery.
2. Register the PAK certificate (see [Registering PAK Certificate](#)).
3. Install the license on the Cisco 5500 Series Wireless Controller (see [Installing License](#)).

Please review the Cisco Wireless LAN Controller Configuration Guide, Release 6.0 or later, for detailed ordering, registration, and installation information for the 5500 Series additive capacity licenses.

Electronic delivery of the same PAKs is available by ordering the e-License SKUs as listed in Table 5. If a paper certificate is required, please use the SKUs listed in Table 6.

PAK Certificate Registration

Customers are required to register a PAK certificate for all upgrade licenses for the Cisco 5500 Series Wireless Controllers. Customer email address and host name are required to register the PAK certificate at:

<http://www.cisco.com/go/license>.

Installing License on Cisco WCS Server

Follow these steps to install a license file. If you need additional help, contact Cisco Technical Assistance Center (TAC) at 800 553-2447 or tac@cisco.com.

1. Install Cisco WCS software if not already completed.
2. Save the license file (.lic) to a temporary directory on your hard drive. (You will receive an email from Cisco with an attached license file)
3. Open a supported version of the Internet Explorer browser.
4. In the location or address field, enter the following URL, replacing IP address with the IP address or host name of the Cisco WCS server: **https:// <IP address>**.
5. Log in to the Cisco WCS server as system administrator. (Be aware that usernames and passwords are case-sensitive.)
6. From the Help menu, select **Licensing**.
7. On the Licensing page, from the Command menu, select **Add License**.
8. On the Add License page, click **Browse** to navigate to the location where you saved the .lic file.
9. Click **Download**. The Cisco WCS server imports the license.

Table 7 shows the optional DTLS license for Cisco 5500 Series Wireless Controllers.

Datagram Transport Layer Security (DTLS) is required for all OfficeExtend deployments to encrypt the Data Plane traffic. **Customers planning to install this device physically in Russia must order the controller with DTLS disabled and then obtain a physical PAK in order to enable a DTLS license and should not download the license from Cisco.com.** Please consult your local government regulations to ensure that Data DTLS encryption is permitted.

If a customer chooses SWC5500K9-60, SWC5500K9-70 or SWC5500K9-72, DTLS Data Encryption is enabled by default. When a customer orders the 5500 Series and chooses either SWC5500LPE-K9-70 or SWC5500LPE-K9-72 in the Optional Licenses tab, data DTLS Encryption is disabled.

The DTLS Paper PAK license is designated for customers who purchase a controller with DTLS disabled due to import restrictions but get permission to add DTLS support after initial purchase. This optional DTLS license is required for Cisco OfficeExtend deployment.

Table 7. Optional Licensing for Cisco 5500 Series Wireless Controllers (PAKs)

Part Number	Description
LIC-CT5508-LPE-K9	5508 Wireless Controller DTLS License (Paper PAK)
L-LIC-CT55-LPE-K9=	Cisco 5508 Controller DTLS License (electronic Certificate)

Other customers can simply use the procedure outlined below in order to download the DTLS license from Cisco.com.

To obtain a data DTLS license, follow these steps:

Step 1. Browse to <http://cisco.com/go/license>

Step 2. On the Product License Registration page, choose **Licenses Not Requiring a PAK**

Step 3. Choose **Cisco Wireless Controllers DTLS License** under Wireless

Step 4. Complete the remaining steps to generate the license file. The license will be provided online or via email

Step 5. Copy the license file to your TFTP server

Step 6. Install the license by browsing to the WLC Web Administration Page:

Management --> Software Activation --> Commands --> Action: Install License

Step 7. Browse to: [Cisco 5508 Wireless Controller Software Download Page](#)

<http://www.cisco.com/cisco/software/release.html?mdfid=282600534&release=7.0.230.0&relind=AVAILABLE&softwareid=280926587&rellifecycle=ED&reltype=latest>

Step 8. Choose the release that corresponds to the SW running on your WLC

Step 9. Choose the **NON LDPE** software release: AIR-CT5500-K9-X-X-XX.aes

Step 10. Complete the remaining steps to download the software

Service and Support

Realize the full business value of your wireless network and mobility services investments faster with intelligent, customized services from Cisco and our partners. Backed by deep networking expertise and a broad ecosystem of partners, Cisco professional and technical services enable you to successfully plan, build, and run your network as a powerful business platform. Our services can help you successfully deploy the Cisco 5500 Series Wireless Controller and integrate mobility solutions effectively to lower the total cost of ownership and secure your wireless network.

To learn more about Cisco Wireless LAN service offers, visit: <http://www.cisco.com/go/wirelesslanservices>.

Summary

The Cisco 5500 Series Wireless Controller is designed for 802.11n performance and offers maximum scalability for enterprise and service provider wireless deployments. It simplifies deployment and operation of wireless networks, helping to ensure smooth performance, enhance security, and maximize network availability. The Cisco 5500 Series Wireless Controller manages all the Cisco access points within campus environments and branch locations, eliminating complexity and providing network administrators with visibility and control of their wireless LANs.

For More Information

For more information about Cisco wireless controllers, contact your local account representative or visit:

<http://www.cisco.com/en/US/products/ps6366/index.html>.

For more information about the Cisco Unified Wireless Network framework, visit:

<http://www.cisco.com/go/unifiedwireless>.




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