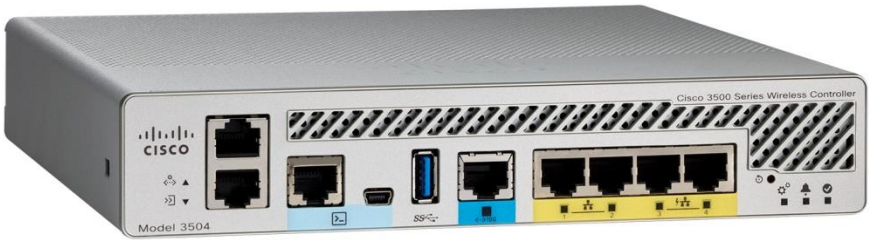
Cisco 3504 Wireless Controller

Optimized for 802.11ac Wave 2 performance, the Cisco® 3504 Wireless Controller with Cisco Multigigabit Ethernet technology is a compact, highly scalable, service-rich, resilient, and flexible platform that enables next-generation wireless networks for small to medium-sized enterprises and branch office deployments.

Product Overview

The Cisco 3504 Wireless Controller provides centralized control, management, and troubleshooting for small to medium-sized enterprises and branch offices. It offers flexibility to support multiple deployment modes in the same controller—a centralized mode for campus environments, Cisco FlexConnect® mode for lean branches managed over the WAN, and a mesh (bridge) mode for deployments in which full Ethernet cabling is unavailable. As a component of the Cisco Unified Wireless Network, the 3504 controller provides real-time communications between Cisco Aironet® Access Points, Cisco Prime® Infrastructure, and the Cisco Mobility Services Engine, and is interoperable with the Cisco 5520 and 8540 Wireless Controllers.

Figure 1. Cisco 3504 Wireless Controller



Features and Benefits

The Cisco 3504 Wireless Controller with Cisco Multigigabit Ethernet technology is optimized for 802.11ac Wave 2 performance, high scale, and enhanced system uptime. It offers:

- Quiet operation, with a small form factor and compact design ideal for space-constrained deployments, providing flexibility without compromising on features.
- Cisco Multigigabit Ethernet technology to support next-generation 802.11ac Wave 2 deployments using existing cabling infrastructure.
- Subsecond access point and client failover for uninterrupted application availability.
- Extraordinary visibility into application traffic, using Cisco Application Visibility and Control (AVC), the technology that includes the Network-Based Application Recognition 2 (NBAR2) engine, with Cisco's deep packet inspection (DPI) capability. This allows the 3504 to mark, prioritize, and block to conserve network bandwidth and enhance security. Customers can optionally export the flows to Cisco Prime Infrastructure or a third-party NetFlow collector.

- An embedded wireless bring-your-own-device (BYOD) policy classification engine that allows classification of client devices and application of user group policies.
- Guest access and Bonjour and Chromecast services in centralized deployments.
- Software-defined segmentation with Cisco TrustSec® technology, reducing access control list (ACL) maintenance, complexity, and overhead.
- Integrated Cisco CleanAir® technology, providing the industry's only self-healing and self-optimizing wireless network.
- A simplified GUI wizard for quick setup and intuitive dashboards for monitoring and troubleshooting.

Table 1 lists the features and benefits of the 3504 wireless controller.

Table 1. Features and Benefits

Feature	Benefits
Scalability and performance	Optimized to enable 802.11ac Wave 2 next-generation networks, supporting: ● 4-Gbps throughput ● 150 access points ● 3000 clients ● 1x 10 Gigabit Ethernet, Multigigabit Ethernet, + 4x 1 Gigabit Ethernet ● 4096 VLANs
Flexibility and ease of deployment	● Only 10-in. (25-cm) depth to fit nicely in reduced-depth cabinet or desktop deployments ● Quiet and fanless operation for cabinet or desktop (up to 86°F [30°C] ambient) deployment. The fans are used by the controller only under certain conditions ● For quick and easy deployment, access points can be connected directly to the controller via two Power over Ethernet (PoE) ports
RF management	● Proactively identifies and mitigates signal interference for better performance ● Provides both real-time and historical information about RF interference affecting network performance across controllers, through systemwide integration with Cisco CleanAir technology
Multimode with indoor/ outdoor mesh access points	● Versatile controller with support for centralized, distributed, and mesh deployments to be used at different places in the network, offering maximum flexibility for medium-sized campus, enterprise, and branch networks ● Centralized control, management, and client troubleshooting ● Seamless client access in the event of a WAN link failure (local data switching) ● Highly secure guest access ● Efficient access point upgrade that optimizes WAN link utilization for downloading access point images ● Cisco OfficeExtend technology that supports corporate wireless service for mobile and remote workers with secure wired tunnels to indoor Cisco Aironet access points supporting OfficeExtend mode
Comprehensive end-to-end security	● Offers Control and Provisioning of Wireless Access Points (CAPWAP)-compliant Datagram Transport Layer Security (DTLS) encryption on the control plane between access points and controllers across remote WAN links ● Management frame protection detects malicious users and alerts network administrators ● Rogue detection for Payment Card Industry (PCI) compliance ● Rogue access point detection and detection of denial-of-service attacks
End-to-end voice	● Supports Cisco Unified Communications for improved collaboration through messaging, presence, and conferencing ● Supports all Cisco Unified IP Phones for cost-effective, real-time voice services
Fault tolerance and high availability	● Subsecond access point and client failover for uninterrupted application availability ● Redundant 1 Gigabit Ethernet, Cisco Multigigabit Ethernet, or 10 Gigabit Ethernet connectivity ● Solid-state device-based storage—no moving parts ● Enhanced system uptime with fast system restarts
Cisco Enterprise Wireless Mesh	● 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
WLAN express setup	● Simplified GUI wizard for quick setup, and intuitive dashboards for monitoring and troubleshooting

Feature	Benefits
High-performance video	• Cisco VideoStream technology optimizes the delivery of video applications across the WLAN
Mobility, security, and management for IPv6 and dual-stack clients	• Highly secure, reliable wireless connectivity and consistent end-user experience • Increased network availability through proactive blocking of known threats • Equips administrators for IPv6 planning, troubleshooting, and client traceability from Cisco Prime Infrastructure
Energy efficiency	• Organizations may choose to turn off access point radios to reduce power consumption during off-peak hours

Licensing

The Cisco 3504 Wireless Controller provides right-to-use (with End User License Agreement [EULA] acceptance) license enablement for faster time to deployment, with flexibility to add additional access points (up to 150 access points) as business needs grow.

Starting with the 8.5 release, the Cisco 3504 Wireless Controller also provides an option to enable licensing using Cisco Smart Software Licensing, designed for easy monitoring and consumption of licenses.

- Manage license deployments with real-time visibility to ownership and consumption
- Pool license entitlements in a single account. Licenses can be moved freely through the network, wherever they are needed

Product Specifications

Table 2. Product Specifications

Item	Specifications
Wireless	IEEE 802.11a, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, 802.11n, 802.11k, 802.11r, 802.11u, 802.11w, 802.11ac Wave 1 and Wave 2
Wired, switching, and routing	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX specification, 1000BASE-T. 1000BASE-SX, 1000-BASE-LH, IEEE 802.1Q VLAN tagging, IEEE 802.1AX Link Aggregation
Data request for comments (RFC)	• RFC 768 UDP • RFC 791 IP • RFC 2460 IPv6 • RFC 792 Internet Control Message Protocol (ICMP) • RFC 793 TCP • RFC 826 Address Resolution Protocol (ARP) • RFC 1122 Requirements for Internet Hosts • RFC 1519 Classless Interdomain Routing (CIDR) • RFC 1542 BOOTP • RFC 2131 Dynamic Host Configuration Protocol (DHCP) • RFC 5415 CAPWAP Protocol • RFC 5416 CAPWAP Binding for 802.11
Security standards	• Wi-Fi Protected Access (WPA) • IEEE 802.11i (WPA2, RSN) • RFC 1321 MD5 Message-Digest Algorithm • RFC 1851 Encapsulating Security Payload (ESP) Triple Data Encryption Standard (3DES) Transform • RFC 2104 HMAC: Keyed Hashing for Message Authentication • RFC 2246 Transport Layer Security (TLS) Protocol Version 1.0 • RFC 2401 Security Architecture for the Internet Protocol • RFC 2403 HMAC-MD5-96 within ESP and Authentication Header (AH) • RFC 2404 HMAC-SHA-1-96 within ESP and AH • RFC 2405 ESP DES-CBC Cipher Algorithm with Explicit IV • RFC 2407 Interpretation for Internet Security Association and Key Management Protocol (ISAKMP) • RFC 2408 ISAKMP • RFC 2409 Internet Key Exchange (IKE)

Item	Specifications
	• RFC 2451 ESP Cipher Block Chaining (CBC)-Mode Cipher Algorithms • RFC 3280 Internet X.509 Public Key Infrastructure (PKI) Certificate and Certificate Revocation List (CRL) Profile • RFC 4347 Datagram Transport Layer Security • RFC 5426 TLS Protocol Version 1.2
Encryption	Wired Equivalent Privacy (WEP) and Temporal Key Integrity Protocol-Message Integrity Check (TKIP-MIC): • RC4 40, 104 and 128 bits (both static and shared keys) • Advanced Encryption Standard (AES): CBC, Counter with CBC-MAC (CCM), Counter with CBC Message Authentication Code Protocol (CCMP) • Data Encryption Standard (DES): DES-CBC, 3DES • Secure Sockets Layer (SSL) and TLS: RC4 128-bit and RSA 1024- and 2048-bit • DTLS: AES-CBC • IPsec: DES-CBC, 3DES, AES-CBC • 802.1AE MACsec encryption
Authentication, authorization, and accounting (AAA)	• IEEE 802.1X • RFC 2548 Microsoft Vendor-Specific RADIUS Attributes • RFC 2716 Point-to-Point Protocol (PPP) Extensible Authentication Protocol (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 5176 Dynamic Authorization Extensions to RADIUS • RFC 3579 RADIUS Support for EAP • RFC 3580 IEEE 802.1X RADIUS Guidelines • RFC 3748 EAP • Web-based authentication • TACACS support for management users
Management	• Simple Network Management Protocol (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 Trivial File Transfer Protocol (TFTP) • RFC 1643 Ethernet MIB • RFC 2030 Simple Network Time Protocol (SNTP) • 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 Remote Monitoring 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	• Web-based: HTTP/HTTPS • Command-line interface: Telnet, Secure Shell (SSH) Protocol, serial port • Cisco Prime Infrastructure
Interfaces and indicators	• 1x 10 Gigabit Ethernet, Multigigabit Ethernet interface + 4x 1 Gigabit Ethernet interfaces (RJ-45) • 1x service port: 1 Gigabit Ethernet port (RJ-45) • 1x redundancy port: 1 Gigabit Ethernet port (RJ-45) • 1x console port: Serial port (RJ-45) • 1x console port: Serial port (mini-B USB) • 1x USB 3.0 port • LED indicators: Network link, diagnostics

Item	Specifications
Physical and Environmental	Dimensions: 1.73 x 9.5 x 8.5 in. (43.94 x 214.3 x 215.9 mm) Weight: 4.4lbs Temperature: Operating: 32 to 104 °F (0 to 40°C) Storage: -4 to 158 °F (-20 to 70°C) Humidity: Operating Humidity: 5% to 95% RH non-condensing Storage Humidity: 0% to 95% RH non-condensing Power adapter: Input power: 100 to 240 VAC; 50/60 Hz Heat dissipation(without PoE): 47W, 160BTU/hr Heat dissipation(with PoE): 98W, 335BTU/hr
Regulatory compliance	CE Markings per directives 2004/108/EC and 2006/95/EC Safety: ● UL 60950-1 Second Edition ● CAN/CSA-C22.2 No. 60950-1 Second Edition ● EN 60950-1 Second Edition ● IEC 60950-1 Second Edition ● AS/NZS 60950-1 ● GB4943 2011 EMC - Emissions: ● 47CFR Part 15 (CFR 47) Class B ● AS/NZS CISPR22 Class B ● EN 55032 Class B ● ICES003 Class A VCCI Class B ● EN 61000-3-2 EN 61000-3-3 KN22 Class B ● CNS13438 Class B EMC - Immunity: ● EN 55024 ● CISPR24 ● EN 300386 ● KN24

Warranty Information

Find warranty information on Cisco.com at the Product Warranties page.

The Cisco 3504 Wireless Controller is backed by a warranty that includes:

- 3 years parts coverage
- 10-day advance replacement (AR): Cisco or its service center will use commercially reasonable efforts to ship a replacement within ten (10) working days after receipt of the RMA request. Actual delivery times might vary depending on customer location

This warranty also includes a 90-day software warranty on media and ongoing downloads of BIOS, firmware, and drivers.

Ordering Information

For ordering details, please consult the part numbers in Table 3. To place an order, visit the Cisco How to Buy homepage. To download software, visit the Cisco Software Center.

Table 3. Ordering Information

Product Name	Part Number	Services 8x5xNBD
Cisco 3504 Wireless Controller	AIR-CT3504-K9	CON-SNT-AIRT3504
Cisco 3504 Wireless Controller upgrade SKU	LIC-CT3504-UPG	CON-ECMU-LICGT552
Cisco 3504 Wireless Controller 1 access point adder license	LIC-CT3504-1A	CON-ECMU-LICT3504
Cisco 3504 Wireless Controller DTLS license	LIC-CT3504-DTLS-K9	
Cisco 3504 Wireless Controller Spare Power Supply	PWR-115W-AC=	
Cisco 3504 Wireless Controller Rack Mount Bracket	AIR-CT2504-RMNT=	

Cisco Wireless LAN Services

Realize the full business value of your technology investments faster with intelligent, customized services from Cisco. Backed by deep networking expertise, Cisco Wireless LAN Services enable you to deploy a sound, scalable mobility network that enables rich media collaboration while improving the operational efficiency gained from a converged wired and wireless network infrastructure based on the Cisco Unified Wireless Network. We offer expert advisory, implementation and optimization services to accelerate your transition to advanced mobility services while continuously optimizing the performance, reliability, and security of that architecture after it is deployed. In addition, Smart Net Total Care service helps you protect your investment and derive maximum value from your Cisco products. Delivered by Cisco and backed by your trusted partner, this comprehensive service includes access to the Cisco Technical Assistance Center 24 hours a day, 365 days a year, IOS software updates, online resources, and expedited hardware replacement when needed. The Smart Net Total Care service helps you solve problems faster, improve operational efficiency, and reduce the risk of downtime. For more details, visit: http://www.cisco.com/c/en/us/products/wireless/service-listing.html

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For More Information

For more information about the Cisco 3504 Wireless Controller, visit http://www.cisco.com/c/en/us/products/wireless/5520-wireless-controller/index.html.

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