# Cisco 5700 Series Wireless Controller

The Cisco® 5760 Wireless Controller (Figure 1) is an industry-leading platform designed for 802.11ac networks with maximum performance and services at scale, combined with high availability for mission-critical wireless networks. Through the Unified Access Data Plane (UADP) application-specific integrated circuit (ASIC), it delivers wire-speed performance with services such as advanced quality of service (QoS), flexible NetFlow v9, and downloadable ACLs. Delivering on the One Network component of the Unified Access vision, the Cisco 5760 offers:

- Wire-speed 60-Gbps throughput with services
- Up to 1000 access points per controller and 72,000 access points in a cluster
- Up to 12,000 clients per controller and 864,000 clients in a cluster
- Network traffic visibility through flexible NetFlow v9
- RF visibility and protection
- Cisco CleanAir® technology
- ClientLink 3.0
- VideoStream
- Access Point Stateful Switchover(AP SSO)
- Application Visibility with AVC
- Service Discovery Gateway

**Figure 1.**    Cisco 5760 Wireless LAN Controller



## Features

The 5760 Wireless Controller can operate in both converged access mode and centralized mode. Converged access mode provides a hierarchical network design that distributes the wireless data plane at the access layer on Cisco Catalyst® switches for maximum performance and scale. Converged access mode provides maximum resiliency by constraining outages to smaller failure domains. Additionally, converged access mode delivers high availability with access point stateful failover (access point SSO), making sure SSIDs are highly available and have minimal effect on wireless clients. (See Tables 1 and 2)

**Table 1.**     Cisco 5760 Wireless LAN Controller Features

| Feature | Benefits |
|---|---|
| Scalability | • Supports up to 1000 access points and 12,000 wireless clients for business-critical wireless services.<br>• Unparalleled scalable wireless solution including multiple controllers can support up to 72,000 access points and 864,000 wireless clients. |
| High performance | • Optimized for 802.11ac standard.<br>• 6 10G SFP+ uplinks.<br>• Hardware processing to provide up to 60 Gbps throughput with services such as downloadable ACL, granular QoS queues, fairness algorithm, NetFlow v9 processing, and so on. |
| High resiliency | • Converged access deployment mode provides hierarchical network design that constraints outages to smaller failure domains, thereby providing higher resiliency. Wireless clients will recover quickly from switch failures within the Cisco 3850 or 3650 Series switch stack automatically through stateful failover (access point SSO).<br>• Cisco 5760 in centralized deployment mode (also known as local mode) supports 1+1 and N+1 resiliency.<br>• Multiple link aggregation (LAG) support to protect against link failures while maintaining the optimal network connectivity.<br>• 5760 also supports stateful switchover to the standby 5760 controller using the StackWise technology |
| Service Discovery Gateway | • Enables Apple Bonjour® services to be advertised and utilized in a separate Layer 2 network. Supports mDNS and DNS-SD standards for full interoperability. |
| Application Visibility | • 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 |
| Controller based on Cisco IOS Software | • Proven and security hardened Cisco IOS® Software operating system.<br>• Well known Cisco IOS Software CLI allows customers to use existing management tools for operations.<br>• Cisco's rich NetFlow ecosystem enables customers to use reporting, monitoring, traffic analysis, and troubleshooting tools for wireless network. |
| ClientLink 2.0 | • Cisco ClientLink 2.0 technology to improve downlink performance to all mobile devices, including one-, two-, and three-spatial-stream devices on 802.11n while improving battery life on mobile devices such as smartphones and tablets. |
| CleanAir | • Cisco CleanAir technology, which provides proactive, high-speed spectrum intelligence to combat performance problems due to wireless interference. |
| RF management | • Provides both real-time and historical information about RF interference affecting network performance across controllers using systemwide Cisco CleanAir technology integration. |
| Comprehensive end-to-end security | • Offers Control and Provisioning of Wireless Access Points (CAPWAP)-compliant DTLS encryption to make sure of encryption between access points and controllers or between controllers. |
| High-performance video | • Optimized video delivery using single stream for both wired and wireless clients.<br>• Supports Cisco VideoStream technology to optimize the delivery of business-critical multicast video applications across the WLAN. |
| End-to-end voice | • Supports unified communications for improved collaboration through messaging, presence, and conferencing.<br>• Supports all Cisco Unified Communications Wireless IP Phones for cost-effective, real-time voice services. |
| Advanced QoS | • Consistent configuration CLI for both wired and wireless QoS through modular QoS CLI (MQC).<br>• Granular QoS policies per access point, SSID, radio, and client.<br>• Fair bandwidth allocation across wireless clients on an access point.<br>• Uses Cisco's proven Cisco IOS Software and ASIC technology to provide line-rate performance. |
| Advanced ACL | • Simplifies and centralizes security policies through downloadable ACLs.<br>• ACLs are processed in hardware to provide line-rate performance. |
| Flexible NetFlow v9 | • Networkwide visibility with flexible NetFlow for wireless clients. |
| Environmentally responsible | • Organizations may choose to turn off access point radios to reduce power consumption during off-peak hours.<br>• Integrated wireless LAN controller avoids the deployment of additional device in the network. |
| Mobility and security | • Secure, reliable wireless connectivity and consistent end-user experience.<br>• Increased network availability through proactive blocking of known threats. |
| IPv6 | • Supports IPv6 addressing on interfaces with appropriate show commands for monitoring and troubleshooting.<br>• IPv6 ACLs are processed in hardware to provide line-rate performance. |

**Table 2.**     Product Specifications for Cisco 5700 Series Wireless Controllers

| Item | Specifications |
|---|---|
| Wireless | IEEE 802.11a, 802.11b, 802.11g, WMM/802.11e, 802.11h, 802.11n, 802.11r, 802.11k, 802.11w, 802.11ac |
| Wired/switching | • IEEE 802.3u 100BASE-TX specification<br>• 1000BASE-T<br>• 1000BASE-SX<br>• 1000-BASE-L<br>• IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports<br>• IEEE 802.1Q Vtagging<br>• IEEE 802.1AX Link Aggregation |
| Data request for comments (RFC) | • RFC 768 UDP<br>• RFC 791 IP<br>• RFC 2460 IPv6<br>• RFC 792 ICMP<br>• RFC 793 TCP<br>• RFC 826 ARP<br>• RFC 1122 Requirements for Internet Hosts<br>• RFC 1519 CIDR<br>• RFC 1542 BOOTP<br>• RFC 2131 DHCP<br>• RFC 5415 CAPWAP Protocol Specification<br>• RFC 5416 CAPWAP Binding for 802.11 |
| Security standards | • WPA<br>• IEEE 802.11i (WPA2, RSN)<br>• RFC 1321 MD5 Message-Digest Algorithm<br>• RFC 1851 The ESP Triple DES Transform<br>• RFC 2104 HMAC: Keyed Hashing for Message Authentication<br>• RFC 2246 TLS Protocol Version 1.0<br>• RFC 2401 Security Architecture for the Internet Protocol<br>• RFC 2403 HMAC-MD5-96 within ESP and AH<br>• RFC 2404 HMAC-SHA-1-96 within ESP and AH<br>• RFC 2405 ESP DES-CBC Cipher Algorithm with Explicit IV<br>• RFC 2406 IPsec<br>• RFC 2407 Interpretation for ISAKMP<br>• RFC 2408 ISAKMP<br>• RFC 2409 IKE<br>• RFC 2451 ESP CBC-Mode Cipher Algorithms<br>• RFC 3280 Internet X.509 PKI Certificate and CRL Profile<br>• RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec<br>• RFC 3686 Using AES Counter Mode with IPsec ESP<br>• RFC 4347 Datagram Transport Layer Security<br>• RFC 4346 TLS Protocol Version 1.1 |
| Encryption | • WEP and TKIP-MIC: RC4 40, 104 and 128 bits (both static and shared keys)<br>• AES: CBC, CCM, CCMP<br>• DES: DES-CBC, 3DES<br>• SSL and TLS: RC4 128-bit and RSA 1024- and 2048-bit<br>• DTLS: AES-CBC<br>• IPSec: DES-CBC, 3DES, AES-CBC |

| Item | Specifications |
|---|---|
| **Authentication, authorization, and accounting (AAA)** | • IEEE 802.1X<br>• RFC 2548 Microsoft Vendor-Specific RADIUS Attributes<br>• RFC 2716 PPP EAP-TLS<br>• RFC 2865 RADIUS Authentication<br>• RFC 2866 RADIUS Accounting<br>• RFC 2867 RADIUS Tunnel Accounting<br>• RFC 2869 RADIUS Extensions<br>• RFC 3576 Dynamic Authorization Extensions to RADIUS<br>• RFC 3579 RADIUS Support for EAP<br>• RFC 3580 IEEE 802.1X RADIUS Guidelines<br>• RFC 3748 Extensible Authentication Protocol<br>• Web-based authentication<br>• TACACS support for management users |
| **Management** | • SNMP v1, v2c, v3<br>• RFC 854 Telnet<br>• RFC 1155 Management Information for TCP/IP-Based Internets<br>• RFC 1156 MIB<br>• RFC 1157 SNMP<br>• RFC 1213 SNMP MIB II<br>• RFC 1350 TFTP<br>• RFC 1643 Ethernet MIB<br>• RFC 2030 SNTP<br>• RFC 2616 HTTP<br>• RFC 2665 Ethernet-Like Interface types MIB<br>• RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual Extensions<br>• RFC 2819 RMON MIB<br>• RFC 2863 Interfaces Group MIB<br>• RFC 3164 Syslog<br>• RFC 3414 User-Based Security Model (USM) for SNMPv3<br>• RFC 3418 MIB for SNMP<br>• RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs<br>• Cisco private MIBs<br>• SSH<br>• SFTP |
| **Management interfaces** | • Web-based: HTTP/HTTPS<br>• Command-line interface: Telnet, Secure Shell (SSH) Protocol, serial port<br>• Cisco Prime™ |
| **Interfaces** | • Uplink: 6 ports<br>**Supported interfaces:**<br>• 10GBASE-ER<br>• 10GBASE-LR<br>• 10GBASE-SR<br>• 10GBASE-LRM<br>• 10GBASE-CX1(1m)<br>• 10GBASE-CX1(3m)<br>• 10GBASE-CX1(5m)<br>• 10/100/1000BASE-T<br>• 1000BASE-SX/LX/LH/EX/ZX<br>• 1000BASE-BX10-D<br>• 1000BASE-BX10-U<br>• 100BASE-FX |

| Item | Specifications |
|---|---|
| **SFP+/SFP** (only Cisco SFPs supported) | • SFP-10G-ER<br>• SFP-10G-LR<br>• SFP-10G-SR<br>• SFP-10G-LRM<br>• SFP-H10GB-CU1M<br>• SFP-H10GB-CU3M<br>• SFP-H10GB-CU5M<br>• GLC-BX-D<br>• GLC-BX-U<br>• GLC-SX-MM<br>• GLC-SX-MMD<br>• GLC-T<br>• GLC-LH-SM<br>• GLC-ZX-SM<br>• CWDM-SFP<br>• DWDM-SFP<br>• SFP-GE-L<br>• SFP-GE-S<br>• GLC-LH-SMD<br>• GLC-EX-SMD<br>• GLC-GE-100FX |
| **Interface indicators** | • LED indicators: link<br>• Service Port: 10/100/1000 Mbps Ethernet (RJ45)<br>• Service Port: 10/100/1000 Mbps Ethernet (RJ45) For High Availability for future use<br>• LED indicators: link<br>• Utility Port: 10/100/1000 Mbps Ethernet (RJ45)<br>• LED indicators: link<br>• Expansion Slots: 1 (5760)<br>• Console Port: RS232 (DB-9 male/RJ-45 connector included), mini-USB<br>• Other Indicators: Sys, ACT, Power Supply 1, Power Supply 2 |
| **Regulatory Compliance: Products Should Comply with CE Marking per Directives 2004/108/EC and 2006/95/EC** | |
| **Safety** | • UL 60950-1 Second Edition<br>• CAN/CSA-C22.2 No. 60950-1 Second Edition<br>• EN 60950-1 Second Edition<br>• IEC 60950-1 Second Edition<br>• AS/NZS 60950-1 |
| **EMC: emissions** | • 47CFR Part 15 (CFR 47) Class A<br>• AS/NZS CISPR22 Class A<br>• CISPR22 Class A<br>• EN55022 Class A<br>• ICES003 Class A<br>• VCCI Class A<br>• EN61000-3-2<br>• EN61000-3-3<br>• KN22 Class A |
| **EMC: immunity** | • EN55024<br>• CISPR24<br>• KN24 |
| **Physical Specifications** | |
| **Dimensions (H x W x D)** | 1.75 x 17.5 x 17.7 in. (4.45 x 44.5 x 45.0 cm) |
| **Weight** | 19.6 lbs (8.9 kg) with two power supplies installed<br>17.1 lbs (7.8 kg) with a single power supply installed |

| Item | Specifications |
|---|---|
| **Environmental Ranges** | |
| **Operating temperature** | 23 to 113° F (-5 to 45° C) |
| **Storage temperature** | -40 to 158° F (-40 to 70° C) |
| **Relative humidity** | 5 to 95% (noncondensing) |
| **Operating altitude** | Up to 10,000 ft (3000m) |
| **Storage altitude** | Up to 15,000 ft (4600m) |
| **Input power** | 100 to 240 VAC; 50/60 Hz |

Table 3 lists the ordering information for Cisco 5700 Series Wireless Controllers.

**Table 3.**     Ordering Information for Cisco 5700 Series Wireless Controllers

| Part Number | Product Description | Cisco SMARTnet Service 8x5xNBD |
|---|---|---|
| **AIR-CT5760-25-K9** | 5700 Series Wireless Controller for up to 25 Cisco Access Points | CON-SNT-CT576025 |
| **AIR-CT5760-50-K9** | 5700 Series Wireless Controller for up to 50 Cisco Access Points | CON-SNT-CT576050 |
| **AIR-CT5760-100-K9** | 5700 Series Wireless Controller for up to 100 Cisco Access Points | CON-SNT-CT576100 |
| **AIR-CT5760-250-K9** | 5700 Series Wireless Controller for up to 250 Cisco Access Points | CON-SNT-CT576250 |
| **AIR-CT5760-500-K9** | 5700 Series Wireless Controller for up to 500 Cisco Access Points | CON-SNT-CT576500 |
| **AIR-CT5760-1K-K9** | 5700 Series Wireless Controller for up to 1000 Cisco Access Points | CON-SNT-CT57601K |
| **AIR-CT5760-HA-K9** | Cisco 5760 Wireless Controller for High Availability | CON-SNT-CT5760HA |

## Additive Capacity Upgrade Licenses

The simplified right-to-use (RTU) licensing model allows customers to buy only the required number of access point capacity licenses and then add the licenses through a simple CLI on the controller.

Tables 4 and 5 list additive capacity upgrade licenses for the Cisco 5700 Series.

**Table 4.**     Ordering Information for Cisco 5700 Series Wireless Controllers Additive Capacity Licenses (E-Delivery)

| | Part Number | Product Description | Cisco SMARTnet Service 8x5xNBD |
|---|---|---|---|
| **e-License** | L-LIC-CT5760-UPG | Primary upgrade license SKU for Cisco 5760 Wireless Controller (e-delivery) | CON-SNT-CT5760UP |
| | L-LIC-CTIOS-1A | 1 access point adder license for the wireless controller based on Cisco IOS Software (e-delivery) | CON-SNT-LCTIOS1A |

**Table 5.**     Ordering Information for Cisco 5700 Series Wireless Controllers Additive Capacity Licenses (Paper)

| | Part Number | Product Description | Cisco SMARTnet Service 8x5xNBD |
|---|---|---|---|
| **Paper license** | LIC-CT5760-UPG | Primary upgrade license SKU for Cisco 5760 Wireless Controller | CON-SNT-CT5760UP |
| | LIC-CTIOS-1A | 1 access point adder license for the wireless controller based on Cisco IOS Software | CON-SNT-LCTIOS1A |

The additive capacity licenses allow for the increase in access point capacity supported by the controller up to a maximum of 1000 access points. As an example, if a controller was initially ordered with the 250 access point support, that capacity could be later increased to up to 1000 access points by purchasing a 750 access point additive capacity license (750 * "LIC-CT5760-1A" or "L-LIC-CT5760-1A"). The single access point adder license SKU for the 5700 Series Wireless Controller allows customers the flexibility to purchase the exact number of licenses at a time. (See Tables 6 and 7)

**Table 6.**   Accessories for Cisco 5700 Series Wireless Controllers

| Part Number | Product Name |
| --- | --- |
| PWR-C1-350WAC/2 | 350WAC Redundant Power Supply Bay 2 |
| AIR-CT5700-CCBL | 5700 Series Wireless Controller Console cable |
| AIR-CT5760-RK-MNT | 5760 Wireless Controller Rack mount kit |

**Table 7.**   Power Cords for Cisco 5700 Series Wireless Controllers

| Part Number | Product Name |
| --- | --- |
| CAB-TA-NA | North America AC Type A Power Cable |
| CAB-TA-AP | Australia AC Type A Power Cable |
| CAB-TA-AR | Argentina AC Type A Power Cable |
| CAB-TA-SW | Switzerland AC Type A Power Cable |
| CAB-TA-UK | United Kingdom AC Type A Power Cable |
| CAB-TA-250V-JP | Japan 250V AC Type A Power Cable |
| CAB-TA-EU | Europe AC Type A Power Cable |
| CAB-TA-IT | Italy AC Type A Power Cable |
| CAB-TA-IN | India AC Type A Power Cable |
| CAB-TA-CN | China AC Type A Power Cable |
| CAB-TA-DN | Denmark AC Type A Power Cable |
| CAB-TA-IS | Israel AC Type A Power Cable |
| CAB-TA-JP | Japan AC Type A Power Cable |

**Table 8.**   Stacking cables for the Cisco 5700 Series Wireless Controllers

| Part Number | Product Name |
| --- | --- |
| C STACK-T1-50CM= | Cisco StackWise-480 50cm stacking cable spare |
| STACK-T1-1M= | Cisco StackWise-480 1m stacking cable spare |
| STACK-T1-3M= | Cisco StackWise-480 3m stacking cable spare |

## DTLS Cisco 5700 Series Wireless Controllers

Datagram Transport Layer Security (DTLS) is required to encrypt the data plane traffic. If a customer chooses the software option "SW5760K9-xxxx" (for example, SW5760K9-32SE), DTLS data encryption is enabled by default. Customers planning to install this device physically in Russia must order the controller with DTLS disabled by choosing the DTLS disabled software version (for example, SW5760LPE-K9-32SE). Consult your local government regulations to make sure that data DTLS encryption is permitted.

## Service and Support

Realize the full business value of your wireless network and mobility services investments more quickly with intelligent, customized services from Cisco and our partners. Backed by comprehensive 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 5700 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 5700 Series Wireless Controller is designed for 802.11ac networks, delivering wire-speed performance with services through hardware (ASIC) processing while offering maximum scalability and high resiliency for enterprise wireless deployments. The hierarchical wireless network design through the new converged access mode of deployment offers unparalleled scalability and future-proofs Wi-Fi networks.

The Cisco 5700 Series Wireless Controller is a controller based on Cisco IOS Software that enables customers to use the rich and proven features of Cisco IOS Software and its ecosystems. The Cisco IOS Software CLI allows customers to continue to use their existing tools to manage the wireless network. Cisco IOS Software makes sure of maximum security and stability.

All of these benefits are provided while maintaining Cisco's wireless innovations such as CleanAir, ClientLink 2.0, and VideoStream.

## 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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