

# Cisco Flex 7500 Series Cloud Controller

The Cisco® Flex 7500 Series Cloud Controller is a highly scalable branch controller for multisite [wireless](#) deployments. Deployed in the private cloud the Cisco Flex 7500 Series Controller extends wireless services to distributed branch offices with centralized control that lowers total cost of operations.

<p><b>Lower CapEx</b></p> <ul style="list-style-type: none"> <li>Consolidate multiple controllers into one controller with support up to 2000 access points, and save on rack space with 1-RU platform.</li> <li>Save on power and switch ports with fewer controllers to support large deployments.</li> <li>Save on licensing costs by purchasing a higher <a href="#">access point</a> capacity license at a lower premium and take advantage of the license across multiple sites.</li> </ul>
<p><b>Lower OpEx</b></p> <ul style="list-style-type: none"> <li>Deploy fewer controllers in a data center by consolidating many controllers into one and manage up to 500 sites.</li> <li>Significant savings in operations by configuring, managing and troubleshooting up to 2000 access points and 20,000 clients with a single point of touch.</li> </ul>
<p><b>Licensing Flexibility and Investment Protection</b></p> <ul style="list-style-type: none"> <li>Additional access point capacity licenses can be added over time.</li> </ul>
<p><b>FlexConnect Solution</b></p> <ul style="list-style-type: none"> <li>Intelligent RF control plane, centralized software update, control and management, and troubleshooting.</li> <li>With a distributed data plane, deploy in-branch (locally switched) voice, video, and data intensive applications over wireless.</li> <li>Deploy FlexConnect in sites of up to 50 access points.</li> <li>Seamless wireless services even when WAN link fails or a controller flaps.</li> <li>Local radius server for new clients to get on the network and access the services.</li> </ul>
<p><b>Comprehensive Wired/Wireless Security</b></p> <ul style="list-style-type: none"> <li>Full CAPWAP access point to controller encryption.</li> <li>Supports rogue access point detection and denial-of-service attacks.</li> <li>Management frame protection detects malicious users and alerts network administrators.</li> </ul>
<p><b>Secured Guest Access</b></p> <ul style="list-style-type: none"> <li>Deploy simple and secured guest access services across 500 sites.</li> </ul>

The Cisco Flex 7500 Series (Figure 1) can manage wireless [access points](#) in up to 500 branch locations and allows IT managers to configure, manage, and troubleshoot up to 2000 access points and 20,000 clients from the data center. The Cisco Flex 7500 Series controller supports secure guest access, rogue detection for Payment Card Industry (PCI) compliance and in-branch (locally switched) Wi-Fi voice and video.

**Figure 1.** Cisco Flex 7500 Series Cloud Controller



## Features

The Cisco Flex 7500 Series Cloud Controller provides centralized control, management, and troubleshooting. It supports the Cisco FlexConnect solution for a lean branch network using access points connected to controllers in the data center over a wide area network. Data traffic from the access points are switched locally at the branch; so in the rare event of a WAN failure at the branch, the wireless clients remain connected on the network with access to local resources within the branch.

The Cisco Flex 7500 Series Cloud Controllers automate 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 branch networks. As a component of the Cisco Unified [Wireless Network](#), this controller provides real-time communication between [Cisco Aironet® access points](#), the [Cisco Wireless Control System \(WCS\)](#), and the [Cisco Mobility Services Engine](#), and is interoperable with other Cisco controllers. With integrated Cisco CleanAir technology, the Cisco Flex 7500 Series provides the industry’s only self-healing and self-optimizing wireless network for branches.

## Software Licensing Flexibility

Cisco Flex 7500 Series licensing offers the flexibility to add additional access points (up to 2000 access points) as business needs grow.

Table 1 lists the features of the Cisco Flex 7500 Series [Cloud Controllers](#).

**Table 1.** Cisco Flex 7500 Series Cloud Controller Features

Feature	Benefits
<b>Scalability</b>	<ul style="list-style-type: none"> <li>• Supports 300, 500, 1000, and 2000 access points</li> <li>• Supports 20,000 clients</li> <li>• Supports up to 500 branch locations</li> </ul>
<b>RF Management</b>	<ul style="list-style-type: none"> <li>• Provides both real-time and historical information about RF interference impacting network performance across controllers, through systemwide Cisco <a href="#">CleanAir technology</a> integration</li> </ul>
<b>Cisco FlexConnect</b>	<ul style="list-style-type: none"> <li>• Wireless branch deployment for up to 50 access points per branch</li> <li>• Centralized control, management, and client troubleshooting</li> <li>• Seamless Layer 2 roaming within a Cisco FlexConnect group of 50 access points</li> <li>• Seamless client access in the event of a WAN link failure (local data switching)</li> <li>• Local RADIUS server support to enable new clients to access wireless services without depending on the central RADIUS servers</li> <li>• Support for high-latency WAN links</li> <li>• Secure guest access</li> <li>• Enhanced security with a wireless intrusion prevention system (wIPS)</li> <li>• Rogue detection for PCI compliance</li> </ul>
<b>Access Point Support</b>	<ul style="list-style-type: none"> <li>• Cisco Aironet 1040 Series Access Points, Cisco Aironet 1130 Series Access Points, Cisco Aironet 1140 Series Access Points, Cisco Aironet 3500 Series Access Points, Cisco Aironet 1250 Series Access Points, Cisco Aironet 1260 Series Access Points, Cisco Aironet 1240 Series Access Points and Cisco 891 Series Integrated Services Router and Cisco 881 Series Integrated Services Router</li> </ul>
<b>Comprehensive End-to-End Security</b>	<ul style="list-style-type: none"> <li>• 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</li> </ul>
<b>End-to-end Voice</b>	<ul style="list-style-type: none"> <li>• Supports Cisco <a href="#">Unified Communications</a> for improved collaboration through messaging, presence, and conferencing</li> <li>• Supports all <a href="#">Cisco Unified Communications wireless IP phones</a> for cost-effective, real-time voice services</li> </ul>
<b>Fault Tolerance</b>	<ul style="list-style-type: none"> <li>• Access points continue to provide seamless services when a controller fails. Provides failover to another backup controller for centralized control and management</li> <li>• Redundant power supply helps to ensure maximum availability</li> </ul>
<b>Environmentally Responsible</b>	<ul style="list-style-type: none"> <li>• Organizations may choose to turn off access point radios to reduce power consumption during off-peak hours</li> </ul>

Table 2 lists the product specifications for Cisco Flex 7500 Series Cloud Controllers.

**Table 2.** Product Specifications for Cisco Flex 7500 Series Cloud Controllers

Item	Specifications
<b>Wireless</b>	IEEE 802.11a, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, <a href="#">802.11n</a>
<b>Wired/Switching/Routing</b>	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX specification, 1000BASE-T, 1000BASE-SX, 1000BASE-LH, IEEE 802.1Q VLAN tagging, and IEEE 802.1AX Link Aggregation
<b>Data Request For Comments (RFC)</b>	<ul style="list-style-type: none"> <li>• RFC 768 UDP</li> <li>• RFC 791 IP</li> <li>• RFC 2460 IPv6 (pass through Bridging mode only)</li> <li>• RFC 792 ICMP</li> <li>• RFC 793 TCP</li> <li>• RFC 826 ARP</li> <li>• RFC 1122 Requirements for Internet Hosts</li> <li>• RFC 1519 CIDR</li> </ul>

Item	Specifications
	<ul style="list-style-type: none"> <li>• RFC 1542 BOOTP</li> <li>• RFC 2131 DHCP</li> <li>• RFC 5415 CAPWAP Protocol Specification</li> </ul>
<b>Security Standards</b>	<ul style="list-style-type: none"> <li>• WPA</li> <li>• IEEE 802.11i (WPA2, RSN)</li> <li>• RFC 1321 MD5 Message-Digest Algorithm</li> <li>• RFC 1851 The ESP Triple DES Transform</li> <li>• RFC 2104 HMAC: Keyed Hashing for Message Authentication</li> <li>• RFC 2246 TLS Protocol Version 1.0</li> <li>• RFC 2401 Security Architecture for the Internet Protocol</li> <li>• RFC 2403 HMAC-MD5-96 within ESP and AH</li> <li>• RFC 2404 HMAC-SHA-1-96 within ESP and AH</li> <li>• RFC 2405 ESP DES-CBC Cipher Algorithm with Explicit IV</li> <li>• RFC 2407 Interpretation for ISAKMP</li> <li>• RFC 2408 ISAKMP</li> <li>• RFC 2409 IKE</li> <li>• RFC 2451 ESP CBC-Mode Cipher Algorithms</li> <li>• RFC 3280 Internet X.509 PKI Certificate and CRL Profile</li> <li>• RFC 4347 Datagram Transport Layer Security</li> <li>• RFC 4346 TLS Protocol Version 1.1</li> </ul>
<b>Encryption</b>	<ul style="list-style-type: none"> <li>• WEP and TKIP-MIC: RC4 40, 104 and 128 bits (both static and shared keys)</li> <li>• AES: CBC, CCM, CCMP</li> <li>• DES: DES-CBC, 3DES</li> <li>• SSL and TLS: RC4 128-bit and RSA 1024- and 2048-bit</li> <li>• DTLS: AES-CBC</li> <li>• IPSec: DES-CBC, 3DES, AES-CBC</li> </ul>
<b>Authentication, Authorization, and Accounting (AAA)</b>	<ul style="list-style-type: none"> <li>• IEEE 802.1X</li> <li>• RFC 2548 Microsoft Vendor-Specific RADIUS Attributes</li> <li>• RFC 2716 PPP EAP-TLS</li> <li>• RFC 2865 RADIUS Authentication</li> <li>• RFC 2866 RADIUS Accounting</li> <li>• RFC 2867 RADIUS Tunnel Accounting</li> <li>• RFC 3576 Dynamic Authorization Extensions to RADIUS</li> <li>• RFC 3579 RADIUS Support for EAP</li> <li>• RFC 3580 IEEE 802.1X RADIUS Guidelines</li> <li>• RFC 3748 Extensible Authentication Protocol</li> <li>• Web-based authentication</li> <li>• TACACS support for management users</li> </ul>
<b>Management</b>	<ul style="list-style-type: none"> <li>• SNMP v1, v2c, v3</li> <li>• RFC 854 Telnet</li> <li>• RFC 1155 Management Information for TCP/IP-Based Internets</li> <li>• RFC 1156 MIB</li> <li>• RFC 1157 SNMP</li> <li>• RFC 1213 SNMP MIB II</li> <li>• RFC 1350 TFTP</li> <li>• RFC 1643 Ethernet MIB</li> <li>• RFC 2030 SNMP</li> <li>• RFC 2616 HTTP</li> <li>• RFC 2665 Ethernet-Like Interface types MIB</li> <li>• RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual Extensions</li> <li>• RFC 2819 RMON MIB</li> <li>• RFC 2863 Interfaces Group MIB</li> <li>• RFC 3164 Syslog</li> <li>• RFC 3414 User-Based Security Model (USM) for SNMPv3</li> </ul>

Item	Specifications
	<ul style="list-style-type: none"> <li>• RFC 3418 MIB for SNMP</li> <li>• RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs</li> <li>• Cisco private MIBs</li> </ul>
<b>Management Interfaces</b>	<ul style="list-style-type: none"> <li>• Web-based: HTTP/HTTPS</li> <li>• Command-line interface: Telnet, Secure Shell (SSH) Protocol, serial port</li> <li>• Cisco Wireless Control System (WCS)</li> </ul>
<b>Interfaces and Indicators</b>	<ul style="list-style-type: none"> <li>• 2x 10 Gigabit Ethernet interfaces</li> <li>• Small Form-Factor Pluggable (SFP) options (only Cisco SFPs supported): SFP-10G-SR</li> <li>• LED indicators: Network Link, Diagnostics</li> <li>• 1x Service Port: 10/100/1000 Mbps Ethernet (RJ-45)</li> </ul>
<b>Physical Dimensions</b>	<ul style="list-style-type: none"> <li>• Dimensions (WxDxH): 17.30 x 28.00 x 1.69 in. (440.0 x 711.4 x 43.0 mm)</li> <li>• Weight: 35.1 lbs (15.9 kg) with 2 power supplies</li> </ul>
<b>Environmental Conditions</b>	<p>Air temperature:</p> <ul style="list-style-type: none"> <li>• Appliance On: 10°C to 35°C (50°F to 95°F); altitude: 0 to 914.4 m (3000 ft), decrease system temperature by 1.0°C for every 1000-foot increase in altitude</li> <li>• Appliance Off: 5°C to 45°C (41°F to 113°F); maximum altitude: 3048 m (10,000 ft)</li> <li>• Storage: -40°C to 60°C (-40°F to 140°F); maximum altitude: 3048 m (10,000 ft)</li> </ul> <p>Humidity:</p> <ul style="list-style-type: none"> <li>• Appliance On: 20% to 80%; maximum dew point: 21°C; maximum rate of change: 5 °C/hr</li> <li>• Appliance Off: 8% to 80%; maximum dew point: 27°C</li> </ul> <p>Electrical input:</p> <ul style="list-style-type: none"> <li>• Sine-wave input (47 - 63 Hz) required</li> <li>• Input voltage low range: <ul style="list-style-type: none"> <li>◦ Minimum: 100 V ac</li> <li>◦ Maximum: 127 V ac</li> </ul> </li> <li>• Input voltage high range: <ul style="list-style-type: none"> <li>◦ Minimum: 200 V ac</li> <li>◦ Maximum: 240 V ac</li> </ul> </li> <li>• Input kilovolt-amperes (kVA), approximately: <ul style="list-style-type: none"> <li>◦ Minimum: 0.090 kVA</li> <li>◦ Maximum: 0.700 kVA</li> </ul> </li> <li>• Heat output (Maximum) 2302 Btu per hour (675 watts)</li> <li>• Acoustical noise emissions: <ul style="list-style-type: none"> <li>◦ Sound power, idling: 6.1 bels maximum</li> <li>◦ Sound power, operating: 6.1 bels maximum</li> </ul> </li> </ul>
<b>Regulatory Compliance</b>	<p>CE Mark</p> <p>Safety:</p> <ul style="list-style-type: none"> <li>• UL 60950-1:2003</li> <li>• EN 60950:2000</li> <li>• EMI and susceptibility (Class A):</li> <li>• U.S.: FCC Part 15.107 and 15.109</li> <li>• Canada: ICES-003</li> <li>• Japan: VCCI</li> <li>• Europe: EN 55022, EN 55024</li> </ul>

Tables 3 and 4 list the ordering and accessories information for Cisco Flex 7500 Series Cloud Controllers.

To place an order, visit the Cisco ordering website: <http://www.cisco.com/en/US/ordering/index.shtml>.

**Table 3.** Ordering Information for Cisco Flex 7500 Series Cloud Controllers

Part Number	Product Name	Cisco SMARTnet® 8x5xNBD
AIR-CT7510-300-K9	7500 Series Cloud Controller for up to 300 Cisco access points	CON-SNT-CT75300
AIR-CT7510-500-K9	7500 Series Cloud Controller for up to 500 Cisco access points	CON-SNT-CT75500
AIR-CT7510-1K-K9	7500 Series Cloud Controller for up to 1000 Cisco access points	CON-SNT-CT751K
AIR-CT7510-2K-K9	7500 Series Cloud Controller for up to 2000 Cisco access points	CON-SNT-CT752K

**Table 4.** Accessories for Cisco Flex 7500 Series Cloud Controllers

Part Number	Product Name
AIR-SRVR-146GB-HD=	Field replaceable 146GB HD for wireless appliances
AIR-SRVR-PWR=	Field replaceable power supply for wireless appliances
AIR-SRVR-URMK=	Universal Rack Mount Rail Kit for wireless appliances

## Additive Capacity Upgrade Licenses

Tables 5 and 6 show the additive capacity upgrade licenses that are available for the Cisco Flex 7500 Series Cloud Controller.

**Table 5.** Ordering Information for Cisco Flex 7500 Series Cloud Controllers Additive Capacity Licenses (e-Delivery PAKs)

	Part Number	Product Description	SMARTnet 8x5xNBD
<b>e-License</b>	L-LIC-CT7500-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	
	L-LIC-CT7500-100A	100 Access Point Adder License for the 7510 Controller (e-Delivery)	CON-SNT-LC75100A
	L-LIC-CT7500-200A	200 Access Point Adder License for the 7510 Controller (e-Delivery)	CON-SNT-LC75250A
	L-LIC-CT7500-500A	500 Access Point Adder License for the 7510 Controller (e-Delivery)	CON-SNT-LC75500A
	L-LIC-CT7500-1KA	1000 Access Point Adder License for the 7510 Controller (e-Delivery)	CON-SNT-LC751KA

**Table 6.** Ordering Information for Cisco Flex 7500 Series Cloud Controllers Additive Capacity Licenses (Paper PAKs)

	Part Number	Product Description	SMARTnet 8x5xNBD
<b>Paper License</b>	LIC-CT7500-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	
	LIC-CT7500-100A	100 Access Point Adder License for the 7510 Controller	CON-SNT-LC75100A
	LIC-CT7500-200A	200 Access Point Adder License for the 7510 Controller	CON-SNT-LC75250A
	LIC-CT7500-500A	500 Access Point Adder License for the 7510 Controller	CON-SNT-LC75500A
	LIC-CT7500-1KA	1000 Access Point Adder License for the 7510 Controller	CON-SNT-LC751KA

## Service and Support

### Cisco Wireless LAN Services

Cisco and our specialized partners offer a broad portfolio of end-to-end services to help you improve your organization's productivity and collaboration by assisting with the readiness, deployment, and optimization of your [wireless](#) network and [mobility](#) services. Our services help you successfully deploy the Cisco Flex 7500 Series Cloud 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>.

Cisco WLAN Advanced Services Consulting is available for the planning and deployment stages to help ensure the successful integration of the Cisco Flex 7500 Series Cloud Controller in your network. Cisco WLAN Advanced Services Consulting can be ordered with the SKU listed in Table 7.

Please contact your Cisco Sales representative with the information required for a pricing quote:

- Number of sites
- Desired coverage area (square feet or square miles)
- Estimated number of access points per site
- Advanced Mobility Services and required applications

**Table 7.** Ordering Information for Planning and Deployment Consulting Services for the Cisco Flex 7500 Series Cloud Controllers

Part Number	Service Name
AS-WLAN-CNSLT	Cisco Wireless LAN Advanced Services Consulting

## Summary

The Cisco Flex 7500 Series Cloud Controller is designed to support large scale branch wireless deployments. It simplifies deployment and operation of wireless networks, helping to ensure smooth performance, enhance security, and maximize network availability. The Cisco Flex 7500 Series Cloud Controller manages all of the Cisco access points within 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>.

For more information about the Cisco Flex 7500 Series Cloud Controller, visit:

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



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