Cisco 2500 Series Wireless Controllers

Product Overview
The Cisco® 2500 Series Wireless Controller enables systemwide wireless functions in small to medium-sized enterprises and branch offices. Designed for 802.11n and 802.11ac performance, Cisco 2500 Series Wireless Controllers are entry-level controllers that provide real-time communications between Cisco Aironet® access points to simplify the deployment and operation of wireless networks (Figure 1).

Figure 1. Cisco 2500 Series Wireless Controller

As a component of the Cisco Unified Wireless Network, this controller delivers centralized security policies, wireless intrusion prevention system (wIPS) capabilities, award-winning RF management, and quality of service (QoS) for voice and video. Delivering 802.11ac performance and scalability, the Cisco 2500 Series provides low total cost of ownership and flexibility to scale as network requirements grow.

The Cisco 2504 Wireless Controller supports Cisco Application Visibility and Control (AVC), the technology that includes Cisco’s Network-Based Application Recognition 2 (NBAR-2) engine. N-BAR-2 does deep packet inspection (DPI) to classify applications and tie into quality of service (QoS) to either drop or mark the traffic, thereby prioritizing 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 Cisco 2504 Wireless Controller also supports Bonjour Services Directory, which enables Bonjour (Apple) 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 2500 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.

Cisco 2500 Series Wireless Controller-based access point licensing offers flexibility with 5, 15, 25, or 50 access points. Additional access point support can be added in increments of 1, 5, or 25.

Small to Medium-Sized Enterprise and Branch Office Controller
• Support for up to 75 access points and 1000 clients.
• 802.11n and 802.11ac ready support up to 1 Gbps.
• Payment Card Industry (PCI) support enables certification for scanner and kiosk deployments.

Licensing Flexibility and Investment Protection
• Additional access point licenses may be added over time.

Comprehensive Security
• Full Control and Provisioning of Wireless Access Points (CAPWAP) access point to controller encryption.
• Supports rogue access point detection and detection of denial-of-service attacks.
• Management frame protection detects malicious users and alerts network administrators.

Cisco CleanAir® Technology
• Detects, classifies, locates, and mitigates RF interference to provide performance protection for 802.11n and 802.11ac networks.

Cisco OfficeExtend Solution
• Secure, simple, cost-effective mobile teleworker solution.

Cisco 2504 Wireless Controller-based access point licensing offers flexibility with 5, 15, 25, or 50 access points. Additional access point support can be added in increments of 1, 5, or 25.
Table 1 lists the features and benefits of the Cisco 2500 Series Wireless Controllers.

**Table 1. Cisco 2500 Series Wireless Controller Features and Benefits**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefits</th>
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</table>
| **Scalability**                | • Supports up to 75 access points  
• Supports up to 1000 clients                                                                                                                   |
| **Ease of Deployment**         | • For quick and easy deployment Access Points can be connected directly to 2504 Wireless LAN Controller via two PoE (Power over Ethernet) ports  |
| **High Performance**           | • Wired-network speed and nonblocking performance for 802.11n and 802.11ac networks. Supports up to 1 Gbps throughput  
• Provides both real-time and historical information about RF interference impacting network performance across controllers, via systemwide Cisco CleanAir® technology integration |
| **RF Management**             | • Offers CAPWAP-compliant Datagram Transport Layer Security (DTLS) encryption to help ensure full-line-rate encryption between access points and controllers across remote WAN/LAN links |
| **Comprehensive End-to-End Security** | • Supports all Cisco Unified Wireless IP Phones for cost-effective, real-time voice services  
• Integrates Cisco VideoStream technology as part of the Cisco medianet framework to optimize the delivery of video applications across the WLAN |
| **End-to-end Voice**           | • Supports Unified Communications for improved collaboration through messaging, presence, and conferencing  
• Supports corporate wireless service for mobile and remote workers with secure wired tunnels to the Cisco Aironet® 600, 1130, 1140 or 3500 Series Access Points |
| **High-Performance Video**     | • Supports Unified Communications for improved collaboration through messaging, presence, and conferencing  
• Supports corporate wireless service for mobile and remote workers with secure wired tunnels to the Cisco Aironet® 600, 1130, 1140 or 3500 Series Access Points |
| **PCI Integration**           | • Supports corporate wireless service for mobile and remote workers with secure wired tunnels to the Cisco Aironet® 600, 1130, 1140 or 3500 Series Access Points |
| **OfficeExtend**               | • Supports corporate wireless service for mobile and remote workers with secure wired tunnels to the Cisco Aironet® 600, 1130, 1140 or 3500 Series Access Points |
| **Environmentally Responsible** | • Supports corporate wireless service for mobile and remote workers with secure wired tunnels to the Cisco Aironet® 600, 1130, 1140 or 3500 Series Access Points |
| **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 |
| **Mobility, Security and Management for IPv6 & Dual-Stack Clients** | • Supports up to 15 guest anchor Ethernet over IP (EoIP) tunnels for path isolation of guest traffic from enterprise data traffic  
• Equips administrators for IPv6 troubleshooting, planning, client traceability from a common wired and wireless management system |

**Product Specifications**

Table 2 lists the product specification for Cisco 2500 Series Wireless Controllers.

**Table 2. Product Specifications for the Cisco 2500 Wireless Controller**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wireless Standards</strong></td>
<td>IEEE 802.11a, 802.11ac, 802.11b, 802.11g, 802.11n, WMM/802.11e, 802.11h, 802.11k, 802.11n, 802.11r, 802.11u, 802.11w, 802.11ac</td>
</tr>
<tr>
<td><strong>Wired/Switching/Routing</strong></td>
<td>IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX specification, 1000BASE-T, and IEEE 802.1Q VLAN tagging</td>
</tr>
<tr>
<td>Item</td>
<td>Specification</td>
</tr>
<tr>
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</tr>
</tbody>
</table>
| Data Request for Comments (RFCs) | - RFC 768 UDP  
- RFC 791 IP  
- RFC 2460 IPv6 (passthrough 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 |
| Security Standards | - Wi-Fi Protected Access (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 IP Encapsulating Security Payload (ESP)  
- 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 |
| Encryption | - 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, CCM, Counter Mode with Cipher Block Chaining Message Authentication Code Protocol (CCMP)  
- DES: DES-CBC, 3DES  
- Secure Sockets Layer (SSL) and Transport Layer Security (TLS): RC4 128-bit and RSA 1024- and 2048-bit  
- DTLS: AES-CBC |
| Authentication, Authorization, and Accounting (AAA) | - 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 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 |
<table>
<thead>
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<th>Specification</th>
</tr>
</thead>
</table>
| 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
Cisco private MIBs        |
| Management Interfaces    | • Designed for use with Cisco Wireless Control System<br>• Web-based: HTTP/HTTPS individual device manager<br>• Command-line interface: Telnet, SSH, serial port |
| Interfaces and Indicators| • Console port: RJ-45 connector<br>• Network: Four 1 Gbps Ethernet (RJ-45)<br>• LED indicators: Link Activity (each 1 Gigabit Ethernet port), Power, Status, Alarm |
| Physical and Environmental| Dimensions: 1.73 x 8.00 x 6.75 in. (43.9 x 203.2 x 271.5mm)<br>Weight: 3.5 lbs (with power supply)<br>Temperature:<br>• Operating: 32 to 104 °F (0 to 40°C)<br>• Storage: -13 to 158°F (-25 to 70°C)<br>Humidity:<br>• Operating humidity: 10 to 95 percent, noncondensing<br>• Storage humidity: Up to 95 percent<br>Power adapter: Input power: 100 to 240 VAC; 50/60 Hz<br>Heat dissipation: 72 BTU/hour |
| Regulatory Compliance    | Safety:<br>• UL 60950-1, 2nd Edition<br>• EN 60950:2005<br>EMI and susceptibility (Class B):<br>• U.S.: FCC Part 15.107 and 15.109<br>• Canada: ICES-003<br>• Japan: VCCI<br>• Europe: EN 55022, EN 55024 |
Ordering Information


Table 3. Ordering Information for Cisco 2500 Series Wireless Controllers

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Cisco SMARTnet® 8x5xNBD</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR-CT2504-S-K9</td>
<td>2500 Series Wireless Controller for up to 5 Cisco access points</td>
<td>CON-SNT-CT255</td>
</tr>
<tr>
<td>AIR-CT2504-15-K9</td>
<td>2500 Series Wireless Controller for up to 15 Cisco access points</td>
<td>CON-SNT-CT2515</td>
</tr>
<tr>
<td>AIR-CT2504-25-K9</td>
<td>2500 Series Wireless Controller for up to 25 Cisco access points</td>
<td>CON-SNT-CT2525</td>
</tr>
<tr>
<td>AIR-CT2504-50-K9</td>
<td>2500 Series Wireless Controller for up to 50 Cisco access points</td>
<td>CON-SNT-CT2550</td>
</tr>
<tr>
<td>AIR-CT2504-HA-K9</td>
<td>Cisco 2500 Series Wireless Controller for High Availability</td>
<td>CON-SNT-CT2504HA</td>
</tr>
</tbody>
</table>

Please note AIR-CT2504-HA-K9 does not support access point and client stateful switchover.

Table 4. Ordering Information for Cisco 2500 Series Wireless Controllers: Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Product Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR-CT2504-RMNT</td>
<td>Cisco 2504 Wireless Controller Rack Mount Bracket</td>
</tr>
<tr>
<td>PWR-2504-AC</td>
<td>Cisco 2504 Wireless Controller Spare Power Supply (not necessary with original order as 1 power supply is included)</td>
</tr>
</tbody>
</table>

Additive Capacity Upgrade Licenses

Tables 5 and 6 summarize additive capacity upgrade licenses that are available for the Cisco 2500 Series.

Table 5. Ordering Information for Cisco 2500 Series Wireless Controllers: Access Point Adder Licenses (e-Delivery PAKs)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>SWSS 8x5xNBD</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-LIC-CT2504-UPG</td>
<td>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</td>
<td>CON-ECMU-LCT25UP</td>
</tr>
<tr>
<td>L-LIC-CT2504-1A</td>
<td>1 Access Point Adder License for Cisco 2504 Wireless Controller (e-Delivery)</td>
<td>CON-ECMU-LICCT2504</td>
</tr>
<tr>
<td>L-LIC-CT2504-5A</td>
<td>5 Access Point Adder License for Cisco 2504 Wireless Controller (e-Delivery)</td>
<td>CON-ECMU-LCT255A</td>
</tr>
<tr>
<td>L-LIC-CT2504-25A</td>
<td>25 Access Point Adder License for Cisco 2504 Wireless Controller (e-Delivery)</td>
<td>CON-ECMU-LCT2525A</td>
</tr>
</tbody>
</table>

Table 6. Ordering Information for Cisco 2500 Series Wireless Controllers: Access Point Adder Licenses (Paper PAKs)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>SWSS 8x5xNBD</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIC-CT2504-UPG</td>
<td>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</td>
<td>CON-ECMU-LCT25UP</td>
</tr>
<tr>
<td>LIC-CT2504-1A</td>
<td>1 Access Point Adder License for Cisco 2504 Wireless Controller (Paper Certificate - U.S. Mail)</td>
<td>CON-ECMU-LICCT2504</td>
</tr>
<tr>
<td>LIC-CT2504-5A</td>
<td>5 Access Point Adder License for Cisco 2504 Wireless Controller (Paper Certificate - U.S. Mail)</td>
<td>CON-ECMU-LCT255A</td>
</tr>
<tr>
<td>LIC-CT2504-25A</td>
<td>25 Access Point Adder License for Cisco 2504 Wireless Controller (Paper Certificate - U.S. Mail)</td>
<td>CON-ECMU-LCT2525A</td>
</tr>
</tbody>
</table>

Table 7 shows the optional DTLS license for Cisco 2500 Series Wireless Controllers. When the customer orders the 2500 Series and chooses “none selected (the default) in the Optional Licenses tab, data DTLS encryption is disabled.
Datagram Transport Layer Security (DTLS) is required for all Cisco OfficeExtend deployments to encrypt the data plane traffic. To enable this functionality, you must obtain a $0 DTLS license. **Customers planning to install this device physically in Russia must 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.

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 2500 Series Wireless Controllers (PAKs)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIC-CT2504-UPG</td>
<td>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</td>
</tr>
<tr>
<td>LIC-CT25-DTLS-K9</td>
<td>Cisco 2504 Controller DTLS License (Paper Certificate - U.S. Mail)</td>
</tr>
<tr>
<td>L-LIC-CT2504-UPG</td>
<td>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</td>
</tr>
<tr>
<td>L-LIC-CT25-DTLS-K9</td>
<td>Cisco 2504 Controller DTLS License (electronic Certificate; must not be ordered by Russian customers)</td>
</tr>
</tbody>
</table>

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

To obtain/download a Data DTLS License:

**Step 1.** Browse to [http://cisco.com/go/license](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 Trivial File Transfer Protocol (TFTP) server.

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

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

### 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 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](http://www.cisco.com/go/wirelesslanservices).
Cisco Capital

Financing to Help You Achieve Your Objectives

Cisco Capital® financing can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx, accelerate your growth, and optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there’s just one predictable payment. Cisco Capital is available in more than 100 countries. Learn more.

For More Information

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

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

Learn more.