Cisco Virtual Wireless Controller

The Cisco® Virtual Wireless Controller is a virtual form-factor controller that enables flexible and cost-effective deployment for small, medium-sized, or large service provider deployments.

Deployment Flexibility

- Virtual form-factor
- Any x86 server with VMware Hypervisor ESXi4.x, 5.x, or 6.x, HyperV, or KVM
- On-premises or data-center-hosted deployments

Cost-Effective

- Share existing virtualization infrastructure to achieve operational cost savings
- Co-resides with other virtualized network services: virtual Cisco Prime™ Infrastructure, virtual Cisco Mobility Services Engine (vMSE), virtual Cisco Identity Services Engine (vISE) and others
- Single access point adder licenses enable a granular "pay as you grow" model

HA and Manageability

- Common Cisco Prime management for appliance and virtual wireless controller, in addition to the standard virtual machine (VM) tools for monitoring, troubleshooting, and so on
- N+1 High Availability
- Use VM infrastructure features: VMotion, cloning, snapshot, and so on
- Business agility with on-demand orchestration; enabling new controllers is quick and simple

FlexConnect Solution

- Intelligent RF control plane, centralized software update, control and management, and troubleshooting
- With a distributed data plane, deploy On-Prem (locally switched) voice-, video-, and data-intensive applications over wireless
- Seamless wireless services even when WAN link fails or a controller out-of-service
- Local RADIUS server for new clients to get on the network and access services

Comprehensive Wired and Wireless Security

- Full CAPWAP access point to controller encryption
- Supports detection of rogue access points and denial-of-service attacks
- Management frame protection detects malicious users and alerts network administrators

Secured Guest Access

- Deploy simple and secure guest access services

The Cisco Virtual Wireless LAN Controller (vWLC) is available with two types of software images: small scale image (supports up to 200 access points and 6000 clients) and large scale image (supports up to 3000 access points and 32000 clients). The Virtual Controller supports secure guest access, rogue detection for Payment Card Industry (PCI) compliance, and in-branch (locally switched) Wi-Fi voice and video.

Features

The Cisco Virtual Wireless Controller provides centralized control, management, and troubleshooting. It supports the Cisco FlexConnect™ solution. Data traffic from the access points are switched locally at the access point.

The Cisco Virtual Wireless Controller 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. Cisco Virtual Wireless Controller in central switched mode supports Bonjour Services Directory to enable Bonjour Services to be advertised and utilized in a separate L3 network. Wireless Policy engine is a wireless profiler and policy feature on the wireless controller that enables profiling of wireless devices and enforcement of policies such as VLAN assignment, quality of service (QoS), ACL and time-of-day-based access. As a component of the Cisco Digital Network Architecture (Cisco DNA), this controller provides real-time communications between Cisco Aironet® access points, the Cisco Prime Infrastructure, and the Cisco Mobility Services Engine, and is interoperable with other Cisco controllers. With integrated Cisco CleanAir® technology, the Cisco Virtual Wireless Controller provides the industry's only self-healing and self-optimizing wireless network for small and mid-sized businesses as well as large enterprises.

Table 1 lists the features of Cisco Virtual Wireless Controller.

Table 1. Cisco Virtual Wireless Controller Features

Feature	Benefits	
Scalability	Small Scale Image: • Supports 200 access points • Supports 6000 clients	Large Scale Image: • Supports 3000 access points • Supports 32,000 clients
RF Management	• Provides both real-time and historical information about RF interference impacting network performance across controllers, through systemwide Cisco CleanAir technology integration	
Cisco FlexConnect	• Supports up to 200 Cisco FlexConnect groups and 100 access points in each FlexConnect group • Centralized control, management, and client troubleshooting • Seamless Layer 2 roaming within a Cisco FlexConnect group of 100 access points • Seamless client access in the event of a WAN link failure (local data switching) • Local RADIUS server support to enable new clients to access wireless services without depending on the central RADIUS servers • Support for high-latency WAN links • Secure guest access • Efficient access point upgrade that optimizes the WAN link utilization for downloading access point images • Integrated and enhanced security with a wireless intrusion prevention system (wIPS) • Rogue detection for PCI compliance • Local split tunneling for improved WAN bandwidth utilization • Workgroup bridge/universal workgroup bridge (WGB/uWGB) support for local switching simplifies deployment of wired-only devices in remote locations	
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	
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	• Access points continue to provide seamless services when a controller fails; provides failover to another backup controller for centralized control and management • Redundant power supply helps to ensure maximum availability	
Environmentally Responsible	• Organizations may choose to turn off access point radios to reduce power consumption during off- peak hours	

Table 2 lists the product specifications for Cisco Virtual Wireless Controller.

Table 2. Product Specifications for Cisco Virtual Wireless Controller

Item	Specifications
Wireless	IEEE 802.11a, 802.11ac, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, 802.11k, 802.11n, 802.11r, 802.11u, 802.11w
Wired/Switching/Routing	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX specification, 1000BASE-T. 1000BASE-SX, 1000-BASE-LH, IEEE 802.1Q VLAN tagging
Data Request For Comments (RFC)	• 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

Item	Specifications
Security Standards	• 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 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 4347 Datagram Transport Layer Security • RFC 4346 TLS Protocol Version 1.1
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): Cipher Block Chaining (CBC), Counter with CBC-MAC (CCM), Counter with Cipher Block Chaining Message Authentication Code Protocol (CCMP) • Data Encryption Standard (DES): DES-CBC, 3DES • Secure Sockets Layer (SSL) and Transport Layer Security (TLS): RC4 128-bit and RSA 1024- and 2048-bit • IPsec: DES-CBC, 3DES, 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 • Terminal Access Controller Access-Control System (TACACS) support for management users
Management	• 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 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 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

Item	Specifications	
Management Interfaces	• Web-based: HTTP/HTTPS • Command-line interface: Telnet, Secure Shell (SSH) Protocol, serial port • Prime Infrastructure	
Regulatory Compliance	CE Mark Safety: • 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	
Virtual Machine Specifications	Cisco Virtual Wireless Controller can run on any x86 server that supports HyperV, VMware ESXi 4.x, 5.x, and 6.x and KVM Linux based systems. The resource requirements from the virtualized server hardware:	
	Small-scale image: • CPU: 1 virtual CPU • Memory: 2 GB • Disk space: 8 GB • Network interfaces: 2 (vNICs)	Large-scale image: • CPU: 2 virtual CPU • Memory: 8 GB • Disk space: 8 GB • Network interfaces: 2 (vNICs)

Licensing

Cisco Virtual Wireless Controllers provide right-to-use (with end-user license agreement [EULA] acceptance) license enablement for faster time to deployment, with flexibility to add additional access points as business needs grow.

- Additional access point capacity licenses can be added over time.
- Right-to-use licensing (with EULA acceptance) for faster and easier license enablement.
- Starting with the 8.2 release, Cisco Virtual Wireless Controllers also provide 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.
- Pools license entitlements in a single account. Licenses can be moved freely through the network wherever they are needed.

Table 3 lists ordering and accessories information for Cisco Virtual Wireless Controller. To place an order, visit the Cisco ordering website: http://www.cisco.com/en/US/ordering/index.shtml.

Table 3. Ordering Information for Cisco Virtual Wireless Controller

Part Number	Product Name	Cisco SMARTnet® Service 8x5xNBD
L-AIR-CTVM-5-K9	Cisco Virtual Wireless Controller for up to 5 Cisco access points	CON-SAU-CTVM5K9

Additive Capacity Upgrade Licenses

Table 4 shows the additive capacity upgrade licenses that are available for the Cisco Virtual Wireless Controller.

Table 4. Ordering Information for Cisco Virtual Wireless Controller Additive Capacity Licenses (e-Delivery PAKs)

	Part Number	Product Description	SMARTnet 8x5xNBD
e-License	L-LIC-CTVM-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-CTVM-1A	1 Access Point Adder License for the Virtual Controller (e-Delivery)	CON-SAU-CTVM1A
	L-LIC-CTVM-5A	5 Access Point Adder License for the Virtual Controller (e-Delivery)	CON-SAU-CTVM5A
	L-LIC-CTVM-25A	25 Access Point Adder License for the Virtual Controller (e-Delivery)	CON-SAU-CTVM25A

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 Virtual 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 Virtual Wireless 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 Virtual Wireless Controller manages all the Cisco access points, eliminating complexity and providing network administrators with visibility and control of their wireless LANs.

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For More Information

For more information about Cisco wireless controllers, contact your local account representative or visit http://www.cisco.com/en/US/products/ps6302/Products_Sub_Category_Home.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/en/US/products/ps11635/index.html.

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