Cisco Wireless Controllers

Cisco® Wireless Controllers help reduce overall operational expenses by simplifying network deployment, operations, and management. Extending the same Cisco Borderless Networks policy and security from the wired network core to the wireless edge, Cisco Wireless Controllers deliver the industry's most scalable and highest performing controller solution. These controllers provide unique network security and optimization for IPv6-enabled mobile clients, and next-generation hotspot functionality– from branch offices, to small enterprises, to main campuses and service providers.

Cisco Wireless Controllers support systemwide functions to deliver:

- Flexibility to configure wireless policy, management, or security settings at any time through centralized provisioning and management
- Faster response to business needs by centrally managing wireless networks
- Standardized access point configuration for software versioning
- Wireless intrusion prevention system (wIPS) capabilities
- Networkwide quality of service (QoS) for voice and video across wired and wireless networks
- Networkwide centralized security policies across wired and wireless networks
- Industry-leading mobility, security, and management for IPv6 and dual-stack clients, equipping administrators for IPv6 troubleshooting, planning, and client traceability from a common wired and wireless management system

Cisco options for wireless integrated switches and routers provide cost-effective support for converged networks that integrate wireless connectivity. Integrated platforms lower hardware costs, simplify remote management, and offer flexible configurations that can reduce the total cost of operations and ownership.

Cisco Advanced Technology Services

High-Availability with AP and Client Stateful Switchover – This feature ensures no Service Set Identification (SSID) outage while simultaneously providing customers with a low-cost standby controller. A controller can be configured as the standby (HA) controller to another controller designated as the primary. The standby controller synchronizes the access point license count, access point roaming keys, and access point CAPWAP state with the primary controller and provides subsecond failover for thousands of access points and clients in case of outage on the primary controller.

Application visibility and control – To ensure business critical applications get prioritized over personal applications, Cisco wireless controllers offer the ability to identify, analyze and optimize application traffic based on NBAR2 libraries for 1000s of applications. Bonjour Services Directory - Cisco wireless controllers enables Layer 2 (mDNS) discovery, advertisement and policy across WLAN, LAN and WAN for Apple applications.

Integrated Wireless Policy Classification Engine to enable BYOD with wireless profiling and policy enforcement services. To help ensure an exceptional end-user experience on the wireless network, Cisco Wireless Controllers provide a variety of capabilities, including:

- Integrated Cisco CleanAir™ technology, which protects 802.11n and 802.11ac performance by creating a self-healing and self-optimizing wireless network

- Cisco ClientLink technology specifically for on mixed-client networks. ClientLink optimizes overall network capacity by helping to ensure that 802.11a/g, 802.11n and 802.11ac clients operate at the best possible rates

- Cisco Adaptive wIPS provides robust protection for the entire wireless network, including detection, location, and mitigation of security penetration and DoS threats

- Single-point of policy across wired and wireless networks with Cisco Identity Services Engine (ISE). Cisco ISE enables enterprises to adapt to the exponential growth in mobile smartphones, tablets, and laptops. Cisco ISE meets the varied demands of the bring-your-own-device (BYOD) trend with secure, relevant access for employees, guests, and contractors through a single, centralized point of management

Cisco Wireless Controllers for Large Multisite or Single-Site Enterprises and Service Providers

Optimize the performance of your large wireless network with centralized visibility and control. The Cisco 8500 Series Controller and the Cisco 5760 Wireless Controller are designed to cost-effectively manage, secure, and optimize the performance of sizeable wireless networks. Ideal for service provider and large campus deployments, the 8500 Series Controller and the Cisco 5760 Wireless Controller enables high-scalability on an as-needed basis.

The 8500 Series Wireless Controller offers:

- High scale with the industry's largest scalability in a single rack-unit space (1RU). A centralized touch-point for up to 6000 access points, 64,000 clients, and 6000 branch locations

- High speed with 10 Gigabit Ethernet connectivity support: 2 x 10 Gigabit Ethernet ports for redundancy

- High availability with subsecond access point and client stateful failover, helping to ensure access point and client state maintenance and avoiding the reinitialization process

- High resiliency with redundant dual power supplies

- The architectural flexibility to support centralized controller switched architecture for campuses. The Cisco FlexConnect™ solution provides a lean branch network that uses access points connected to controllers in the data center over a wide area network, as well as mesh support in a single controller

Table 1 summarizes information about the Cisco 8500 Series Wireless Controller.

Table 1. Cisco 8500 Series Wireless Controller for Large Campus or Service Provider Deployments
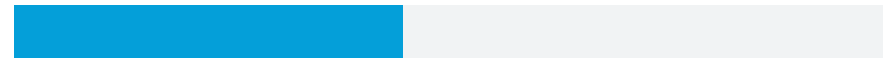
Cisco 8500 Series Controller	- 802.11n and 802.11ac ready, designed for high performance and maximum scalability - A centralized touch-point for up to 6000 access points and 64,000 clients - Supports up to 6000 branch offices with up to 100 access points per branch - High availability with stateful access point and client fail-over, redundant dual 10 Gigabit Ethernet ports with LAG, and redundant dual power supplies

Cisco 5700 Series Wireless Controllers offer: Designed for mid-to-large campus deployments, the Cisco 5760 Wireless LAN Controller offers:

- 802.11ac optimized, wire-speed 60 Gbps throughput with advanced network services per controller
- High resiliency with N+1 clustering, link aggregation groups (LAG) and redundant power supplies
- IOS based wireless controller with rich feature set like Flexible Netflow, Hierarchical QoS with four hardware wireless queues, downloadable ACLs, etc.

Table 2 summarizes information about the Cisco 5760 Wireless Controller.

Table 2. Cisco 5760 Wireless Controller for Large Campus or Service Provider Deployments

[Cisco 5760 Wireless Controller](#)	• Support for up to 1000 access points per controller, up to 12,000 clients per controller • Scalable solution with seamless roaming across 72,000 access points

The Cisco Catalyst 6500 Series WiSM2 is a highly scalable, integrated blade switch that extends the same policies and security from the wired network core to the wireless edge. It lowers hardware costs and offers flexible configuration options that can reduce the total cost of operations and ownership for wireless networks.

Cisco Wireless Controllers for Mid-Sized and Large, Single-Site Enterprises

You can cost-effectively manage and secure your wireless networks with the high-performance Cisco 5500 Series Wireless Controller, Cisco Wireless Service Module 2 (WiSM2) Controller on Cisco Catalyst® 6500 Series Switches and the Cisco Catalyst 3850 Switch with integrated Wireless LAN Controller.

As the industry's most deployed controller, the Cisco 5500 Series Wireless Controller provides the highest performance, security, and scalability to support business communications today and in the future. Benefits include:

- Seamless, high-quality mobile experience: Efficient roaming capabilities help ensure consistent experience on any smart mobile device with voice and video applications.
- Reliability: Cisco 5500 Series Wireless Controllers provide industry-leading IPv6 roaming with secure access.
- Flexibility to pay as you grow: The Cisco 5500 Series offers software license flexibility to add additional access points as business requirements change.
- Versatility: Supports advanced services for any network use case, campus or branch, including Cisco OfficeExtend solutions for secure mobile teleworking and Cisco Enterprise Wireless Mesh solutions, which allow access points to dynamically establish wireless connections in hard-to-connect locations.

Deploy the Cisco Wireless Service Module 2 (WiSM2) Controller on the Catalyst 6500 Series Switches to help enable systemwide wireless functions in medium-sized to large enterprise environments.

The Cisco Catalyst 6500 Series WiSM2 is a highly scalable, integrated blade switch that extends the same policies and security from the wired network core to the wireless edge. It lowers hardware costs and offers flexible configuration options that can reduce the total cost of operations and ownership for wireless networks.

Designed for Small-to-large enterprise deployments, the Cisco Catalyst 3850 Switch with Integrated Wireless LAN Controller offers:

- IOS based wireless controller integrated within 3850 switch offering a rich feature set such as Flexible Netflow, Hierarchical QoS with four hardware wireless queues, Downloadable ACLs, etc.
- High resiliency with AP SSO, Multiple Link Aggregation (LAG), redundant power supplies, and redundant fans

Table 3 summarizes the features of Cisco Controller products for mid-sized and large, single-site enterprises.

Table 3. Cisco Wireless Controllers for Mid-Sized and Large, Single-Site Enterprises

[Cisco 5500 Series Wireless Controller](#)	• Support for up to 500 access points and 7000 clients • 8-Gbps throughput, eight 1 Gigabit Ethernet ports, with Link Aggregation Group (LAG) support • Standalone, rack-mountable appliance
[Cisco Catalyst 6500 Series Wireless Services Module2 (WiSM2)](#)	• Support for up to 1000 access points and 15,000 clients • 20-Gbps throughput • Integrated switch blade for Cisco Catalyst 6500 Series chassis • Supports up to seven Cisco WiSM2 blades per chassis for added scalability
[Cisco Catalyst 3850 Switch with Integrated Wireless LAN Controller](#)	• 802.11ac optimized, up to 40 Gbps wirespeed throughput with advanced network services per 3850 switch • Up to 50 access points per switch and per stack; up to 2,000 clients per switch and per stack • Converged access switch with integrated controller

Cisco Wireless Controllers for Branch Environments and Multisite Deployments

Consolidate your wireless branch network with the Cisco Flex® 7500 Series Wireless Controllers to help network managers cost-effectively manage branch networks. Its robust scalability significantly lowers operating expenses by providing the visibility and control needed to manage thousands of wireless branches from a single location.

The Cisco Flex 7500 Series is ideally suited for supporting smaller, leaner branch environments (see Table 4). The Cisco 7500 Series is:

• A cost-effective solution that does not require a local controller at each branch location

• A consolidated, remote management system that allows scaled and consistent control over thousands of branches

• A way to provide secure, centralized policy management of distributed guest and employee access

• A solution that helps ensure business continuity in each local branch by providing resiliency in WAN failures

• A solution that provides efficient networking with local switching of data traffic, allowing WAN optimization and QoS policies without requiring tunneling across the WAN

Table 4. Cisco Wireless Controllers for Multisite Deployments

[Cisco Flex 7500 Series Cloud Controller](#)	• Private cloud deployment extends wireless services to distributed branches • 802.11n and 802.11ac ready, supports up to 6000 branch offices • Supports up to 100 access points per branch • Configure, manage and troubleshoot up to 6000 access points and 64,000 clients • Designed specifically for wireless branches with local survivability features

Cisco Wireless Controllers for Small and Mid-Sized Enterprises

Cisco 2500 Series Wireless Controllers, Cisco Virtual Wireless Controller, and the Cisco Wireless Controller Module for Cisco Integrated Services Router Generation 2 (ISR G2) and the Cisco Catalyst 3650 Series Switch provide small branch or singlesite enterprise WLAN deployments with entry-level wireless for data. They are ideal for improved mobility with laptops, providing guest access for vendors or customers or offering limited hotspot coverage. Now you can enhance the productivity of your growing mobile workforce, and scale and add services over time. These controllers offer deployment flexibility onsite, with virtual machines, or through integration with a router. Other benefits include:

- 802.11n and 802.11ac performance and scalability at an attractive entry-level price
- Support for award-winning Cisco CleanAir™ technology for RF management
- Support for scanners and kiosks for Payment Card Industry (PCI) certified customers
- Support for highly secure guest access, voice, location services, and other collaboration applications

Table 5 summarizes information about controllers for small enterprises.

Table 5.   Cisco Wireless Controllers for Small Enterprises

Cisco Catalyst 3650 Series Switch

- Converged access switch with integrated controller
- Up to 40G of wireless capacity per switch (48-port models)
- Support for up to 25 Access Points and 1000 wireless clients on each switching entity (switch or stack)
- Three fixed-uplink models with 4x Gigabit Ethernet, 2 x 10 Gigabit Ethernet, or 4 x 10 Gigabit Ethernet ports
- Duel redundant, modular power supplies and three modular fans providing redundancy

Cisco Virtual Wireless Controller

- Virtual form-factor controller for any x86 server with VMware Hypervisor ESXi 4.x or 5.x
- Supports up to 3000 access points and 32000 clients across 200 branches
- Supports 100 access points per branch
- Co-resides with other virtualized network services, including Cisco Identity Services Engine (ISE), Cisco Prime™ Infrastructure, and Cisco Mobility Services Engine (MSE)
- Entry-level 802.11n, 802.11ac controller application for small to medium-sized enterprises and branch offices
- Pay as you grow licensing starting at support for five access points

Cisco 2500 Series Wireless Controllers

- Support up to 75 access points and 1000 clients
- 1 Gbps throughput, four 1 Gigabit Ethernet ports (two support Power over Ethernet [PoE])
- Standalone, small form-factor appliance
- Pay as you grow licensing starting at support for five access points

Cisco Wireless Controller Module for ISR G2 with UCS-E

- Cisco UCS E-Series Servers are Intel™ Xeon™ based general purposes servers for the Cisco Integrated Services Routers Generation 2
- (ISR G2)
- UCS E140S and E140D, E140DP, E160D and E160DP servers with Virtual Wireless Controller can support up to clients supports up to 200 access points and 3000 clients
- Pay as you grow licensing starting at support for five access points
- PCI functionality for scanner and kiosk support
- Supported on the Cisco 2900 and 3900 Series ISR G2 Routers
- Entry-level 802.11n, 802.11ac controller application for small to medium-sized enterprises and branch offices

	Virtual Controller	Controller for ISR G2	2500 Series	3650	5500 Series	5760	3850	WiSM2	Flex 7500 Series	8500 Series
Product Image										
Target Deployments	Small or Midsized Business Branch or Large SP	Small or Midsized Business Branch	Small or Midsized Business Branch	Small or Midsized Business Branch	Midsized to Large Enterprise	Midsized to Large Enterprise	Small to Large Enterprise	Midsized to Large Enterprise	Large Number of Branches	Large Enterprise and Service Provider
Form Factor	Virtual Machine Software	ISR-G2-UCS-E	Desktop	1RU Switch	1RU Appliance	1RU Appliance	1RU Switch	Catalyst 6500 Module	1RU Appliance	1RU Appliance
Deployment Modes										
FlexConnect	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes
Central Mode (Formerly Local Mode)	–	Yes	Yes	–	Yes	–	–	Yes	–	Yes
Mesh	No	No	Yes	No	Yes	No	No	Yes	No	Yes
OfficeExtend	Yes	–	Yes	–	Yes	–	–	Yes	Yes	Yes
FlexConnect + Mesh	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes
Scale										
Min Access Points	5	5	5	1	12	25	1	100	300	300
Max Access Points	3000	200	75	25	500	1,000	50	1,000	6,000	6,000
Max Client Support	32,000	6,000	1,000	1,000	7,000	12,000	2,000	15,000	64,000	64,000
Max RF Tag Support	3,000	500	500	1,000	5,000	10,000	1,000	5,000	50,000	50,000

	Virtual Controller	Controller for ISR G2	2500 Series	3650	5500 Series	5760	3850	WiSM2	Flex 7500 Series	8500 Series
Product Image										
Max Throughput	500 Mbps	500 Mbps	1 Gbps	20 Gbps and 40 Gbps	8 Gbps	60 Gbps	20 Gbps and 40 Gbps	20 Gbps	1 Gbps	10 Gbps
Max Number of Access Point Groups	200	200	30	25	500	1,000	50	1000	6,000	6,000
Max Number of Flex Groups	100	100	30	–	100	–	–	100	2,000	2,000
Max Access Points per Group	100	100	25	25	25	25	25	25	100	100
Max WLANs	512	512	16	64	512	512	64	512	512	512
Max VLANs	512	512	16	4,000	512	4,000	4,000	512	4,096	4,096
Platform Details										
Interfaces or Network I/O	2 vNICs	ISR G2 Backplane	Four 1GbE	4 * 1G/10G Uplink 2 * 1G/10G Uplink 4 * 1G Uplink 24 and 48 * 10/100/ 1000 Mbps Data/ POE+	Eight 1GbE	6 * 1/10 GbE	4 * 1G/10G Uplink 2 * 1G/10G Uplink 4 * 1G Uplink 24 and 48 * 10/100/ 1000 Mbps Data/ POE+	Catalyst 6500 Backplane	Two 10GbE	Two 10GbE
Redundant Power	NA	Yes (Option)	No	Yes (option)	Yes (Option)	Yes (Option)	Yes (Option)	Yes	Yes (Installed)	Yes (Installed)
Redundant Fans	NA	Yes	Built-in Fan	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Virtual Controller	Controller for ISR G2	2500 Series	3650	5500 Series	5760	3850	WiSM2	Flex 7500 Series	8500 Series
Product Image										
Max Power Consumption	–	Refer to UCS-E	80W	350W	125W	350W	350W	220W	675W	675W
Standard Hardware Warranty	NA	90 Days	90 Days	E-LLW	90 Days	90 Days	E-LLW	90 Days	90 Days	90 Days
Standard Software Warranty	90 Days	90 Days	90 Days	90 Days	90 Days	90 Days	90 Days	90 Days	90 Days	90 Days
Feature Support										
Workgroup Bridge	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Link Aggregation Group (LAG)	–	–	Yes	Yes	Yes	Yes	Yes	–	Yes	Yes
Radio Resource Management (RRM)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Datagram Transfer Layer Security (DTLS)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cisco Compatible Extensions Call Admission Control (CAC)/ Wi-Fi Multimedia (WMM)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cisco VideoStream	Yes	–	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Guest Services (Wireless)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Guest Services (Wired)	–	–	Yes	Yes	Yes	Yes	Yes	Yes	–	–

	Virtual Controller	Controller for ISR G2	2500 Series	3650	5500 Series	5760	3850	WiSM2	Flex 7500 Series	8500 Series
Product Image										
Guest Anchor	–	–	Yes	–	Yes	Yes	–	Yes	–	Yes
Access Control Lists (ACLs)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HA with AP SSO	NO – vMotion Base HA	No – vMotion Base HA	No – Only N+1 HA	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HA with Client SSO	vMotion HA	vMotion HA	No	No	Yes	No	No	Yes	Yes	Yes
Integrated Wireless Policy Engine	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes
Application Visibility & Control (AVC)	–	–	Yes**	Yes	Yes**	Yes	Yes	Yes**	Yes**	Yes**
Bonjour Gateway	Yes**	Yes**	Yes**	Yes	Yes**	Yes	Yes	Yes**	Yes**	Yes**
Mobility	L2	L2	L2 & L3	L2 & L3	L2 & L3	L2 & L3	L2 & L3	L2 & L3	L2	L2 & L3
QoS	Yes	Yes	Yes	Yes (MQC based)	Yes	Yes (MQC based)	Yes (MQC based)	Yes	Yes	Yes
Bi-Directional Rate Limiting	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes
Government Certifications										
FIPS	In Plan	In Plan	In Plan	In Plan	Certified	In Plan	In Plan	Certified	In Plan	In Plan
Common Criteria	In Plan	In Plan	In Plan	In Plan	Certified	In Plan	In Plan	Certified	In Plan	In Plan
DISA UCAPL	In Plan	In Plan	In Plan	In Plan	Certified	In Plan	In Plan	Certified	In Plan	In Plan
DISA UCAPL	In Plan	In Plan	In Plan		Certified	In Plan	In Plan	Certified	In Plan	In Plan

** Denotes supported in 'Central Mode' and 'FlexConnect' ('Centrally Switched') mode of deployments. For WLC 2500, AVC is supported only in Central Mode.

Service and Support

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. To learn more about Cisco Wireless LAN Service offers, visit: http://www.cisco.com/go/wirelesslanservices.

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.

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