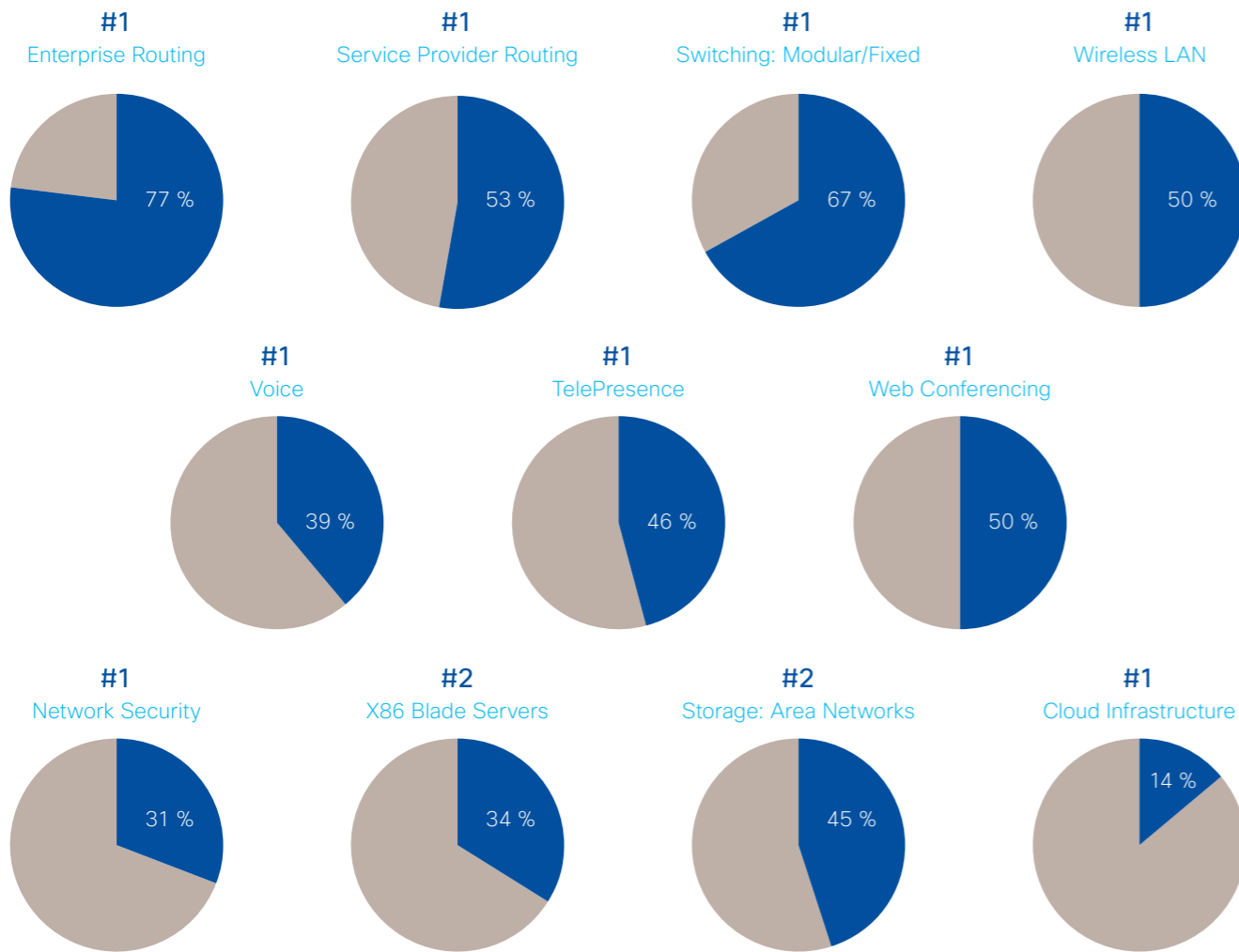


## Our Leading Market Share



Source: Dell'Oro, Synergy, Infonetics, ACG; Q1'CY15 Market share data (Network Security share DOES include Sourcefire; Web Conferencing is SaaS; Cloud Infrastructure is Q4'CY14 Synergy data).

Accelerating Innovation with Fast IT

# Cisco

## Cisco Catalog - Asia Pacific

Vol.3 2015 November - 2016 January

### Feature

Cisco ONE Software

The More Flexible, Cost-Effective Solution  
Makes Buying Your Infrastructure Software  
Faster and Easier



### Evolving Aironet



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Switches

Wireless

Routers

Meraki

Small Business

Services

# Calling all Commercial Partners Commercial Xcelerate is Here for you!

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Velocity Products Xcelerator	Focus Products Xcelerator	Midmarket Solutions Xcelerator
<b>PRODUCT FAMILY / SKU</b>	<b>PRODUCT FAMILY / SKU</b>	<b>SOLUTIONS</b>
<b>Cisco Well Known Classic</b>	<b>Hybrid Router</b>	<b>All-In-One Branch</b>
Catalyst 2960X Series	C891-24X/K9	<b>Base</b> (Hybrid Router + AP1830 + ASA5506)
Catalyst 2960+ Series	<b>IWAN</b>	<b>Advanced</b> (ISR4300 + AP1850 + Cat2960X + ASA5508)
<b>Small Business</b>	ISR4321 Series	<b>Premium</b> (ISR4300 + CME2700 + Cat3650 + ASA5516)
Top 14 ~ 30 High Volume SB SKU <i>*Varies by countries</i>	ISR4331 Series	<b>Unified Access Bundle</b> (One Network Solution)
<b>Cisco 800 BB</b>	ISR4351 Series	Selected ONENTWK SKUs
Top 5 Cisco 800 Series SKU	<b>Cisco Mobility Express</b>	<b>Cisco mGig Office</b>
<b>Wireless Everywhere</b>	AIR-AP1702I-"X"-WLC	Any of Mgid switch + CME
AIR 1700 Series	AIR-AP2702I-UX-WLC	<b>Target rewards</b> 2% ~ 3% of net sales booking
AIR 2700 Series	AIR-AP3702I-UX-WLC	
<b>Cisco 1900/2900 Routers</b> <i>*For ASEAN countries only</i>	AP1830 Series	
Cisco 1900 Series	AP1850 Series	
Cisco 2900 Series	<b>mGig Switches</b>	
<b>Target rewards</b> 0.5% ~ 1% of net sales booking	WS-C3560-CX-8XPD-S	
	Catalyst 3850-24XU / 12X48U	
	<b>Catalyst 3K with NaaS/NaaE Solution</b> <i>*For Korea only</i>	
	Catalyst 3K Series	
	<b>Target rewards</b> 1% ~ 3% of net sales booking	

### Wait no more, the time is NOW!

Cisco Commercial Xcelerate program Q2 promotion held from October 26, 2015 – January 22, 2016. Be part of the Cisco Commercial Xcelerate program to earn points and redeem rewards. To know more about the product offering and member registration, please login to [www.cisco-commercialxcelerate.com](http://www.cisco-commercialxcelerate.com)

**Hurry now! If you are not a Commercial Xcelerate member, simply register on the Commercial Xcelerate website today!**

\*Terms and condition apply  
\*Product eligibility varies from country to country. Promotion is applicable to Australia, New Zealand, Singapore, Malaysia, Philippines, Indonesia, Thailand, Vietnam, Korea, and India only.



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## 1 Training Provider 5 Architecture Specializations

Enterprise Networking • Security • Collaboration  
• Data Center • Service Provider



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# What's New

Enterprise networks today are required to be secure, reliable, and connectable seamlessly anywhere, anytime, for any user, and on any device. This catalog introduces the lineup of new products designed to deliver enterprise networks that help steer small- and medium-sized companies toward business success.

**i** Please contact your authorized Cisco partner, authorized Cisco distributor or Cisco reseller for details on the release date.

## FEATURE

### Cisco ONE Software: Buy All Applications/Licenses as a Suite

**Cisco ONE Software** is a valuable and flexible way to buy software for your data center, WAN, and access domains. At each stage in the product lifecycle, Cisco ONE Software helps make buying, managing, and upgrading your network and infrastructure software easier.

**When you buy:** Instead of choosing from hundreds of separately priced software features, you purchase a single Cisco ONE Software product. Instead of a single perpetual license tied to the lifetime of your hardware, we offer flexibility with a choice of licensing options.

**When you use:** Your Cisco ONE Software investment can grow in value through ongoing innovation, updates, and upgrades. And coming soon with Cisco ONE Software, you'll have the freedom to deploy your licenses on physical or virtual machines.

**When you refresh:** You benefit from lower costs and lower TCO. Cisco ONE Software licenses are not tied to specific hardware, so they are portable to the next generation of applicable devices.

Cisco ONE Software  P06

## Wireless

### Next-Generation Wireless for the Mobile Enterprise

Ideal for small and medium-sized networks, the **Cisco Aironet 1830 Series** delivers industry-leading wireless performance with support for the latest Wi-Fi standard, IEEE's new 802.11ac Wave 2 specification.

With 802.11ac Wave 2, the Cisco Aironet 1830 Series provides a data rate of up to 867 Mbps on the 5-GHz radio, exceeding the data rates offered by today's high-end 802.11n access points.

Cisco Aironet 1830 Series

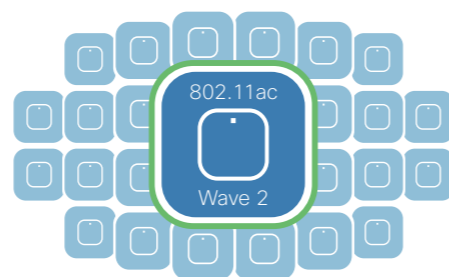
 P28/33



### Deploy and Manage Your Wi-Fi Network in a Snap

The **Cisco Mobility Express Solution** is specifically designed to help small and medium-sized networks easily and cost-effectively deliver enterprise-class wireless access to employees and customers.

Now you can deploy your small to midsize wireless LAN in less than 10 minutes. You can also easily manage and troubleshoot your network using advanced software-based wireless controller functions built right into your **Cisco Aironet 1830/1850 Series** at no extra charge.



Cisco Mobility Express Solution  P28

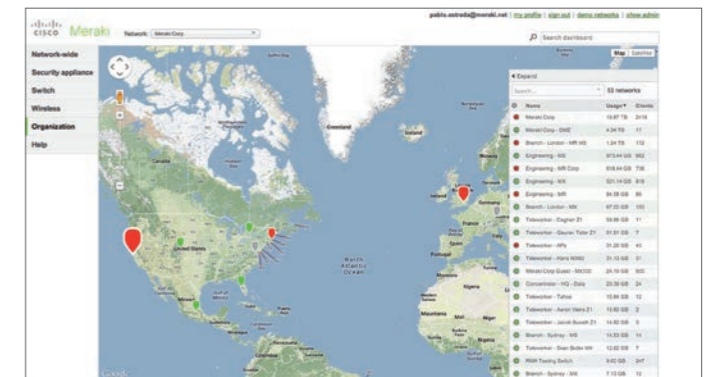
## Meraki

### Cloud-Managed IT. Fast Business Outcomes

The **Cisco Meraki** portfolio is centrally managed from the cloud. The feature-rich, easy-to-use Meraki cloud architecture can enable customers worldwide to solve new business problems and reduce operating costs.

Cloud Networking provides centralized management, visibility, and control without the cost and complexity of controller appliances or overlay management software.

Cisco Meraki products are built from the ground up for cloud management, and come out of the box with centralized management, layer 7 device and application visibility, real time web-based diagnostics, monitoring, reporting, and much, much more. Cisco Meraki deploys quickly and easily, without training or proprietary command line interfaces.



Cisco Meraki  P50



Cloud Managed Wireless



Cloud Managed Switches



Cloud Managed Security Appliances



Mobility Management


## Small Business

### Advanced Features for Demanding Environments, at an Affordable Price

The **Cisco Small Business 350X Series Stackable Managed Switches** and the **Cisco Small Business 550X Series Stackable Managed Switches** are a new line of stackable managed Ethernet switches that provide the rich capabilities you need to support a more demanding network environment, at a very affordable price.

These models provide 12, 16, 24 or 48 ports of 10 Gigabit Ethernet, providing a solid foundation for your current business applications, as well as those you are planning for the future. At the same time, these switches are easy to deploy and manage, without a large IT staff. These switches are Cisco's most cost-effective platforms with 10 Gigabit Ethernet and Stacking.



Cisco Small Business 550X Series Stackable Managed Switches  P54



Cisco Small Business 350X Series Stackable Managed Switches  P53

# The More Flexible, Cost-Effective Solution Makes Buying Your Infrastructure Software Faster and Easier

What if buying complete IT solutions across your data center, WAN, and access domains were as simple as a single purchase? With Cisco ONE Software, we are making it easier for you to extract the value in your network infrastructure.

## Making Software Buying Simple

**Cisco ONE Software** is a valuable and flexible way to buy software for your data center, WAN, and access domains. At each stage in the product lifecycle, Cisco ONE Software helps make buying, managing, and upgrading your network and infrastructure software easier.

Cisco ONE Software is organized by domains (Data Center, WAN, and Access) and feature sets (Foundation, Advanced Applications, and Advanced Security). **Cisco ONE for Access** offers a comprehensive fea-

ture set for wired and wireless access. **Cisco ONE for WAN** provides complete functionality for the branch and network edge. **Cisco ONE for Data Center** provides functionality for physical and virtualized data centers, across network and compute resources, and provides secure, scalable support for private and hybrid clouds. Finally, **Cisco ONE Advanced Security** provides a robust set of threat defense capabilities and central policy management.

## Cisco ONE for Access

**Cisco ONE for Access** is a simple and economical solution for deploying branch and campus switches and wireless access points. It offers an uncompromised user experience in a highly secure and feature-rich access infrastructure.

**Cisco ONE Foundation for Switching** provides a solution to:

- Manage a large switching infrastructure more efficiently.
- Help reduce expenses by simplifying network deployment and management.
- Centralize network access policies across wired and wireless networks.
- Manage wired, wireless, and VPN users and devices easily.
- Help improve the energy efficiency of your connected devices.

**Cisco ONE Campus Fabric:**

- Delivers a better user experience in complex switching environments.
- Helps you scale your network for business expansion and increases resiliency for your mission-critical applications.

**Cisco ONE Foundation for Wireless** offers connectivity and management solutions to:

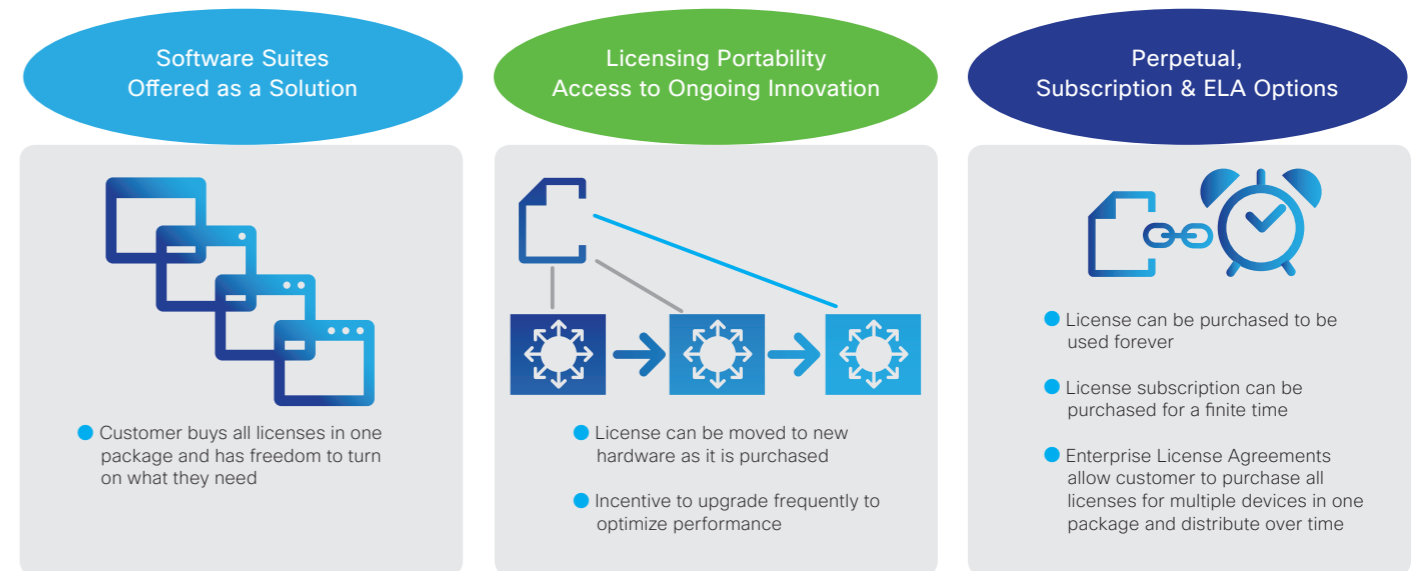
- Build business-class Wi-Fi networks.
- Create trusted wireless LAN (WLAN) access points.
- Manage mobile devices across the network more efficiently.
- Deliver location-based services for your users.
- Provide highly secure access for guest and employee access.

**Cisco ONE Advanced Mobility Services:**

- Help you create personalized mobile experiences for your users and start unlocking the potential of your business with wireless security and advance mobile location and analytics.

	Cisco ONE for Access		Cisco ONE for WAN	Cisco ONE for Data Center	
Advanced Security	Threat Defence for Access ISE		Threat Defence for WAN ASA, FS	Threat Defence for Data Center ASA 5585, FP, FS	
Advanced Applications	Campus Fabric	Advanced Mobility Services	WAN Collaboration	Data Center Fabric	Enterprise Cloud Suite
Foundation	Foundation for Switching	Foundation for Wireless	Foundation for WAN	Foundation for Data Center Networking	Foundation for Compute
Infrastructure and Base OS	Switching Catalyst 2K, 3K, 4K, 6K	Wireless AP, WLC	WAN ISR, ASR	Networking Nexus 5K, 6K, 7K	Compute X86, UCS

## ■ Cisco ONE Software: Buy All Applications/Licenses as a Suite



## Cisco ONE for WAN

**Cisco ONE for WAN** provides rich capabilities for branch offices and the network edge. If you want to implement new branch-office initiatives and secure IP WAN connections, this is the right solution.

**Cisco ONE Foundation for WAN** connects and better secures your branch offices while keeping WAN bandwidth costs under control and gives you solutions to:

- Improve application performance.
- Deploy hybrid WANs with high reliability.
- Automate deployment with centralized policies and distributed enforcement.
- Strengthen network security.
- Manage the energy use of connected devices more easily.

**Cisco ONE WAN Collaboration** integrates voice and video across your branches to increase productivity and helps remote branch facilities to:

- Extend rich-media capabilities to branches with more secure video.
- Improve branch and cloud telephony reliability.
- Simplify transition to IP collaboration at your own pace and budget.
- Migrate easily from time-division multiplexing (TDM) to Session Initiation Protocol (SIP) trunking.
- Manage collaboration sessions centrally.

## Cisco ONE for Data Center

**Cisco ONE for Data Center** can help you build a scalable, resilient, and efficient data center. You can move workloads and resources between different cloud models, quickly, more securely, and in compliance with your policies. You can also reduce costs and increase IT agility with highly secure private, public, and hybrid clouds for your physical and virtual environments.

**Cisco ONE Foundation for Data Center Networking:**

- Improves visibility and consistency across physical and virtual networks.
- Delivers global reach across your businesses and data centers.
- Delivers automation to simplify management of compute and virtual network environments.
- Adds performance and port density with greater fault tolerance.
- Increases operational efficiency with performance and power management.

**Cisco ONE Data Center Fabric:**

- Helps you create a scalable, intelligent network by converging your LANs and SANs.

**Cisco ONE Foundation for Compute:**

- Increases security in your virtual environments.
- Deploys foundational automation across compute and virtual infrastructure layers across private and hybrid environments.
- Uses programmable application containers for your converged data center.
- Monitors performance and energy of your compute and virtual network environments.
- Manages multiple UCS domains from a single management console.

**Cisco ONE Enterprise Cloud Suite:**

- Delivers the tools for creating, monitoring, self-service ordering, and lifecycle management of your private cloud. It provides unified provisioning and management of both Cisco and multi-vendor hardware.

# Activate Your Cisco Network as a Powerful Security Sensor and Enforcer

Cybercrime is now a major global business, rendering traditional approaches to security inadequate. Organizations need to add another layer of protection by using the network itself to detect anomalous behavior and enforce security policies. The Cisco 'Network as a Sensor' and 'Network as an Enforcer' solutions deliver deep visibility and pervasive control to mitigate threats before, during, and after an attack.

## The Enterprise Cybercrime Landscape

Global enterprise networks face an epidemic of cybercrime. Fully 100 percent of the business networks analyzed by Cisco threat research teams contained traffic going to websites that host malware, according to the Cisco 2014 Annual Security Report.

Cybercrime is a major global business composed of extremely profitable crime syndicates. Cybercriminals build malware directly targeting an organization's specific vulnerabilities, often discovered through extensive surveillance of the organization's networks and business practices. These threats can remain in the network for months gathering data about the company's network, devices, and users before launching attacks elsewhere in the organization's environment.

Further complicating matters, the number of potential points of infiltration into the organizations is expanding because of the growth in mobility, cloud, and the Internet of Things (IoT). The continuous growth of connected endpoints exponentially expands the attack surface for malware. An average organization uses as many as 40 separate security tools to defend against threats. However, it's nearly impossible to correlate data from so many disparate systems and uncover the source and trajectory of security threats.

Instead, your customers can leverage the network itself as a sensor and enforce to complement traditional security systems and better detect and mitigate threats in the earliest stages of attack.

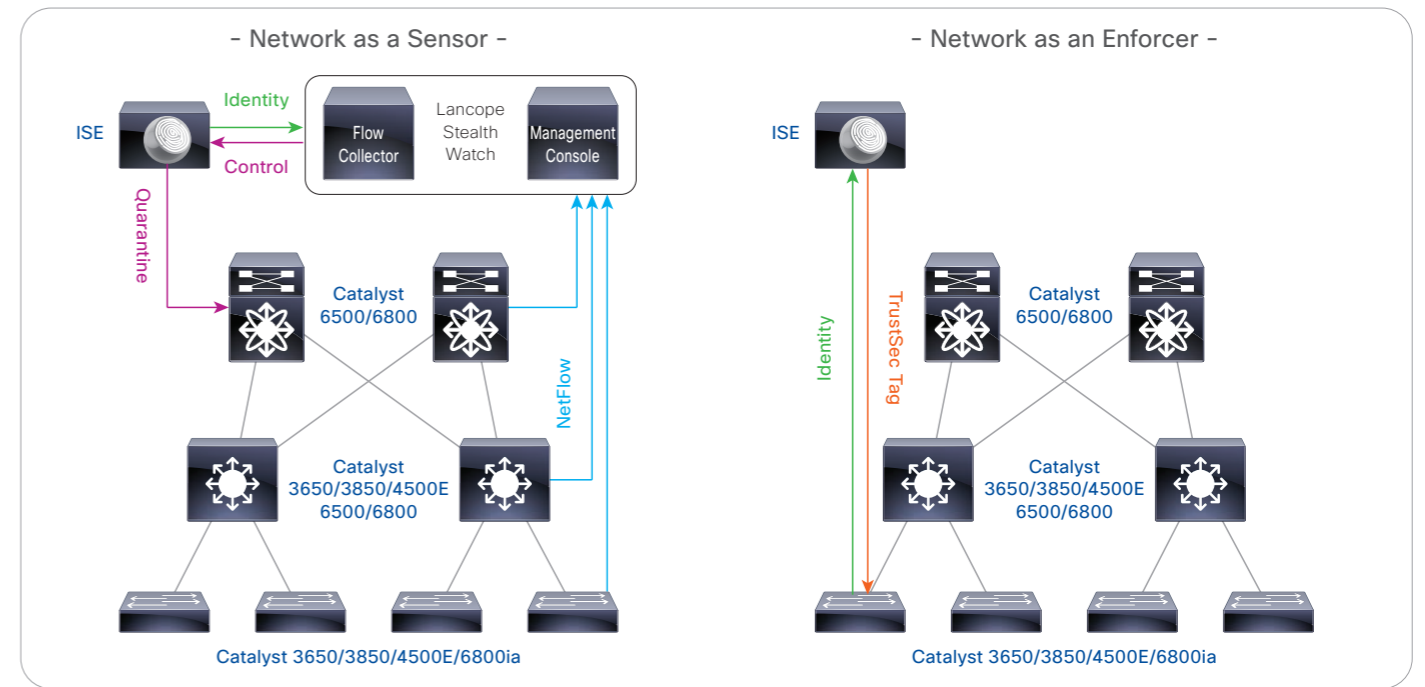
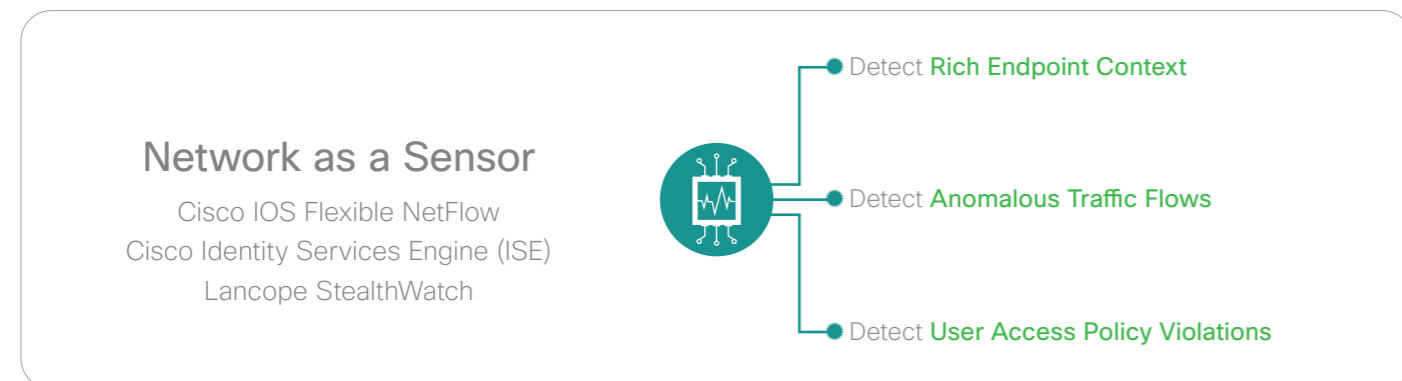
## Cisco Network as a Sensor

With so many access attempts occurring beyond the traditional enterprise network perimeter, you now need security everywhere. Fortunately, your Cisco network already contains what you need to do the job. We call it the Cisco Network as a Sensor solution. By simply activating the embedded security capabilities in your Cisco network, you can transform your network into a full-blown security monitoring system that gives you broad and deep visibility into your network and everything that connects to it.

If you can't see network threats, how can you defend against them? The Cisco Network as a Sensor solution addresses this issue head-on.

You get the global network visibility you need in the form of detailed security analytics generated by Cisco IOS Flexible NetFlow, contextual data from the Cisco Identity Services Engine (ISE), and real-time monitoring and alerts from partner technology, Lancope StealthWatch.

The solution determines the baseline profile for your network. From there it can then rapidly detect malicious activities - abnormal data movements, suspicious traffic, advanced threats - anywhere in your environment. You see how your traffic is flowing, which devices are accessing your network and what malicious activities might be taking place on your network.



Cisco Catalyst Switches Compatibility

	NetFlow	TrustSec
2960-CX (LAN Base)	Lite	-
3560-CX	Lite	SGT, SGACL
2960-X (LAN Base/IP Lite)	Lite	SXP
3650	Full Flexible	SGT, SGACL
3850	Full Flexible	SGT, SGACL
4500E (SUP8-E)	Full Flexible	SGT, SGACL
6500 (SUP2T)	Full Flexible	SGT, SGACL
6800 (SUP2T)	Full Flexible	SGT, SGACL

### Cisco NetFlow

- Full Flexible - Provides full scale NetFlow for all traffic without CPU impact
- Lite - Provides sampled NetFlow, reducing total visibility

### Cisco TrustSec

- SGT - Supports inline packet tagging
- SGACL - Supports SGT-based access control
- SXP - Supports exchange of tag assignment with upstream SGT-capable device

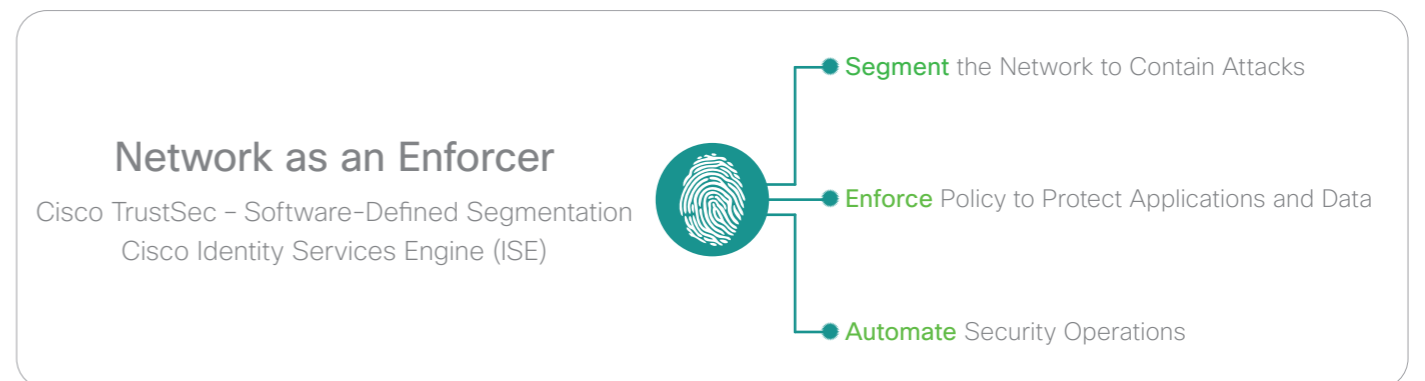
## Cisco Network as an Enforcer

Each network connection, whether created by cloud services, mobility, the Internet of Things (IoT), or something else, represents a potential attack entry point. Your challenge is to balance the network access that users and devices need with risk mitigation.

The good news is that your Cisco network already contains the tools to do that. You just need to activate them to allow your network to serve as an enforcer of network security policy. For example, you can contain threats by using Cisco TrustSec and Cisco ISE to partition your network into smaller segments. Through a software-defined approach to network segmentation, you can then protect the segments using specific group

policies that determine user access based on user roles and their business needs and greatly reduce your "attack surface." That means that even if hackers do make their way into your network, they can no longer move freely about and cause widespread damage.

With your Cisco network acting as a network security enforcer, you centrally apply your security policies networkwide. The right users and devices now enjoy the right access, and you contain the impact of an attack. Cisco ISE serves as the centralized policy engine that provides real-time access control decisions for Cisco switches, routers, and security devices.



# Switches

## L2 / L3 Switches



### Line-up of Cisco Catalyst Switches

Category	Series	Layer
Core	Cisco Catalyst 4500-X Series, Cisco Catalyst 6500 Series, Cisco Catalyst 6800 Series	L3
Core / Access	Cisco Catalyst 3650 Series, Cisco Catalyst 3850 Series, Cisco Catalyst 4500E Series	L2/L3
Access	Cisco Catalyst 2960-X Series	L2
	Cisco Catalyst 2960-Plus Series	L2
Compact	Cisco Catalyst 2960-CX Series	L2
	Cisco Catalyst 3560-CX Series	L3

Cisco Catalyst 2960-CX Series	L2 compact switches suitable for deployment in the access layer. These switches deliver basic network services even outside the wiring closet.	See page 16.
Cisco Catalyst 3560-CX Series	L3 compact switches suitable for deployment in the access layer. These switches deliver advanced network services even outside the wiring closet.	See page 16.
Cisco Catalyst 2960-Plus Series	L2 fixed-configuration switches suitable for deployment in the access layer. FE is supported on all downlink ports.	See page 17.
Cisco Catalyst 2960-X Series	L2/L3 fixed-configuration switches suitable for deployment in the access layer. GE and stacking are supported on all downlink ports.	See page 18.
Cisco Catalyst 3650 Series	L2/L3 fixed-configuration switches suitable for deployment in the access layer or core layer. Provide a wireless controller function to server as an integrated platform for wired/wireless LAN networks.	See page 19.
Cisco Catalyst 3850 Series	Next-generation L2/L3 fixed-configuration switches suitable for deployment in the access layer or core layer. Provide a wireless controller function to server as an integrated platform for wired/wireless LAN networks.	See page 20.
Cisco Catalyst 4500E Series	L2/L3 modular switches suitable for deployment in the access layer or core layer. The superior cost performance of these switches ensure the protection of investment over long periods.	See page 22.
Cisco Catalyst 4500-X Series	L3 fixed-configuration switches suitable for deployment in the core layer. Deliver excellent expandability and performance in environments with space constraints.	See page 24.
Cisco Catalyst 6500 Series	L3 modular switches suitable for deployment in the core layer. Provide a wide range of network services thanks to their top-of-the-industry performance.	See page 25.
Cisco Catalyst 6800 Series	L3 fixed-configuration/modular switches suitable for deployment in the core layer. Provide network services optimized for 10/40/100 Gigabit Ethernet.	See page 26.

### Selection of Cisco Catalyst Switches

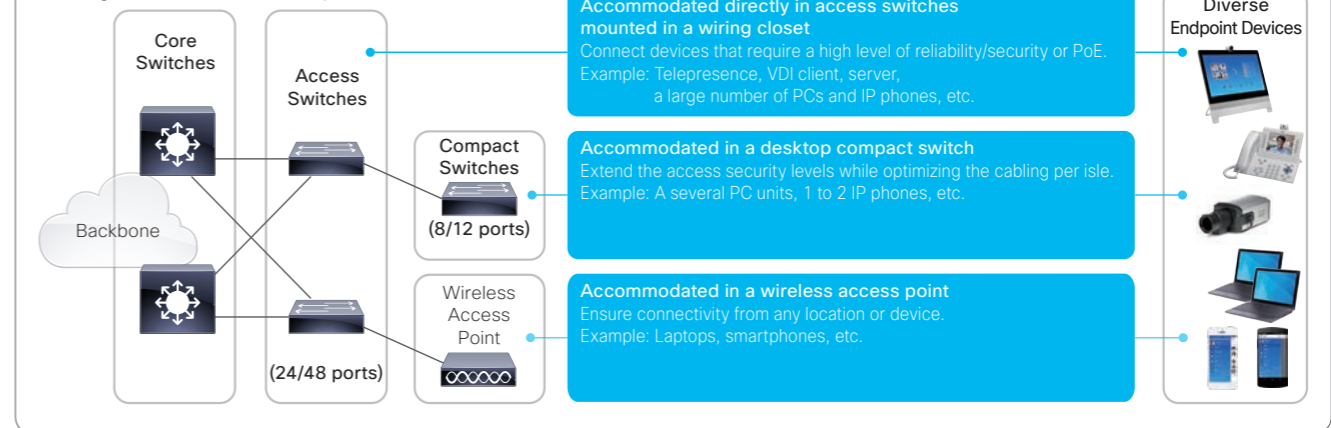
#### Access Switches and Core Switches

Medium-sized corporate networks today are generally configured in two layers with access switches and core switches. Access switches are used to connect the end devices such as client PCs, IP phones and wireless access points; and core switches are used to consolidate lines by connecting multiple access switches. Switches with higher performance than access switches should be selected for core switches as their role is to consolidate a large number of lines.

#### L2 Switches and L3 Switches

Switches can be categorized into L2 switches (Layer 2 switches) and L3 switches (Layer 3 switches) based on their functionality. In general, L2 switches are used for access switches and L3 switches are used for core switches, respectively. However, L3 switches should also be selected for access switches when offering services with higher added value to the end users such as MACsec, which is a part of the Cisco TrustSec solution. The Cisco Catalyst 3650/3850/4500E Series support the upgrade from L2 to L3 switches via a Cisco IOS upgrade license.

#### Configuration/Connection Examples



#### Fixed-Configuration Switches and Modular Switches

Typically, fixed-configuration switches (or box-type switches) are referred to as having low cost and low performance; and modular switches (or chassis-type switches) are referred to as having high cost and high performance. However, when the port unit prices of multiple fixed-configuration switches and a single modular switch are put to comparison, the latter cost may become lower as the number of ports increases. High-performance switches should generally be selected for the core switches. However, in a small-sized network, a sufficient performance and redundant configuration can be achieved by connecting the fixed-configuration Cisco Catalyst 3650/3850 Series switches in a stack.

#### Compact Switches

In some physical environments such as an office, it may be impossible or labor- and cost-intensive to run separate wiring from access switches installed in a wiring closet to the end devices such as a client PC, IP phone and wireless access points. The Cisco Catalyst 2960-CX/3560-CX Series compact switches have been developed to resolve these issues. All models feature space-saving dimensions of under 5 cm x 27 cm x 24 cm with weight under 2 kg as well as a stylish, fanless low-noise design, making them suitable for installation in locations that are within sight of end users, such as on a desktop, counter or wall. In addition to addressing issues related to the cable wiring, installation space, some models also support the innovative PoE pass-through functionality to resolve any power supply issues.

### Ports

Cisco Catalyst Switches support the following interface ports for uplink and downlink connections:

- Fast Ethernet port (FE)
- Gigabit Ethernet port (GE)
- Multigigabit Ethernet port (mGig)
- SFP module slot (SFP)
- Dual-Purpose port (GE/SFP)
- 10GBASE-T port (10GB-T)
- X2 module slot (X2)
- SFP+ module slots (SFP/SFP+)
- CFP module slot (CFP)

The bracketed notations are abbreviations used in the specification comparison tables in this catalog. A dual-purpose port is an interface combining a Gigabit Ethernet port with an SFP module slot and is notated as GE/SFP (Either one can be activated independently). Similarly, SFP+ module slots are notated as SFP/SFP+ due to their compatibility with SFP. SFP/SFP+ modules can be mounted to X2 or CFP module slots using an appropriate converter. In most cases, the supported port interfaces and number of ports of each product can be determined from their SKU (Refer to page 12 for details).

#### Ports Supported by Fixed-Configuration Cisco Catalyst Switches (e.g.)

##### Uplink

- Gigabit Ethernet port (GE)
- SFP module slot (SFP)
- Dual-Purpose port (GE/SFP)
- 10GBASE-T port (10 GB-T)
- SFP+ module slot (SFP/SFP+)

##### Downlink

- Fast Ethernet port (FE)
- Gigabit Ethernet port (GE)
- Multigigabit Ethernet port (mGig)
- SFP module slot (SFP)
- SFP+ module slot (SFP/SFP+)



## How to Distinguish Specifications from SKU of Cisco Catalyst Switches

The SKU of each Cisco Catalyst Switch contains a broad description of the product's specification.

Cisco Catalyst 2960-CX/2960-Plus/2960-X Series

**WS-C 2960 X-24 TS-L**

■ **Series Number**

■ **Model Type**

- CX : Compact model
- + : FE model
- G : GE model
- X : GE model with stacking support<sup>\*1\*</sup>
- XR : GE model with power supply redundancy/stacking support

■ **Number of Ports**

8, 24, or 48

■ **Downlink Ports**

- T : Data-only port
- L : Port with PoE power supply support (Full 15.4 W power on 8 ports)
- P : Port with PoE power supply support (Full 15.4 W power on 24 ports)<sup>\*3</sup>
- LP : Port with PoE power supply support (Full 15.4 W power on 24 ports)
- FP : Port with PoE power supply support (Full 15.4 W power on 48 ports)

■ **Uplink Ports**

- Q : GE port
- T : GE port
- C : GE/SFP port
- S : SFP module slot
- D : SFP/SFP+ module slot

■ **Cisco IOS**

- S : LAN Lite
- L or LL : LAN Base
- I : IP Lite

Cisco Catalyst 3560-CX/3650/3850 Series

**WS-C 3850 -24 XU-S**

■ **Series Number**

■ **Number of Ports**

- T : Data-only port
- P : Port with PoE power supply support (Full 15.4 W power on 24 ports)<sup>\*4</sup>
- PF/F/PW : Port with PoE power supply support (Full 15.4 W power on 48 ports)
- U : Port with UPOE power supply support
- S : SFP module slot
- X : mGig port or SFP/SFP+ module slot

■ **Downlink Ports**

- T : Data-only port
- P : Port with PoE power supply support (Full 15.4 W power on 24 ports)<sup>\*4</sup>
- PF/F/PW : Port with PoE power supply support (Full 15.4 W power on 48 ports)
- U : Port with UPOE power supply support
- S : SFP module slot
- X : mGig port or SFP/SFP+ module slot

■ **Cisco IOS**

- L : LAN Base
- S : IP Base
- E : IP Services

Cisco Catalyst 4500E Series (Chassis)

**WS-C 4507 R+E**

■ **Number of Slots**

3, 6, 7, or 10

■ **Supervisor Engine Redundancy**

- None : Not supported
- R : Supported

Cisco Catalyst 4500E Series (Line Card)

**WS-X 4748 -RJ45 - E**

■ **Bandwidth per Slot**

- 46 : 24 Gbps
- 47 : 48 Gbps

■ **Port Interface**

- RJ45 : GE port
- RJ45V+ : GE port with PoE+ power supply support
- U, UPOE : GE port with UPOE power supply support
- X : mGig port
- SFP : SFP module slot
- X2 : X2 module slot
- SFP+ : SFP/SFP+ module slot

Cisco Catalyst 4500-X Series (no Network Module)

**WS-C 4500 X-F-16 SFP+**

■ **Cooling Fan**

- None : Front air intake/Rear exhaust
- F : Rear air intake/Front exhaust

■ **Number of Ports**

16 or 32

Cisco Catalyst 4500-X Series (with Network Module)

**WS-C 4500 X-24 X-ES**

■ **Number of Ports**

16 or 32

■ **Cisco IOS**

- IPB : IP Base
- ES : Enterprise Services

Cisco Catalyst 6500 Series (Chassis)

**WS-C 6509 -V-E**

■ **Number of Slots**

3, 4, 6, 9, or 13

■ **Chassis Type**

- None : Horizontal slot
- V : Vertical slot

Cisco Catalyst 6500/6800 Series (Line Card)

**WS-X 6904 -40G - 2T**

■ **Number of Ports**

4, 8, 16, 24, 32, or 48

■ **Port Interface**

- TX : GE port
- SFP : SFP module slot
- 10T : 10GBASE-T port
- 10G : X2 module slot or SFP/SFP+ module slot
- 40G : CFP module slot

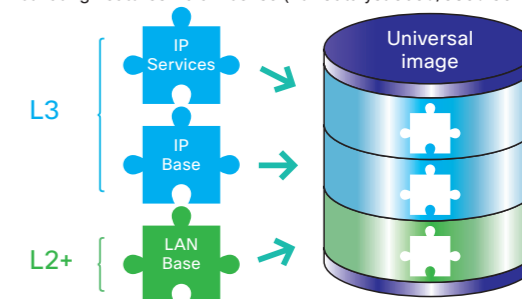
\*1 LAN Lite model does not support stacking. \*2 WS-C2960X-24PSQ-L is not supported. \*3 Compact switches support full 15.4 W power on 8 ports. \*4 Compact switches support full 15.4 W power on 8 or 12 ports.

## Cisco IOS on Cisco Catalyst Switches

Cisco Catalyst Switches incorporate the Cisco IOS (Internetwork Operating System), which is a high-performance network infrastructure software. LAN Lite and LAN Base feature sets provide the L2 level features, and IP Lite, IP Base, IP Services, Advanced IP Services, Enterprise Services, and Advanced Enterprise Services feature sets provide the L3 level features, respectively.

Cisco IOS provided with the Cisco Catalyst 3560-CX/3650/3850/4500-X/4500E Series is delivered in a single universal image. The universal image contains the entire Cisco IOS feature set that can be activated via a software license. A software image needed to be installed in order to use the new functions on previous Cisco Catalyst Switches. However, on the Cisco Catalyst 3560-CX/3650/3850/4500-X/4500E Series Switches, advanced functions can be activated immediately using the Cisco IOS Upgrade License.

■ **Activating Features via a License (For Catalyst 3650/3850 Series)**



Cisco IOS Feature Sets	LAN Lite	LAN Base	IP Lite	IP Base	IP Services	Enterprise Services	Advanced IP Services	Advanced Enterprise Services
Supported Series	2960-CX	-	●	-	-	-	-	-
	3560-CX	-	-	-	●	●	-	-
	2960-Plus	●	●	-	-	-	-	-
	2960-X	●	●	●	-	-	-	-
	3650	-	●	-	●	●	-	-
	3850	-	●	-	●	●	-	-
	4500-X	-	-	-	●	-	●	-
	4500E	-	●	-	●	-	●	-
6500	-	-	-	●	●	-	●	
6800	-	-	-	●	●	-	●	
L2	- IEEE 802.1 Q trunking - STP (Spanning tree protocol) - CDP - DTP - UDLD - VTP - EtherChannel - LACP - LLDP - Storm control on port-by-port basis		All LAN Lite functions PLUS:  - Flex Link - Link State Tracking - LLDP-MED		All LAN Base features			
	- Static Routing		- Static Routing - RIP - PIM Stub - EIGRP Stub - Policy-based routing (PBR)		All IP Base functions PLUS: - OSPF - EIGRP - BGP - IS-IS <sup>*2</sup> - VRF-Lite - WCCP - Policy-based routing (PBR)		All IP Services functions PLUS: - IS-IS - MPLS - EoMPLS - L3 VPN	
L3	- SNMP - RMON - SPAN - TDR - Smart Ports - Smart Install (client)		All LAN Lite functions PLUS: - RSPAN - Cisco IOS IP SLA (responder)		All LAN Base features		All LAN Base functions PLUS: - Smart Install (director) - Cisco IOS EEM - Cisco IOS IP SLA (initiator)	
	- SSH - SSL - SCP - HTTPS - TACACS+ - RADIUS - Port security - MAC authentication bypass for voice - Private VLAN edge		All LAN Lite functions PLUS: - ALC in Layer 2-4 - DHCP snooping - Dynamic ARP inspection - IP source guard - Web authentication - TrustSec SXP		All LAN Base functions PLUS: - Router ACL - VLAN ACL - Private VLAN		All LAN Base functions PLUS: - Router ACL - VLAN ACL - Private VLAN - TrustSec SGT/SGACL - MACsec	
Security	- Smart Install (director) - Cisco IOS EEM - Cisco IOS IP SLA (initiator)		All LAN Base functions PLUS: - Smart Install (director) - Cisco IOS EEM - Cisco IOS IP SLA (initiator)		All LAN Base functions PLUS: - Smart Install (director) - Cisco IOS EEM - Cisco IOS IP SLA (initiator)			
	- SRR		All LAN Lite functions PLUS: - AutoQoS - DSCP		All LAN Base functions PLUS: - Separate policy for each VLAN			
QoS								

\*1 Cisco Catalyst 3560-CX/3650 Series are not supported. \*2 Cisco Catalyst 6500/6800 Series require the Cisco IOS Advanced IP Services/Advanced Enterprise Services image.

# New Switch Selection Decision Tree

1. What's the purpose of the switch?

2. Where will you deploy the switch?

3. Do you need converged wired and wireless support?

4. What are your connectivity needs?

5. What type of switch do you prefer?

6. What features do you need?

Advantages over Basic Switch

5. What features do you need?

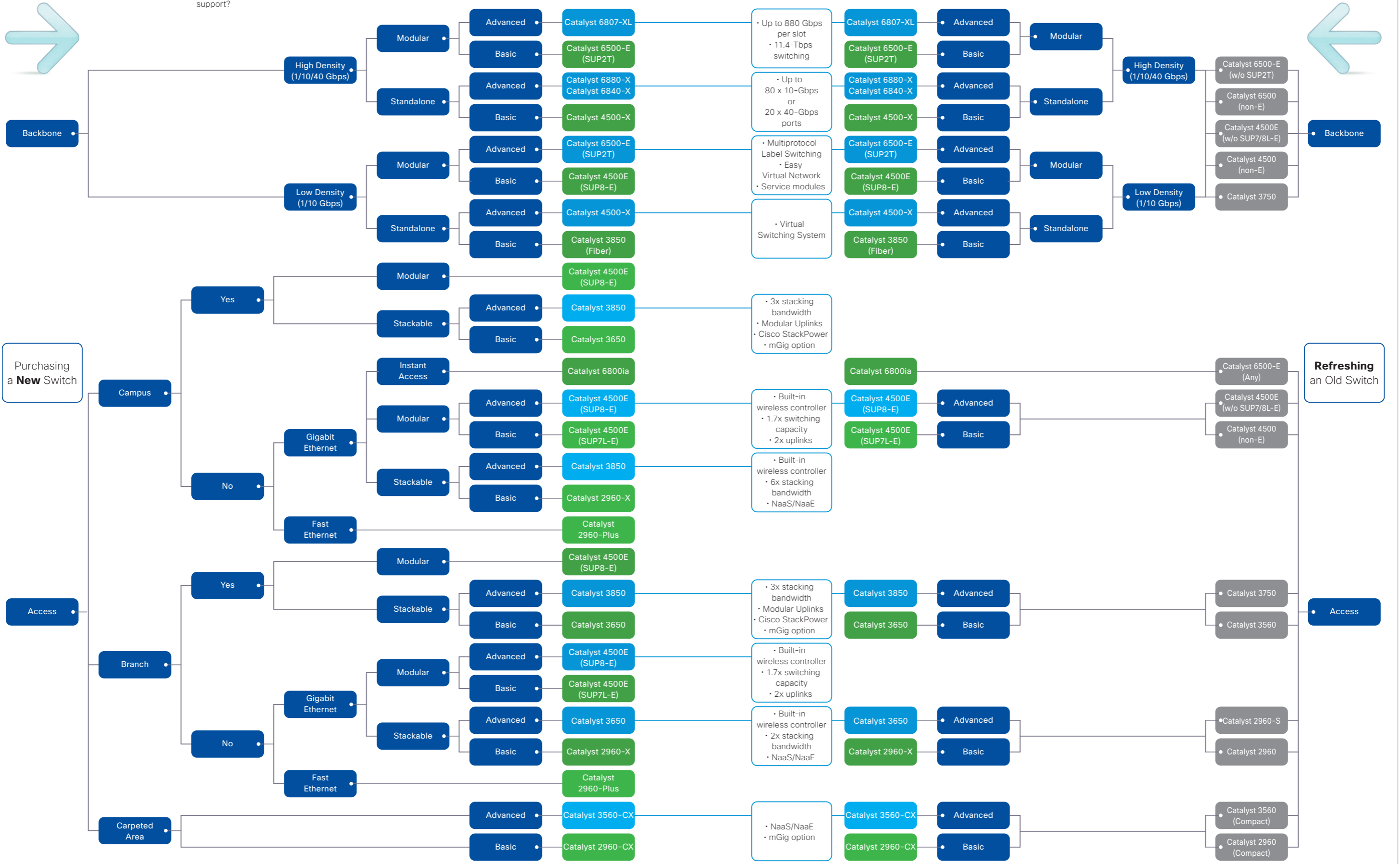
4. What type of switch do you prefer?

# Switch Refresh Decision Tree

3. What are your connectivity needs?

2. Which Cisco switch are you upgrading?

1. What's the purpose of the switch?



Switches

Switches

Wireless

Routers

Meraki

Small Business

Services















# Wireless

## Wireless Access Points / Controllers



### New Features of Cisco Aironet 1850/1830 Series

**Cisco Aironet 1850/1830 Series** are Cisco's first access points that support IEEE 802.11ac Wave 2 technology. With 11ac Wave 2, Cisco Aironet 1850 Series provide a data rate of up to 1.7 Gbps on the 5 GHz radio, more than triple the rates offered by today's high-end 11n access points. And Cisco Aironet 1830 Series provide a data rate of up to 866 Mbps on the 5 GHz radio. These also enable a total aggregate dual-radio PHY data rate of 2.0 Gbps and 1.0 Gbps respectively, providing the necessary foundation for enterprise and service provider networks to stay ahead of the performance and bandwidth expectations and needs of their wireless users.

#### ■ MU-MIMO

With 11n and 11ac Wave 1, a device can transmit multiple spatial streams at once, but only directed to a single address. For individually addressed frames, only a single device (or user) gets data at a time. This is referred to as SU-MIMO (Single-User Multiple Input and Multiple Output).

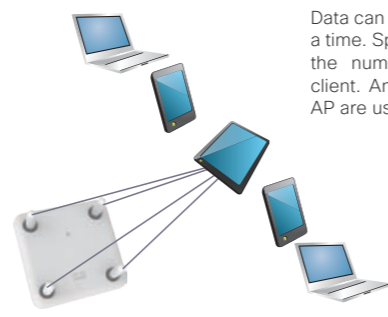
With the advent of 11ac Wave 2, a new technology is defined, called MU-MIMO (Multi-User MIMO). Using this technology, an access point can use its antennas and radio systems to transmit to different clients, all at the same time over the same frequency spectrum. These parallel transmissions improve RF efficiency when client devices also support 11ac Wave 2.

Cisco Aironet 1850 Series support 4 x 4 MU-MIMO with four spatial streams, and 4 x 4 MU-MIMO with three spatial streams. Cisco Aironet 1830 Series support 3 x 3 SU-MIMO and MU-MIMO with two spatial streams.

#### ■ Link Aggregation

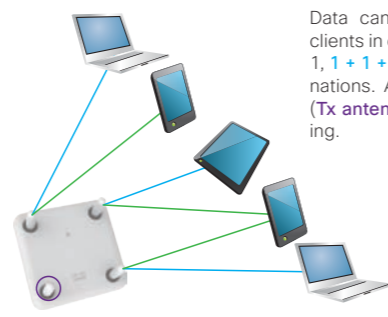
Many switches support links up to 1 Gbps throughput. However, with newer 11ac Wave 2 access points, it is possible (or at least the potential exists) that the access point traffic could exceed 1 Gbps. It is not likely to occur until MU-MIMO and 4 spatial stream 11 ac Wave 2 clients become more commonplace. To address this potential issue, Cisco has implemented Link Aggregation into the Cisco Aironet 1850 Series. Link Aggregation is the only method to gain higher throughput on access point that does not support multi-gigabit technologies such as NBASE-T.

#### ■ SU-MIMO



Data can be directed to one client at a time. Spatial streams are limited to the number of receivers on the client. Any additional radios on the AP are used for beamforming.

#### ■ MU-MIMO



Data can be directed to different clients in concurrent streams in a 1 + 1, 1 + 1 + 1, or 1 + 2 stream combinations. Additional radio on the AP (Tx antenna) is used for beamforming.

### Cisco Mobility Express Solution NEW

The **Cisco Mobility Express Solution** is specifically designed to help small and medium-sized networks easily and cost-effectively deliver enterprise-class wireless access to employees and customers.

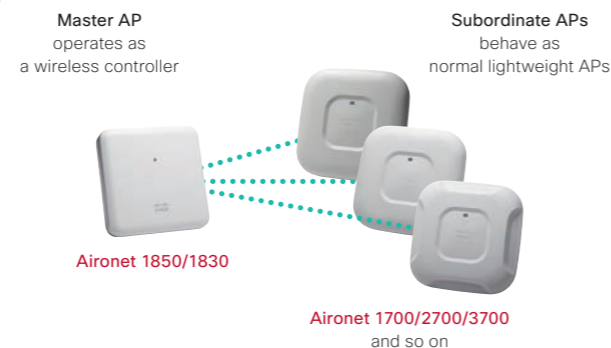
Cisco Mobility Express Solution is an on-premise, managed Wi-Fi solution that:

- Provides an easy, over-the-air interface for deployment in under **10 minutes**
- Is ideal for small and medium-sized deployments of up to **25 access points** and **500 clients**
- Is supported on Cisco Aironet 1850/1830 Series
- Can control other access points, such as Cisco Aironet 1700/2700/3700 Series



3-step over-the-air wireless network configuration

In the Cisco Mobility Express Solution, one access point (AP), running the Cisco Mobility Express wireless controller, is designated as the **master AP**. Other access points, referred to as **subordinate APs**, associate to this master AP. The master AP operates as a **wireless controller**, to manage and control the subordinate APs, and also operates as an access point to serve clients. The subordinate APs behave as normal lightweight access points to serve clients.



### Why Cisco?

#### Robust Stability

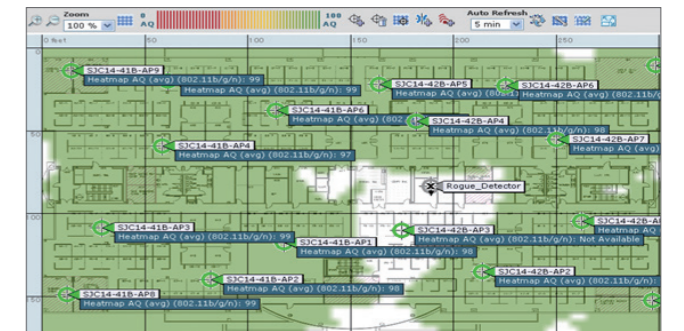
Cisco was one of the first corporations to foresee that wireless LAN would eventually either replace wired LAN or occupy the same position as wired LAN. In order for this transition to occur, high-speed communication was one of the primary requirements for wireless LAN. Cisco Wireless products are the best achieving products on the market, with IEEE 802.11ac PHY rates of 1.7 Gbps. However, high-speed communication alone is not enough to promote the use of wireless LAN in business. In addition to providing a high level of reliability without security risks such as information leakage and data theft, it is critical that wireless LAN has the required stability to ensure that user convenience is not compromised by factors such as impaired or broken communications. Cisco has developed a wide array of technologies and solutions to address such needs. Cisco's wireless products provide unparalleled stability based on over 15+ years of development achievements.

- Stability is pursued from the hardware design phase, including the use of custom chips.
- Radio interference is avoided intelligently based on reliable information related to the "type", "location", "impact range" and "degree of impact" of the source of interference.
- Automatic calibration is performed in areas where service is unavailable. In the unlikely event of failure of a wireless access point, a neighboring wireless access point takes its place automatically.
- Performance and stability of conventional IEEE 802.11a/g/n clients are enhanced as well, not just the IEEE 802.11ac clients.
- Dual-band compatible clients are automatically guided to a clean, interference-free 5 GHz band.
- Cisco verifies the compatibility with a wide array of vendors through the Wi-Fi Alliance certification as well as proprietary certification programs.

#### Unparalleled Level of Visualization

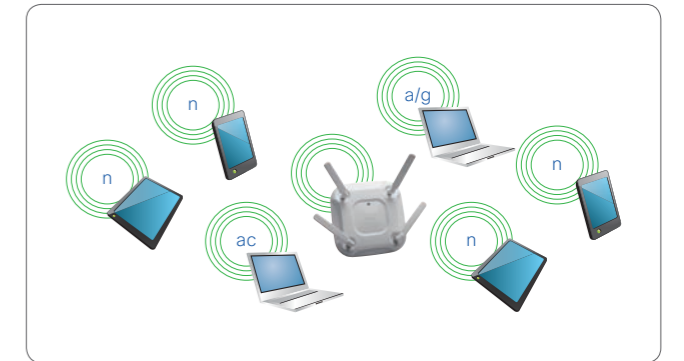
Radio waves are invisible, and this fact can often cause a nightmare for wireless LAN network administrators. Potential problems related to the radio environment may include "The communication speed is slowing down without any known cause", "Some kind of interference is occurring but its level of impact is unknown", etc. Visualization of wireless LAN is therefore one of the important trends today. Cisco's wireless access points incorporate a dedicated custom chip which functions as a measuring instrument and/or analyzer for the radio wave environment. Unlike the software-based data used in competitors' products, Cisco visualizes the radio wave intensity and type, location, impact range and degree of impact of the interference source in great precision and detail, based on highly accurate hardware-based data. The quality of the radio wave can also be visualized using this data. Visualization also includes identification of protocols and applications in the wireless LAN, making it "completely transparent" and significantly enhancing the network manageability.

#### ■ Quantifying and Graphically Visualizing the Radio Wave Quality (AQ) in a Floor Map



### Cisco ClientLink

In a mixed environment with low-speed clients (e.g. IEEE 802.11a/g clients) and high-speed clients (e.g. IEEE 802.11n/ac clients), the communication performance of the entire wireless LAN network will be dragged down by the slower clients. The **Cisco ClientLink** technology implemented on Cisco Aironet Access Points uses the signal processing expansion function, which is embedded in the chipset, to analyze the uplink communication signals from the client and strengthen/optimize the downlink communication signals to enhance the communication performance of low-speed clients. **Cisco ClientLink 3.0** implemented on the **Cisco Aironet 1570/2700/3700 Series** use the third or fourth antenna of the access points to also enhance the communication performance of IEEE 802.11n-compatible clients supporting up to three data streams, including the iPhone, iPad and latest laptops. In Cisco ClientLink 3.0, the communication performance of IEEE 802.11ac-compatible clients can be enhanced without implementing special hardware or software on the client side.



### Cisco CleanAir

**Cisco CleanAir** is an innovative technology for the **Controller-based Wireless Solution** that enables construction of self-recovering, self-optimizing wireless LAN environments.

In conventional technologies, the network administrators were required to move around carrying a sensor-equipped laptop in order to identify the source of radio interference. In Cisco CleanAir, Cisco Aironet Access Points with built-in ASIC (a dedicated custom chip) serve the roles of a measuring instrument and an analyzer for the wireless environment; and the data obtained from the Cisco Aironet Access Points are presented in a visualized manner. This enables network administrators to identify the cause of a problem and fix it promptly and efficiently. This technology also offers the wireless resource

management function which alleviates problems by automatically optimizing the frequency band after detecting a radio interference.

Cisco CleanAir can be implemented for the following products:

- **Cisco Aironet 1570/1700/2700/3700 Series:** Collects data by detecting and categorizing the radio interference in wireless LAN network.<sup>\*1</sup>
- **Cisco Wireless Controller:** Analyzes the collected data to identify the cause and dynamically optimizes the entire wireless LAN network.
- **Cisco Mobility Service Engine (MSE):** Tracks wireless LAN devices and collects the location information and the radio interference range.
- **Cisco Prime Infrastructure:** Visualizes the entire wireless LAN environment.

\*1 Cisco Aironet 1700 Series support Cisco CleanAir Express in Cisco AireOS 8.0 or later. Cisco Aironet 1570/2700/3700 Series support the 80 MHz channel bandwidth of IEEE 802.11ac.

## Cisco Connected Mobile Experiences (CMX) Solutions

**Cisco Connected Mobile Experiences (CMX)** is a revolutionary solution that collects and analyzes the location of wireless LAN (Wi-Fi) devices such as smartphones and tablets for business utilization. This solution supports the monetization of wireless LAN in a wide range of sectors including retail, services, transportation, healthcare, education, and government offices. This solution already has an excellent deployment track record overseas. And in Asia Pacific, positive results have been obtained in demonstration experiments conducted at events such as Interop Tokyo 2013/2014; and its commercial deployment is already in the pipeline. Cisco CMX provides the services described below.

### Location Analysis

This function anonymously detects and traces Wi-Fi device signals to obtain, aggregate and visualize the number of Wi-Fi users and their movement for analysis.

In the Copenhagen Airport case study, for example, this function enabled analysis of the general movement route and staying area/time of travelers (i.e. Wi-Fi users) during their departure and arrival, enabling better understanding of their different behavior patterns. This has enabled optimization of personnel allocation based on crowding and adjustment of the facility layout for improved customer convenience, helping to deliver services that guarantee high levels of customer satisfaction in a cost-effective manner. This function has also facilitated effective attraction of customers through optimization of the advertisement layout, contributing to bursting the earnings of duty free shops and tenant stores.

### Customer Engagement

The ability to capture new and keep existing customers by delivering more value is essential to continued growth in all industries. Cisco CMX allows customers mobile users to connect through your onsite wireless LAN. It opens a direct channel of communication that lets you better understand and deliver what your guests want. When you more effectively engage your mobile users, you can:

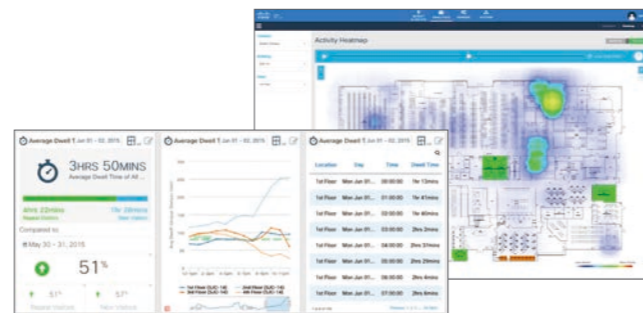
- Increase loyalty of existing customers and attract new customers by providing them with a personalized experience
- Heighten the guest experience by providing wireless access and key information during their journey
- Increase brand exposure through social media check-in and feed streaming
- Increase visitor satisfaction by helping them make decisions more aligned with their needs

### Cisco CMX for Facebook Wi-Fi

Cisco has also begun a new Cisco CMX service called **Cisco CMX for Facebook Wi-Fi** in collaboration with Facebook. In hotels and shops that are deploying this service, Wi-Fi users can use free wireless LAN by checking in with the facility using the facility's wireless network. This solution not only improves user convenience but also offers a variety of business benefits including better

customer recognition thanks to the increased number of check-ins and marketing based on the customer information collected anonymously by Facebook.

### Offering a Variety of Analysis Methods including Traffic Line Information and Residence Time



### Venue Efficiency

By helping you better understand how your visitors actually behave while at your site, Cisco CMX helps you make the best use of your floor plan. With this improved insight, you can:

- Determine the most trafficked locations to position advertisements, products or services
- Adjust venue layout to optimize traffic flow in periods of high use
- Staff service locations to accommodate visitor flows and time of day
- Evaluate impact of floor plan adjustments

For your customers and your business, the Cisco CMX solution can deliver the right information at the right time.

customer recognition thanks to the increased number of check-ins and marketing based on the customer information collected anonymously by Facebook.

For details on Cisco CMX, visit the following Web site:  
<http://www.cisco.com/go/cmxc>

## Cisco Connected Stadium Wi-Fi Solutions

Proliferation of smartphones and tablet devices combined with increased usage of visual content such as photos and videos in social media networks have resulted in a sharp increase of the 3G/4G LTE network traffic. High expectations are being placed on wireless LAN to offload the increased traffic. However, wireless LAN is facing the critical challenge of ensuring high-capacity and stable connectivity in crowded locations where a large number of people access the network simultaneously, such as in sports/entertainment complexes and event venues.

**Cisco Connected Stadium Wi-Fi** is a solution that can achieve a denser installation by reducing the coverage area of each wireless access point (**Cisco Aironet 3702P**) to ensure sufficient communication capacity and coverage even in a crowded stadium environment containing tens of thousands of users. This solution achieves the targeted coverage for each wireless access point using directional narrow-beam antennas and utilizes an advanced wireless resource management (RRM) system to optimize the performance of the entire network in high-density wireless LAN environments. The solution has already been adopted by a large number of corporations around the world, including the Seibu Prince Dome in Japan.

High-density and high-quality wireless LAN environments can ensure increased user satisfaction and revenue through provision of new fan-centric services, etc. For example, Seibu Prince Dome offers a dedicated service website called "Lions Wi-Fi". This service provides a new dimension of sports entertainment allowing

visitors to view the player profiles in the "Player Database", check the real-time game statistics, see the gourmet guide of the Seibu Dome and view the "Lions@YouTube" while enjoying the ball game.

### Left: Conventional Solution

Covering a large area with one wireless access point: Limited capacity per user

### Right: Cisco Connected Stadium Wi-Fi

Covering a small area with one wireless access point: Increased capacity per user



## Wireless Product Line

### Cisco Aironet Access Points

#### Indoor Access Points

All indoor models of the **Cisco Aironet Access Points** are compatible with the IEEE 802.11 standards including IEEE 802.11a/b/g/n and the latest standard IEEE 802.11ac which provides throughput up to 1.7 Gbps (some models are IEEE 802.11ac-compatible). A wide lineup of models are available including: (1) Lightweight compact models featuring a streamlined body with built-in antenna and integrated LAN/power cable using PoE (Power over Ethernet) for stylish installation without spoiling the aesthetics of the office; (2) Heavy-duty models with a wide selection of external antennas and featuring a rigid metal chassis to support a wide range of operating temperatures for use in factories, warehouses and stores where environmental requirements are strict; and (3) High-performance models for telecommuters and satellite offices offering the same level of security and network services as the headquarters office.

See page 32 to 33 for details.



#### Outdoor Access Points

The outdoor models of the **Cisco Aironet Access Points** deliver high-speed and stable wireless LAN environments in various locations such as in a massive city-size area, inside a company building, a factory ground, or a mining field. Featuring a chassis with IEC IP67 waterproof and NEMA Type 4X certified outdoor dust/rust resistance, a wide lineup of outdoor models is available to meet the diversifying customer needs in the harshest of environments. Available models include the lightweight compact model with a polished exterior design that blends into the surrounding environment, the PoE power supplying model capable of powering surveillance cameras, and the model with built-in cable modem for utilizing the existing cable network.

See page 34 for details.



### Cisco Wireless Controller

**Cisco Wireless Controller** is a platform that enables centralized management of multiple Cisco Aironet Access Points including remote bases. This platform automates the configuration management required for deploying/adding Cisco Aironet Access Points to reduce the workload of the network administrator, as well as provide the control functions needed to establish a stable wireless LAN environment. The control functions include load balancing of Cisco Aironet Access Points and prompt and dynamic response to changes in the wireless environment.

See page 37 to 38 for details.



### Mobility Services & Network Management Tools

**Cisco Mobility Engine (MSE)**, which delivers a wide range of mobility services such as collecting the location of mobile devices, and **Cisco Prime Infrastructure**, that is designed to dramatically simplify network operations by providing management of wired and wireless network seamlessly, these are two critical components of **Cisco CleanAir**.

See page 39 for details.



Switches

Wireless

Routers

Meraki

Small Business

Services





# Outdoor Access Points

## ■ Cisco Aironet Outdoor Access Points

The **Cisco Aironet Outdoor Access Points** deliver high-speed and stable wireless LAN environments in various locations such as in a massive city-size area, inside a company building, a factory ground, or a mining field. Featuring a chassis with IEC IP67 waterproof and NEMA Type 4X certified outdoor dust/rust resistance, a wide lineup of outdoor models is available to meet the diversifying customer needs in the harshest of environments.

- Built-in antenna models: **Cisco Aironet 1532I** and **Cisco Aironet 1572IC4** have a polished exterior design that blends into the surrounding environment.
- External antenna models: A wide selection of antennas are available for **Cisco Aironet 1532E** and **Cisco Aironet 1572EAC/EC** to suit different installation environments (Refer to page 35-36 for details on the **Cisco Aironet antennas**).
- Built-in cable modem models: **Cisco Aironet 1572IC** incorporate a cable modem that is compatible with DOCSIS 3.0, an international standard for communication services via coaxial cables used for cable television, etc.

## ■ Highlights

- IEC IP67 waterproof (All models)
- NEMA Type 4X certified outdoor dust/rust resistance (**Cisco Aironet 1570 Series**)
- Designed for hazardous environments, certified Class 1 Div2/Zone2 enclosure (All models)
- Supports GPS (**Cisco Aironet 1570 Series**)<sup>\*1</sup>
- IEEE 802.11n compatible (All models)
- IEEE 802.11ac compatible (**Cisco Aironet 1570 Series**)
- Supports 2.4 GHz/5 GHz dual-band (All models)
- Supports 5.6 GHz (W56) frequency band (All models)
- Supports **Cisco CleanAir** (**Cisco Aironet 1570 Series**, Refer to page 29 for details on the technology)
- Supports **ClientLink** (**Cisco Aironet 1570 Series**, Refer to page 29 for details on the technology)
- Supports **Cisco BandSelect** (All models, for wired connection)
- Supports **Cisco High Density Experience (HDX)** (**Cisco Aironet 1570 Series**)



Model Name	Dimensions (Height x Width x Depth)	Maximum Weight
Cisco Aironet 1532I	10.16 x 17.78 x 22.86 cm	2.27 kg
Cisco Aironet 1532E	10.16 x 17.78 x 25.40 cm	2.49 kg
Cisco Aironet 1572IC	29.97 x 20.07 x 20.07 cm	5.22 kg
Cisco Aironet 1572EAC	29.97 x 20.07 x 16.00 cm	6.12 kg
Cisco Aironet 1572EC	29.97 x 20.07 x 16.00 cm	6.12 kg

## ■ Cisco Aironet 1530 Series

SKU	Clean Air	ClientLink		Band Select	Ports			Power Supply Options					Antennas				
		2.0	3.0		GE	SFP	Cable	AC	DC	PoE (PSE)	PoE (PD)	UPOE (PD)	PoC (PD)	Built-in Dual-band	External Dual-band	External Single-band	
AIR-CAP1532I-x-K9	-	-	-	●	2	-	-	-	●	-	-	●	-	-	3 <sup>*2</sup>	-	-
AIR-CAP1532E-x-K9	-	-	-	●	2	-	-	-	●	-	●	-	-	-	-	2	2 + 2

## ■ Cisco Aironet 1570 Series

SKU	Clean Air	ClientLink		Band Select	Ports			Power Supply Options					Antennas				
		2.0	3.0		GE	SFP	Cable	AC	DC	PoE (PSE)	PoE (PD)	UPOE (PD)	PoC (PD)	Built-in Dual-band	External Dual-band	External Single-band	
AIR-AP1572ICn-x-K9 <sup>*3</sup>	●	-	●	●	2	1	1	-	●	-	-	-	●	-	4	-	-
AIR-AP1572EAC-x-K9	●	-	●	●	2	1	-	-	●	-	●	-	-	-	-	4	2 + 2
AIR-AP1572ECn-x-K9 <sup>*3</sup>	●	-	●	●	2	1	1	-	●	-	-	-	●	-	4	2 + 2	

\*1 GPS Antenna (AIR-ANT-GPS-1) is required. \*2 2.4 GHz: 3 Tx / 3 Rx Antennas with 3 streams. 5 GHz: 2 Tx / 3 Rx Antennas with 2 streams. \*3 If "n" is "1"; Diplex Filter split of: 5-42/88-1000 MHz. If "n" is "2"; Diplex Filter split of: 5-85/108-1002 MHz. If "n" is "3"; Diplex Filter split of: 5-65/108-1002 MHz. \*4 PoE+ power supply is supported.

# Cisco Aironet Antennas and Accessories

## ■ Cisco Aironet 2.4 GHz Omni-directional Antenna

SKU	Installation/Dimensions	Gain (dBi)
AIR-ANT2420V-N	12.70 x 2.54 cm	2.0
AIR-ANT2450V-N	27.94 x 2.54 cm	5.0
AIR-ANT2455V-N	31.75 x 2.54 cm	5.5
AIR-ANT2480V-N	49.53 x 2.22 cm	8.0

## ■ Cisco Aironet 2.4 GHz Directional Antenna

SKU	Installation/Dimensions/Weight	Gain (dBi)
AIR-ANT2413P2M-N	Patch 19.81 x 19.81 x 3.05 cm 0.61 kg	13.0

## ■ Cisco Aironet Dual-band Omni-directional Antenna

SKU	Installation/Dimensions/Weight	Gain (dBi)
AIR-ANT2524V4C-R	Ceiling mount 18.42 x 18.42 x 2.54 cm 0.59 kg	2.0 (2.4 GHz) 4.0 (5 GHz)
AIR-ANT2544V4M-R	Wall mount 55.37 x 16.00 cm 0.67 kg	4.0 (2.4 GHz) 4.0 (5 GHz)
AIR-ANT2547V-N	28.19 x 3.18 cm 170 g	4.0 (2.4 GHz) 7.0 (5 GHz)
AIR-ANT2547VG-N	28.19 x 3.18 cm 170 g	4.0 (2.4 GHz) 7.0 (5 GHz)
AIR-ANT2568VG-N	37.59 x 3.81 cm 204 g	6.0 (2.4 GHz) 8.0 (5 GHz)

## ■ Cisco Aironet 5 GHz Omni-directional Antenna

SKU	Installation/Dimensions	Gain (dBi)
AIR-ANT5140V-N	12.70 x 2.54 cm	4.0
AIR-ANT5175V-N	29.59 x 2.54 cm	7.5
AIR-ANT5180V-N	27.94 x 2.54 cm	8.0

## ■ Cisco Aironet 5 GHz Directional Antenna

SKU	Installation/Dimensions/Weight	Gain (dBi)
AIR-ANT5114P2M-N	Patch 19.81 x 19.81 x 3.05 cm 0.61 kg	14.0

## ■ Cisco Aironet Dual-band Dipole Antenna

SKU	Color/Dimensions/Weight	Gain (dBi)
AIR-ANT2524DB-R	Black 16.84 x 2.11 cm 36.85 g	2.0 (2.4 GHz) 4.0 (5 GHz)
AIR-ANT2524DG-R	Grey 16.84 x 2.11 cm 36.85 g	2.0 (2.4 GHz) 4.0 (5 GHz)
AIR-ANT2524DW-R	White 16.84 x 2.11 cm 36.85 g	2.0 (2.4 GHz) 4.0 (5 GHz)
AIR-ANT2535SDW-R	White 8.38 x 3.18 cm 48.19 g	3.0 (2.4 GHz) 5.0 (5 GHz)

## ■ Cisco Aironet Dual-band Directional Antenna

SKU	Installation/Dimensions/Weight	Gain (dBi)
AIR-ANT2566P4W-R	Patch 16.00 x 27.94 x 3.05 cm 0.64 kg	6.0 (2.4 GHz) 6.0 (5 GHz)
AIR-ANT2566D4M-R	Patch 25.40 x 25.40 x 4.09 cm 1.36 kg	6.0 (2.4 GHz) 6.0 (5 GHz)
AIR-ANT2588P3M-N	Patch 30.48 x 17.78 x 2.79 cm 0.45 kg	8.0 (2.4 GHz) 8.0 (5 GHz)
AIR-ANT2513P4M-N	Patch 30.48 x 17.78 x 2.79 cm 0.45 kg	13.0 (2.4 GHz) 13.0 (5 GHz)

For details on **Cisco Aironet Antennas**, visit the following Web site:  
<http://www.cisco.com/go/antenna>



Additional Access Point License for Cisco 2500 Series Wireless Controller<sup>\*1</sup>

SKU	Additional	Compatible Models
L-LIC-CT2504-1A	1	2504
L-LIC-CT2504-5A	5	2504
L-LIC-CT2504-25A	25	2504

Additional Access Point License for Cisco Virtual Wireless Controller<sup>\*2</sup>

SKU	Additional	Compatible Models
L-LIC-CTVM-1A	1	-
L-LIC-CTVM-5A	5	-
L-LIC-CTVM-25A	25	-

Additional Access Point License for Cisco 5700 Series Wireless Controller<sup>\*3</sup>

SKU	Additional	Compatible Models
L-LIC-CTIOS-1A	1	5760

Additional Access Point License for Cisco Wireless Services Module 2 (WISM2)<sup>\*4</sup>

SKU	Additional	Compatible Models
L-LIC-WISM2-100A	100	6500/6800
L-LIC-WISM2-200A	200	6500/6800

Additional Access Point License for Cisco 5500 Series Wireless Controller<sup>\*5</sup>

SKU	Additional	Compatible Models
L-LIC-CT5508-1A	1	5508
L-LIC-CT5508-25A	25	5508
L-LIC-CT5508-50A	50	5508
L-LIC-CT5508-100A	100	5508
L-LIC-CT5508-250A	250	5508
L-LIC-CT5520-1A	1	5520

Additional Access Point License for Cisco 8500 Series Wireless Controller<sup>\*6</sup>

SKU	Additional	Compatible Models
L-LIC-CT8500-1A	1	8510
L-LIC-CT8500-100A	100	8510
L-LIC-CT8500-500A	500	8510
L-LIC-CT8500-1000A	1,000	8510
L-LIC-CT8540-1A	1	8540

\*1 L-LIC-CT2504-UPG is required. \*2 L-LIC-CTVM-UPG is required. \*3 L-LIC-CT5760-UPG is required. \*4 L-LIC-WISM2-UPG is required. \*5 L-LIC-CT5508-UPG or L-LIC-CT5540-UPG is required. \*6 L-LIC-CT8500-UPG or L-LIC-CT8540-UPG is required.

## Cisco Wireless Controller Software

Unlike traditional products, the **Cisco 5700 Series Wireless Controllers** (and the **Cisco Catalyst 3650/3850 Series** and the **Supervisor Engine 8-E for Cisco Catalyst 4500E Series**) incorporate the Cisco IOS XE based wireless

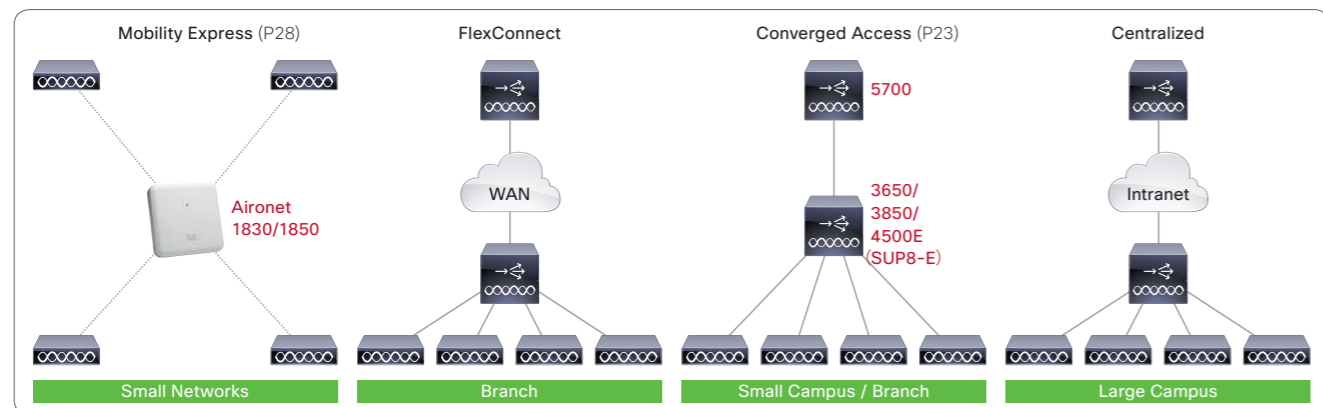
controller software. Rich features of the Cisco IOS including **Flexible NetFlow**, advanced QoS and **dACL (downloadable Access Control List)** can be provided for wireless LAN networks as well.

Cisco Wireless Controller Software Specification Comparison

	AirOS	IOS-XE
Resilience	Client SSO, AP SSO, N+1, High-availability option SKU	AP SSO, Multiple LAG, High-availability option SKU
QoS	Alloy QoS	High level of QoS (MQC)
Security	Dynamic ACLs, SGA (SXP)	dACL
Roaming	L2 and L3 FSR, IEEE 802.11r, Neighbor List	L2 and L3 FSR
Service	Bonjour, AVC, Static Netflow	Flexible Netflow, AVC
Command Line Interface	Secure FTP	Cisco IOS CLI, Secure Shell, EEM/TCL/TK

## Deployment Modes

Cisco's wireless solutions can be broadly classified into **Standalone** systems that operate **Cisco Aironet Access Points** individually and **Controller-based** systems that centrally manage multiple Cisco Aironet Access Points using a **Cisco Wireless Controller**. Multiple expansion modes are also supported in **Controller-based** systems.



The Mesh Mode, FlexConnect + Mesh Mode, OfficeExtend Mode, Monitor Mode, Rogue Detector Mode, and Sniffer Mode are also supported.

Cisco Wireless Controller Deployment Mode Compatibility Comparison

Platform	Deployment Modes					
	Mobility Express	FlexConnect	Converged Access	Centralized	Mesh	OfficeExtend
Cisco Aironet 1830/1850 Series Access Points	●	-	-	●	-	-
Cisco 2500 Series Wireless Controller	-	●	-	●	●	●
Cisco Virtual Wireless Controller	-	●	-	-	-	-
Cisco 5500 Series Wireless Controller	-	●	● <sup>*1</sup>	●	●	●
Cisco 5700 Series Wireless Controller	-	●	●	●	●	●
Cisco Wireless Services Module 2 (WISM2)	-	●	● <sup>*1</sup>	●	-	-
Cisco 8500 Series Wireless Controller	-	●	-	●	●	●

\*1 Cisco Wireless Controller Software release 7.3.112.0 is required. \*2 Cisco AireOS 8.1 and higher are not supported.

## Mobility Services & Network Management Tools

### Cisco Mobility Service Engine (MSE)

**Cisco Mobility Service Engine (MSE)** is a platform that provides a wide range of mobility services including **Cisco CleanAir**, **Cisco Base Location Services**, **Cisco Connected Mobile Experiences (CMX)**, and **Cisco Wireless Intrusion Prevention System (wIPS)**. This platform is implemented as a software product on VMware ESX/ESXi or as a hardware appliance.



Cisco Connected Mobile Experiences (CMX) release 10

Cisco CMX 10 is a platform that enhances the Cisco wireless LAN by:

- Calculating the location of all wireless devices in a venue, including mobile devices, tags, rogue access points, and wireless interferers.
- Generating advanced location analytics (**CMX Analytics**).
- Providing a visitor wireless onboarding platform (**CMX Connect**).
- Calculating the location of Bluetooth Low Energy (BLE) beacons.

Cisco Connected Mobile Experiences (CMX) release 10 License

- Cisco CMX Base License**  
Provides the ability to determine the location of Wi-Fi clients, Bluetooth low energy (BLE) beacons, devices, and RFID tags, **CMX Connect**, third-party integration using standard REST APIs.
- Cisco CMX Advanced License**  
Provides all the CMX Base services and **CMX Analytics**.
- Cisco wIPS Monitor Mode License**  
Provides wIPS for Cisco Aironet Access Points in monitor mode (will be available in a future release).
- Cisco wIPS Enhanced Local Mode License**  
Provides wIPS for Cisco Aironet Access Points in local mode (will be available in a future release).

Cisco Mobility Services Engine (MSE)

SKU	Description	Managed Access Points	
		Location service CMX	wIPS Monitor Mode wIPS Enhanced Local Mode
L-MSE-7.0-K9	Software product	5,000	10,000
AIR-MSE-3365-K9	Hardware appliance	5,000	10,000

Cisco CMX Base License

SKU	CMX 10.x <sup>*2</sup>	Supported Access Points
MSE 8.0 <sup>*1</sup>	L-LS-1AP-N	1
L-LS-1AP	-	100
L-LS-100AP	-	1,000

Cisco wIPS Monitor Mode License

SKU	CMX 10.x <sup>*2</sup>	Supported Access Points
MSE 8.0 <sup>*1</sup>	TBD	1
L-WIPS-MM-1AP	TBD	100
L-WIPS-MM-100AP	TBD	1,000

Cisco CMX Advanced License

SKU	CMX 10.x <sup>*2</sup>	Supported Access Points
MSE 8.0 <sup>*1</sup>	L-AD-LS-1AP-N	1
L-AD-LS-1AP	-	100
L-AD-LS-100AP	-	1,000
L-UPG-LS-1AP	L-UPG-LS-1AP-N	1

Cisco wIPS Enhanced Local Mode License

SKU	CMX 10.x <sup>*2</sup>	Supported Access Points
MSE 8.0 <sup>*1</sup>	TBD	1
L-WIPS-ELM-1AP	TBD	100
L-WIPS-ELM-100AP	TBD	1,000

## Cisco Prime Infrastructure

**Cisco Prime Infrastructure** is an integrated management platform that enables comprehensive management of the entire network including wired/wireless LAN at the headquarters and branches. This platform not only enables devices comprising wired/wireless LAN networks to be managed as physical assets but also enables the networks to be managed from the user service level perspective, based on the rich information collected from the devices.

Cisco Prime Infrastructure 3.x Hardware Appliance

SKU	Description
PI-UCS-APL-K9	Generation 2 Hardware Appliance
PI-UCS-APL-U-K9	Upgrade from Generation 1

Cisco Prime Infrastructure 3.x Software & Base License<sup>\*3</sup>

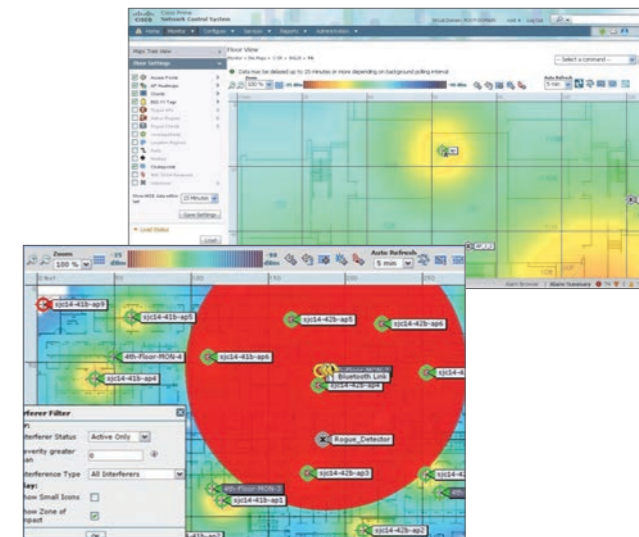
SKU	Description
R-PI30-SW-K9	Prime Infrastructure 3.0 Software
L-MGMT3X-PI-BASE	Base License

Cisco Prime Infrastructure 3.x High Availability License<sup>\*3</sup>

SKU	Description
L-MGMT3X-HA	High Availability License

Cisco Prime Infrastructure 3.x Lifecycle & Assurance License<sup>\*3</sup>

SKU	Managed Devices	QTY
L-MGMT3X-2K-K9	Cisco Catalyst 2000 Series	1
L-MGMT3X-3K-K9	Cisco Catalyst 3000 Series	1
L-MGMT3X-4K-K9	Cisco Catalyst 4000 Series	1
L-MGMT3X-6K-K9	Cisco Catalyst 6000 Series	1
L-MGMT3X-CSR1-K9	Cisco CSR 1000 Series	1
L-MGMT3X-800SR-K9	Cisco ISR 800 Series	1
L-MGMT3X-ISR1-K9	Cisco ISR 1000 Series	1
L-MGMT3X-ISR2-K9	Cisco ISR 2000 Series	1
L-MGMT3X-ISR3-K9	Cisco ISR 3000 Series	1
L-MGMT3X-ISR4-K9	Cisco ISR 4000 Series	1



SKU	Managed Devices	QTY
L-MGMT3X-ASR1K9	Cisco ASR 1000 Series	1
L-MGMT3X-AP-K9	Cisco Aironet Access Point	1
L-MGMT3X-N2K-K9	Cisco Nexus 2000 Series Fabric Extender (FEX)	1
L-MGMT3X-N3K-K9	Cisco Nexus 3000 Series	1
L-MGMT3X-N5K-K9	Cisco Nexus 5000 Series	1
L-MGMT3X-N6K-K9	Cisco Nexus 6000 Series	1
L-MGMT3X-N7K-K9	Cisco Nexus 7000 Series	1
L-MGMT3X-N93XX-K9	Cisco Nexus 9300 Series	1
L-MGMT3X-N9K-K9	Cisco Nexus 9000 Series	1

\*1 L-MSE-PAK is required. \*2 L-MSE-PAK-N is required. \*3 R-MGMT3X-N-K9 is required.

# Routers

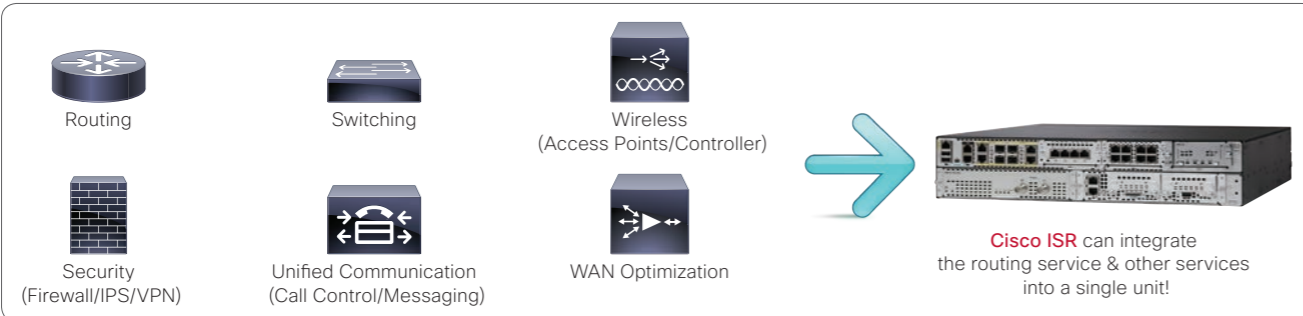
## Integrated Services Routers



### Line-up of Cisco ISR

Previously, even the small-scale bases were required to install a wide range of devices including switches, wireless access points and WAN optimization appliances. **Cisco Integrated Services Routers (ISR)** are "super routers" that are capable of integrating the network services provided by these multiple devices into a single platform. These routers are not only capable of integrating

multiple services but also have the flexibility to add new services as required via license activation and/or addition of expansion modules. Adoption of these routers results in simpler network configuration, helping to reduce the device costs as well as operation and maintenance costs.

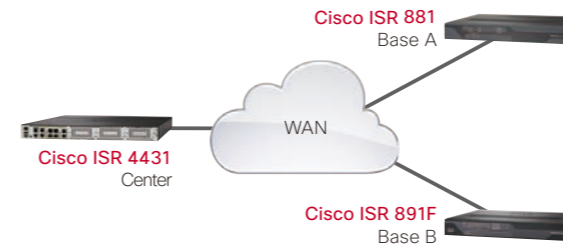


### Selection of Cisco ISR

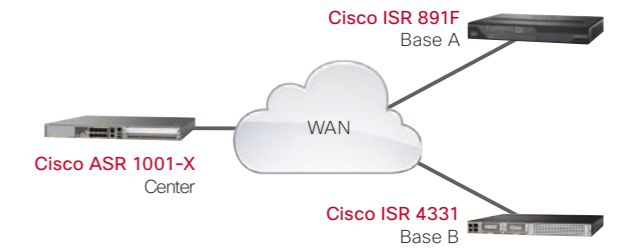
Routers with higher performance and expandability should be selected for traffic-intensive data centers than the bases. **Cisco ISR** not only allows selection of bundle models according to the services required at the data centers or bases,

but also respond flexibly to changes in the business needs by means of license activation of **Cisco IOS** technologies and addition of expansion modules.

#### Sample inter-base network configuration: small-scale network



#### Sample inter-base network configuration: Medium-scale network



### Benefits of Migrating to Cisco ISR 4000 Series

The Cisco ISR 4000 Series build on 20 years of branch-office routers, adding services and horsepower for the needs of modern branch offices and allowing businesses to:

- Quickly open new remote offices or easily add additional services
- Operate an entire branch office with a single box
- Give IT departments more time for innovation by automating repetitive tasks and orchestrating security and application services

The **Cisco ISR 4000 Series** address the problems that modern branch offices face, without giving up any of the existing services of previous-generation Cisco ISRs. It also brings virtualization to networking so that IT can adopt services faster and repurpose resources as needs change. And it delivers additional computing power for local application survivability, data backup, and local analytics processing.

The new architecture of the Cisco ISR 4000 Series delivers up to 2 Gbps in a converged platform, typically 4 to 10 times faster than the previous-generation ISRs. The WAN and application optimization services of the Cisco ISR 4000 Series include **Cisco Application Visibility and Control (AVC)**, allowing IT to assess capacity planning; and **Cisco Performance Routing Version 3 (PfR v3)**, which automatically sends traffic across the best connection for current network conditions. Not only does this architecture allow a branch office to run the network with a single box, it also allows use of that box to converge network, computing, and storage resources in the same platform. The virtualization technology available both embedded within the Cisco ISR 4000 Series and through additional data center-class server modules (**Cisco UCS E Series Servers**) offers new levels of converged capability.



#### Series Comparison

Branch Network Needs	Features	Cisco ISR 1800/2800/3800 Series	Cisco ISR 1900/2900/3900 Series	Cisco ISR 4000 Series	Benefits
Scale with high performance	Maximum throughput	Up to 50 Mbps	Up to 350 Mbps	Up to 2 Gbps	4 to 10 times performance increase for the same price as the ISR G2
	Separate data, control, and services planes	-	-	●	Minimal performance impact as network services are added and throughput increases
	Integrated service container	-	-	●	No need for additional branch appliances; add network services using pluggable virtual machines
	Integrated compute with Cisco UCS E-Series Servers	-	●	●	Local compute resources for applications, data backup, and analytics
Uncompromised user experience	Cisco IOS XE Operating System	-	-	●	Higher availability for network services with multicore processing
	Cisco Application Visibility and Control (AVC)	-	●	●	Visibility into 1000+ applications for capacity planning and prioritization
	Intelligent path selection (PfR v3)	-	●	●	Improve application experience and lower costs with path selection using real-time analytics
Security	WAN optimization (WAAS and Akamai)	-	●	●	Improve application performance and offload WAN with Layer 4-7 optimization and intelligent caching
	Sourcefire Intrusion Detection System (IDS)	-	●	●	Industry-leading advanced threat defense
	Cloud Web Security with Advanced Malware Protection (AMP)	-	●	●	Scale secure direct Internet access with consistent policy enforcement
Reduced costs and increased business agility	Multicore hardware VPN acceleration	-	-	●	High-performance encryption for secure WAN
	Pay-as-you-grow performance and services	-	-	●	Ability to buy what you need today and upgrade anytime without complete equipment upgrades
	Cisco ONE Software Suites	-	●	●	Predictable OpEx spend, license portability, and investment protection
	Intelligent WAN app with Cisco APIC Enterprise Module	-	●	●	Automated provisioning for faster deployment

High Performance & Functionality

Fixed-configuration

Modular (EHWIC/SM) \*1

Modular (NIM/SM-X) \*1

\*1 Primary expansion slots incorporated on the platform. Refer to pages 46-47 for details on the compatible expansion modules.

- Cisco ISR 800 Series
Fixed-configuration second-generation integrated services routers suitable for deployment in small-sized bases, home offices and Machine-to-Machine (M2M) environments. [See page 42 for details.](#)
- Cisco ISR 1900/2900/3900 Series
Modular second-generation integrated services routers suitable for deployment in small- to large-sized bases. [See page 43 for details.](#)
- Cisco ISR 4000 Series
Modular second-generation integrated services routers suitable for deployment in bases that require a provision of application-aware services. [See page 44 for details.](#)

Switches

Wireless

Routers

Meraki

Small Business

Services









# Cisco Wide Area Application Services (WAAS)

## What is Cisco WAAS?

**Cisco Wide Area Application Services (WAAS)** is an effective solution for achieving optimization of inter-office WAN and application acceleration. This solution addresses the WAN-specific issues such as delays to enhance the TCP-based application performance.

### Same Level of Application Performance as LAN Connection

Cisco WAAS enables applications to be used via WAN with the same level of performance as via LAN.

- Optimized throughput: Enhances the WAN environment even further by improving the behavior of the transport protocol.
- More efficient bandwidth: Minimizes the sending/receiving of redundant data patterns using DRE (Data Redundancy Elimination) and compression technology.
- Application speedup: Achieves efficient utilization of bandwidth by eliminating delays using technologies such as read-ahead, protocol proxy and caching.

### Full Support for Citrix XenDesktop and XenApp

VDI (Virtual Desktop Infrastructure) solutions that are becoming increasingly popular to address the challenges in the fields of business flexibility and sustainability as well as compliance/security requirements. However, since the communications from a client to a virtual desktop (i.e. server) are achieved via a network, network delay and bandwidth limit need to be considered carefully (especially via WAN).

Cisco WAAS has obtained Citrix's compatibility certification for their VDI solutions Citrix XenDesktop and XenApp and delivers the following benefits.

- Enhances the virtual desktop performance on WAN by up to 70 %
- Increases the number of simultaneous Citrix client connections by up to twice without the costly upgrade of the WAN bandwidth.
- Up to 60 % reduction of the WAN bandwidth requirements
- Up to 98 % optimization of the printing via WAN
- Supports Citrix MSI (Multi Stream ICA)

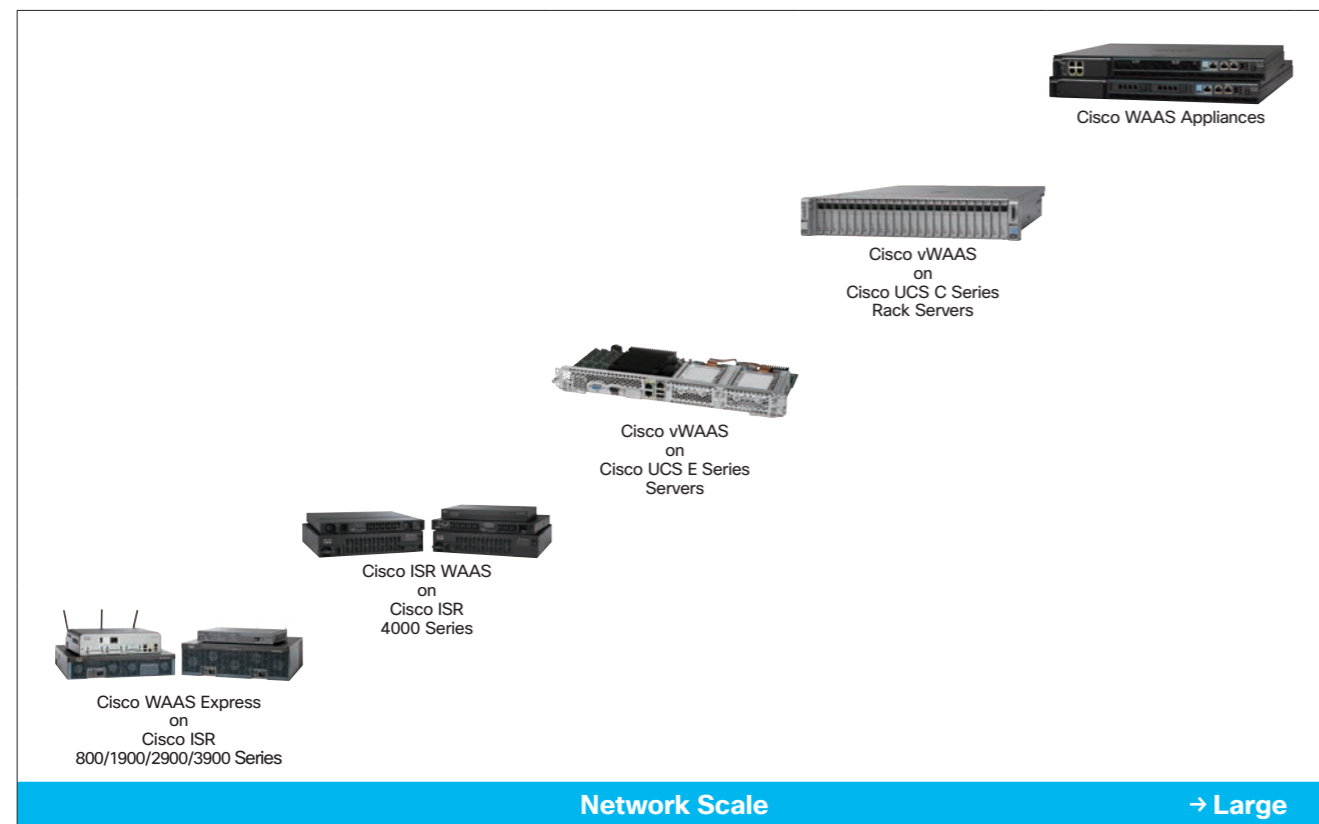
For details on **Cisco WAAS**, visit the following Web site:

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

## Cisco WAAS Product Portfolio

Cisco WAAS is available in various types to suit different purposes and scales. These products can be used to achieve WAN optimization and application

acceleration in a variety of operating environments, resulting in enhanced corporate productivity.



- Cisco WAAS Express**: Software products suitable for bases, integrated into Cisco IOS on the Cisco ISR 800/1900/2900/3900 Series, and activated by Cisco IOS Feature License or Cisco IOS APP license.
- Cisco ISR WAAS**: Software products suitable for bases or data centers/headquarters, integrated into Cisco IOS XE on the Cisco ISR 4000 Series, and activated by Cisco IOS APP License.
- Cisco vWAAS**: Software products suitable for bases or data centers/headquarters, implemented on VMware ESX/ESXi which is supported by Cisco UCS E Series Servers and Cisco UCS C Series Rack Servers.
- Cisco WAAS Appliances**: Hardware appliances suitable for bases or data centers/headquarters.

## Cisco Intelligent WAN (IWAN) with Akamai Connect

Cisco Intelligent WAN (IWAN) with Akamai Connect is a suite of integrated WAN optimization, application acceleration, and intelligent caching features in Cisco ISRs running Application Experience services.

The solution extends the well-known Akamai Intelligent Platform with HTTP caching across the last mile into the branch office, turbo charging the application optimization features of the Cisco IWAN. Akamai Connect caching integrates with Cisco IWAN features such as **Application Visibility and Control (AVC)**, **Cisco Performance Routing (PfR)**, and **Cisco Wide Area Application Services (WAAS)**. It is available across the Cisco ISR portfolio and **Cisco WAAS Appliances**, allowing you to deploy full-service branch-office operations.

Users can access bandwidth-intensive applications instantly, over any network, regardless of where the application is hosted - data center, private cloud, public cloud, or the Internet.

### Mobile Assisted Selling Application Benchmark Results in Seconds (s)

	Without Akamai Connect	With Akamai Connect 1st Hit	With Akamai Connect 2nd Hit
ERP App	57 s	18 s	2 s
Repair App	70 s	28 s	< 1 s
Catalog App	28 s	13 s	< 1 s

### Training/Digital Signage Application Benchmark Results in Pixels (p) and Seconds (s)

	Without Akamai Connect	With Akamai Connect
Default Quality	144 p	720 p (HD Automatic)
Time to Load (720 p HD)	14 s	Instant

### Cisco IWAN with Akamai Connect License

SKU	Description
SL-200-AKC	License for up to 200 WAAS connections
SL-750-AKC	License for up to 750 WAAS connections
SL-1300-AKC	License for up to 1300 WAAS connections
SL-2500-AKC	License for up to 2500 WAAS connections
SL-6K-AKC	License for up to 6000 WAAS connections

### Cisco WAAS Specification Comparison

Series Name	SKU/Platform	WAN Bandwidth (Max)	TCP Optimized Connections (Max)	WAN Optimization	App Speedup	AppNav	Central Manager Mode Managed Devices
Cisco WAAS Express	L-FL-C880-WAASX <sup>*1</sup>	1.5 Mbps	75	●	-	-	-
	L-FL-C890-WAASX <sup>*1</sup>	2 Mbps	75	●	-	-	-
	L-FL-C1941-WAASX <sup>*1</sup>	4 Mbps	150	●	-	-	-
	L-FL-C2901-WAASX <sup>*1</sup>	6 Mbps	150	●	-	-	-
	L-FL-C2911-WAASX <sup>*1</sup>	6 Mbps	200	●	-	-	-
	L-FL-C2921-WAASX <sup>*1</sup>	6 Mbps	200	●	-	-	-
	L-FL-C2951-WAASX <sup>*1</sup>	6 Mbps	200	●	-	-	-
Cisco ISR WAAS	Cisco 4321	15 Mbps	200	●	●	●	-
	Cisco 4331	25 Mbps	750	●	●	●	-
	Cisco 4351	25 Mbps	750	●	●	●	-
	Cisco 4431	50 Mbps	1,300	●	●	●	-
	Cisco 4451	150 Mbps	2,500	●	●	●	-
Cisco vWAAS	LIC-200-VWAAS	20 Mbps	200	●	●	-	-
	LIC-750-VWAAS	50 Mbps	750	●	●	-	-
	LIC-1300-VWAAS	80 Mbps	1,300	●	●	-	-
	LIC-2500-VWAAS	150 Mbps	2,500	●	●	-	-
	LIC-6K-VWAAS	200 Mbps	6,000	●	●	-	-
	LIC-12K-VWAAS	310 Mbps	12,000	●	●	-	-
Cisco WAAS Appliances	WAVE-294-K9	4 GB Memory	10 Mbps	200	●	●	250 (200) <sup>*7</sup>
		8 GB Memory <sup>*2</sup>	20 Mbps	400	●	●	250 (200) <sup>*7</sup>
	WAVE-594-K9	8 GB Memory	50 Mbps	750	●	●	1,000 (800) <sup>*7</sup>
		12 GB Memory <sup>*3</sup>	100 Mbps	1,300	●	●	1,000 (800) <sup>*7</sup>
	WAVE-694-K9	16 GB Memory	200 Mbps	2,500	●	●	2,000 (2,000) <sup>*7</sup>
		24 GB Memory <sup>*4</sup>	200 Mbps	6,000	●	●	2,000 (2,000) <sup>*7</sup>

### Modules for Cisco Wide Area Application Services (WAAS) Appliance

SKU	Description	GE Ports	SFP Ports
WAVE-INLN-GE-4T	GE Module for the Cisco WAAS Appliances <sup>*9</sup>	4	-
WAVE-INLN-GE-8T	GE Module for the Cisco WAAS Appliances	8	-
WAVE-INLN-GE-4SX	SFP Module for the Cisco WAAS Appliances	-	4
WAVE-APNV-GE-12T	AppNav GE Module for the Cisco WAVE 694 WAAS Appliances	12	-
WAVE-APNV-GE-12SFP	AppNav SFP Module for the Cisco WAVE 694 WAAS Appliances	-	12

### Cisco WAAS Central Manager

**Cisco WAAS Central Manager** is a mandatory management tool for all Cisco WAAS implementations. Generally, Cisco WAAS Central Manager is either implemented to a single Cisco WAAS Appliance in the data center or headquarters accommodating the data and application servers, or as Cisco Virtual WAAS (vWAAS) on the VMware ESX/ESXi server. Cisco WAAS Central Manager can be used to centrally manage a wide range of Cisco WAAS devices distributed across multiple bases, including the Cisco

800/1900/2900/3900 Series with activated Cisco WAAS Express, Cisco ISR 4000 Series with activated Cisco ISR WAAS, and Cisco WAAS Appliances, and so on. An intuitive GUI provides access to functions such as deployment and real-time monitoring of Cisco WAAS devices, fault management and logging, as well as the custom reporting function for creating scheduled reports for up to 2,500 Cisco WAAS devices in the Cisco WAAS topology.

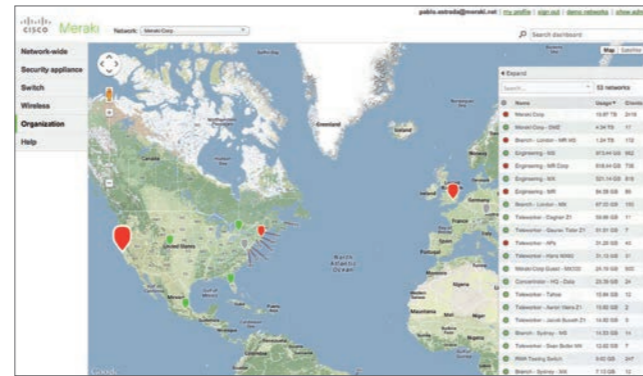
<sup>\*1</sup> Maximum DRAM supported by the platform is required. <sup>\*2</sup> MEM-294-8GB is required. <sup>\*3</sup> MEM-594-12GB is required. <sup>\*4</sup> MEM-694-24GB is required. <sup>\*5</sup> Cisco AppNav 10 GE Bundle (WAVE-APNV-10GE) is required. <sup>\*6</sup> Cisco AppNav GE or SFP Module is required. <sup>\*7</sup> Performance indicators based on Cisco WAAS software release 5.1. <sup>\*8</sup> The maximum number of managed devices is reduced by 20 % in an environment containing routers equipped with Cisco WAAS Express. <sup>\*9</sup> Incorporated on WAVE-294-K9 by default.

Cisco Meraki

100% Cloud Managed Networking

The Cisco Meraki portfolio of networking devices are centrally managed from the cloud. This feature-rich, easy-to-use cloud architecture enables customers to solve new business problems and reduce operating costs.

- Manage entire network from a single dashboard
- Control users, applications, and devices
- No controller hardware or management software to install and maintain
- Secure (PCI and HIPAA-compliant) cloud infrastructure
- Scales from small sites to million-user deployments



Cisco Meraki Cloud Managed Products



Cloud Managed Wireless

- Indoor and outdoor access point models
- IEEE 802.11ac and 802.11n with ultra-high performance, up to 1.75 Gbps
- Integrated wireless security and guest access
- Third radio dedicated to security and RF optimization (indoor models)
- Ideal for high-density campuses, branches, teleworkers, and rugged/outdoor environments
- Built-in traffic shaping, location analytics, group policies—all configurable with just a few mouse clicks

Cloud Managed Switches

- GE access switches and 10 GE aggregation switches
- Centrally managed with monitoring and alerts
- Ultra reliable and includes lifetime warranty
- Optimized for voice and video traffic with PoE available on all ports

Cloud Managed Security Appliances

- Complete networking, security, and application control
- Centrally managed from the cloud
- Includes firewall, auto VPN, WAN optimization, and branch routing
- Six models scale from small branches to campuses

Mobility Management

- Network-wide visibility and control
- No on-site controller hardware
- Automatic monitoring and alerts
- Seamless over-the-web upgrades

For details on Cisco Meraki, visit the following Web site:  
<http://www.cisco.com/go/meraki>

Mobility Management Promotion

Meraki Systems Manager provides cloud-based over-the-air centralized management, diagnostics, monitoring, and security of the mobile devices managed by your organization. Manage distributed deployments of all of your devices with Systems Manager – without an on-site appliance. Managed devices connect securely to

Meraki's cloud, enabling you to locate devices, deploy software and apps, deliver content, enforce security policies, and monitor all your devices through an intuitive and powerful web-based dashboard.

**SM** Receive up to 100 devices of Meraki EMM for free with any Cisco purchase  
 No license required until network reaches 100+ devices, then licenses are required per device



Cloud Managed Wireless

Cisco Meraki MR Cloud Managed Wireless Access Points

Model	Indoor Access Points				Outdoor Access Points	
	MR18	MR26	MR32	MR34	MR66	MR72
Radios Specification	1 x 11b/g/n radio 1 x 11a/n radio	1 x 11b/g/n radio 1 x 11a/n radio	1 x 11b/g/n radio 1 x 11a/n/ac radio 1 x Bluetooth Low Energy radio	1 x 11b/g/n radio 1 x 11a/n/ac radio	1 x 11b/g/n radio 1 x 11a/n radio	1 x 11b/g/n radio 1 x 11a/n/ac radio 1 x Bluetooth Low Energy radio
11n and 11ac Capabilities	2 x 2 MIMO 2 streams	3 x 3 MIMO 3 streams	2 x 2 MIMO 2 streams	3 x 3 MIMO 3 streams	2 x 2 MIMO 2 streams	2 x 2 MIMO 2 streams
Max Data Rate	600 Mbps	900 Mbps	1.2 Gbps	1.75 Gbps	600 Mbps	1.2 Gbps
Interface	1 x GE	1 x GE	1 x GE	1 x GE	1 x GE	1 x GE

Cloud Managed Switches

Cisco Meraki MS Cloud Managed Switches

Model	Layer 2 Access Switches			Layer 3 Access Switches		Aggregation Switches	
	MS220-8 MS220-8P	MS220-24 MS220-24P	MS220-48 MS220-48LP MS220-48FP	MS320-24 MS320-24P	MS320-48 MS320-48LP MS320-48FP	MS420-24	MS420-48
Downlinks	8 x GE	24 x GE	48 x GE	24 x GE	48 x GE	24 x SFP/SFP+	48 x SFP/SFP+
Uplinks	2 x SFP	4 x SFP	4 x SFP	4 x SFP/SFP+	4 x SFP/SFP+	-	-
PoE/PoE+ Power Budget	124 W (-8P)	370 W (-24P)	370 W (-48LP) 740 W (-48FP)	370 W (-24P)	370 W (-48LP) 740 W (-48FP)	-	-
Switching Capacity	20 Gbps	48 Gbps	104 Gbps	128 Gbps	176 Gbps	960 Gbps	960 Gbps

Cloud Managed Security Appliances

Cisco Meraki MX Cloud Managed Security Appliance Series

Model	Small Branch		Medium Branch		Large Branch, Campus / Concentrator	
	MX64	MX64W	MX80	MX100	MX400	MX600
Recommended Max Users	50	50	100	500	2,000	10,000
Stateful Firewall Throughput	200 Mbps	200 Mbps	250 Mbps	750 Mbps	1 Gbps	1 Gbps
Advanced Security Throughput	80 Mbps	80 Mbps	80 Mbps	600 Mbps	1 Gbps	1 Gbps
Maximum VPN sessions	25	25	50	250	1,000	5,000
Interfaces	5 x GE	5 x GE	5 x GE	9 x GE 2 x SFP	4 x GE	4 x GE
Wireless	-	1 x 11b/g/n radio 1 x 11a/n radio 2 x 2 MIMO 2 streams 1.2 Gbps	-	-	-	-

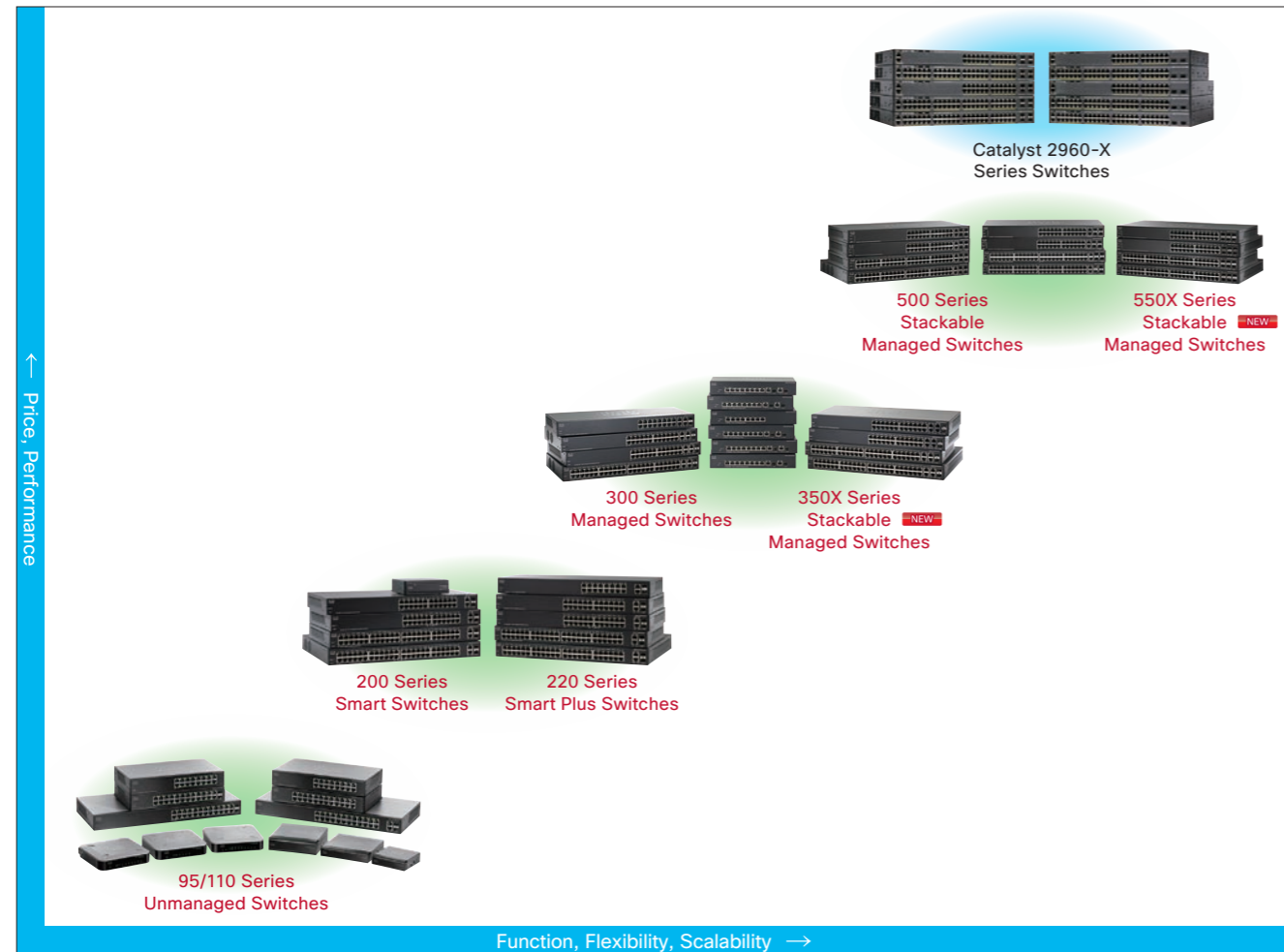
Cisco Small Business Switches

Cisco Small Business Switches provide nonblocking, wire-speed switching for 10-, 100-, and 1000-Mbps network clients. These switches can be used to replace the current workgroup hub or switch and to deliver full 1- and 10-Gbps speeds to high-requirement workstations as necessary while continuing to serve other clients at their current speeds.

The switches can also be used to create a local area network within the business, with appropriate link speeds for each user's requirements. Either way, they're perfect for graphics, videos, and other applications that have to move large files across the network quickly.

- 95/110 Series Unmanaged Switches
200 Series Smart Switches
220 Series Smart Plus Switches
300 Series Managed Switches
350X Series Stackable Managed Switches
500 Series Stackable Managed Switches
550X Series Stackable Managed Switches

Positioning Map



Cisco Small Business 95 Series Unmanaged Switches

Table with columns: New Model Name, Existing Model Name, Orderable SKU, Ports (FE, GE, SFP, GE/SFP, 10 GB-T, SFP+), PoE (Power Budget, IEEE 802.3), PoE Input Ports, AC Power, Fan less, Stack able, Rack Mount.

Cisco Small Business 110 Series Unmanaged Switches

Table with columns: New Model Name, Existing Model Name, Orderable SKU, Ports (FE, GE, SFP, GE/SFP, 10 GB-T, SFP+, 10GB-T/SFP+), PoE (Power Budget, IEEE 802.3), PoE Input Ports, AC Power, Fan less, Stack able, Rack Mount.

Cisco Small Business 200 Series Smart Switches/Cisco Small Business 220 Series Smart Plus Switches

Table with columns: New Model Name, Existing Model Name, Orderable SKU, Ports (FE, GE, SFP, GE/SFP, 10 GB-T, SFP+, 10GB-T/SFP+), PoE (Power Budget, IEEE 802.3), PoE Input Ports, AC Power, Fan less, Stack able, Rack Mount.

Cisco Small Business 300 Series Managed Switches/Cisco Small Business 350X Series Stackable Managed Switches

Table with columns: New Model Name, Existing Model Name, Orderable SKU, Ports (FE, GE, SFP, GE/SFP, 10 GB-T, SFP+, 10GB-T/SFP+), PoE (Power Budget, IEEE 802.3), PoE Input Ports, AC Power, Fan less, Stack able, Rack Mount.



# Cisco Low-end Product Series Comparison

## Switches

Price, Performance ↑

### Catalyst 2960-X Series Switches

- 24- & 48-port GE, 24- & 48-port GE with 10 GE models and PoE options
- Enable scalable, secure and energy-efficient business operations with intelligent services and a range of advanced **Cisco IOS** software features
- Cisco FlexStack Plus** for stacking of up to 8 switches with 80 Gbps of stack throughput (optional)



### 500/550X Series Stackable Managed Switches

- 24- & 48-port FE, 28- & 52-port GE, 24- & 48-port GE with 10 GE, 16- to 48-port 10 GE models and PoE+ options
- Advanced QoS, security, EEE, IPv6 support, and L3 switching
- True **stacking** of up to 8 switches
- Recommended models: SF500-24, SG500-28, SG500-28P



### 300/350X Series Managed/Stackable Managed Switches

- 8- to 48-port FE, 10- to 52-port GE, 12- to 48-port 10 GE models and PoE+ options
- Enhanced QoS, security, EEE, IPv6 support, and L3 switching
- True **stacking** of up to 4 switches
- Recommended models: SG300-10, SG300-10MPP, SG300-28



### 200/220 Series Smart/Smart Plus Switches

- 24- & 48-port FE and 8- to 50-port GE models with PoE+ options
- Basic QoS, security, EEE and IPv6 support
- Recommended models: SF200-24, SG200-08, SG200-26



### 95/110 Series Unmanaged Switches

- 5- to 24-port FE and GE models with PoE+ options
- No configuration or management required
- QoS and Energy Efficient Ethernet (EEE) on all models and energy-efficient design on GE models
- Recommended models: SF95-24, SG95D-08, SG95-24



Function, Flexibility, Scalability →

## Wireless Access Points

Price, Performance ↑

### Aironet Access Points

- IEEE 802.11 a/b/g/n/ac (Aironet 1700/2700/3700)
- 2.4 and 5 GHz
- The **fourth** antenna provides exceptional performance compared to other IEEE 802.11ac solutions (Aironet 2700/3700)
- Available in highly secure, enterprise-scale **Controller-based** mode, or **Standalone** mode



### 500 Series Wireless Access Points

- IEEE 802.11 a/b/g/n
- 2.4 or 5 GHz (WAP551), 2.4 and 5 GHz (WAP561)
- Up to 450 Mbps with 3 x 3 MIMO
- Manage up to 16 APs in a cluster



### 300 Series Wireless Access Points

- IEEE 802.11 a/b/g/n (WAP321/WAP351), IEEE 802.11 a/b/g/n/ac (WAP371)
- 2.4 or 5 GHz (WAP321), 2.4 and 5 GHz (WAP351/WAP371)
- Up to 300 Mbps with 2 x 3 MIMO (WAP321/WAP351\*), Up to **1.3 Gbps** with 3 x 3 MIMO (WAP371\*)
- Manage up to 8 APs in a cluster



### 100 Series Wireless Access Points

- IEEE 802.11 b/g/n
- 2.4 GHz (WAP121), 2.4 and 5 GHz (WAP131)
- Up to 300 Mbps with 2 x 2 MIMO
- Manage up to 4 APs in a cluster



Function, Flexibility, Scalability →

\*1 2 x 2 MIMO (2.4 GHz) and 2 x 3 MIMO (5 GHz).

## Routers

### Low End Routers Specification Comparison

	RV110W/215W	RV130/130W	RV320/325	Cisco 860VAE	Cisco 810	Cisco 880	Cisco 840M	Cisco 890
Multiple Active WAN Interfaces	1 FE + 4G Dongle	1 GE + 4G Dongle	2 GE + 4G Dongle	-	GE + 4G	FE/xDSL + 4G	GE/GE	GE/SFP + GE + xDSL + 4G
FE/GE WAN	1 FE	1 GE	2 GE	1 GE	1 GE	1 FE	2 GE	1 FE (891F), 1 GE (892FSP)
GE SFP	-	-	-	-	-	-	-	1
Switch Ports	4	4	4/14	5 (4 + 1)	4	4	4 or 8	8 or 24
POE	-	-	-	1	-	2	-	4 or 8
VDSL2/ADSL2	-	-	-	Yes	-	886VA, 887VA	-	896VA, 897VA
G.SHDSL (ATM/EFM)	-	-	-	-	-	888	-	898EA
WWAN	4G Dongle (RV215W)	4G Dongle (RV130W)	4G Dongle	-	HSPA, EVDO, HSPA+, 4G LTE	HSPA, EVDO, HSPA+, 4G LTE	EVDO, HSPA	4G LTE
IEEE 802.11n	2.4 GHz	2.4 GHz (RV130W)	-	2.4 GHz	2.4 GHz/5 GHz	2.4 GHz/5 GHz	-	2.4 GHz/5 GHz
WLAN Deployment Modes	Standalone	Standalone	Standalone	Standalone	Standalone, Controller-based	Standalone, Controller-based	-	Standalone, Controller-based
Serial	-	-	-	-	-	-	Optional	-
T1, ISDN, V.92	-	-	-	-	-	ISDN	-	ISDN & V.92
Compute	-	-	-	-	-	IOx	IOx	IOx
Voice Interfaces	-	-	-	-	-	Select Models	-	-
Warranty	LLW	LLW	LLW	1 Year	1 Year	1 Year	1 Year	1 Year
Typical Lifecycle	3 Years	3 Years	3 Years	5 Years	5 Years	5 Years	5 Years	5 Years
OS	Linux	Linux	Linux	IOS	IOS	IOS	IOS	IOS
Routing Features	Static, RIP	Static, RIP	Static, RIP	Static, RIP, BGP	Static, RIP, BGP, OSPF, EIGRP	Static, RIP, BGP, OSPF, EIGRP	Static, RIP, BGP, OSPF, EIGRP	Static, RIP, BGP, OSPF, EIGRP
PPPoX	PPPoE	PPPoE	PPPoE	●	●	●	●	●
Firewall	Layer 4 FW	Layer 4 FW	Layer 4 FW	Layer 4 FW	Layer 4 FW	Layer 4 FW	Layer 4 FW	Layer 4 FW
VPN	Site to Site (IPsec), Remote Access (PPTP)	Site to Site (IPsec), Remote Access (IPsec, PPTP)	Site to Site (IPsec), Remote Access (IPsec, SSL, PPTP)	Site to Site (IPsec), Remote Access (Easy VPN, Flex VPN)	Site to Site (IPsec), Remote Access, Any to Any (IPsec VPN, DMVPN, GETVPN, Flex VPN, SSL)	Site to Site (IPsec), Remote Access, Any to Any (IPsec VPN, DMVPN, GETVPN, Flex VPN, SSL)	Site to Site (IPsec), Remote Access, Any to Any (IPsec VPN, DMVPN, GETVPN, Flex VPN, SSL)	Site to Site (IPsec), Remote Access, Any to Any (IPsec VPN, DMVPN, GETVPN, Flex VPN, SSL)
Content Filtering	-	●*1	●*1	CWS	CWS	CWS	CWS	CWS
NAT/PAT	●	●	●	●	●	●	●	●
QoS	Priority queuing (5-tuple)	Priority queuing (5-tuple)	Rate limiting or Priority queuing (5-tuple)	QoS	HQoS	HQoS	HQoS	HQoS
AVC	-	-	-	-	●	●	●	●
CLI	-	-	●	IOS	IOS	IOS	IOS	IOS
IPSLA	-	-	-	●	●	●	●	●
EEM	-	-	-	●	●	●	●	●

\*1 To be supported in future software release.

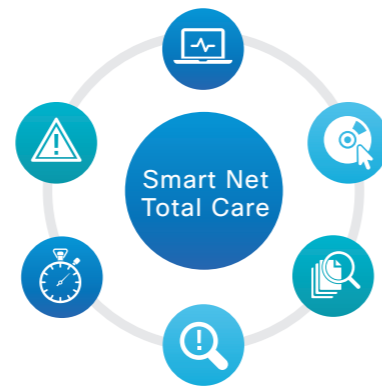
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## Cisco Smart Net Total Care Service

Your IT infrastructure is the lifeline that connects your business to customers and suppliers. Business success requires maintaining high service levels for your network while reducing costs and expanding your network as your business grows. **Cisco Smart Net Total Care** can help you meet these objectives by providing technical services and smart capabilities that:

- Resolve problems faster**  
 Identify issues quickly and streamline your incident management processes to reduce network downtime and improve IT service levels.
- Reduce risk**  
 Access to Cisco technical experts combined with smart, proactive tools and capabilities minimizes risks to business continuity.
- Increase operational efficiency**  
 Proactive management and automated processes mean fewer support resource requirements and lower costs for managing your network.



### Resolve Problems Faster



24 x 7 x 365 TAC assistance on product use, configuration, and troubleshooting



Get replacement hardware in as little as two hours



Automated diagnostic and support capabilities speed time-to-resolution

### Improve Risk Management



Visibility into covered and uncovered devices - comply with corporate policies



Identify IT that is nearing end-of-life - simplify upgrades, planning and budgeting



Ensure that Cisco products are running current, supported software

### Increase Operational Efficiency



Reduce the time and staff required for contract management and renewal



Improve planning with inventory and support contracts visibility



Pinpoint and manage product and security alerts - only those relevant to your network

## Cisco Smart Assist Service

**Cisco Smart Assist Service** is a related service to extend the value of **Cisco Smart Net Total Care**.

This service can help you accelerate the time to enable and use smart capabilities. It provides assistance for installing the Cisco collector and accessing the Smart Net Total Care portal. It also offers onboarding and enablement services such as smart capability training, support for product inventory collection, installed base (IB) reconciliation (twice per year), and Cisco TAC support for the portal and collections.

Feature / Functionality	Smart Net Total Care (SNTC)	Smart Assist
Smart Capabilities Entitlement	●	Through SNTC
Onboarding	Customer Self-Service	Cisco Assisted
Installation Assistance	Customer Self-Service	Cisco Assisted
Onboarding Smart Capabilities Training	Customer Self-Service	Cisco Assisted
IB Reconciliation	Customer Self-Service	Twice per year
Technical Support for Portal & Collections	Community Support	TAC

**Cisco Smart Net Total Care** helps reduce downtime with fast, expert technical support and flexible hardware coverage provided by the **Cisco Technical Assistance Center (TAC)**. Its integrated smart capabilities provide current information about the customer's installed base, contracts, and security alerts to enhance the efficiency of support workflows.

## Technical Service and Incident Management

- Cisco TAC**  
 The Cisco TAC is staffed by Cisco professionals certified in a broad range of Cisco products and technologies and service provider architectures. We provide you with access by phone, fax, or email 24 hours a day, 365 days a year and can assist you with product use, configuration, and troubleshooting issues.
- Advance hardware replacement**  
 With our customized hardware support service plans, you can have confidence knowing that your hardware can support your ongoing business needs. Cisco offers multiple service levels with different shipment options.

### Advance Hardware Replacement Service Levels

Service Level	Description
Smart Net Total Care 24 x 7 x 2	2-hour response, 24 hours a day, 7 days per week, including holidays
Smart Net Total Care 24 x 7 x 4	4-hour response, 24 hours a day, 7 days a week, including holidays
Smart Net Total Care 8 x 5 x 4	4-hour response, local business hours based on depot time, 5 days a week
Smart Net Total Care 8 x 5 x Next Business Day	Next-business-day delivery, local business hours based on depot time, 5 days a week

- Onsite support**  
 Cisco is committed to providing professional, customer-focused support services in person at your location. Smart Net Total Care Onsite service includes installation of advance replacement parts.

### Onsite Support Service Levels

Service Level	Description
Smart Net Total Care Onsite 24 x 7 x 2	2-hour response, 24 hours a day, 7 days per week, including holidays
Smart Net Total Care Onsite 24 x 7 x 4	4-hour response, 24 hours a day, 7 days a week, including holidays
Smart Net Total Care Onsite 8 x 5 x 4	Based on depot time. 4-hour response, 9 a.m. to 5 p.m., if the request is received before 1 p.m., the service (including parts, labor, and materials) will be provided the same day. For requests received after 1 p.m., the service will be provided the following business day.
Smart Net Total Care Onsite 8 x 5 x NextBusiness Day	Based on depot time. Next business day, 9 a.m. to 5 p.m., if the request is received before 3 p.m., the service (including parts, labor, and materials) will be provided the next business day. After 3 p.m., the service (including parts, labor, and materials) will be provided the following business day.

- Software updates**  
 Cisco provides OS software updates for your licensed feature set. Software releases and any supporting documentation are available through Cisco.com Software Central at <http://software.cisco.com/swcentral/home.html>.
- Online self-help support**  
 Cisco provides access to the Cisco Support website, which includes Cisco's extensive knowledge library, software downloads, and support tools designed to help users resolve network issues quickly without opening a case.

## Security and Product Alerts

- Hardware alerts**  
 Hardware alerts inform you about devices that have reached or are approaching end of life in your network.
- Software alerts**  
 Software alerts inform you about end-of-life issues with specific software versions you are using.
- Security alerts**  
 Security alerts are Product Security Incident Response Team (PSIRT) alerts that inform you about security vulnerabilities associated with specific devices in your network.
- Field notices**  
 Field notices inform you about significant issues (other than security vulnerability issues) with a hardware device or software version.

## Service Coverage Management

- Service coverage reports**  
 Device data from installed base collections can be matched against service contracts and purchase orders to identify coverage gaps. View all service contracts and coverage levels, including 24-month advance visibility into upcoming renewal dates. Reviewing coverage information can help ensure that devices in your network have the right kind of coverage for their intended use.
- Service coverage and renewal management workflow**  
 This feature gives you the ability to document and annotate those devices that do not require service coverage and why. You can also assign tasks to people responsible for architectural or budget planning to ask for recommendations about renewing coverage versus replacing specific devices before their service contracts expire.

## Product Lifecycle Management

- Role-based access control (RBAC)**  
 The Smart Net Total Care portal gives you control over the types of data that users can see. User views within the portal are based on the user's role, allowing administrators to assign roles and designate network device data visibility for portal users, including partners. For example, a certain group of network administrators may be given access to data for a specific segment of the network, and other groups of users may be restricted to specific types of information such as device configuration data or security alerts.
- Device data file uploads**  
 In addition to data uploads from the Cisco collector, data can be uploaded using manual file uploads (such as from a spreadsheet) or third-party collection mechanisms. After data is uploaded into the portal, it can be analyzed and enriched with Cisco support information.