



Cisco Catalyst Update

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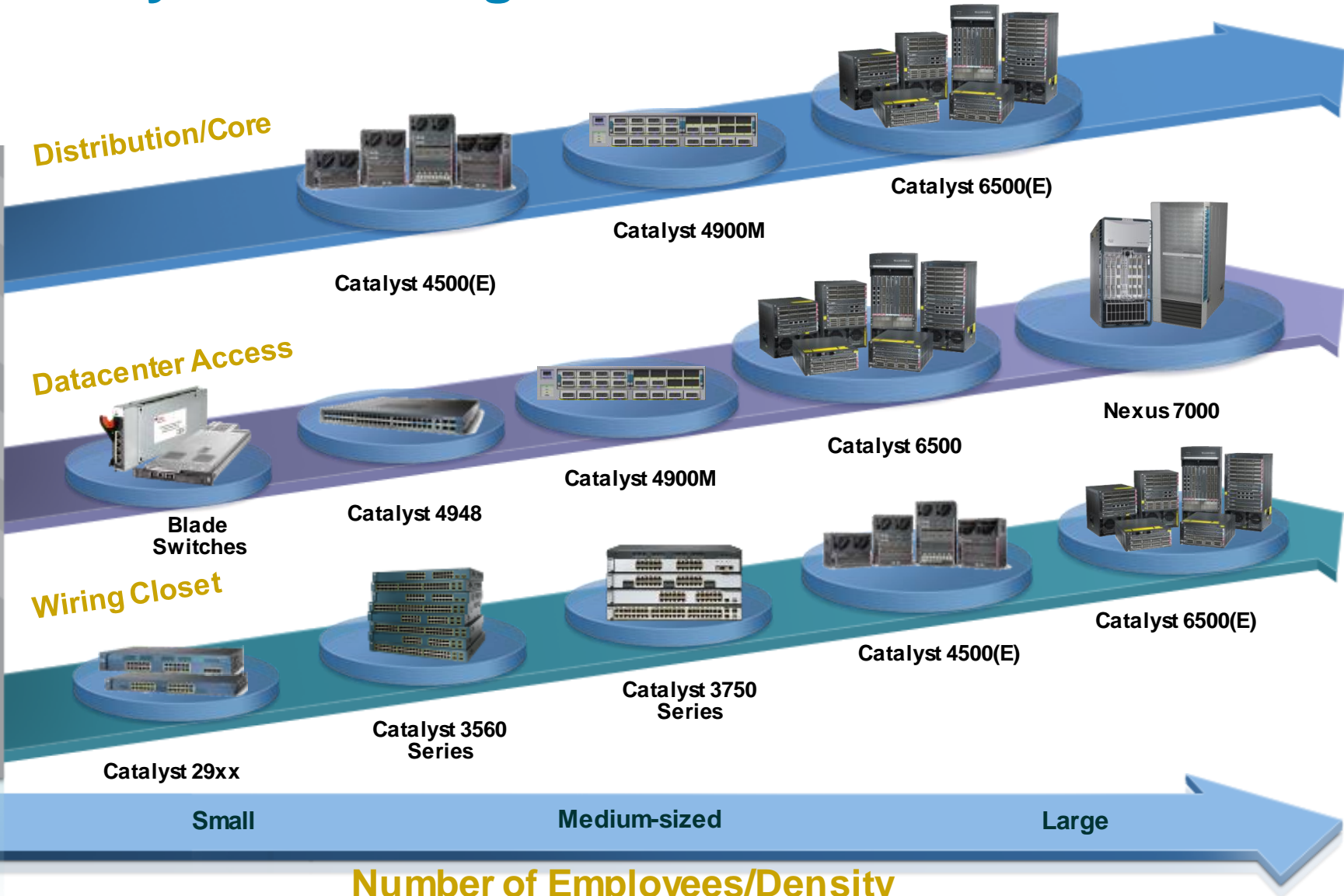


Agenda

- Catalyst 6500 – SUP 2T
- Catalyst 4500 – SUP 7E
- Catalyst 3560-X/3750-X
- Catalyst 2960S

Catalyst Switching Portfolio

Features, Scalability, Longevity



Next Generation Catalyst 4500E System



Supervisor7-E

848Gbps Switching Capacity
48G/slot

Rich hardware features
(FnF, TrustSec, Wireless, ERSPAN,
Tunneling, VRF-NG, VSS and more...)



WS-X4748-RJ45V+E

48p 10/100/1000 non-blocking
30W/port (PoE+) on all 48 ports
Cisco TrustSec in Hardware



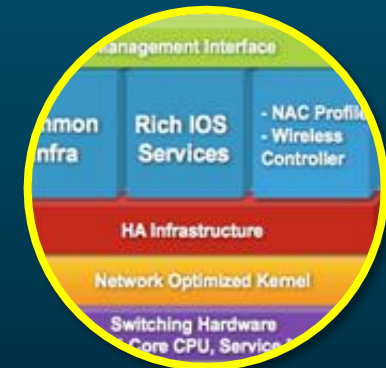
Catalyst 4500E and 4500E+ Chassis

Forward and backward compatible
48G/slot
Lifecycle till year 2020



WS-X4712-SFP+E

12 PORT 10GE 2.5:1 Line Card
Cisco Trustsec in
HardwareSFP+ SR modules
(Lower power mode)



Cisco IOS XE

Modern OS to support multi-core CPU
IOS investment protection
Enabling Open Service Platform

Catalyst 4500 Supervisor 7-E



Hardware Elements

DRAM

Dual Core CPU

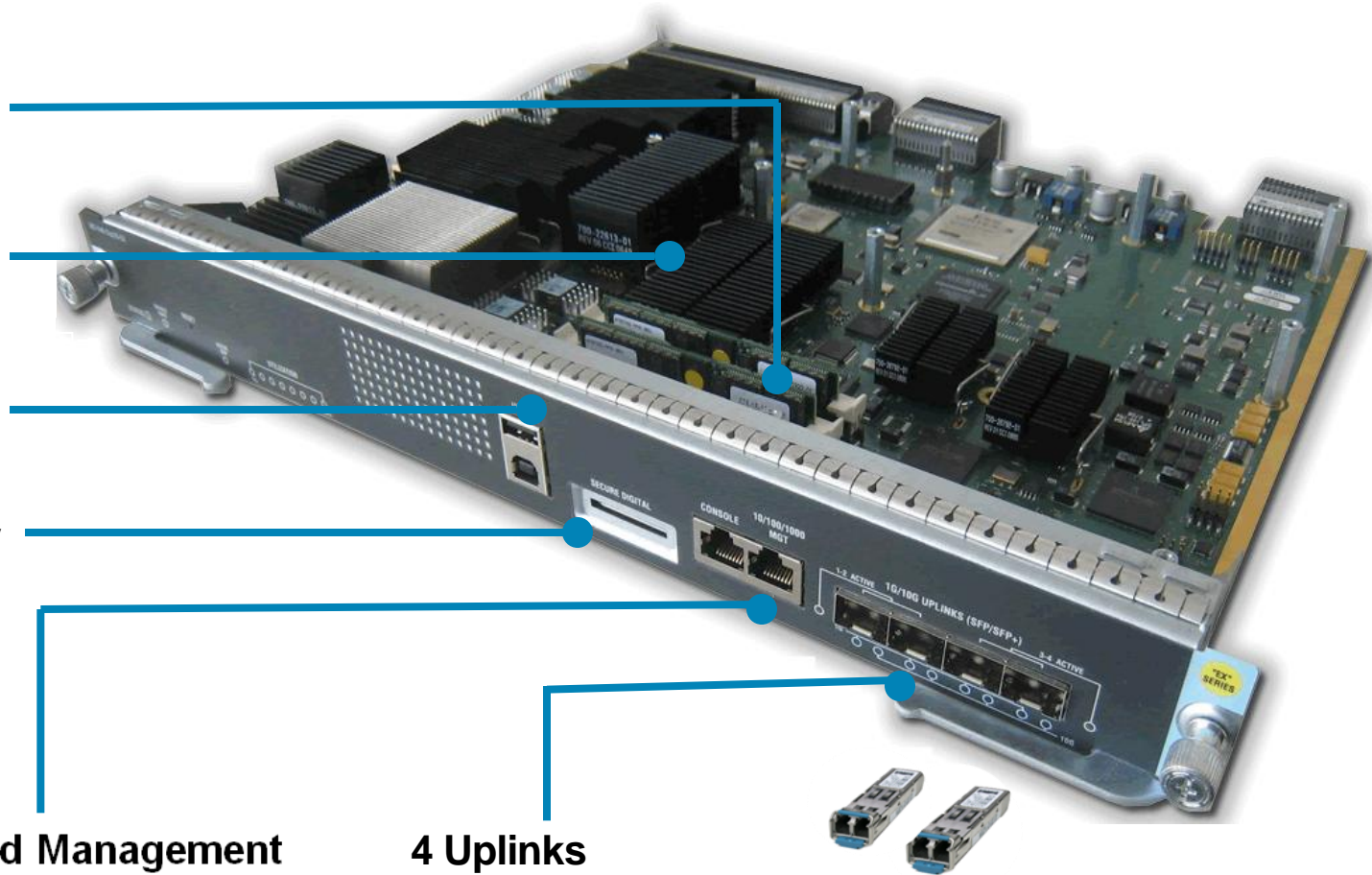
USB ports*
Type A
Type B

SD Memory Card

Console and Management Port

4 Uplinks
10GE with SFP+
1GE with SFP

**USB Type A is supported
USB Type B is not supported*



Supervisor 7-E

Performance & Scalability



Feature	Supervisor 7-E	Supervisor 6-E	Supervisor 6L-E
Switching Capacity	848Gbps	320 Gbps	280 Gbps
Throughput	250 Mpps (125 Mpps for IPv6)	250 Mpps (125 Mpps for IPv6)	225 Mpps (125 Mpps for IPv6)
Bandwidth / Slot	Upto 48G	Upto 24G	Upto 24G
CPU	Dual Core 1.5 GHz	Single Core 1.3 GHz	Single Core 1 GHz
SSO failover time	0-50 msec	0-50 msec	0-50 msec
Number of Packet buffers	128000	64000	64000
DRAM	2G (Upgradable to 4G)	512 MB (Upgradable to 1G)	512 MB
Bootflash	1G	128 MB	128 MB
Number of 10/100/1000 ports	Upto 384 access Upto 4 GE uplinks	Upto 384 access Upto 4 GE uplinks	Upto 240 access Upto 4 GE uplinks
Number of 10GE ports	Upto 96 on Line cards Upto 4 on Supervisors	Upto 30 on Line cards Upto 4 on Supervisors	Upto 30 on Line cards Upto 2 on Supervisors

Cisco Catalyst 4500E Series

Innovative Borderless Services Platform



Unprecedented app visibility with **Flexible NetFlow IP SLA**

WCCPv2



Secure conference rooms, role-based policy & HW encryption* with **Cisco TrustSec**

Virtualization with **VRF-Lite, VRF-NG***



Energy saving with **EnergyWise**

Power Efficiency with **Idle slot optimization, PoE policing, EEE***



Plug & Play video device rollout with **PoEP, ASP**

Optimized media delivery

Simplified M&T with **Video IPSLA, monitoring***



Unified wired & Wireless Locations

Converged Management and Policy with Lumos and Positron

Application Performance

Security

Green

Medianet

Mobility



When the **Network KNOWS**

You Create a Platform for **YOUR BUSINESS**

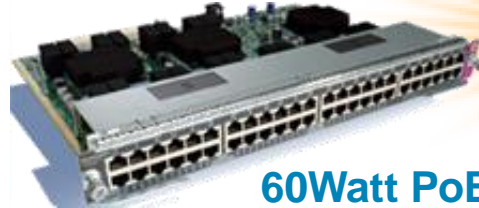
* roadmap

Beyond PoEP – PoEP NG



1HCY2011

60Watt PoEP NG, EEE
Line Card



Compact Switches



Physical Access



Media Player



Thin Client

- Maximum power sourced with PoE+NG = 60W
- Does not violate any safety specifications from cabling standards
- As simple as two independent PoE+ connections
- Maximum power available for end devices after line losses = 51W
- Enables applications that require greater than 25.5W while
 - Providing all benefits of PoE

Catalyst 3750-X and 3560-X

What's New



- Next Generation Gigabit Ethernet 24 and 48 port, Data and PoE+ Switches
- StackPower – Power aggregation
- Network Modules – Field replaceable uplink
- Dual redundant power supplies and fans
- Full 802.3at PoE+ Support
- MACsec – Hardware encryption
- Three IOS feature sets
- Full Energy-Wise support

Catalyst 3750 Models comparison

	3750-X	3750-E	3750G
StackPower	Yes	No	No
FRU Network Module	Yes	No	No
FRU Power Supplies	Yes, Dual PS	Yes	No
Encryption	Yes (Downlink)	No	No
PoE+ 30W/port	Yes	No	No
IOS LAN Base Option	Yes	No	No
Management Options	Console RJ45, USB console , and Out of band Ethernet	Console RJ45 and Out of Band Ethernet	Console RJ45
RPS/ XPS	XPS	RPS	RPS
EnergyWise	Report Actual Power use PoE & System	Report Actual Power use PoE	Report Budgeted Power

Catalyst 3750-X & 3560-X

Model comparison



IOS	Model	Stackable	StackPower	Full PoE	PoE+	Description
LAN Base	WS-C3750X-24T-L	Yes	Available with upgrade to IP Base	-	-	24-port 10/100/1000, 350W AC, LAN Base
	WS-C3750X-48T-L	Yes		-	-	48-port 10/100/1000, 350W AC, LAN Base
	WS-C3750X-24P-L	Yes		Yes	Yes	24-port PoE+ 10/100/1000, 715W AC, LAN Base
	WS-C3750X-48P-L	Yes		-	Yes	48-port PoE+ 10/100/1000, 715W AC, LAN Base
	WS-C3750X-48PF-L	Yes		Yes	Yes	48-port PoE+ 10/100/1000, 1100W AC, LAN Base
IP Base	WS-C3750X-24T-S	Yes	Yes	-	-	24-port 10/100/1000, 350W AC, IP Base
	WS-C3750X-48T-S	Yes	Yes	-	-	48-port 10/100/1000, 350W AC, IP Base
	WS-C3750X-24P-S	Yes	Yes	Yes	Yes	24-port PoE+ 10/100/1000, 715W AC, IP Base
	WS-C3750X-48P-S	Yes	Yes	-	Yes	48-port PoE+ 10/100/1000, 715W AC, IP Base
	WS-C3750X-48PF-S	Yes	Yes	Yes	Yes	48-port PoE+ 10/100/1000, 1100W AC, IP Base
LAN Base	WS-C3560X-24T-L	-	-	-	-	24-port 10/100/1000, 350W AC, LAN Base
	WS-C3560X-48T-L	-	-	-	-	48-port 10/100/1000, 350W AC, LAN Base
	WS-C3560X-24P-L	-	-	Yes	Yes	24-port PoE+ 10/100/1000, 715W AC, LAN Base
	WS-C3560X-48P-L	-	-	-	Yes	48-port PoE+ 10/100/1000, 715W AC, LAN Base
	WS-C3560X-48PF-L	-	-	Yes	Yes	48-port PoE+ 10/100/1000, 1100W AC, LAN Base
IP Base	WS-C3560X-24T-S	-	-	-	-	24-port 10/100/1000, 350W AC, IP Base
	WS-C3560X-48T-S	-	-	-	-	48-port 10/100/1000, 350W AC, IP Base
	WS-C3560X-24P-S	-	-	Yes	Yes	24-port PoE+ 10/100/1000, 715W AC, IP Base
	WS-C3560X-48P-S	-	-	-	Yes	48-port PoE+ 10/100/1000, 715W AC, IP Base
	WS-C3560X-48PF-S	-	-	Yes	Yes	48-port PoE+ 10/100/1000, 1100W AC, IP Base
IP Base Models can be upgraded to IP services feature set at the time of order						

Optional 10G / 1G Network Modules

Optional Network Module

Main features



- FRU Network module supports OIR
- Provides flexibility with two options at FCS:
 - Four 1G ports (SFP)
 - Two 10Gig port (SFP+) or Four 1G ports (SFP)
- Port numbering changed
 - Interface Gig 1/1/1 – 1/1/4
 - Interface TenGig 1/1/1 – 1/1/2



Network Modules for the Catalyst 3750-X and 3560-X Series	
C3KX-NM-1G=	1G network module spare
C3KX-NM-10G=	10G network module spare
C3KX-NM-BLANK=	Network module blank spare

MACsec (Crypto)

Main features



- Standards based encryption (802.1AE) on all user ports
- Line rate performance
- Standards based key exchange protocol, MKA, included in 802.1X-Rev
- Tested with current Intel NIC cards
- Some newer Intel's LOM chip set supports MACsec

Industry
Leadership

StackPower

Main features

Industry
Leadership



- Innovative technology, aggregates and shares available input power capacity in a Stack
- Flexible arrangement of power supplies in a stack
 - Up to 8.8Kw power in a stack
- Supports a “zero-footprint” RPS deployment
- Intelligent power shedding
- Stackpower decouples a PS from its physical location in the stack!
- Up to 4 switches can be part of Stackpower
 - Independent from Stackwise (Stackwise Plus)
- No need for RPS though an XPS is available!

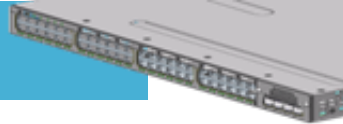


LAN Base vs. IP Base and IP Services Highlights



New

Cisco® Catalyst® 3560-X and Catalyst 3750-X



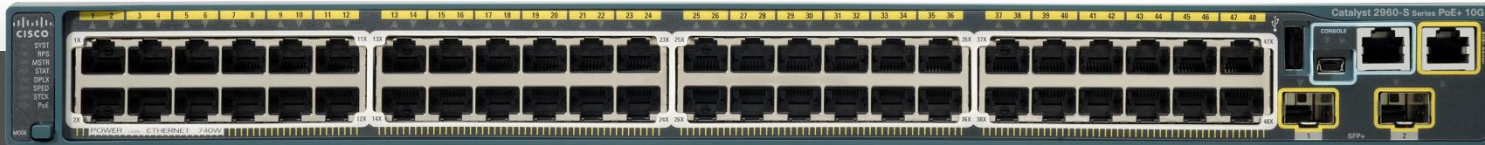
Cisco Catalyst 3560 and Catalyst 3750, Including E and X Series



Functions	LAN Base	IP Base	IP Services
Layer 2+	<ul style="list-style-type: none"> • Enterprise access Layer 2 Wide range of Layer 2 access features for enterprise deployments 	<ul style="list-style-type: none"> • Complete Access Layer 2 Supports all Cisco Catalyst 2000 and Catalyst 3000 Layer 2 features, including hot standby protocols; supports Cisco StackPower™ technology (Cisco Catalyst 3750-X) 	
Layer 3	<ul style="list-style-type: none"> • No routing support Support for SVI with no IP routing support 	<ul style="list-style-type: none"> • Enterprise access Layer 3 RIP, static and stub PIM, and EIGRP 	<ul style="list-style-type: none"> • Complete access Layer 3 OSPF, EIGRP, BGP, IS-IS VRF-lite, WCCP, and PBR
Manageability	<ul style="list-style-type: none"> • Basic manageability Support for a wide range of MIBs, IPSLA Responder, and RSPAN 	<ul style="list-style-type: none"> • Enterprise access Layer 3 Gold-Lite and Smart Install Director 	<ul style="list-style-type: none"> • Complete access Layer 3 EEM and IPSLA Initiator
Security	<ul style="list-style-type: none"> • Enterprise access security DHCP Snooping, IPSG, DAI, ACLs, Cisco Identity 4.0, NAC and 802.1x features 	<ul style="list-style-type: none"> • Complete access security Router and VLAN ACLs, private VLANs, complete identity and security, TrustSec SXP, and IEEE 802.1AE (Cisco Catalyst 3560-X and Catalyst 3750-X) 	
QoS	<ul style="list-style-type: none"> • Enterprise access QoS Ingress policing, Trust Boundary, AutoQoS, and DSCP mapping 	<ul style="list-style-type: none"> • Complete access QoS Support for all Cisco Catalyst 2000 and Catalyst 3000 QoS features, including per-VLAN policies 	

Note: IP Services feature set includes all IP Base features. IP Base feature set includes all LAN Base features.

Introducing Catalyst 2960-S



- 24/48 10/100/1000 ports with fixed uplinks
- Fixed Uplink Options: 4x1G or 2x10G SFP+
- FlexStack Technology
 - Brings stackable ease-of-use features to the 2960 family, features 20G stacking links
- Power over Ethernet
 - Full standards-based PoE on every port
 - PoE+ support for next-generation high-power devices
- Sustainability - GREEN
 - Very low power for Gigabit Ethernet Switch
 - New EnergyWise functionality to control PHY power
 - Half the power of Catalyst 2960G
- E-LLW, NBD and 90 day TAC support
- LAN Lite and LAN Base Software Options
- LAN Lite option provides entry-level Gig-E platform

Catalyst 2960-S Model comparison

Model	Cisco FlexStack Stacking	10G SFP+ Ports	1G SFP Ports	10/100/1000 Ports	Full PoE (15.4W) ports	PoE Budget
10G Uplink Ports						
<u>WS-C2960S-48FPD-L</u>	√	2		48	48	740W (PoE+)
<u>WS-C2960S-48LPD-L</u>	√	2		48	24	370W (PoE+)
<u>WS-C2960S-48TD-L</u>	√	2		48		
<u>WS-C2960S-24PD-L</u>	√	2		24	24	370W (PoE+)
<u>WS-C2960S-24TD-L</u>	√	2		24		
1G Uplink Ports						
<u>WS-C2960S-48FPS-L</u>	√		4	48	48	740W (PoE+)
<u>WS-C2960S-48LPS-L</u>	√		4	48	24	370W (PoE+)
<u>WS-C2960S-48TS-L</u>	√		4	48		
<u>WS-C2960S-24PS-L</u>	√		4	24	24	370W (PoE+)
<u>WS-C2960S-24TS-L</u>	√		4	24		
LAN Lite 1G Uplink Ports						
<u>WS-2960S-48TS-S</u>			2	48		
<u>WS-2960S-24TS-S</u>			2	24		

Catalyst 2960-S FlexStack



- FlexStack available with optional Module
Hot Swappable with two wire-speed 10G ports
- Up to 4 switches in a stack
- Unified management, control, and data plane (similar look and feel as StackWise)
- 3 FlexStack Cable lengths supported
0.5 meters, 1.0 meter, 3.0 meter

	2960-S Stacking Ease of Use	3750-X StackWise Plus Ease of Use and High Availability
Device Limit	4 units	9 units
Stack Bandwidth	10G / 20G	32G / 64G
Architecture	HW Drop Table	Ring (Destination stripping)
Dynamic Ring Load Balancing	No	Yes
Stack Convergence	1-2 seconds	Few milliseconds
Stack QoS	Applied hop by hop	Applied on ingress
Management	Single IP address, SNMP, SYSLOG	Single IP address, SNMP, SYSLOG
Configuration	Single config and CLI, auto image and config update	Single config and CLI, auto image and config update
Show and Debug Commands	Unified	Unified
Single Forwarding and Control Plane	Synchronize ARP, MAC Address, IGMP, VLAN tables	Synchronize ARP, MAC Address, IGMP, VLAN, Routing tables
Cross-Stack Features	Yes	Yes
Single Bridge-ID	Yes	Yes
Preprovision members	Yes	Yes
Redundancy	Stack master 1:N redundancy	Stack master 1:N redundancy
Easy member replacement	Yes	Yes

LAN Lite vs. LAN Base Highlights



Cisco® Catalyst® 2960 and Catalyst 2960-S

Functions	LAN Lite	LAN Base
Layer 2	<ul style="list-style-type: none"> • Entry-level access Layer 2 Basic Layer 2 access features, including 802.1Q trunking, (M)STP, STP extensions, Cisco Discovery Protocol, DTP, UDLD, VTPv2, PAGP/LACP, LLDP, and storm control 	<ul style="list-style-type: none"> • Enterprise Access Layer 2 Wide range of Layer 2 access features for enterprise deployments, including FlexLinks, VTPv3, and LLDP MED
Layer 3	<ul style="list-style-type: none"> • No routing support Support for Layer 3 management interface 	<ul style="list-style-type: none"> • Static Routing Support
Manageability	<ul style="list-style-type: none"> • Entry-level manageability Express setup, Cisco Device Manager, SNMPv3 (with cryptography), RMON, SPAN, TDR, Auto Smart Ports, and Smart Install client 	<ul style="list-style-type: none"> • Basic manageability Support for a wider range of MIBs, IPSLA Responder, and RSPAN
Security	<ul style="list-style-type: none"> • Entry-level access security SSH v2 server, SSL, HTTPS, SCP, TACACS+, RADIUS, port security, 802.1x (with guest VLAN), MAB, private VLAN edge, and NAC 	<ul style="list-style-type: none"> • Enterprise access security DHCP snooping, IPSG, DAI, ACLs, Cisco Identity 4.0, and 802.1x features
QoS	<ul style="list-style-type: none"> • Entry-level access QoS Ingress and egress queuing, scheduling, Priority Queuing, and SRR 	<ul style="list-style-type: none"> • Enterprise access QoS Ingress policing, Trust Boundary, AutoQoS, and DSCP mapping, service policy

Note: LAN Base feature set includes all LAN Lite features.

