

Borderless novosti Routing & switching

Beograd, 23.03.2010.

Tatjana Bošković, Channel SE
tboskovi@cisco.com

Agenda

- ISR G2 pregled
- Novi model licenciranja IOS-a
- Catalyst 3750-X, 3560-X, 2960-S pregled
- Q&A



The Integrated Services Routers Generation 2

Cisco Integrated Services Router Brand Seven Million and Counting...!

100+ Network Interfaces
and Modules

Broadest Range
of Services

Up to 70% in Operational
Cost Reduction

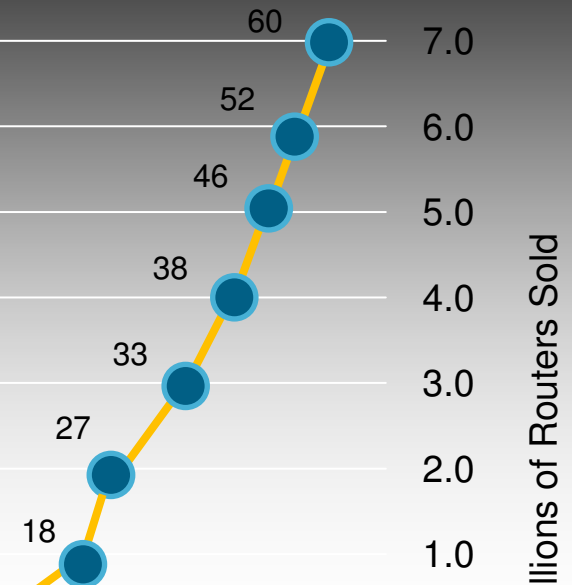
2005–09
Market share

#1

Access Routing

Source: Dell 'Oro

ISR Units (in Millions)



Coca-Cola Enterprises Inc.

carrier2carrier

verizon wireless

Balfour Beatty

COUNCIL ROCK
SCHOOL DISTRICT

usbank
Five Star Service Guaranteed

Branch Infrastructure

Evolving Cisco Integrated Services Router Generation 2 Portfolio

Performance, Scalability, Availability



Next Generation Integrated Services Routers

Under the Covers

Services Performance Engine (3900)

- Upgradeable with newer engines in the future

Multi-core Network Processor

- Up to 5x performance increase

Multi Gigabit Fabric

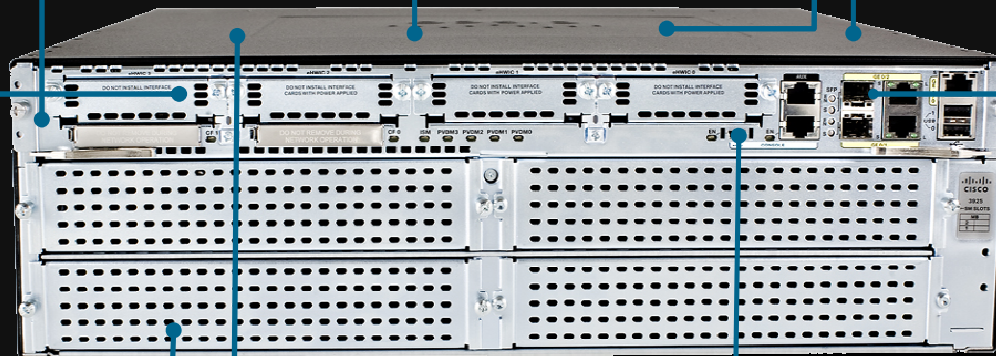
- Module to module communications
- Packet prioritization and shaping

NG DSP Modules

- Video ready DSP modules
- 4x increase in audio conferencing and transcoding
- Configurable power savings modes

EHWIC

- 2x performance increase
- HWIC/WIC/VVIC support natively
- EPoE capable



GE Ports

- Plus GE ports (3 on 2911+)
- SFP slots on 2921 and above

Service Modules

- 3x-7x increase in service module performance
- Existing NM support through adapter
- EPoE capable

Internal Services Module

- 3x increase in service module performance
- Configurable power savings mode
- 802.11n Option on 19xx

USB

- Console over USB
- Convenience storage
- Security credentials

Cisco 1900 Series

Integrated Services Routers



	1941W	1941
SM Slots	0	0
ISM Slots	Fixed 802.11n Radio	1
EHWIC Slots	2	2
Onboard WAN Ports	2 GE	2 GE
Onboard DSP Slots	0	0
Default Flash	256 MB	256 MB
Default DRAM	512 MB	512 MB
Form Factor	2RU	2RU

Secure Mobility Platform

- 25Mbps WAN Access with Services
- Factory selectable Integrated wireless 802.11n option
- Desktop form factor with Double Wide HWIC Support

Cisco 2900 Series

Integrated Services Routers



	2951	2921	2911	2901
SM Slots	2	1	1	0
ISM Slots	1	1	1	1
EHWIC Slots	4	4	4	4
Onboard DSP Slots	3	3	2	2
Onboard WAN Ports	3 GE (1 SFP)	3 GE (1 SFP)	3 GE	2 GE
Default Flash	256 MB	256 MB	256 MB	256 MB
Default DRAM	512 MB	512 MB	512 MB	512 MB
Form Factor	2RU	2RU	2RU	1RU

Secure Collaboration Platform

- Up to 75Mbps WAN Access with Services
- Video-ready DSP support
- Increased service density with Second Services module Slot
- 12 Inch Depth on 2911

Cisco 3900 Series

Integrated Services Routers



	3945	3925
SM Slots	4	2
ISM Slots	1	1
EHWIC Slots	4	4
Onboard DSP Slots	4	4
Field Upgradeable Motherboards	SPE-150	SPE-100
Integrated Redundant PS	Yes	Yes
Onboard WAN	3GE (2 SFP)	3GE (2 SFP)
Default Flash	256MB	256MB
Default DRAM	1 GB	1 GB
Form Factor	3RU	3RU

Scalable Rich-media Services Platform

- Up To 150Mbps WAN Access With Services
- Upgradeable services performance engine (SPE) for future expansion
- Configurable dual Integrated Redundant Power supplies
- 2x Default Memory

Cisco 800 Series

Integrated Services Routers



	890	880G	880	860
10/100/1000 WAN	✓			
10/100 WAN		✓	✓	✓
ADSL2/2+ WAN		✓	✓	✓
VDSL WAN		✓	✓	
G.SHDSL WAN		✓	✓	
LAN Interfaces	8x 10/100	4x 10/100	4x 10/100	4x 10/100
802.11n (a/b/g/n)	✓			
802.11n (b/g/n)		✓	✓	✓
SRST (4 users)			✓*	
3G Wireless		✓		
Backup	V.92 modem or ISDN BRI	3G or ext. modem	ISDN BRI or ext. modem	ext. modem

* SRST available with 10/100 or G.SHDSL WAN

Secure Mobility Platform

- Very small offices, Cisco Virtual Office (teleworkers)
- Up to 15 Mbps WAN Access with Security
- Fixed configurations:
Pick your:
 1. WAN interface(s)
 2. 802.11 Wireless (Y/N)
 3. SRST* (Y/N)
 4. Backup Interface

Borderless Branch

New ISR G2 Platforms

Cisco 3925E, 3945E

- New Services Performance Engine 200s:
- Up To 350Mbps WAN Access With Services
- High Scale UC Services



Cisco 1921

- Small form factor – modular platform
- Supports wide range of WAN and LAN interfaces



Cisco 887, 887V, 888E

- Integrated 3G + VDSL
- Remote Management (3G MIB)
- Ethernet over SHDSL
- VoIP Support over 3G



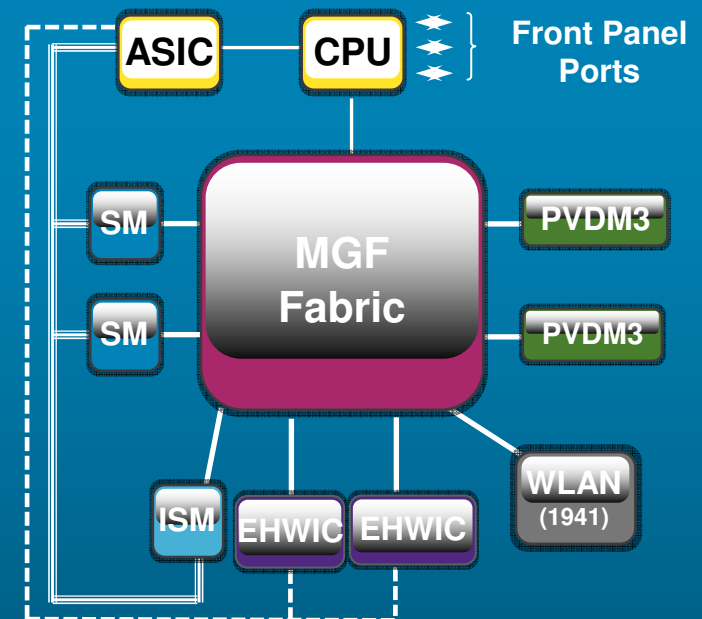
High Performance Solutions
for Rich Media Services Delivery

Introducing The Multi Gigabit Fabric (MGF)

- Superior scalability by providing direct high-performance connectivity between services and modules
Provides connectivity between EHWICs, PVDM3s, SMs and ISMs through the backplane

- Offload the CPU when providing connectivity to internal modules or between services
There will be no CPU involvement when providing the service integration and traffic redirection as mentioned above

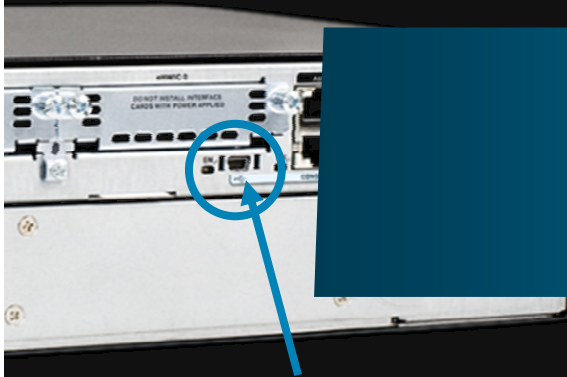
- Legacy interface modules do not benefit from the MGF and connect directly to the system CPU



— GE Serdes
= PCIe
-- HWIC DDR

Note: Not all possible modules are shown

USB Console



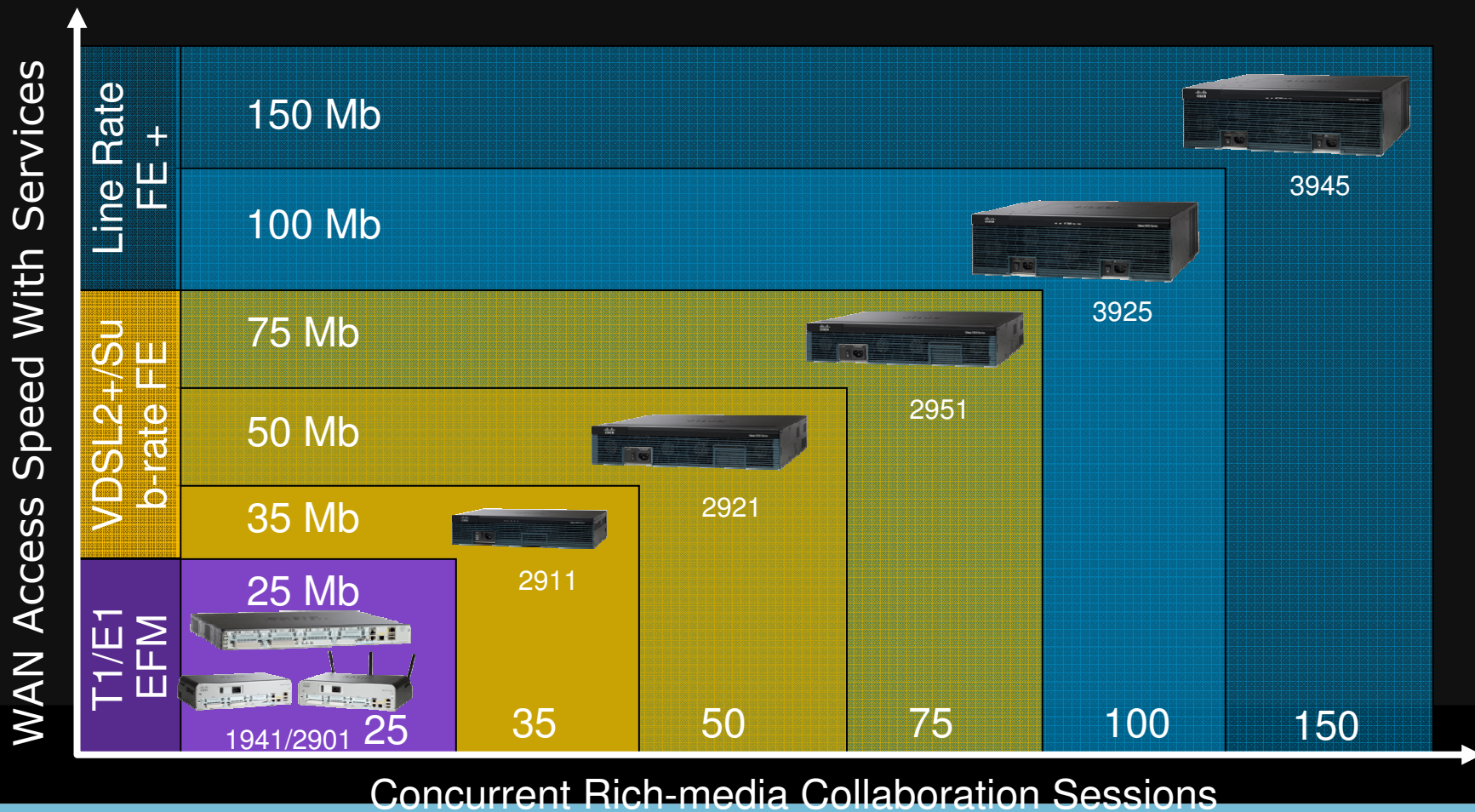
New Type B mini USB Console Port

- Enables use of a Mini USB cable for console access in addition to the Cisco console cable
- Mini USBs are commonly used for cell phones and digital cameras and offers a more flexible console access by not being limited to the Cisco console cable
- **Only one console can be active at a time; USB cable always takes precedence**

* Console cables in shipment of new router are an option that need to be configured at time of ordering

ISP C2 Performance Positioning

WAN Access and Collaboration



ISR Performance

Platform Positioning Recommendation

Router	Recommended Positioning with Heavy Services	^a Max Bidirectional Throughput (IP only)
1841	1T1/E1 (2Mbps)	185 Mbps
2801	1T1/E1 (2Mbps)	190 Mbps
2811	2T1/E1 (4Mbps)	197 Mbps
2821	4T1/E1 (8Mbps)	1,741 Mbps
2851	6T1/E1 (12Mbps)	1,949 Mbps
3825	14T1/E1 (22Mbps)	1,954 Mbps
3845	1T3/E3 (45Mbps)	1,972 Mbps

^aAll ISRs are CPU-based platforms and reaching the max throughput in a real, deployed scenario is unlikely. In order to accurately estimate the platform for your needs, review the recommended positioning above and the detailed test reports below.

ISR G2 Performance

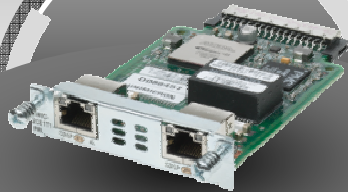
Platform Positioning Recommendation

Router	Recommended Positioning with Heavy Services		*Max Bidirectional Throughput @ NDR using IMIX
3945	Line Rate FE+	150 Mbps	2,859 Mbps
3925	Line Rate FE+	100 Mbps	2,280 Mbps
2951	VDSL2+, Sub-rate FE	75 Mbps	1,730 Mbps
2921	VDSL2+, Sub-rate FE	50Mbps	1,240 Mbps
2911	VDSL2+, Sub-rate FE	35 Mbps	1,088 Mbps
2901	T1/E1, DSL, EFM	25 Mbps	976 Mbps
1941/1941W	T1/E1, DSL, EFM	25 Mbps	885 Mbps

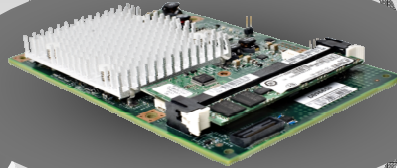
***All ISRs are CPU-based platforms and reaching the max throughput in a real, deployed scenario is unlikely. In order to accurately estimate the platform for your needs, review the recommended positioning above and the detailed test reports below.**

Service Modules and Interface Cards

Interface Cards
(WAN or LAN)



Internal Module for
Running Services
That Don't Require
Interface Ports,
Dedicated CPU
and Memory

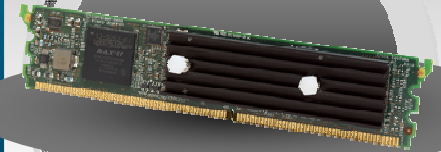


Independent CPU
and Memory for
Hosting Services *or*
High Density
Interface Ports.

Examples: Wireless LAN
Controller, WAN
Optimization, Etherswitch
Module



High Density
Rich-Media Voice
and Video DSP
Modules



EHWIC

Enhanced High Speed
WAN Interface Card

ISM

Internal Service
Module

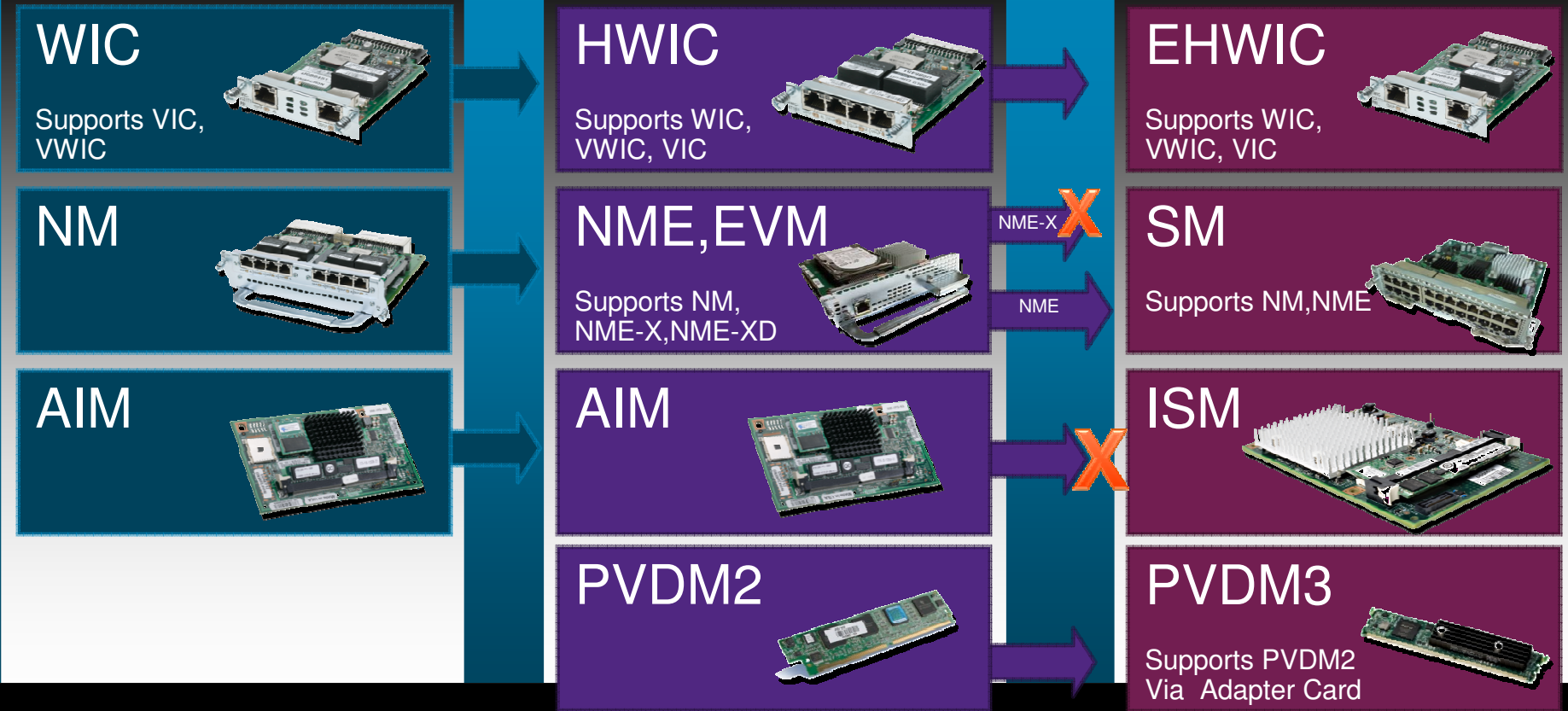
SM

Service
Module

PVDM3

Packet Voice/
Data Module

Platform Module Slot Evolution



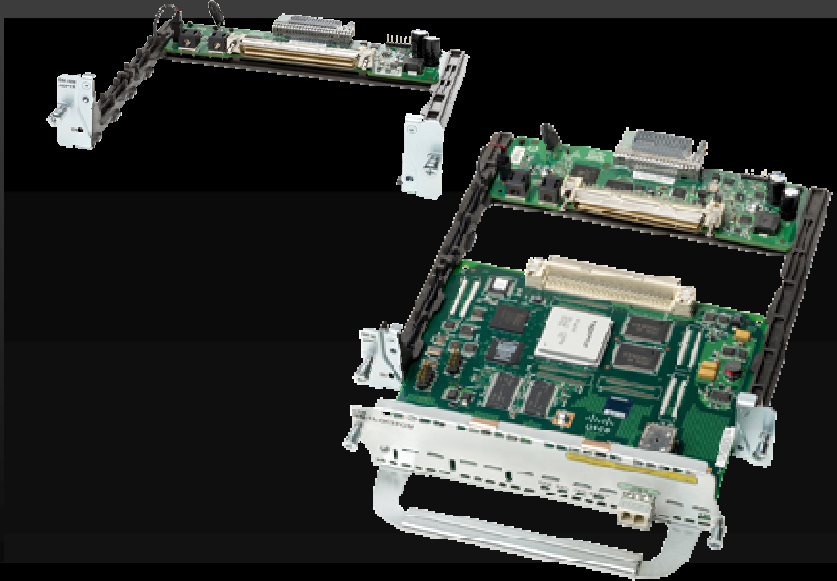
Pre-ISR

ISR

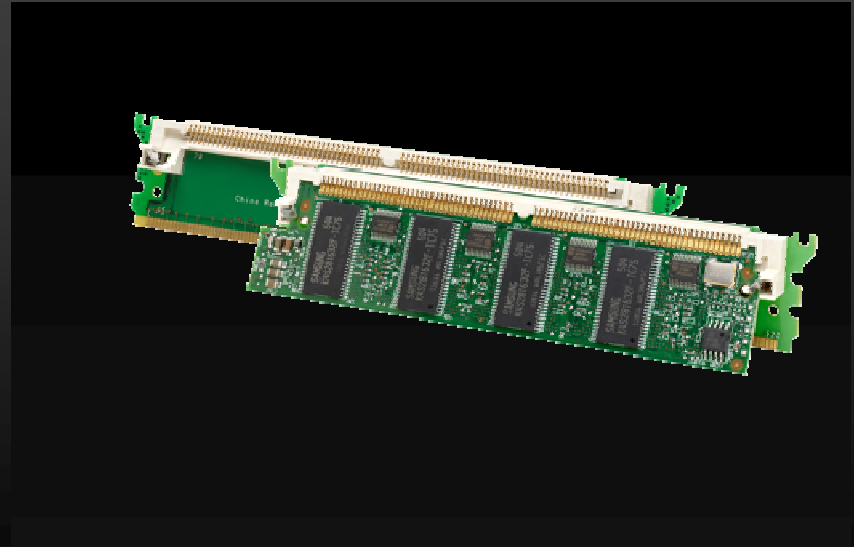
ISR G2

Adapters

- Maximize investment protection, while allowing for platform evolution
- Provide maximum interface coverage at platform FCS



**NM to
SM Adapter**



**PVDM2 to PVDM3
Adapter**

Video-Ready



Rich-media Services with Medianet

- Video-Ready Media Engine (PVDM3)
- Scalable audio-conferencing
- Increased Video Storage (Up to 1TB per module)
- Multi-Gigabit Fabric for hi-performance connectivity
- WAN Optimization and Application Acceleration

Superior Customer Experience
with up to 150 Concurrent Rich-Media Collaboration Sessions



Telepresence
to Mid-Size
Branch Offices



Secure IP Video
Surveillance



High-scale Webex
and desktop video
collaboration



Streaming
video / Digital
Signage

PVDM3 DSPs

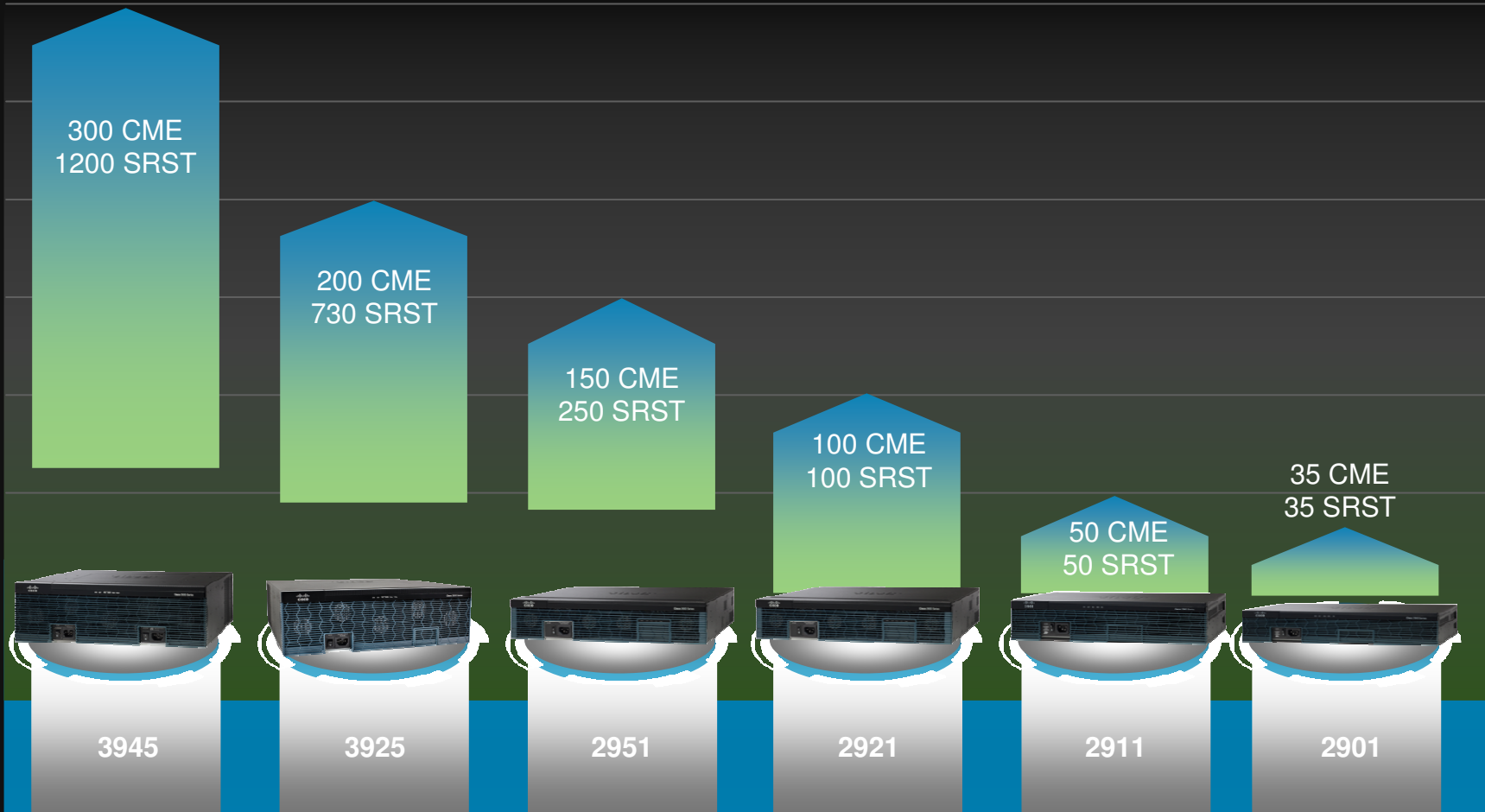
- All PVDM3 SKUs supported on all Cisco 2900 and 3900 series platforms
- Up to 4X voice channel density per slot
GE backplane interface with for increased IP throughput
- Enhanced multi-core DSP architecture optimized for rich-media UC applications
- Feature parity with the PVDM2s
- Video feature ready
- Migration enabled by support for the co-existence of PVDM2, PVDM2-DM and PVDM3 on the Cisco 2900 and 3900 series platforms

PVDM3 SKUs	G.711 Channels
PVDM3-256	256
PVDM3-192	192
PVDM3-128	128
PVDM3-64	64
PVDM3-32	32
PVDM3-16	16

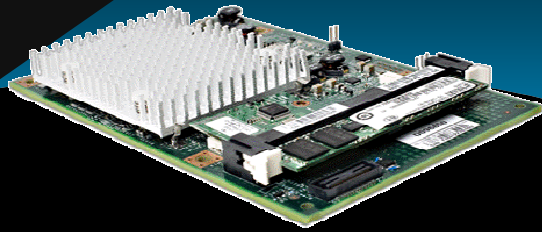


Video Ready DSP

Unified Communications Max User Counts



ISR Generation 2 Services Ready Engines (SRE)



Internal Service Module (ISM)

Single Core x86
512MB RAM, 4GB Flash

Available on 1941 & above—Selected Services



Service Module (SM)

Dual Core High Performance x86
2–4GB RAM, 500GB-1TB HDD

Available on 2811 and above—Full Range of Services

Up to 7x Performance Improvement Compared to Previous Generation

Support for EnergyWise®—Reduces Power Consumption,

High Capacity Storage, RAID Capable and FRU Disks—Enable HA Deployments

Integrated Management, Troubleshooting, on-board HW Diagnostics Tool

Flexible “Service Ready” Deployment Model

- Deploy HW with router—SW can be deployed remotely saving truck roll costs
- Available Services: Application eXtension Platform, Cisco Unity Express
- Roadmap: WAAS, Wireless LAN Controller, Video Surveillance, Network Analysis, Server Virtualization, Windows Server

ISR G2 Services Portfolio

Network and Security Services

Collaboration Services

Compute Services and Applications

Network Services

Network and Physical Security

Unified Communications

Application Infrastructure

Industry Applications



Branch IT Infrastructure and Management



Secure, Protect, Compliance



High-performance Communication and Collaboration



Consolidate Branch Servers and Applications



Customized Vertical Solutions

- Cisco Wide Area Application Services (WAAS)
- Cisco Wireless LAN Controller (WLC)
- Cisco Network Analysis Module
- Infoblox core network services on AXP

- Cisco Video Surveillance
- Cisco Intrusion Prevention System

- Cisco Unity® Express (Voicemail, IVR)
- NICE Voice Recording on AXP
- Sagem Interstar Fax over IP on AXP
- SingleWire Informacast on AXP

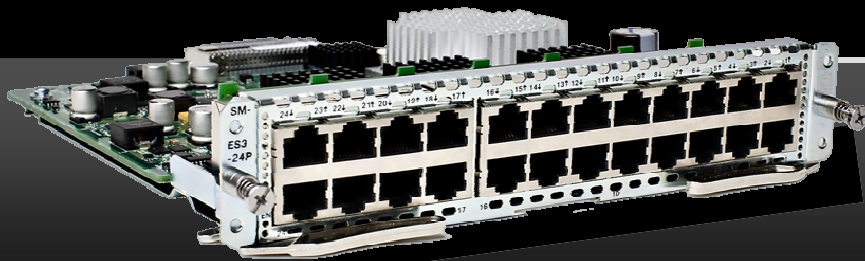
- Cisco Application Extension Platform (AXP)
- Cisco Integrated Storage System
- Industry standard virtualization
- Windows Server

- Tiani Medical Data Exchange on AXP
- Global Protocols Skipware on AXP

○ Roadmap ○ Available

New Enhanced EtherSwitch Service Modules (ESM)

- 16, 24, and 48 ports of GE or FE LAN
- Feature parity with Catalyst 3560-E and 2960
- Local Line-rate Layer 2/3 switching
- Supports Cisco EnergyWise for green IT
- Integration with MGF for LAN traffic performance optimization between modules, with no impact on CPU/WAN performance
- Integrates the latest enterprise switch features into the router, with the same features and configurations that are in the headquarters
- Industry Leading Power Over Ethernet
 - Enhanced POE (ePOE) Up to 20 watts per port
 - Takes advantage of 2900/3900 increased power levels offering up to 1040 watts per chassis
 - Per port autosensing and configuration of power levels
- Industry leading security and authentication
- Auto Smartports for plug and play port configuration

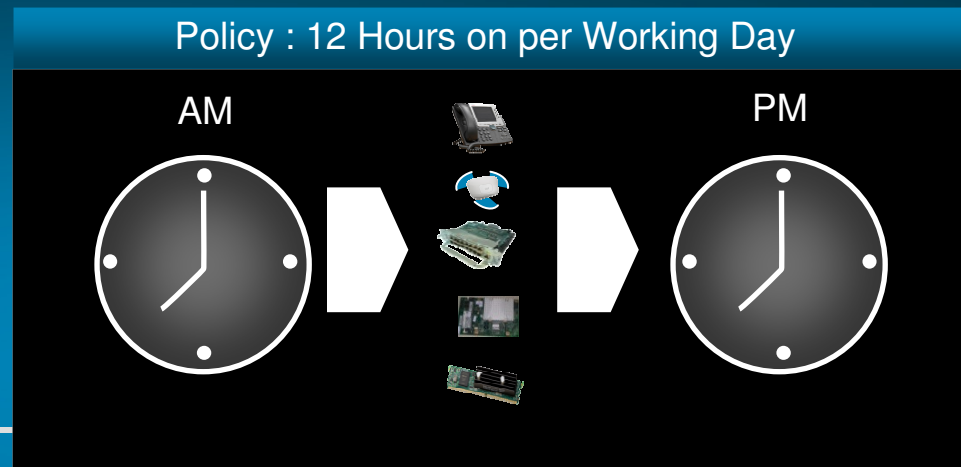


Gigabit Ethernet

Power Management Modules and Scenario

Support Available in:

- ISM (SRE)
- SM (SRE—EtherSwitch)
- PVD3M3
- EHWICs



	Hours	Days	Hours	Total
ON	Working days Mon-Fri	251 (x 12h)	3012	5748
OFF	Working days Mon-Fri	251 (x 12h)	3012	
OFF	Weekends	104 (x 24h)	2496	
OFF	Holidays	10 (x 24h)	240	
Total		365	8760	8760

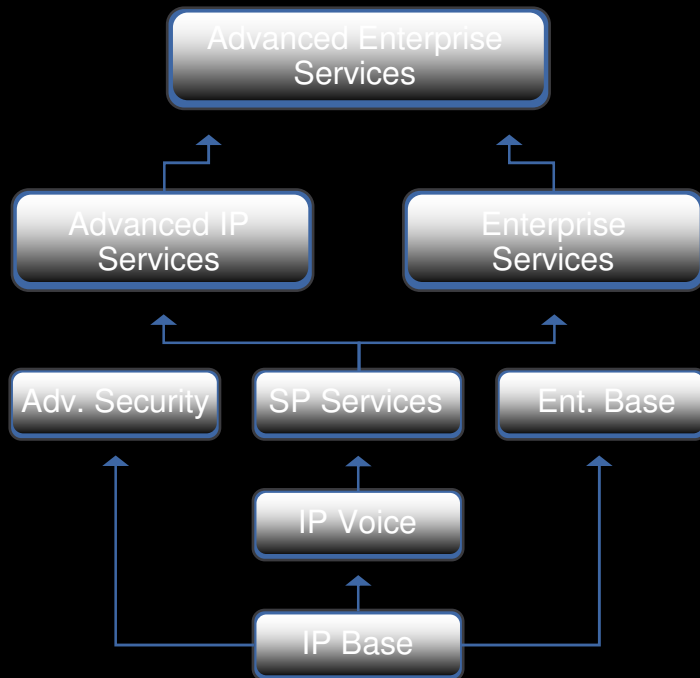
66% of the Time It Could Be Off



IOS Software Evolution

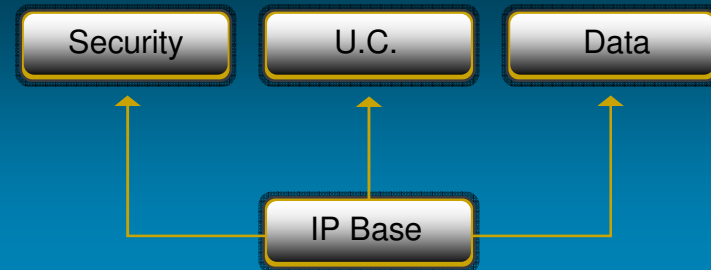
IOS Software Packaging Evolution Summary

Current



New

Universal Image



○ Simplified Software Management

A single IOS Universal Image will ship with all ISR G2 platforms

Four IOS enforceable licenses enable full suite of functionality that were previously offered in eight images

○ Less Costly Software Upgrades

IOS feature upgrades can be done by enabling a new license key, reducing the need for truck-roll to remote offices

○ Enable Development of New Software Based Business Models

Services on Demand—purchase upgrades as you need them via Cisco licensing

Right to Use Feature Licences

- SSLVPN
- Intrusion Prevention (S)
- Content Filtering (S)

- MLPP
- LMR [Land Mobile Radio]
- CME: Voice and Video (C)
- SRST : Voice and Video (C)
- VXML/IVR Gateway (C)
- CUBE[IPIP Gateway] (C)
- CUBE[IP Trunk] (C)

- SNA switch

- CUBE [Gatekeeper] (C)

- MPLS BFD RSVP
- L2VPN
- L2TPv3
- Layer 2 Local Switching
- Mobile IP
- Multicast Authentication
- FHRP—GLBP
- ISIS IPv6 OSPFv6
- ISIS IPv6 OSPFv6
- IP SLAs PfR NTPv4
- DECnet ALPS
- AppleTalk RSRB BIP
- DLSw+ FRAS
- Token Ring
- ISL IPX STUN
- SNTIP SDLC QLLC
- LAT

- IKE v1 / IPsec / PKI
- IPsec/GRE
- Easy VPN w/ DVTI
- DMVPN
- Static VTI
- Firewall
- Network Foundation Protection
- GETVPN

- TDM/PSTN Gateway
- Video Gateway[H320/324]
- Voice Conferencing
- Cod ec Transcoding
- Secure Voice/ SRTP
- RSVP Agent (voice)
- FAX T.37/38
- CAC/QOS
- Hoot-n-Holler

SEC

UC

Data

IP Base

AAA BGP, OSPF, EIGRP, ISIS, RIP PBR IGMP, Multicast DHCP HSRP,
 GLBP NHRP HTTP HQF QoS ACL, NBAR GRE CDP, ARP NTP PPP
 PPPoA PPPoE RADIUS TACACS SCTP SMDS SNMP STP VLAN DTP IGMP Snooping
 SPAN WCCP ISDN ADSL over ISDN NAT - Basic X.25, RSVP, Flexible Netflow

When available an IPV6 feature will follow IPV4 of same feature.

New Model

- Each device is loaded with a universal IOS image
- A Software Activation License enables specific functionality
- Each SAL is unique to a particular device

A Feature Set is purchased via a “Product Activation Key” (PAK)

Product ID + Serial Number +
PAK = Software Activation License

- New devices are shipped with the Software Activation License pre-installed
- New functionality can be “switched on” with a new SAL

Simply order a PAK for the desired Feature Set



Summary Review

What's New with Cisco ISR G2?

Cisco ISR	➔	Cisco ISR G2
Up to 45 Mbps with Services Single X with 160GB	WAN Performance Network processor Service Module	
	Performance and Capacity	
	Onboard DSPs	
	Switch Modules	
	IOS Images	
	Service Delivery	
	Redundancy	
	Energy Efficiency	



Up to 5X the Performance. Similar price points.



Borderless access Catalyst 3750-X, 3560-X, 2960-S

Introducing Catalyst 3750-X & 3560-X

Innovation Leadership: What's New

- 24/48 10/100/1000 ports
- Seamless upgrades from 4x1G to 2x10G
No special hardware required, just replace the optics
- StackPower Technology – Industry First
Distributes power in the stack where it is needed
- Dual Field Replaceable Power Supplies/Fans
Switch can be upgraded and serviced in the field
- TrustSec Enabled
Provides advanced authentication and adds encryption on user-facing ports
- Full 802.3at PoE+ Support
Standards based power delivery up to 30 watts per port supporting next-generation high-power devices
- Enhanced Limited Lifetime Hardware Warranty
NBD delivery where available
90-day 8x5 TAC support

New



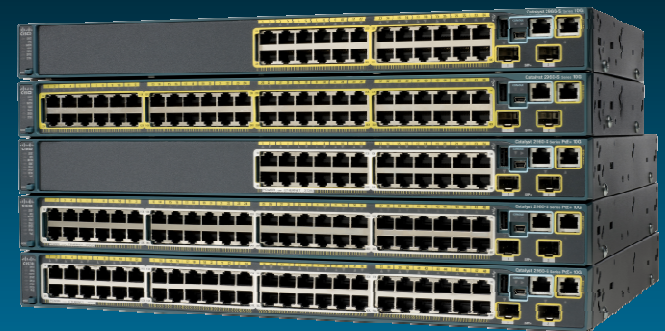
- **3 Software Options: LAN Base, IP Base, IP Services**
Flexible software features and lower entry level pricing

Introducing Catalyst 2960-S

Mainstream Features in a Cost Optimized Platform

- 24/48 10/100/1000 ports with fixed uplinks
- Fixed Uplink Options: 4x1G or 2x10G SFP+
10 Gigabit Ethernet in a cost optimized platform
- 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
- Cisco Online Diagnostics & Onboard Fault Logging
Hardware innovations that deliver preventative early fault detection
- Enhanced Limited Lifetime Hardware Warranty
NBD delivery where available
90-day 8x5 TAC support

New



- **LAN Lite and LAN Base Software Options**
- **LAN Lite option provides entry-level Gig-E platform**

Key LAN Lite vs LAN Base Highlights

Key LAN Lite vs LAN Base Highlights

Catalyst 2960, 2960-S



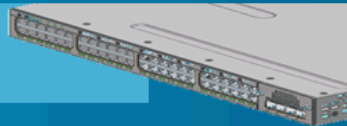
Functionality	LAN Lite	LAN Base
Layer 2	<ul style="list-style-type: none"> • Entry-level Access Layer 2 Basic L2 access features including 802.1Q trunking, (M)STP, STP extensions, CDP, DTP, UDLD, VTPv2, PAGP/LACP, LLDP, Storm control 	<ul style="list-style-type: none"> • Enterprise Access Layer 2 Wide range of L2 access features for enterprise deployments, including FlexLinks, VTPv3, LLDP MED
Layer 3	<ul style="list-style-type: none"> • No Routing Support Support for L3 management interface 	<ul style="list-style-type: none"> • No Routing Support Support for SVI with no IP routing support
Manageability	<ul style="list-style-type: none"> • Entry-level Manageability Express Setup, Cisco Device Manager, SNMPv3 (w/crypto), RMON, SPAN, TDR, Auto Smart Ports, Smart Install client 	<ul style="list-style-type: none"> • Basic Manageability Support for a wider range of MIBs, IPSLA Responder, RSPAN
Security	<ul style="list-style-type: none"> • Entry-level Access Security SSH v2 server, SSL, HTTPS, SCP, TACACS+, RADIUS, Port Security, 802.1x (w/ Guest VLAN), MAB, Private VLAN Edge 	<ul style="list-style-type: none"> • Enterprise Access Security DHCP Snooping, IPSPG, DAI, ACLs, Cisco Identity 4.0, NAC and 802.1x features
QoS	<ul style="list-style-type: none"> • Entry-level Access QoS Ingress and egress queuing, Scheduling, Priority queuing, SRR 	<ul style="list-style-type: none"> • Enterprise Access QoS Ingress policing, Trust Boundary, AutoQoS, DSCP mapping

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

LAN Base vs. IP Base and IP Services Highlights

New

Catalyst® 3750-X
and Catalyst 3560-X



Catalyst 3750 and Catalyst
3560, Including E and X Series



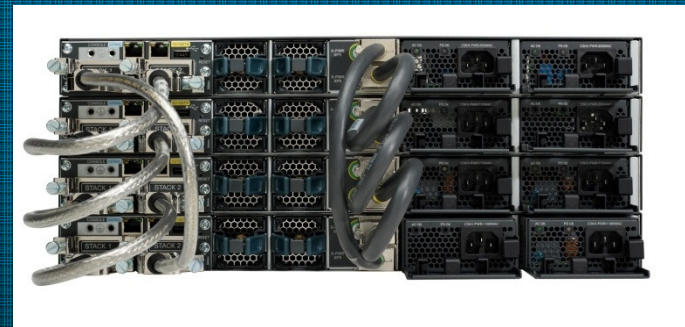
Functions	LAN Base	IP Base	IP Services
Layer 2+	<ul style="list-style-type: none"> • Enterprise access Layer 2 Wide range of Layer 2 access features for enterprise deployments 	<ul style="list-style-type: none"> • Complete Access Layer 2 Supports all Cisco Catalyst 2000 and Catalyst 3000 Layer 2 features, 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, PACLs, 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.

StackWise Plus vs. FlexStack

Ease of Operations

- **Catalyst 3750-X StackWise Plus**
 - High performance – 64G stacking
 - Non Stop, Self Healing – seamless recovery
 - Unified management, control & data plane
 - Bandwidth optimization – dynamic ring load balancing
 - Traffic prioritization – Built in QoS
 - Up to nine switches in a stack
- **Catalyst 2960-S FlexStack**
 - Module with two wire-speed 10G ports
 - Unified management, control & data plane
 - Up to four switches in a stack



When
the Network
KNOWS

You Have
MORE OPTIONS

Catalyst 2960-S FlexStack - Details

- Not a ring Architecture. Packets traverse stack Hop by Hop
- Local switching of unicast packets
- Not switched to Stack ports unnecessarily
- Proprietary header of 32Bytes pre-pended on all stack packets
- Packet path determined using “OSPF” like algorithm based on Ingress member.

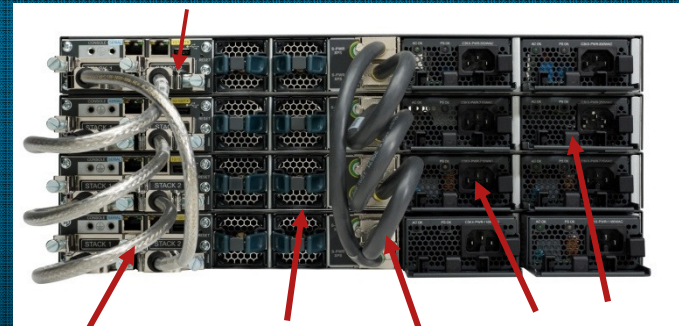
StackPower

Industry
Leadership

Ease of Operations And High Availability

- Adaptable – “pool of power” across the stack
- Flexibility and sustainability with zero to 2.2kW per switch
- Intelligent power shedding – turn off low priority PDs
- Supports mix of AC/DC power supplies in a stack
- “Zero-footprint” RPS deployment

Console, 10/100 port
& USB type A



StackWise+ FRU Dual Redundant Fans Dual Power supply

StackPower

When
the Network
KNOWS

Your Productivity
Is ENHANCED

StackPower

Capabilities Overview

Switch A

Full POE on 48-ports 740w PoE
Need = 986w



Switch B

48-ports, Data Only,
Needs 246w



Switch C

Full POE+ on 48-ports 1,440w PoE
Needs 1,686w



Switch D

48-ports, Data Only,
Needs 246w



Power requirements:

$$246w * 4 + 740 + 1440 = 3,172w$$

$$\text{Available Power} = 2,130w$$

$$\text{Deficit} = 1,042w$$

Options:

1) Add one 1,100w PS slot B of any switch to cover the deficit.

2) Add two 1,100w PS to any two switches in slot B to cover 1,042w deficit plus 1,100w for redundancy. Extra capacity for zero-footprint RPS functionality.

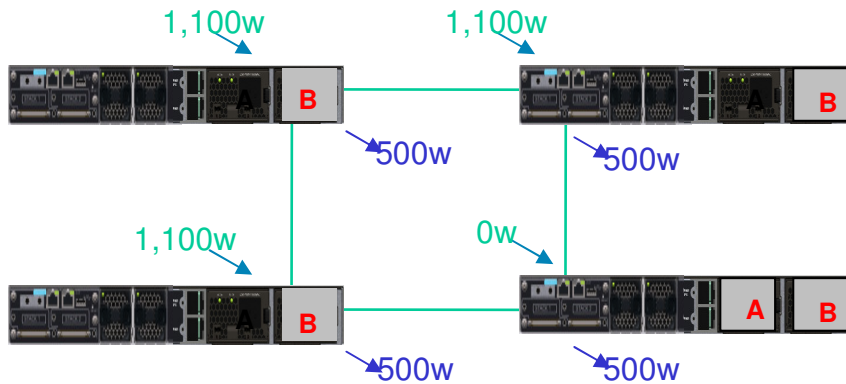
Note capability to boot up a switch that doesn't have a PS and even provide PoE+ on that switch.

Stackpower can provide complementary power as well as Redundant power depending on requirements and configuration.

StackPower Modes

Power share, Redundant, RPS modes

Power Sharing mode

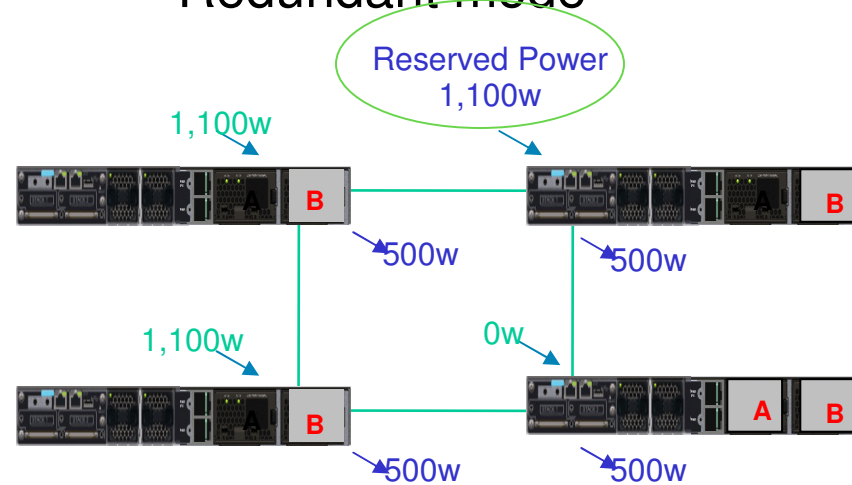


Available Pwr	Allocated Pwr	Unused Pwr
3,300 W	2,000 W	1,300 W

Entire available power of 3,300w is available to the system.

Switch and PD requests for more power is granted until all 3,300w are used. No redundancy

Redundant mode



Available	Allocated	Unused	RESERVED
3,300 W	2,000 W	200W	1,100 W

Overall capacity is 3,300w – 1,100w is reserved for redundancy.

Available Power to share is 2,200w and there is an extra 200 W available for allocation.

Should a PS fail, then the reserved power is made available for the stack.

StackPower Modes & Topology

Power Share, Redundant Modes, & RPS mode

The Catalyst 3750-X supports **Power share, Redundant, & RPS modes**

Includes power sharing across Cat3750X switches

Ring & Star topologies

Ring is Stackpower & Star is XPS

XPS (future availability) can Not be deployed in a Ring topology

The power shelf can not be part of a Stackpower ring

The Catalyst 3560-X ONLY supports RPS mode with an XPS

In the Star Topology, a XPS must be the hub

Up to nine switches can be connected to the power shelf

Either Catalyst 3750-X, Catalyst 3560-X or a combination of switches.

XPS detects Catalyst 3750-X Vs. Catalyst 3560-X

C2960-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 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

Warranty Strategy and Software Policy

Warranty and Software Update Policy

	Product Warranty www.cisco.com/go/warranty	Software Update Policy
Cisco® Catalyst® 2960 and 3560-E, 3750-E Series Switches	Cisco Limited Lifetime Hardware Warranty	Unlimited maintenance updates for LAN Base and LAN Lite IOS® Images* Service Contract required for IOS Premium Images
Cisco Catalyst 2960-S Series Switches	Cisco Enhanced Limited Lifetime Hardware Warranty	Unlimited maintenance updates for LAN Base and LAN Lite Images* Service Contract required for IOS Premium Images
Cisco Catalyst 3560-X Series Switches	Cisco Enhanced Limited Lifetime Hardware Warranty	Unlimited maintenance updates for Base IOS Images* Service Contract required for IOS Premium Images
Cisco Catalyst 3750-X Series Switches	Cisco Enhanced Limited Lifetime Hardware Warranty	Unlimited maintenance updates for Base IOS Images* Service Contract required for IOS Premium Images

* Entitlement extends for as long as the original end user continues to own or use the product or up to one year from the end-of-sale date, whichever occurs earlier. This policy supersedes any previous warranty or software statement and is subject to change without notice.

Positioning Cisco Warranty and Service Options

Service Element	Warranty	Cisco® Smart Foundation	Cisco SMARTnet® Service
Duration of Coverage	As long as the original End User continues to own or use the Product, provided that: fan and power supply warranty is limited to five (5) years.	Renewable 1-, 3-, and 5-year contracts	Renewable 1 year and multi-year contracts, depending on product family
Cisco Technical Assistance Center (TAC) Support	LLW: Not included E-LLW: Business hours access for 90-days	Business hours access to SMB TAC (access levels vary by region)	24x7 coverage
Online Support / Web Access	Unregistered access only	Available through Smart Foundation Portal	Direct 24x7 registered access
Advance Hardware Replacement	LLW: 10 business days* E-LLW: Next business day**	Next business day as available, otherwise same day ship	Next business day, 8x5x4, 24x7x4, 24x7x2 delivery options as available
On-site Support	No	No	SMARTnet Onsite service options available

•Cisco or its service center will use commercially reasonable efforts to ship a replacement part within ten (10) working after receipt of the RMA request. Actual delivery times may vary depending on Customer location.

** Where next business day delivery is available, Cisco will use commercially reasonable efforts to ship a replacement for next business day delivery provided Cisco's determination of the hardware failure has been made before 3 p.m. depot time. If a request is made after 3 p.m. depot time, Cisco will ship the advance replacement on the next business day. Actual delivery times may vary depending on Customer location.



CISCO