Sponzor komunikacijskih tehnologija

Hrvatski Telekom

Sponzori konferencije

SG Equipment Finance

SG Leasing d.o.o.

SOGELEASE

HRVATSKA UDRUGA POSLODAVACA

Komunikacijski partner

spona
Integrirane komunikacije

Partner digitalnog oglašavanja i video nadzora

RECRO net
We know IT

Partneri konferencije

COMPUTECH

computer systems

IBM

KING ICT

RECRO net

s&t

Sedam IT
Primjena informatičkih tehnologija

STORM

verso

Tehnološki sponzor

ComTel Corp.

EMC²

Novi Forum

SAP

Medijski pokrovitelji

vecernji.hr

ADRIA

MREŽA

racunalo.com

Večernji list

Veseli hakeri

infoTrend

VIDI

PC chip

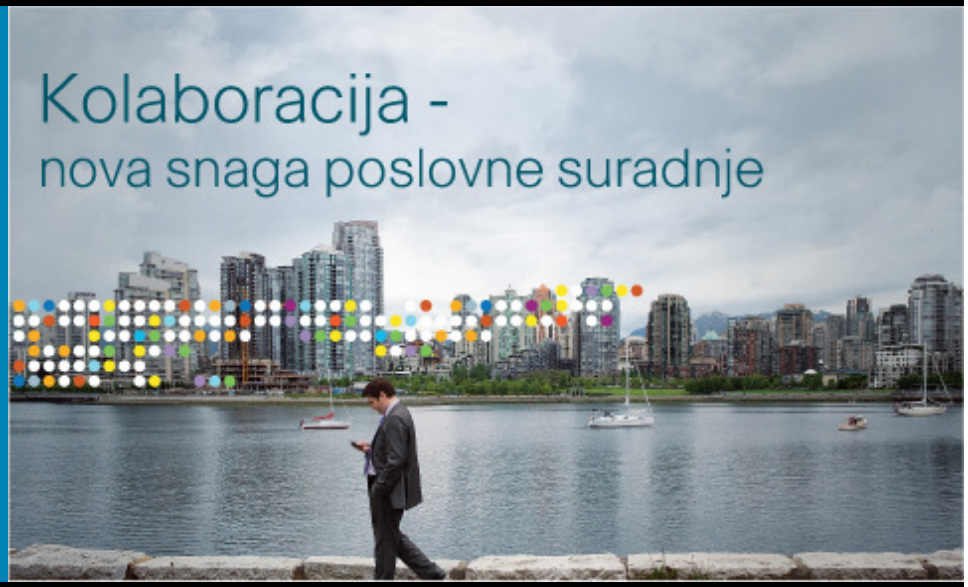
Cisco Expo 2010

24.–26. ožujka 2010.
Hotel Le Méridien Lav
Split

Kolaboracija -
nova snaga poslovne suradnje

Cisco Expo 2010

Integrated Services Routers Generation 2



Technical Overview - **Denis Zotov**

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Agenda

- Integrated Services Router Generation 2 Overview
- ISR Generation 2 Architecture
- Service Readiness on ISR Generation 2
- PVDM3 on ISR G2

Borderless Branch

17% Growth Projected by 2010

Workspace Experience

- Drastic increase in video adoption. 75% organizations strive for increased collaboration and productivity

Operational Efficiency

- Centralized Data and Distributed Interactions are driving operational simplicity, cost savings and ROI

Branches Are the Windows to Customer Experience

Bank

Retail Store

Clinic

Classroom

Source: Nemertes Research

Borderless Branch with ISR G2

- Rich-media applications
- High performance
- Application optimization

Customer Experience

- Services “On-Demand”
- Customized Applications
- Cloud extension

Business Innovation

- Greener technology
- Operational Simplicity
- Rapid ROI with Investment Protection

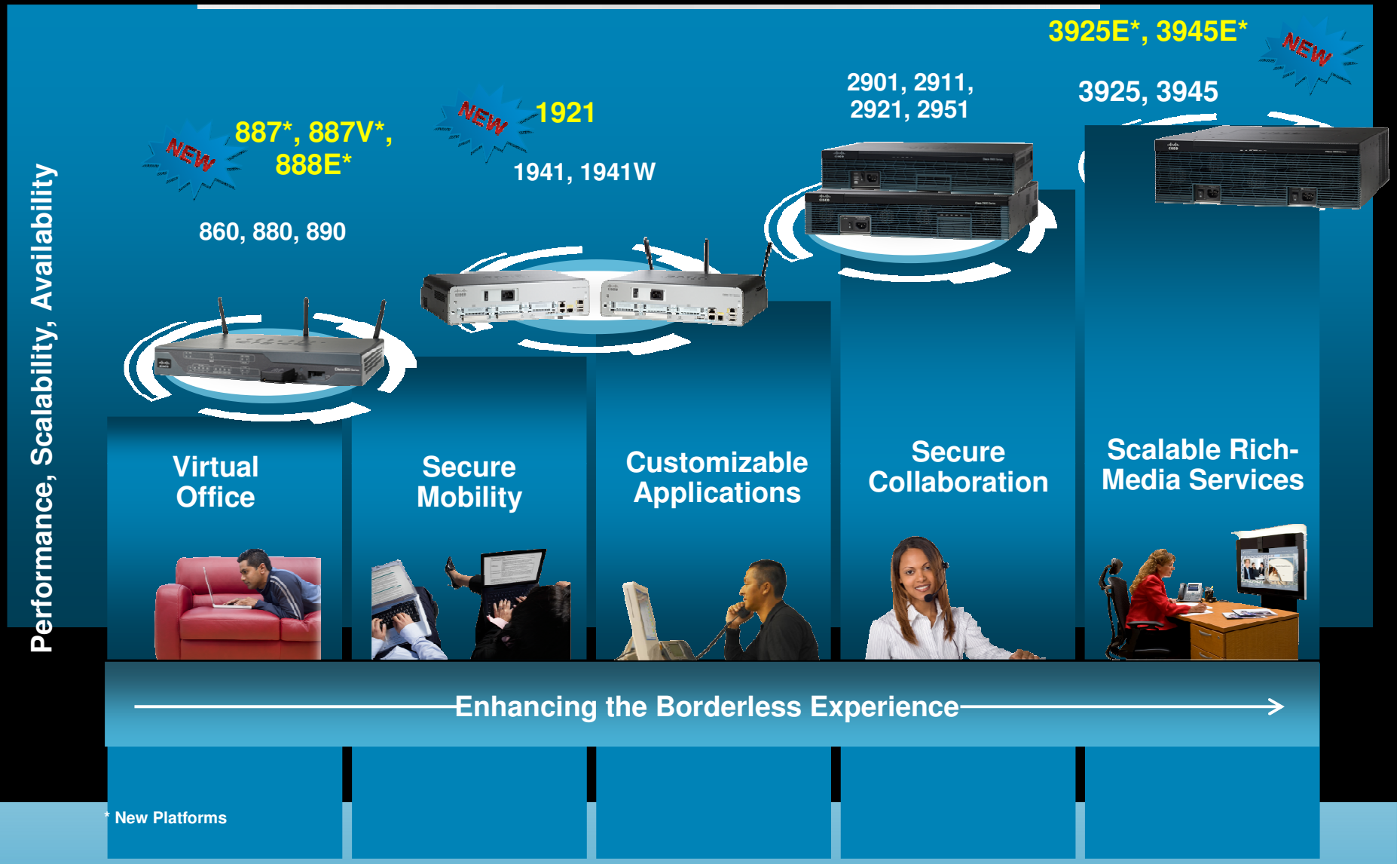
Lowest TCO

Integrated Services Routers Generation 2
Overview

Cisco Expo 2010

Branch Infrastructure

Evolving Cisco Integrated Services Router Generation 2 Portfolio



Next Generation Integrated Services Routers

Services Performance Engine (3900)

Multi-core Network Processor

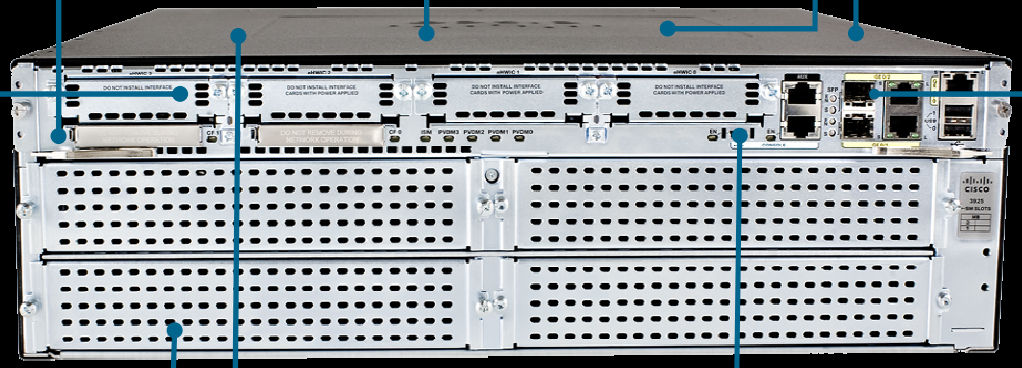
- 4x performance increase

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/VWIC/VIC support natively
- EPoE capable

GE Ports

- Plus GE ports (4 on 3945E & 3925E, 3 on 3945 & 3925)
- 2 SFP slots on all

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
- No ISM slot on 3945E & 3925E
- Configurable power savings mode

USB

- Console over USB (type B mini)
- Convenience storage
- Security credentials

New Cisco 3900E Series

Optimized for High Performance Branch Applications

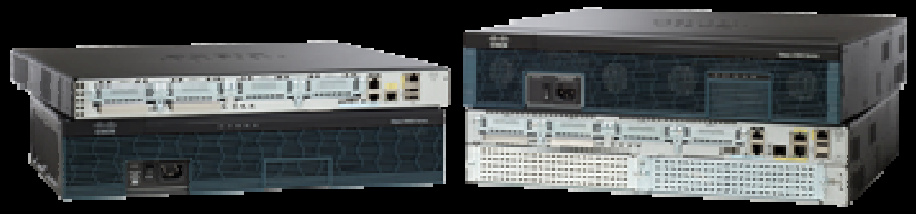
Services Performance Engine 250
Services Performance Engine 200

	3945E	3925E	3945	3925
Onboard WAN	4GE (2 SFP)	4GE (2 SFP)	3GE (2 SFP)	3GE (2 SFP)
Performance (IMIX 75% cpu)	350 Mbps	250 Mbps	150 Mbps	100 Mbps
SM Slots	4	2	4	2
ISM Slots	0	0	1	1
EHWIC Slots	3	3	4	4
Onboard DSP Slots	3	3	4	4
Field Upgradeable Motherboards	SPE-250	SPE-200	SPE-150	SPE-100
Integrated Redundant PS	Yes	Yes	Yes	Yes
Form Factor	3RU	3RU	3RU	3RU

Scalable Rich-media Services for the Branch

- Up to 350Mbps WAN Access With Services (3945E)
- 2x performance improvement over 3945 & 3925
- 4 Onboard GE Ports
- Upgradeable Motherboard Provides Investment Protection
- Configurable Dual Integrated Redundant Power supplies
- Hot swappable Fans and Power supplies

2900 ISR Summary



	2901	2911	2921	2951
SM / EVM Slots	0	1	1 (DW)	2
ISM Slots	1	1	1	1
EHWIC Slots	4	4	4	4
Onboard DSP Slots	2	2	3	3
Onboard WAN Ports	2GE	3GE	3GE (1 SFP)	3GE (1 SFP)
Default Flash	256MB	256MB	256MB	256MB
Max Flash	4GB	4GB	4GB	4GB
Default DRAM	512MB	512MB	512MB	512MB
Max DRAM	2.5GB	2.5GB	2.5GB	4GB
Form Factor	1RU	2RU	2RU	2RU

- Metro Ethernet Ready

  Around 75 Mbps with Services.
- POE Boost Capable with External Redundant PS RPS-2300
- EPOE support up to 36 Ports
- 12 Inch Depth on 2911

Cisco 1921, 1941 Comparison

Integrated Services Routers

	1921	1941
SM/ISM Slots	0	1
SM/ISM Slots	0	1
EHWIC Single wide /Double wide	2 Single wide OR 1 Dbl wide	2 Single wide OR 1 Dbl wide , 1Sngl wide
Onboard WAN Ports	2 GE	2 GE
Onboard DSP Slots	0	0
Default /Max Flash	256MB	512MB/4G
Default /Max DRAM	512 MB/None	512MB/2G
POE	External	External
Power Supply	AC Integrated	AC External
Form Factor	1RU	2RU

Entry Level Modular Platform

- **Cisco 1921 - Entry level modular router supporting a wide range of WAN and LAN interfaces**
- **Cisco 1941 – Modular router with mobility and customizable applications**

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

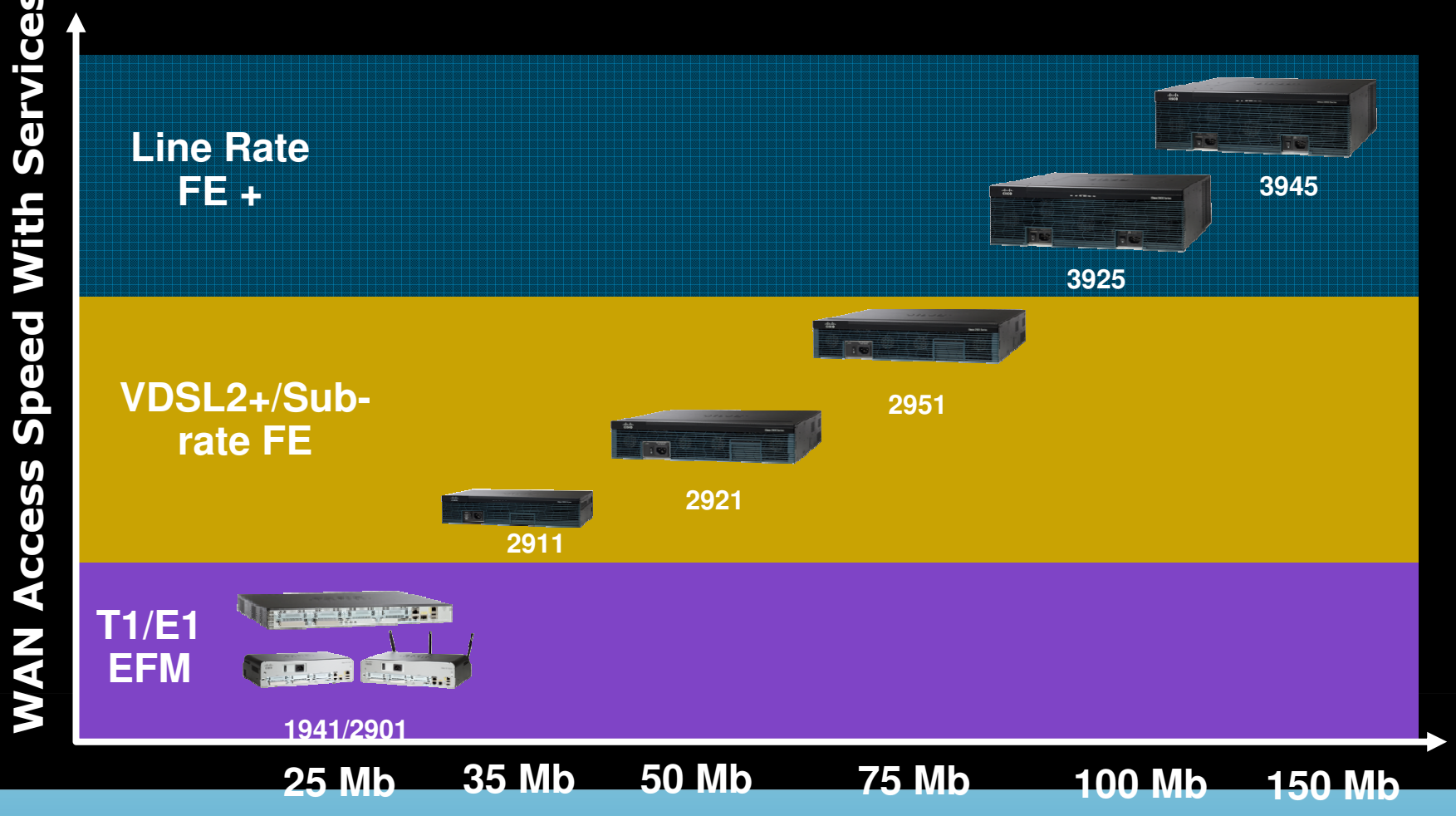
- **Very small offices, Cisco Virtual Office (teleworkers)**
- **Up to 15 Mbps WAN Access with Security**
- **Fixed configurations:**

  Pick your:

  1. **WAN interface(s)**
  2. **802.11 Wireless (Y/N)**
  3. **SRST* (Y/N)**
  4. **Backup Interface**

ISR G2 Performance Positioning

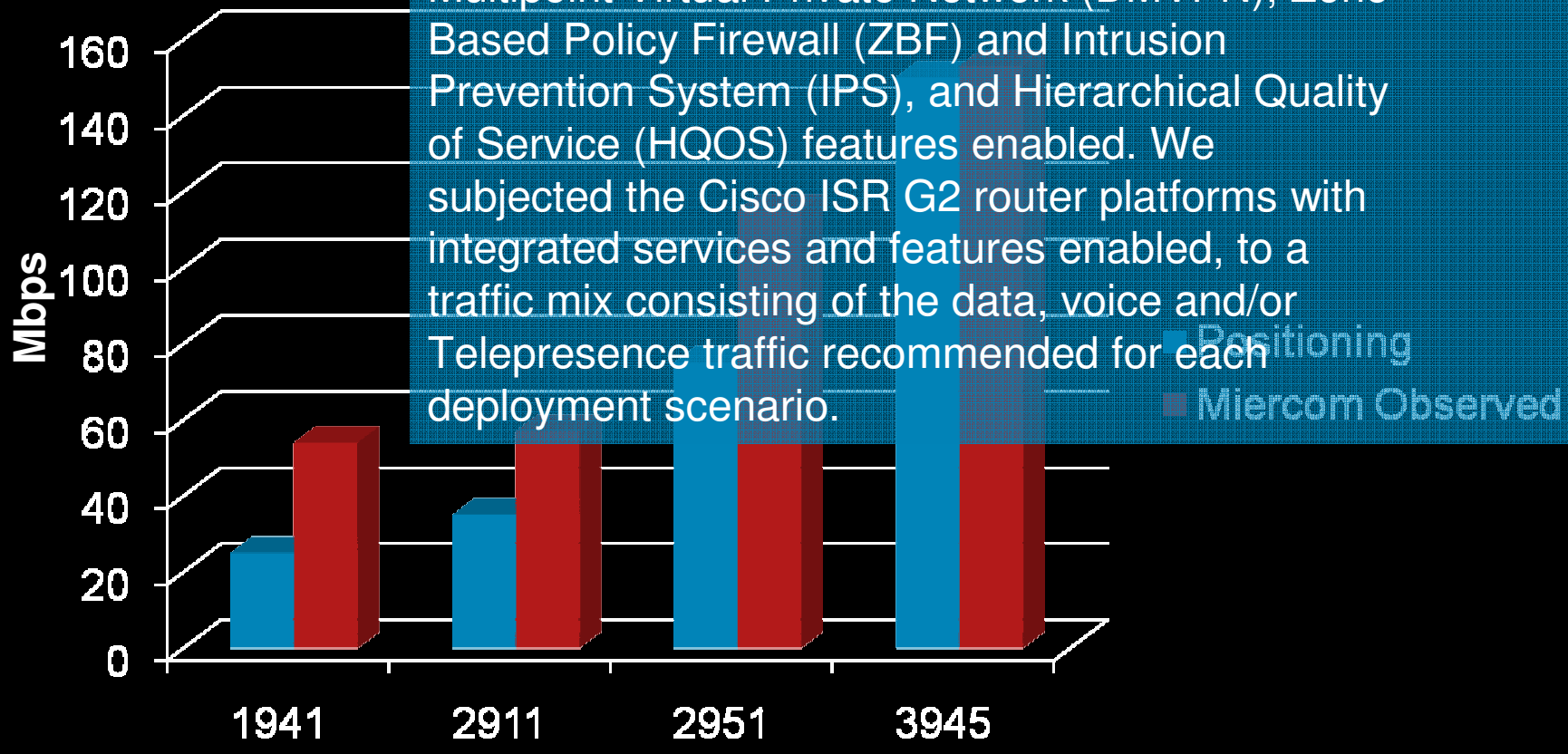
WAN Access Speeds with Services



Miercom Performance Verification

ACL, HQoS, DMVPN, Firewall

Each class of branch routers was tested based on the typical application of the model with Dynamic Multipoint Virtual Private Network (DMVPN), Zone Based Policy Firewall (ZBF) and Intrusion Prevention System (IPS), and Hierarchical Quality of Service (HQOS) features enabled. We subjected the Cisco ISR G2 router platforms with integrated services and features enabled, to a traffic mix consisting of the data, voice and/or Telepresence traffic recommended for each deployment scenario.

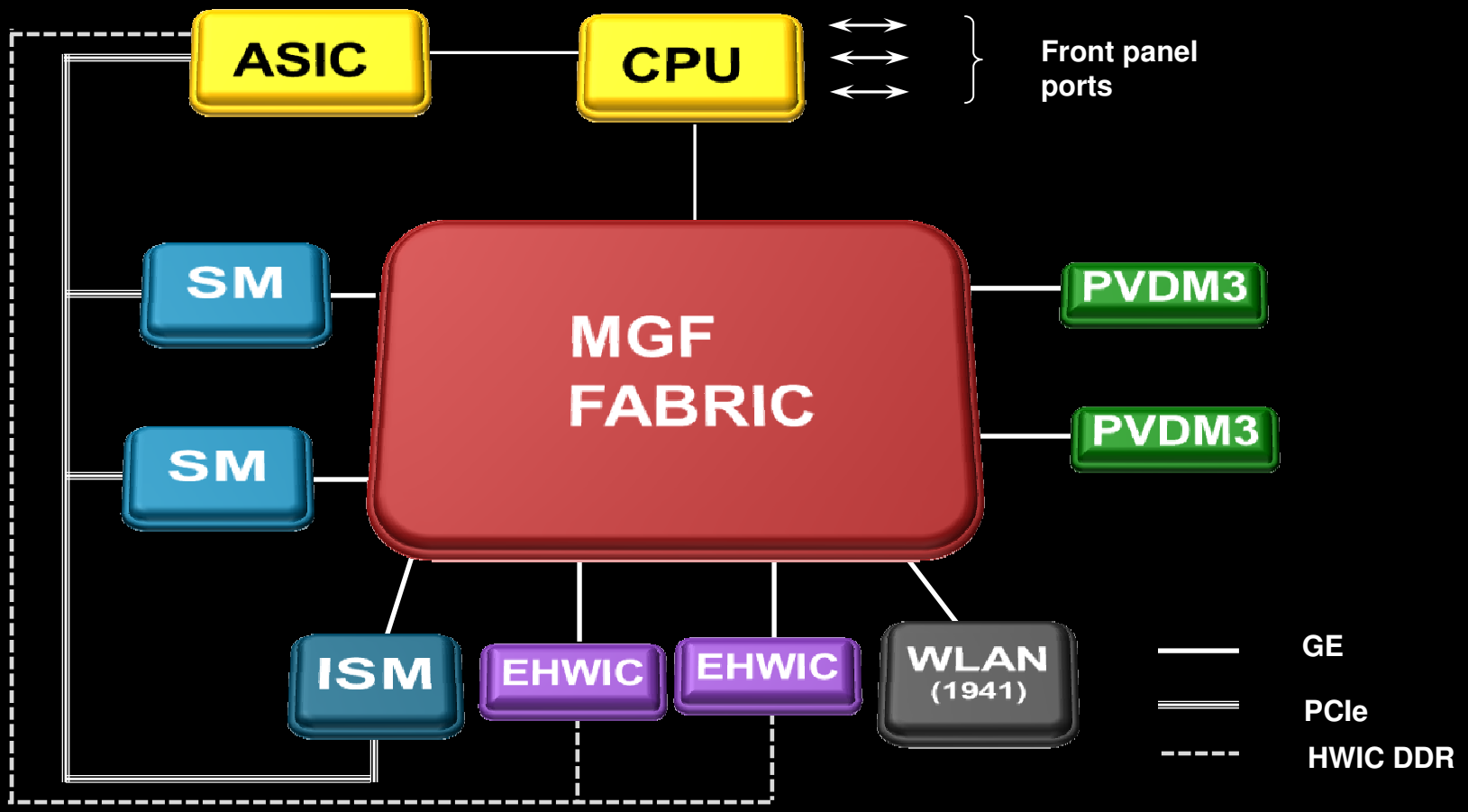


http://www.miercom.com/cisco/isrg2/20091028.pdf

Integrated Services Routers Generation 2
Architecture

Cisco Expo 2010

Multi Gigabit Fabric (MGF) Block Diagram



Note: Not all possible modules are shown

What is the MGF?

- Active L2 forwarding engine for module to module traffic
- 1 Gb connection to each SM, ISM and EHWIC slot
- Supports HIMI or VLAN connect modes today
- Prioritizes latency sensitive traffic between modules (not configurable)
- Does not participate in CEF, RIB or other L3 processes
- New modules will use traditional interface bus for normal WAN traffic. The MGF is intended solely for offloading traffic for local services only.

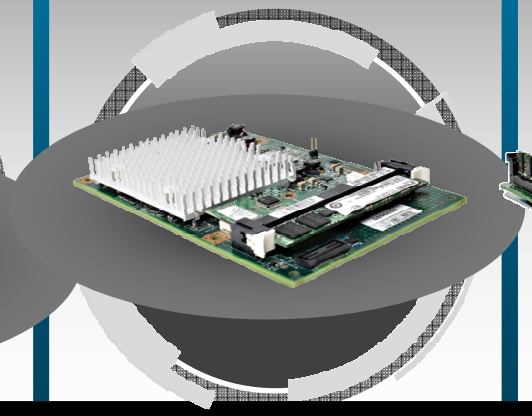
Service Modules and Interface Cards

Interface Cards (WAN or LAN)

EHWIC
Enhanced High Speed WAN Interface Card

Internal Module for Running Services That Don't Require Interface Ports

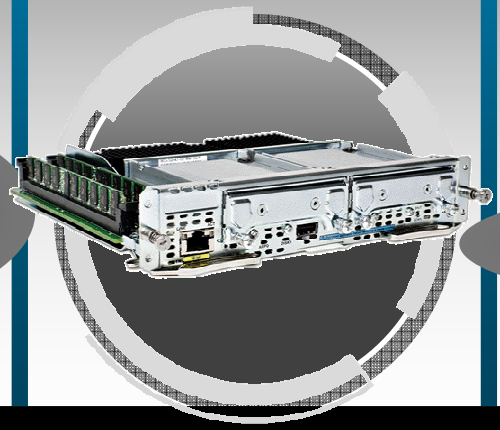
Dedicated CPU and Memory



ISM
Internal Service Module

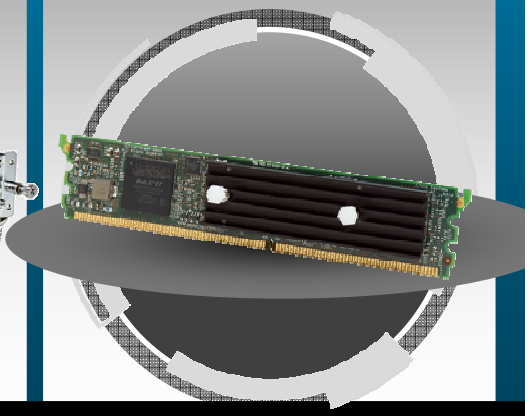
Independent CPU and Memory for Hosting Services *or* High Density Interface Ports.

Examples: Wireless LAN Controller, WAN Optimization, Etherswitch Module



SM
Service Module

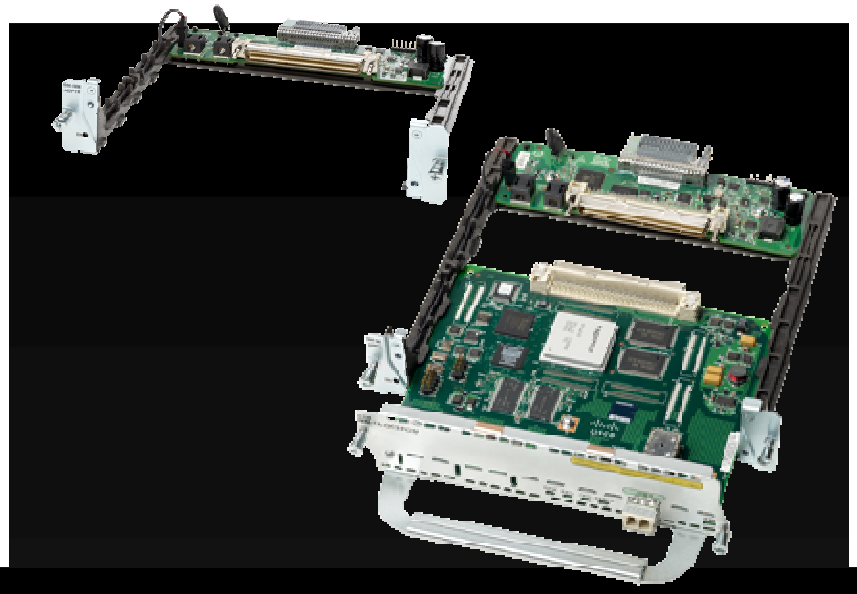
High Density Rich-Media Voice and Video DSP Modules



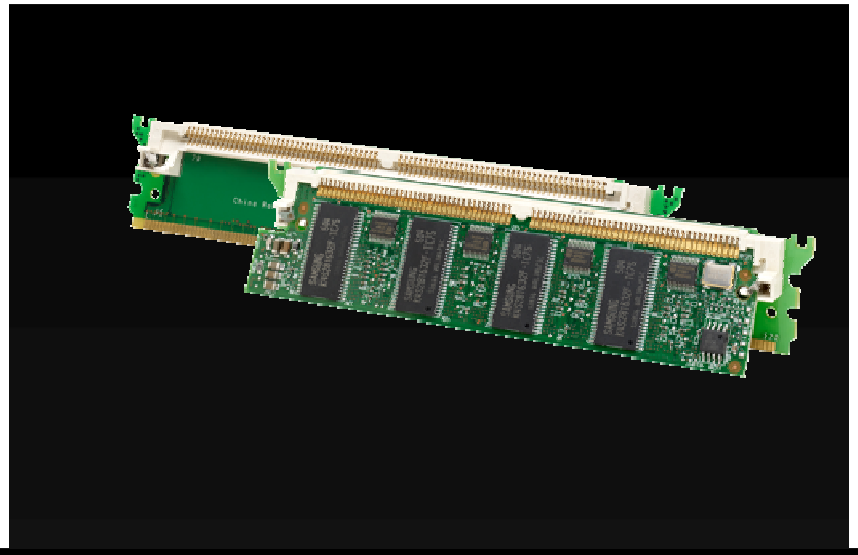
PVDM3
Packet Voice/ Data Module

Adapters

-
-



NM to
SM Adapter



PVDM2 to PVDM3
Adapter

Power Supply Advancements

New power supply standby switch

- **Green LED on pwr supply indicating power to the system**
  - **Will be lit up even if router is powered off**

- **Standby position leaves the microcontrollers on the power supply active**
  - **Future use – Cron based automatic power on/off of system**

- **Temperature sensors located on the power supply**
  - **Sensors are monitored by the system**

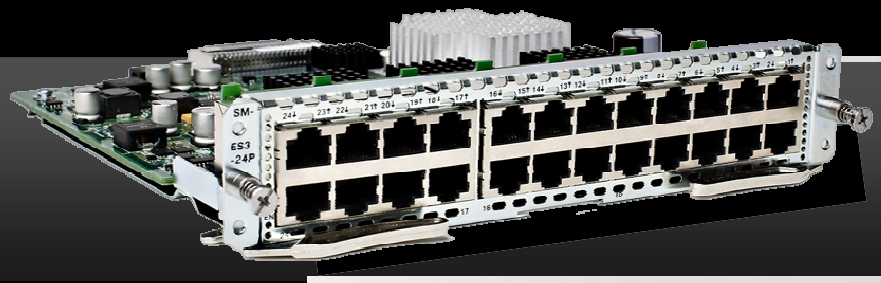
- **Allow mix & match of AC & DC power supplies (3900)**
  - **Redundant power through external RPS (2900)**
  - **DC supply range of 24VDC to 75VDC**

ISR G2 Power Supply Redundancy Model

Platforms	Power Supply redundancy model
C3945 and C3925	•Dual internal PSU based system with two identical power supply slots ▪ Both PSUs work in load sharing mode ▪ In PoE redundancy mode, total PoE power consumption = 520W. ▪ In Boost mode, total PoE consumption can =1040W.
C2951, C2921 and C2911	Single internal PSU slot and one RPS Adaptor slot for RPS 2300 connectivity
C2901 and C1941	Single Power supply unit slot. Power redundancy is not supported.

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

Switch Types

Model	FE Ports	GE Ports	SFP	L2	L2/L3	PoE	Width
SM-ES2-16-P	15	1		X		Yes	single
SM-ES2-24	23	1		X			Single
SM-ES2-24-P	23	1		X		Yes	Single
SM-D-ES2-48	48		2	X			Double
SM-ES3-16-P	15	1			X	Yes	Single
SM-ES3-16G-P		16			X	Yes	Single
SM-ES3-24-P	23	1			X	Yes	Single
SM-ES3G-24-P		24			X	Yes	Single
SM-D-ES3-48-P	48		2		X		Double
SM-D-ES3G-48-P		48	2		X	Yes	Double

SM:	Switch Module
ES2:	L2 Cat 2960 Architecture
ES3:	L2/3 Cat 3560-E Architecture
G:	Gigabit Ethernet, no G signifies Fast Ethernet
P:	Power Over Ethernet (POE)
16/24/48	Number of ports per EtherSwitch

Operational Excellence

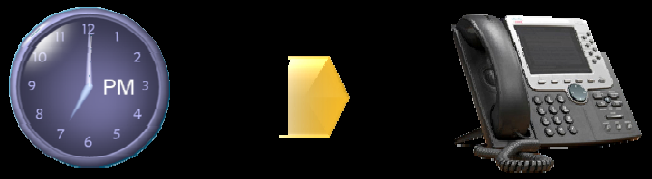
Improving Carbon Footprint with ISR G2

Cisco EnergyWise

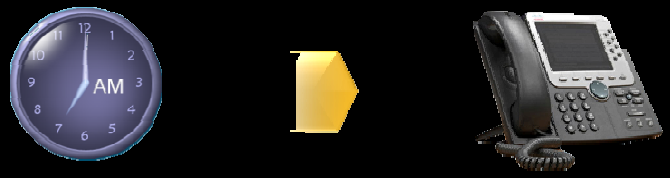
NEW

- Real-time Energy Power Consumption reporting
- System-wide EnergyWise
- ISR G2 Module power Up/Down

EnergyWise Policy: Power off at 7 p.m.



EnergyWise Policy: Power on at 7 a.m.



Hardware Re-Usability

- 90% of service modules and WAN interface cards supported
- Investment protection

Green Engineering

- Power Boost mode on 3900 series
- High-efficiency power supplies (85%)

Integrated Switching

- Up to 48 ports of FE/GE switching
- No additional power supply required
- Industry leading ePoE

Environmentally Friendly

- RoHS compliant motherboards—no lead!
- Recyclable packaging

Integrated Services Routers Generation 2
Service Readiness

Cisco Expo 2010

Evolution of Software Packaging and Activation

Ease of Ordering

Simpler Packaging

Universal Image

Operational Simplicity

Try and Buy

Reduced Testing

Ease of Management

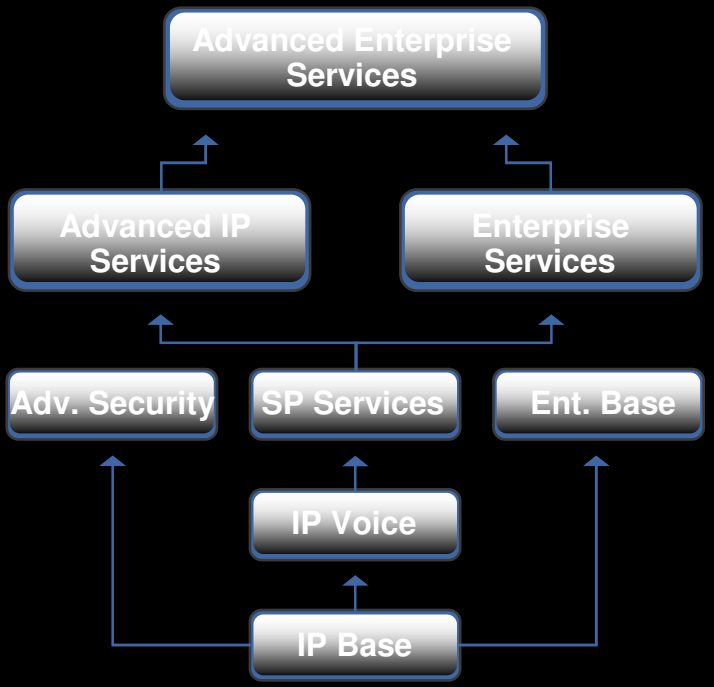
Pay as You Grow

Software Key

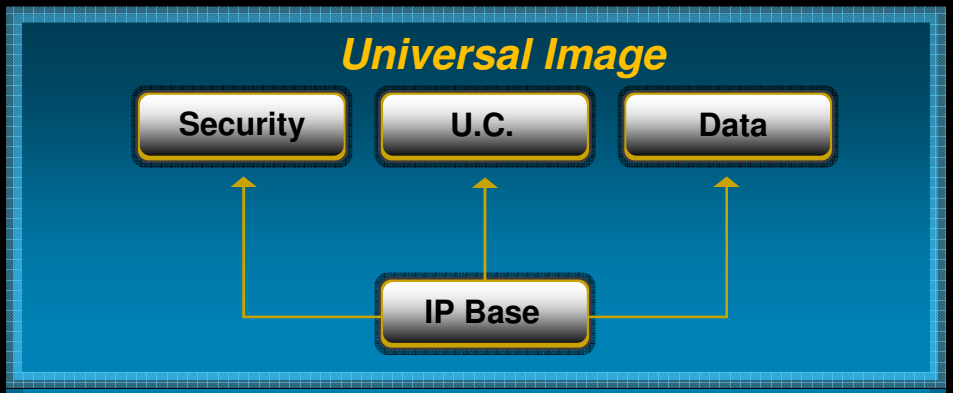
No Truck Rolls

IOS Software Packaging Evolution Summary

Current



New



- **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

Virtualized Services Framework

Virtualized Services

Software can be deployed and managed remotely without truck-rolls

Cisco Network & Collaboration Services

Cisco App (A)

OR

Cisco App (B)

OR

Compute Services & Third Party Applications

App (C)

App (D)

App (E)

HYPERVISOR / AXP

Management

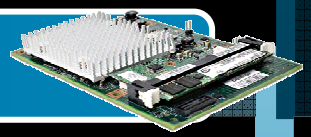
Central Management for Remote Provisioning

Cisco and Third-Party Management Tools

Integrated Compute and Storage Hardware

Hardware can be deployed with the router

Services Ready Engine – SM or ISM



SRE Services Portfolio

Network and Security Services

Network Services

Get More from the Network

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

Network and Physical Security

Secure, Protect, Comply

- Video Surveillance

Collaboration Services

Unified Communications

Enable New Capabilities

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

Compute Services and Applications

Application Infrastructure

Consolidate Branch IT

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

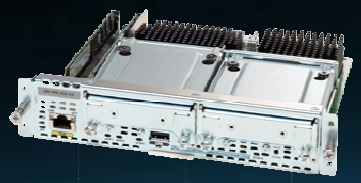
Industry Applications

Custom Solutions

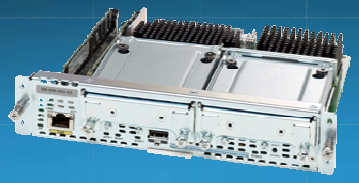
- ICW Healthcare Connector on AXP
- Tiani Medical Data Exchange on AXP
- Global Protocols Skipware (AXP)

- Roadmap
- Available

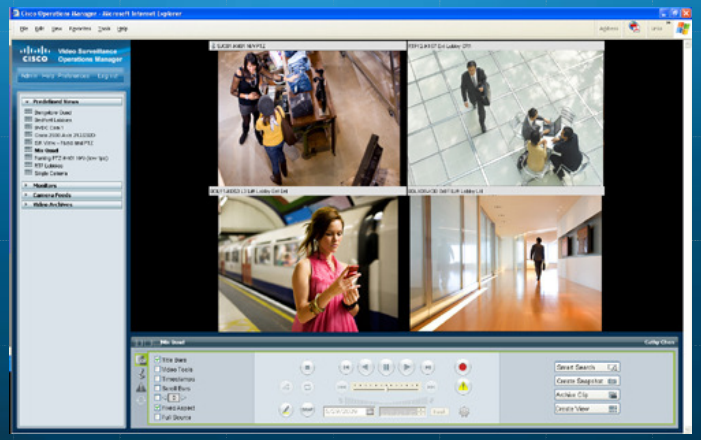
Integrated Video Surveillance for the ISR G2
Video Management and Storage System



Video Management and Storage System (VMSS)



Integrated Storage System (ISS)



Video Surveillance Manager (VSM)

Solution Objective

- Integrate video surveillance for a single-box branch office solution

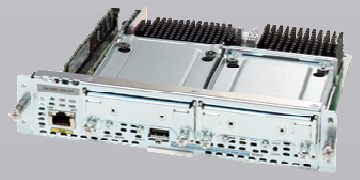
Solution Benefits

- Single management interface for IP and analog video devices through VSM
- Live viewing and local retention of video
- Remote accessibility of video data
- Extended video storage with ISS
- Security through granular access control

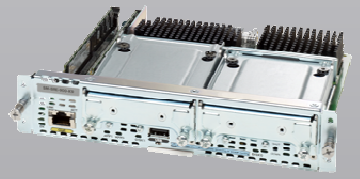
Enhancements with G2

- VSM supported on SM 700 and SM 900
- Increase onboard video retention capacity
- Higher performance and faster video retrieval
- Video data protection through RAID

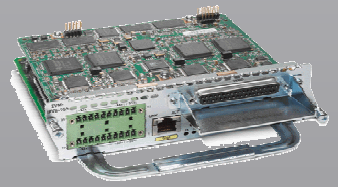
Integrated Services Routers G2 Portfolio for Video Surveillance



Video Management and Storage System on SRE 700 and 900



Integrated Storage System on SRE 700 and 900



Analog Video Encoding Module

2911, 2921, 2951

3925, 3945

Small Branch

Data and Security Services

Embedded Wireless, Security and Data

Medium to Large Branch

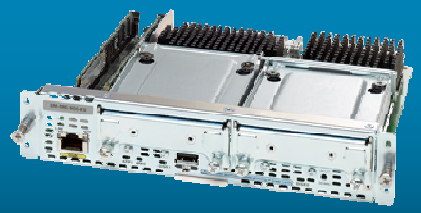
for Concurrent Services

Embedded, Advanced Voice, Video, Data and Security Services

Embedded Wireless, Security and Data

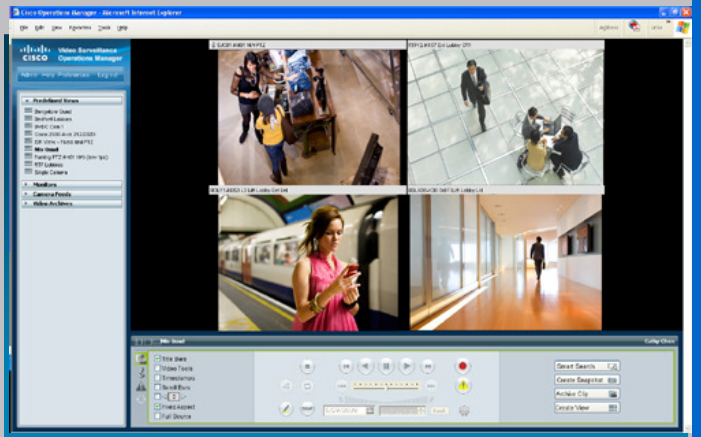
Enhancing the Customer Experience

Cisco Integrated IP Video Surveillance – Video Management and Storage System



Integrated Video Management and Storage System

Cisco Video Surveillance Manager



Manage video sources

- Provides a unified interface to configure and control IP Video Surveillance Devices
  - Manage, view and archive surveillance data for up to 32 devices simultaneously
  - Cisco Video Surveillance Management Software Suite
    - Supports Cisco Integrated Analog Video Gateway
    - Supports major 3rd party IP Cameras and encoders/decoders
- View live and archived video through same Thin Client interface

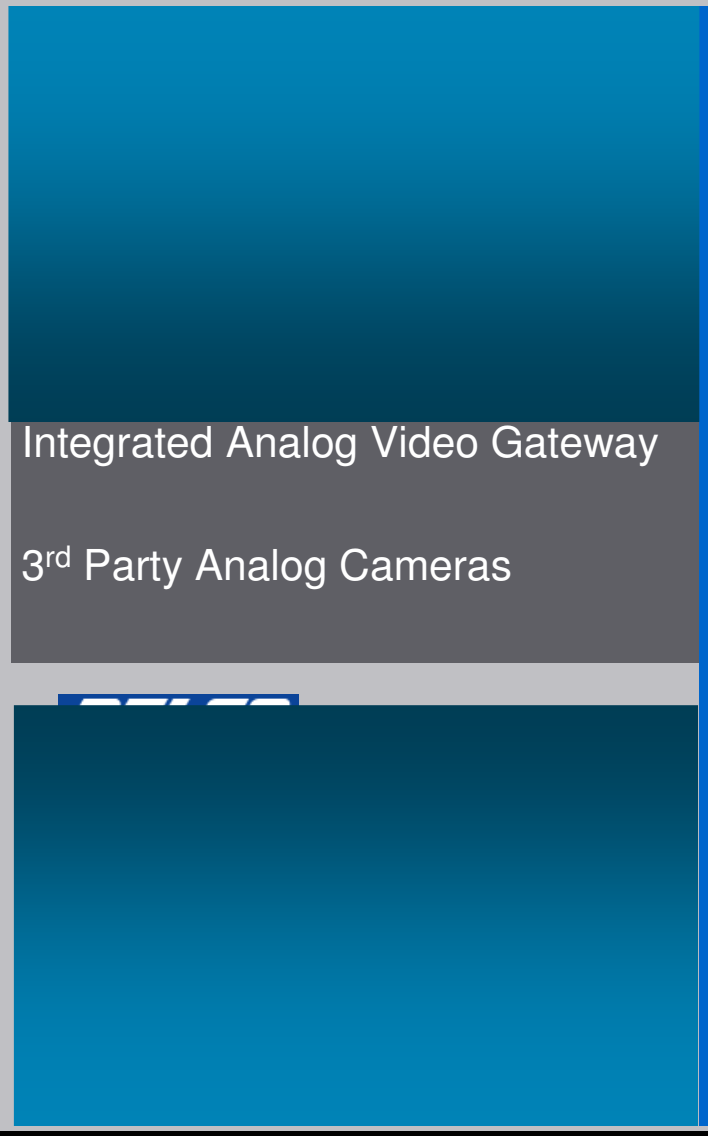
Archive and Manage Video

- Up to 1TB of local storage per SRE module
- Add ISS on SRE module for additional storage

Protect video assets

- High configurable user privileges
  - Control access with a fine granularity

Cisco Integrated IP Video Surveillance – Hybrid Solution with Analog Video Gateway



Move your Analog Video onto the IP Network

- Up to 16 Analog Video Ports
  - 14 dedicated inputs, 2 configurable input/output
- Chose your preferred Codec
  - MJPEG, MPEG-4, H.264
- Transport with Standard Protocols
  - RTSP for MPEG4 based Codecs
  - HTTP for MJPEG

Control your Cameras

- 2xRS-485 ports for device Pan/Tilt/Zoom control
- Support for pass-through of serial commands to/from host system

Alert your management station

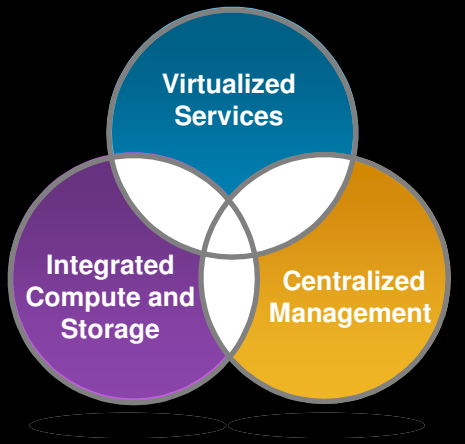
- 8 Contact Closure Ports for sensor triggers
  - 4 dedicated Inputs, 4 input/output

Optimize your video with Analytics

- Built in Motion Detection algorithms

In Summary, Why Cisco SRE?

- Compact, versatile, high-performance router blade
- Flexible infrastructure to run different applications
- Centralized application deployment and management
- Better infrastructure flexibility, TCO, and investment protection than overlay appliances
- Deploy blade today, application later
- Attractively priced router bundles



Integrated Services Routers Generation 2
Unified Communications

Cisco Expo 2010

ISR G2 Enhances Branch Unified Communications

Completely integrated solution provides key UC services for the highly collaborative organization

- Voice Gateway services bridge IP to legacy TDM environments with a broad range of traditional voice interfaces
- Cisco Unified Border Element links VoIP domains and technologies across borders
- Feature rich Cisco Unified Communications Manager Express and Unity Express provide built-in IP PBX, key system and voice mail features
- Addresses emerging requirements for productivity enhancing video

- PVDM3 engineered for voice and video, support traditional and high-fidelity voice; employs power saving technologies
- ISR G2 for high performance needs of collaboration services and greater UC scale
- Ease migration thru consistent services, voice gateway, CME, SRST, CUBE and API's
- Maintains PSTN voice interfaces for investment protection

Cisco Next Generation Integrated Services Router Portfolio for Unified Communications

Concurrent Services and Performance

Multiple Services

With the Services Module and Integrated Services Module – SRE for Unity Express (32 ports) and AXP

35 Phones
35 Phones
100 sessions
100 DS0

2901

50 Phones
50 Phones
200 sessions
200 DS0

2911

100 Phones
100 Phones
400 sessions
360 DS0

2921

150 Phones
250 Phones
600 sessions
480 DS0

2951

250* Phones
730 Phones
800 sessions
480 DS0

3925

350*Phones
1200 Phones
1000 sessions
720 DS0

3945

Cisco Unified Communications Manager Express
Cisco Unified Survivable Remote Site Telephony
Cisco Unified Border Element
Voice Gateway

Small Office | Small Branch | Enterprise Branch Office

Integrated Services Routers
Voice and UC Capacity Comparison

Platform	Voice Gateway	CUBE	CME	SRST
3945E	660*	2500	450	1500
3925E	420*	2000	400	1350
3945	720	1000	350	1200
3925	480	800	250	730
2951	250	600	150	150
2921	170	400	100	100
2911	100	200	50	50
2901	50	100	35	35

***Gateway – lower due to fewer HWIC slots on 3945E & 3925E**

PVDM3 DSPs

- Up to 4X voice channel density per slot
- MGF interface for increased IP throughput
- Enhanced multi-core DSP architecture optimized for rich-media UC applications
- Feature parity with the PVDM2s
- support for co-existence with PVDM2

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

- The PVDM3-16, 32, 64 and 128 contain a single DSP chip
- The PVDM3-192 and 256 contain two DSP chips

Platform Onboard PVDM3 Voice Termination Capacity Summary

- All onboard slots are populated with PVDM3-256

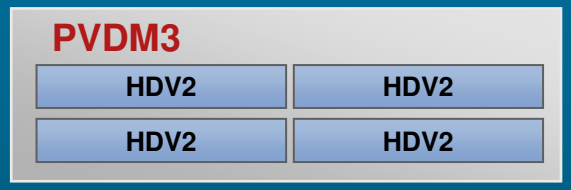
  SM slots are unused (these can additionally be populated with PVDM2s)

Platform	Onboard PVDM3 Slots	Onboard Ports (T1/E1)	G.711 DSP Channels	G.729A DSP Channels	G.729/iLBC DSP Channels
3945	4	8 (192 / 240)	1024	768	480
3925	4	8 (192 / 240)	1024	768	480
2951	3	8 (192 / 240)	768	576	360
2921	3	8 (192 / 240)	768	576	360
2911	2	8 (192 / 240)	512	384	240
2901	2	8 (192 / 240)	512	384	240

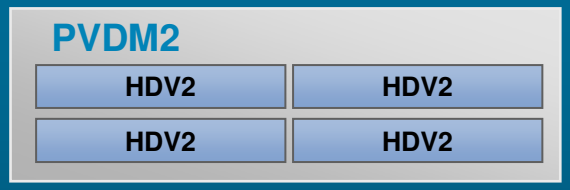
PVDM2 and PVDM3 Co-Existence

- PVDM2 and PVDM3 DSP can co-exist on the same platform
- Each DSP domain can only consist of a single type of DSP
- DSP sharing only across domains that have the same DSP type
  - Motherboard (with all its PVDMs) is a single DSP domain
  - Each NM (with all its PVDMs) is a single DSP domain

Platform	Onboard **PVDM3** Slots	SM-Based **PVDM2** Slots
3945	4	16
3925	4	8
2951	3	8
2921	3	4
2911	2	4
2901	2	0



- PVDM3 on motherboard
- PVDM2 in NM slots
- NM interfaces can share DSPs



- PVDM2 on motherboard
- PVDM2 in NM slots
- EHWIC and NM interfaces can share DSPs

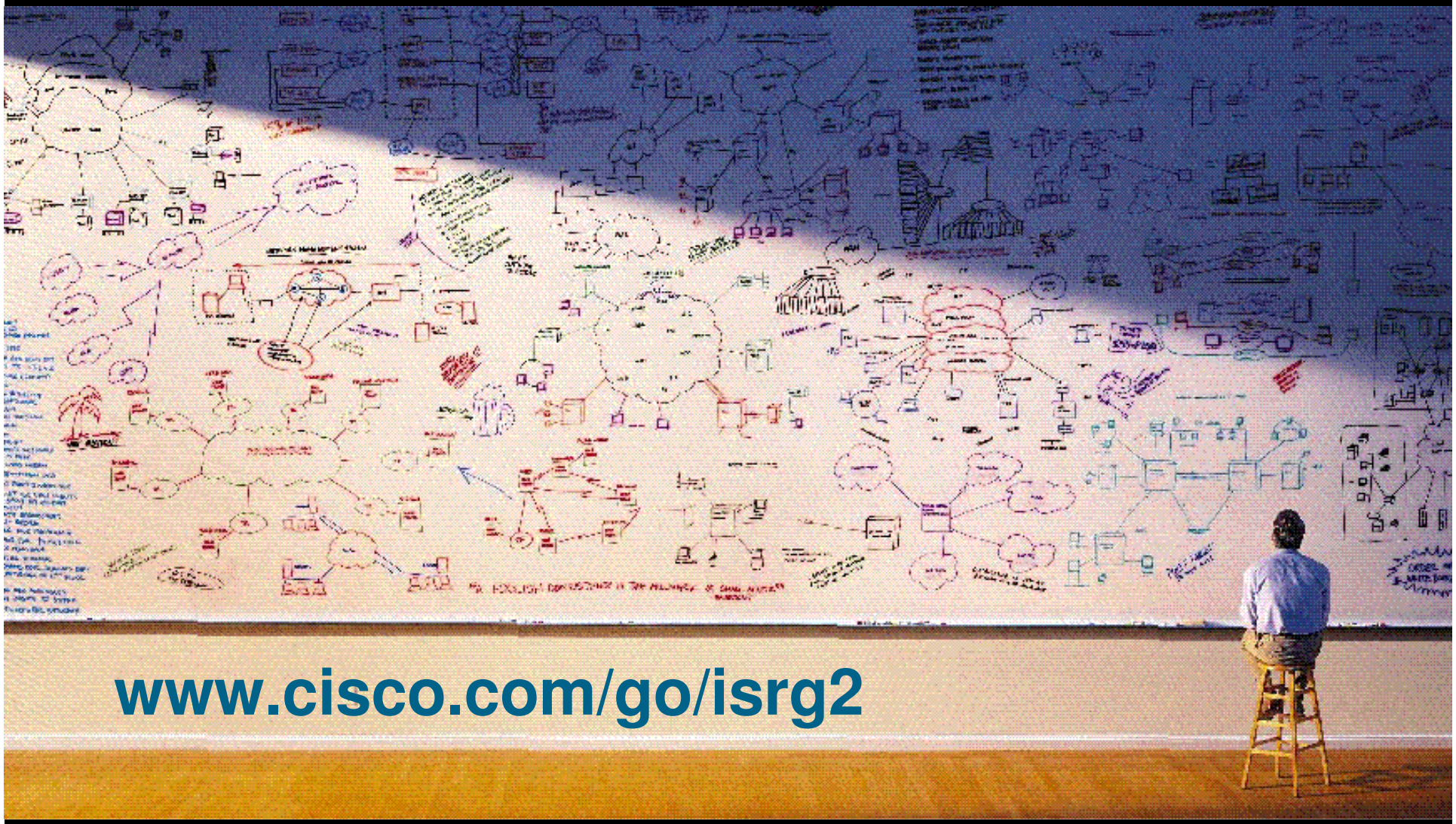
Summary: What's New with Cisco ISR G2?

Making the best …even better!

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

Up to 8X the Performance. Similar price points.

Q & A



www.cisco.com/go/isrg2