



# Cisco Network Foundation: Switching & Routing

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# What's new?



- Routing

- C1861 Integrated Services Router
- C860&880 Integrated Services Router

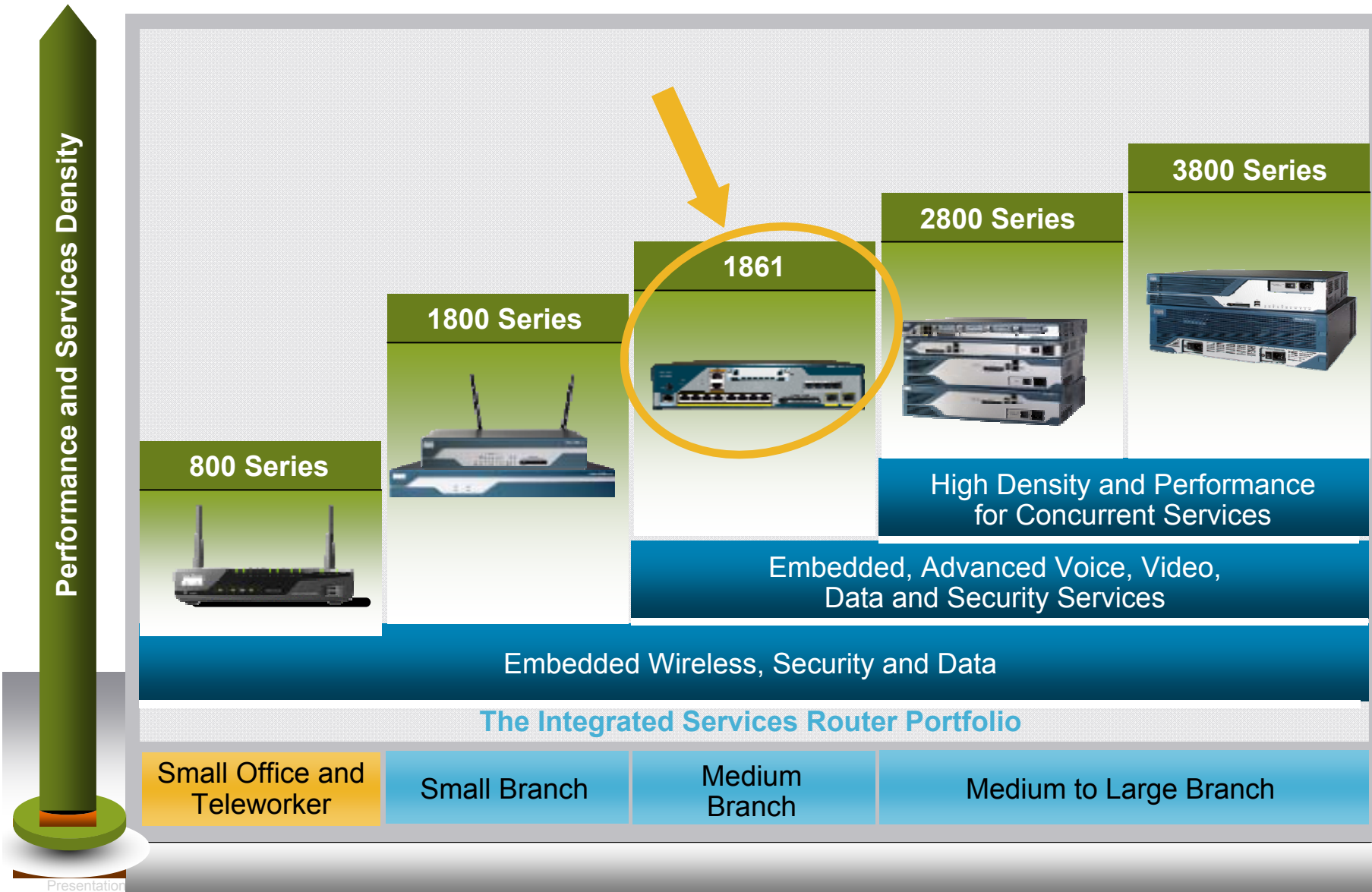
- Switching

- Catalyst 2960 Switches, with LAN Lite IOS
- Catalyst 3560E Switches
- ...others



# ROUTING UPDATE

# Cisco Integrated Services Router Portfolio



# Cisco 1861 Integrated Services Router



For Small Branch Offices and Small/Medium Businesses

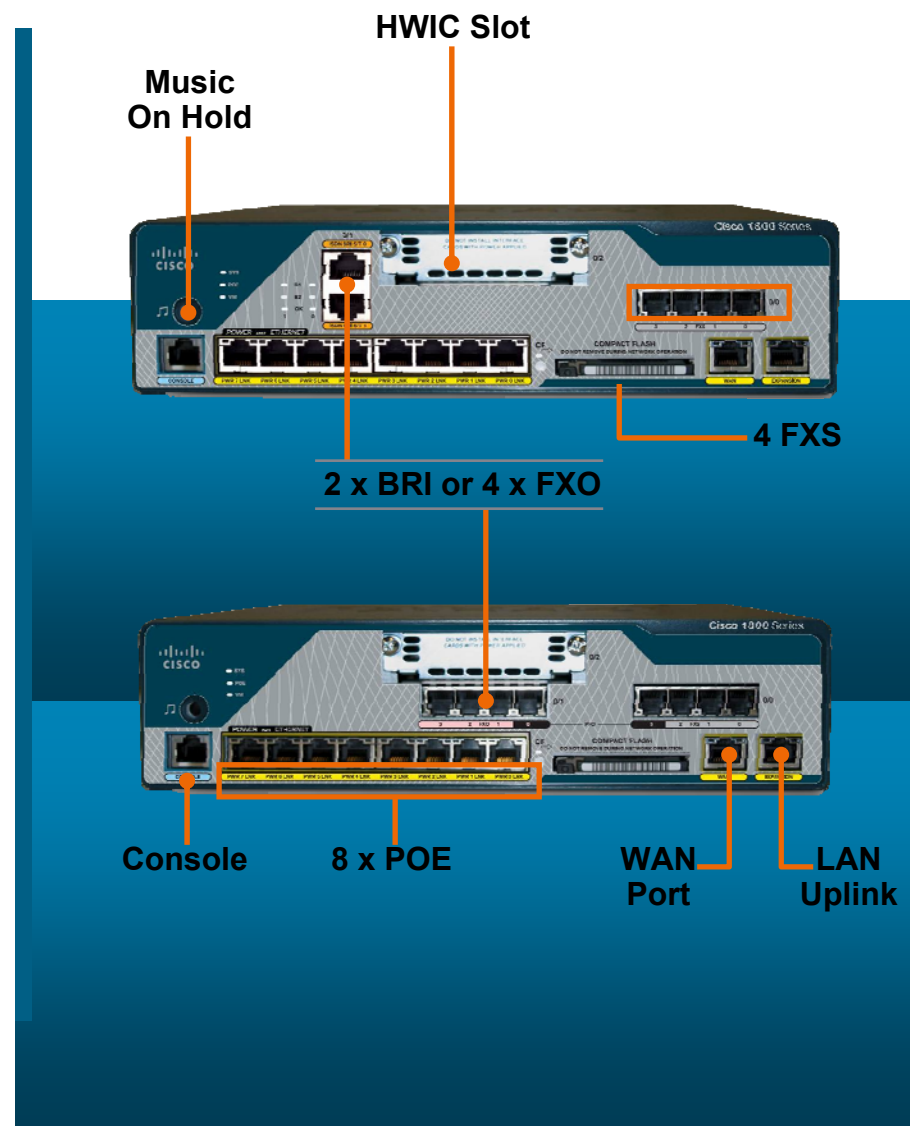
- Solution Packaged for 12 User Office
- Flexible WAN Interface Options
- Power failover to PSTN
- POE-enabled 8-port switch
- Small Desktop, Wall-mount or Rack - mount

- Unified Communications solution for small branch office or small business
  - Combines call control, messaging, routing and switching for lower capital and operational costs
  - Cost flexibility
  - Simplified: ordering, operation, and deployment
- Full Unified Communication support
  - SRST
  - Unified Call Manager Express
  - CUE
- Comprehensive security
  - IPSec VPN acceleration
  - Threat Control and Containment

# Cisco 1861 Integrated Services Router

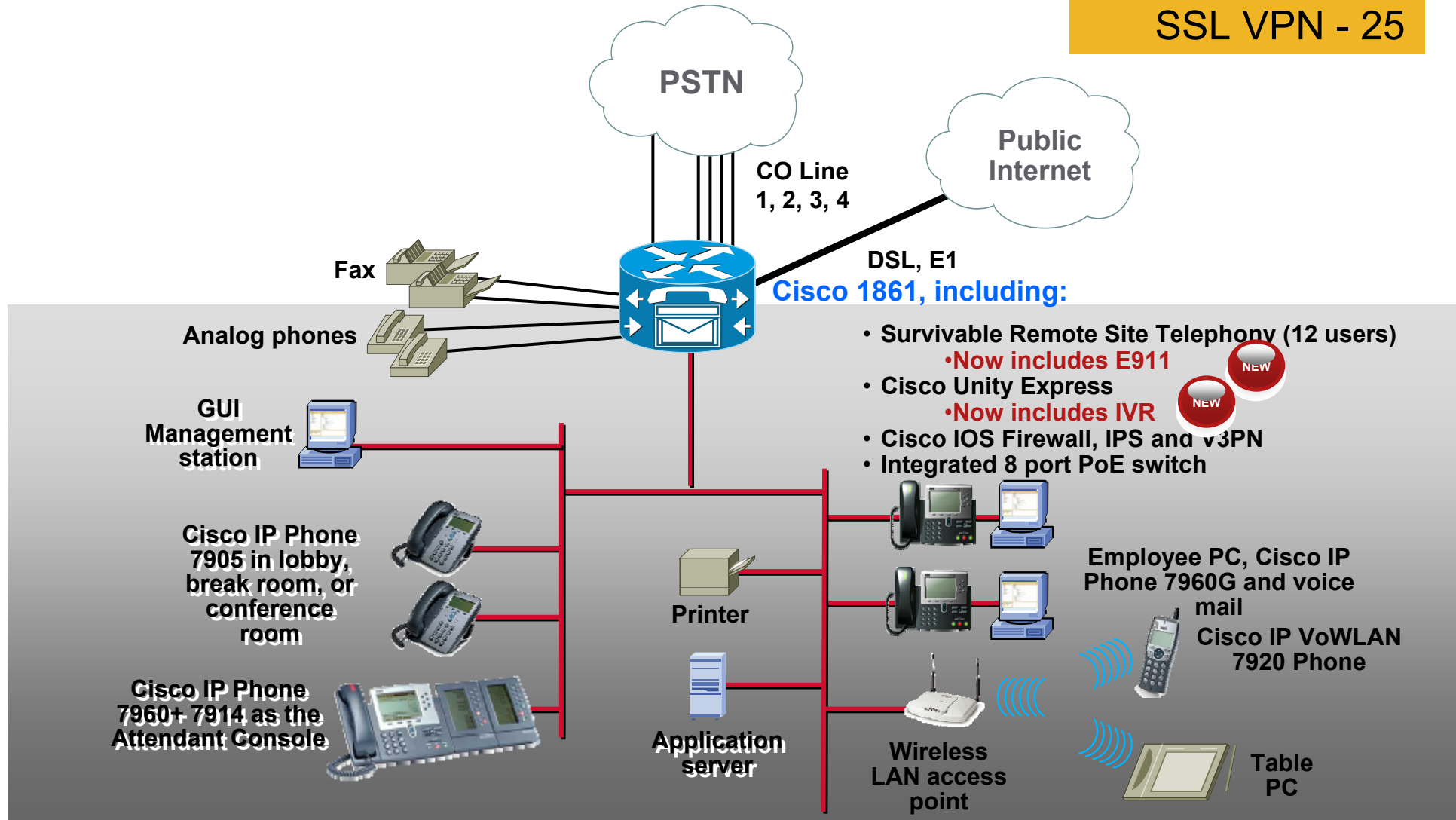
## Small Branch Unified Communications Services

- Cisco 1861 Integrated Services Router offers a 12-user packaged Unified Communications platform:
- Unified Communications Features:
  - Unified Call Manager Express or Survivable Remote Site Telephony Option for 12 Users
  - Fixed PVDM configuration (1 DSP)
  - Cisco Unity Express orderable option
  - 4 FXS Station Ports
  - 4 FXO or 2BRI PSTN Trunk Ports
  - Music on Hold port
  - 8 10/100 POE Switch Ports + 1 Expansion port
- Routing and Security Features:
  - Cisco IOS Security software images
  - T1/E1 & Serial WAN
  - 3G Wireless WAN
  - DSL and Cable



# Branch Office Deployment SMB & Mid-Market

**Users**  
 Voice - 12  
 Data – no limit  
 SSL VPN - 25



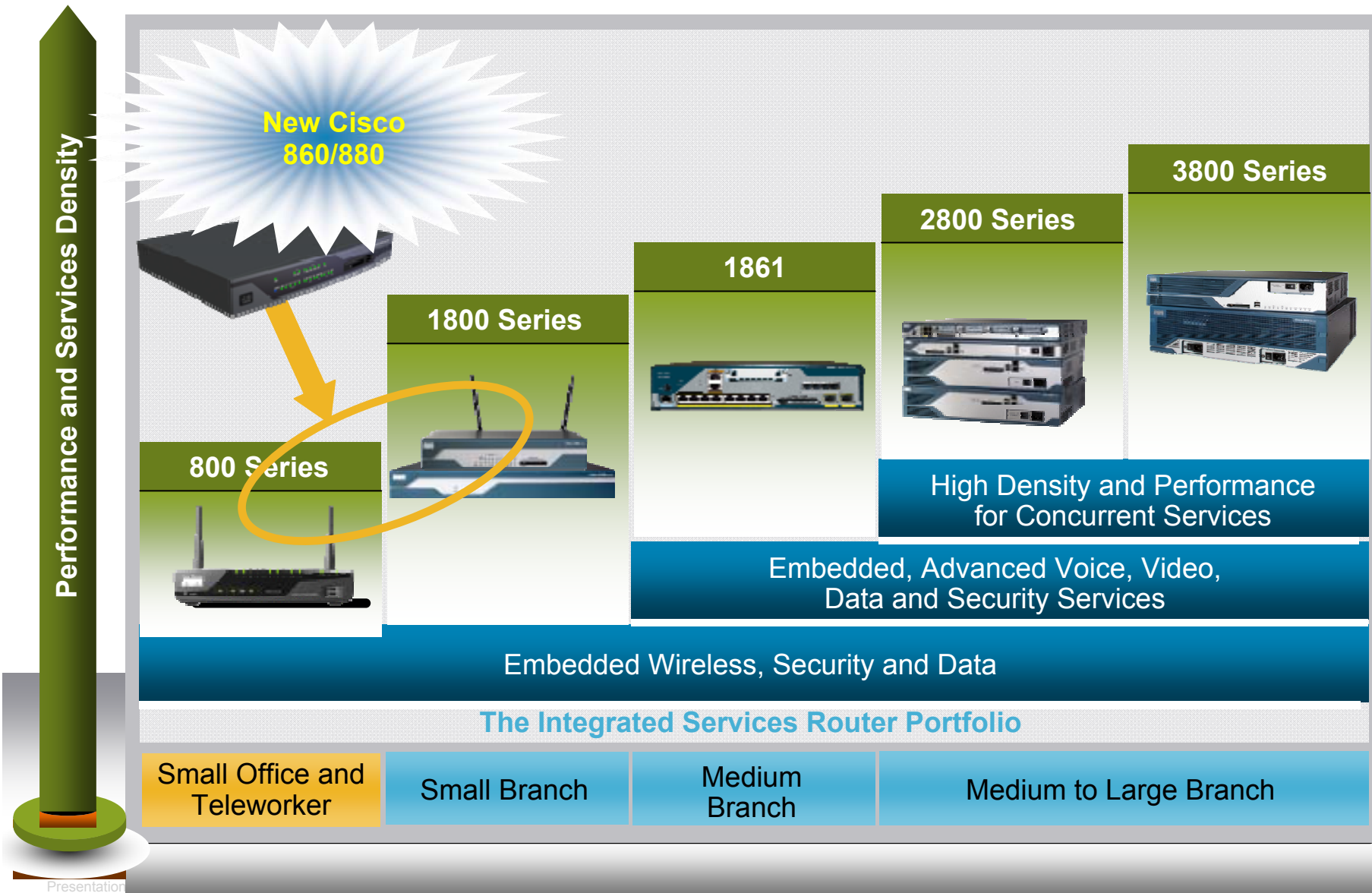
# 1861 positioning

Feature/Functionality	UC500	1861	2801
Target Market	Unified communications solution for Small businesses; <b>part of the Smart Business Communications System</b>	<b>ISR with focus on unified communications solution</b> with integrated WAN & security for SMB, Enterprise small branch offices	<b>ISR with support for Data, security, voice, &amp; video communications for SMB, Enterprise branch offices</b>
Fixed ports/Modular Slots	Fixed POE Switch and Voice ports, expandable slot for specific voice cards	Fixed POE Switch and Voice ports, expandable slot for specific HWICs for WAN	4 x Modular data and voice slots
Form Factor / Dimensions	Desk-top / 10.5" W x 11.05" D and 2.625" H	Desk-top / 10.5" W x 11.05" D and 2.625" H	Rackmount / 17.5" W x 16.5" D x 1.72" H
WAN support	<b>Needs an external router</b>	<b>Specific list of HWICs supported</b>	<b>Comprehensive list of HWICs supported</b>
LAN support	Fixed: 1 x FE (routed port), 8 x POE + 1 (switch uplink port)	Fixed: 1 x FE (routed port), 8 x POE + 1 (switch uplink port)	Fixed: 2xFE, Expandable through HWIC slots
USB ports	None	None	1
Internal AIM slots	None	None	Yes
PVDM slots	Fixed	Fixed	2 Internal PVDM slots
Default Memory	128MB Flash, 256MB DRAM	128MB Flash, 256MB DRAM	64MB Flash, 128MB DRAM
Max Memory	128MB Flash, 256MB DRAM	128MB Flash, 256MB DRAM	128MB Flash, 384MB DRAM
Power Supply	External AC	External AC	Internal AC

# 1861 positioning

Feature/Functionality	UC500	1861	2801
Product Packaging	Unified communications focused	Unified communications focused	Data, security, voice gateway, & unified communications
IOS image support	Fixed image	Default voice image, upgradeable to higher-end images	Default image depends on sku; comprehensive list of IOS images supported
Call Manager Express (# of users)	8 - 48	12	24
SRST support	No	Yes	Yes
Advanced security features (SSL VPN, IPS, NAC, GETVPN, etc.)	No	Yes	Yes
Dynamic Routing (RIP, BGP, OSPF, EIGRP, etc.)	No	Yes	Yes
Enterprise features (IBM, SNA, etc.)	No	Yes	Yes
Wireless LAN (WLAN) Support	Yes	No	Yes

# Cisco Integrated Services Router Portfolio



# Cisco 860, 880 Fixed Router Solution

<b>Cisco 860 ISR</b> Data, Security, Wireless	<b>Cisco 880 ISR</b> Data, Security, Wireless	<b>Cisco 880 SRST</b> ISR with Voice	<b>Cisco 880 IAD</b> Integrated Access
 <p><b>Enterprise Teleworker and Small Business</b></p> <ul style="list-style-type: none"> <li>Entry-level, secure routing solution</li> </ul>	 <p><b>Enterprise Teleworker and Small Business, Small Branch</b></p> <ul style="list-style-type: none"> <li>Full-featured secure router</li> </ul>	 <p><b>Enterprise Teleworker and Small Branch</b></p> <ul style="list-style-type: none"> <li>Voice with survivability</li> </ul>	 <p><b>Small Business</b></p> <ul style="list-style-type: none"> <li>For SP managed services only</li> </ul>

Optional 802.11n	Standalone	Standalone/Unified	Standalone/Unified	Standalone/Unified
Dual WAN Links	No	Yes	No	Yes
3G Option	No	Yes	No	No
Unified Wireless	No	Yes	Yes	Yes

Security	Basic	Advanced	Advanced	Advanced
Cisco 860 Router Series Products				
CISCO861-K9	Cisco 861 Ethernet Security Router		\$449	
CISCO861W-GN-E-K9	Cisco 861 Ethernet Security Router 802.11n ETSI Compliant		\$799	
Cisco 880 Router Series Products				
CISCO881-K9	Cisco 881 Ethernet Sec Router		\$649	
CISCO888-K9	Cisco888 G.SHDSL Sec Router w/ ISDN B/U		\$1,295	
CISCO888W-GN-E-K9	Cisco888 G.SHDSL Sec Router ISDN B/U 802.11n ETSI Comp		\$1,645	

# Cisco 860 and 880 Series Overview

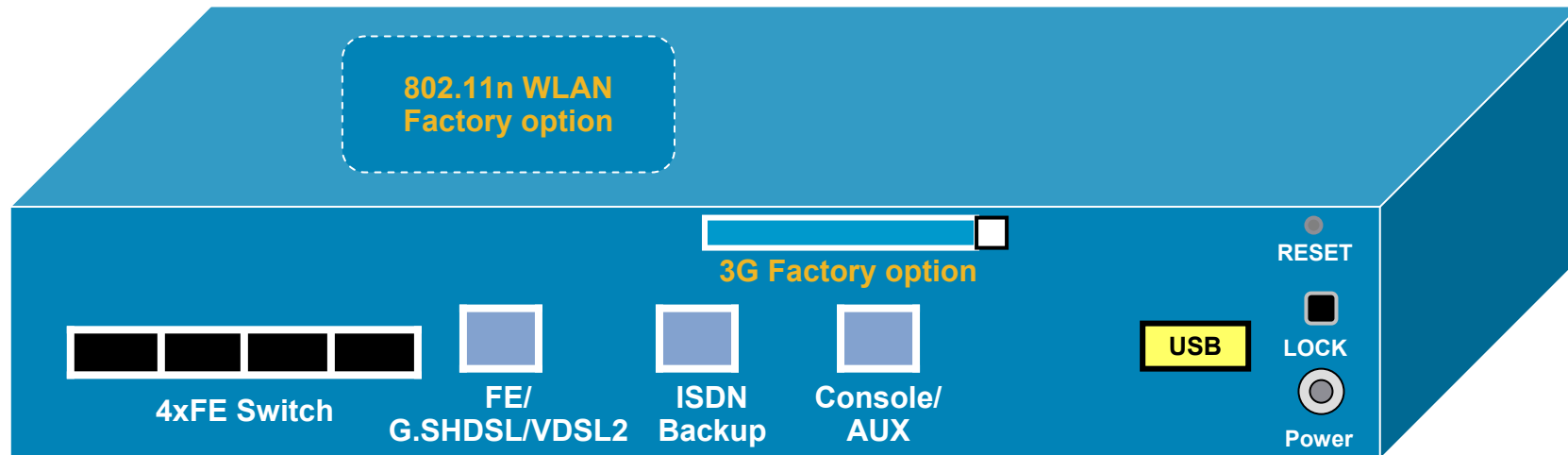
	860	880 Data	880SRST
FE WAN	Yes	Yes	Yes
G.SHDSL	No	Yes	Yes
VDSL2*	Yes	Yes	Yes
Data Back Up	No	ISDN BRI, 3G	ISDN BRI
802.11n	2.4GHz	2.4GHz	2.4GHz
Managed 10/100 Switch Ports	4 ports	4 ports	4 ports
VLANs (wired and wireless)	2	8	8
Voice ports	No	No	4-port FXS + FXO or BRI
SRST	No	No	Yes

\* Future

# Cisco 860 and 880 Series Overview

	860	880 Data	880SRST
Hardware Based IPsec Encryption	Yes	Yes	Yes
Flash	128M	128M	256M
DRAM (standard/max)	256M	256M/768M	512M/768M
DSP	None	None	1 (PVDM2-16)
Internal POE option	No	2 Ports	2 Ports
USB 1.1	No	1	1
Wireless Features	Basic	Advanced	Advanced
Security Features	Basic	Advanced	Advanced
IOS Feature Set	Adv. Security	Adv. Security Adv. IP Services	Adv. IP Services
Performance	1X860	2X860	2X860

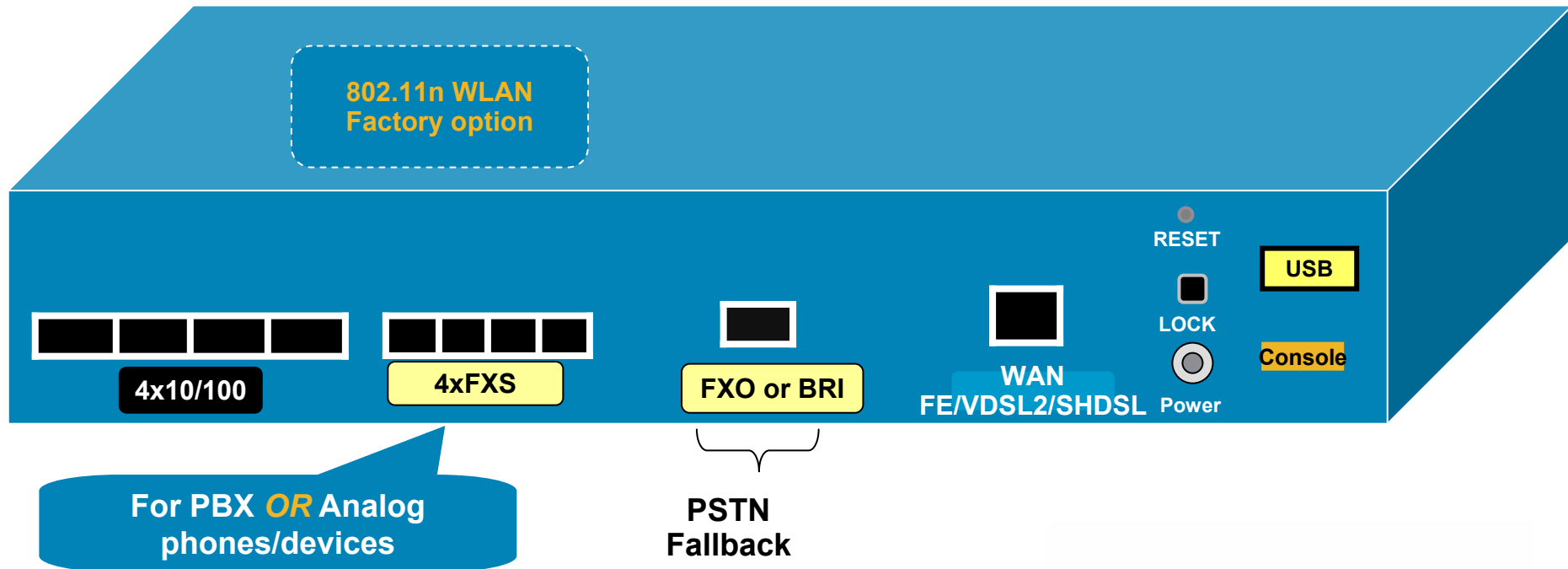
# Cisco 880 Series



- Desktop chassis with External Power supply
- Integrated FE WAN, G.SHDSL, or VDSL2 (backward compatible with ADSL2+)
- 4 x 10/100 managed switch on 880 models;
- ISDN backup on DSL models
- One USB (1.1) flash memory or security e-token
- Reset button (restores factory default configuration)
- Factory Options: 802.11n WLAN AP, 3G, Internal 2-port POE
- Default IOS image with Advanced Security feature set, upgradable to Advanced IP Feature set



# Cisco 880SRST



- Voice ports: 4FXS with FXO for PSTN Fallback
- Voice ports: 4FXS with BRI for PSTN Fallback
- WAN: FE, G.SHDSL, VDSL2
- Supports up to 4 simultaneous calls





# Data and Security Applications

# Cisco IOS VPN Solutions

## Innovations in Confidential Communications

### Cisco Advanced Site-to-Site VPNs

#### 1. Hub-and-Spoke VPNs

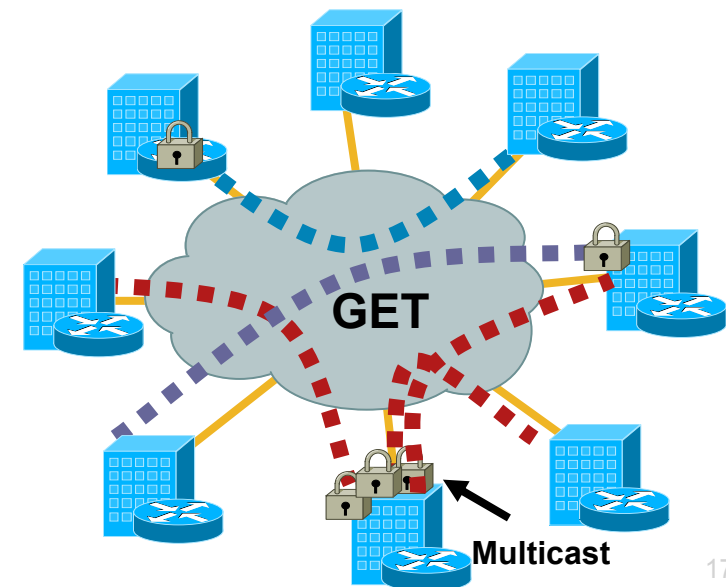
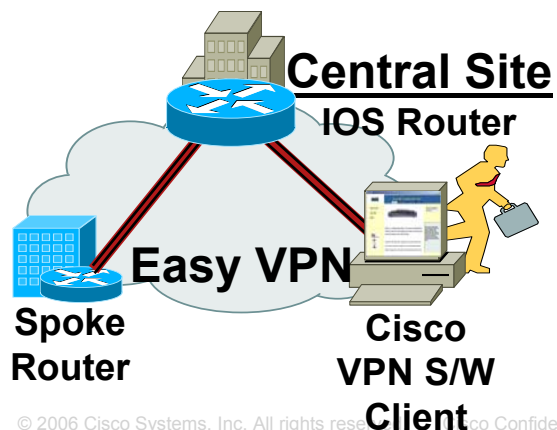
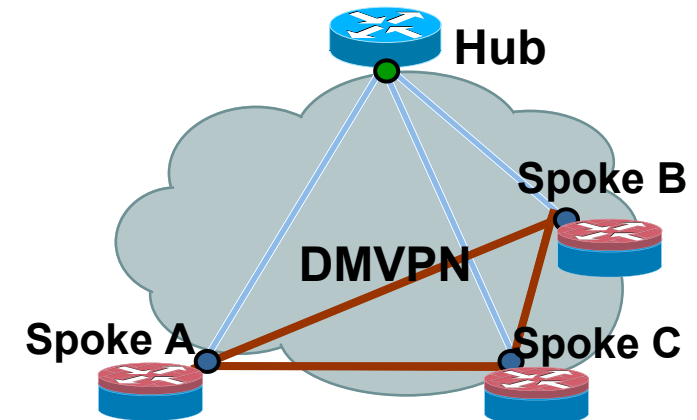
- IPSec+GRE: (Static Tunnels with Routing)
- Easy VPN (Dynamic Policy/Config Push)
- DMVPN (Zero Touch with Dynamic Routing)

#### 2. Dynamic Spoke-to-Spoke VPNs

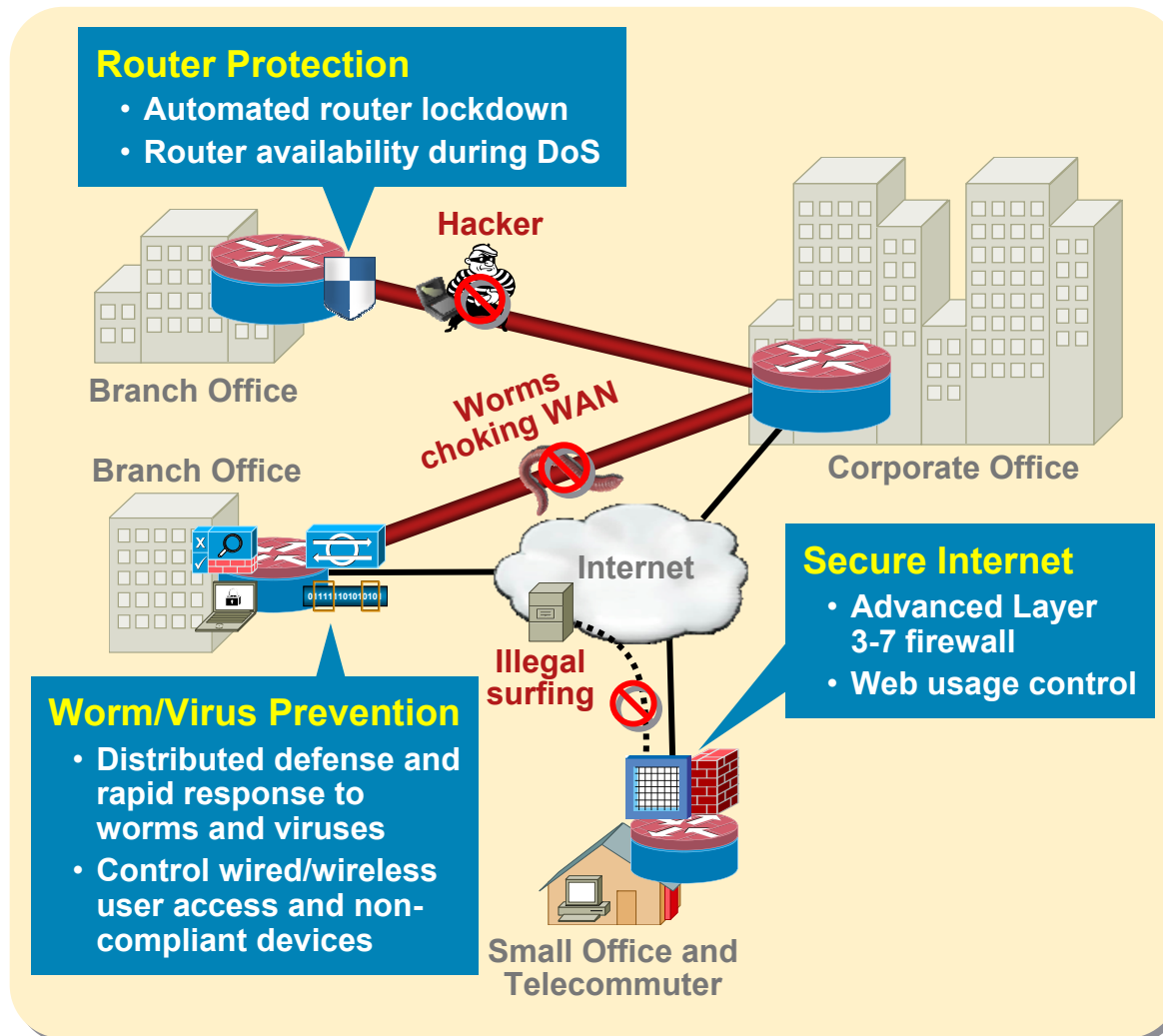
- DMVPN (On-Demand Partial-Mesh)

#### 3. Tunnel-Less Any-to-Any VPNs

- Group Encrypted Transport (GET) VPN



# Integrated Threat Defense Overview



- Secure Internet access to branch, without the need for additional devices
- Control worms and viruses right at the remote site, conserve WAN bandwidth
- Protect the router itself from hacking and DoS attacks

# Cisco IOS Firewall

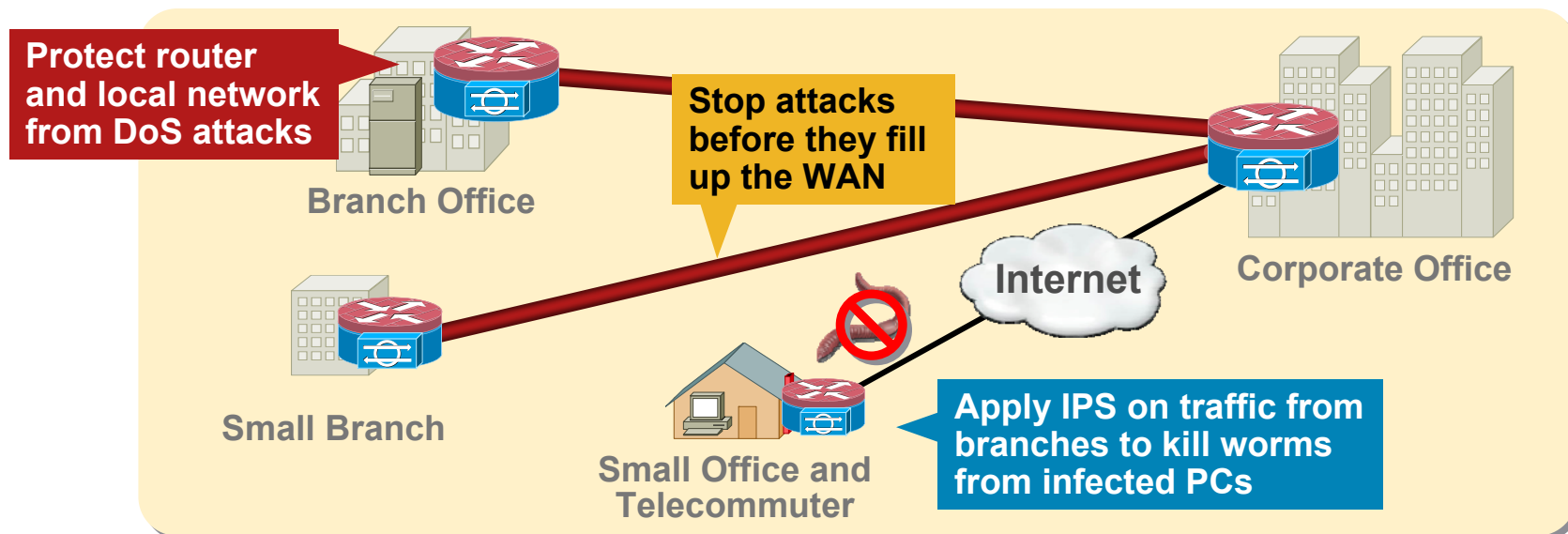
## Advanced Layer 3-7 Firewall

- Stateful filtering
- Application inspection (Layer 3 through Layer 7)
- Application control – Application Layer Gateway (ALG) engines with wide range of protocols and applications
- Built-in DoS protection capabilities
- Supports deployments with VRFs, transparent mode and stateful failover

# Cisco IOS Intrusion Prevention (IPS)

## Distributed Defense Against Worms and Viruses

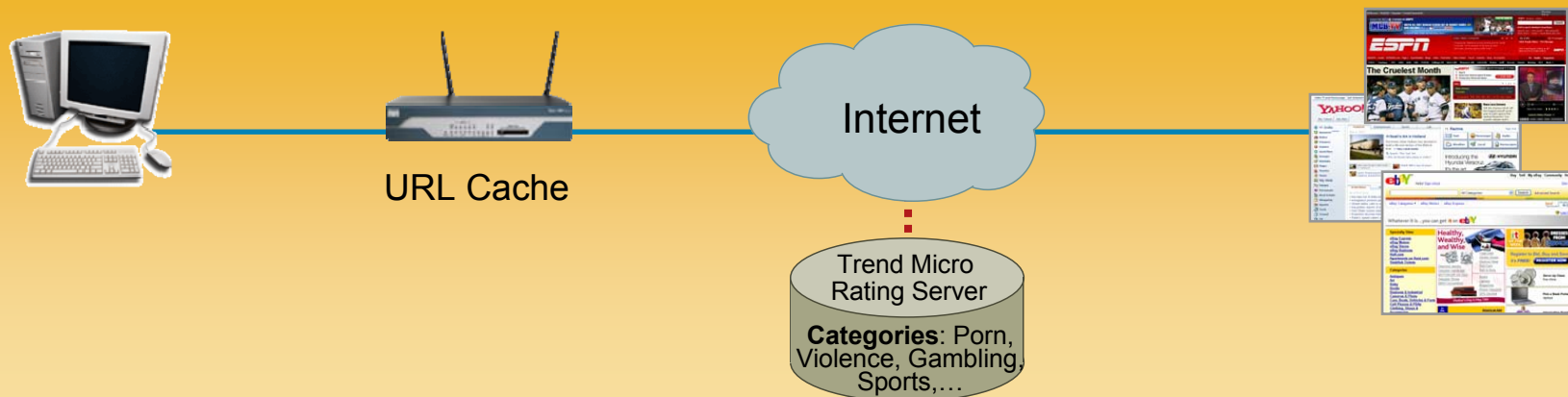
- Cisco® IOS® IPS stops attacks at the entry point, conserves WAN bandwidth, and protects the router and remote network from DoS attacks
- Integrated form factor makes it cost-effective and viable to deploy IPS in Small and Medium Business and Enterprise branch/telecommuter sites
- Supports 2000+ signatures sharing the same signature database available with Cisco IPS sensors
- Allows custom signature sets and actions to react quickly to new threats



# Cisco IOS® Content Filtering with Trend Micro

A Web Security Solution That Protects Organizations from Known and New Internet Threats, While Improving Employee Productivity

- Ideal for Enterprise Branch and Small-Medium Businesses
- Block malicious sites and enforce corporate policies
- Offers category based security and productivity ratings
- Regulations such as HIPAA, FISMA, CIPA (Children's Internet Protection Act) mandate reliable content filtering.
- Policy is enforced and maintained on the router locally
- Subscription based service



# Comprehensive Content Filtering Features

## Feature

## Benefit

- Security Ratings  
Adware, phishing,  
spyware, hacking

- **Block malware**; use security rating of a Website to prevent malware downloaded by the end users

- Category-based URL classification  
Over 70 categories available

- **Block unwanted Web activity**; enforce access to both objectionable and productivity affecting Websites

- Keyword blocking

- Localized filtering on Cisco<sup>®</sup> router allows blocking of Websites based on keywords

- Black and White List support

- Support for 100 Black and 100 White Lists in Cisco IOS<sup>®</sup>

# Flexible Packet Matching (FPM)

## Rapid Response to New and Emerging Attacks

- Network managers require tools to filter Day Zero attacks e.g. prior to IPS signatures being available
- Traditional ACLs take a shotgun approach – legitimate traffic could be blocked

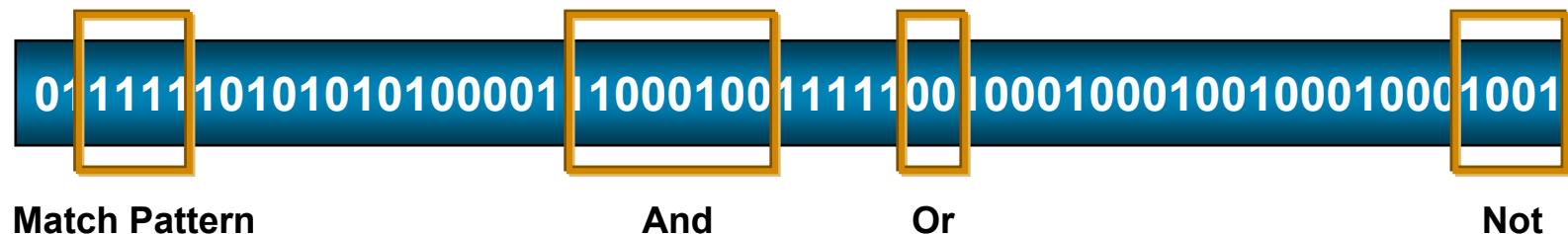
Example: Stopping Slammer with ACLs meant blocking port 1434 i.e. deny business transactions involving Microsoft SQL

- FPM delivers flexible, granular Layer 2-7 matching

Example: Port 1434 + Packet length 404B + Specific pattern within payload → Slammer

### Flexible Classification and Rapid Response

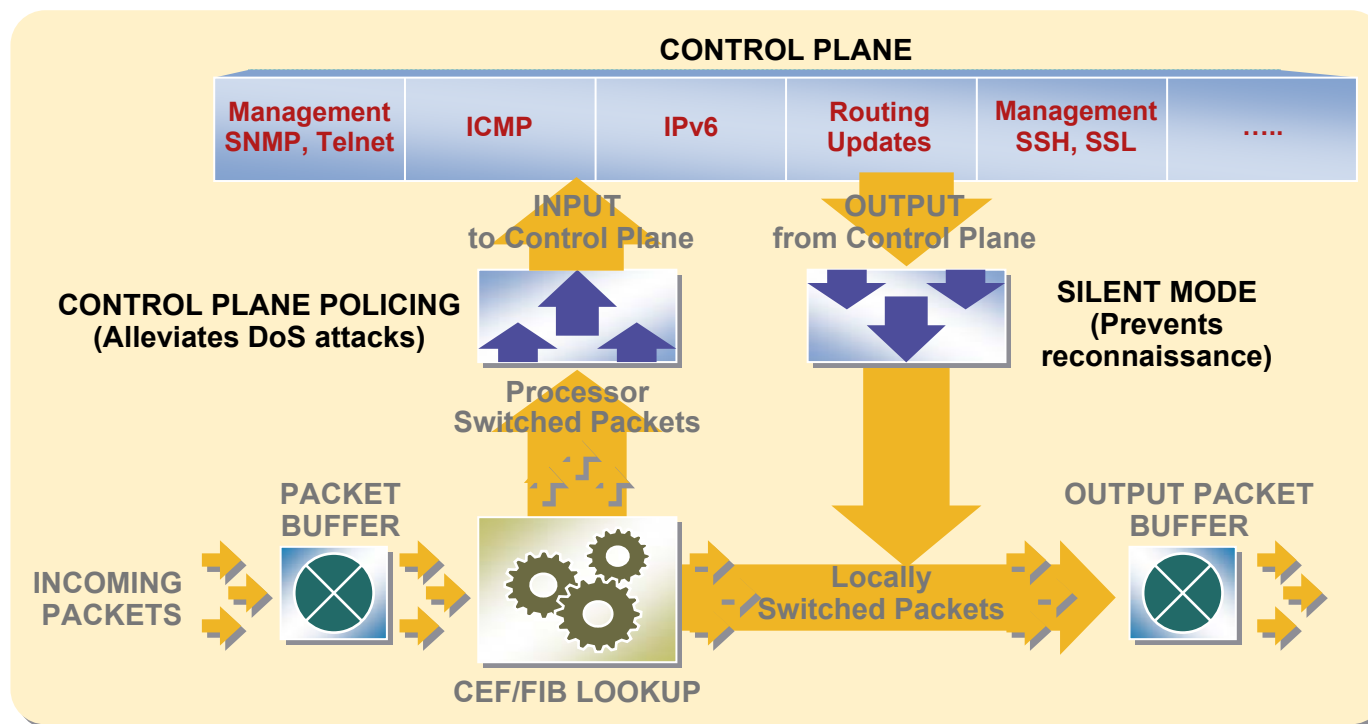
- Goes beyond static attributes – specify arbitrary bits/bytes at any offset within the payload or header
- Classify on multiple attributes within a packet
- Set up custom filters rapidly using XML-based policy language



# Cisco IOS Control Plane Policing

## Continual Router Availability Under Duress

- Mitigates DoS attacks on control plane (route processor) e.g. ICMP floods
- Polices and throttles incoming traffic to control plane, maintains packet forwarding and protocol states during attacks or heavy traffic load

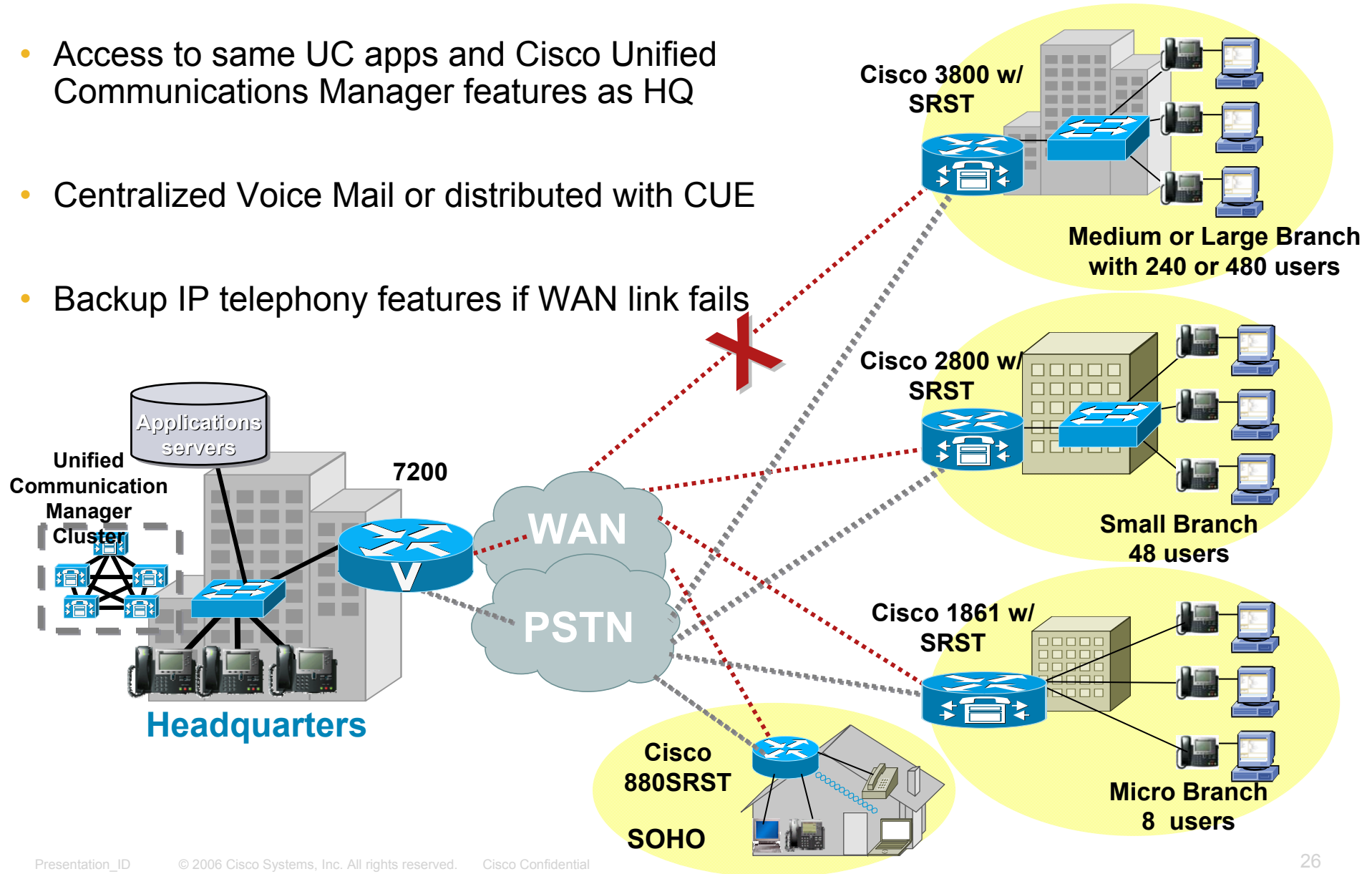




# Voice with Survivability

# Cisco Unified SRST

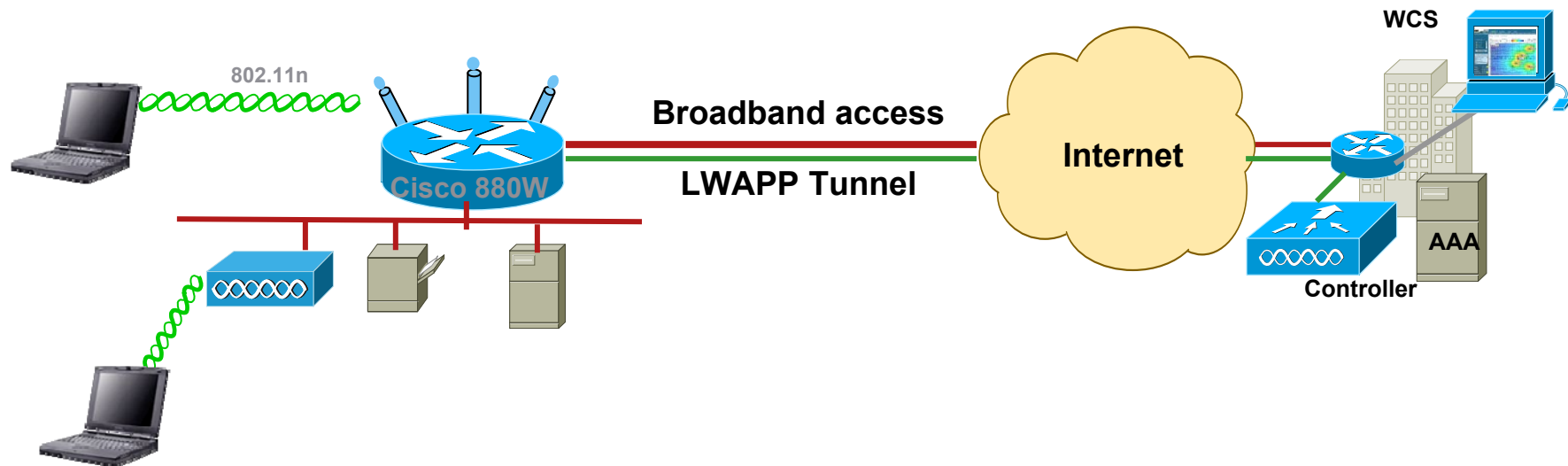
- Access to same UC apps and Cisco Unified Communications Manager features as HQ
- Centralized Voice Mail or distributed with CUE
- Backup IP telephony features if WAN link fails





# Mobility Applications

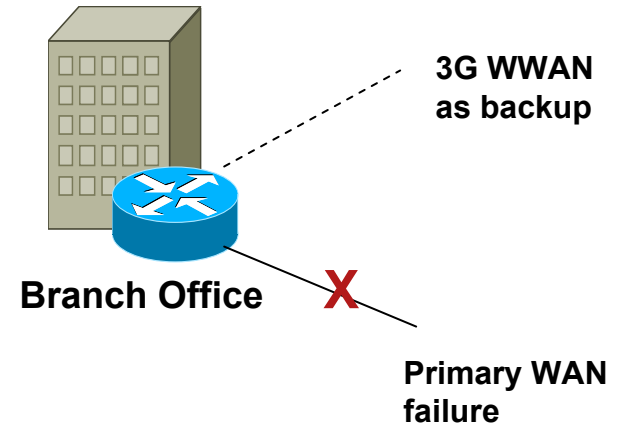
# Cisco Unified Wireless LAN: Extending Cisco Wireless Router Solution



- 2.4GHz 802.11n support
- Extended range and higher throughput
- Hands free wireless provisioning with controller
- Dynamic RF management with WCS
- Mix and match embedded AP with external APs with consistent feature and management capabilities
- HREAP option providing local traffic switching support for branch office and teleworkers

# 3G Wireless WAN Applications

- WAN backup for Branch offices, Retail stores, Warehouses, Banks, Mall Outlets, etc.
- Primary connectivity for Remote locations like Gas stations, 7Elevens, Lottery Kiosks, etc.
- Telemetry applications for gathering data from remote sensors
- Remote Banking and ATM machines
- Mobile Applications, Portable communications Kit for Disaster Recovery and Temporary Sites



Enterprises and Mobile Operators see WWAN dial backup as a viable alternative to ISDN

Has been trialed successfully with external modem (non-integrated 2-box solution)

Can be more cost effective than ISDN

Provides additional reliability compared to ISDN as Cellular infrastructure is serviced out of independent CO

# 3G Feature Highlights

- Provides broadband WAN connectivity over High Speed 3G Wireless Networks
- Sierra Wireless 3G ExpressCard form factor, with Aircard 597e (EVDO) and Aircard 880e/885e (UMTS/HSDPA)
- Cellular interface based on the async serial interface and DDR in IOS
- Diagnostic port (Post FCS support)
- Modem based support for Mobile IP
- Automatic best network selection

**EVDO RevA → EVDO Rev0 → 1XRTT**  
**HSDPA → UMTS → EDGE → GPRS**



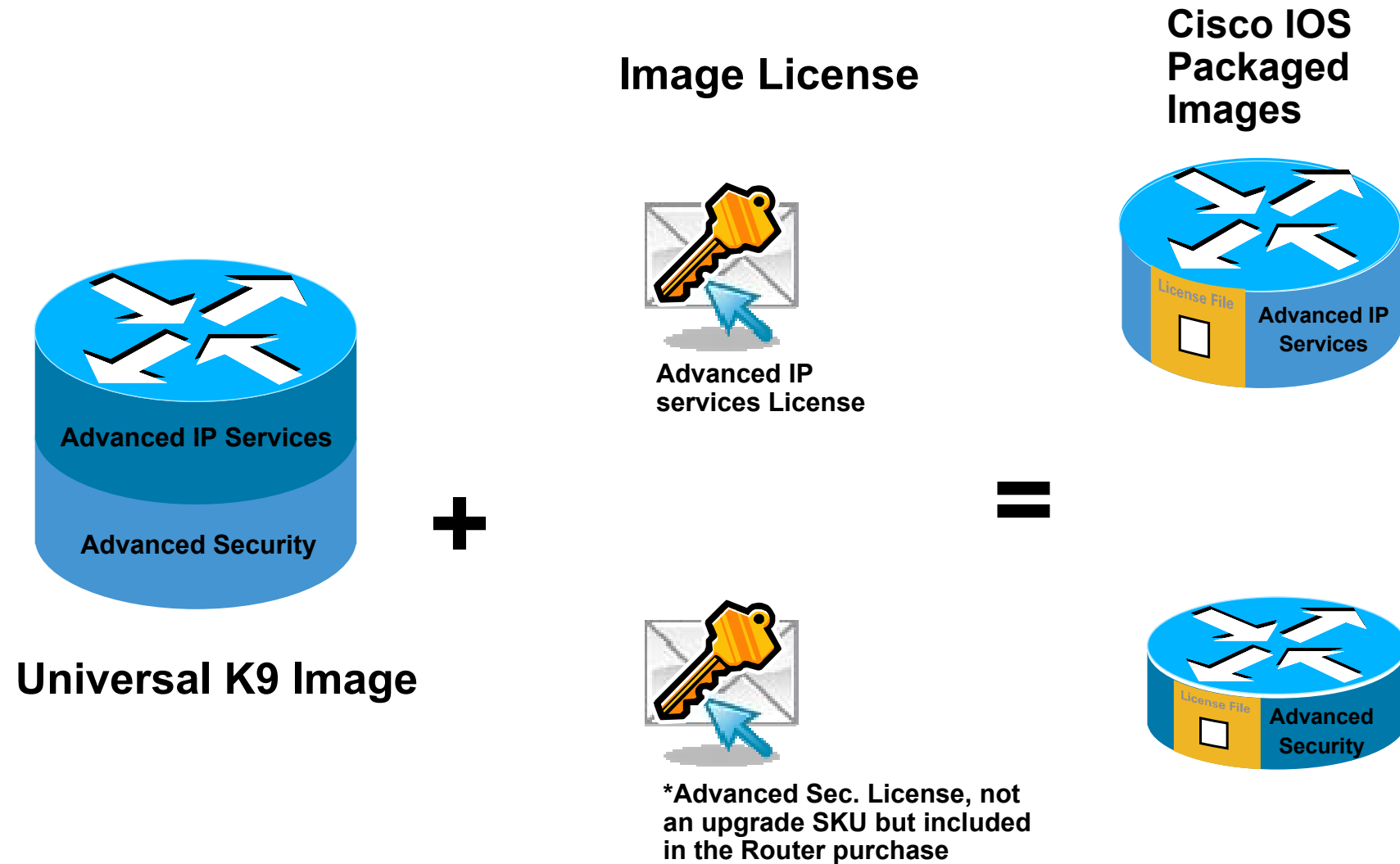
- **3G modem is bundled with the 3G SKUs**
- IOS CLI based or GUI based modem activation
- Independent modem firmware upgrade

<http://www.sierrawireless.com/product/expresscards.aspx>



# Software Feature Overview

# Cisco SW Licensing - Universal Image

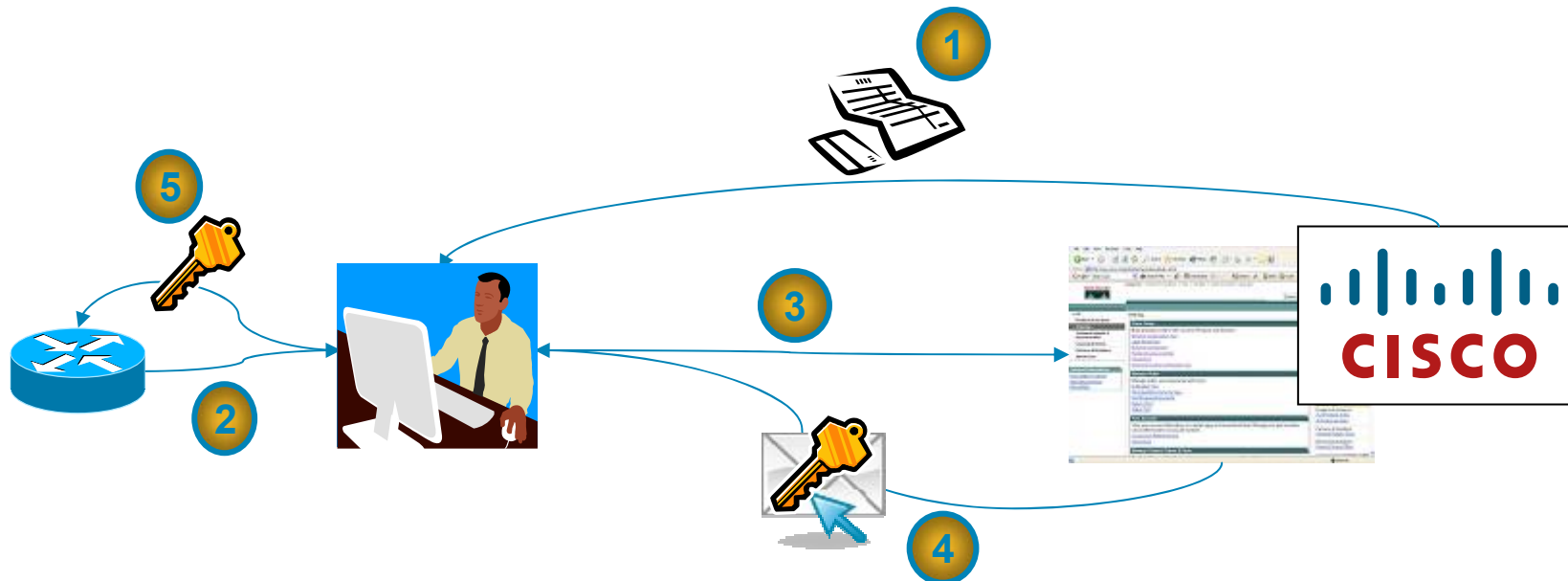


# Cisco 860 and 880 Series Feature Set Software Activation

	860	880		
	(c860-universalk9-mz)	880 Data (c880data-universalk9-mz)	IAD880 (c880voice-universalk9-mz)	SRST880 (c880voice-universalk9-mz)
Advanced Security	Default	Default	Default	N/A
Advanced IP Services	N/A	✓	✓	Default
Software Upgrade SKU	N/A	SL-880-AIS	SL-IAD880-AIS	N/A

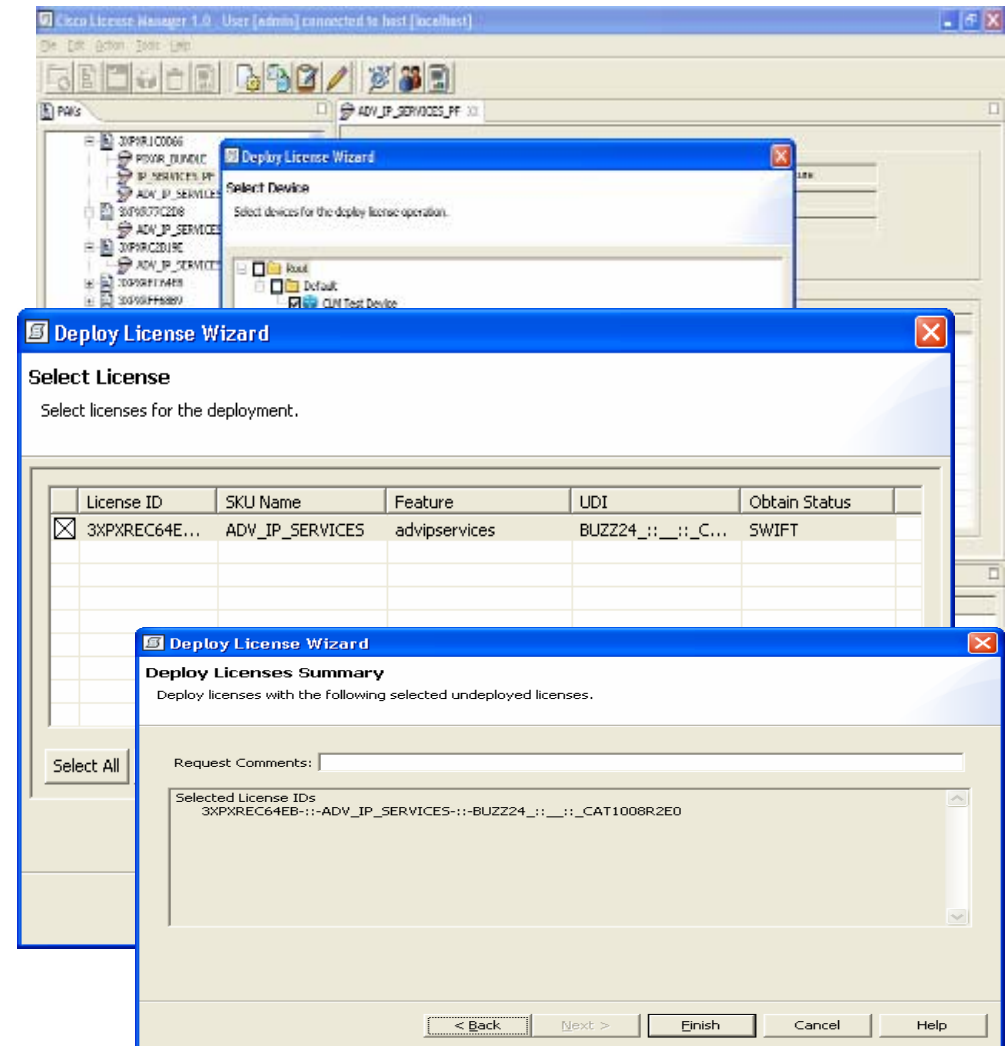
# Software Upgrade Process

1. Customer purchases required Product Activation Key (PAKs)
2. Product ID (PID) and Serial Number (SN) are obtained from the device
3. The PID, SN and PAK are entered into to Cisco's licensing portal
4. License file is sent to customer via email
5. Customer installs licenses on the devices to activate the additional features



# Software Activation Management Tool

- **Cisco License Manager (CLM) is a downloadable License tool to allowing users to install licenses on multiple devices in their network, up to 30,000 devices**
- **CLM offers the following functions and capabilities**
  - Discovers the network
  - Offers per device License inventory, reporting and status
  - Obtains and deploys licenses via secure connections
  - Offers integration into the existing license management application



**GUI based Wizards to obtain and deploy licenses securely in the network**

# Software Feature Set Overview

	Cisco 860 (Advanced Security)	Cisco 880 Data (Advanced Security)	Cisco 880 Data and 880SRST (Advanced IP services)
<b>Security</b>			
Easy VPN	✓	✓	✓
GETVPN/DMVPN			✓
Firewall	✓	✓	✓
Content Filtering			✓
IPS			✓
<b>QoS</b>			
WFQ/CBWFQ	✓	✓	✓
LLQ	✓	✓	✓
CoS to DSCP Mapping		✓	✓
HQoS			✓
RSVP			✓
NBAR			✓
DiffServ			✓

# Software Feature Set Overview

	Cisco 860 (Advanced Security)	Cisco 880 Data (Advanced Security)	Cisco 880 Data and 880SRST (Advanced IP services)
<b>Routing Protocols</b>			
RIPv1/v2	✓	✓	✓
EIGRP			✓
BGP			✓
OSPF			✓
<b>Switching</b>			
VLANs	2	8	8
storm control	✓	✓	✓
SPAN	✓	✓	✓
PoE (802.3af and Cisco)		✓	✓
mac filtering	✓	✓	✓
802.1x			✓
port security			✓

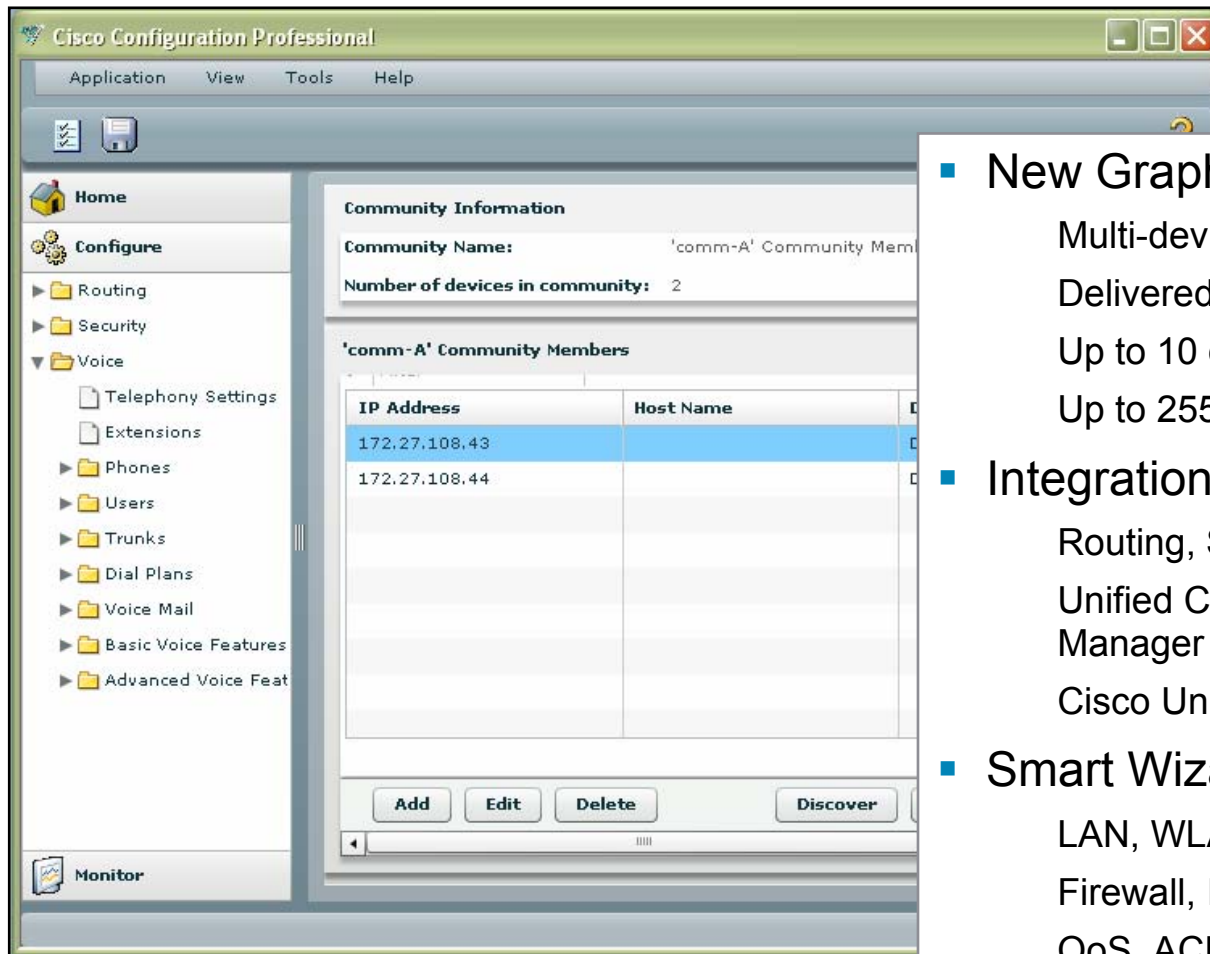
# Software Feature Set Overview

	Cisco 860 (Advanced Security)	Cisco 880 Data (Advanced Security)	Cisco 880 Data and 880SRST (Advanced IP services)
<b>Wireless</b>			
Autonomous AP mode	✓	✓	✓
Unified Wireless mode			✓
H-REAP mode			✓
<b>Voice</b>			
SRST version 4.3			✓ (SRST models only)
SIP			✓ (SRST models only)
MGCP			✓ (SRST models only)
SCCP			✓ (SRST models only)
H.323			✓ (SRST models only)
<b>High Availability</b>			
HSRP/VRRP		✓	✓
Integrated backup port		✓	✓
<b>Embedded Management</b>			
EEM	✓	✓	✓
IP SLA	✓	✓	✓
NetFlow	✓	✓	✓



# Management

# Cisco Configuration Professional for Cisco IOS Routers

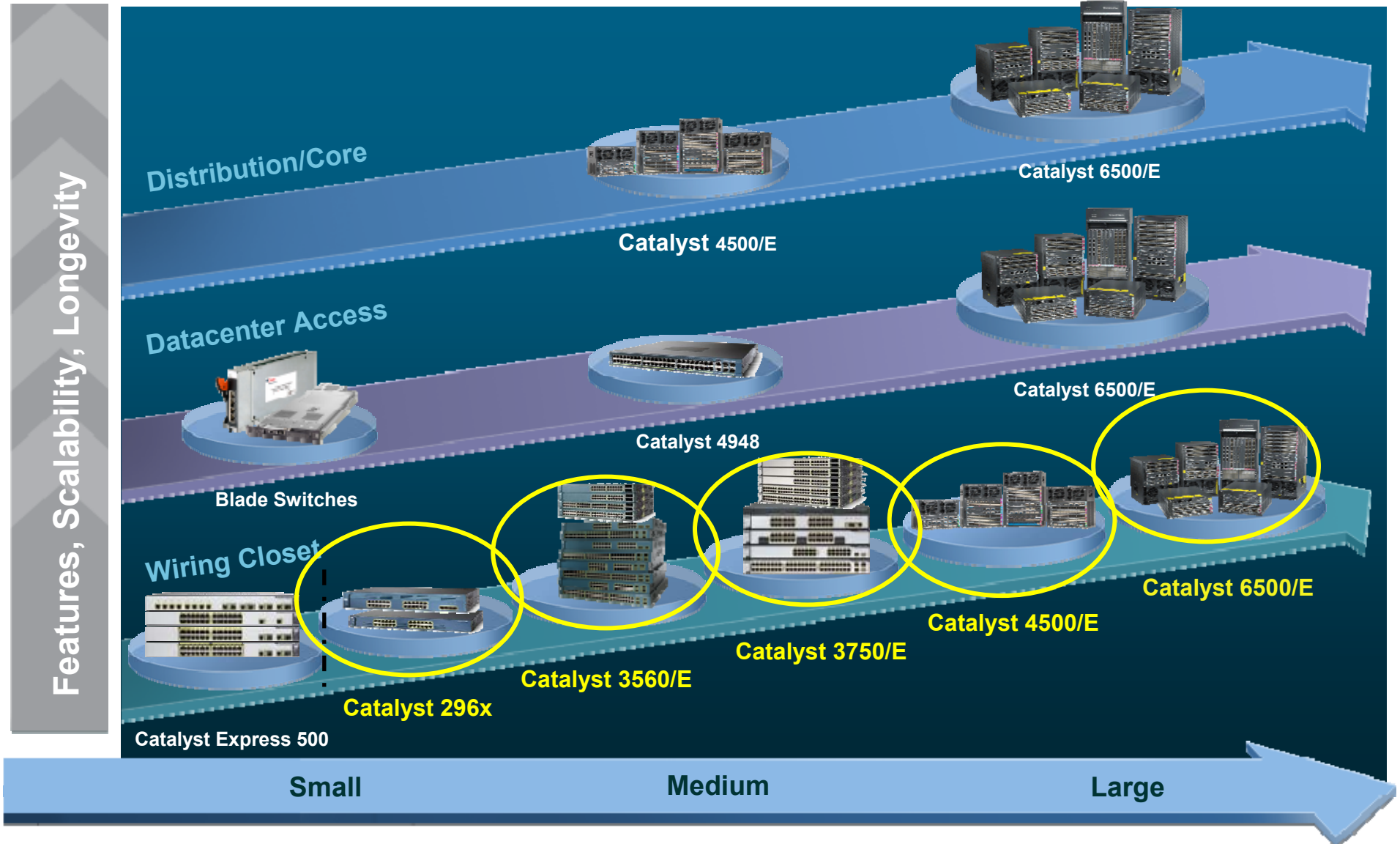


- **New Graphical Tool**
  - Multi-device management
  - Delivered on CD with every ISR
  - Up to 10 devices in community
  - Up to 255 communities
- **Integration configuration of:**
  - Routing, Security
  - Unified Communications Manager Express
  - Cisco Unity® Express
- **Smart Wizards for:**
  - LAN, WLAN, and WAN
  - Firewall, IPS, and VPN
  - QoS, ACLs
  - One-Step Security Lockdown



# SWITCHING UPDATE

# Catalyst Switching Portfolio



Number of Employees/Density

# Power over Ethernet Solutions

## Cisco Catalyst 2960 PoE

New



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WS-C2960-24LT-L	Catalyst2960 24 10/100 (8 PoE)+ 2 1000BT LAN Base Image
WS-C2960-24PC-L	Catalyst 2960 24 10/100 PoE + 2 T/SFP LAN Base Image

# Power over Ethernet Solutions

## Cisco Catalyst 2960 Powered Device Compact Switch

New




- 
- 
- **Power received through 10/100/1000 uplink port**
- 
- 
- 

WS-C2960PD-8TT-L

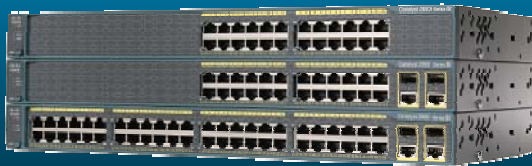
Catalyst 2960 Powered Device 8 10/100 + 1 1000BT LAN Base

# Catalyst 2960 Target Customers

	Target Customer	Segment Attributes
<b>Cat 2960 LAN Base</b>	<b>Cost Conscious Feature Seeker</b>	<p>Need intelligent services such as security, GE, QoS</p> <p>Brand / quality / service &amp; support are important</p> <p>Willing to mix vendors for cheaper pricing</p> <p>Majority of technology adopters &amp; network savvy IT staff</p> <p>Vendor interoperability important</p>
 <b>Cat 2960 LAN Lite</b>	<b>Entry Level Brand Aware</b>	<p>Price and basic features drive purchases</p> <p>Brand / quality / service &amp; support are becoming important</p> <p>Laggard technology adopters &amp; often non-technical IT staff</p> <p>Need scalable mgmt &amp; ease-of-use for basic connectivity</p> <p>Installed base of hubs &amp; unmanaged switches common</p>

- Size of company not used in segmentation

# Catalyst 2960 Switches with LAN Lite Cisco IOS



**Catalyst 2960**

Same hardware

Entry level IOS image

22% to 28% lower priced than  
prior 2960s

SKU	Access Ports	Uplink Ports
WS-C2960-24-S	24 10/100	None
WS-C2960-24TC-S	24 10/100	2 10/100/1000 or SFP
WS-C2960-48TC-S	48 10/100	2 10/100/1000 or SFP

## Catalyst 2960 Feature Comparison

	2960 LAN Lite	2960 LAN Base
<b>QoS Features</b>		
Modify CoS / DSCP Mapping	No	Yes
Ingress Policing	No	Yes
Auto QoS	No	Yes
<b>Security Features</b>		
L2-4 ACLs (Port, Time, and DSCP-based)	No	Yes
NAC L2 802.1x	No	Yes
DHCP Snooping	No	Yes
<b>Availability Features</b>		
Flex Link	No	Yes
Link State Tracking	No	Yes
LLDP	Yes	Yes (+MED)
RPS Support	No	Yes
<b>Other Features</b>		
VLANs	64	255
DHCP Server	No	Yes
IPv6 Host	No	Yes
100BASE-LX	No	Yes
1000BASE-ZX	No	Yes

# FAQ

- Can you upgrade from LAN Lite Image to LAN Base Image?

No

- Can you deploy voice with LAN Lite Image?

Yes but we recommend higher featured platforms

LAN Lite supports Voice VLAN and expedite queue

LAN Base supports Auto QoS, RPS, LLDP-MED, DHCP Snooping, Trusted Boundary, and ACLs

3K supports PoE, 802.1x MDA, DAI, IPSG, EIGRP-Stub & PIM-Stub, Embedded Event Manager, ...

## C3560/E és C3750/E

- Különálló: 3560 és 3560-E
- Stackelhető: 3750 és 3750-E



3560



3560-E



3750



3750-E

- A stackelhetőség azt jelenti, hogy a Cisco által gyártott stackelő kábelek a Stackwise vagy a Stackwise Plus protokollt alkalmazzák
- A stackelhetőségtől eltekintve a 3750 és a 3560 azonos egymással.
- Az E sorozat és a régebbi eszközök között funkcióbeli eltérések állnak fenn.

# Szoftverek a régebbi eszközökhöz

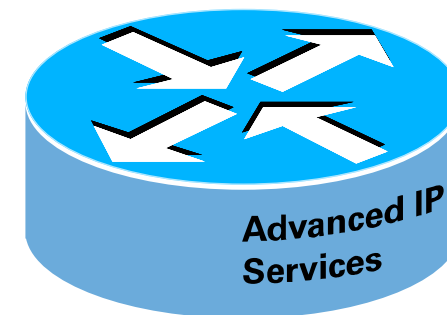
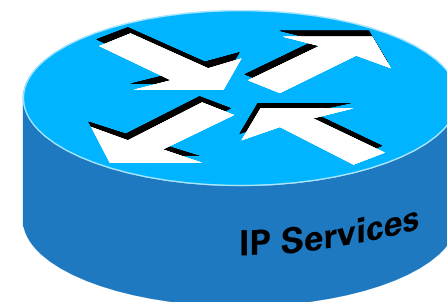
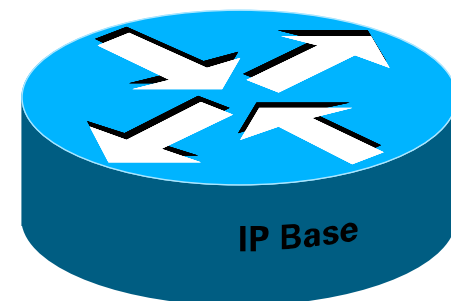
- Három szoftver áll rendelkezésre a régebbi eszközök esetén.

IP-Base (L2, Stub routing, IP ACLs)

IP Services (Full L3 Routing and Multicast routing)

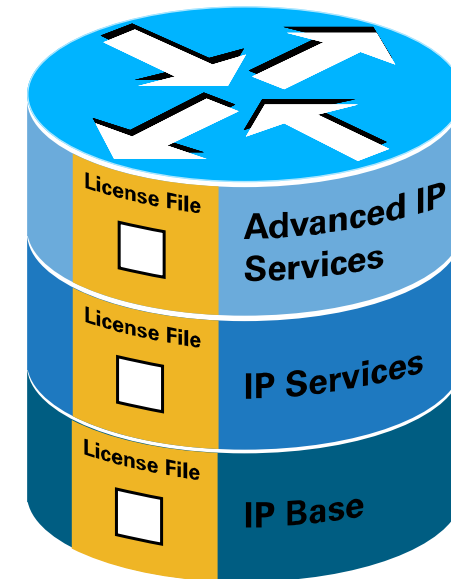
Advanced IP services (IPv6 Routing)

3 különböző szoftver



# Egyetlen egységes szoftver az E sorozat számára

- Az egységes IOS szoftver magában foglalja az összes IOS funkciót
- A licenclelés az IOS funkcionalitás különböző szintjeit teszi lehetővé
- A felhasználók csupán a licenc megújításával növelhetik a funkcionalitást.
- Az egységes IOS szoftver a gyártás során telepítésre kerül.



**Egységes IOS Szoftver**

# Catalyst 3560E-12SD Overview

Jan  
2008



12-port GE SFP + 2-port 10 GE

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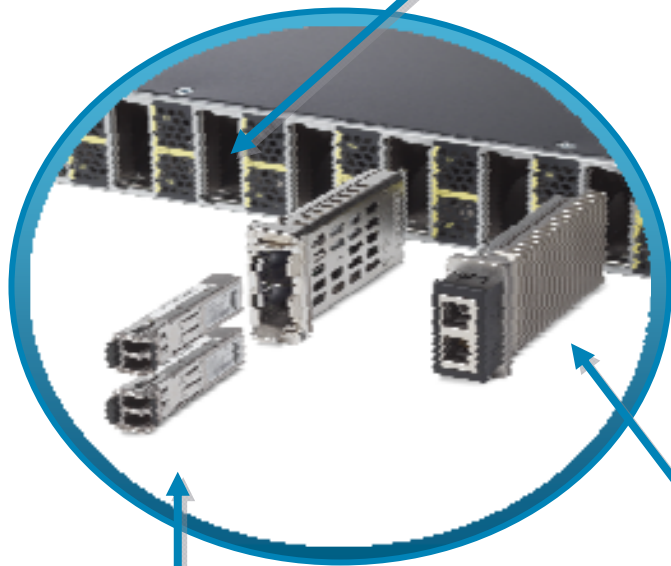
# Catalyst 3560E-12D Overview



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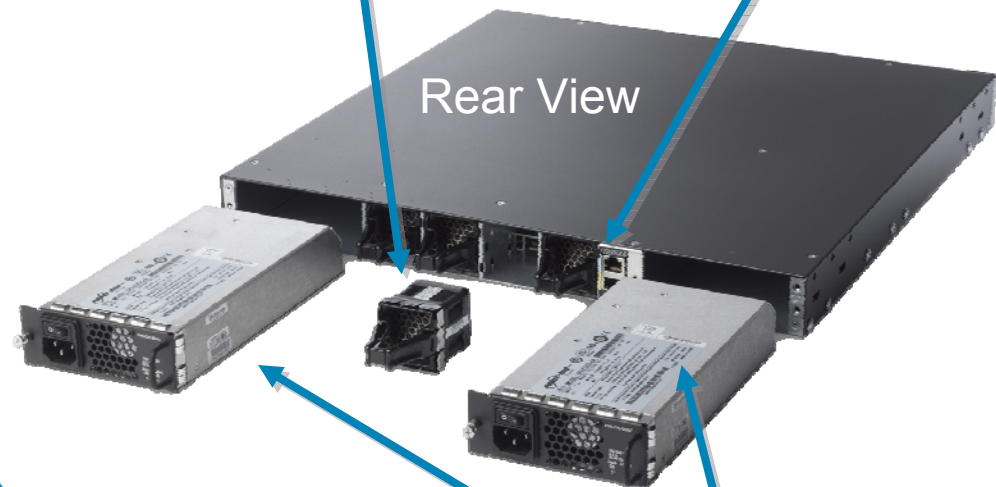
# Mechanical Overview

Vertical X2 Slots  
enhance Cooling



Four FRU  
Fan Modules

Console and  
Ethernet  
Management Ports



Rear View

Twelve 10GE X2 Slots

Dual FRU 300W  
power supplies  
(AC/DC/AC+DC)

Compatible with  
TwinGig Modules

# Single-Fiber Bidirectional SFP

- **1000BASE-BX10-D** transmits a 1490-nm channel and receives a 1310-nm signal,
- **1000BASE-BX10-U** transmits at a 1310-nm wavelength and receives a 1490-nm signal.
- Integrated wavelength-division multiplexing (WDM) splitter



1000BASE-BX-D	1310	SMF	10 km (32,8210 ft)
1000BASE-BX-U	1490	SMF	10 km (32,8210 ft)

# The Cisco IE 3000 Industrial Switch



## Built for Industrial Automation

- Rugged
- Secure
- Easy-to-use
- Standards based

## Built with the best of Cisco

- Cisco IOSTM
- Catalyst™ switch architecture and feature set
- CLI & Device Manager
- Secure integration with enterprise network



# Cisco IE 3000 Hardware Features

Feature	Description
Mounting	DIN-Rail, Wall-Mount and Rack-Mount (19" rack converter provided)
Temperature	-40C to 75C
Relative Humidity	5% - 95% Condensing
Shock	15g (Operational), 30g (Non-Operational)
Surge Protection	4 kV (line to earth) / 2 kV (line to line)
Alarms	Dual 24V alarm relays, normally open
Memory	Removable Compact Flash
Real Time Ethernet	IEEE 1588 (PTP Boundary Clock)
Fiber Connectors	LC
Intrusion Protection rating	IP20 (Protection against dust, (solids greater than 12mm), No protection against water)
Power input	24V/48V DC

# IEEE 1588 – Precision time protocol

## Standards Based

- **Precision time protocol (PTP)**
  - Real-time synchronization in a distributed system
- **Needed in environments with high performance industrial applications**
  - e.g. motion control requires sub-micro second accuracy and precision
  - All devices synchronize their clocks to ***within 1 microsecond or less***
  - The high-precision activity is scheduled (ex: all systems stop at time=x)

