



# **CISCO IOS SOFTWARE RELEASE 12.3T POWERS CISCO INTEGRATED SERVICES ROUTERS**

**INTERNET TECHNOLOGIES DIVISION**

**SEPTEMBER 2004**

# Agenda

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- **Release 12.3T Family**
- Support for new Cisco Integrated Services Routers
- Introducing Release 12.3(11)T
- Cisco IOS® Packaging
- Upgrade Paths
- Summary

# Cisco IOS Software Release 12.3T

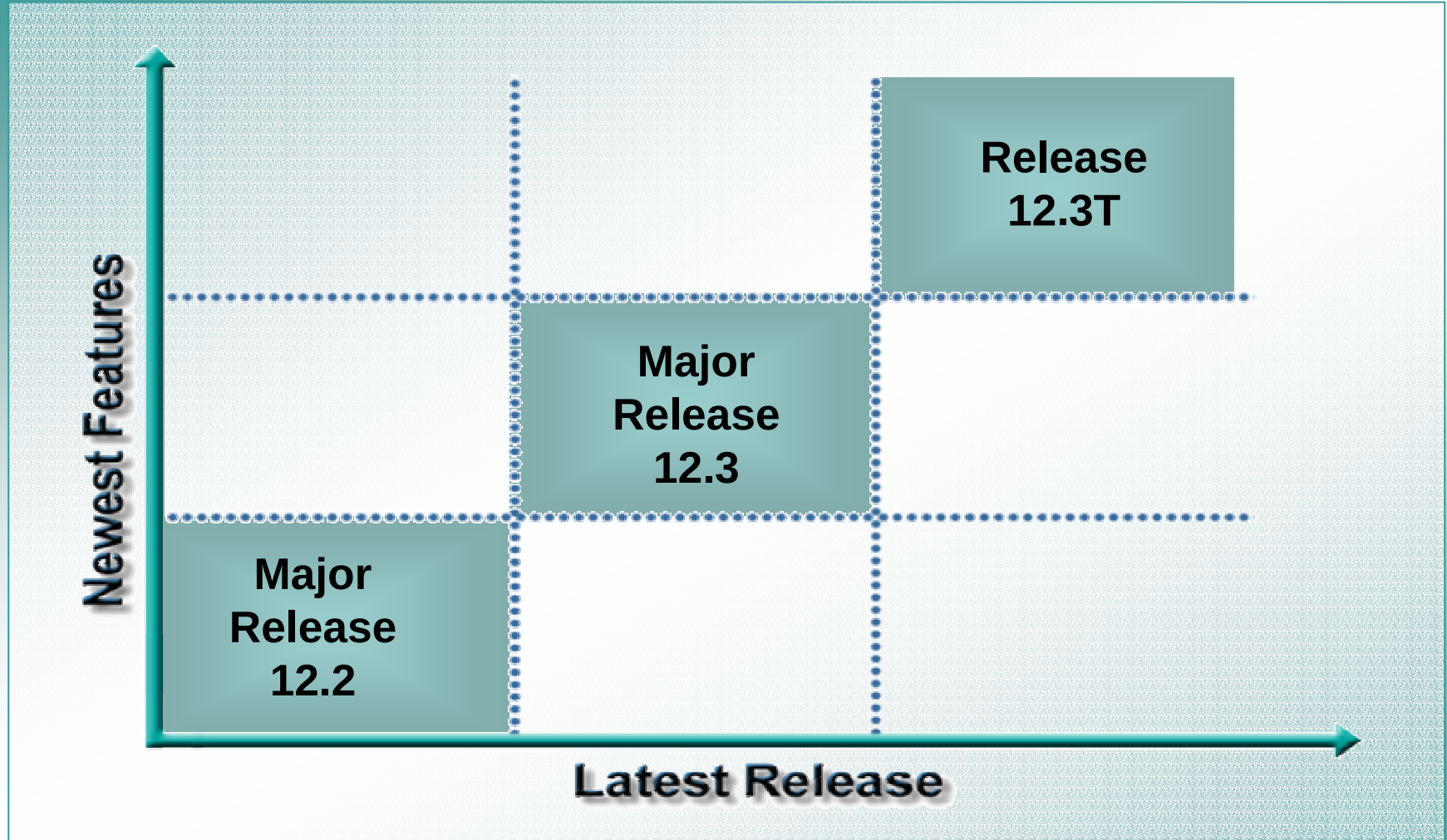
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## Driving business productivity with innovations in Security, Voice, and Wireless

- Offers productivity enhancements to Enterprise, Access, and Service Provider Aggregation customers
- Provides hundreds of new business-critical features
- Powers the new Cisco Integrated Services Routers
- Ongoing quality improvements

# Release 12.3T: Built on the Mature Base of Major Release 12.3

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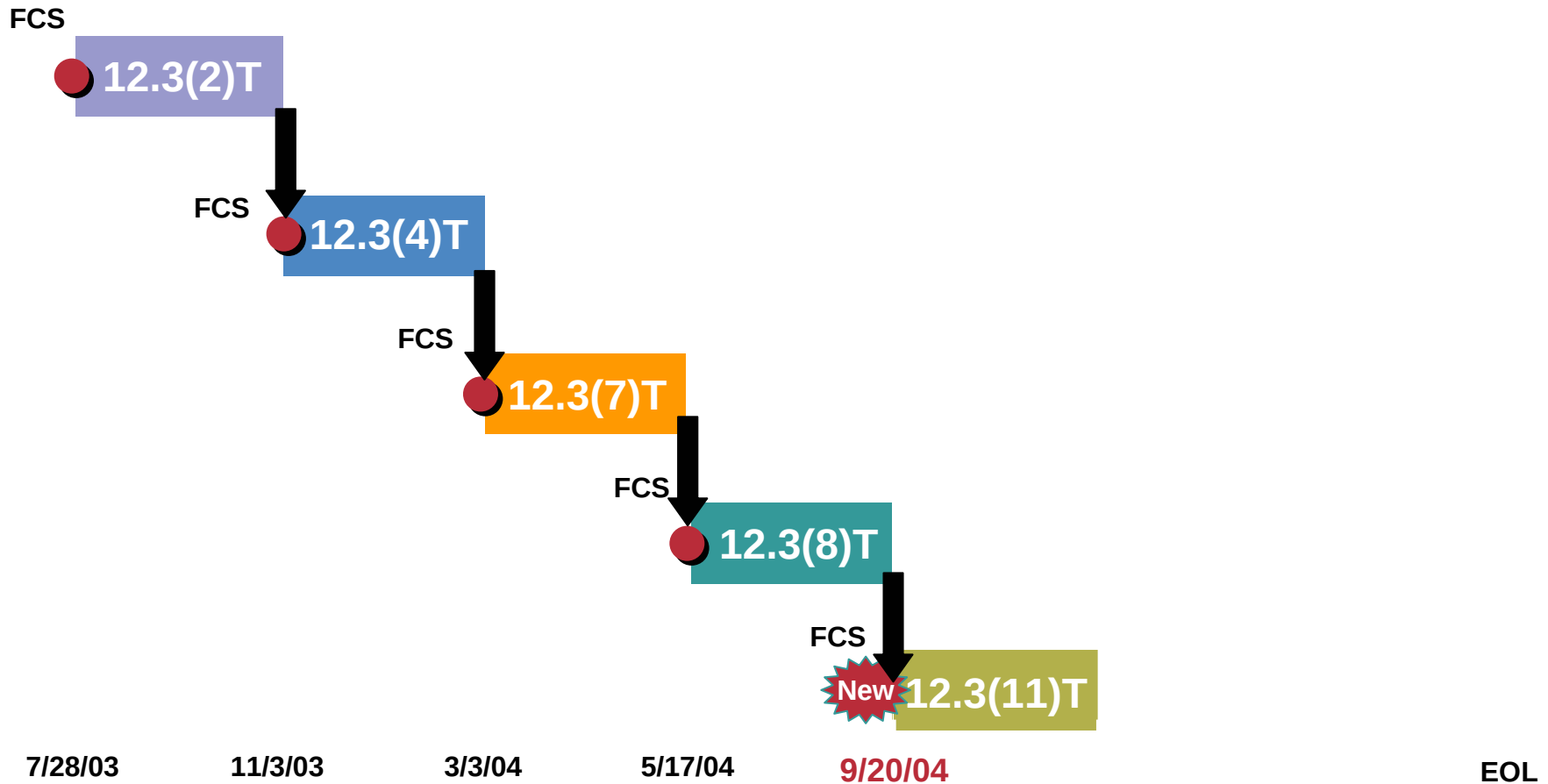
# Release 12.3T Within the Cisco IOS Software Release Portfolio

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| Release Families                                                                               | Target Market                                                               | Planned Hardware                                                                                                                                                            |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cisco IOS XR                                                                                   | Service Provider Core                                                       | Cisco Carrier Router System-1 (CRS-1)                                                                                                                                       |
| Release 12.3                                                                                   | Enterprise Access                                                           | Cisco 800, 1700, 2600, 3600, 3700 Series Routers<br>Cisco 7200 and 7500 Series Routers                                                                                      |
|  Release 12.3T | Enterprise, Access, Service Provider Aggregation                            | Cisco 800, 830, 1700, 1800, 2600, 2800, 3600, 3700, 3800 Series Routers<br>Cisco 7200 and 7500 Series Routers                                                               |
| Release 12.2S                                                                                  | Enterprise Core / Switching / WAN Aggregation, Service Provider Aggregation | Cisco Catalyst 2970, 3750, 4500, 6500 Series Switches<br>Cisco 7200, 7300, 7500, 7600, ONS155x0, and uBR7000/ uBR10000 Series Routers<br>Cisco 10000 Series Internet Router |
| Release 12.0S                                                                                  | Service Provider Core / Aggregation                                         | Cisco 7200 and 7500 Series Routers<br>Cisco 10000 and 12000 Series Internet Routers                                                                                         |
| Release 12.1E                                                                                  | Enterprise Access / Aggregation                                             | Cisco 6500, 7200, 7500, ONS15454 Series Routers                                                                                                                             |
| Release 12.2                                                                                   | Enterprise Access                                                           | Cisco 800, 1700, 2600, 3600 Series Routers<br>Cisco 7200 and 7500 Series Routers<br>Cisco ONS15104 Router                                                                   |

# Release 12.3T Family Inheritance

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**Each release inherits the functionality of its predecessor in the Release 12.3T family**

# Release 12.3T Family: Release 12.3(2)T

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## Security

- Cisco IOS Online Certificate Status Protocol (OCSP)
- Invalid SPI Recovery
- Encrypted Pre-shared Key

## Quality of Service

- Compressed RTP (cRTP) – DSL interfaces
- Class-Based QoS MIB (CBQoS MonMIB) Enhancements

## Manageability

- Netflow v9 export format
- Cisco IOS Service Assurance Agent (SAA) – MPLS/VPN Path Jitter

# Cisco IOS Software Release 12.3(2)T

See [\*Product Bulletin No. 2215\*](#) for a complete list of features in Cisco IOS Software Release 12.3(2)T

## Routing

- Open Shortest Path First (OSPF) Incremental Shortest Path First (i-SPF) Support
- Border Gateway Protocol (BGP) Fast Convergence Optimization
- Loadsharing IP packets over more than six parallel paths
- OSPF Link-State Advertisement (LSA) Throttling
- BGP Cost Community

## Connectivity

- Frame Relay – Multilink (MLFR-FRF.16)
- ISDN backup in MPLS Core

# Release 12.3T Family: Release 12.3(4)T

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## Security

- Secure Shell v2 (SSHv2)
- Control Plane Policing
- Cisco IOS Certificate Server
- Image Verification

## Voice

- Cisco Call Manager Express
- Cisco Unity Express Module Support

## Quality of Service

- Network-Based Application Recognition (NBAR) Extended Inspection for HTTP Traffic
- NBAR User-Defined Custom Application Classification

# Cisco IOS Software Release 12.3(4)T

See [Product Bulletin No. 2215](#) for a complete list of features in Cisco IOS Software Release 12.3(4)T

## Wireless

- Dynamic Security Associations and Key Distribution
- Mobile Networks Dynamic Collocated Care-of-Address

## Manageability

- Cisco IOS SAA for VoIP
- Embedded Event Manager 1.0
- Service Selection Gateway (SSG) Enhancements

## Routing

- Authentication, Authorization, and Accounting (AAA) IPv6 Attributes Support
- BGP-Policy Accounting output interface accounting

# Release 12.3T Family: Release 12.3(7)T

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## Security

- Role-based CLI Access
- Transparent Cisco IOS Firewall
- Cisco IOS Firewall for IPv6
- IP Source Tracker
- Authentication, Authorization, and Accounting (AAA) Double Authentication Secured by Absolute Timeout
- Key Rollover for Certificate Renewal
- Public Key Infrastructure (PKI): Query Multiple Servers During Certificate Revocation Check
- Software Encryption Algorithm (SEAL) Encryption

## Voice

- Cisco CallManager Express 3.1 Enhancements
- IP Communications High-Density Digital Voice/Fax Network Module

## Cisco IOS Software Release 12.3(7)T

See [Product Bulletin No. 2215](#) for a complete list of features in Cisco IOS Software Release 12.3(7)T

## Quality of Service

- Cisco AutoQoS for the Enterprise

## Wireless

- Mobile IP - Foreign Agent Local Routing to Mobile Networks

## IP Addressing and Services

- Rate Based Satellite Control Protocol (RBSCP)

## IP Multicast

- IPv6 Multicast Phase 1 & Phase 2

# Release 12.3T Family: Release 12.3(8)T

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## Security

- Dynamic Multipoint VPN Spoke-to-Spoke Functionality
- Cisco IOS Network Admission Control
- Quality of Service per VPN Group
- Cisco AutoSecure Rollback and Logging
- Easy Secure Device Development / Authentication, Authorization, and Accounting Integration
- Cisco IOS Resilient Configuration
- Call Admission Control for IKE
- Certificate to ISAKMP Profile Mapping

## Quality of Service

- Cisco AutoQoS for the Enterprise AutoDiscovery Trust Option

## Cisco IOS Software Release 12.3(8)T

See [Product Bulletin No. 2215](#) for a complete list of features in Cisco IOS Software Release 12.3(8)T

## Wireless

- Mobile IP – Support for RFC 3519 NAT Traversal

## Manageability

- MPLS Aware Netflow
- Cisco IOS Service Assurance Agent Multi-Operation Scheduler

## Routing

- Cisco IOS Optimized Edge Routing
- Enhanced Interior Gateway Routing Protocol Support for Route Map Filtering
- Enhanced Interior Gateway Routing Protocol MPLS VPN PE-CE Site of Origin

## Connectivity

- Asynchronous Line Monitoring

# Agenda

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- Release 12.3T Family
- **Support for Cisco Integrated Services Routers**
- Introducing Release 12.3(11)T
- Cisco IOS Packaging
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# New Router Portfolio Fully Leverages a Systems Approach

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- First hardware / software system to deliver concurrent services at **wire-speed**
- Release 12.3(8)T supports Cisco 2800 and 1800 Series; Release 12.3(11)T supports the Cisco 3800 Series
- Includes all features introduced in previous releases of Release 12.3T
- Enables customers to:

**Deploy the right router for every office**

**Maintain self-defending networks**

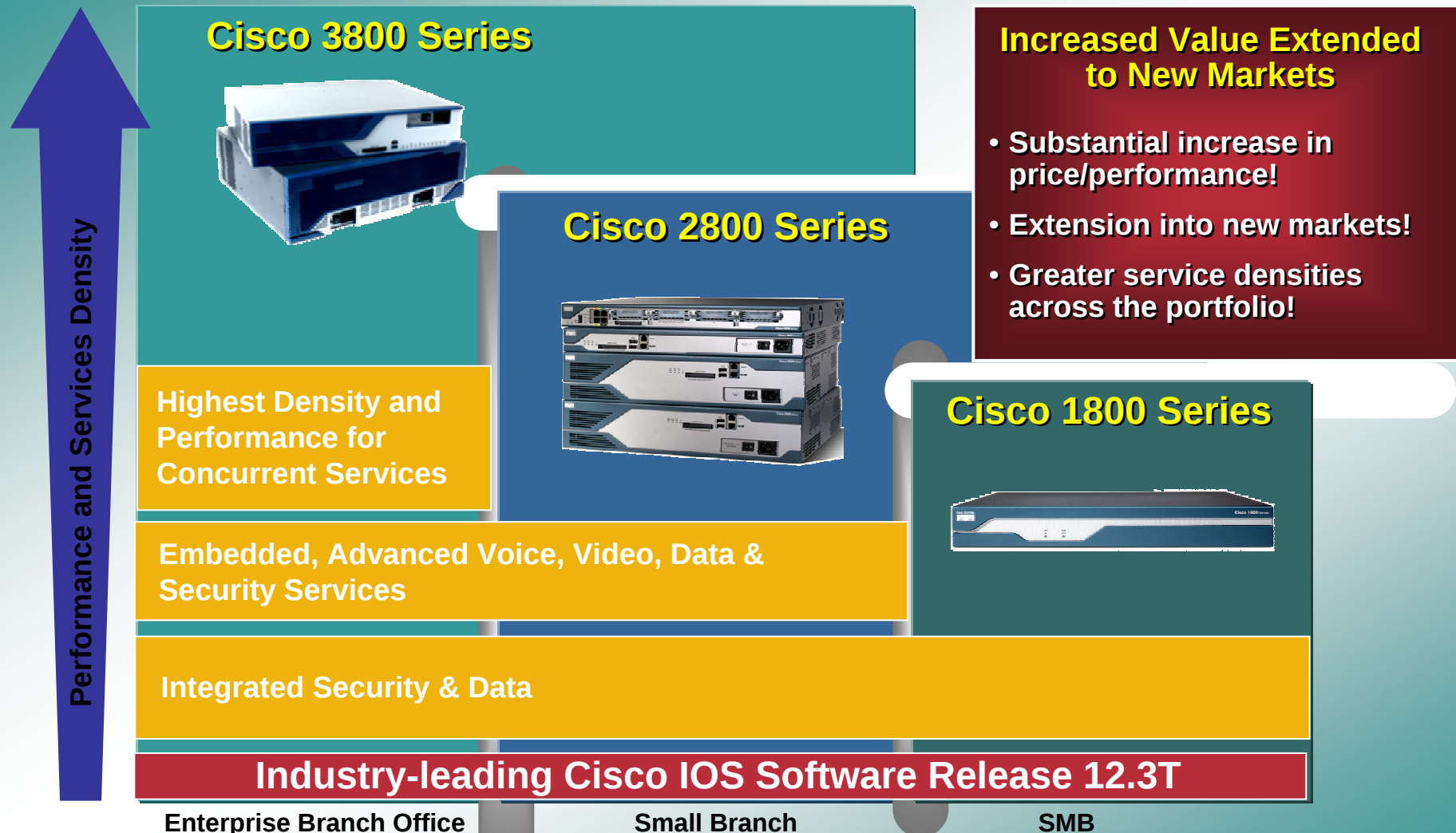
**Leverage advanced network routing capabilities**



# Scalable from Small Businesses to Large Enterprises

The Right  
Router for  
Every Office

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# Cisco Integrated Services Routers

## Key Features & Benefits

The Right  
Router for  
Every Office

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### Embedded Security and Voice

- Fast, on-board encryption
- Highest voice services densities
- Cisco IOS Software delivers seamless integration and business-critical services

### Higher Performance

- New ASIC, Bus design, and processor boost performance for services
- Double services density and memory defaults
- Leverages Cisco IOS Software intelligence and automation

### Increased Modularity

- Increased high speed slots — up to 2.2 Gbps
- High density, larger form factor network modules

### Resiliency

- Redundant power option with online insertion and removal
- Cisco IOS Software enables network-wide resilience to increase IP network availability

### Investment Protection

- Leverages existing modules
- Up to 4X memory capacity
- Cisco IOS Software: most widely leveraged network infrastructure software in the world

Integrated  
Services

Security

Voice

Content

L2 Switching

Wireless\*

Management

Extended Services,  
Headroom and  
Investment Protection



Cisco Integrated  
Services Routers

\* future

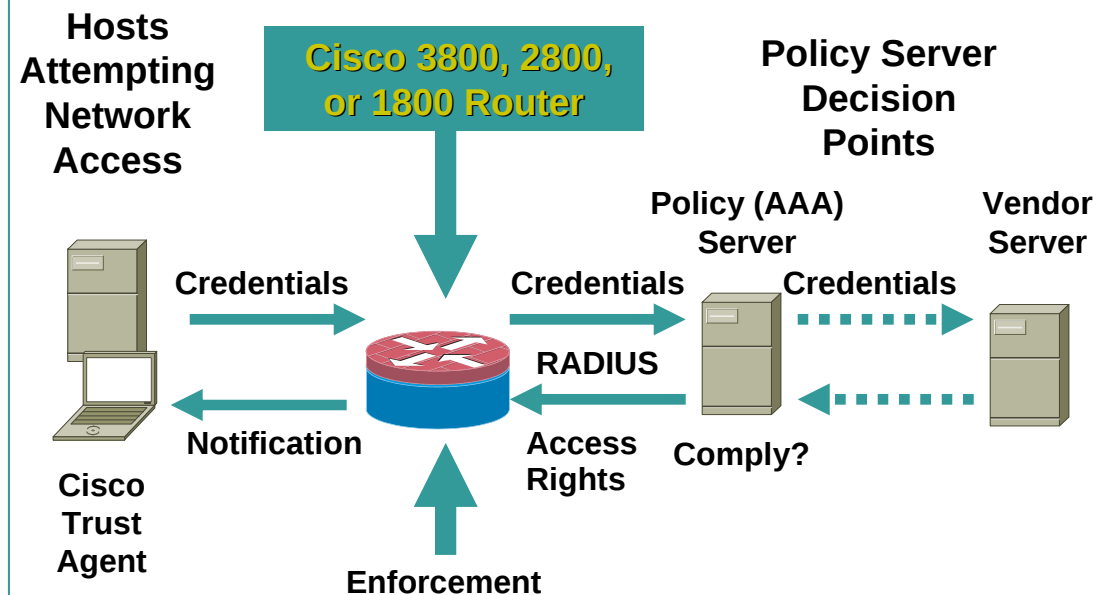
# Network Admission Control

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Leverages the network to intelligently enforce access privileges based on endpoint security posture

- Focused on limiting damage from viruses and worms
- Limits network access to compliant, trusted endpoints
- Restricts network access to compliant devices
- Supports multiple anti-virus vendors and Cisco Security Agent
- Cisco 3800, 2800, and 1800 security bundles ship with NAC capability

## Coalition of market-leading vendors



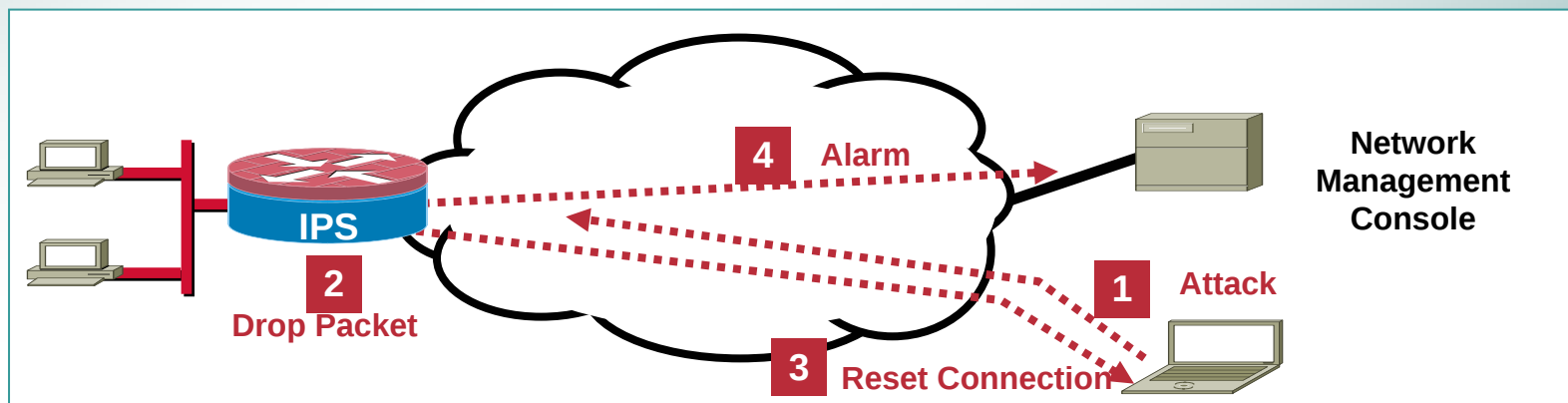
# Cisco IOS Intrusion Prevention Systems

Self-Defending  
Networks

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- First to market with IPS in a router – *inline* ability to mitigate network attacks
  - DROP** packet, **RESET** connection, **SEND** alarm
- Supports a wide range of attack/worm signatures supported (740+)
- Used for inline intrusion prevention and event notification
- Dynamically loads attack signatures to the router
- Integrates technology from Cisco IDS Sensor families

Cisco IDS 4200 Series Appliances, Cisco Catalyst® 6500 IDS Module, Network Module IDS appliance (NM-CIDS)

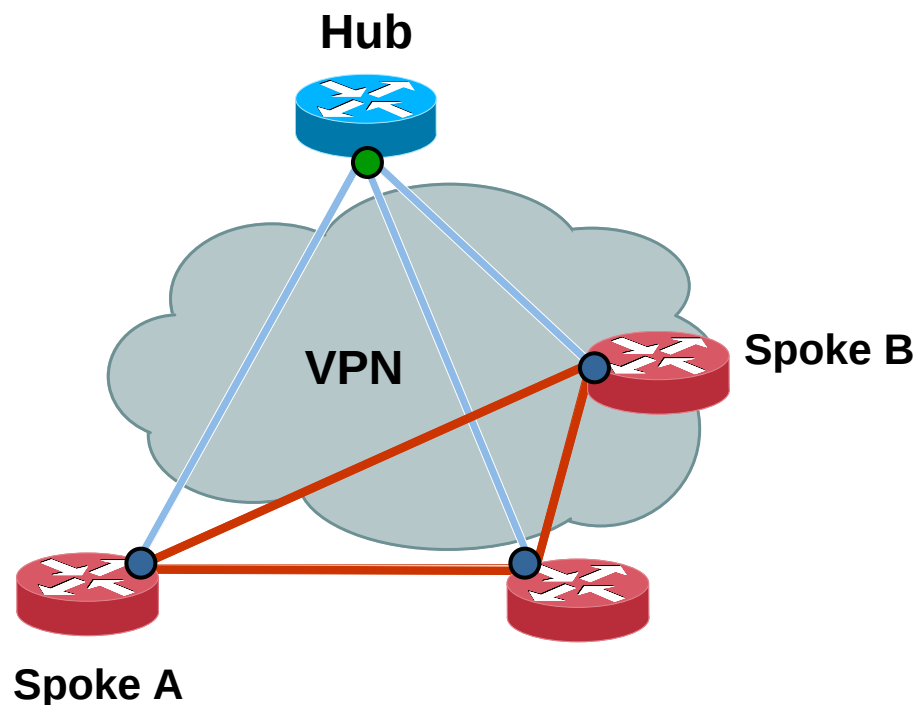


# Dynamic Multipoint VPN (DMVPN)

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- Full meshed connectivity with configuration simplicity of hub and spoke
- Preserves (central) bandwidth and minimizes latency
- Supports dynamically addressed spokes
- Zero touch configuration for addition of new spokes in the DMVPN

## Secure Meshed Tunnels Automatically



- = DMVPN Tunnels
- = Traditional Static Tunnels
- = Static Known IP Addresses
- = Dynamic Unknown IP Addresses

# Agenda

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# Introducing Release 12.3(11)T

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- **Extends Cisco IOS High Availability to small and medium sized business and branch offices**
- **Minimizes router downtime during planned or unplanned outages**
- **Fifth in a series of individual 12.3T releases, each of which inherits functionality delivered via its predecessor**
- **Innovations span multiple technology areas, including Security, Voice, and Wireless**

# Release 12.3(11)T: Additional Features and Enhancements

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## High Availability

- Cisco IOS Warm Upgrade
- Cisco IOS IPsec Stateful Failover

## Manageability

- Egress NetFlow
- NetFlow MIB and Top N Talkers

## Security

- Role-Base CLI Access – Granular Interface Control
- Cisco IOS 802.1x Supplicant
- Cisco IOS Security Device Event Exchange
- Easy VPN 4.0

## Cisco IOS Software Release 12.3(11)T

## Routing

- Cisco OER Support for Policy-Rules Configuration and Port-Based Prefix Learning

## Quality of Service

- Cisco AutoQoS for the Enterprise Suggested Policy

## Connectivity

- Configurable MAC Address for bba-group

See [Product Bulletin No. 2215](#) for a complete list of features in Release 12.3(11)T

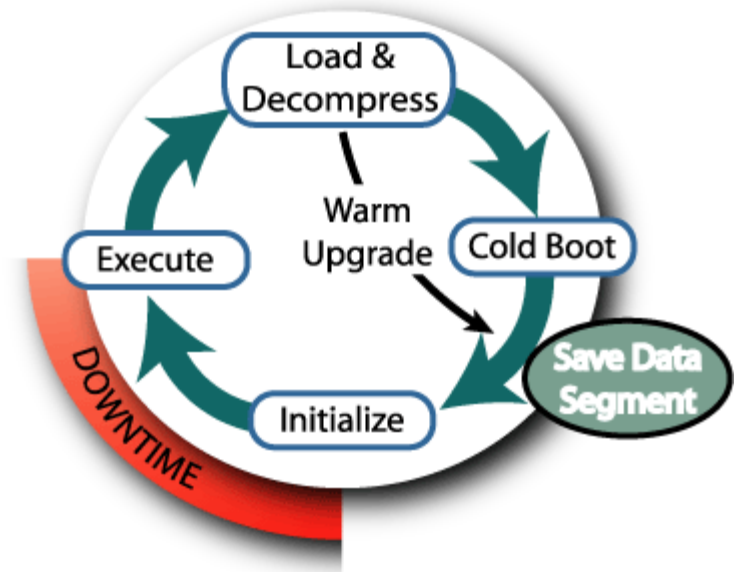
# System Level Resiliency: Warm Upgrade

Extending  
High  
Availability

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- Reduces downtime for planned upgrades for single RP platforms
- Builds upon Warm Reload
- The new image does not have to support Warm Upgrade

## Warm Upgrade process

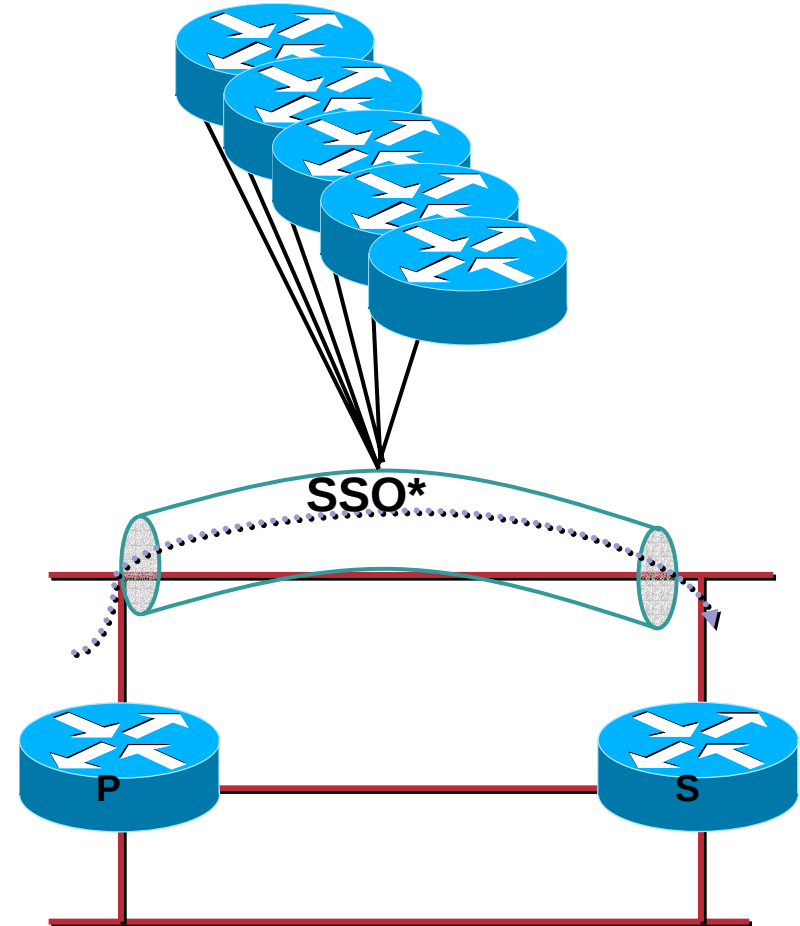


- Normal Reloading without Cisco IOS Warm Upgrade
  - Router loses packet forwarding for about 3.5 minutes
- With Cisco IOS Warm Upgrade
  - Router loses packet forwarding for about 30 seconds

# Cisco IOS IPsec Stateful Failover

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- Enables rapid IPsec stateful failover for thousands of geographically dispersed peers
- Increases resiliency and availability for network applications
- Avoids disruption of mission-critical applications



**\*Stateful Switchover**

# Role-Based CLI Access

- **Provides a view-based access to CLI commands**  
**View: set of operational commands and configuration capabilities**
- **User authentication occurs via a AAA Server (internal or external), or TACACS+**
- **Customer can define up to fifteen views, in addition to one reserve view for the root user**

# Role-Based CLI Access – Granular Interface Control

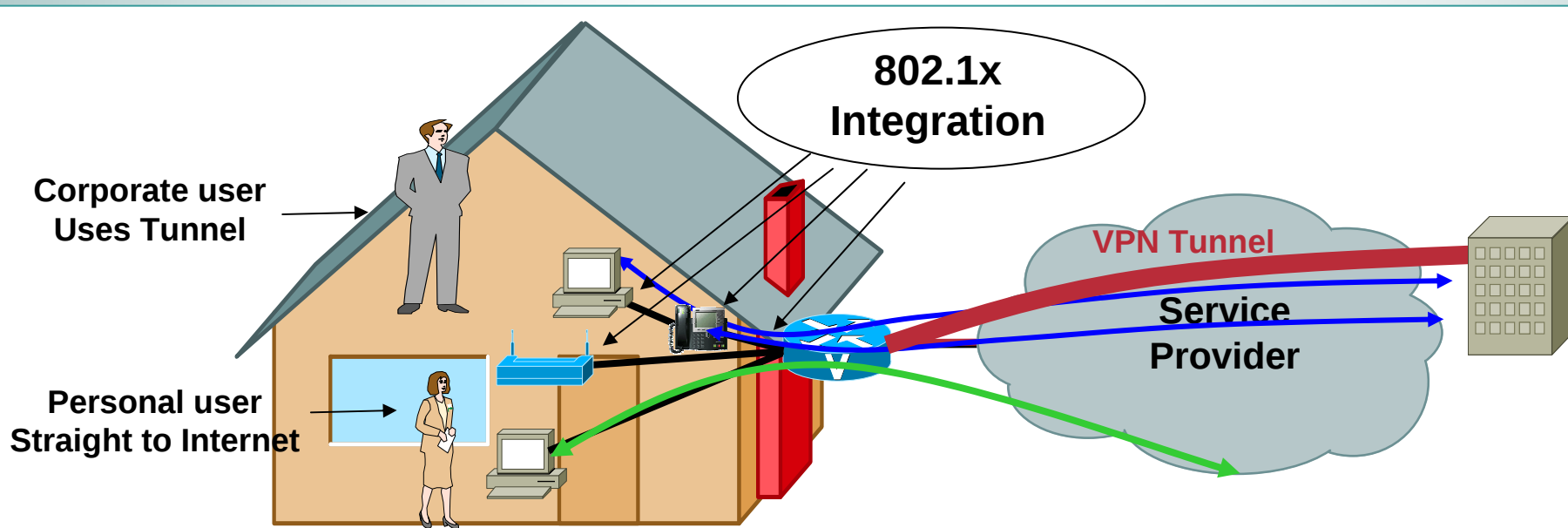
- Greatly enhances the security of the device by defining the set of CLI commands that a particular user can access
- Minimizes downtime by preventing unintentional execution of CLI commands by unauthorized personnel



***Customized Access To Match Operational Needs***

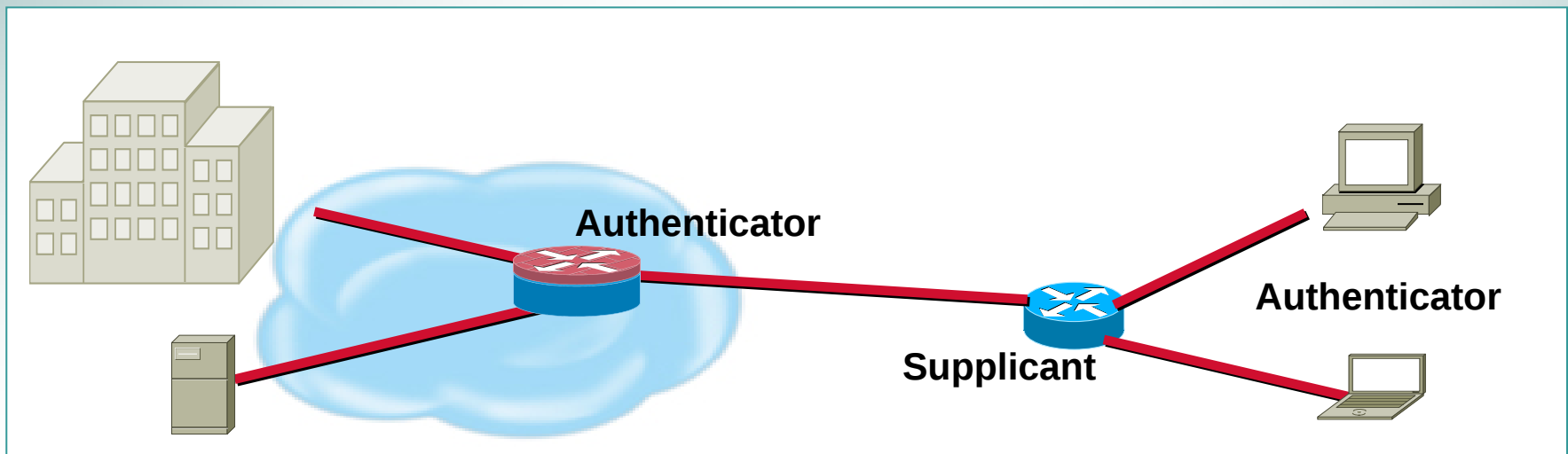
# Cisco IOS 802.1x

- Client-server based access control and authentication protocol that restricts unauthorized devices from connecting to a LAN through publicly accessible ports
- Works between the **supplicant** (client) and the **authenticator** (network device)
- Maintains backend communication to an **authentication (RADIUS) server**



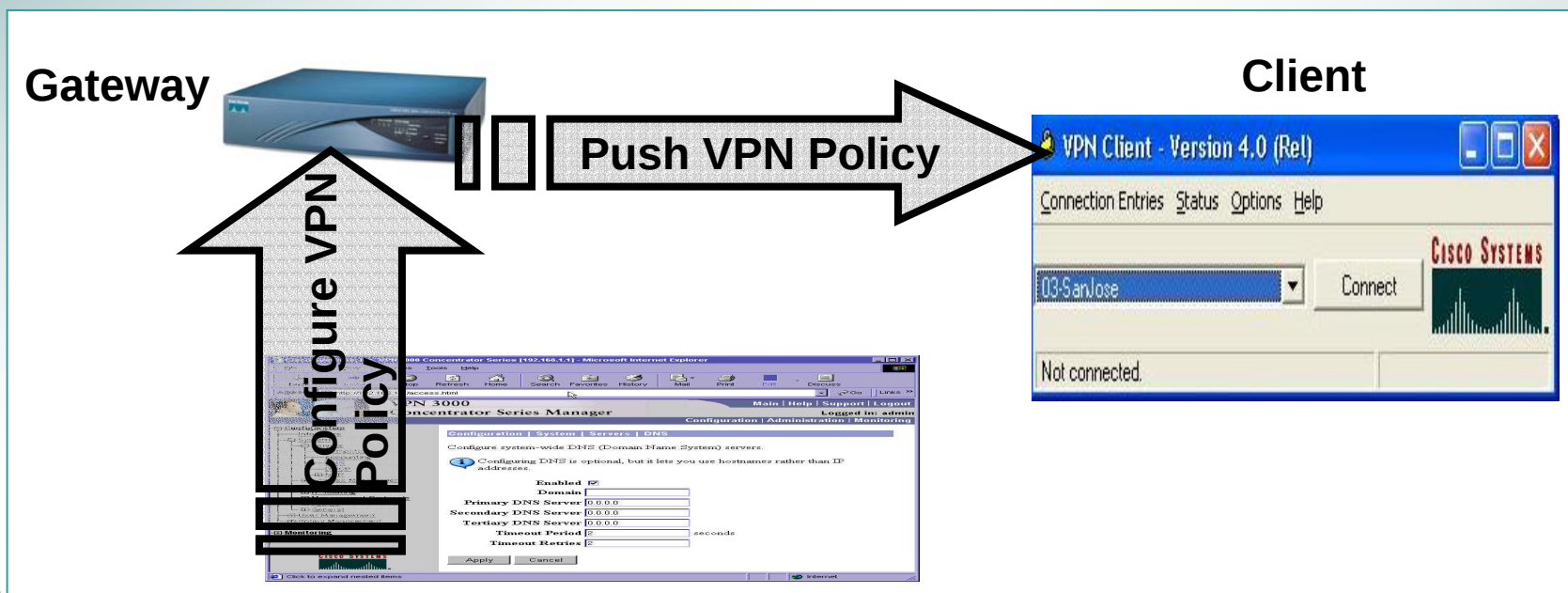
# Cisco IOS 802.1x Supplicant

- Consistent, standards-based technology for insertion into any mixed multimedia, multi-vendor network
- Single supplicant can connect to multiple authenticators, so different connectivity and security policies can be implemented for different users



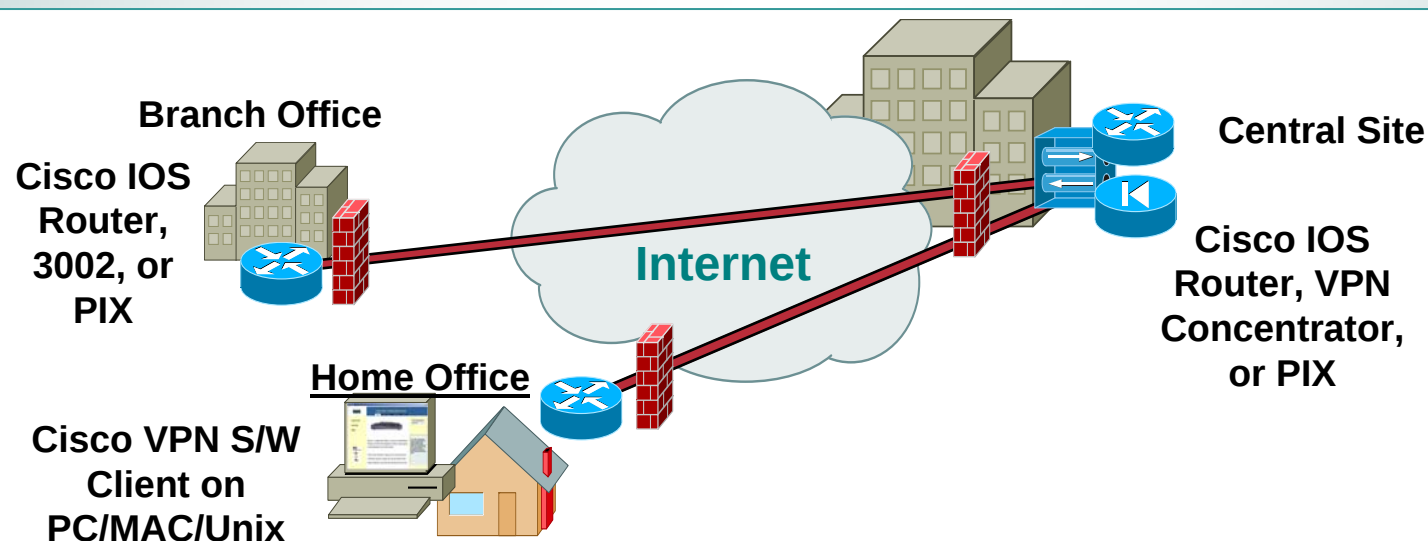
# Easy VPN

- Simplifies VPN deployments by eliminating complex remote-side configuration
- Central Site VPN Gateways with Cisco Easy VPN Server supported on Cisco VPN30xx, Cisco IOS Routers, PIX Security Appliances
- HTML-Based Management



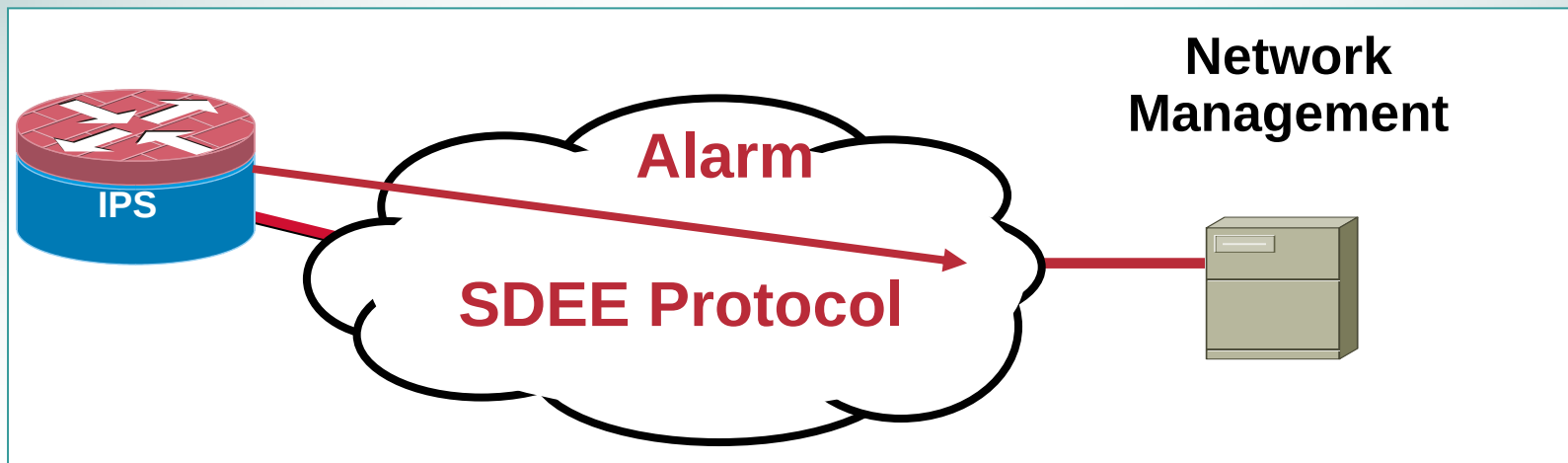
# Easy VPN 4.0

- Simple, scalable, and flexible
- Easy VPN enhancements
  - Easy VPN Remote with IEEE 802.1x Authentication
  - Easy VPN Remote with Certificates
  - Easy VPN Remote Load Balancing
  - Easy VPN Remote Management Enhancements
  - Easy VPN Remote VLAN Support



# Cisco IOS Security Device Event Exchange

- Security Device Event Exchange (SDEE) is a new standard that specifies the format of messages and protocol used to communicate events generated by security devices
- Provides a standard format for vendor interoperability which lowers total cost of ownership
- Ensures secure transport of data across the network



# Cisco AutoQoS for the Enterprise

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- **Application Classification**  
Example: automatically discovering applications and providing appropriate QoS treatment
- **Policy Generation**  
Example: auto-generation of initial and ongoing QoS policies
- **Configuration**  
Example: providing high level business knobs, and multi-device / domain automation for QoS
- **Monitoring & Reporting**  
Example: generating intelligent, automatic alerts and summary reports
- **Consistency**  
Example: enabling automatic, seamless interoperability among all QoS features and parameters across a network topology – LAN, MAN, and WAN



# Cisco AutoQoS for the Enterprise Suggested Policy

Quality of  
Service

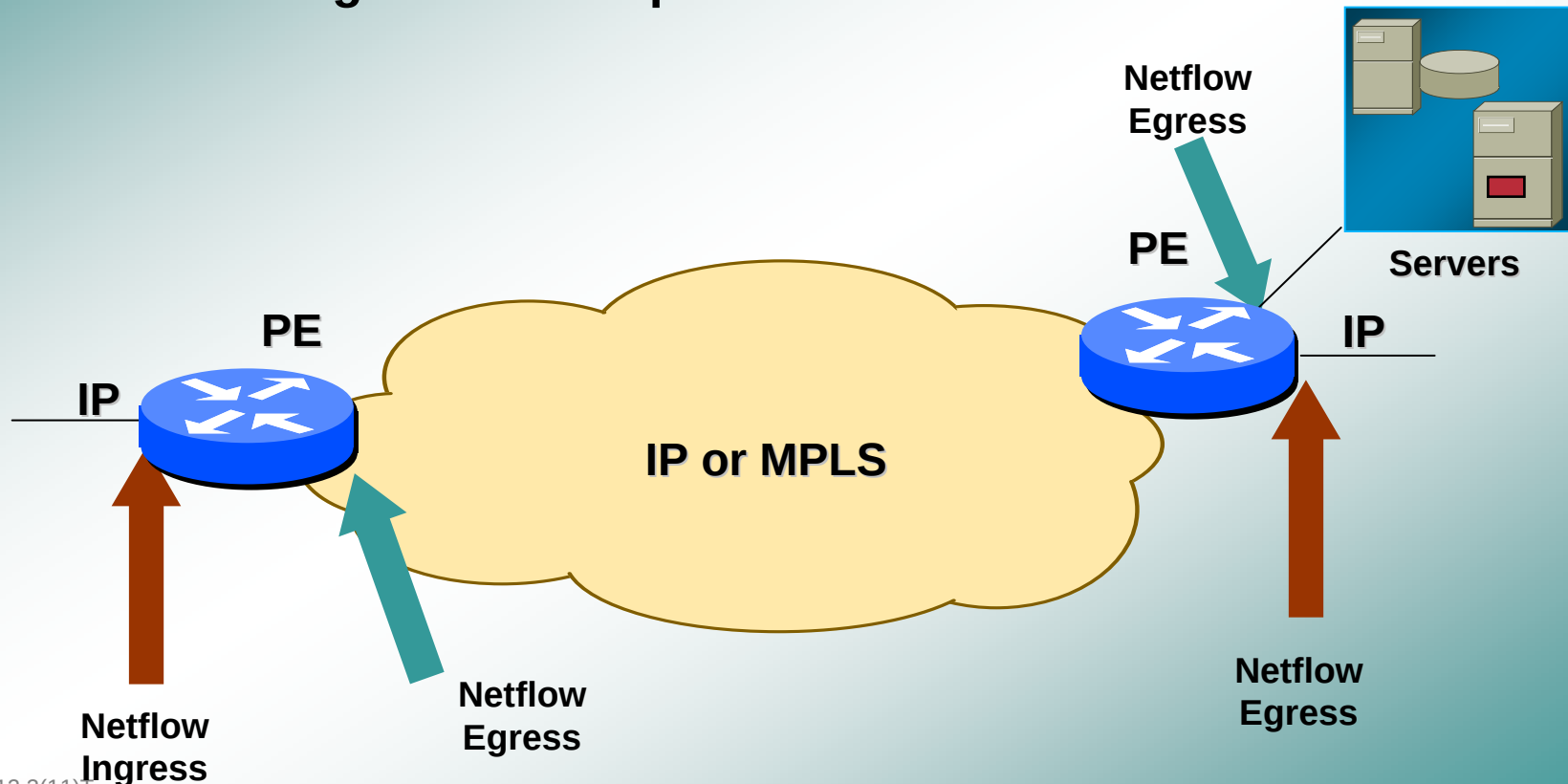
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- Increases customer flexibility by allowing users to view, compare, and edit a Cisco AutoQoS suggested policy prior to application



# Egress NetFlow Accounting

- Extends Netflow tracking to flows exiting a Cisco IOS device
- Enables tracking of flows after features (ie: QoS, NAT) have made changes to the IP packet



# NetFlow MIB with Top Talkers

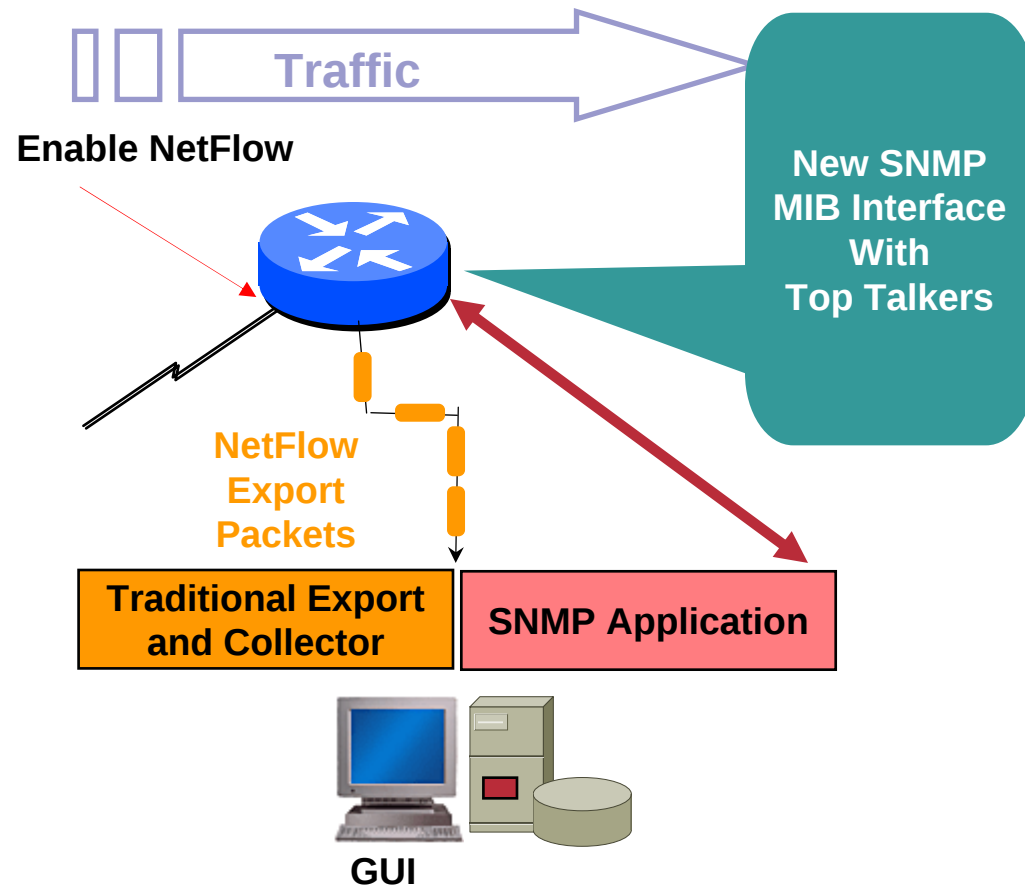
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- Key benefits

**Provides critical information about Top N talkers and top conversations (NetFlow cache)**

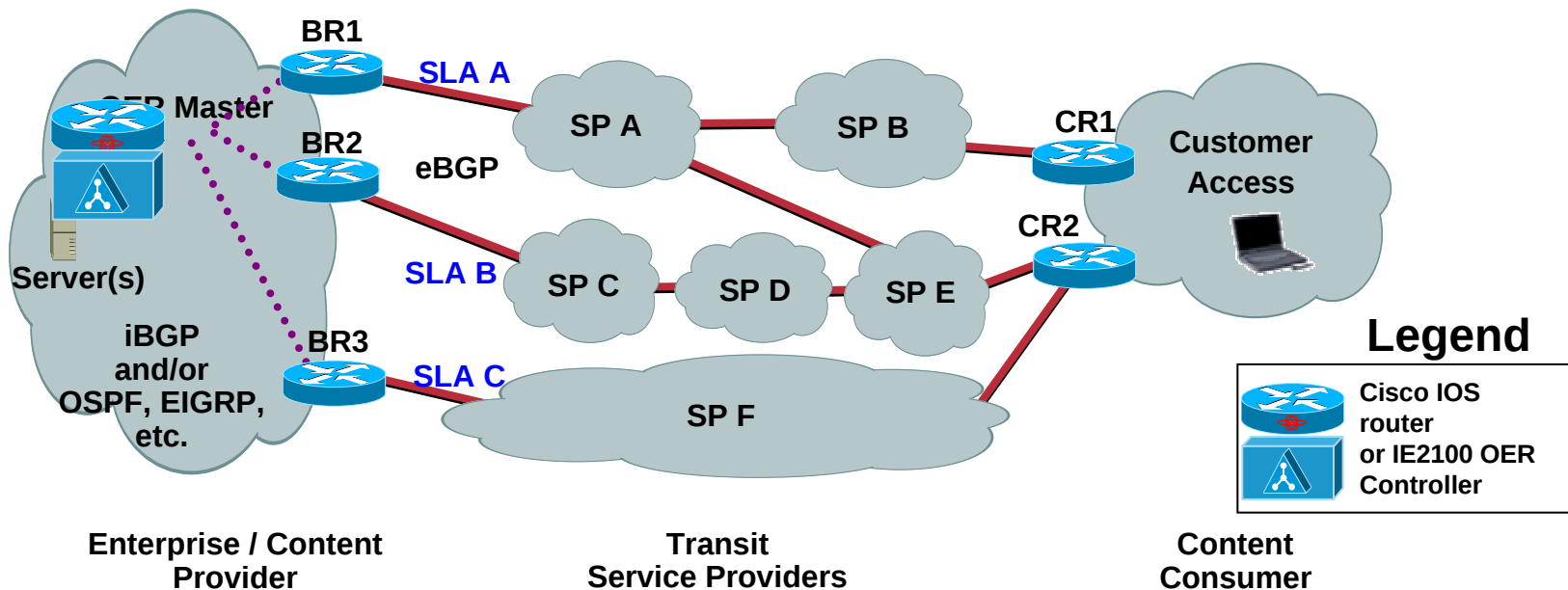
**Retrieves NetFlow information when traditional UDP export is impractical**

**Users can configure and modify NetFlow using an SNMP interface**



# Cisco IOS Optimized Edge Routing (OER)

**Automates routing performance by selecting the optimal outbound route based on cost minimization, load distribution policy, and overall network performance**



# Cisco OER Support for Policy-Rules Configuration & Port-Based Prefix Learning

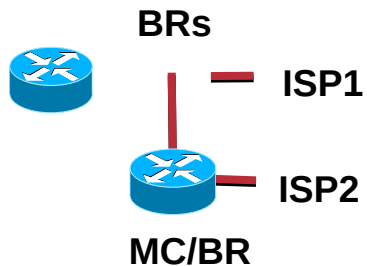
Routing

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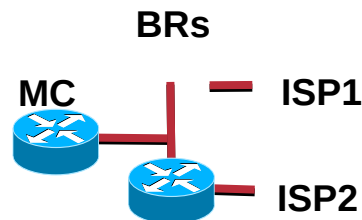
- **Protocol-port based learning can be configured to optimize the learning process**
  - Reflect priorities of administrator and enterprise
- **Additional filters with current protocol-port based learning capability available for application to the learning mechanism**

## Cisco OER Product Family, Configurations, and Hardware

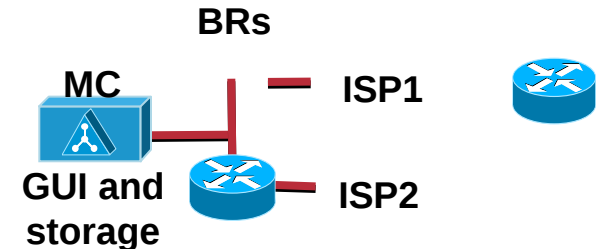
Config A



Config B

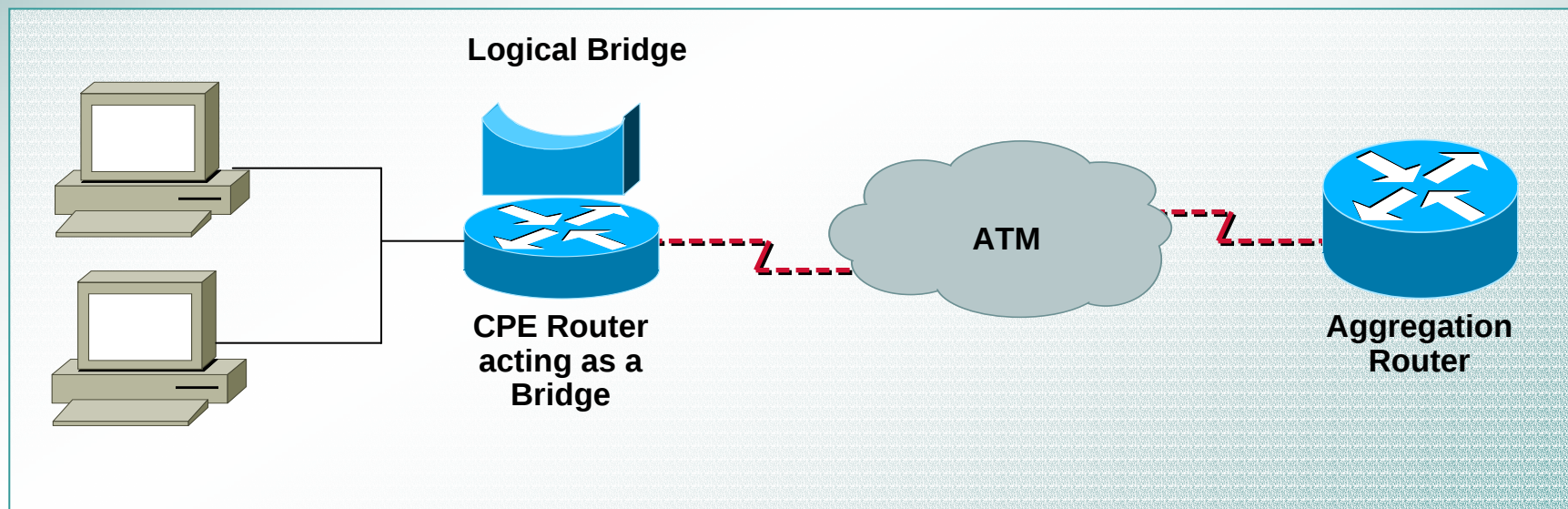


Config C



# Configurable MAC Address for bba-group

- Allows support of multiple session types (ie: RBE and PPPoE) on the same ATM interface for broadband applications



# Agenda

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# Cisco IOS Packaging Introduction/Customer Benefits

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- **Simplification**

Minimize customer disruption during the software selection process

- **Consolidation**

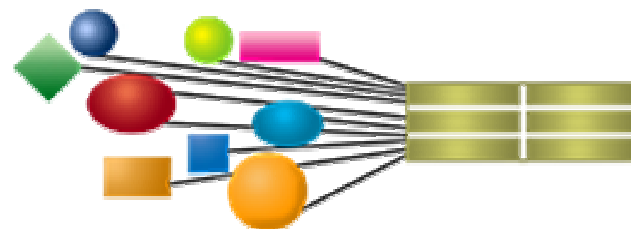
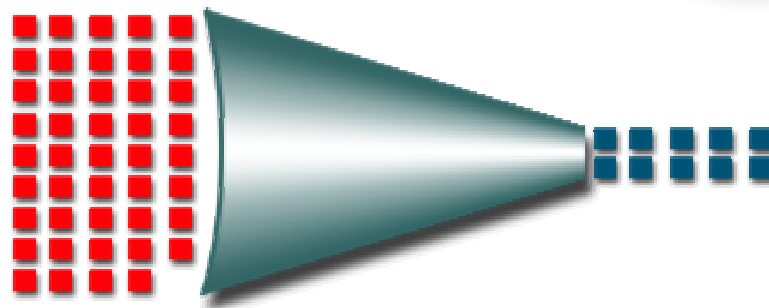
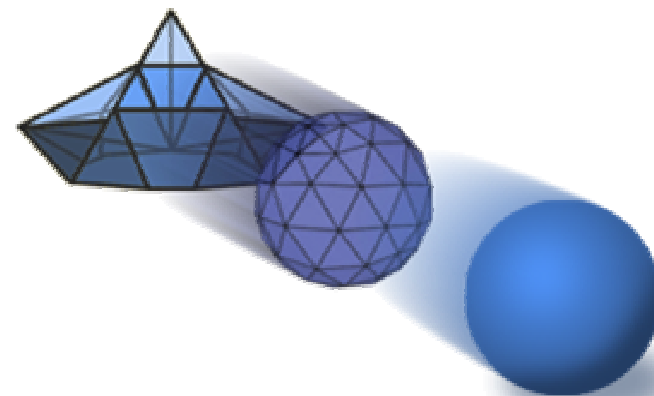
Streamline packaging across Cisco-IOS based hardware

- **Consistency**

Consistent image names

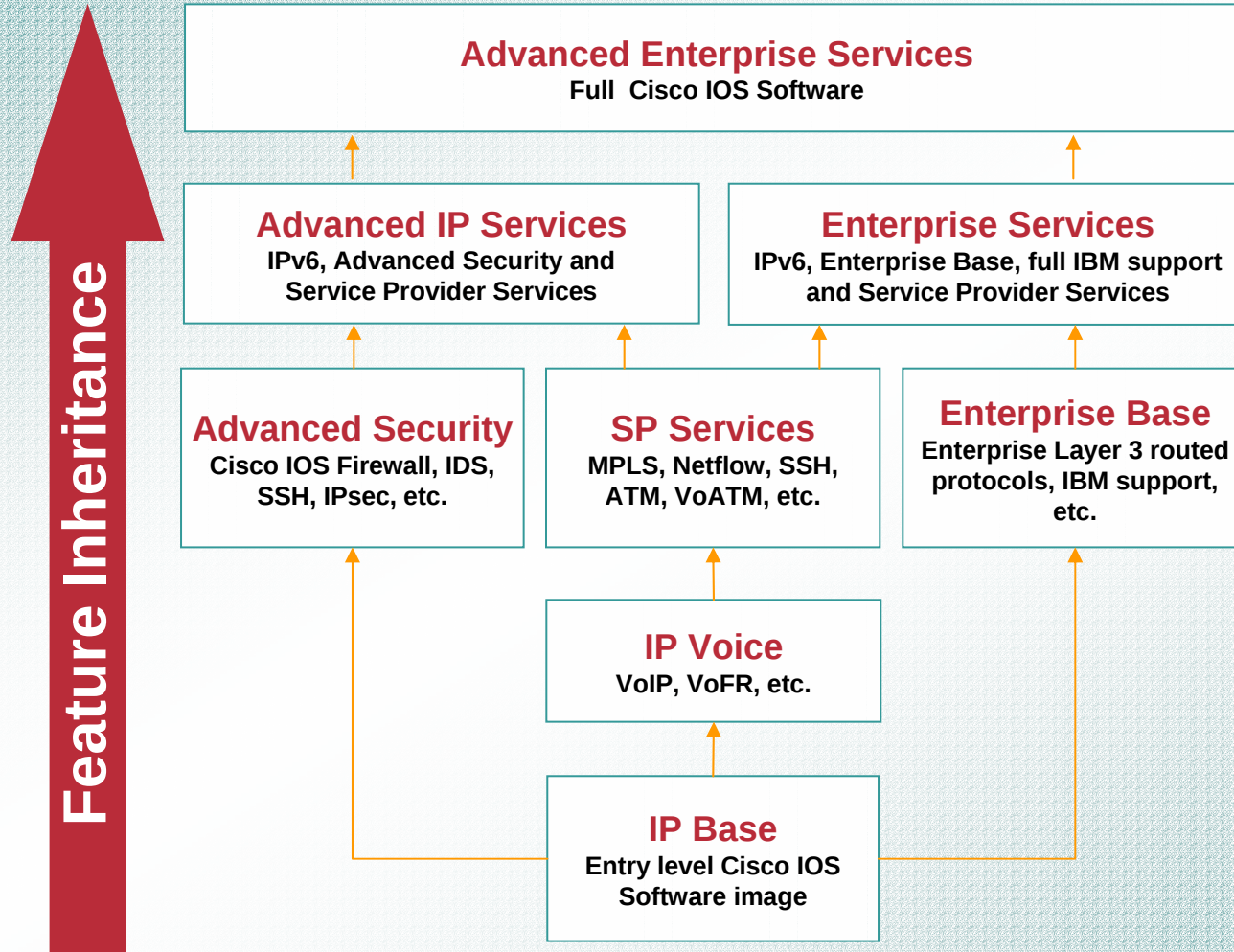
Consistent functionality across Cisco-IOS based hardware

Consistent Cisco IOS software pricing



# Cisco IOS Packaging for Access Routers

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# Cisco IOS Packaging: Naming Convention Feature Set, Image Names & Product Codes

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- **Base:** entry level image
- **Enterprise:** Layer 3/Enterprise protocols
- **Advanced:** Security (VPN, IPsec/3DES, Firewall, Encryption, IDS)
- **Services:** Cisco IOS Software premium features (MPLS, Netflow, Voice, VoIP, VoFR)

|   | Marketing Name               | Image Names                       | Product Codes     |
|---|------------------------------|-----------------------------------|-------------------|
| 1 | IP Base                      | c2600- <b>ipbase</b> -mz          | S2600IPB-12301T   |
| 2 | IP Voice                     | c2600- <b>ipvoicek9</b> -mz       | S2600IPVK9-12301T |
| 3 | Enterprise Base              | c2600- <b>entbasek9</b> -mz       | S2600EBK9-12301T  |
| 4 | Advanced Security            | c2600- <b>advsecurityk9</b> -mz   | S2600ASK9-12301T  |
| 5 | SP Services                  | c2600- <b>spservicesk9</b> -mz    | S2600SPSK9-12301T |
| 6 | Advanced IP Services         | c2600- <b>advipservicesk9</b> -mz | S2600AIK9-12301T  |
| 7 | Enterprise Services          | c2600- <b>entservicesk9</b> -mz   | S2600ESK9-12301T  |
| 8 | Advanced Enterprise Services | c2600- <b>adventerprisek9</b> -mz | S2600AEK9-12301T  |

# Agenda

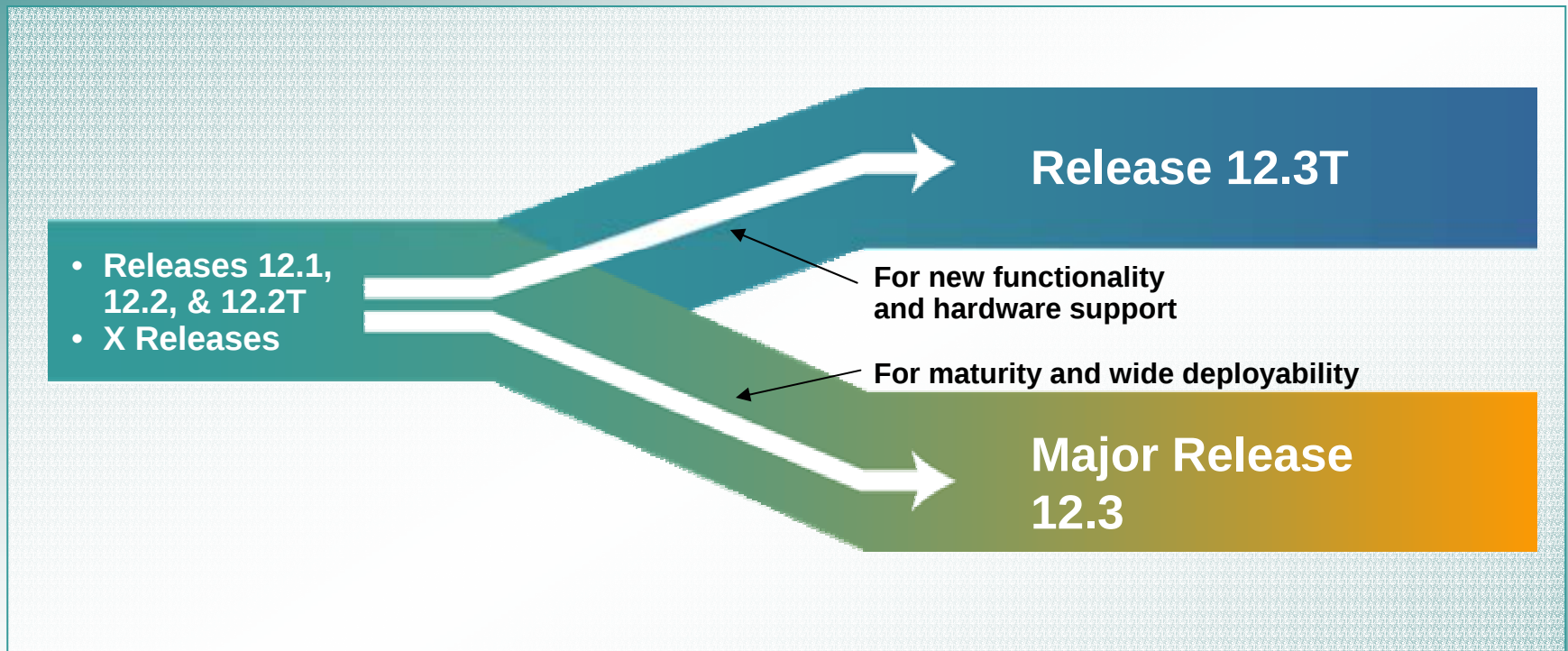
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# Release 12.3T Upgrade Paths

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# Cisco IOS Software Release 12.3(11)T

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## Cisco IOS Software Release 12.3(11)T

services at *wire-speed*

- Release 12.3(8)T supports the Cisco 2800 and 1800 Series; Release 12.3(11)T supports the Cisco 3800 Series
- Includes all features introduced in previous releases of Release 12.3T
- Enables customers to:
  - Deploy the right router for every office
  - Maintain self-defending networks
  - Leverage advanced network routing capabilities

# References – Release 12.3T

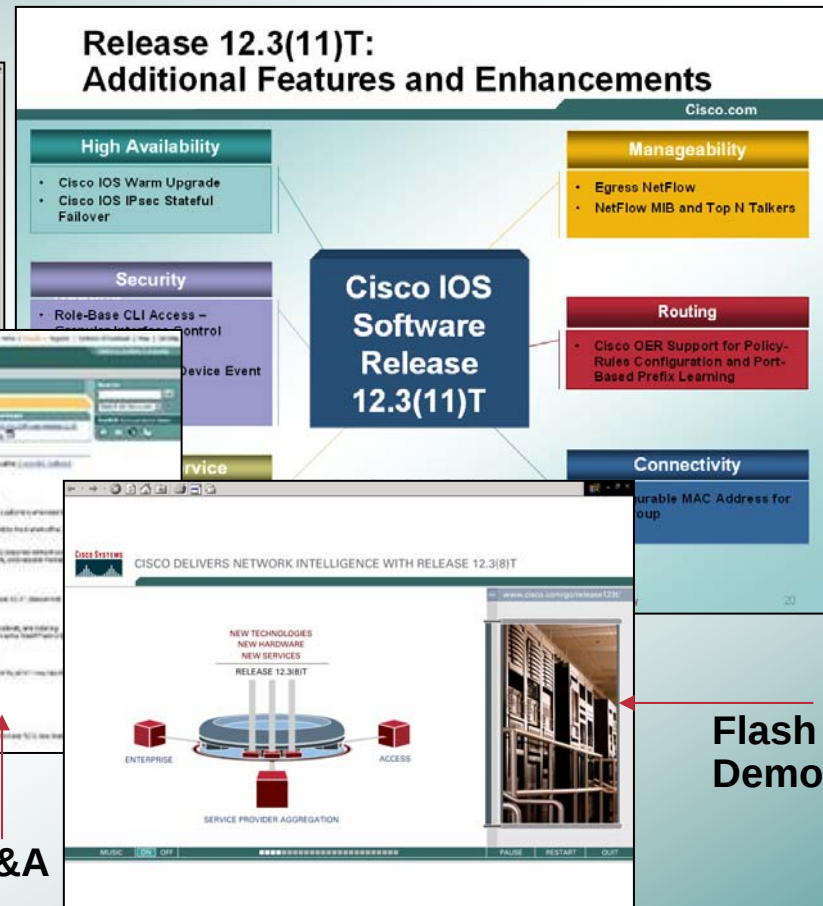
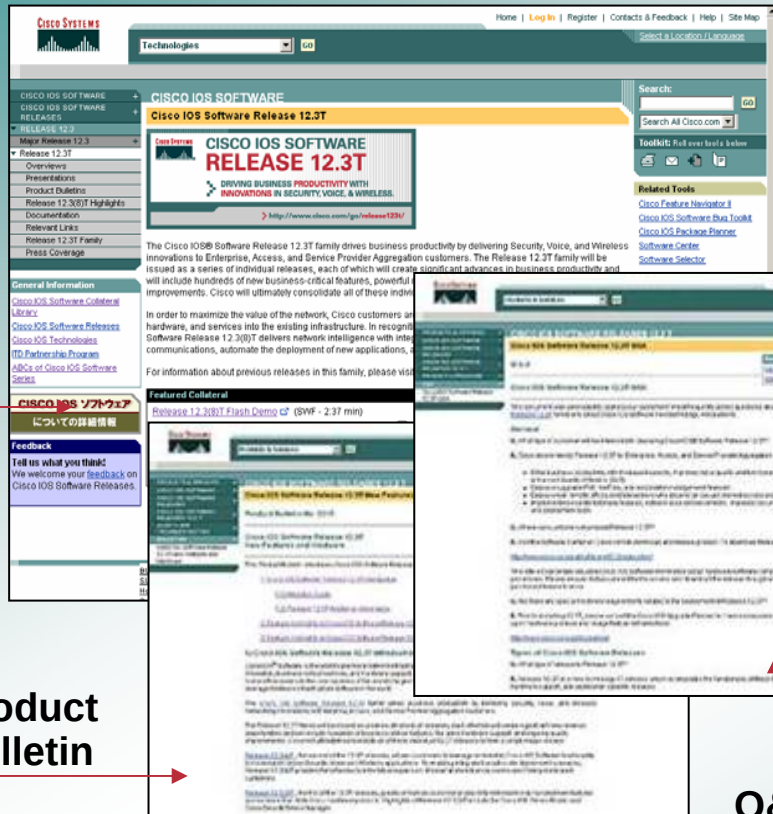
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Web

Product  
Bulletin

Q&A

Flash  
Demo



[www.cisco.com/go/release123t/](http://www.cisco.com/go/release123t/)

# Release 12.3T References

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- **Cisco IOS Software Release 12.3T**  
[www.cisco.com/go/release123t/](http://www.cisco.com/go/release123t/)
- **Cisco Integrated Service Routers**  
[www.cisco.com/go/isr/](http://www.cisco.com/go/isr/)

# CISCO SYSTEMS

