



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

**INTERNET TECHNOLOGIES DIVISION**

**SEPTEMBER 2004**

# Agenda

Cisco.com

- **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

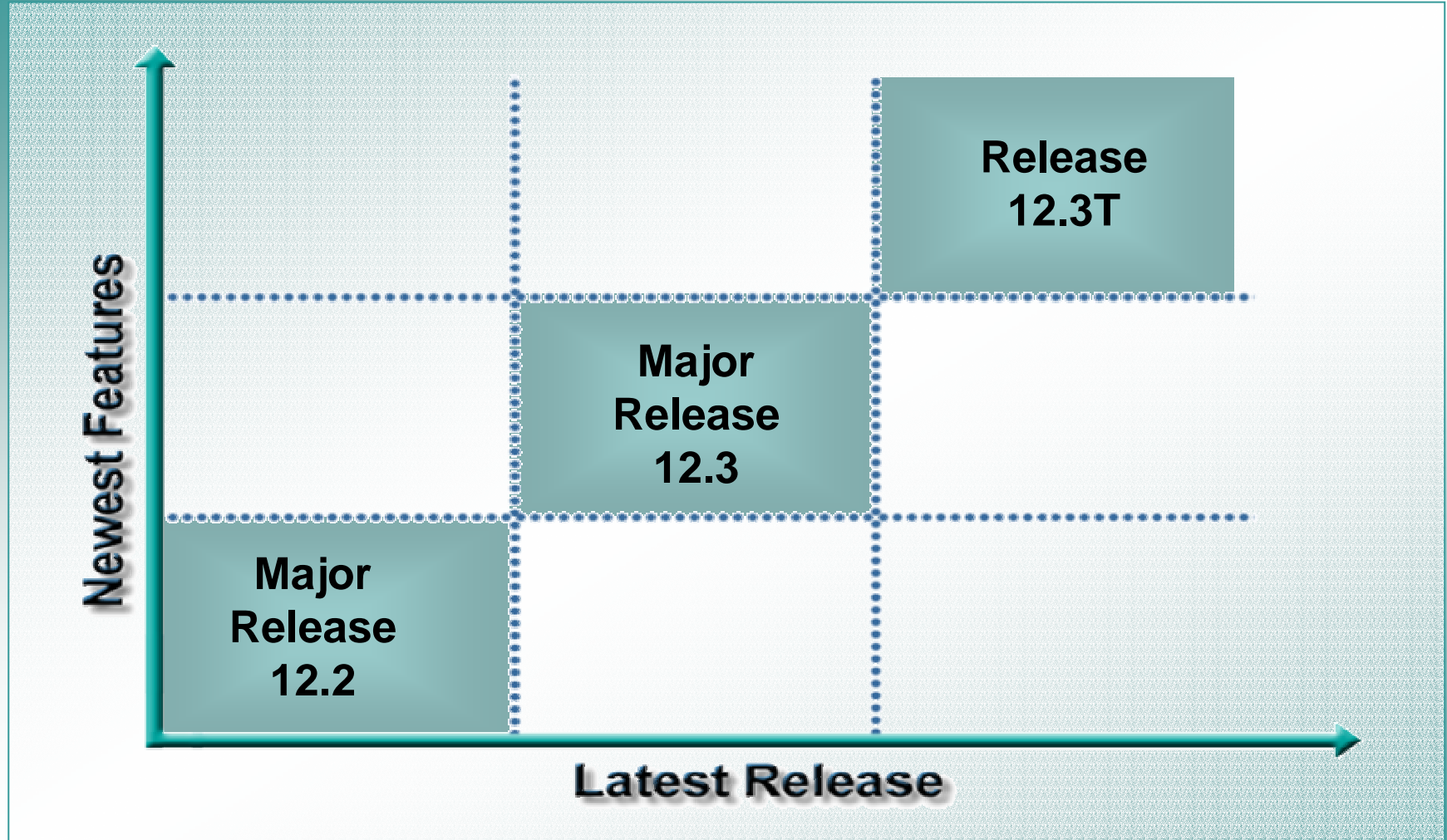
Cisco.com

## 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

Cisco.com



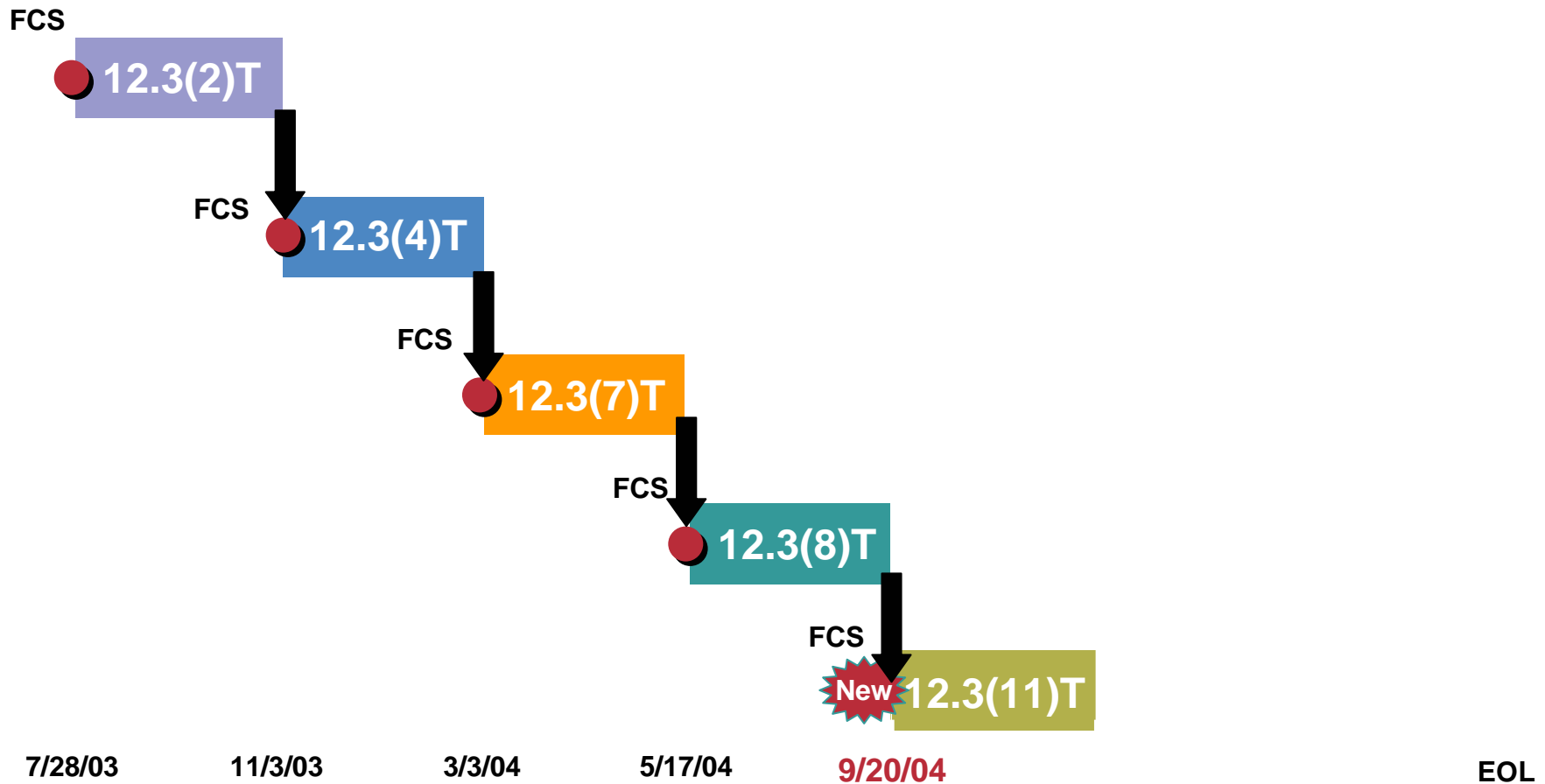
# Release 12.3T Within the Cisco IOS Software Release Portfolio

Cisco.com

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 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 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 Cisco 7200, 7300, 7500, 7600, ONS155x0, and uBR7000/ uBR10000 Series Routers Cisco 10000 Series Internet Router
Release 12.0S	Service Provider Core / Aggregation	Cisco 7200 and 7500 Series Routers 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 Cisco 7200 and 7500 Series Routers Cisco ONS15104 Router

# Release 12.3T Family Inheritance

Cisco.com



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

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

Cisco.com

## 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

Cisco.com

## 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

Cisco.com

## 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

Cisco.com

## 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

Cisco.com

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

# New Router Portfolio Fully Leverages a Systems Approach

Cisco.com

- 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**

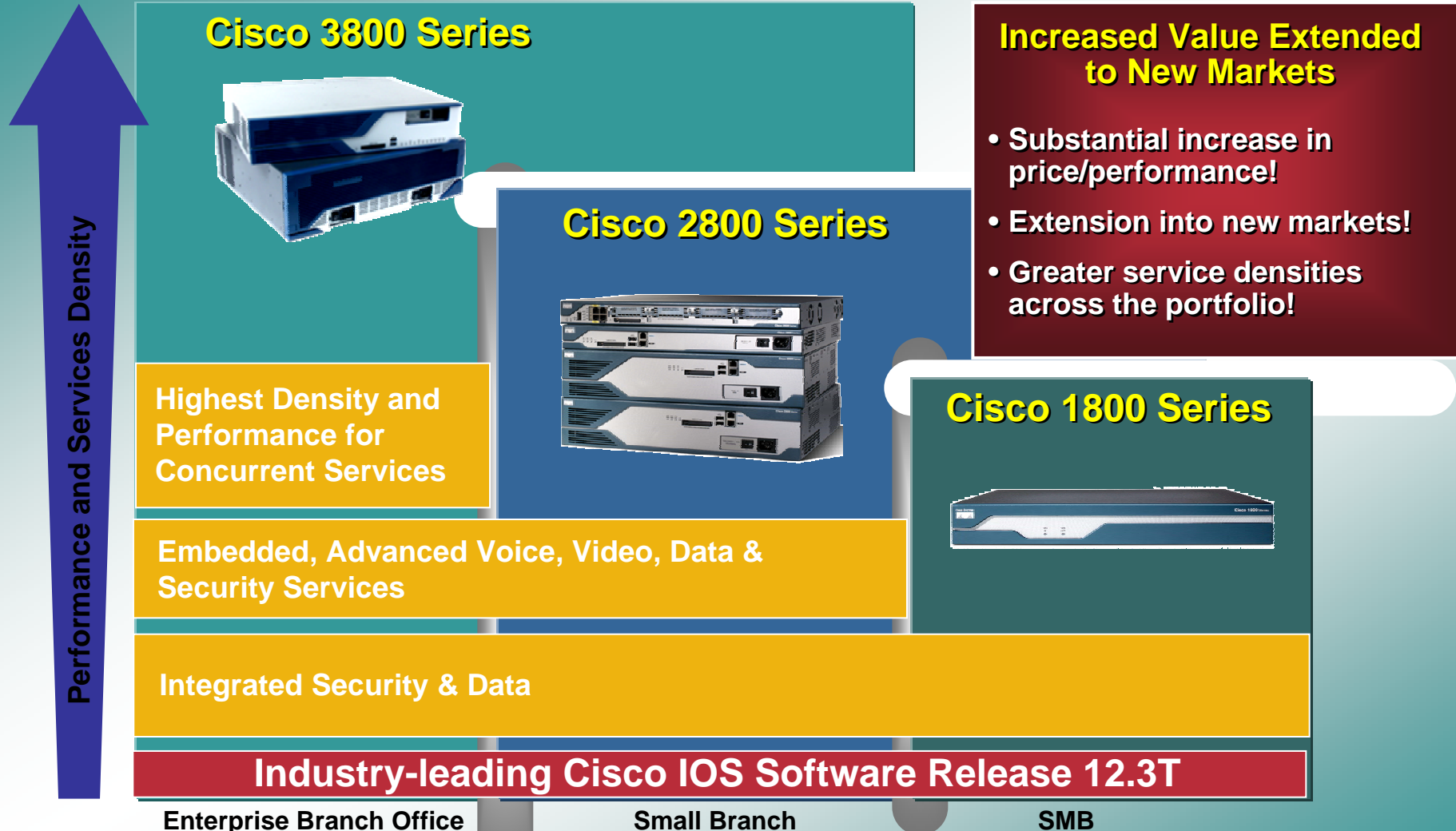
**Leverage advanced network routing capabilities**



# Scalable from Small Businesses to Large Enterprises

The Right  
Router for  
Every Office

Cisco.com



# Cisco Integrated Services Routers

## Key Features & Benefits

The Right  
Router for  
Every Office

Cisco.com

### 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



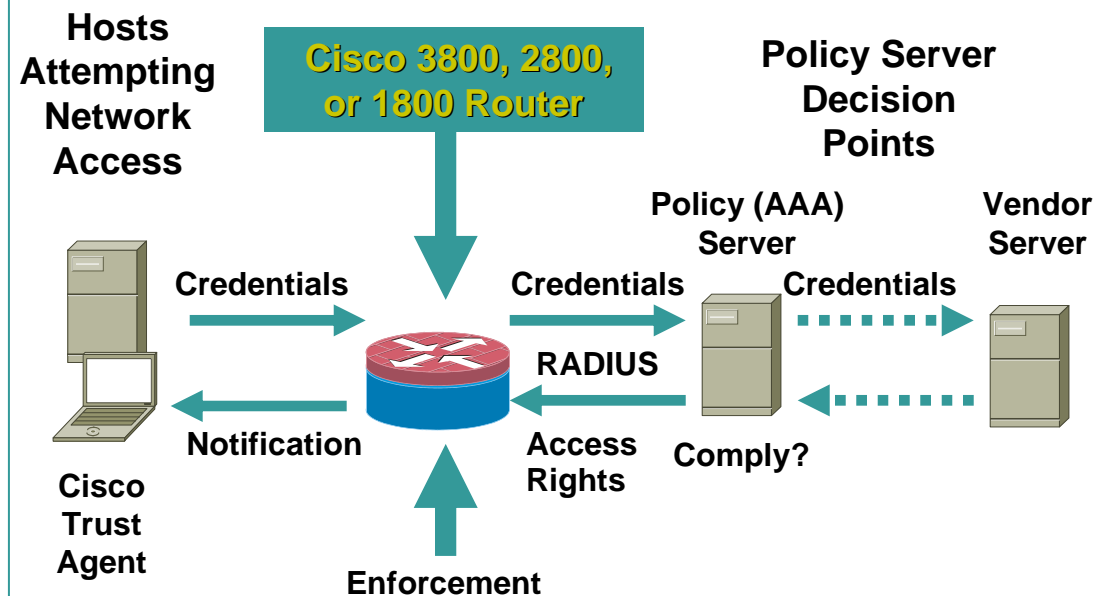
# Network Admission Control

Cisco.com

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





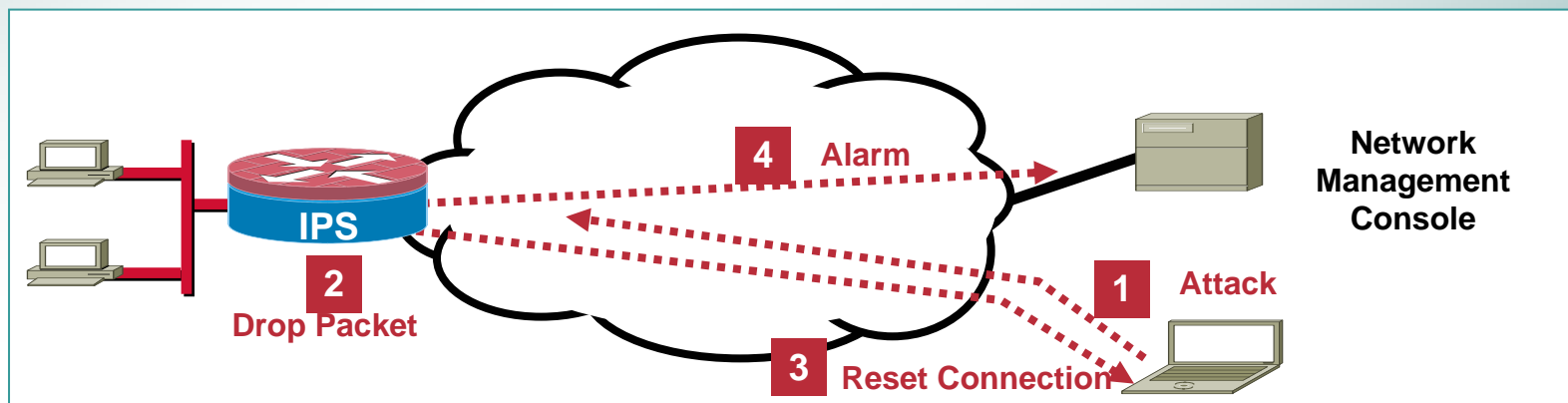
# Cisco IOS Intrusion Prevention Systems

- 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)

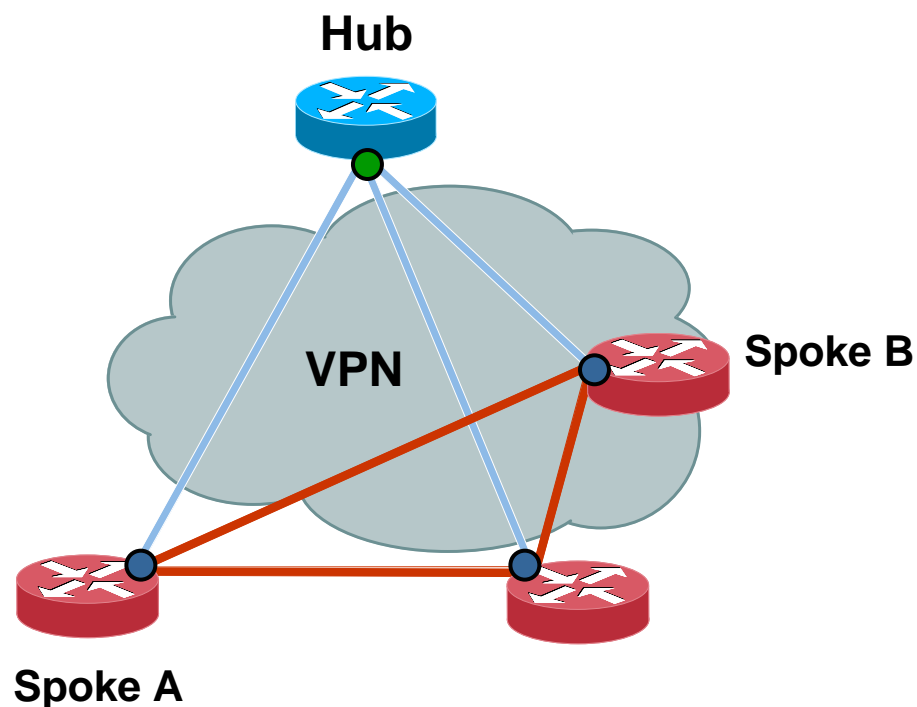


# Dynamic Multipoint VPN (DMVPN)

Cisco.com

- 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

Cisco.com

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

# Introducing Release 12.3(11)T

Cisco.com

- **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

Cisco.com

## 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

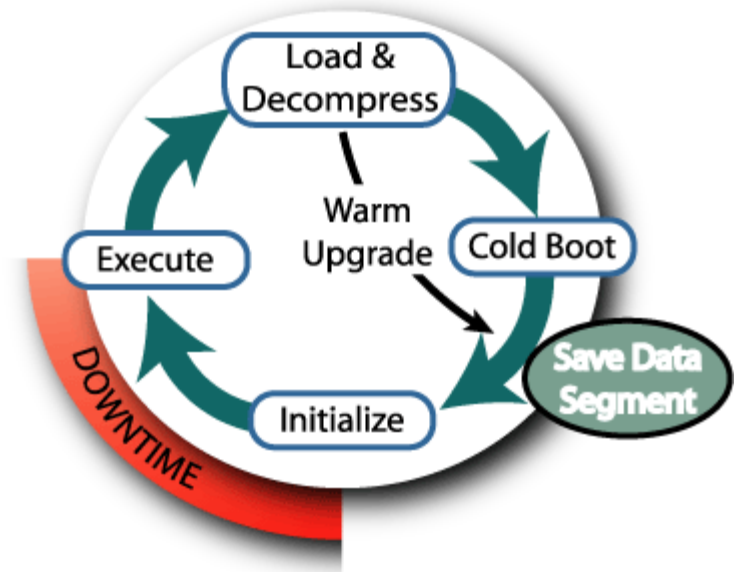
# System Level Resiliency: Warm Upgrade

Extending  
High  
Availability

Cisco.com

- 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

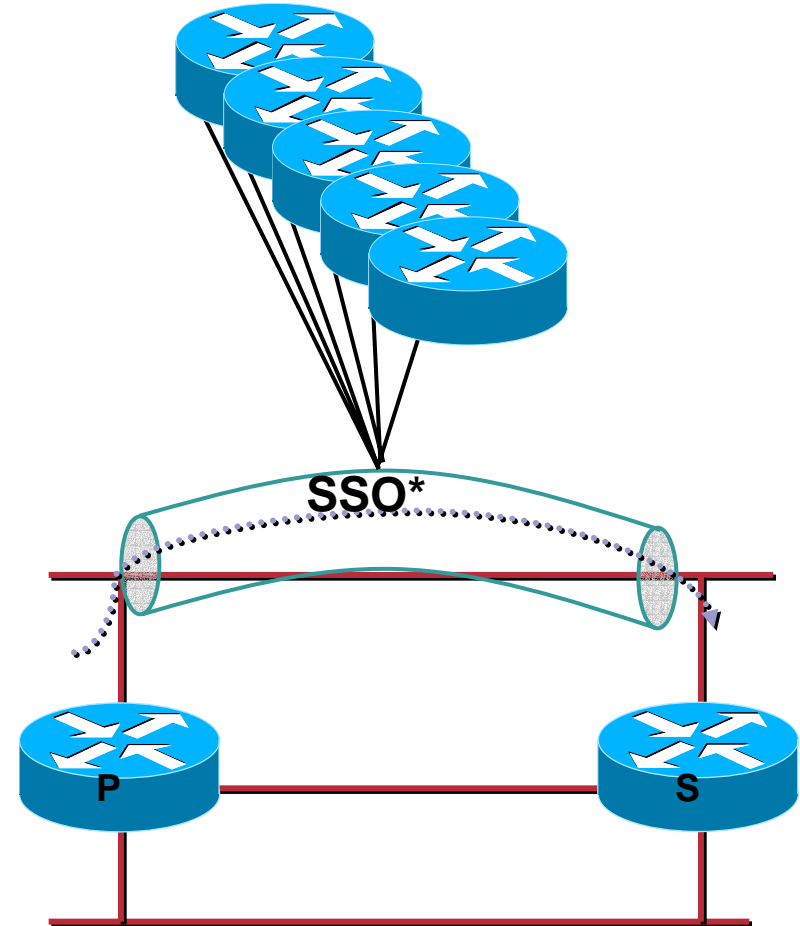


- Normal Reloading without Cisco IOS Warm Upgrade  
Router loses packet forwarding for about 3.5 minutes
- With Cisco IOS Warm Upgrade  
Router loses packet forwarding for about 30 seconds

# Cisco IOS IPsec Stateful Failover

Cisco.com

- 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

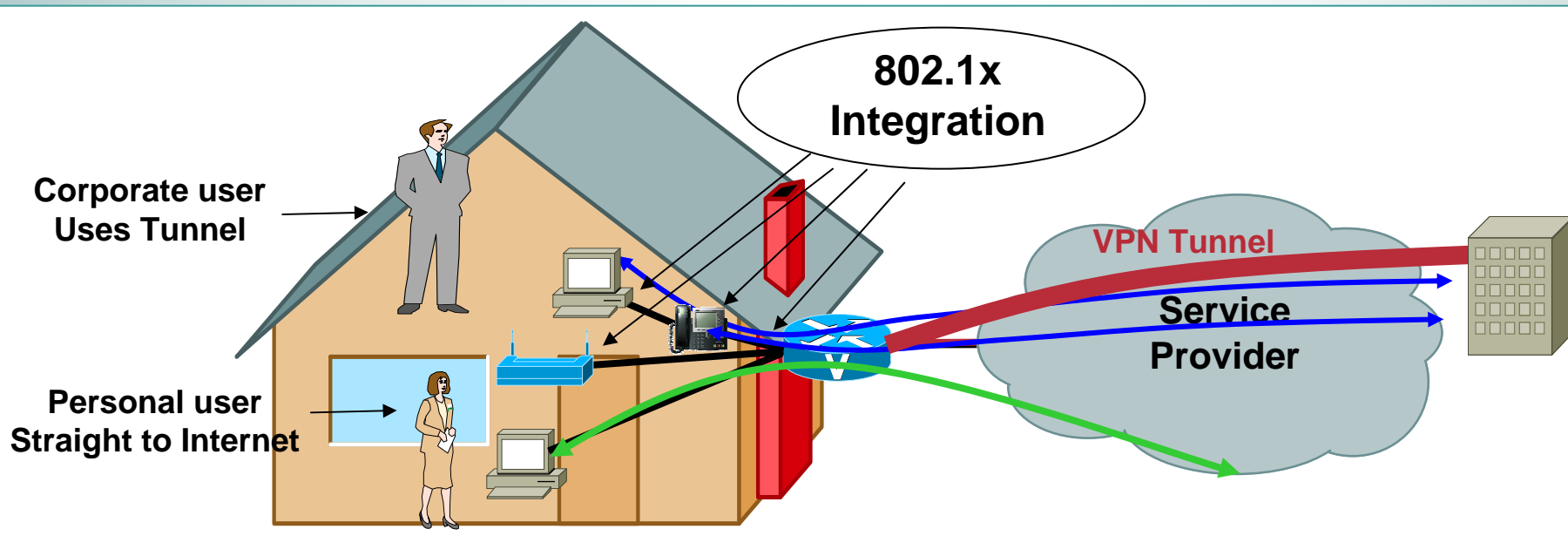


***Customized Access To Match Operational Needs***

# Cisco IOS 802.1x

Cisco.com

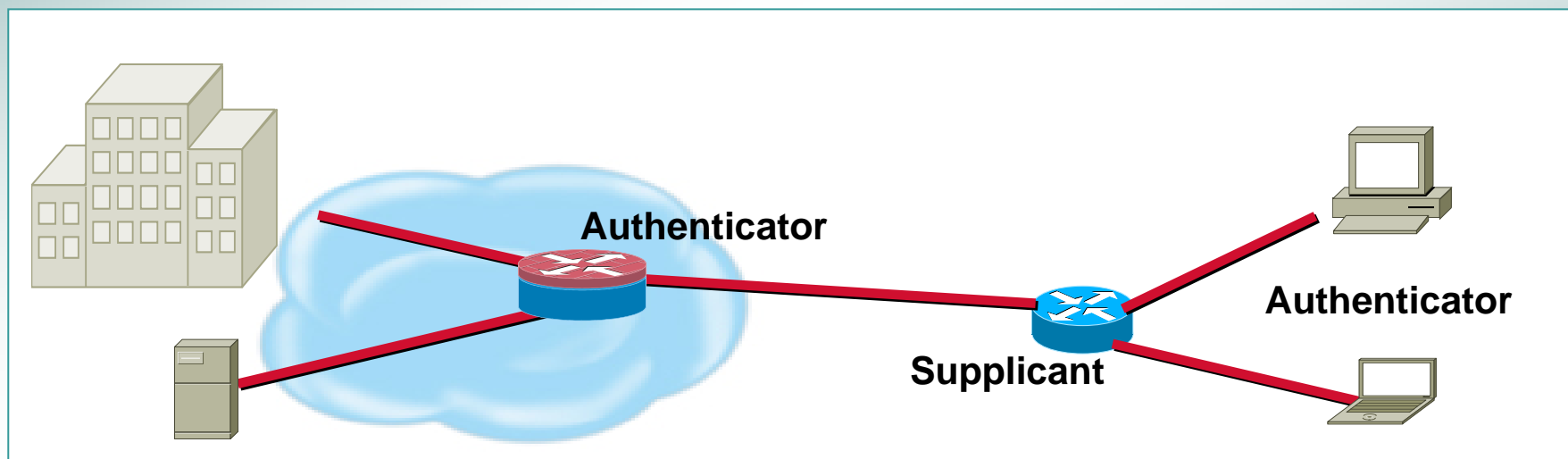
- Client-server based access control and authentication protocol that restricts unauthorized devices from connecting to a LAN through publicly accessible ports
- Works between the **supplicant** (client) and the **authenticator** (network device)
- Maintains backend communication to an **authentication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



# Cisco IOS 802.1x Supplicant

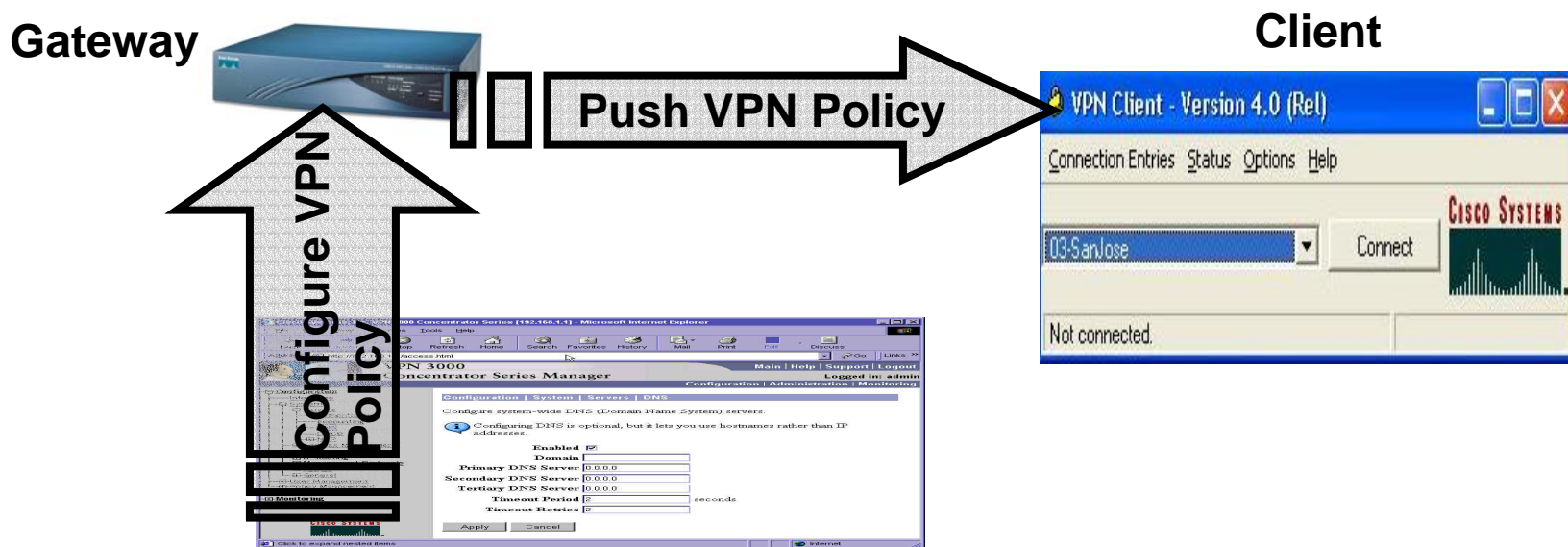
Cisco.com

- 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



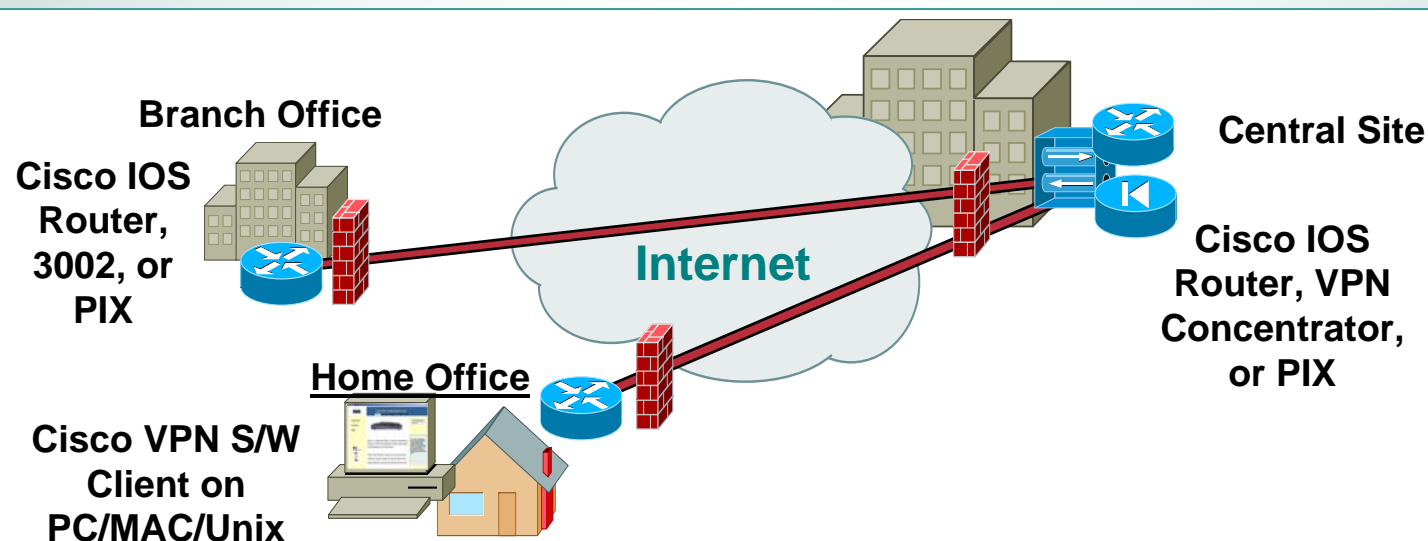
# Easy VPN

- 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



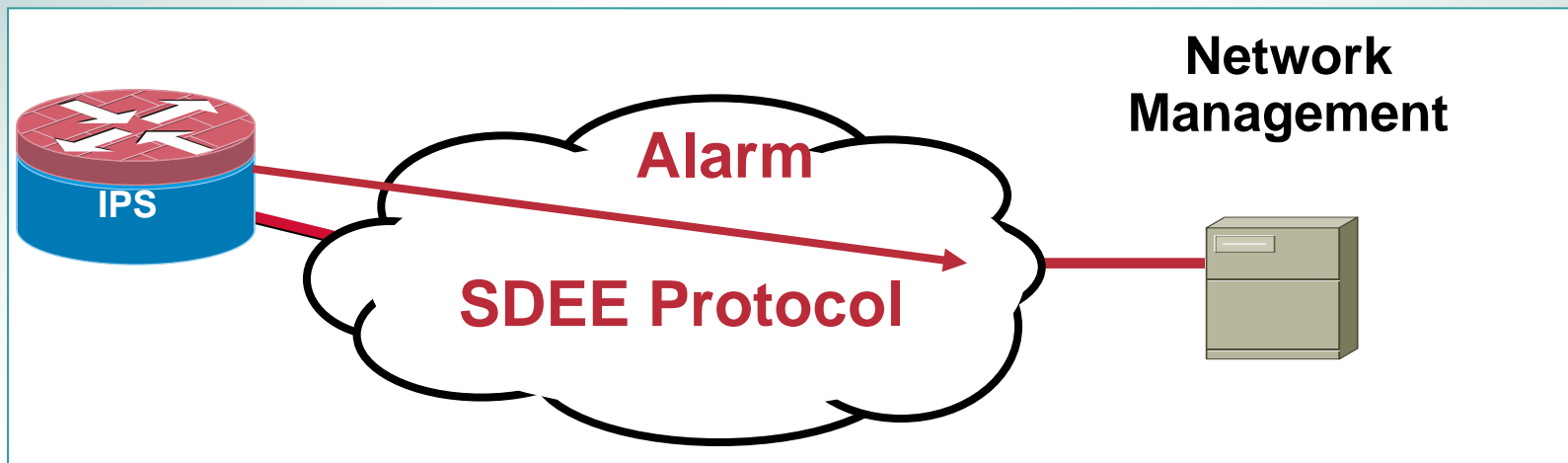
# Easy VPN 4.0

- 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

Cisco.com

- **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

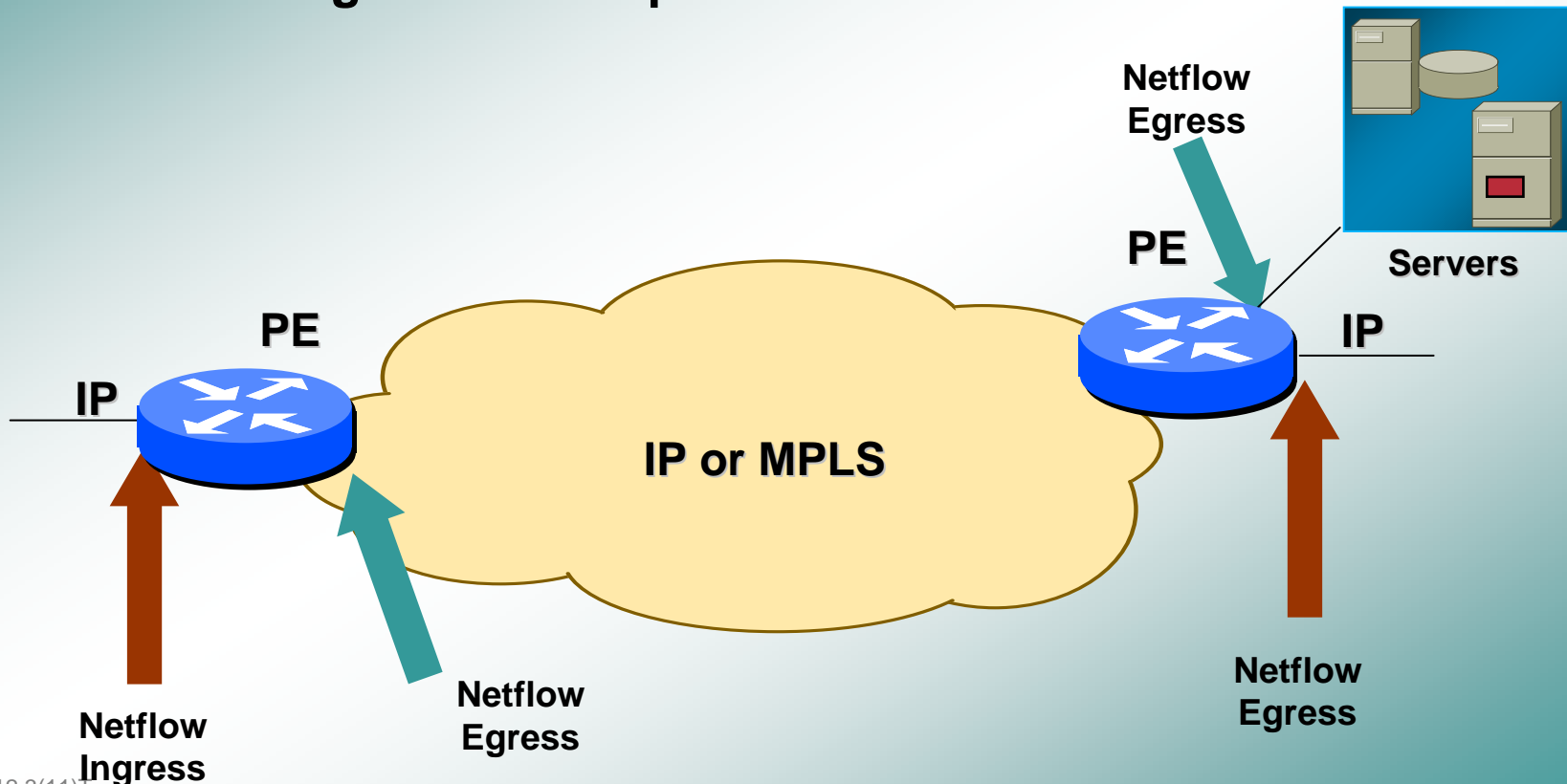
Cisco.com

- 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

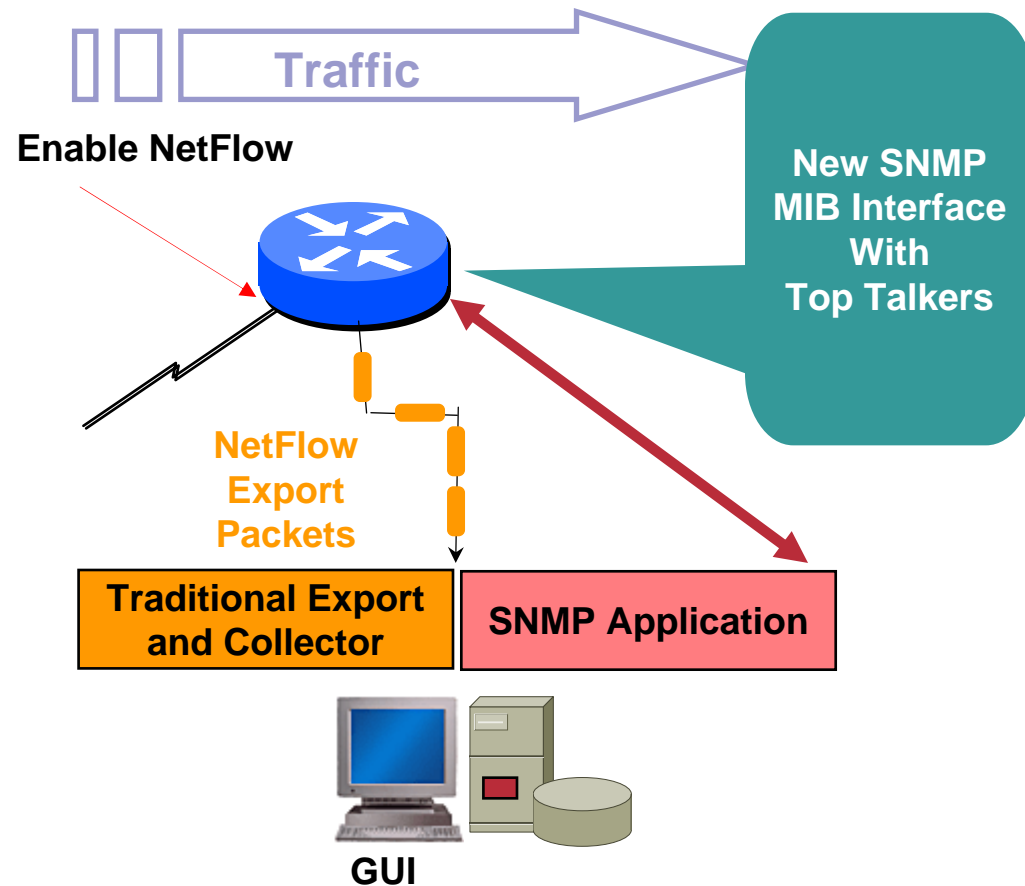
Cisco.com

- Key benefits

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

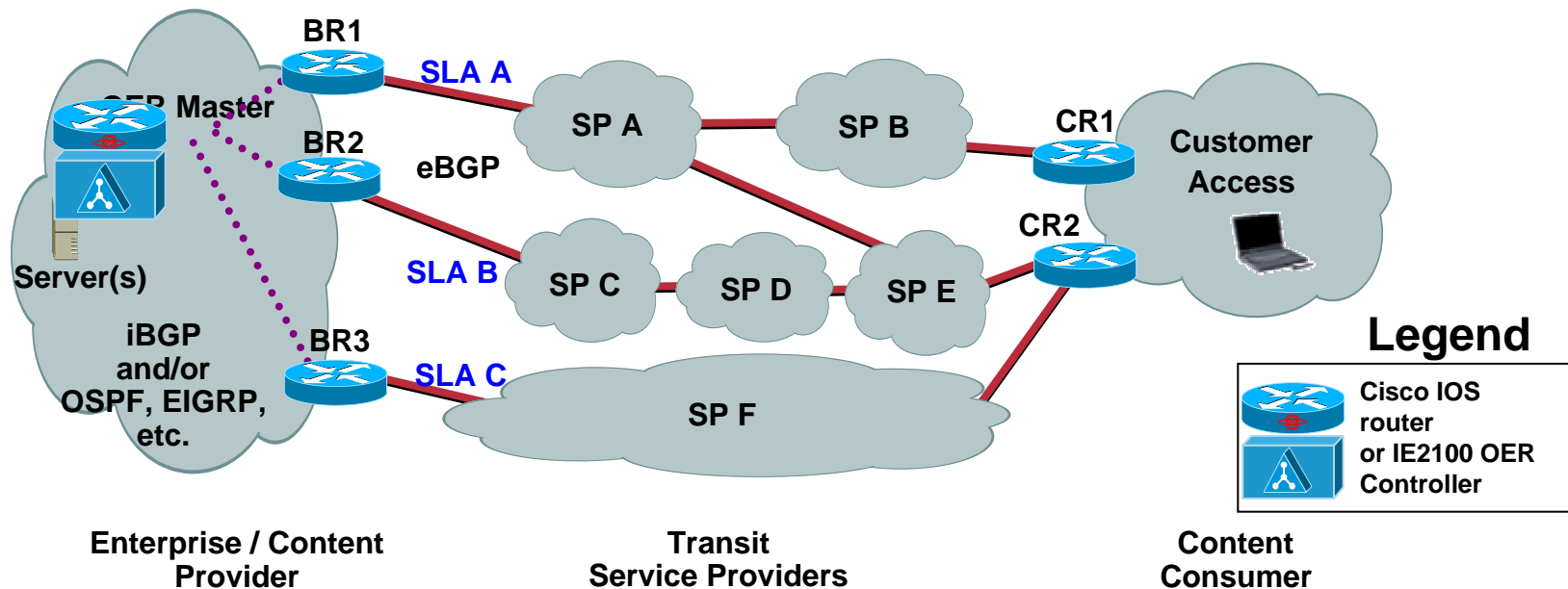
**Retrieves NetFlow information when traditional UDP export is impractical**

**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

Cisco.com

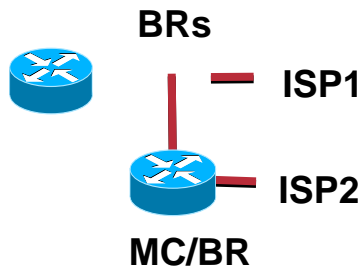
- Protocol-port based learning can be configured to optimize the learning process

Reflect priorities of administrator and enterprise

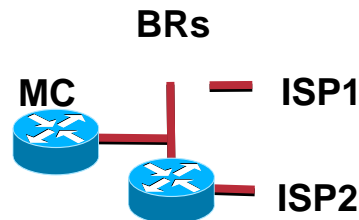
- Additional filters with current protocol-port based learning capability available for application to the learning mechanism

## Cisco OER Product Family, Configurations, and Hardware

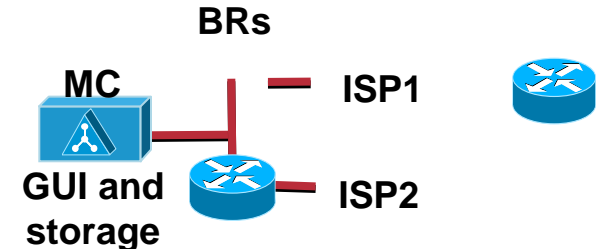
Config A



Config B



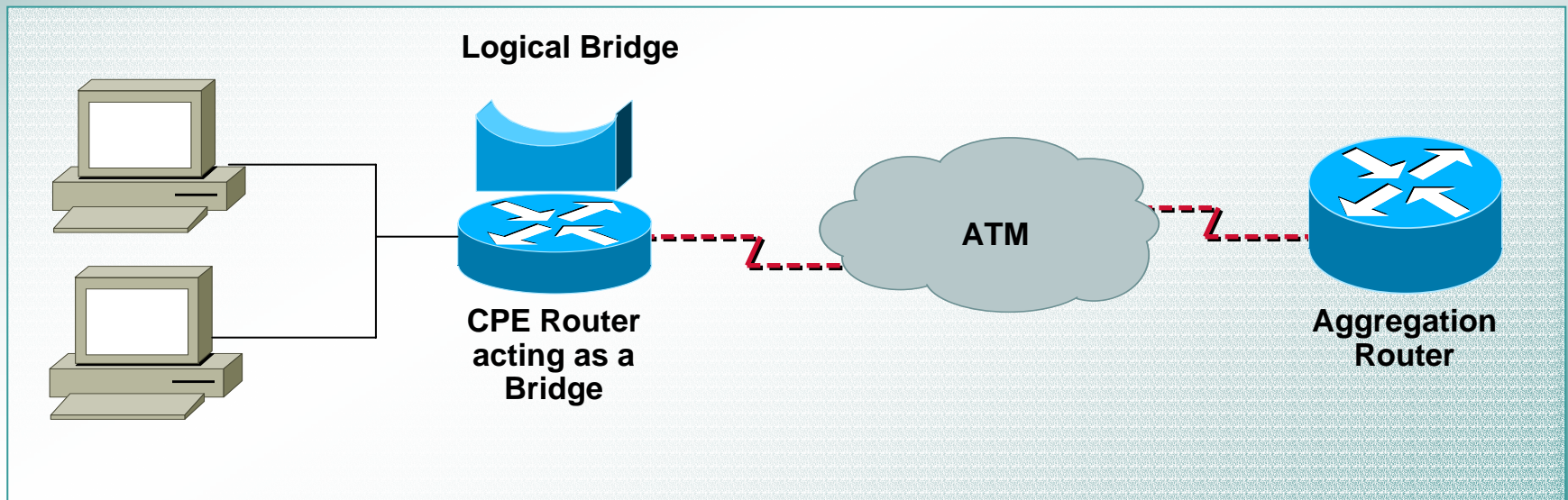
Config C





# 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

Cisco.com

- Release 12.3T Family
- Introducing Release 12.3(8)T
- **Cisco IOS Packaging**
- Upgrade Paths
- Summary

# Cisco IOS Packaging Introduction/Customer Benefits

Cisco.com

- **Simplification**

Minimize customer disruption during the software selection process

- **Consolidation**

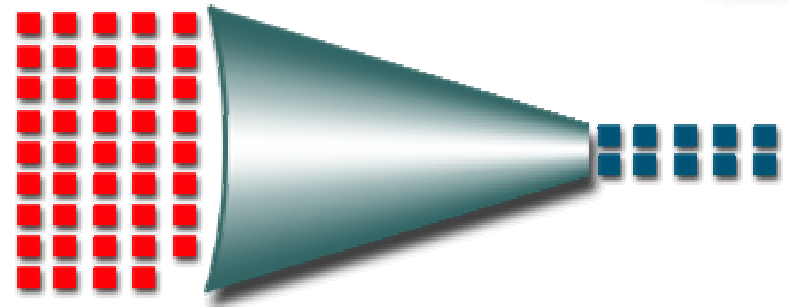
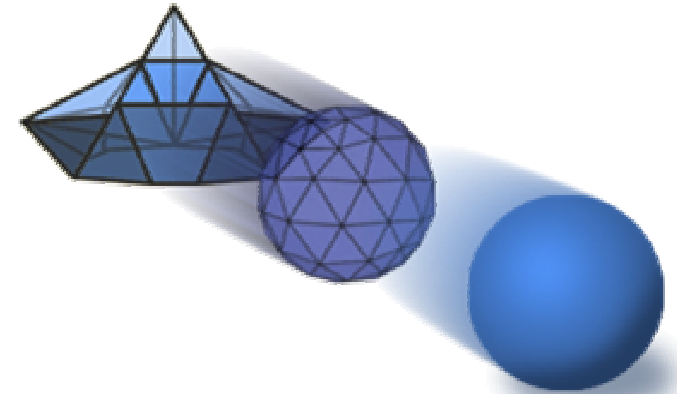
Streamline packaging across Cisco-IOS based hardware

- **Consistency**

Consistent image names

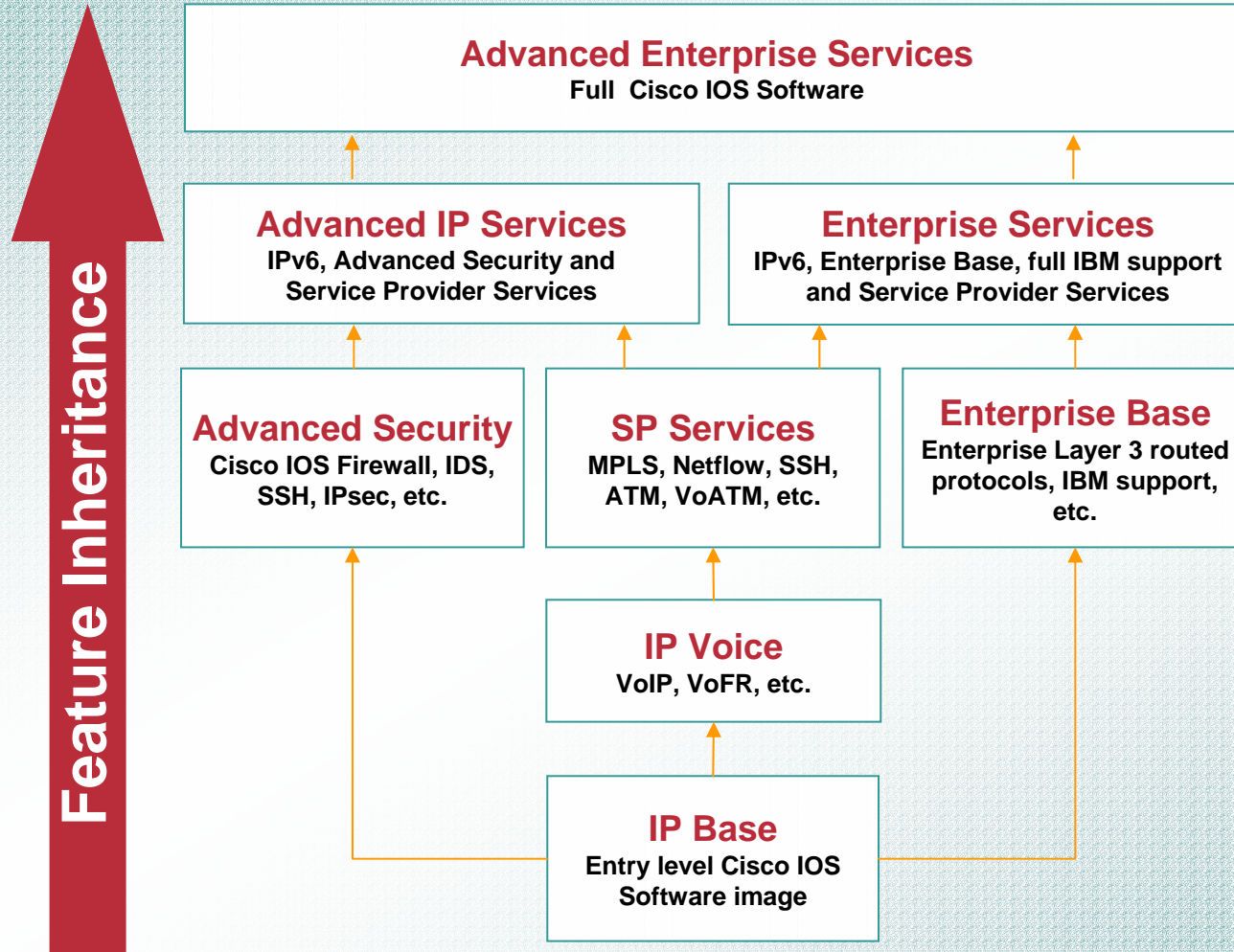
Consistent functionality across Cisco-IOS based hardware

Consistent Cisco IOS software pricing



# Cisco IOS Packaging for Access Routers

Cisco.com



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

Cisco.com

- **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

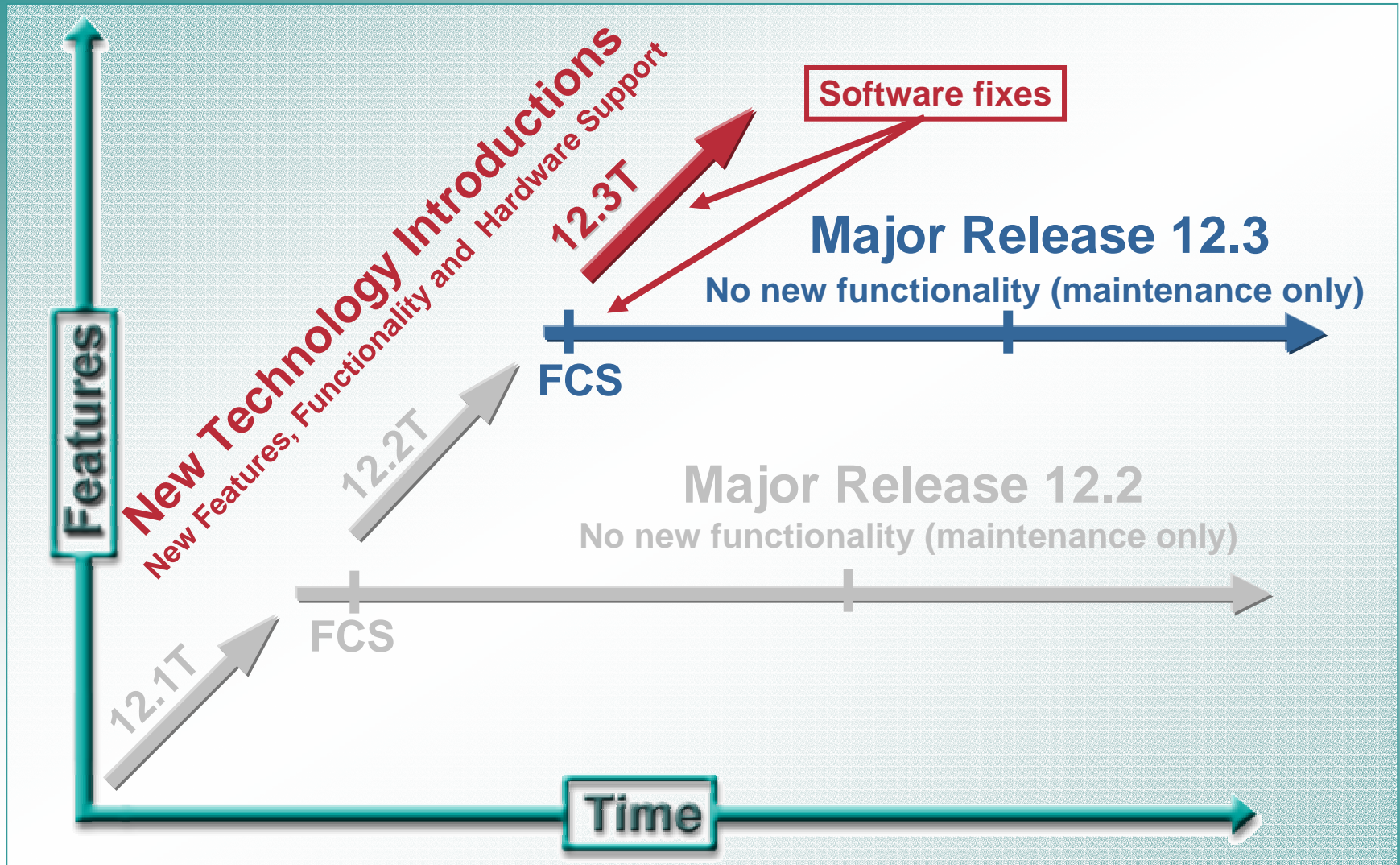
Cisco.com

- Release 12.3T Family
- Introducing Release 12.3(8)T
- Cisco IOS Packaging
- **Upgrade Paths**
- Summary



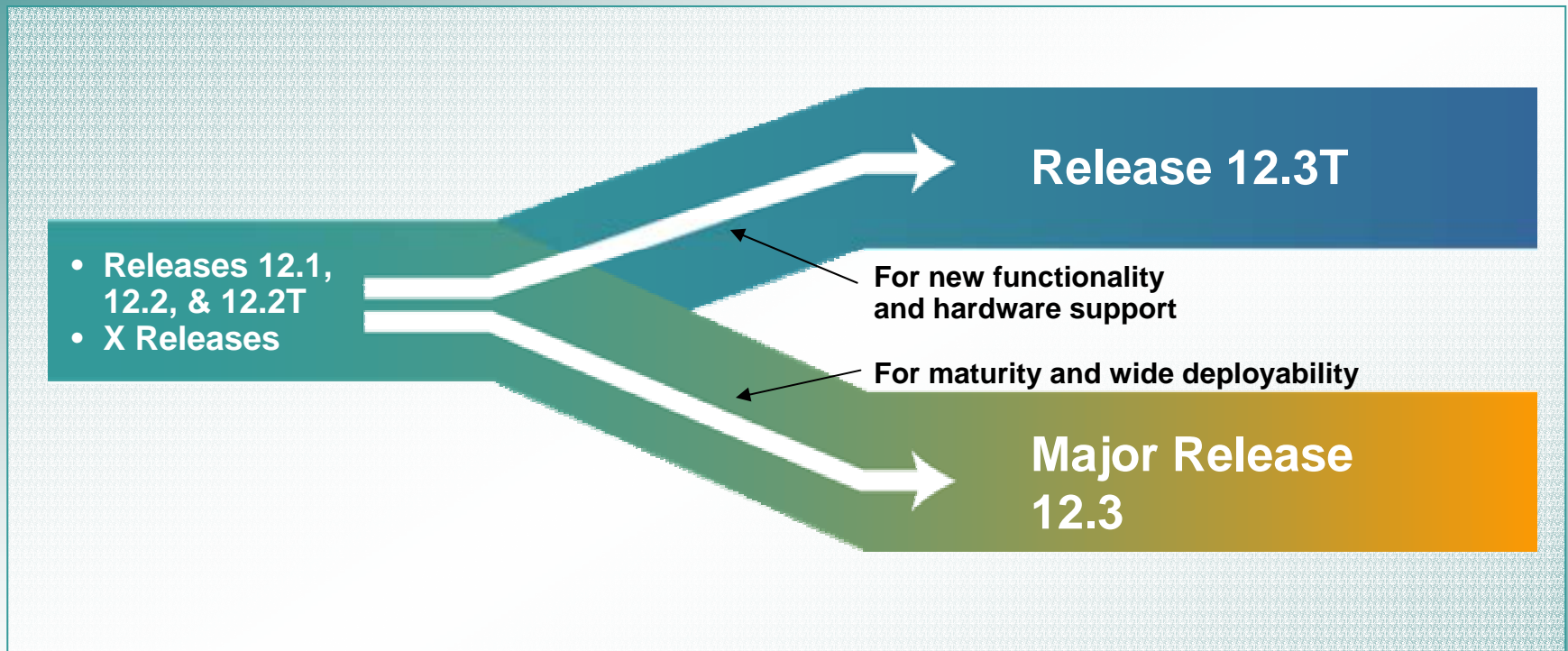
# Evolution to Release 12.3T

Cisco.com



# Release 12.3T Upgrade Paths

Cisco.com



# Agenda

Cisco.com

- Release 12.3T Family
- Introducing Release 12.3(8)T
- Cisco IOS Packaging
- Upgrade Paths
- **Summary**



# Cisco IOS Software Release 12.3(11)T

Cisco.com

## 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

Cisco.com

Web

Product  
Bulletin

Q&A

Flash  
Demo

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

Cisco.com

### High Availability

- Cisco IOS Warm Upgrade
- Cisco IOS IPsec Stateful Failover

### Manageability

- Egress NetFlow
- NetFlow MIB and Top N Talkers

### Security

- Role-Based CLI Access –
- Cisco IOS Software Control Plane Event

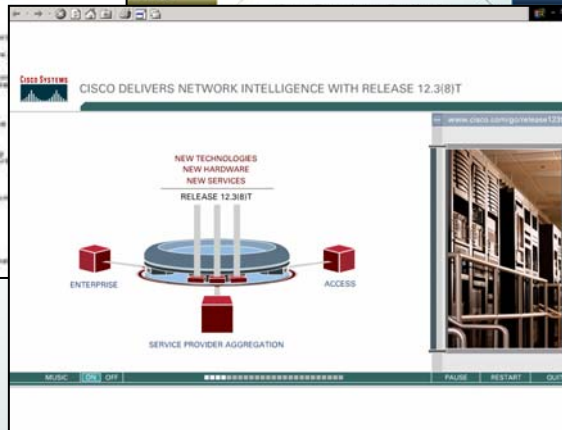
## Cisco IOS Software Release 12.3(11)T

### Routing

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

### Connectivity

- Secure MAC Address for Group



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

# Release 12.3T References

Cisco.com

- **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

