

## New Features for Cisco 7600 Series with IOS Software Release 15.1(1)S

Cisco IOS Software Release 15.1(1)S for Cisco 7600 Series Routers

### Product Overview

Cisco IOS<sup>®</sup> Software Release 15.1(1)S for Cisco<sup>®</sup> 7600 Series Routers is the second release in the Cisco IOS Software Release 15S train. It is a short release that will have fewer maintenance releases. The release includes features from all previous Cisco IOS Software releases and introduces 26 new features and enhancements for service providers and enterprise customers. The new capabilities are built on a robust platform that offers comprehensive features and flexible interfaces. Cisco IOS Software Release 15.1(1)S allows customers to build next-generation IP networks that offer new revenue-generating services with new hardware and software solutions, superior quality with effective service-level agreements (SLAs), and an attractive return on investment (ROI) with improved operations.

### Features and Benefits

Cisco IOS Software Release 15.1(1)S strengthens the position of the Cisco 7600 Series Routers in the mobile, video, and Carrier Ethernet markets. The features and enhancements in this release would harden the mobile solutions, enrich video services, and solidify the Carrier Ethernet applications. The major features include the following:

- **DS3 SFP Support for ES+ for c7600:** Provides an end-to-end DS-3 solution for the IP Radio Access Network (RAN) backhaul while taking advantage of all the benefits of the Cisco 7600 Series ES+ Line Card and offering a cost-effective way to migrate to the Cisco IP Next-Generation Network (IP NGN)
- **Hot Standby PW Support for ATM and TDM Access Circuits:** Improves pseudowire resiliency with faster convergence time and support of ATM, TDM, and Ethernet access circuit types and with scale.
- **MPLS Encapsulation Support for Inline Video Monitoring:** Allows monitoring of real-time quality of video traffic transported by any MPLS-encapsulated packet, with complete support for MPLS Layer 3 VPN, Layer 2 VPN, Virtual Private LAN Services (VPLS), Label Distribution Protocol (LDP), Multicast LDP (MLDP), and Resource Reservation Protocol – Traffic Engineering (RSVP-TE) transport
- **mLDP MVPN Extranet:** Allows multicast content originating from one site to be distributed to other sites and other VPNs (for example, it lets MVPN-B import content from MVPN-A); mLDP MVPN Extranet uses LDP in the core instead of Product Independent Multicast (PIM), which is used in MVPN generic routing encapsulation (GRE)
- **Service Groups for Subinterfaces and Access Subinterfaces:** Improve quality of service (QoS) implementations for business, residential, and wholesale services across N:1 or 1:1 service models to save bandwidth and simplify provisioning.
- **VPLS InterAS Option B:** Allows service providers to interconnect their networks and provide Inter-AS VPLS services; Border Gateway Protocol (BGP) Option B allows secure and operationally efficient deployment of interservice provider Layer 2 VPN services

Cisco IOS Software Release 15.1(1)S includes all the features of Cisco IOS Software Release 15.0(1)S. The new release provides the following benefits:

- Faster time to market: Feature releases every 4 months
- Improved quality: Production-ready releases sooner
- Broadened operational consistency of features and advanced technologies
- Predictable schedules for new features and rebuilds
- Proactive communication about software selection, support lifecycle, and migration

Cisco IOS Release 15.1(1)S for Cisco 7600 Series Routers provides the new features listed in Table 1. For a complete list of features of Cisco IOS Release 15.1(1)S, visit the Release Notes homepage.

**Table 1.** Features and Benefits

Feature	Benefit
<b>Hardware</b>	
DS3 SFP Support for ES+ Line Card	Provides an end-to-end DS-3 solution for the IP RAN backhaul that takes advantage of the benefits of the ES+ line card and offers a cost-effective way to migrate to the Cisco IP NGN
SDH Support for SPA-1XCHSTM4/OC12	Offers a high-density solution for aggregating TDM circuits on Cisco 7600 Series Routers for the SDH market
E3 and Channelization support for SPA-2CHT3-CE-ATM	Extends circuit emulation functions to the SDH market with E3 support
<b>Carrier Ethernet</b>	
EVC Portchannel Per Flow Load Balancing	Improves network scalability, simplifies operations, and improves resilience without sacrificing SLAs; includes advanced EVC features with flow-load balancing to allow distribution of traffic from large EVCs over multiple member links
Portchannel EVC enhancements for ES20 and ES+	Uses the Cisco EVC infrastructure to create services and lower costs when link aggregation is required; achieves PortChannel feature parity for EVC by adding EVC security features and Multiple Spanning Tree Protocol (MST) and MST Access Gateway (MST-AG) support
LST (Link State Tracking) for REP and MST	Improves network resilience with new automatic recovery mechanisms triggered if uplinks fail
REP no-edge-neighbor	Allows the rapid recovery of REP with improved interoperability
Per Subscriber Session Call Admission Control	Enhances the Cisco Intelligent Services Gateway (ISG) by adding hardware-assisted CAC on first sign of life (FSOL) packets and other packets that are sent to route processor CPU, increasing the stability of the router under high demand
VPLS InterAS Option B	Allows service providers to interconnect their networks and provide Inter-AS VPLS services; BGP Option B offers secure and operationally efficient deployment of interservice provider Layer 2 VPN services
<b>Mobile Transport</b>	
Hot Standby PW Support for ATM and TDM Access Circuits	Improves pseudowire resilience with faster convergence time and support of ATM and TDM access circuit types and Ethernet with Scale
ACR support for CEM	Improves IP RAN resilience with ACR support for all access circuit types (Ethernet, ATM, and TDM) and adds local switching for TDM and ATM, and QoS enhancement
BFD over SVI on 7600	Offers the capability to add superior resilience to Layer 2 aggregation networks, for example by tracking connectivity to multiple cell sites or access nodes on the same subnet
1588v2 Feature Enhancements on Metronome SPA	Provides flexibility by adding ISO 8601 time-of-day (TOD) format support to the IEEE 1588v2 solution on Cisco 7600 Series Routers
SSM support on SPA-1XCHOC12/DS0 and SPA-1XOC48POS/RPR	Provides Synchronization Status Message (SSM) capabilities on the Channelized Optical Carrier 12 (CHOC12) SPA and Optical Carrier 48 Packet over SONET (OC48POS) SPA to enhance synchronization and interoperate with Synchronous Ethernet
<b>Video</b>	
Configurable MPEG Video PIDs for Inline Video Monitoring	Allows specification of up to 5 custom MPEG PIDs for the Media Dependent Interface (MDI) metric; applicable for Single Program Transport Stream (SPTS) or Multiple Programs Transport Stream (MPTS); unicast video on demand (VoD) or multicast Television (IPTV) and cable TV
MPLS Encapsulation Support for Inline Video Monitoring	Allows monitoring of real-time quality of video traffic transported by any MPLS encapsulated packet, with complete support for MPLS Layer 3 VPN, Layer 2 VPN, VPLS, LDP, MLDP, and RSVP-TE transport
IP Packet Delay Variation Metric Support for Inline Video Monitoring	Allows monitoring of Layer 3 jitter of constant bit rate (CBR) or variable bit rate (VBR) video traffic; supported for any unicast VoD or multicast IPTV and cable TV

Feature	Benefit
mLDP MVPN Extranet	Allows multicast content originating from one site to be distributed to other sites and other VPNs (for example, it lets MVPN-B import content from MVPN-A); mLDP MVPN extranet uses LDP in the core instead of PIM, which is used in MVPN GRE
<b>Quality of Service</b>	
Minimum Bandwidth Guarantee plus Multiple Policies	Increases aggregation network utilization by honoring residential and business service SLAs on a per-customer basis without wasting bandwidth
Port Level Shaping concurrent with 4HQoS on ES+	Provides consistent services over existing access networks to simplify migration to Carrier Ethernet
Service Groups for Subinterfaces and Access Subinterfaces	Improve QoS implementations for converged business, residential, and wholesale services across N:1 or 1:1 service models to save bandwidth and simplify provisioning

For further information, see: [http://preview.cisco.com/en/US/docs/ios/15\\_1s/release/notes/15\\_1s\\_rn\\_intro.html](http://preview.cisco.com/en/US/docs/ios/15_1s/release/notes/15_1s_rn_intro.html).

## Hardware

### DS3 SFP Support for ES+ Line Cards (CISCO-SFP-T3-GE=)

DS-3 connections can be terminated today on the Cisco 7600 Series on various channelized and clear-channel SPAs and on SIP-400 line cards. The new DS-3 SFP supports ES+ Gigabit Ethernet interfaces, forwarding Ethernet packets to a TDM-based WAN at full duplex DS-3 wire speed. Support of DS-3 Ethernet connections brings multiple benefits to the customer: no need for a dedicated slot for TDM circuits, an Ethernet layer with EVC features and other ES+ features such as video monitoring (VidMon), and an efficient way to prepare for migration toward Gigabit Ethernet services.

Here is the PID and the Supported ES+ Modules

**Table 2.** DS3 SFP PID and Supported ES+ Modules

Product ID (PID)	Supported on
	7600-ES+20G3C
	7600-ES+20G3CXL
	7600-ES+40G3C
	7600-ES+40G3CXL
CISCO-SFP-T3-GE=	76-ES+T-20G
	76-ES+T-40G
	76-ES+XC-20G3C
	76-ES+XC-20G3CXL
	76-ES+XC-40G3C
	76-ES+XC-40G3CXL

The feature requires the support of Ethernet over DS-3 and HDLC framing on the equipment terminating the circuits, and is supported on Cisco 7600 Series Routers as well as on the Cisco MWR 2941\_DC Mobile Wireless Router.

### SDH Support for SPA-1XCHSTM4/OC12 (SPA-1xCHOC12/DS0=)

This feature introduces SDH mapping support for the CHOC12 SPA in Cisco 7600 Series Routers. SDH customers can use this high-density SPA to aggregate TDM circuits from their mobile backhaul applications or straight TDM connections.

This SPA is supported on Cisco 7600 SIP-400 line cards with all route switch processors (RSPs) and supervisors and all chassis types.

### **E3 and Channelization Support for SPA-2CHT3-CE-ATM (SPA-2CHT3-CE-ATM=)**

This feature introduces E3 support for the E3/T3 CEoP SPA as well as channelization. Circuit emulation has been widely deployed by service providers and enterprise customers who use Cisco 7600 Series Routers and wish to continue using their existing TDM networks while migrating to IP networks. Adding E3 support expands its applicability to the SDH market, and adding channelization support expands its applicability to aggregating T1/E1 interface cards.

This SPA is supported on Cisco 7600 SIP-400 line cards for all RSPs and supervisors and all chassis types.

## **Carrier Ethernet Features**

### **EVC Port Channel Per Flow Load Balancing**

EVC PortChannel support is enhanced by the introduction of per-flow load balancing. This feature completes the set of load-balancing mechanisms offered for EVC PortChannels; the other available mechanisms are per-EVC, manual, and weighted load balancing. Per-flow load balancing splits the traffic from a single EVC over multiple member links to achieve throughputs of over 1 Gbps on a single EVC. Per-flow load balancing can improve network scale, simplify operations, and improve resilience without sacrificing SLAs.

This feature is supported on ES+ line cards.

### **Portchannel EVC enhancements for ES20 and ES+**

The Cisco EVC infrastructure supports the scaling of services, creates new service opportunities, and lowers operational costs with features that include local VLAN significance and flexible VLAN tag manipulation. Cisco continues to deliver more enhancements to EVC support when link aggregation is required.

New EVC enhancements for PortChannels include:

- Custom EtherType on ES20 line cards
- MST and MST-AG for ES+ and ES20 line cards
- Unidirectional Link Detection (UDLD) for ES+ and ES20 line cards
- Layer 2 access control lists (ACLs) for ES+ line cards
- Layer 3 and Layer 4 ACLs for ES+ line cards
- DHCP Snooping and Dynamic Address Resolution Protocol (ARP) inspection for ES+ and ES20 line cards.

EVC support is available on ES+, ES20, and SIP-400 line cards.

### **LST (Link State Tracking) for REP and MST**

LST improves network resilience with new automatic recovery mechanisms that are triggered if uplinks fail. REP provides rapid recovery mechanisms for Ethernet-based access rings. As an alternative, MST is commonly used for Ethernet access resilience in hub-spoke or star topologies. With LST, the REP ring or spanning tree will reconverge to its alternative path upon notification that upstream communication to the ring is lost. Downtime is reduced and overall network resilience is improved because the Cisco Carrier Ethernet network responds automatically.

### **Resilient Ethernet Protocol no-edge-neighbor**

REP provides fast reconvergence and traffic recovery when a link in a ring fails. Fast reconvergence is achieved by notifying all nodes in the ring with a hardware-switched control message that activates the redundant path to the core network.

In access-ring topologies where the aggregation nodes do not support REP, but convergence times like those of REP are desired, one solution is to construct a REP segment with no edge ports. The REP no-edge-neighbor feature adds the capability for fast recovery without participation of the edge device in the REP protocol. The feature also provides interoperability between the Cisco 7600 Series REP and Cisco ASR 9000 Series Aggregation Services Routers REP-AG.

#### **Per Subscriber Session Call Admission Control**

CAC limits the number of active sessions that can be established based on CPU and critical system resources. Rate limitation of session initiation messages is provided for Point-to-Point Protocol (PPP) and IP sessions to preserve system capability in the event of excess session requests. This security protection improves operations performance for broadband by helping to ensure that during peak session demand the system remains stable and is protected against CPU utilization spikes.

Per-subscriber-session CAC is available only for ES+3CXL line cards (ES+, ES+XT, and ES+XC 3CXL models); it is not available for ES+T line cards.

A Cisco 7600 Intelligent Services Gateway (ISG) license is required for PPP or IP sessions.

#### **VPLS Inter-AS Option B**

VPLS Inter-AS VPLS, like Layer 3 VPN, can be deployed using option A, B, or C. Options A and C can be deployed with previous releases. Option B provides an additional level of security as compared to option C, while simplifying operations as compared to Option A. Option B requires BGP autodiscovery for VPLS. It is NSF and SSO compliant.

This feature is supported for ES+, ES20 and SIP-400 (all line cards required to support VPLS).

### **Mobile Transport Features**

#### **Hot Standby PW Support for ATM and TDM Access Circuits**

Pseudowire Preferential Forwarding was developed for PortChannel Ethernet access circuits in Cisco Services-Ready Engine (SRE) Modules. Preferential Forwarding allows a backup pseudowire to be preprovisioned, which facilitates a fast switchover from the active state to the standby state. This feature extends that capability to ATM, TDM, and physical Ethernet access circuits, providing fast recovery with resilient pseudowire for all three access circuit types and improving SLA performance.

This feature is supported on Cisco 7600 Series Routers through Cisco 7600 SIP-400 and ES+ line cards.

#### **ACR support for CEM**

This feature introduces ACR support for TDM and Ethernet in addition to ATM. This feature also adds local switching support for TDM and ATM circuits while offering ATM shaping functions for ATM Virtual Paths. Customers can achieve fast end-to-end convergence while interconnecting access circuits to the MPLS network through circuit emulation. Local switching and ATM shaping also allow customers to use the same platform to connect existing circuits, for an easier transition to IP NGN.

This feature is supported on Cisco 7600 SIP-400 line cards and the SPA-1CHOC3-CE-ATM.

#### **BFD Over SVI on 7600**

BFD is supported for SVI with the same scalability and feature support as for other types of Layer 3 interfaces. When deployed on Layer 2 networks, BFD timers must be configured according to the expected Layer 2 convergence to avoid BFD and Layer 2 convergence race conditions.

### 1588v2 Feature Enhancements on Metronome SPA

This release provides more flexibility by adding ISO 8601 TOD format support to the IEEE 1588v2 solution on the Cisco 7600 Series Router.

This feature is supported for the Metronome SPA.

### SSM support on SPA-1XCHOC12/DS0 and SPA-1XOC48POS/RPR

This feature adds SSM support for additional SPAs, including SPA-1XCHOC12/DS0 and SPA-1XOC48POS/RPR, improving synchronization is on the SPAs for TDM operation and providing interoperability with Synchronous Ethernet.

This feature is supported with SSM support for SPA-1XCHOC12/DS0 and SPA-1XOC48POS/RPR.

## Video Features

### Configurable MPEG Video PIDs for Inline Video Monitoring

The previous video monitoring implementation (MDI metric) learns the first five PIDs seen in an MPEG video. The learned PIDs can identify any type of data, including video, audio, and control data. Configurable MPEG video PIDs allow users to specify that only video PIDs are learned; these are considered the most critical PIDs.

This feature is supported for ES+ line cards.

Inline video monitoring is available with the purchase of the 76-ES+VIDEO-LIC license.

### MPLS Encapsulation Support for Inline Video Monitoring

This feature allows inline video monitoring for MPLS-encapsulated packets on MPLS-enabled interfaces. The feature supports the following MPLS scenarios:

- MPLS swap: tag to tag; router responsible for switching MPLS packets
- MPLS pop: tag to IP; router responsible for label disposition of last MPLS tag
- MPLS push: IP to tag; router responsible for label imposition of first MPLS tag
- Ethernet-over MPLS (EoMPLS) and VPLS
- MPLS Layer 3 VPN
- Unicast LDP and MLDP
- Point-to-Multipoint Traffic Engineering (P2MP-TE) and unicast TE

The inline video monitoring implementation is independent of the number of MPLS labels present in a packet.

This feature is supported for ES+ line cards.

Inline video monitoring is available with the purchase of the 76-ES+VIDEO-LIC license.

### IP Delay Variation Support for Inline Video Monitoring

IPDV allows measurement of the per-packet IP delay variation. This feature can measure IPDV for VBR or CBR flows. IPDV is video-rate independent and does not require users to configure a reference VBR or CBR rate.

For information about the Cisco Video Assurance Management Solution, visit

<http://www.cisco.com/en/US/products/ps9518/index.html>

To see a video demonstration of Cisco inline video monitoring, visit

<http://www.cisco.com/web/solutions/routingswitching/vidmon.html>

This feature is supported for ES+ line cards.

Inline video monitoring is available with the purchase of the 76-ES+VIDEO-LIC license.

#### **mLDP: mVPN Extranet**

This feature allows extranet capabilities in MVPN. The extranet allows VPN closed user groups to share information, with common multicast information distributed across multiple VPN customers.

#### **Label Switched Multicast (LSM) MLDP-Based MVPN Support**

LSM is a solution framework providing multicast services over an MPLS and Generalized MPLS (GMPLS) backbone network. This feature uses extensions to MPLS label switching to achieve MVPN across the IP and MPLS core cloud, without requiring them to be multicast aware (which was required for GRE-based MVPN).

This release supports MLDP MVPN extranet receiver-side chaining.

### **Quality of Service Features**

#### **Service Groups for Subinterfaces and Access Subinterfaces**

Service groups can apply a common QoS policy to a group of logical interfaces residing on the same physical port or PortChannel. Service groups are a flexible way to create a shared treatment of aggregate traffic. This release extends the service group concept to support subinterfaces for IP services, access subinterfaces for residential services, and EVCs. Service groups for subinterfaces are not supported over PortChannels. With these enhancements to service groups, service providers can improve QoS implementations for business, residential, and wholesale services across N:1 or 1:1 service models, saving bandwidth and simplifying provisioning.

Service groups for subinterfaces are available for ES+ and ES20 line cards. Access subinterfaces are available only for ES+ line cards.

#### **Port Level Shaping support concurrent with 4HQoS on ES+**

In many situations, a subscriber-facing Gigabit Ethernet port will need to operate at less than line rate; for example, when connecting to Ethernet over SONET, SDH, microwave, or subrate E-Line service. Support for port-level shaping allows configuration of a modular QoS command-line interface (MQC) policy map on the physical port for shaping, and also configuration of QoS on logical interfaces such as subinterfaces, EVCs, or service groups. This provides the capability for managing residential traffic and business SLAs with three- or four-level HQoS service definitions, regardless of downstream speed limitations.

This feature is available for all ES+ line cards.

#### **Minimum Bandwidth Guarantee Support for Service Groups**

Previous releases supported configuration of HQoS per service group using only bandwidth remaining ratio at the parent policy level. This defined weight for each service group was used to determine how much bandwidth to assign to a service group during times of congestion, but only in a relative manner. With minimum bandwidth support, each service group can be assigned an absolute bandwidth value, expressed as a percentage or as kbits per second.

This is especially useful if three-level scheduling (HQoS per EVC or subinterface only and four-level scheduling (HQoS per subinterface EVC and flat QoS on a service group) are combined on the same port. Assigning minimum bandwidth values to all service groups (four-level schedulers) implicitly defines the aggregate minimum bandwidth for all three-level schedulers, allowing optimal flexibility and QoS fine-tuning.

This feature is supported for all ES+ line cards.

## Warranty Information

Find warranty information on Cisco.com at the [Product Warranties](#) webpage.

## Ordering Information

Table 3 provides ordering information. To place an order, visit the [Cisco Ordering homepage](#). To download software, visit the [Cisco Software Center](#).

**Table 3.** Table 3 Ordering Information

Product Name	Part Number
Cisco 7600-RSP720 IOS ADVANCED ENTERPRISE SERVICES SSH	S76GAEK9-15101S
Cisco 7600-RSP720 IOS ADVANCED ENTERPRISE SERVICES SSH	S764AEK9-15101S
Cisco 7600-RSP720 IOS ADVANCED IP SERVICES	S76GAIS-15101S
Cisco 7600-RSP720 IOS ADVANCED IP SERVICES	S764AIS-15101S
Cisco 7600-RSP720 IOS ADVANCED IP SERVICES SSH	S76GAIK9-15101S
Cisco 7600-RSP720 IOS ADVANCED IP SERVICES SSH	S764AIK9-15101S
Cisco 7600-RSP720 IOS IP SERVICES	S76GIS-15101S
Cisco 7600-RSP720 IOS IP SERVICES	S764IS-15101S
Cisco 7600-RSP720 IOS IP SERVICES SSH	S76GISK9-15101S
Cisco 7600-RSP720 IOS IP SERVICES SSH	S764ISK9-15101S
Cisco 7600-SUP32 IOS ADVANCED ENTERPRISE SERVICES SSH	S732AEK9-15101S
Cisco 7600-SUP32 IOS ADVANCED IP SERVICES	S732AIS-15101S
Cisco 7600-SUP32 IOS ADVANCED IP SERVICES SSH	S732AIK9-15101S
Cisco 7600-SUP32 IOS IP SERVICES	S732IS-15101S
Cisco 7600-SUP32 IOS IP SERVICES SSH	S732ISK9-15101S
Cisco 7600-SUP720 IOS ADVANCED ENTERPRISE SERVICES SSH	S763AEK9-15101S
Cisco 7600-SUP720 IOS ADVANCED IP SERVICES	S763AIS-15101S
Cisco 7600-SUP720 IOS ADVANCED IP SERVICES SSH	S763AIK9-15101S
Cisco 7600-SUP720 IOS IP SERVICES	S763IS-15101S
Cisco 7600-SUP720 IOS IP SERVICES SSH	S763ISK9-15101S
Cisco 7600-SUP720 IOS ADVANCED IP SERVICES	S763AI-15101S
Cisco 7600-SUP720 IOS IP SERVICES SSH	S763IPSK9-15101S

## Cisco Services

Cisco Services span all phases of the network lifecycle, build on the extensive expertise unique to Cisco, and help service providers mitigate risk, lower costs, and accelerate time to market for new services.

The Cisco Lifecycle approach defines the activities needed to help ensure service excellence at each phase of the network lifecycle: preparation, planning, design, implementation, operation, and optimization. Among the many Cisco Advanced Services offerings, Cisco Test and Validation Services can be particularly helpful in a transition to Cisco IOS Software Release 15.1(1)S. These services are adapted to the service provider's specific needs. Test engineering expertise and Cisco laboratory environments provide service verification, supporting adherence to end-customer SLAs. Services include validation of features, scale, and multivendor solutions, resulting in higher availability, increased capacity, less risk, and shorter deployment times.

In addition, Cisco Upgrade and Refresh Services are helpful when moving to a new software release or for any product, technology, or service migration. These services work with the service provider's specific attributes and provide a cost-effective methodology for preparing, planning, designing, and implementing a Cisco IP NGN transition for increased business agility, high availability, security, and subscriber acquisition and retention. Cisco's experience,



automation tools, and cumulative migration expertise help make the network transition predictable, with faster adoption of new services.

By using the extensive tools, best practices, and experts offered through Cisco Services, service providers can mitigate risks, bring new services to market faster, lower costs, improve the customer experience through service assurance, and increase the value of their investments. With a collaborative delivery methodology that joins the forces of Cisco, our highly skilled network of partners, and our customers, Cisco helps service providers achieve outstanding results.

### For More Information

Contact your local account representative or visit the following websites.

- To learn more about the Cisco 7600 Series Router, visit [www.cisco.com/en/US/products/hw/routers/ps368/index.html](http://www.cisco.com/en/US/products/hw/routers/ps368/index.html).
- For more information about Cisco Services, visit the [Advanced Services Routing and Switching](#) webpage or the [Cisco Services for Service Provider](#) webpage.
- For more information about Cisco IOS Software releases, visit [www.cisco.com/go/ios](http://www.cisco.com/go/ios).



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