



# Release Notes for the Cisco 10000 Router for Cisco IOS Release 12.2(15)BX

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These release notes provide information about Cisco IOS Release 12.2(15)BX, which provides broadband aggregation features for the Cisco 10000 router.

These release notes are updated as needed to describe new features, memory requirements, hardware support, software platform deferrals, and changes to the microcode and related documents.

Cisco IOS Release 12.2(15)BX is based on the following releases:

- Cisco IOS Release 12.2(15)BZ
- Cisco IOS Release 12.2(4)BZ1
- Cisco IOS Release 12.0(20)ST for features specific to the Cisco 10000 router
- Cisco IOS Release 12.2B for platform-independent features

To review the release notes for Cisco IOS Release 12.0(20)ST, go to [www.cisco.com](http://www.cisco.com) and click **Technical Documents > Aggregation > Cisco 10000 Series Edge Services Routers > Cisco 10000 Series ESR Release Notes > Release Notes for the Cisco 10000 Series ESR for Cisco IOS Release 12.0(20)ST**.

To review the release notes for Cisco IOS Release 12.2, go to [www.cisco.com](http://www.cisco.com) and click **Technical Documents**. Select **Release 12.2** from the Cisco IOS Software drop-down menu. Then click **Cisco IOS Release Notes > Cisco IOS Release 12.2**.

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## Upgrading to a New Software Release

*Cisco 10000 Series ESR Software Configuration Guide*

*Cisco IOS*

*Upgrade Ordering Instructions*

[http://www.cisco.com/warp/public/cc/pd/iosw/prodlit/957\\_pp.htm](http://www.cisco.com/warp/public/cc/pd/iosw/prodlit/957_pp.htm)

For additional information about ordering Cisco IOS software, refer to the Cisco IOS Software Releases URL:

<http://www.cisco.com/warp/public/cc/pd/iosw/iore/index.shtml>

## System Requirements

This broadband aggregation image requires that you have the PRE2 version (product number ESR-PRE2) of the Performance Routing Engine (PRE) installed in the Cisco 10000 chassis. To verify which PRE is installed in the router, use the **show version**

## New Features in Cisco IOS Release 12.2(15)BX

*Cisco 10000 Series ESR Broadband Aggregation Configuration Guide*

### Layer 2 Tunnel Protocol Features

**L2TP Access Concentrator**—Cisco IOS Release 12.2(15)BX brings L2TP Access Concentrator (LAC) capability to the Cisco 10000 router. LAC capability encapsulates PPPoX sessions in L2TP tunnels, allowing wholesale providers to tunnel subscriber PPP sessions to the retail provider. PPP in L2TP sessions are encapsulated in IP packets and forwarded over any IP transport network.

LAC functionality on the router includes MTU Path Discovery, allowing the PPP client to run the path MTU discovery algorithm to adjust the maximum MTU it can send—without forcing fragmentation.

**L2TP on MPLS Interfaces**—L2TP on MPLS Interfaces allow the Cisco 10000 router to receive L2TP tunnelled traffic on an MPLS tag interface.

# New Features in Cisco IOS Release 12.2(15)BX

## Layer 2 Tunnel Protocol Features

### Broadband Protocols

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### Broadband AAA

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### Broadband Configuration and Management

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## Broadband Quality of Service

The following new broadband Quality of Service (QoS) features are supported by Cisco IOS Release 12.2(15)BX:

- 802.1P (classification/marketing) support for PPPoE and Ethernet interfaces
- Simultaneous Input and Output Policing (IP level only)
- CBWFQ for PPPoX

## Multilink Frame Relay

## IP QoS for LNS Sessions

## RADIUS, AAA, and Tunnel Selection

- **Static Domain Name/VPI/VCI override**
  - Per-users tunnel selection**
  - Dynamic tunnel selection for PPP sessions**
  - Domain preauthorization for dynamic tunnel selection**
  - Tunnel service authorization**
  - Sessions per-tunnel limiting**
  - L2TP tunnel sharing**
  - Tunnel session load balancing and failover**
  - L2TP LNS tunnel failover**
  - L2TP Stop CCN/CDN failover**
  - DHCP Server**
  - RADIUS Tunnel preference for load-balancing and failover**
  - RADIUS session/idle time-outs effective on LAC/LNS**
  - RADIUS tunnel-assignment-ID**
  - RADIUS gigaword support**
  - RADIUS tagging support**
  - RADIUS VPN ID support**

Quick Connect vendor specific attributes (VSAs)

## Support for New Line Cards

- 
- **Cisco OC-48/STM-16 Packet over SONET line card**

### Cisco 24-port E1 line card

framed (channelized) or unframed (unchannelized) interfaces.

**8-port Fast Ethernet line card**—A half-height line card containing eight 100BASE-TX ports. Each port autonegotiates between half and full duplex mode and supports 100BASE-T only. The FE line card provides the Cisco 10000 router with IEEE 802.3u-compliant 100BASE-TX Ethernet interfaces for high-density uplinks to content servers, routers, and other FE devices.

## Cisco 10000 Series Router MIB Enhancements

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*Router Broadband MIB Specifications Guide*



**Note**

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# Cisco 10000 Router Software Features

**Table 1**      *Principal Software Features*

	Route Processing Redundancy Plus (RPR+)
	Ethernet High-Level Data Link Control (HDLC) Point-to-Point (PPP) Multilink Point-to-Point (MLP)
	Multiprotocol Label Switching Virtual Private Network (MPLS/VPN) edge services 802.1q PXF switching for ARPA encapsulation
	Multicast Static Routes Multicast Routing Monitor (MRM)
	Internet Group Management Protocol (IGMP) Protocol-Independent Multicast (PIM) Distance Vector Multicast Routing Protocol (DVMRP) Cisco Group Management Protocol (CGMP) Unidirectional Link Routing (UDLR) Session Directory Protocol (SDP) Multicast Source Discovery Protocol (MSDP) Border Gateway Protocol (BGP)
	Border Gateway Protocol (BGP) Intermediate System-to-Intermediate System (IS-IS) Open Shortest Path First (OSPF) Interior Gateway Routing Protocol (IGRP) Enhanced Interior Gateway Routing Protocol (EIGRP) Routing Information Protocol (RIP) Policy Based Routing (PBR)
	Standard and extended access lists Authentication, Authorization, and Accounting (AAA) Kerberos authentication and client support on Telnet RADIUS authentication Terminal Access Controller Access Control System Plus (TACACS+)

# Limitations and Restrictions

## L2TP Tunnel Authorization

## Broadband Aggregation Groups

groups using RADIUS. You must configure BBA groups manually.

## ATM PXF Queuing

`no atm pxf queuing mode`

## ToS Settings on a Virtual Template

## QoS Service Policy on a Virtual Access Interface

`set ip`

## CISCO-VPDN-MGMT MIB

## AAA Method Lists

## RBE Subinterfaces with Per Session Rate Limiting

## Unshaped UBR PVCs

## Controlling the Rate of Logging Messages

```
Router(config)# logging rate-limit console all 10 except critical
```

*Fundamentals Command Reference*



Tip

# Important Notes

## Provisioning for Scaling

### PPPoA sessions with IP QoS Static Routes

### AAA Authentication on the NME Port

```
int fa 0/0/0
Router(config-if)# hold-queue 4096 in
                  hold-queue 4096 out
```

### Call Admission Control

```
call admission limit 95
```

## Inserting a New Line Card

# Open Caveats in Cisco IOS Release 12.2(15)BX

**Table 2**      *Open Caveats in Cisco IOS Release 12.2(15)BX*

<b>Caveat</b>	<b>Description</b>
<b>CSCdy79740</b>	<p data-bbox="553 478 906 499">[%IPRT-4-ROUTECOUNTNEGATIVE]</p> <p data-bbox="553 527 716 554"><b>Workaround:</b></p>
<b>CSCea35508</b>	
<b>CSCea37038</b>	<p data-bbox="1062 695 1279 722">&lt;slot/subslot/port&gt;</p> <p data-bbox="716 789 933 816">&lt;slot/subslot/port&gt;</p> <p data-bbox="997 898 1214 926">&lt;slot/subslot/port&gt;</p>
<b>CSCea41145</b>	<p data-bbox="656 1129 987 1150">12tp timeout no-session 30</p>
<b>CSCea46149</b>	
<b>CSCea51673</b>	<ul style="list-style-type: none"> <li data-bbox="565 1629 574 1644">•</li> <li data-bbox="565 1707 574 1722">•</li> <li data-bbox="565 1778 574 1793">•</li> </ul>

*Open Caveats in Cisco IOS Release 12.2(15)BX (continued)*

<b>CSCea52741</b>	
<b>CSCea67815</b>	%ALIGN-3 -TRACE
	% Image does not support any AAA protocols. % Image does not support any AAA protocols.

<b>Caveat</b>	<b>Description</b>
<b>CSCea78890</b>	
<b>CSCea78899</b>	
<b>CSCea81015</b>	
<b>CSCea82309</b>	

**CSCdv59309**

**CSCdx77497**

**CSCea29188**

**CSCea32824**

?

**Enter**

**CSCea32864**

**CSCea33965**

**CSCea33996**

**CSCea34409**

**CSCea35238**

**show tag tdp neighbor**

**command. This problem has been fixed.**

**CSCea36590**

**CSCea36915**

**card slot <x/x>**

PRE, any error was returned as "unknown" instead of the correct error message text. This problem has been fixed.

Previously, the internal interface FastEthernet 0/0/1 appeared in the output of the command. This problem has been fixed.

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Previously, if you shut down the 4-port channelized STM-1 line card au-3 c-3 controller, traceback messages appeared on the console. This problem has been fixed.

**CSCuk27655**

## Other Caveats

**CSCea33889**

## Obtaining Documentation, Obtaining Support, and Security Guidelines

security guidelines, and also recommended aliases and general Cisco documents, see the monthly What's New in Cisco Product Documentation, which also lists all new and revised Cisco technical documentation at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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