



# Release Notes for Cisco 3600 Series Routers for Cisco IOS Release 12.2(8) YN

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**November 4, 2002**

Cisco IOS Release 12.2(8)YN

OL-3464-01

These release notes for the Cisco 3600 series routers describe the enhancements provided in Cisco IOS Release 12.2(8) YN. These release notes are updated as needed.

For a list of the software caveats that apply to Cisco IOS Release 12.2(8) YN, see the [“Caveats for Cisco IOS Release 12.2\(8\) YN” section on page 6](#) and *Caveats for Cisco IOS Release 12.2 T*. The caveats document is updated for every maintenance release and is located on [Cisco.com](#) and the Documentation CD-ROM.

Use these release notes with *Cross-Platform Release Notes for Cisco IOS Release 12.2 T* located on [Cisco.com](#) and the Documentation CD-ROM.

Cisco recommends that you view the field notices for this release to see if your software or hardware platforms are affected. If you have an account on Cisco.com, you can find field notices at [http://www.cisco.com/warp/customer/tech\\_tips/index/fn.html](http://www.cisco.com/warp/customer/tech_tips/index/fn.html). If you do not have a Cisco.com login account, you can find field notices at [http://www.cisco.com/warp/public/tech\\_tips/index/fn.html](http://www.cisco.com/warp/public/tech_tips/index/fn.html).

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**Corporate Headquarters:**

**Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA**

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# Inheritance Information

Cisco IOS Release 12.2(8) YN is based on Cisco IOS Release **12.2(8)T**. All features in Cisco IOS Release **12.2(8)T** are in Cisco IOS Release 12.2(8) YN.

[Table 1](#) lists sections of the *Cross-Platform Release Notes for Cisco IOS Release 12.2 T* that apply to Cisco IOS Release 12.2(8) YN.

**Table 1** *References for the Cross-Platform Release Notes for Cisco IOS Release 12.2 T*

Topic	Location
<ul style="list-style-type: none"> <li>• Introductory information about the Cisco 3600 series routers</li> <li>• Hardware Supported</li> <li>• Feature Set Tables</li> <li>• Microcode and Modem Code Software</li> <li>• Additional Notes for the Cisco 3600 Series Routers</li> </ul>	Click <b>Platform-Specific Information</b> and <b>Cisco 2600 Series Routers</b> at <a href="http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122reInt/xprn122t/122tfeat.htm">http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122reInt/xprn122t/122tfeat.htm</a> .
<ul style="list-style-type: none"> <li>• Determining the Software Version</li> <li>• Upgrading to a New Software Release</li> </ul>	Click <b>Cross-Platform System Requirements</b> at <a href="http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122reInt/xprn122t/122treqs.htm">http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122reInt/xprn122t/122treqs.htm</a> .
<ul style="list-style-type: none"> <li>• Feature Descriptions (New and Changed Information)</li> <li>• MIBs</li> <li>• Important Notes</li> </ul>	Go to <a href="http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122reInt/xprn122t/122newf.htm">http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122reInt/xprn122t/122newf.htm</a> .
<ul style="list-style-type: none"> <li>• Related Documentation</li> <li>• Obtaining Documentation</li> <li>• Obtaining Technical Assistance</li> </ul>	Go to <a href="http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122reInt/xprn122t/122tdocs.htm">http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122reInt/xprn122t/122tdocs.htm</a> .

## System Requirements

This section describes the system requirements for Cisco IOS Release 12.2(8)YN and includes the following sections:

- [Memory Recommendations](#), page 3
- [Feature Set Tables](#), page 3

## Memory Recommendations

**Table 2** Memory Recommendations for the Cisco 3600 Series Routers

Platforms	Feature Sets	Image Name	Software Image	Flash Memory Recommended	DRAM Memory Recommended	Runs From
Cisco3640 and Cisco 3640A	IOS IP/FW/IDS PLUS IPSEC 3DES	Cisco 3600 Series IOS IP/FW/IDS PLUS IPSEC 3DES	c3640-ik9o3s-mz	32MB	128MB	RAM
	IOS IP PLUS	Cisco 3600 Series IOS IP PLUS	c3640-is-mz	32MB	128MB	RAM
Cisco3660	IOS IP/FW/IDS PLUS IPSEC 3DES	Cisco 3600 Series IOS IP/FW/IDS PLUS IPSEC 3DES	c3660-ik9o3s-mz	32MB	192MB	RAM
	IOS IP PLUS	Cisco 3600 Series IOS IP PLUS	c3660-is-mz	32MB	192MB	RAM
	IOS ENTERPRISE/FW/IDS PLUS IPSEC 3DES	Cisco 3600 Series IOS ENTERPRISE/FW/IDS PLUS IPSEC 3DES	c3660-jk9o3s-mz	32MB	192MB	RAM
	IOS ENTERPRISE PLUS	Cisco 3600 Series IOS ENTERPRISE PLUS	c3660-js-mz	32MB	192MB	RAM
	IOS ENTERPRISE PLUS/H323 MCM	Cisco 3600 Series IOS ENTERPRISE PLUS/H323 MCM	c3660-jsx-mz	32MB	192MB	RAM

## Feature Set Tables

The Cisco IOS software is packaged in feature sets consisting of software images—depending on the platform. Each feature set contains a specific set of Cisco IOS features.

Cisco IOS Release 12.2(8) YN supports the same feature sets as Cisco IOS Release 12.2, but Cisco IOS Release 12.2(8) YN can include new features supported by the Cisco 3600 series routers.



### Caution

Cisco IOS images with strong encryption (including, but not limited to, 168-bit Triple Data Encryption Standard [3DES] data encryption feature sets) are subject to United States government export controls and have limited distribution. Strong encryption images to be installed outside the United States are likely to require an export license. Customer orders may be denied or subject to delay because of United States government regulations. When applicable, purchaser and user must obtain local import and use authorizations for all encryption strengths. Please contact your sales representative or distributor for more information, or send an e-mail to [export@cisco.com](mailto:export@cisco.com).

Table 3 lists the features and feature sets supported by the Cisco 3600 series routers in Cisco IOS Release 12.2(8)N and uses the following conventions:

- Yes—The feature is supported in the software image.
- No—The feature is not supported in the software image.
- In—The number in the “In” column indicates the Cisco IOS release in which the feature was introduced. For example, “12.2(8)YN” means a feature was introduced in Cisco IOS Release 12.2(8) YN. If a cell in this column is empty, the feature was included in the initial base release.

**Note**

These release notes are not cumulative and list only features that are new to Cisco IOS Release 12.2(8)YN. The parent release for Cisco IOS Release 12.2(8)YN is Cisco IOS Release 12.2(8)T. For information about inherited features, refer to Cisco.com or Cisco Feature Navigator. For Cisco.com, go to <http://www.cisco.com/univercd/home/index.htm>, select the appropriate software release under **Cisco IOS Software**, and click **Release Notes**. If you have a Cisco.com login account, you can use the Cisco Feature Navigator tool at <http://www.cisco.com/cgi-bin/Support/FeatureNav/FN.pl>.

**Table 3** Feature List by Feature Set for the Cisco 3600 Series Routers

Features	In	Software Images by Feature Sets				
		Cisco 3600 Series IOS IP/FW/IDS PLUS IPSEC 3DES	Cisco 3600 Series IOS IP PLUS	Cisco 3600 Series IOS ENTERPRISE /FW/IDS PLUS IPSEC 3DES	Cisco 3600 Series IOS ENTERPRISE PLUS/H323 MCM	Cisco 3600 Series IOS ENTERPRISE PLUS
ATM Cell Loss Priority (CLP) Bit Marking	12.2(8)YN	Y	Y	Y	Y	Y
Bundling of ATM interfaces using MLPPP	12.2(8)YN	Y	Y	Y	Y	Y
Compressed Real-Time Transport Protocol	12.2(8)YN	Y	Y	Y	Y	Y
Enhanced ITU-T G.168 Echo Cancellation	12.2(8)YN	Y	Y	Y	Y	Y
Frame Relay - FRF.5 and FRF.8	12.2(8)YN	Y	Y	Y	Y	Y
MLPPP Bundling - DSL Interfaces	12.2(8)YN	Y	Y	Y	Y	Y
Tunable Tx-Ring Buffer	12.2(8)YN	Y	Y	Y	Y	Y

# New and Changed Information

The following sections list the new hardware and software features supported by the Cisco 3600 series routers for Cisco IOS Release 12.2(8) YN.

## New Hardware Features in Cisco IOS Release 12.2(8) YN

There are no new hardware features supported by the Cisco 3600 series routers for Cisco IOS Release 12.2(8) YN.

## New Software Features in Cisco IOS Release 12.2(8) YN

The following new software features are supported by the Cisco 3600 series routers for Cisco IOS Release 12.2(8) YN.

### ATM Cell Loss Priority (CLP) Bit Marking

When congestion occurs in an ATM network, ATM cells are discarded. One way to control which cells are discarded is to use cell loss priority (CLP) bit marking in the header of each cell. You can set the CLP bit to either 1 or 0. Those cells that have the CLP bit set to 1 are always discarded before any cells that have the CLP bit set to 0. The ATM CLP Bit Marking feature allows you to control the CLP setting on the Cisco routers. The marking of the CLP bit is implemented on a per-packet basis so that the CLP bit of every ATM cell that belongs to a particular packet is set to either 0 or 1.

### Bundling of ATM Interfaces Using MLPPP

The Bundling of ATM Interfaces Using Multilink PPP (MLP) feature supports other QoS features, such as LLQ and CBWFQ and link fragmentation and interleaving (LFI). The bundling feature supports the other QoS features over a multilink MLP bundle for which members of the bundle are defined across physically different DSL interfaces. The bundling occurs at the ATM layer through ATM permanent virtual circuits (PVCs).

### Compressed Real-Time Transport Protocol

The Real-Time Transport Protocol (RTP) feature, as described in RFC 1889, is used to carry real-time data for voice and video applications. For a typical Voice over IP (VoIP) application, the payload portion of the packet can be smaller than the header. For instance, using the G.729 codec, the payload is 20 bytes, but the IP, User Data Protocol (UDP), and RTP header is 40 bytes. Sending the IP, UDP, and RTP header across a slow link without compressing it is inefficient. The Compressed Real-Time Transport Protocol (cRTP) feature, as defined in RFC 2508, addresses this inefficiency by making smaller VoIP packet headers. The basic idea behind cRTP is that although several fields in the IP, UDP, and RTP header change from packet to packet, the difference in these fields from packet to packet is constant. The compression scheme in cRTP is to encode the header to reduce the size of information to be transmitted. With cRTP, a 40-byte IP, UDP, and RTP header of a VoIP packet can be compressed to 2 to 4 bytes per packet, yielding approximately 11.2 kbps of bandwidth for a G.729 codec call that uses RTP.

## Tunable Tx-Ring Buffer

The transmission (tx) ring is the first-in, first-out (FIFO) buffer used to hold frames before transmission at the DSL driver level. The tx ring defines the maximum number of packets that can wait for transmission at Layer 2. The tx ring complements the ability of LLQ to minimize jitter and latency of voice packets. For maximum voice quality, use a low tx ring setting. For maximum data throughput, use a high tx ring setting. You can configure the size of the tx ring for each permanent virtual circuit (PVC). The default value is 60. However, the value of the setting can be 2 through 60 on Cisco 1700 series routers and 3 through 60 on Cisco 2600 and Cisco 3600 series routers. A low tx ring setting, such as 2 or 3, is required for latency-critical traffic. For example, when the tx ring limit is configured as 3 and LLQ is configured on the PVC, the worst case delay for a voice packet is the time required to transmit three data packets. When the buffering is reduced by configuring the tx ring limit, the delay for voice packets is reduced by a combination of the tx ring and LLQ mechanism.

## Frame Relay - FRF.5 and FRF.8

To communicate over WANs, end-user stations and the network cloud typically must use the same type of transmission protocol. This limitation has prevented differing networks such as Frame Relay and ATM from being linked. The Frame Relay-to-ATM service interworking feature allows Frame Relay and ATM networks to exchange data despite differing network protocols. The functional requirements for linking Frame Relay and ATM networks are provided by the Frame Relay/ATM PVC Service Interworking Implementation Agreement specified in Frame Relay Forum (FRF) documents FRF.5 and FRF.8. The FRF.5 and FRF.8 interworking functions involve multiplexing PVCs between Frame Relay and ATM networks and mapping the control bits between Frame Relay frame headers and ATM cell headers. FRF.5 and FRF.8 are necessary for ATM-based features to interwork with Frame-Relay-based IP class of service features.

# Caveats for Cisco IOS Release 12.2(8) YN

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious. Severity 3 caveats are moderate caveats, and only select severity 3 caveats are included in the caveats document.

This section contains open and resolved caveats for the current Cisco IOS maintenance release.

All caveats in Cisco IOS Release 12.2 and Cisco IOS Release 12.2 T that apply to the Cisco 3600 series routers are also in Cisco IOS Release 12.2(8) YN.

For information on caveats in Cisco IOS Release 12.2, see *Caveats for Cisco IOS Release 12.2*.

For information on caveats in Cisco IOS Release 12.2 T, see *Caveats for Cisco IOS Release 12.2 T*, which lists severity 1 and 2 caveats and select severity 3 caveats and is located on [Cisco.com](http://www.cisco.com) and the Documentation CD-ROM.



### Note

If you have an account on Cisco.com, you can also use the Bug Toolkit to find select caveats of any severity. To reach the Bug Toolkit, log in to [Cisco.com](http://www.cisco.com) and click **Service & Support: Software Center: Cisco IOS Software: BUG TOOLKIT**. Another option is to go to [http://www.cisco.com/cgi-bin/Support/Bugtool/launch\\_bugtool.pl](http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl).

## Open Caveats—Cisco IOS Release 12.2(8) YN

This section documents possible unexpected behavior by Cisco IOS Release 12.2(8) YN and describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCdy63125: T1/E1 channel group clock rate is not shown in show controller atm  
When using T1/E1 WICs, the serial interface created by configuring channel-group with T1/E1 is not reflected in the clock rate values when issuing **show controller atm**.  
Workaround: There is no work-around.
- CSCdy76221: DSL operating mode doesn't fall back to the configured mode  
G.SHDSL remains trained with previous operating mode after new mode is configured on the interface.  
Workaround: Shut/no shut on the interface has to be issued to retrain.
- CSCdy87266: Tx-ring-limit of 3 may degrade output while 4,5,..60 are ok  
Configuring tx-ring-limit as 3 may degrade output.  
Configure 4 and onwards until 60 for the tx-ring-limit. For lower latency, 4 is the preferred value until this DDTS is resolved.

## Resolved Caveats—Cisco IOS Release 12.2(8) YN

Because Cisco IOS Release 12.2(8) YN is the initial base release, there are no resolved caveats. For a list of the resolved caveats, refer to the next set of release notes for this release version.

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