802.1P CoS Bit Set for PPP and PPPoE Control Frames

The 802.1P CoS Bit Set for PPP and PPPoE Control Frames feature provides the ability to set user priority bits in the IEEE 802.1Q tagged frame to allow traffic prioritization This capability enables a way to provide best effort QoS (quality of service) or CoS (class of service) at layer 2 without requiring reservation setup.

Finding Feature Information in This Module

Your Cisco IOS software release may not support all of the features documented in this module. To reach links to specific feature documentation in this module and to see a list of the releases in which each feature is supported, use the "Feature Information for 802.1P CoS Bit Set for PPP and PPPoE Control Frames" section on page 5.

Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at http://www.cisco.com/go/fn. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

Contents

CISCO SYSTEMS

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

Prerequisites for 802.1P CoS Bit Set for PPP and PPPoE Control Frames

The PPPoE over 802.1Q VLAN feature must be enabled.

Restrictions for 802.1P CoS Bit Set for PPP and PPPoE Control Frames

You cannot set different CoS levels for PPP and PPPoE control packets; all control packets default to a CoS level set at 7.

Information About 802.1P CoS Bit Set for PPP and PPPoE Control Frames

To configure the 802.1P CoS Bit Set for PPP and PPPoE Control Frames feature, you should understand the following concepts:

Benefits of 802.1P CoS Bit Set for PPP and PPPoE Control Frames

The 802.1P CoS Bit Set for PPP and PPPoE Control Frames feature facilitates moving from ATM-based to Ethernet-based networks by supporting the ability to offer prioritized traffic services, VoIP, and other premium services.

Feature Design of 802.1P CoS Bit Set for PPP and PPPoE Control Frames

The IEEE 802.1P specification is an extension of the IEEE 802.1Q VLANs tagging standard and enables Layer 2 devices to prioritize traffic by using an 802.1P header that includes a three bit user priority field. Prior to the 802.1P CoS Bit Set for PPP and PPPoE Control Frames feature, PPPoE sessions that were established over 802.1Q VLANs did not make use of the user priority field. If congestion occurs when the the 802.1P CoS bit is not set, PPP keepalive packets can be lost, which can result in disconnection of an established session with loss of service to the end user. Congestion caused by noncontrol packets can also prevent new sessions from being established, which can also result in denying service to the end user.

The 802.1P CoS Bit Set for PPP and PPPoE Control Frames feature introduced in Cisco IOS Release 12.2(31)SB supports the ability of Layer 2 devices to prioritize traffic by making use of the priority field of the 802.1P control packets. PPPoE sessions established over 802.1Q VLANs now

use the priority header field to provide best efforts QoS or class of service CoS at Layer 2 without involving reservation setup. 802.1P traffic is marked and sent to the destination, and no bandwidth reservations are established.

During network congestion, when the Ethernet network and digital subscriber line access multiplexer (DSLAM) offer 802.1P support, control packets are offered a higher priority than noncontrol packets, thereby increasing the likelihood of reliable delivery. PPPoE control packets and PPP packets originating from the broadband remote access server (BRAS) are marked with user priority 7, the highest level of priority.

The following packets are tagged with user priority 7 in their 802.1P header:

- PPPoE packets
    - PPPoE Active Discovery Offer (PADO)
    - PPPoE Active Discovery Session Confirmation (PADS)
- PPP packets
    - Link Control Protocol (LCP)
    - Network Control Protocol (NCP) (Internet Protocol Control Protocol (IPCP))
    - Authentication
    - Keepalive

How to Configure 802.1P CoS Bit Set for PPP and PPPoE Control Frames

The 802.1P CoS Bit Set for PPP and PPPoE Control Frames feature is enabled by default and requires no configuration.

Troubleshooting Tips

The following command can help troubleshoot 802.1P control frame marking:

- **debug pppoe error**

Configuration Examples for 802.1P CoS Bit Set for PPP and PPPoE Control Frames

The 802.1P CoS Bit Set for PPP and PPPoE Control Frames feature is enabled by default and requires no configuration.

Additional References

The following sections provide references related to the 802.1P CoS Bit Set for PPP and PPPoE Control Frames feature.

Related Documents

Related Topic	Document Title
Broadband access aggregation concepts	*Cisco IOS Broadband and DSL Configuration Guide*, Release 12.4
Broadband access commands	*Cisco IOS Broadband Access Aggregation and DSL Command Reference*, Release 12.4T

Standards

Standard	Title
IEEE Standard 802.1P	*PPPoE over IEEE 802.1Q*
IEEE Standard 802.1Q	*Virtual Bridged Local Area Networks*

MIBs

MIB	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
RFC 2516	*PPP over Ethernet*

Technical Assistance

Description	Link
The Cisco Technical Support & Documentation website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/techsupport

Command Reference

This feature uses no new or modified commands.

Feature Information for 802.1P CoS Bit Set for PPP and PPPoE Control Frames

Table 1 lists the release history for this feature.

Not all commands may be available in your Cisco IOS software release. For release information about a specific command, see the command reference documentation.

Cisco IOS software images are specific to a Cisco IOS software release, a feature set, and a platform. Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at http://www.cisco.com/go/fn. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

Note Table 1 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

Table 1 Feature Information for <Phrase Based on Module Title>

Feature Name	Releases	Feature Information
802.1P CoS Bit Set for PPP and PPPoE Control Frames	12.2(31)SB 2	The 802.1P CoS Bit Set for PPP and PPPoE Control Frames feature provides the ability to set the User Priority bits in the IEEE 802.1Q tagged frame for traffic prioritization.

Feature Information for 802.1P CoS Bit Set for PPP and PPPoE Control Frames