Qos - Policing SUPPORT for GRE Tunnels

The Qos - Policing Support for GRE Tunnels feature allows you to set the Differentiated Services Code Point (DSCP) and IP precedence values on Generic Routing Encapsulation (GRE) tunnel packets.

This feature is essential for MPLS carriers to offer QoS on Multicast VPN services. MVPN uses GRE tunnels between PE devices, and multicast packets are placed in GRE tunnels for transmission across the MPLS core network. The Qos - policing SUPPORT for GRE Tunnels feature allows users to configure QoS for the GRE tunnel packets. Once the GRE packets accurately reflect the QoS markings of the underlying multicast packets, they may be queued accordingly as they travel across the core nodes.

History for the Qos - Policing Support for GRE Tunnels Feature

Release	Modification
Release 12.2(31)SB	This feature was introduced and implemented on the Cisco 10000 series router.

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

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

Restrictions for Qos - Policing Support for GRE Tunnels

- Service policies with GRE tunnel header marking actions can only be attached to the ingress interfaces.
- There is no direct means of marking the inner IP header that arrives in a tunnel (aka tunnel decapsulation or tunnel receive).
- The Cisco 10000 Series router supports only one police action.

Information About Qos - Policing Support for GRE Tunnels

Table 1 shows how the various tunnel-specific marking functions interact with one another.

Table 1 Priority of Tunnel-Marking Commands

Command	Action Seen In Outer IP header
1) Policing commands:	The police values supersede all other marking values.
set dcsp tunnel transmit	Changes the 6-bit dscp value in the outer IP header's ToS byte.
or	
set precedence tunnel transmit	Changes the 3-bit precedence value in the outer IP header's ToS byte.
2) Input QoS set actions:	
set ip dcsp tunnel *value*	Changes the 6-bit dscp value in the outer IP header's ToS byte.
or	
set ip precedence tunnel *value*	Changes the 3-bit precedence value in the outer IP header's ToS byte
3) **tunnel tos** *value*	Changes the entire ToS byte in outer IP header.
4) Default action is: **ToS reflection**	Copy the entire ToS byte from the inner IP header into the outer IP header.

The policing commands are logically applied last and thus have the highest priority. This means that the value associated with the **set ip [dscp | precedence] tunnel transmit** command, when applied, will always show up in the outer IP header's ToS byte.

The **set ip [dscp | precedence] tunnel transmit** command value that is specified will supersede the **tunnel tos** value and any default tunnel action.

The **tunnel tos** *value* command overrides any default tunnel marking action.

If the input QoS action uses a dcsp value and the police action specifies a precedence value, only the police action bits will be changed. The bits associated with the input QoS actions' dscp value will be ignored.

How to Configure Qos - Policing Support for GRE Tunnels

To configure Qos - Policing Support for GRE Tunnels, perform the following configuration tasks:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **class-map** *class-map-name*
4. **match fr-de**
5. **exit**
6. **policy-map** *name*
7. **class** *map-class*
8. **police** *bps* **conform-action** *action*
9. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**class-map** *class-map-name* **Example:** `Router (config)# class-map MATCH_FRDE`	Creates a class map to be used for matching packets to a specified class.
Step 4	**match fr-de** **Example:** `Router (config-cmap)# match fr-de`	Matches packets with the Frame Relay discard eligibility (DE) bit set.
Step 5	**exit** **Example:** `Router (config-cmap)# exit`	Exits class-map configuration mode.
Step 6	**policy-map** *name* **Example:** `Router (config)# policy-map TUNNEL_MARKING`	Configures a policy, i.e., an association of a traffic class with one or more security-related actions.

	Command or Action	Purpose
Step 7	**class** *map-class* **Example:** `Router (config-pmap)# class MATCH_FRDE`	Associates the map class with the protocol.
Step 8	`police` *bps* **conform-action** *action* **Example:** `Router (config-pmap-c)# police 8000 conform-action set-dscp-tunnel-transmit`	Configures traffic policing.
Step 9	**end** **Example:** `Router (config-pmap-c)# end`	Exit policy map configuration mode.

Additional References

The following sections provide references related to Policing Support for GRE Tunnels.

Related Documents

Related Topic	Document Title
Quality of Service on GRE Tunnel Interfaces	Tech Note: Quality of Service Options on GRE Tunnel Interfaces at http://www.cisco.com/en/US/tech/tk543/tk545/technologies_tech_note09186a008017405e.shtml

Standards

Standard	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

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

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