Set ATM CLP Bit Using Policer

The Set ATM CLP Bit Using Policer feature allows you to police and then mark outbound PPP over ATM (PPPoA) traffic. You can set the ATM cell loss priority (CLP) bit using either of the following methods:

- A policed threshold
- Matching a class

Prerequisites for Set ATM CLP Bit Using Policer

If you are setting the ATM CLP bit by a policed threshold, ensure that a policy-map includes the **set-clp-transmit**action. The new policer action conditionally marks PPPoA traffic in the matched class for a higher drop probability in the ATM network when traffic exceeds a given rate.

If you are setting the ATM CLP bit strictly by matching a class, ensure that a policy-map includes the **set atm-clp** action. The set directive marks all traffic in the matched class for higher drop probability in the ATM network.

You can attach policy-maps with the **set-clp-transmit**or **set atm-clp**actions to a virtual template. This template is cloned when PPPoA sessions are created or by dynamic assignment.

Information About Set ATM CLP Bit Using Policer

ATM CLP Bit

The ATM CLP bit shows the drop priority of the ATM cell. During ATM network congestion, the router discards ATM cells with the CLP bit set to 1 before discarding cells with a CLP bit setting of 0.

Using the Set ATM CLP Bit Using Policer feature, you can configure the **police** command to enable the ATM CLP bit in cell headers. The ATM CLP bit can be explicitly marked by a set directive.

The Set ATM CLP Bit Using Policer feature supports the **set-clp-transmit** policing action in the following types of policies:

- Single-rate policing
- Dual-rate policing
- Hierarchical

How to Set the ATM CLP Bit Using Policer

Configuring PPPoA Broadband Traffic Policing

Before you begin

Before configuring the policy-map, ensure that you have defined any class maps used to classify traffic.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **policy-map** *policy-map-name*
4. **class** {*class-name*| **class-default**]
5. **police** [**cir** *cir*] [**conform-action** *action*] [**exceed-action** *action*]
6. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**policy-map** *policy-map-name* **Example:** `Device(config)# policy-map parent-policy`	Enters policy-map configuration mode and creates a policy-map.
Step 4	**class** {*class-name*| **class-default**]	Enters policy-map class configuration mode.

	Command or Action	Purpose
	Example: `Device(config-pmap)# class class-default`	Specifies the name of the class whose policy you want to create or change or specifies the default class (commonly known as the class-default class) before you configure its policy. Repeat this command as many times as necessary to specify the child or parent classes that you are creating or modifying: • *class name* --Name of the class to be configured or whose policy is to be modified. The class name is used for both the class map and to configure a policy for the class in the policy-map. • **class-default** --Specifies the default class so that you can configure or modify its policy.

Step 5	**police** [**cir** *cir*] [**conform-action** *action*] [**exceed-action** *action*]
	Example:
	`Device(config-pmap-c)# police 1000000`
	Example:
	`Router(config-pmap-c-police)# conform-action`
	Example:
	`transmit`
	Example:
	`Device(config-pmap-c-police)# exceed-action`
	Example:
	`set-clp-transmit`
		Configures traffic policing and specifies multiple actions applied to packets marked as conforming to, exceeding, or violating a specific rate.
		• Enters policy-map class police configuration mode. Use one line per action that you want to specify:
		• **cir**--(Optional) Committed information rate. Indicates that the CIR will be used for policing traffic.
		• **conform-action**--(Optional) Action to take on packets when the rate is less than the conform burst.
		• **exceed-action**--(Optional) Action to take on packets whose rate is within the conform and conform plus exceed burst.

Step 6	**end** **Example:** `Device(config-pmap-c)# end`	(Optional) Returns to privileged EXEC mode.

Example

The following example shows you how to set the ATM CLP using a policer:

```
policy-map egress_atm_clp_policer
 class prec0
  police cir 5000000
 class prec1
  police cir 3000000 conform-action transmit exceed-action set-clp-transmit
```

```
class class-default
 police cir 1000000 conform-action transmit exceed-action set-clp-transmit
```

Marking the ATM CLP Bit

Before you begin

Before configuring the policy-map, ensure that you have defined any class maps used to classify traffic.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **policy-map policy-map-name**
4. **class** {*class-name*| **class-default**]
5. **set atm-clp**
6. **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	**policy-map policy-map-name** **Example:** `Router(config)# policy-map parent-policy`	Enters policy-map configuration mode and creates a policy-map.
Step 4	**class** {*class-name*| **class-default**] **Example:** `Router(config-pmap)# class class-default`	Enters policy-map class configuration mode. Specifies the name of the class whose policy you want to create or change or specifies the default class (commonly known as the class-default class) before you configure its policy. Repeat this command as many times as necessary to specify the child or parent classes that you are creating or modifying: • *class name* --Name of the class to be configured or whose policy is to be modified. The class name is used for both the class map and to configure a policy for the class in the policy-map.

	Command or Action	Purpose
		• **class-default** --Specifies the default class so that you can configure or modify its policy.
Step 5	**set atm-clp** **Example:** `Router(config-pmap-c)# set atm-clp`	Configures marking of the ATM CLP bit for all traffic matching this class.
Step 6	**end** **Example:** `Router(config-pmap-c)# end`	(Optional) Returns to privileged EXEC mode.

Example

The following example shows you how to set the ATM CLP using explicit marking:

```
policy-map egress_atm_clp_policer
 class prec0
  police cir 5000000
 class class-default
  set atm-clp
```

Configuration Examples for Set ATM CLP Bit Using Policer

Example Marking the ATM CLP by Policer Action Matching a Class

This example shows how to do the following:

- Define traffic classes.
- Configure a two-layer policy-map.
- Apply the policy-map to PPPoA sessions.

This policy conditionally marks the ATM CLP bit on the traffic in the matching low_interest class once traffic on the class exceeds a given rate.

```
class-map voice
  match precedence 4
!
class-map web
  match precedence 3
!
class low_interest
  match precedence 1 0
!
policy-map child
```

```
 child class voice
  police cir 256000
  priority level 1
 class web
  bandwidth remaining ratio 10
 class low_interest
  police cir 1000000 conform-action transmit exceed-action set-clp-transmit
 class class-default
  bandwidth remaining ratio 1
!
policy-map parent
 class class-default
  shape average 15000000
  service-policy child
```

Policy-maps attached to virtual templates are cloned and used to create a virtual access interface for each PPPoA session:

```
interface Virtual-Template1
 ip unnumbered Loopback1
 load-interval 30
 peer default ip address pool POOL1
 ppp authentication chap ppp
 ipcp address required
 service-policy output parent
```

Example Marking the ATM CLP by Policer Action Policed Threshold

This example shows how to do the following:

- Define traffic classes.
- Configure a two-layer policy-map.
- Apply the policy-map to PPPoA sessions.

This policy marks all non-essential traffic with the ATM CLP bit so that it is eligible for dropping if the ATM network becomes congested.

```
class-map video
  match precedence 5
!
class-map voice
  match precedence 4
!
class-map web
  match precedence 3
!
policy-map child
 child class voice
  police cir 256000
  priority level 1
 class video
  police cir 4000000
  priority level 2
 class web
  set atm-clp
  bandwidth remaining ratio 10
 class class-default
  bandwidth remaining ratio 1
```

```
  set atm-clp
!
interface Virtual-Template1
 ip unnumbered Loopback1
 load-interval 30
 peer default ip address pool POOL1
 ppp authentication chap ppp
 ipcp address required
 service-policy output parent
```

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Commands List, All Releases
Quality of Service commands	*Cisco IOS Quality of Service Command Reference*

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 software releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	--

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for Set ATM CLP Bit Using Policer

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to https://cfnng.cisco.com/. An account on Cisco.com is not required.

Table 1: Feature Information for Set ATM CLP Bit Using Policer

Feature Name	Releases	Feature Information
Set ATM CLP Bit Using Policer	Cisco IOS Release XE 3.3S Cisco IOS Release XE 3.14S	The Set ATM CLP Bit Using Policer feature allows you to police and then mark outbound PPPoA traffic. In Cisco IOS Release XE 3.14S, support for this feature was added on the Cisco 4451-X Integrated Services Router. The following commands were introduced or modified: **set atm-clp**and **police**.