



QoS Policy Support on L2VPN ATM PVPs

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This feature enables you to configure Quality of Service (QoS) service policies in ATM permanent virtual path (PVP) mode for Layer 2 Virtual Private Networks (L2VPNs).

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Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the Feature Information Table at the end of this document.

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

Prerequisites for QoS Policy Support on L2VPN ATM PVPs

Before configuring QoS policies on L2VPN ATM PVPs, you should understand the concepts and configuration instructions in the following documents:

- Any Transport over MPLS
- Applying QoS Features Using the MQC



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Restrictions for QoS Policy Support on L2VPN ATM PVPs

- Queueing-based policies are not supported in ATM PVP mode and virtual circuit (VC) mode at the same time under the same main interface. However, nonqueueing policies can be mixed. For example, you can configure a nonqueueing policy in PVP mode and configure queueing policies on in VC mode under the same main interface. Similarly, you can configure a queueing policy in PVP mode and configure nonqueueing policies in VC mode in the input or output direction.
- ATM PVP mode does not support sessions.
- When you enable a policy in PVP mode, do not configure ATM rates on the VCs that are part of the PVP. The VCs should be unspecified bit rate (UBR) VCs only.
- If VCs are part of a PVP that has a policy configured, you cannot configure ATM VC traffic shaping.
- You cannot configure a queueing policy on an ATM PVP with UBR.
- You cannot configure queueing-based policies with UBR traffic shaping.

Information About QoS Policy Support on L2VPN ATM PVPs

- [The MQC Structure, page 2](#)
- [Elements of a Traffic Class, page 3](#)
- [Elements of a Traffic Policy, page 3](#)

The MQC Structure

The MQC structure allows you to define a traffic class, create a traffic policy, and attach the traffic policy to an interface.

The MQC structure consists of the following three high-level steps.

SUMMARY STEPS

1. Define a traffic class by using the **class-map** command. A traffic class is used to classify traffic.
2. Create a traffic policy by using the **policy-map** command. (The terms traffic policy and policy map are often synonymous.) A traffic policy (policy map) contains a traffic class and one or more QoS features that will be applied to the traffic class. The QoS features in the traffic policy determine how to treat the classified traffic.
3. Attach the traffic policy (policy map) to the interface by using the **service-policy** command.

DETAILED STEPS

-
- | | |
|---------------|--|
| Step 1 | Define a traffic class by using the class-map command. A traffic class is used to classify traffic. |
| Step 2 | Create a traffic policy by using the policy-map command. (The terms traffic policy and policy map are often synonymous.) A traffic policy (policy map) contains a traffic class and one or more QoS features that will be applied to the traffic class. The QoS features in the traffic policy determine how to treat the classified traffic. |
| Step 3 | Attach the traffic policy (policy map) to the interface by using the service-policy command. |
-

Elements of a Traffic Class

A traffic class contains three major elements: a traffic class name, a series of match commands, and, if more than one match command is used in the traffic class, instructions on how to evaluate these match commands.

The match commands are used for classifying packets. Packets are checked to determine whether they meet the criteria specified in the match commands; if a packet meets the specified criteria, that packet is considered a member of the class. Packets that fail to meet the matching criteria are classified as members of the default traffic class.

Elements of a Traffic Policy

A traffic policy contains three elements: a traffic policy name, a traffic class (specified with the class command), and the command used to enable the QoS feature.

The traffic policy (policy map) applies the enabled QoS feature to the traffic class once you attach the policy map to the interface (by using the service-policy command).

**Note**

A packet can match only one traffic class within a traffic policy. If a packet matches more than one traffic class in the traffic policy, the first traffic class defined in the policy will be used.

How to Configure QoS Policy Support on L2VPN ATM PVPs

- [Enabling a Service Policy in ATM PVP Mode, page 3](#)
- [Enabling Traffic Shaping in ATM PVP Mode, page 5](#)
- [Enabling Matching of ATM VCIs, page 7](#)

Enabling a Service Policy in ATM PVP Mode

You can enable a service policy in ATM PVP mode. You can also enable a service policy on PVP on a multipoint subinterface.

**Note**

The **show policy-map interface** command does not display service policy information for ATM interfaces.

>

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface atm slot / subslot / port [. subinterface]**
4. **atm pvp vpi l2transport**
5. **service-policy [input | output] policy-map-name**
6. **xconnect peer-router-id vcid encapsulation mpls**
7. **end**

DETAILED STEPS

| Command or Action | Purpose |
|--|---|
| <p>Step 1 enable</p> <p>Example:</p> <pre>Router> enable</pre> | <p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> • Enter your password if prompted. |
| <p>Step 2 configure terminal</p> <p>Example:</p> <pre>Router# configure terminal</pre> | <p>Enters global configuration mode.</p> |
| <p>Step 3 interface atm slot / subslot / port [. subinterface]</p> <p>Example:</p> <pre>Router(config)# interface atm1/0/0</pre> | <p>Defines the interface and enters interface configuration mode.</p> |
| <p>Step 4 atm pvp vpi l2transport</p> <p>Example:</p> <pre>Router(config-if)# atm pvp 1 l2transport</pre> | <p>Specifies that the PVP is dedicated to transporting ATM cells and enters l2transport PVP configuration mode.</p> <ul style="list-style-type: none"> • The l2transport keyword indicates that the PVP is for cell relay. This mode is for Layer 2 transport only; it is not for regular PVPs. |
| <p>Step 5 service-policy [input output] policy-map-name</p> <p>Example:</p> <pre>Router(config-if-atm-l2trans-pvp)# service policy input poll</pre> | <p>Enables a service policy on the specified PVP.</p> |

| Command or Action | Purpose |
|---|--|
| <p>Step 6 <code>xconnect peer-router-id vcid encapsulation mpls</code></p> <p>Example:</p> <pre>Router(config-if-atm-l2trans-pvp)# xconnect 10.0.0.1 123 encapsulation mpls</pre> | <p>Binds the attachment circuit to a pseudowire VC.</p> <ul style="list-style-type: none"> The syntax for this command is the same as for all other Layer 2 transports. |
| <p>Step 7 <code>end</code></p> <p>Example:</p> <pre>Router(config-if-atm-l2trans-pvp)# end</pre> | <p>Exits l2transport PVP configuration mode and returns to privileged EXEC mode.</p> |

Enabling Traffic Shaping in ATM PVP Mode

Traffic shaping commands are supported in PVP mode. For egress VP shaping, one configuration command is supported for each ATM service category. The supported service categories are constant bit rate (CBR), UBR, variable bit rate-nonreal time (VBR-NRT), and variable bit rate real-time(VBR-RT).

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface atm slot / subslot / port [, subinterface]**
4. **atm pvp vpi l2transport**
5. Do one of the following:
 - **ubr pcr**
 -
 - **cbr pcr**
 - or
 - **vbr-nrt pcr scr mbs**
 - or
 - **vbr-rt pcr scr mbs**
6. **xconnect peer-router-id vcid encapsulation mpls**

DETAILED STEPS

| Command or Action | Purpose |
|---|---|
| <p>Step 1 <code>enable</code></p> <p>Example:</p> <pre>Router> enable</pre> | <p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> Enter your password if prompted. |
| <p>Step 2 <code>configure terminal</code></p> <p>Example:</p> <pre>Router# configure terminal</pre> | <p>Enters global configuration mode.</p> |
| <p>Step 3 <code>interface atm slot / subslot / port [. subinterface]</code></p> <p>Example:</p> <pre>Router(config)# interface atm1/0/0</pre> | <p>Defines the interface and enters interface configuration mode.</p> |
| <p>Step 4 <code>atm pvp vpi l2transport</code></p> <p>Example:</p> <pre>Router(config-if)# atm pvp 1 l2transport</pre> | <p>Specifies that the PVP is dedicated to transporting ATM cells and enters l2transport PVP configuration mode.</p> <ul style="list-style-type: none"> The l2transport keyword indicates that the PVP is for cell relay. This mode is for Layer 2 transport only; it is not for regular PVPs. |
| <p>Step 5 Do one of the following:</p> <ul style="list-style-type: none"> <code>ubr pcr</code> <code>cbr pcr</code> or <code>vbr-nrt pcr scr mbs</code> or <code>vbr-rt pcr scr mbs</code> <p>Example:</p> <pre>Router(config-if-atm-l2trans-pvp)# cbr 1000</pre> | <p>Enables traffic shaping in ATM PVP mode.</p> <ul style="list-style-type: none"> <code>pcr</code> = peak cell rate <code>scr</code> = sustain cell rate <code>mbs</code> = maximum burst size |
| <p>Step 6 <code>xconnect peer-router-id vcid encapsulation mpls</code></p> <p>Example:</p> <pre>Router(config-if-atm-l2trans-pvp)# xconnect 10.0.0.1 123 encapsulation mpls</pre> | <p>Binds the attachment circuit to a pseudowire VC.</p> <ul style="list-style-type: none"> The syntax for this command is the same as for all other Layer 2 transports. |

Enabling Matching of ATM VCIs

You can match on an ATM VCI or range of VCIs, using the **match atm-vci** command in class-map configuration mode.



Note

When you configure the **match atm-vci** command in class-map configuration mode, you can add this class map to a policy map that can be attached only to an ATM VP.

>

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **class-map** *class-map-name* [**match-all** | **match-any**]
4. **match atm-vci** *vc-id* [- *vc-id*]
5. **end**

DETAILED STEPS

| Command or Action | Purpose |
|---|---|
| Step 1 enable Example: Router> enable | Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted. |
| Step 2 configure terminal Example: Router# configure terminal | Enters global configuration mode. |
| Step 3 class-map <i>class-map-name</i> [match-all match-any] Example: Router(config)# class-map class1 | Creates a class map to be used for matching traffic to a specified class, and enters class-map configuration mode. |
| Step 4 match atm-vci <i>vc-id</i> [- <i>vc-id</i>] Example: Router(config-cmap)# match atm-vci 50 | Enables packet matching on an ATM VCI or range of VCIs. The range is 32 to 65535. Note You can use the match not command to remove the match criteria. |

| Command or Action | Purpose |
|--|---|
| Step 5 end Example: Router(config-cmap)# end | (Optional) Returns to privileged EXEC mode. |

Configuration Examples for QoS Policy Support on L2VPN ATM PVPs

- [Example Enabling Traffic Shaping in ATM PVP Mode, page 8](#)

Example Enabling Traffic Shaping in ATM PVP Mode

The following example enables traffic shaping in ATM PMP mode.

```
int atm 1/0/0
  atm pvp 100 l2transport
  ubr 1000
  xconnect 10.11.11.11 777 encapsulation mpls
  atm pvp 101 l2transport
  cbr 1000
  xconnect 10.11.11.11 888 encapsulation mpls
  atm pvp 102 l2transport
  vbr-nrt 1200 800 128
  xconnect 10.11.11.11 999 encapsulation mpls
```

Additional References

Related Documents

| Related Topic | Document Title |
|---|--|
| Cisco IOS commands | Cisco IOS Master Commands List, All Releases |
| Description of commands associated with MPLS and MPLS applications | <i>Cisco IOS Multiprotocol Label Switching Command Reference</i> |
| Modular Quality of Service (QoS) Command-Line Interface (CLI) (MQC) | Applying QoS Features Using the MQC |
| Any Transport over MPLS | Any Transport over MPLS |

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 |
|---|---|
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Feature Information for QoS Policy Support on L2VPN ATM PVPs

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.

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Table 1 **Feature Information for QoS Policy Support on L2VPN ATM PVPs**

| Feature Name | Releases | Feature Information |
|--------------------------------------|--------------------------|---|
| QoS Policy Support on L2VPN ATM PVPs | Cisco IOS XE Release 2.3 | <p>This feature enables you to configure Quality of Service (QoS) service policies in ATM permanent virtual path (PVP) mode for Layer 2 Virtual Private Networks (L2VPNs).</p> <p>The following commands were introduced or modified: cbr, match atm-vci, service-policy, ubr, vbr-nrt, vbr-rt.</p> |
| Cell-Based ATM Shaping per PVP | Cisco IOS XE Release 2.3 | <p>This feature was introduced for Cisco ASR 1000 Series Aggregation Services Routers.</p> |

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