



# ATM Policing by Service Category for SVC SoftPVC

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The ATM Policing by Service Category for SVC/SoftPVC feature enables you to specify which traffic to police, based on service category, on switched virtual circuits (SVCs) or terminating virtual circuits (VCs) on the destination end of a soft VC.

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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](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

## Information About ATM Policing by Service Category

When configured, an ATM switch at the network side of a user-to-network (UNI) interface polices the flow of cells in the forward (into the network) direction of a virtual connection. These traffic policing mechanisms are known as usage parameter control (UPC). With UPC, the switch determines whether



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received cells comply with the negotiated traffic management values and takes one of the following actions on violating cells:

- Pass the cell without changing the cell loss priority (CLP) bit in the cell header.
- Tag the cell with a CLP bit value of 1.
- Drop (discard) the cell.

This feature enables you to select which traffic is affected by UPC and how it is affected. For example, you can configure your switch to pass all UBR traffic, but tag all other traffic types.

For more information about UPC, see the "Traffic and Resource Management" chapter in the *Guide to ATM Technology*.

## How to Configure ATM Policing by Service Category

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### Configuring ATM Policing by Service Category

The task in this section configures the ATM Policing by Service Category for SVC/SoftPVC feature, using the following commands beginning in global configuration mode.

#### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface atm slot / subslot / port**
4. **atm svc-upc-intent [{abr | cbr | vbr-rt | vbr-nrt | ubr}] {tag | pass | drop}**

#### DETAILED STEPS

Command or Action	Purpose
<b>Step 1 enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2 configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.

Command or Action	Purpose
<p><b>Step 3</b> <code>interface atm slot / subslot / port</code></p> <p><b>Example:</b></p> <pre>Router(config)# interface atm slot/subslot/port</pre>	<p>Selects the ATM interface.</p>
<p><b>Step 4</b> <code>atm svc-upc-intent [{abr   cbr   vbr-rt   vbr-nrt   ubr}] {tag   pass   drop}</code></p> <p><b>Example:</b></p> <pre>Router(config-if)# atm svc-upc-intent [{abr   cbr   vbr-rt   vbr-nrt   ubr}] {tag   pass   drop}</pre> <p><b>Example:</b></p> <p>(Repeat this step for each service category and UPC mode combination.)</p>	<p>Specifies the UPC mode. If no service category is specified, then the UPC mode configuration is applied to all traffic types.</p>

## Verifying ATM Policing by Service Category

### SUMMARY STEPS

1. Enter the **show atm vc** or **show atm vp** EXEC command to display the UPC mode for a particular virtual circuit or VP.
2. Enter the **show atm interface** EXEC command. If the UPC mode is not the same for all service categories, the "Svc Upc Intent" field displays "by sc."

### DETAILED STEPS

- Step 1** Enter the **show atm vc** or **show atm vp** EXEC command to display the UPC mode for a particular virtual circuit or VP.

**Example:**

```
Switch# show atm vc int atm 0/0/1 2 120
Interface:ATM0/0/1, Type:oc3suni
VPI = 2 VCI = 120
Status:DOWN
Time-since-last-status-change:1w1d
Connection-type:PVC
Cast-type:point-to-multipoint-leaf
```

```

Packet-discard-option:disabled
Usage-Parameter-Control (UPC):pass

Wrr weight:2
Number of OAM-configured connections:0
OAM-configuration:disabled
OAM-states: Not-applicable
Cross-connect-interface:ATM0/0/1, Type:oc3suni
...

```

**Step 2** Enter the **show atm interface EXEC** command. If the UPC mode is not the same for all service categories, the "Svc Upc Intent" field displays "by sc."

**Example:**

```

Switch# show atm interface atm 8/0/1
Interface:      ATM8/0/1      Port-type:      oc3suni
IF Status:     UP              Admin Status:   up
Auto-config:   enabled        AutoCfgState:  completed
IF-Side:       Network        IF-type:        NNI
Uni-type:      not applicable  Uni-version:    not applicable
Max-VPI-bits:  8              Max-VCI-bits:  14
Max-VP:        255            Max-VC:         16383
ConfMaxSvpcVpi:255          CurrMaxSvpcVpi:255
ConfMaxSvccVpi:255          CurrMaxSvccVpi:255
ConfMinSvccVci:35           CurrMinSvccVci:35
Svc Upc Intent:by sc
                Signalling:   Enabled
ATM Address for Soft VC:47.0091.8100.0000.0002.b9ae.9301.4000.0c84.0010.00
Configured virtual links:
  PVCLs SoftVCLs  SVCLs  TVCLs  PVPLs SoftVPLs  SVPLs Total-Cfgd Inst-Conns
    3      4      0      0      1      0      0      8      7
Logical ports(VP-tunnels):  0
Input cells:  3036674      Output cells:  3036816
5 minute input rate:      0 bits/sec,      0 cells/sec
5 minute output rate:     0 bits/sec,      0 cells/sec
Input AAL5 pkts:1982638, Output AAL5 pkts:1982687, AAL5 crc errors:0

```

## Troubleshooting Tips

If a VC is not configured with the appropriate UPC mode, make sure that the VC was set up after the **atm svc-upc-intent** command was configured. Changes to the UPC mode take effect after the VC is torn down and set up again.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. Router(config)# **interface atm***slot/subslot/port*
4. Router(config-if)# **atm svc-upc-intent** [{**abr** | **cbr** | **vbr-rt** | **vbr-nrt** | **ubr**}] {**tag** | **pass** | **drop**}
5. Repeat step 4 for each service category and UPC mode combination.

**DETAILED STEPS**

Command or Action	Purpose
<p><b>Step 1</b> <code>enable</code></p> <p><b>Example:</b></p> <pre>Router&gt; enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<p><b>Step 2</b> <code>configure terminal</code></p> <p><b>Example:</b></p> <pre>Router# configure terminal</pre>	<p>Enters global configuration mode.</p>
<p><b>Step 3</b> Router(config)# <code>interface atmslot/subslot/port</code></p>	<p>Selects the ATM interface.</p>
<p><b>Step 4</b> Router(config-if)# <code>atm svc-upc-intent</code> [{<code>abr</code>   <code>cbr</code>   <code>vbr-rt</code>   <code>vbr-nrt</code>   <code>ubr</code>}] {<code>tag</code>   <code>pass</code>   <code>drop</code>}</p>	<p>Specifies the UPC mode.</p> <ul style="list-style-type: none"> <li>• If no service category is specified, then the UPC mode configuration is applied to all traffic types.</li> </ul>
<p><b>Step 5</b> Repeat step 4 for each service category and UPC mode combination.</p>	<p>--</p>

# Monitoring and Maintaining ATM Policing by Service Category

The task in this section enable you to monitor and maintain the ATM Policing by Service Category for SVC/SoftPVC feature.

**SUMMARY STEPS**

1. `enable`
2. `configure terminal`
3. Router# `show atm interface`
4. Router# `show controllers atmslot/subslot/port`
5. Router# `show atm vc` [`interface atmslot/subslot/port` ]

## DETAILED STEPS

Command or Action	Purpose
<b>Step 1</b> <code>enable</code>  <b>Example:</b> Router> <code>enable</code>	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>Enter your password if prompted.</li> </ul>
<b>Step 2</b> <code>configure terminal</code>  <b>Example:</b> Router# <code>configure terminal</code>	Enters global configuration mode.
<b>Step 3</b> Router# <code>show atm interface</code>	Displays ATM-specific information about an ATM interface.
<b>Step 4</b> Router# <code>show controllers atm slot/subslot/port</code>	Displays information about a physical port device. Includes dropped (or discarded) cells.
<b>Step 5</b> Router# <code>show atm vc [interface atm slot/subslot/port ]</code>	Displays the configured UPC action and intelligent packet discard mechanisms, as well as the number of cells discarded because of UPC violations.

## Configuration Examples for ATM Policing by Service Category

- [Non-UBR Traffic Policing Example, page 6](#)
- [Monitoring and Maintaining ATM Policing by Service Category Example, page 6](#)

### Non-UBR Traffic Policing Example

In the following example, the UBR traffic on ATM 3/0/0 is passed while all other traffic is policed:

```
Router(config)# interface atm 3/0/0
Router(config-if)# atm svc-upc-intentubr pass
Router(config-if)# atm svc-upc-intentcbr tag
Router(config-if)# atm svc-upc-intentvbr-rt tag
Router(config-if)# atm svc-upc-intentvbr-nrt tag
Router(config-if)# atm svc-upc-intentabr drop
```

### Monitoring and Maintaining ATM Policing by Service Category Example

```
Switch# show atm vc interface atm 3/0/1.51 51 16

Interface: ATM3/0/1.51, Type: oc3suni
VPI = 51 VCI = 16
Status: DOWN
Time-since-last-status-change: 2w0d
```

```

Connection-type: PVC
Cast-type: point-to-point
Packet-discard-option: enabled

Usage-Parameter-Control (UPC): pass

Wrr weight: 32
Number of OAM-configured connections: 0
OAM-configuration: disabled
OAM-states: Not-applicable
Cross-connect-interface: ATM2/0/0, Type: ATM Swi/Proc
Cross-connect-VPI = 0
Cross-connect-VCI = 73
Cross-connect-UPC: pass
Cross-connect OAM-configuration: disabled
Cross-connect OAM-state: Not-applicable
Encapsulation: AAL5ILMI
Threshold Group: 6, Cells queued: 0
Rx cells: 0, Tx cells: 0
Tx Clp0:0, Tx Clp1: 0
Rx Clp0:0, Rx Clp1: 0
Rx Upc Violations:0, Rx cell drops:0

Rx pkts:0, Rx pkt drops:0
Rx connection-traffic-table-index: 6
Rx service-category: UBR (Unspecified Bit Rate)
Rx pcr-clp01: 424
Rx scr-clp01: none
Rx mcr-clp01: none
Rx      cdvt: 1024 (from default for interface)
Rx      mbs: none
Tx connection-traffic-table-index: 6
Tx service-category: UBR (Unspecified Bit Rate)
Tx pcr-clp01: 424
Tx scr-clp01: none
Tx mcr-clp01: none
Tx      cdvt: none
Tx      mbs: none
No AAL5 connection registered

```

## Additional References

The following sections provide references related to the ATM Policing by Service Category for SVC/SoftPVC feature.

### Related Documents

Related Topic	Document Title
ATM commands	<i>Cisco IOS Asynchronous Transfer Mode Command Reference</i>

### Standards

Standard	Title
None	--

**MIBs**

MIB	MIBs Link
<ul style="list-style-type: none"> <li>None.</li> </ul>	<p>To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:</p> <p><a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a></p>

**RFCs**

RFC	Title
None.	--

**Technical Assistance**

Description	Link
<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>	<p><a href="http://www.cisco.com/techsupport">http://www.cisco.com/techsupport</a></p>

## Command Reference

The following commands are introduced or modified in the feature or features documented in this module. For information about these commands, see the *Cisco IOS Asynchronous Transfer Mode Command Reference*. For information about all Cisco IOS commands, go to the Command Lookup Tool at <http://tools.cisco.com/Support/CLILookup> or to the *Cisco IOS Master Commands List*.

- atm svc-upc-intent**

## Feature Information for ATM Policing by Service Category

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 [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

**Table 1** Feature Information for ATM Policing by Service Category for SVC/SoftPVC

Feature Name	Releases	Feature Information
ATM Policing by Service Category for SVC/SoftPVC	12.2(4)B 12.2(13)T	<p>The ATM Policing by Service Category for SVC/SoftPVC feature enables you to specify which traffic to police, based on service category, on switched virtual circuits (SVCs) or terminating VCs on the destination end of a soft VC.</p> <p>In 12.2(4)B, this feature was introduced on the Cisco 6400 NSP.</p> <p>This feature was integrated into Cisco IOS release 12.2 (13) T.</p>

## Glossary

**ABR** --available bit rate. QoS class defined by the ATM Forum for ATM networks. ABR is used for connections that do not require timing relationships between source and destination. ABR provides no guarantees in terms of cell loss or delay, providing only best-effort service. Traffic sources adjust their transmission rate in response to information they receive describing the status of the network and its capability to successfully deliver data. Compare with CBR, UBR, and VBR.

**CBR** --constant bit rate. QoS class defined by the ATM Forum for ATM networks. CBR is used for connections that depend on precise clocking to ensure undistorted delivery. Compare with ABR, UBR, and VBR.

**CLP** --cell loss priority. Field in the ATM cell header that determines the probability of a cell being dropped if the network becomes congested. Cells with CLP = 0 are insured traffic, which is unlikely to be dropped. Cells with CLP = 1 are best-effort traffic, which might be dropped in congested conditions to free up resources to handle insured traffic.

**PVC** --permanent virtual circuit (or connection). Virtual circuit that is permanently established. PVCs save bandwidth associated with circuit establishment and tear down in situations where certain virtual circuits must exist all the time. In ATM terminology, called a permanent virtual connection. Compare with SVC. See also virtual circuit.

**soft PVC** --A PVC-SVC hybrid in which only the two terminating virtual connection links (VCLs) at either end are permanent and the rest of the VCLs are switched (SVC). Like the PVC, a soft PVC is permanent and the called party cannot drop the connection. Like the SVC, a soft PVC is automatically rerouted if a switch or link in the path fails.

**SVC** --switched virtual circuit. Virtual circuit that is dynamically established on demand and is torn down when transmission is complete. SVCs are used in situations where data transmission is sporadic. See also virtual circuit. Called a switched virtual connection in ATM terminology. Compare with PVC.

**tagged traffic** --ATM cells that have their CLP bit set to 1. If the network is congested, tagged traffic can be dropped to ensure the delivery of higher-priority traffic. Sometimes called DE traffic. See also CLP.

**traffic policing** --Process used to measure the actual traffic flow across a given connection and compare it to the total admissible traffic flow for that connection. Traffic outside of the agreed upon flow can be tagged (where the CLP bit is set to 1) and can be discarded en route if congestion develops. Traffic policing is used in ATM, Frame Relay, and other types of networks. Also known as admission control, permit processing, rate enforcement, and UPC. See also tagged traffic.

**UBR** --unspecified bit rate. QoS class defined by the ATM Forum for ATM networks. UBR allows any amount of data up to a specified maximum to be sent across the network but there are no guarantees in terms of cell loss rate and delay. Compare with ABR, CBR, and VBR.

**UPC** --usage parameter control. See traffic policing.

**VBR** --variable bit rate. QoS class defined by the ATM Forum for ATM networks. VBR is subdivided into a real time (RT) class and non-real time (NRT) class. VBR (RT) is used for connections in which there is a fixed timing relationship between samples. VBR (NRT) is used for connections in which there is no fixed timing relationship between samples but that still need a guaranteed QoS. Compare with ABR, CBR, and UBR.

**virtual circuit** --Logical circuit created to ensure reliable communication between two network devices. A virtual circuit is defined by a VPI/VCI pair, and can be either permanent (PVC) or switched (SVC). Virtual circuits are used in Frame Relay and X.25. In ATM, a virtual circuit is called a virtual channel. Sometimes abbreviated VC.

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