



IP to ATM Class of Service Mapping for SVC Bundles

Feature History

Release	Modification
12.2(4) T	This feature was introduced.

This feature module describes the IP to ATM Class of Service Mapping for SVC Bundles feature for Cisco IOS Release 12.2(4)T and includes the following sections:

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Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and 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 module.

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.

Feature Overview

The IP to ATM Class of Service Mapping for SVC Bundles feature supports multiple switched virtual circuits (SVCs) to the same NSAP destination for different types of service (ToS). This feature is an extension of the feature described in the "Configuring IP to ATM Class of Service" module. The original feature was limited to permanent virtual circuits (PVCs) only. This feature is an extension because it applies to SVCs.

The PVC bundle feature requires that the user configure PVCs for different IP ToS. The PVCs have to be set up throughout the ATM network between endpoints. The IP to ATM Class of Service Mapping for SVC Bundles feature needs configuration only at the endpoints. The user does not configure SVCs; the software sets up SVCs in a bundle between endpoints. When the router receives the first IP packet for the destination that is configured in the SVC bundle, that event triggers the creation of the SVC.

A default SVC is used for non-IP traffic, IP traffic with no precedence, and IP traffic with the precedence bit set but for which no SVC exists. SVC setup for the specific IP precedence traffic is triggered when the first IP packet with that precedence bit set is received.

Benefits

Multiple SVCs with Different QoS Parameters

Users can have multiple SVCs, each with different QoS parameters, between SVC endpoints. This allows the customer to easily offer differentiated services between SVC nodes.

Reduced Configuration

SVC bundle configuration requires less configuration than a PVC configuration. The PVC bundle feature needs the configuration of PVCs in bundles throughout the ATM network. However, an SVC bundle needs configuration only at the endpoints and uses the User-Network Interface (UNI) to set up SVCs in the bundle between endpoints.

Restrictions

- Both router platforms require enhanced ATM port adapters.

Related Features and Technologies

The SVC bundle feature is similar to the IP to ATM Class of Service feature, which is documented in the "Configuring IP to ATM Class of Service" module.

Related Documents

For related information on this feature, refer to the following documents:

- "Configuring IP to ATM Class of Service" module
- "IP to ATM Class of Service Overview" module

- *Cisco IOS Quality of Service Solutions Command Reference.*
- "Configuring ATM" module
- *Cisco IOS Wide-Area Networking Command Reference*

Supported Platforms

- Cisco 7200 series with enhanced ATM port adapters

Platform Support Through Feature Navigator

Cisco IOS software is packaged in feature sets that support specific platforms. To get updated information regarding platform support for this feature, access Feature Navigator. Feature Navigator dynamically updates the list of supported platforms as new platform support is added for the feature.

Feature Navigator is a web-based tool that enables you to quickly determine which Cisco IOS software images support a specific set of features and which features are supported in a specific Cisco IOS image.

To access Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions at <http://www.cisco.com/register>.

Feature Navigator is updated when major Cisco IOS software releases and technology releases occur. As of May 2001, Feature Navigator supports M, T, E, S, and ST releases. You can access Feature Navigator at the following URL:

<http://www.cisco.com/go/fn>

Supported Standards MIBs and RFCs

Standards

No new or modified standards are supported by this feature.

MIBs

No new or modified MIBs are supported by this feature.

To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB website on Cisco.com at the following URL:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

RFCs

None

Prerequisites

Before configuring the IP to ATM Class of Service for SVC Bundles feature, you should read and understand the concepts in the following modules:

- "Configuring ATM" module
- "Configuring IP to ATM Class of Service" module
- "IP to ATM Class of Service Overview" module

Configuration Tasks

The following sections describe configuration tasks for the IP to ATM Class of Service Mapping for SVC Bundles feature. Each task in the list is identified as either optional or required.

Note that the bundle members must be configured either directly, by bundle-level parameters, or by class. The bundle configuration should be the same on both ends (the end where the SVC is initiated and the end where it is terminated).

Creating an SVC Bundle

Command	Purpose
<pre>Router(config-if)# bundle svc <i>bundle-name</i> nsap <i>destination-nsap-address</i></pre>	Creates or modifies an SVC bundle. The name must be the same on both sides of the VC.

Configuring Bundle-Level Parameters

Command	Purpose
Router(config-if-atm-svc-bundle)# protocol ip <i>protocol-address broadcast</i>	Configures the destination network address of an SVC bundle.
Router(config-if-atm-svc-bundle)# encapsulation aal5 snap mux ip	Sets the encapsulation method used by the interface. By default, encapsulation aal5 snap is enabled.
Router(config-if-atm-svc-bundle)# class-bundle <i>vc-class-name</i>	(Optional) Configures a bundle with the bundle-level commands contained in the specified VC class.
Router(config-if-atm-svc-bundle)# oam-bundle manage [<i>frequency</i>]	(Optional) Enables end-to-end F5 operation, administration, and maintenance (OAM) loopback cell generation and OAM management for all VC members of a bundle or a VC class that can be applied to a VC bundle.

Attaching a Class to a Bundle

Command	Purpose
Router(config-if-atm-svc-bundle)# class-bundle <i>vc-class-name</i>	(Optional) Configures a bundle with the bundle-level commands contained in the specified VC class.

Configuring an SVC Bundle Member Directly

SUMMARY STEPS

1. Router(config-if-atm-svc-bundle)# **svc-bundle** *svc-handle*
2. Router(config-if-atm-svc-member)# **ubr** *output-pcr input-pcr*
3. Router(config-if-atm-svc-member)# **ubr+** *output-pcr output-mcr input-pcr* [*input-mcr*]
4. Router(config-if-atm-svc-member)# **vbr-rt** *peak-rate average-rate burst*
5. Router(config-if-atm-svc-member)# **precedence other** | *range*
6. Router(config-if-atm-svc-member)# **bump implicit** | **explicit** *precedence-level traffic*
7. Router(config-if-atm-svc-member)# **idle-timeout** *seconds minimum-rate*
8. Router(config-if-atm-svc-member)# **class-vc** *vc-class-name*

DETAILED STEPS

	Command or Action	Purpose
Step 1	Router(config-if-atm-svc-bundle)# svc-bundle <i>svc-handle</i>	Creates or modifies a member of an SVC bundle. Note Each SVC bundle can have a maximum of eight members. The number of members and the precedence values attached to them should be the same on both ends of the SVC (that is, where the SVC is initiated and where it is terminated).
Step 2	Router(config-if-atm-svc-member)# ubr <i>output-pcr</i> <i>input-pcr</i>	Configures the VC for unspecified bit rate (UBR) QoS and specifies the output peak cell rate (PCR) for it.
Step 3	Router(config-if-atm-svc-member)# ubr+ <i>output-pcr</i> <i>output-mcr</i> <i>input-pcr</i> [<i>input-mcr</i>]	Configures the VC for UBR QoS and specifies the output PCR and output minimum guaranteed cell rate for it.
Step 4	Router(config-if-atm-svc-member)# vbr-rt <i>peak-rate</i> <i>average-rate</i> <i>burst</i>	Configures the real-time variable bit rate (VBR).
Step 5	Router(config-if-atm-svc-member)# precedence other <i>range</i>	Configures the precedence levels for the VC.
Step 6	Router(config-if-atm-svc-member)# bump implicit explicit <i>precedence-level</i> traffic	Configures the bumping rules for the VC.
Step 7	Router(config-if-atm-svc-member)# idle-timeout <i>seconds</i> <i>minimum-rate</i>	Configure the idle timeout parameter for tearing down an ATM SVC.
Step 8	Router(config-if-atm-svc-member)# class-vc <i>vc-class-name</i>	Assigns a VC class to a VC bundle member.

Monitoring IP to ATM Class of Service Mapping for SVC Bundles

Command	Purpose
Router# debug atm bundle error	Displays debug messages for SVC bundle errors.
Router# debug atm bundle events	Displays SVC bundle events.
Router# show atm bundle svc <i>bundle-name</i>	Displays the bundle attributes assigned to each bundle VC member and the current working status of the VC members.
Router# show atm bundle svc <i>bundle-name</i> statistics	Displays the statistics of an SVC bundle.

Configuration Examples

Example IP to ATM Class of Service Mapping in Bundle Mode

In this example, the bundle parameters are configured in bundle mode. Initially, the end station ID (ESI) address and an Integrated Local Management Interface (ILMI) PVC are configured.

The PVC helps in getting the prefix from the switch (for example, an LS 1010). The combined address is the NSAP address.

You also need to know the other NSAP address to configure the SVC bundle. The eight VC classes are configured with precedences and traffic parameters. The classes must be configured before you attach them to the specific members. The **vc-class** commands could also be configured in the bundle-member configuration. The configuration of the members must be the same at both ends (that is, where the bundle is initiated and where it is terminated).

```

vc-class atm seven
  vbr-nrt 10000 5000 32
  precedence 7
!
vc-class atm six
  ubr 6000
  precedence 6
!
vc-class atm five
  ubr 5000
  precedence 5
  bump explicit 7
!
vc-class atm four
  ubr 4000
  precedence 4
!
vc-class atm three
  ubr 3000
  precedence 3
!
vc-class atm two
  ubr 2000
  precedence 2
!
vc-class atm one
  ubr 1000
  precedence 1
!
vc-class atm zero
  ubr 500
  precedence other
!
no ip address
no ip mroute-cache
no atm ilmi-keepalive
atm voice aal2 aggregate-svc upspeed-number 0
pvc qsaal 0/5 qsaal
!
pvc ilmi 0/16 ilmi
!
bundle-enable
!
interface ATM1/0.1 multipoint
ip address 170.100.9.2 255.255.255.0
atm esi-address 11111111111.11
bundle svc test nsap 47.0091810000000003E3924F01.999999999999.99

```

```

protocol ip 170.100.9.1
broadcast
oam retry 4 3 10
encapsulation aal5snap
oam-bundle manage
svc-bundle seven
  class-vc seven
svc-bundle six
  class-vc six
svc-bundle five
  class-vc five
svc-bundle four
  class-vc four
svc-bundle three
  class-vc three
svc-bundle two
  class-vc two
svc-bundle one
  class-vc one
svc-bundle zero
  class-vc zero
!
```

Example IP to ATM Class of Service Mapping Using the class-bundle Command

In this example, the bundle parameters are added to the bundle by using the **class-bundle** command. The class attached is named "sanjose".

```

vc-class atm sanjose          !Here we are attaching this vc-class to the whole bundle
  broadcast
  oam retry 4 3 10
  encapsulation aal5snap
  oam-bundle manage 3
!
vc-class atm med
 ubr 10000
  precedence 4-5
!
vc-class atm high
vbr-nrt 10000 5000 32
precedence 6-7
!
vc-class atm low
ubr+ 100000 5000
precedence 0-3
interface ATM1/0
ip address 3.3.3.1 255.255.255.0
atm idle-timeout 5
atm esi-address 665544332211.22
no atm ilmi-keepalive
atm voice aal2 aggregate-svc upspeed-number 0
pvc 0/5 qsaal
!
pvc 0/16 ilmi
!
pvc 0/100
!
bundle svc svc-test nsap 47.00918100000000003E3924F01.998877665533.88
  class-bundle bundle-test
  protocol ip 3.3.3.2
  svc-bundle high
    class-vc high
  svc-bundle med
    class-vc med
  svc-bundle low
    class-vc low
!
```