



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:

- [Feature Overview, page 1](#)
- [Supported Platforms, page 2](#)
- [Supported Standards, MIBs, and RFCs, page 3](#)
- [Prerequisites, page 3](#)
- [Configuration Tasks, page 4](#)
- [Monitoring IP to ATM Class of Service Mapping for SVC Bundles, page 5](#)
- [Configuration Examples, page 6](#)
- [Command Reference, page 9](#)

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.



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

© 2007 Cisco Systems, Inc. All rights reserved.

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, page 4](#) (required)
- [Configuring Bundle-Level Parameters, page 4](#) (optional)
- [Attaching a Class to a Bundle, page 5](#) (optional)
- [Configuring an SVC Bundle Member Directly, page 5](#) (optional)

Creating an SVC Bundle

To create an SVC bundle and enter SVC-bundle configuration mode, in which you can assign bundle-level parameters to the bundle and all of its member SVCs, use the following command in interface configuration mode:

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

Configuring Bundle-Level Parameters

Configuring bundle-level parameters is optional if a VC class is attached to the bundle to configure it. To attach a class to a bundle, see the “[Attaching a Class to a Bundle](#)” section.

To configure parameters that apply to the bundle and all of its members, use the following commands in SVC-bundle configuration mode, as needed:

Command	Purpose
Router(config-if-atm-svc-bundle)# protocol ip <i>protocol-address</i> [broadcast]	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

To attach a preconfigured VC class containing bundle-level configuration commands to a bundle, use the following command in SVC-bundle configuration mode:

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

Configuring an SVC Bundle Member Directly

Configuring SVC bundle members directly is optional if a VC class is attached to the bundle member.

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).

To configure an individual SVC bundle member directly, use the following commands, as appropriate, starting in SVC-bundle configuration mode:

	Command	Purpose
Step 1	Router(config-if-atm-svc-bundle)# svc-bundle svc-handle	Creates or modifies a member of an SVC bundle.
	Router(config-if-atm-svc-member)# ubr output-pcr [input-pcr]	Configures the VC for unspecified bit rate (UBR) QoS and specifies the output peak cell rate (PCR) for it.
	Router(config-if-atm-svc-member)# ubr+ output-pcr output-mcr [input-pcr] [input-mcr]	Configures the VC for UBR QoS and specifies the output PCR and output minimum guaranteed cell rate for it.
	Router(config-if-atm-svc-member)# vbr-rt peak-rate average-rate burst	Configures the real-time variable bit rate (VBR).
	Router(config-if-atm-svc-member)# precedence [other range]	Configures the precedence levels for the VC.
	Router(config-if-atm-svc-member)# bump {implicit explicit precedence-level traffic}	Configures the bumping rules for the VC.
	Router(config-if-atm-svc-member)# idle-timeout seconds [minimum-rate]	Configure the idle timeout parameter for tearing down an ATM SVC.
	Router(config-if-atm-svc-member)# class-vc vc-class-name	Assigns a VC class to a VC bundle member.

Monitoring IP to ATM Class of Service Mapping for SVC Bundles

Use the following commands to monitor 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.

Command	Purpose
Router# <code>show atm bundle svc bundle-name</code>	Displays the bundle attributes assigned to each bundle VC member and the current working status of the VC members.
Router# <code>show atm bundle svc bundle-name statistics</code>	Displays the statistics of an SVC bundle.

Configuration Examples

This section provides the following configuration examples:

- [IP to ATM Class of Service Mapping with Bundle Parameters Configured in Bundle Mode Example, page 6](#)
- [IP to ATM Class of Service Mapping with Bundle Parameters Configured with the class-bundle Command Example, page 7](#)

IP to ATM Class of Service Mapping with Bundle Parameters Configured in Bundle Mode Example

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 47.009181000000003E3924F01.99999999999.99
 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
!

```

IP to ATM Class of Service Mapping with Bundle Parameters Configured with the class-bundle Command Example

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
!

```

■ Configuration Examples

```
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 47.0091810000000003E3924F01.998877665533.88
  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
  !
```

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 Quality of Service Solutions Command Reference* at http://www.cisco.com/en/US/docs/ios/qos/command/reference/qos_book.html. For information about all Cisco IOS commands, use the Command Lookup Tool at <http://tools.cisco.com/Support/CLILookup> or a Cisco IOS master commands list.

- **bump**
- **bundle svc**
- **class-bundle**
- **class-vc**
- **debug atm bundle error**
- **debug atm bundle events**
- **encapsulation aal5**
- **idle-timeout**
- **oam-bundle**
- **precedence (VC bundle)**
- **protocol (ATM)**
- **show atm bundle svc**
- **show atm bundle svc statistics**
- **svc-bundle**
- **ubr**
- **ubr+**
- **vbr-rt**

CCDE, CCENT, CCSI, Cisco Eos, Cisco HealthPresence, Cisco IronPort, the Cisco logo, Cisco Nurse Connect, Cisco Pulse, Cisco SensorBase, Cisco StackPower, Cisco StadiumVision, Cisco TelePresence, Cisco Unified Computing System, Cisco WebEx, DCE, Flip Channels, Flip for Good, Flip Mino, Flipshare (Design), Flip Ultra, Flip Video, Flip Video (Design), Instant Broadband, and Welcome to the Human Network are trademarks; Changing the Way We Work, Live, Play, and Learn, Cisco Capital, Cisco Capital (Design), Cisco:Financed (Stylized), Cisco Store, Flip Gift Card, and One Million Acts of Green are service marks; and Access Registrar, Aironet, AllTouch, AsyncOS, Bringing the Meeting To You, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, CCVP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Lumin, Cisco Nexus, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Collaboration Without Limitation, Continuum, EtherFast, EtherSwitch, Event Center, Explorer, Follow Me Browsing, GainMaker, iLYNX, IOS, iPhone, IronPort, the IronPort logo, Laser Link, LightStream, Linksys, MeetingPlace, MeetingPlace Chime Sound, MGX, Networkers, Networking Academy, PCNow, PIX, PowerKEY, PowerPanels, PowerTV, PowerTV (Design), PowerVu, Prisma, ProConnect, ROSA, SenderBase, SMARTnet, Spectrum Expert, StackWise, WebEx, and the WebEx logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0910R)

Any Internet Protocol (IP) addresses used in this document are not intended to be actual addresses. Any examples, command display output, and figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses in illustrative content is unintentional and coincidental.

© 2007 Cisco Systems, Inc. All rights reserved.

