aaa authentication arap through atm sonet stm-1

aaa authentication arap

To enable an authentication, authorization, and accounting (AAA) authentication method for AppleTalk Remote Access (ARA), use the **aaa authentication arap** command in global configuration mode. To disable this authentication, use the **no** form of this command.

aaa authentication arap {**default**| *list-name*} *method1* [*method2 ...*]

no aaa authentication arap {**default**| *list-name*} *method1* [*method2 ...*]

Syntax Description

default	Uses the listed methods that follow this argument as the default list of methods when a user logs in.
list-name	Character string used to name the following list of authentication methods tried when a user logs in.
method1 [*method2...*]	At least one of the keywords described in the table below.

Command Default

If the **default** list is not set, only the local user database is checked. This has the same effect as the following command:

```
aaa authentication arap default local
```

Command Modes

Global configuration

Command History

Release	Modification
10.3	This command was introduced.
12.0(5)T	Group server and local-case support were added as method keywords for this command.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

The list names and default that you set with the **aaa authentication arap**command are used with the **arap authentication** command. Note that ARAP guest logins are disabled by default when you enable AAA. To

allow guest logins, you must use either the **guest** or **auth-guest** method listed in the table below. You can only use one of these methods; they are mutually exclusive.

Create a list by entering the **aaa authentication arap** *list-name method*command, where *list-name* is any character string used to name this list (such as *MIS-access*). The *method*argument identifies the list of methods the authentication algorithm tries in the given sequence. See the table below for descriptions of method keywords.

To create a default list that is used if no list is specified in the **arap authentication** command, use the **default** keyword followed by the methods you want to be used in default situations.

The additional methods of authentication are used only if the previous method returns an error, not if it fails.

Use the **more system:running-config**command to view currently configured lists of authentication methods.

Note In the table below, the **group radius**, **group tacacs +**, and **group***group-name* methods refer to a set of previously defined RADIUS or TACACS+ servers. Use the **radius-server host** and **tacacs+-server host** commands to configure the host servers. Use the **aaa group server radius** and **aaa group server tacacs+** commands to create a named group of servers.

Table 1: aaa authentication arap Methods

Keyword	Description
guest	Allows guest logins. This method must be the first method listed, but it can be followed by other methods if it does not succeed.
auth-guest	Allows guest logins only if the user has already logged in to EXEC. This method must be the first method listed, but can be followed by other methods if it does not succeed.
line	Uses the line password for authentication.
local	Uses the local username database for authentication.
local-case	Uses case-sensitive local username authentication.
group radius	Uses the list of all RADIUS servers for authentication.
group tacacs+	Uses the list of all TACACS+ servers for authentication.
group *group-name*	Uses a subset of RADIUS or TACACS+ servers for authentication as defined by the **aaa group server radius** or **aaa group server tacacs+** command.

Examples

The following example creates a list called *MIS-access*, which first tries TACACS+ authentication and then none:

```
aaa authentication arap MIS-access group tacacs+ none
```

The following example creates the same list, but sets it as the default list that is used for all ARA protocol authentications if no other list is specified:

```
aaa authentication arap default group tacacs+ none
```

Related Commands

Command	Description
aaa new-model	Enables the AAA access control model.

abr

To select available bit rate (ABR) quality of service (QoS) and configure the output peak cell rate and output minimum guaranteed cell rate for an ATM permanent virtual circuit (PVC) or virtual circuit (VC) class, use the **abr** command in the appropriate command mode. To remove the ABR parameters, use the **no** form of this command.

abr *output-pcr output-mcr*

no abr *output-pcr output-mcr*

Syntax Description

output-pcr	The output peak cell rate, in kilobits per second.
output-mcr	The output minimum guaranteed cell rate, in kilobits per second.

Command Default

ABR QoS at the maximum line rate of the physical interface.

Command Modes

Interface-ATM-VC configuration (for an ATM PVC) VC-class configuration (for a VC class) PVC range configuration (for an ATM PVC range) PVC-in-range configuration (for an individual PVC within a PVC range)

Command History

Release	Modification
11.1	This command was introduced.
12.1(5)T	This command was modified to be available in PVC range and PVC-in-range configuration modes.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

If the **abr**command is not explicitly configured on an ATM PVC, the VC inherits the following default configuration (listed in order of precedence):

- Configuration of any QoS command (**abr** **ubr**, **ubr+**, or **vbr-nrt**) in a VC class assigned to the PVC itself.
- Configuration of any QoS command (**abr**, **ubr**, **ubr+**, or **vbr-nrt**) in a VC class assigned to the PVC's ATM subinterface.

- Configuration of any QoS command (**abr**, **ubr**, **ubr+**, or **vbr-nrt**) in a VC class assigned to the PVC's ATM main interface.
- Global default value: ABR QoS at the maximum line rate of the PVC.

ABR is a quality of service 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.

In ABR transmission, the peak cell rate (PCR) specifies the maximum value of the allowed cell rate (ACR), and minimum cell rate (MCR) specifies the minimum value for the ACR. ACR varies between the MCR and the PCR and is dynamically controlled using congestion control mechanisms.

Examples

The following example specifies the *output-pcr* argument to be 100,000 kbps and the *output-mcr* argument to be 3000 kbps for an ATM PVC:

```
pvc 1/32
 abr 100000 3000
```

Related Commands

Command	Description
ubr	Configures UBR QoS and specifies the output peak cell rate for an ATM PVC, SVC, VC class, or VC bundle member.
ubr+	Configures UBR QoS and specifies the output peak cell rate and output minimum guaranteed cell rate for an ATM PVC, SVC, VC class or VC bundle member.
vbr-nrt	Configures the VBR-NRT QoS and specifies output peak cell rate, output sustainable cell rate, and output maximum burst cell size for an ATM PVC, SVC, or VC class.

atm

To provision an interface to function with ATM capabilities, use the atm command in controller configuration mode (config-controller). To undo the configuration use the **no** form of this command.

atm

no atm

Syntax Description

This command has no arguments or keywords.

Command Default

No default behavior or values are available.

Command Modes

Controller configuration (config-controller)

Command History

Release	Modification
Cisco IOS XE Release 3.4.0S	This command was introduced on the Cisco ASR 1000 Series Aggregation Service Routers.
Cisco IOS XE Release 3.5.0S	This command was integrated into Cisco IOS XE Release 3.5.0S to support the clear E3 ATM.

Usage Guidelines

The **atm** command was introduced in Cisco IOS XE Release 3.4.0S to support clear T3 ATM on the Cisco ASR 1000 Series Routers. The Circuit Emulation SPA for which the **atm** command is used is SPA-2CHT3-CE-ATM. In Cisco IOS XE Release 3.5.0S, clear E3 ATM has been introduced in the SPA-2CHT3-CE-ATM .

Use the following commands in the sequence described here to configure an interface as either clear T3 or E3 ATM:

1. Configure the card type using the **card type {t3 | e3}** *slot subslot* command.
2. The Shared Port Adapter (SPA) reloads after the card type is configured. Once the SPA is up, you should configure the controller type as T3 or E3 using the **controller {t3 | e3}** *slot/subslot/port* command.
3. To provision an interface to function with ATM capabilities use the **atm** command.

Examples

The following example shows how to configure an interface as clear T3 ATM:

```
Device# configure terminal
Device(config)# card type t3 0 1
Device(config)# controller t3 0/1/0
Device(config-controller)# atm
```

The following example shows how to configure an interface as clear E3 ATM:

```
Device# configure terminal
Device(config)# card type e3 0 2
Device(config)# controller e3 0/2/atm0
Device(config-controller)# atm
```

Related Commands

Command	Description
card type	Configures the card type for the SPA as either T3 or E3.
controller e3	Configures the interface on the SPA as an ET3 controller.
controller t3	Configures the interface on the SPA as a T3 controller.

atm aal aal3 4

To enable support for ATM adaptation layer 3/4 (AAL3/4) on an ATM interface, use the **atm aal aal3/4**command in interface configuration mode. To disable support for AAL3/4 on an ATM interface, use the **no** form of this command.

atm aal aal 3 4

no atm aal aal 3 4

Syntax Description

This command has no arguments or keywords.

Command Default

Support for AAL3/4 is disabled.

Command Modes

Interface configuration

Command History

Release	Modification
10.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is supported on Cisco 7500 series routers with ATM Interface Processor (AIP). This command is not supported on the ATM port adapter. Because Cisco 4500 and Cisco 4700 routers always support both AAL3/4 and AAL5, this command is not required on Cisco 4500 and Cisco 4700 routers.

Only one virtual circuit can exist on a subinterface that is being used for AAL3/4 processing, and that virtual circuit must be an AAL3/4 virtual circuit.

The AAL3/4 support feature requires static mapping of all protocols except IP.

Examples

The following example enables AAL3/4 on ATM interface 2/0:

```
interface atm2/0
 ip address 172.21.177.178 255.255.255.0
 atm aal aal3/4
```

Related Commands

Command	Description
atm mid-per-vc	Limits the number of MID numbers allowed on each VC.
atm multicast	Assigns an SMDS E.164 multicast address to the ATM subinterface that supports AAL3/4 and SMDS encapsulation.
atm smds-address	Assigns a unicast E.164 address to the ATM subinterface that supports AAL3/4 and SMDS encapsulation.
pvc	Creates or assigns a name to an ATM PVC, specifies the encapsulation type on an ATM PVC, or enters interface-ATM-VC configuration mode.

atm abr rate-factor

To configure the amount by which the cell transmission rate increases or decreases in response to flow control information from the network or destination for available bit rate (ABR) virtual circuits (VCs), use the **atm abr rate-factor**command in interface configuration mode. To return to the default, use the **no** form of this command.

atm abr rate-factor [*rate-increase-factor*] [*rate-decrease-factor*]

no atm abr rate-factor [*rate-increase-factor*] [*rate-decrease-factor*]

Syntax Description

rate-increase-factor	(Optional) Factor by which to increase the data rate. The rate increase factor is specified in powers of 2 from 1 to 32768.
rate-decrease-factor	(Optional) Factor by which to decrease the data rate. The rate decrease factor is specified in powers of 2 from 1 to 32768.

Command Default

The ABR rate increase and decrease factor is 16.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

To configure an ABR VC, use the **pvc** command with the **abr** keyword.

To verify the ABR rate factor, use the **show atm interface atm**EXEC command.

Examples

The following example sets the ABR rate factor to 32 for the next cell transferred on ATM interface 4/0:

```
interface atm 4/0
 atm abr rate-factor 32 32
```

Related Commands

Command	Description
pvc	Configures the PVC interface.
show atm interface atm	Displays ATM-specific information about an ATM interface.

atm address-registration

To enable the router to engage in address registration and callback functions with the Interim Local Management Interface (ILMI), use the **atm address-registration** command in interface configuration mode. To disable ILMI address registration functions, use the **no** form of this command.

atm address-registration

no atm address-registration

Syntax Description

This command has no arguments or keywords.

Command Default

Enabled

Command Modes

Interface configuration

Command History

Release	Modification
11.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command enables a router to register its address with the ILMI for callback when specific events occur, such as incoming Simple Network Management Protocol (SNMP) traps or incoming new network prefixes.

Examples

The following example enables ATM interface 1/0 to register its address:

```
interface atm 1/0
 atm address-registration
```

Related Commands

Command	Description
atm ilmi-keepalive	Enables ILMI keepalives.

atm arp-server

To identify an ATM Address Resolution Protocol (ARP) server for the IP network or set time-to-live (TTL) values for entries in the ATM ARP table, use the **atm arp-server** command in interface configuration mode. To remove the definition of an ATM ARP server, use the no form of this command.

atm arp-server [**self**| **nsap** *nsap-address*] [**time-out** *minutes*]

no atm arp-server [**self** [**time-out** *minutes*]| [**nsap** *nsap-address*]]

Syntax Description

self	(Optional) Specifies the current router as the ATM ARP server.
time-out *minutes*	(Optional) Number of minutes for which a destination entry listed in the ATM ARP server's ARP table will be kept before the server takes any action to verify or time out the entry. The default timeout value is 20 minutes.
nsap *nsap-address*	(Optional) Network service access point (NSAP) address of an ATM ARP server.

Command Default

The ARP server process is disabled.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

If an NSAP address is specified, the ARP client on this interface uses the specified host as an ARP server. You can specify multiple ATM ARP servers by repeating the command. If **self** is specified, this interface acts as the ARP server for the logical IP network.

The ATM ARP server takes one of the following actions if a destination listed in the server's ARP table expires:

- If a virtual circuit still exists to that destination, the server sends an Inverse ARP request. If no response arrives, the entry times out.
- If a virtual circuit does not exist to the destination, the entry times out immediately.

This implementation follows RFC 1577 , *Classical IP over ATM* .

To configure redundant ARP servers, you must first enable redundant ARP server support by entering the **atm classic-ip-extensions** command with the **BFI**keyword.

Examples

The following example configures ATM on an interface and configures the interface to function as the ATM ARP server for the IP subnetwork:

```
interface atm 0/0
 ip address 10.0.0.1.255.0.0.0
atm nsap-address ac.1533.66.020000.0000.0000.0000.0000.0000.0000.00
atm rate-queue 1 100
atm maxvc 1024
atm pvc 1 0 5 qsaal
atm arp-server self
```

Related Commands

Command	Description
atm classic-ip-extensions	Enables support for redundant ATM ARP servers on a single LIS.

atm autovc retry

To configure retry frequency of create-on-demand permanent virtual circuits (PVC), use the **atm autovc retry** command in interface configuration mode. To set the retry frequency of create-on-demand PVCs to their default value, use the **no** form of this command.

atm autovc retry *timeout-value*

no atm autovc retry *timeout-value*

Syntax Description

timeout-value	Specifies the retry timeout value, in minutes. Range is from 1 to 60.

Command Default

The retry timeout value is set to 1 minute.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
12.2(15)B	This command was introduced.
15.0(1)M	This command was integrated into Cisco IOS Release 15.0(1)M.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
Cisco IOS XE 2.5	This command was implemented on ASR 1000 series routers.

Usage Guidelines

Use this command to configure retry frequency of create-on-demand PVCs, when the initial VC creation fails due to reasons such as temporary shortage of resource.

Examples

The following example shows how to configure retry frequency of 12 minutes for create-on-demand PVCs:

```
Router> enable
Router# configure terminal
Router(config)# interface atm 2/0
Router(config-if)# atm autovc retry 12
```

Related Commands

Command	Description
create on-demand	Configures ATM PVC auto provisioning, which enables a PVC or range of PVCs to be created automatically on demand.

atm bandwidth dynamic

To enable the automatic management of changes in the total bandwidth of an Asynchronous Transfer Mode (ATM) interface configured with an Inverse Multiplexing over ATM (IMA) group, use the **atm bandwidth dynamic**command in interface configuration mode. To disable automatic management of changes in total IMA group bandwidth, use the **no** form of this command.

atm bandwidth dynamic

no atm bandwidth dynamic

Syntax Description

This command has no arguments or keywords.

Command Default

Changes in total IMA group bandwidth are not automatically managed.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
12.0(30)S1	This command was introduced.
12.0(31)S	This command was integrated into Cisco IOS Release 12.0(31)S.

Usage Guidelines

When the **atm bandwidth dynamic**command is enabled, all of the permanent virtual circuits (PVCs) configured on an IMA group interface are created again if the total available IMA group bandwidth changes.

There must be at least one active link on the IMA group interface for dynamic bandwidth changes to take effect.

Automatic bandwidth management is supported only for the following quality of service (QoS) classes:

- UBR--unspecified bit rate
- ABR--available bit rate
- VBR-NRT--variable bit rate nonreal-time

If necessary and applicable for a particular PVC based on its QoS class, new values are applied for the following parameters when PVCs are re-created:

- peak cell rate (PCR)--all supported QoS classes
- minimum cell rate (MCR)--ABR QoS
- sustainable cell rate (SCR)--VBR-NRT QoS

The algorithm used to implement automatic bandwidth management is applied only when dynamic changes to an IMA group interface occur. It is not applied at virtual circuit creation on router bootup.

Note PVCs may have incorrect QoS parameters if the **atm bandwidth dynamic** command is disabled after changing the total bandwidth, and enabled again after changing the total bandwidth once more.

Examples

The following example shows how to create IMA group 1, enable automatic bandwidth management, and assign a physical ATM interface to the IMA group:

```
interface atm3/ima 1
 atm bandwidth dynamic
!
interface atm0/1
 ima-group 1
```

Related Commands

Command	Description
ima-group	Defines physical links as IMA group members.
interface atm	Configures an ATM interface and enters interface configuration mode.
interface atm ima	Configures an IMA group.

atm classic-ip-extensions

To enable support for redundant ATM Address Resolution Protocol (ARP) servers on a single logical IP subnetwork (LIS), use the **atm classic-ip-extensions** command in interface configuration mode. To remove support for redundant ATM ARP servers, use the **no** form of this command.

atm classic-ip-extensions {**BFI**| **none**}

no atm classic-ip-extensions

Syntax Description

BFI	Enables simple redundant ARP server support. BFI as an acronym is undefined.
none	Enables standard RFC 1577 behavior (no redundant ARP server support).

Command Default

Redundant ATM ARP server support is not enabled.

Command Modes

Interface configuration

Command History

Release	Modification
11.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Cisco's implementation of the ATM ARP server supports redundant ATM ARP servers on a single logical IP subnetwork (LIS). In order for redundant ATM ARP server support to work, all of the devices on the LIS must be Cisco devices and must have the **atm classic-ip-extensions BFI** command configured.

The **none** keyword enables behavior that complies with RFC 1577, *Classical IP over ATM* . RFC 1577 does not support redundant ARP servers.

Examples

The following example shows how to configure redundant ARP servers on an ATM interface:

```
Router(config)# interface atm 1/0
Router(config-if)# atm classic-ip-extensions BFI
Router(config-if)# atm arp-server nsap 47.000580FFE1000000F21A3167.666666666666.00
```

```
Router(config-if)# atm arp-server nsap 47.000580FFE1000000F21A3167.555555555555.00
```

Related Commands

Command	Description
atm arp-server	Identifies an ATM Address Resolution Protocol (ARP) server for the IP network or sets TTL values for entries in the ATM ARP table.

atm clock internal

To cause the ATM interface to generate the transmit clock internally, use the **atm clock internal**command in interface configuration mode. To restore the default value, use the **no** form of this command.

atm clock internal

no atm clock internal

Syntax Description

This command has no arguments or keywords.

Command Default

The ATM interface uses the transmit clock signal from the remote connection (the line).

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

When the ATM interface uses the transmit clock signal from the remote connection (the line), the switch provides the clocking.

This command is meaningless on a 4B/5B physical layer interface module (PLIM).

For SONET interfaces, use the **atm clock internal** command to configure an ATM port adapter to supply its internal clock to the line.

Examples

The following example causes the ATM interface to generate the transmit clock internally:

```
interface atm 4/0
 atm clock internal
```

atm compression

To specify the software compression mode on an interface, use the **atm compression** command in interface configuration mode. To remove the compression mode setting, use the **no** form of this command.

atm compression {**per-packet**| **per-interface**| **per-vc**}

no atm compression {**per-packet**| **per-interface**| **per-vc**}

Syntax Description

per-packet	Specifies packet-by-packet compression mode (no history). This is the default.
per-interface	Specifies one context per interface (with history).
per-vc	Specifies one context for every virtual circuit (with history).

Command Default

Packet-by-packet compression mode (no history) is used.

Command Modes

Interface configuration

Command History

Release	Modification
11.3(1)MA	This command was introduced on the Cisco MC3810 multiservice concentrator.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command applies to ATM configuration on the Cisco MC3810 multiservice concentrator.

Examples

The following example configures per-packet ATM compression:

```
interface atm0
 atm compression per-packet
```

atm ds3-scramble

To enable scrambling of the ATM cell payload for the DS3 physical layer interface module (PLIM) on an ATM interface, use the **atm ds3-scramble**command in interface configuration mode. To disable scrambling of the ATM cell payload for the DS3 PLIM, use the **no** form of this command.

atm ds3-scramble

no atm ds3-scramble

Syntax Description

This command has no arguments or keywords.

Command Default

DS3 scrambling is not enabled.

Command Modes

Interface configuration

Command History

Release	Modification
11.0	This command was introduced.
11.1	Command syntax was changed from **ds3 scramble** to **atm ds3-scramble**.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

DS3 scrambling is used to assist clock recovery on the receiving end.

Examples

The following example disables DS3 scrambling on the interface:

```
interface atm 4/0
 no atm ds3-scramble
```

atm e164 auto-conversion

To enable ATM E164 autoconversion, use the **atm e164 auto-conversion** command in interface configuration mode. To disable autoconversion, use the **no** form of this command.

atm e164 auto-conversion

no atm e164 auto-conversion

Syntax Description

This command has no arguments or keywords.

Command Default

E.164 auto conversion is not enabled.

Command Modes

Interface configuration

Command History

Release	Modification
11.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

You must enable the ATM interface before using the **atm e164 auto-conversion** command.

When an interface is configured for E.164 auto conversion, ATM E.164 format addresses are converted to the corresponding native E.164 address for outgoing calls. For incoming calls, native E.164 addresses are converted to the corresponding ATM E.164 format.

Examples

The following example enables E.164 auto conversion on ATM interface 0/0/1:

```
interface atm 0/0/1
 atm e164 auto-conversion
```

atm e3-scramble

To enable scrambling of the ATM cell payload for the E3 physical layer interface module (PLIM) on an ATM interface, use the **atm e3-scramble** command in interface configuration mode. To disable scrambling of the ATM cell payload for the E3 PLIM, use the **no** form of this command.

atm e3-scramble

no atm e3-scramble

Syntax Description

This command has no arguments or keywords.

Command Default

E3 scrambling is enabled.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

E3 scrambling is used to assist clock recovery on the receiving end.

Examples

The following example disables E3 scrambling on the interface:

```
interface atm 2/0
 no atm e3-scramble
```

atm enable-ilmi-trap

To generate an Integrated Local Management Interface (ILMI) atmfVccChange trap when an ATM interface or subinterface is enabled or shut down, use the **atm enable-ilmi-trap**command in subinterface configuration mode. To disable ILMI traps, use the **no** form of this command.

atm enable-ilmi-trap

no atm enable-ilmi-trap

Syntax Description

This command has no arguments or keywords.

Command Default

An atmfVccChange trap is not generated when an ATM interface or subinterface is enabled or shut down.

Command Modes

Subinterface configuration (config-subif)

Command History

Release	Modification
12.0(28)S	This command was introduced.
12.2SB	This command was integrated into Cisco IOS Release 12.2SB.

Usage Guidelines

ILMI permanent virtual circuit (PVC) should have been created under the ATM main interface.

The **atm enable-ilmi-trap** command is supported only on Cisco 12000 routers.

Examples

The following example allows atmfVccChange traps to be generated when an ATM interface or subinterface has a status of shut or no shut:

```
atm enable-ilmi-trap
```

Related Commands

Command	Description
atm ilmi-keepalive	Enables ILMI keepalives.
pvc	Creates or assigns a name to an ATM PVC, specifies the encapsulation type on an ATM PVC, and enters ATM virtual circuit configuration mode.

atm ether-mac-address

To configure the ATM point-to-point subinterface to use a user-defined MAC address or a MAC address of any other physical interface, use the **atm ether-mac-address** command in ATM point-to point subinterface configuration mode. To disable any configured functionality, use the **no** form of this command.

atm ether-mac-address {*MAC-address*| **interface** *interface-name*}

no atm ether-mac-address

Syntax Description

MAC-address	The specific or user-defined MAC address.
interface *interface-name*	Name of the physical interface whose MAC address can be used.

Command Default

The functionality is disabled if the **atm ether-mac-address**command is not used in conjunction with the Route Bridge Encapsulation (RBE) feature.

Command Modes

ATM point-to-point subinterface configuration (config-subif)

Command History

Release	Modification
15.0(1)M2	This command was introduced.

Usage Guidelines

You can use the MAC address of any other physical interface as the MAC address of a subinterface, in conjunction with the Dynamic Host Configuration Protocol (DHCP) client. You can also configure an explicit MAC address for an ATM point-to-point subinterface.

Examples

The following example shows how the ATM point-to-point subinterface can be configured to use the MAC address of any other physical interface:

```
Router# config t
Router(config)# interface atm3/0.100 point-to-point
Router(config-subif)# atm ether-mac-address interface fastEthernet 0/0
Router(config-subif)#interface ATM3/0.100 point-to-point
Router(config-subif)# atm ether-mac-address interface FastEthernet0/0
Router(config-subif)# no atm enable-ilmi-trap
Router(config-subif)# end
```

Note For RBE, the client interface is restricted to ethernet interfaces only.

The following example shows how the ATM point-to-point subinterface can be configured with the user-defined MAC address:

```
Router(config-subif)# atm ether-mac-address 0a0a.0b0b.0c0c
Router(config-subif)# interface ATM3/0.100 point-to-point
Router(config-subif)# no atm enable-ilmi-trap
end
```

Note A valid nonzero MAC address is essential for a successful configuration.

```
Router(config-subif)# atm ether-mac-address 0000.0000.0000
% Malformed hex mac address
```

Related Commands

Command	Description
show run	Displays the configured interface name.

atm esi-address

To enter the end station ID (ESI) and selector byte fields of the ATM network service access point (NSAP) address, use the **atm esi-address**command in interface configuration mode. The NSAP address prefix is filled in via Integrated Local Management Interface (ILMI) from the ATM switch. To delete the end station address, use the **no** form of this command.

atm esi-address *esi . selector*

no atm esi-address *esi . selector*

Syntax Description

esi	End station ID field value in hexadecimal; 6 bytes long.
. *selector*	Selector field value in hexadecimal; 1 byte long. Dot is required as a separator.

Command Default

No ESI is defined.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

The **atm esi-address** command allows you to configure the ATM address by entering the ESI (12 hexadecimal characters) and the selector byte (2 hexadecimal characters). The ATM prefix (26 hexadecimal characters) will be provided by the ATM switch. To get the prefix from the ATM switch, the ILMI permanent virtual circuit (PVC) must be configured on the router and the ATM switch must be able to supply a prefix via ILMI. A period must be used to separate the *esi* from the *selector*arguments.

Note When ILMI is configured, use the **atm esi-address** command instead of the **atm nsap-address** command. The **atm esi-address**and **atm nsap-address**commandsare mutually exclusive. Configuring the router with the **atm esi-address** command negates the **atm nsap-address** setting, and vice versa.

The ILMI PVC must be configured in order to get an NSAP address prefix from the switch.

Examples

The following example sets up the ILMI PVC and assigns the ESI and selector field values on the ATM interface 4/0:

```
interface atm 4/0
 atm pvc 2 0 16 ilmi
 atm esi-address 345678901234.12
```

Related Commands

Command	Description
atm nsap-address	Sets the NSAP address for an ATM interface using SVC mode.
ilmi manage	Enables ILMI management on an ATM PVC.
pvc	Configures the PVC interface.

atm exception-queue

To set the exception queue length, use the **atm exception-queue**command in interface configuration mode. To restore the default value, use the **no** form of this command.

atm exception-queue *number*

no atm exception-queue

Syntax Description

number	Number of entries. Range is from 8 to 256. Default is 32.

Command Default

32 entries

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is supported on ATM interface processor (AIP) for Cisco 7500 series routers. This command is not supported on the ATM port adapter for Cisco 7200 and 7500 series routers, nor is it supported on Cisco 4500 and Cisco 4700 routers.

The exception queue is used for reporting ATM events, such as cycle redundancy check (CRC) errors.

Examples

The following example sets the exception queue to 50 entries:

```
atm exception-queue 50
```

atm framing (DS3)

To specify digital signal level 3 (DS3) line framing on an ATM interface, use the **atm framing** command in interface configuration mode. To return to the default C-bit with Physical Layer Convergence Protocol (PLCP) framing, use the **no** form of this command.

atm framing [**cbitadm**| **cbitplcp**| **m23adm**| **m23plcp**]

no atm framing [**cbitadm**| **cbitplcp**| **m23adm**| **m23plcp**]

Syntax Description

cbitadm	(Optional) Specifies C-bit with ATM direct mapping (ADM).
cbitplcp	(Optional) Specifies C-bit with PLCP framing.
m23adm	(Optional) Specifies M23 ATM direct mapping.
m23plcp	(Optional) Specifies M23 with PLCP framing.

Command Default

C-bit with PLCP framing is used.

Command Modes

Interface configuration

Command History

Release	Modification
11.0	This command was introduced.
11.1	This command was modified to include the Cisco 7200 series routers with the ATM-CES port adapter.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is available on Cisco 4500 and 4700 routers with DS3 access speeds, Cisco 7200 series routers, and Cisco 7500 series routers.

Framing on the interface must match that on the switch for this ATM link.

Examples

The following example specifies M23 ADM framing on a router that has been set up with DS3 access to an ATM network:

```
interface atm 4/0
 atm framing m23adm
```

atm framing (E3)

To specify E3 line framing, use the **atm framing** command in interface configuration mode. To return to the default G.751 Physical Layer Convergence Protocol (PLCP) framing, use the **no** form of this command.

atm framing [**g751adm**| **g832adm**| **g751plcp**]

no atm framing [**g751adm**| **g832adm**| **g751plcp**]

Syntax Description

g751adm	(Optional) Specifies G.751 ATM direct mapping (ADM).
g832adm	(Optional) Specifies G.832 ATM direct mapping.
g751plcp	(Optional) Specifies G.751 PLCP encapsulation.

Command Default

G.751 ATM direct mapping (ADM) is used.

Command Modes

Interface configuration

Command History

Release	Modification
11.0	This command was introduced.
11.1	The **g751plcp** keyword was added, together with information on the Cisco 7200 series router with the ATM-CES port adapter.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

The default framing is described in the ITU-T Recommendation G.751.

Framing on the interface must match that on the switch for this ATM link.

Examples

The following example specifies G.832 ADM framing on a router that has been set up with E3 access to an ATM network:

```
interface atm 4/0
 atm framing g832adm
```

atm ilmi-keepalive

To enable Interim Local Management Interface (ILMI) keepalives, use the **atm ilmi-keepalive** command in interface configuration mode. To disable ILMI keepalives, use the **no** form of this command.

atm ilmi-keepalive [*seconds*]

no atm ilmi-keepalive [*seconds*]

Syntax Description

seconds	(Optional) Number of seconds between keepalives. Values less than 3 seconds are rounded up to 3 seconds, and there is no upper limit.

Command Default

3 seconds

Command Modes

Interface configuration

Command History

Release	Modification
11.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following example enables ILMI keepalives for the ATM interface 1/0:

```
interface atm 1/0
 atm address-registration
 atm ilmi-keepalive
```

Related Commands

Command	Description
atm address-registration	Enables the router to engage in address registration and callback functions with the ILMI.

atm ilmi-pvc-discovery

To enable ATM permanent virtual circuit (PVC) discovery, use the **atm ilmi-pvc-discovery**command in interface configuration mode. To disable PVC discovery, use the **no**form of this command.

atm ilmi-pvc-discovery [subinterface]

no atm ilmi-pvc-discovery [subinterface]

Syntax Description

subinterface	(Optional) Causes discovered PVCs to be assigned to the ATM subinterface whose number matches the discovered PVC's VPI number.

Command Default

PVC discovery is not enabled.

Command Modes

Interface configuration

Command History

Release	Modification
11.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following example enables PVC discovery on the ATM main interface 2/0. The **subinterface** keyword is used so that all discovered PVCs with a VPI value of 1 will be assigned to the subinterface 2/0.1:

```
interface atm 2/0
 pvc RouterA 0/16 ilmi
 exit
 atm ilmi-pvc-discovery subinterface
 exit
interface atm 2/0.1 multipoint
 ip address 172.21.51.5 255.255.255.0
```

atm lbo

To specify the cable length (line build-out) for the ATM interface, use the **atm lbo** command in interface configuration mode. To return to the default, use the **no** form of this command.

atm lbo {**long**| **short**}

no atm lbo

Syntax Description

long	Specifies a cable length greater than 50 feet.
short	Specifies a cable length up to 50 feet.

Command Default

A cable length greater than 50 feet is specified.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following example specifies that the ATM interface uses a cable of up to 50 feet in length:

```
interface atm 4/0
 atm lbo short
```

Related Commands

Command	Description
ces	Configures cable length for the CBR interface.

atm max-channels

To configure the number of transmit channels for the interface, use the **atm max-channels** command in interface configuration mode. To return to the default, use the **no** form of this command.

atm max-channels *number*

no atm max-channels

Syntax Description

number	Maximum number of transmit channels for the interface. The range is from 64 to 2048 channels. The default is 64 channels.

Command Default

64 channels

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

The **atm max-channels** command replaces the **atm tx-channels** command.

Transmit Descriptors

The **atm max-channels**command can be used to divide the available number (fixed) of transmit descriptors across the configured number of transmit channels. Typically, you think of a one-to-one association between a transmit channel and a VC; however, the ATM-CES port adapter supports other types of VCs than data VCs (for example CES VCs). Also, the ATM-CES port adapter can multiplex one or more VCs over a single virtual path (VP) that is shaped, and the VP only requires a single transmit channel. Therefore, the term *transmit channel* is used rather than *virtual circuit* .

Maximum Burst

The maximum burst of packets that are allowed per VC is limited by the number of transmit descriptors allocated per VC. Because the total number of transmit descriptors available is limited by the available SRAM space, configuration of the number of transmit channels for the interface determines the number of transmit descriptors for each transmit channel. Hence the burst size for each transmit channel is determined by the **atm**

max-channels command. For example, for 64 (the default) transmit channels for the interface, 255 transmit descriptors are associated per channel, and for 512 transmit channels for the interface, 31 transmit descriptors are associated per channel.

To display information about the transmit descriptors, use the **show atm interface atm** command.

Examples

The following example sets the number of transmit descriptors for the interface to 120.

```
interface atm 2/0
 atm max-channels 120
```

Related Commands

Command	Description
show atm interface atm	Displays ATM-specific information about an ATM interface.

atm maxvc

To set the ceiling value of the virtual circuit descriptor (VCD) on the ATM interface, use the **atm maxvc**command in interface configuration mode. To restore the default value, use the **no** form of this command.

atm maxvc *number*

no atm maxvc

Syntax Description

number	Maximum number of supported virtual circuits. Valid values are 256, 512, 1024, and 2048.

Command Default

2048 virtual circuits

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is supported on Cisco 7500 series routers; it is not supported on the Cisco 4500 and Cisco 4700 routers, which have a fixed maximum of 1024 VCs.

This command sets the maximum value supported for the *vcd* argument in the **atm pvc** command. It also determines the maximum number of virtual circuits on which the AIP allows segmentation and reassembly (SAR) to occur. However, if you set a **maxvc** limit and then enter the **atm pvc** command with a larger value for the *vcd*argument, the software does not generate an error message.

This command does not affect the virtual path identifier (VPI)-virtual channel identifier (VCI) pair of each virtual circuit.

Examples

The following example sets a ceiling VCD value of 1024 and restricts the AIP to supporting no more than 1024 virtual circuits:

```
atm maxvc 1024
```

Related Commands

Command	Description
pvc	Configures an ATM PVC.

atm mid-per-vc

To limit the number of message identifier (MID) numbers allowed on each virtual circuit, use the **atm mid-per-vc** command in interface configuration mode.

atm mid-per-vc *maximum*

Syntax Description

maximum	Number of MIDs allowed per virtual circuit on this interface. The values allowed are 16, 32, 64, 128, 256, 512, and 1024.

Command Default

16 MIDs per virtual circuit.

Command Modes

Interface configuration

Command History

Release	Modification
10.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is supported on Cisco 7200 and 7500 series routers.

MID numbers are used by receiving devices to reassemble cells from multiple sources into packets.

This command limits the number of discrete messages allowed on the PVC at the same time. It does not limit the number of cells associated with each message.

The *maximum* set by the **atm mid-per-vc** command overrides the range between the *midhigh* and *midlow* values set by the **atm pvc** command. If you set a *maximum* of 16 but a *midlow* of 0 and a *midhigh* of 255, only 16 MIDs (not 256) are allowed on the virtual circuit.

Examples

The following example allows 64 MIDs per ATM virtual circuit:

```
atm mid-per-vc 64
```

Related Commands

Command	Description
pvc	Configures the PVC interface.

atm multicast

To assign a Switched Multimegabit Data Service (SMDS) E.164 multicast address to the ATM subinterface that supports ATM adaptation layer 3/4 (AAL3/4) and SMDS encapsulation, use the **atm multicast** command in interface configuration mode.

atm multicast *address*

Syntax Description

address	Multicast E.164 address assigned to the subinterface.

Command Default

No multicast E.164 address is defined.

Command Modes

Interface configuration

Command History

Release	Modification
10.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is supported on Cisco 7500 series, Cisco 4500, and Cisco 4700 routers. This command is not supported on the ATM port adapter.

Each AAL3/4 subinterface is allowed only one multicast E.164 address. This multicast address is used for all protocol broadcast operations.

Examples

The following example assigns a multicast E.164 address to the ATM subinterface that is being configured:

```
atm multicast e180.0999.000
```

Related Commands

Command	Description
abr	Selects ABR QoS and configures output peak cell rate and output minimum guaranteed cell rate for an ATM PVC or VC class.

Command	Description
atm smds-address	Assigns a unicast E.164 address to the ATM subinterface that supports AAL3/4 and SMDS encapsulation.
pvc	Configures the PVC interface.

atm multipoint-interval

To specify how often new destinations can be added to multipoint calls to an ATM switch in the network, use the **atm multipoint-interval**command in interface configuration mode. To return to the default interval, use the **no** form of this command.

atm multipoint-interval *interval*

no atm multipoint-interval *interval*

Syntax Description

interval	Interval length, in seconds. Range is from 0 to 4294967. Default is 30.

Command Default

30 seconds

Command Modes

Interface configuration

Command History

Release	Modification
11.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command applies to switched virtual circuits (SVCs) only, not to permanent virtual circuits (PVCs).

This command has no effect unless ATM multipoint signaling is enabled on the interface.

Examples

The following example enables point-to-multipoint signaling on the ATM interface 2/0. It also specifies that new destinations can be added to multipoint calls every 60 seconds:

```
interface atm 2/0
 atm multipoint-signalling
 atm multipoint-interval 60
```

Related Commands

Command	Description
atm multipoint-signalling	Enables point-to-multipoint signaling to the ATM switch.

atm multipoint-signalling

To enable point-to-multipoint signaling to the ATM switch, use the **atm multipoint-signalling** command in interface configuration mode. To disable point-to-multipoint signalling to the ATM switch, use the **no** form of this command.

atm multipoint-signalling

no atm multipoint-signalling

Syntax Description

This command has no arguments or keywords.

Command Default

Point-to-multipoint signaling is not enabled.

Command Modes

Interface configuration

Command History

Release	Modification
11.0	This command was introduced.
11.1	Functionality was changed to allow this command on all subinterfaces, not just the main interface.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

If multipoint signaling is enabled, the router uses existing static map entries that have the **broadcast** keyword set to establish multipoint calls. One call is established for each logical subnet of each protocol.

All destinations are added to the call. One multicast packet is sent to the ATM switch for each multipoint call. The ATM switch replicates the packet to all destinations.

The **atm multipoint-interval** command determines how often new destinations can be added to a multipoint call.

Note Prior to Cisco IOS Release 11.1, when this command was used on the main interface, it also affected all subinterfaces. For Release 11.1 and later, explicit configuration on each subinterface is required to obtain the same functionality.

Examples

The following example enables point-to-multipoint signalling on the ATM interface 2/0:

```
interface atm 2/0
 atm multipoint-signalling
```

Related Commands

Command	Description
atm multipoint-interval	Specifies how often new destinations can be added to multipoint calls to an ATM switch in the network.

atm nsap-address

To set the network service access point (NSAP) address for an ATM interface using switched virtual circuit (SVC) mode, use the **atm nsap-address**command in interface configuration mode. To remove any configured address for the interface, use the **no**form of this command.

atm nsap-address *nsap-address*

no atm nsap-address

Syntax Description

nsap-address	The 40-digit hexadecimal NSAP address of this interface (the source address).

Command Default

No NSAP address is defined for this interface.

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

When configuring an SVC, you must use the **atm nsap-address** command to define the source NSAP address. It identifies a particular port on the ATM network and must be unique across the network.

Note When the Integrated Local Management Interface (ILMI) is configured, use the **atm esi-address** command instead of the **atm nsap-address** command. The **atm esi-address**and **atm nsap-address**commandsare mutually exclusive. Configuring the router with the **atm esi-address** command negates the **atm nsap-address** setting, and vice versa.

Configuring a new address on the interface overwrites the previous address. The router considers the address as a string of bytes and will not prefix or suffix the address with any other strings or digits. The complete NSAP address must be specified, because this value is used in the Calling Party Address Information Element in the SETUP message to establish a virtual circuit.

ATM NSAP addresses have a fixed length of 40 hexadecimal digits. You must configure the complete address in the following dotted format:

```
xx.xxxx.xx.xxxxxx.xxxx.xxxx.xxxx.xxxx.xxxx.xxxx.xx
```

Note All ATM NSAP addresses should be entered in the dotted hexadecimal format shown above, which conforms to the User-Network Interface (UNI) specification.The dotted method provides some validation that the address is a legal value. If you know your address format is correct, the dots may be omitted.

Examples

In the following example, the source NSAP address for the interface is AB.CDEF.01.234567.890A.BCDE.F012.3456.7890.1234.12:

```
atm nsap-address AB.CDEF.01.234567.890A.BCDE.F012.3456.7890.1234.12
```

atm oam ais alarm

To enable the generation of Operation, Administration, and Maintenance (OAM) Alarm Indication Signal (AIS) alarms, use the **atm oam ais alarm**command in interface configuration mode. To disable the generation of OAM AIS alarms, use the **no** form of this command.

atm oam ais alarm

no atm oam ais alarm

Syntax Description

This command has no arguments or keywords.

Command Default

OAM AIS alarms are generated.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
12.0(32)SY4	This command was introduced.

Usage Guidelines

Use the **show interfaces atm**command to determine whether generation of OAM AIS alarms is enabled.

Examples

The following example shows how to enable the generation of OAM AIS alarms:

```
Router> enable
Password:
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# interface atm 0/0
 Router(config-if)# atm oam ais alarm
 Router(config-if)# end
```

Related Commands

Command	Description
show interfaces atm	Displays information about ATM interfaces.

atm oam flush

To drop all current and future Operation, Administration, and Maintenance (OAM) cells received on an ATM interface, use the **atm oam flush**command in interface configuration mode. To receive OAM cells on an ATM interface, use the **no** form of this command.

atm oam flush

no atm oam flush

Syntax Description

This command has no arguments or keywords.

Command Default

Dropping of OAM cells is disabled.

Command Modes

Interface configuration

Command History

Release	Modification
11.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following example drops all current and future OAM cells received on the ATM main interface with slot 0 and port 0:

```
interface atm 0/0
 atm oam flush
```

atm oversubscribe

To enable infinite bandwidth oversubscription for service categories other than constant bit rate (CBR), use the **atm oversubscribe**command in interface configuration mode. To disable bandwidth oversubscription for service categories other than CBR, use the **no** form of this command.

atm oversubscribe

no atm oversubscribe

Syntax Description

This command has no arguments or keywords.

Command Default

Infinite bandwidth oversubscription is enabled

Command Modes

Interface configuration

Command History

Release	Modification
12.0(3)T	This command was introduced.
12.2(16)BX3	This command was integrated into Cisco IOS Release 12.2(16)BX3.
12.3(7)XI1	This command was integrated into Cisco IOS Release 12.3(7)XI1.
12.4(6)T	Support for this command was added to DSL ATM interfaces.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command disables bandwidth management for service categories other than CBR.

When infinite bandwidth oversubscription is enabled, the interface allows as much bandwidth as possible with no upper limits (except on digital subscriber line (DSL) ATM interfaces, in which oversubscription is a not infinite, but is a factor of 2). The system determines if the ATM link is already oversubscribed. If so, the command is rejected. Otherwise, the total bandwidth available on the link is recorded, and all future connection setup requests are monitored to ensure that the link is not oversubscribed.

The bandwidth allocated for each service category appears in the output of the **show atm interface atm** command.

The ATM bandwidth manager tracks the bandwidth used by virtual circuits (VCs) on a per-interface basis. Because many services require guaranteed bandwidth (for example, for variable bit rate-real time (VBR-RT), available bit rate (ABR), and CBR), bandwidth management is required. The purpose of the bandwidth manager is to reserve resources for connections that require guaranteed services. Bandwidth management for CBR is turned on automatically for all interfaces supporting CBR. Bandwidth management for other service categories must be turned on by the user. All service categories outside CBR are monitored only if specifically requested.

Note Because unspecified bit rate (UBR) does not provide guaranteed bandwidth, the bandwidth specified for a UBR connection is not used in any calculations.

Bandwidth checking for a permanent virtual circuit (PVC) is done when that PVC is configured. Bandwidth checking for a switched virtual circuit (SVC) is done when a signaling call is placed or received.

When you use the atm pvp command, the system checks if the specified bandwidth is available on the interface. If the bandwidth available is greater than or equal to the peak rate specified for the Permanent Virtual Path (PVP), the command is accepted; otherwise, the command is rejected.

Within the VC mode, the available bandwidth check will determine whether the bandwidth is already used by the VC to fulfill the request. If the VC being configured is a PVC and belongs to a PVP, the bandwidth available on the PVP is used for the check; otherwise, the bandwidth available on the interface is used for the check.

When services within a VC class are being configured, the check determines whether the new bandwidth requirement can be fulfilled for all VCs using the class (on a per-interface basis) by comparing it with the bandwidth available on the corresponding interface.

Bandwidth checking for an SVC occurs before a SETUP message is sent for an outbound call. If the bandwidth check fails, the SETUP message is not sent. If the bandwidth check passes, the traffic class from which the service category is inherited is updated with the requirements for the new SVC.

When an SVC setup is requested for remotely initiated calls, a bandwidth check occurs as soon as the SETUP message is received. This bandwidth check has two components:

- Match the bandwidth requested by the remote end with the bandwidth configured locally.
- Check if bandwidth configured locally can be satisfied currently.

If the bandwidth check fails, a RELEASE message is sent out, and the call is rejected. If the bandwidth check passes, resources are reserved for the VC, and the call is accepted.

Cisco 10000 Series Router

Oversubscription of the ATM interfaces is off by default. Oversubscription of the tunnels (the number and bandwidth of VCs that can be in a tunnel) is on by default and is not subject to any oversubscription factor. Oversubscription of the tunnels cannot be adjusted or turned off. On the Cisco 10000 Series router, to enable the oversubscription feature for a particular interface or tunnel, use the atm over-subscription-factor command (but not the atm oversubscribe command, which can cause undesirable results). To prevent oversubscription of the interface, use the no atm oversubscribe command.

With variable bit rate-nonreal time (VBR-NRT) oversubscription, because of congestion on the physical interface, the accuracy of priority queueing (PQ) and class-based weighted fair queueing (CBWFQ) on individual VCs degrades. For example, if you configure each of three queues at a distribution of 50, 30, and 20 percent, respectively, the actual distribution might be 45, 40, and 15 percent, respectively. The distribution of bandwidth for each VC might be less than expected based on the speed of the VC. Typically, low-speed VCs are allocated the expected bandwidth, and high-speed VCs share the remaining bandwidth equally. The amount of bandwidth allocated for the PQ or latency might be less than expected.

Examples

The following example enables the oversubscription feature:

```
Router(config)# interface atm 4/0/0
Router(config-if)# atm oversubscribe
Router(config-if)# exit
```

The following example displays the available bandwidth in kbps after the router enters VC mode. In this example, the available bandwidth is 139,000 kbps:

```
Router#
show atm interface atm 2/0
 Interface ATM2/0:
 AAL enabled: AAL5, Maximum VCs:1024, Current VCCs:5
 Maximum Transmit Channels:64
 Max. Datagram Size:4496
 PLIM Type:SONET - 155Mbps, TX clocking:LINE
 Cell-payload scrambling:OFF
 sts-stream scrambling:ON
 877 input, 120843834 output, 0 IN fast, 20 OUT fast
 ABR parameters, rif:16 rdf:16, 0 out drop
 Bandwidth distribution :CBR :16000  Avail bw = 139000
 Config. is ACTIVE
```

Examples

The following example enables the oversubscription feature (using the atm over-subscription-factor command rather than the atm oversubscribe command) and configures the interface with an oversubscription factor of 50:

```
Router(config)# interface atm 4/0/0
Router(config-if)# atm over-subscription-factor 50
Router(config-if)# exit
```

The following example disables oversubscription of the ATM 4/0/0 interface. The previously configured factor 50 is configured on the interface, but the router does not allow the oversubscription:

```
Router(config)# interface atm 4/0/0
Router(config-if)# no atm oversubscribe
Router(config-if)# exit
```

Related Commands

Command	Description
atm oversubscribe factor	Enables finite line bandwidth oversubscription for DSL.
atm over-subscription-factor	Oversubscribes ATM VCs.
atm pvp	Creates a PVP used to multiplex (or bundle) one or more VCs.
show atm interface atm	Displays ATM-specific information about an ATM interface.
show controllers	Displays the total subscribed rate of all VCs on the port.

Command	Description
show running-config	Displays the contents of the running configuration file.
ubr+	Configures unspecified bit rate plus for an ATM PVC.
vbr-nrt	Configures variable bit rate-nonreal-time for an ATM PVC.
vbr-rt	Configures variable bit rate real-time for VoATM voice connections.

atm oversubscribe factor

To set up finite line bandwidth oversubscription for digital subscriber line (DSL), use the **atm oversubscribe factor** command in interface configuration mode. To disable finite line bandwidth oversubscription for DSL, use the **no** form of this command.

atm oversubscribe factor *factor*

no atm oversubscribe factor *factor*

Syntax Description

factor	Oversubscription factor in the range from 2 to 14000000000.

Command Default

Finite line bandwidth oversubscription for DSL is disabled.

Command Modes

Interface configuration

Command History

Release	Modification
12.4(2)XA	This command was introduced.
12.4(6)T	This command was integrated into Cisco IOS Release 12.4(6)T.

Usage Guidelines

Resource limitations on Cisco xDSL interfaces require a way to configure bandwidth oversubscription up to a defined bandwidth (a *finite* oversubscription of bandwidth). For this requirement, the **atm oversubscribe factor**command is used. A DSL ATM interface supports only an oversubscribe factor of 2.

Oversubscription is allowed on variable bit rate real time class (VBR-rt), variable bit rate non-real time class (VBR-nrt), and unspecified bit rate plus (UBR+) permanent virtual circuits (PVCs). With oversubscription enabled, multiple VBR-rt, VBR-nrt, and UBR+ PVCs can be configured even when the sum of their sustainable cell rates (SCRs) exceeds the actual bandwidth available over the physical line. For example, if oversubscription is enabled and an oversubscription factor of 2 is set for a line rate of 2304 kbps, the sum of SCRs and minimum desired cell rates of VBR-rt, VBR-nrt, and UBR+ PVCs must be less than or equal to 4608 kbps, excluding the constant bit rate (CBR) PVC bandwidth.

An oversubscription factor of 2 is used internally; that is, VBR and UBR+ PVCs with a sum of SCRs up to twice the current line rate are valid. If you configure VBR-rt, VBR-nrt, or UBR+ for more than the configured oversubscription factor, the PVCs will be configured when bandwidth is available. But when no oversubscription bandwidth is available, a PVC is downgraded to an unspecified bit rate (UBR) (CBR PVCs are not affected, however); in this state, if you try to configure VBR or UBR+ PVCs beyond the line rate, the new PVCs will be downgraded to UBR state. If you have no oversubscription configured, each virtual circuit (VC) receives up to its configured SCR value of traffic, and VCs with higher SCR values receive more bandwidth. For example, if VC1 is a VBR-rt PVC configured with peak cell rate (PCR) and SCR line rates of 2304 kbps

(command **vbr-rt 2304 2304**), VC2 is a VBR-nrt PVC configured with PCR and SCR line rates of 2000 kbps (command **vbr-nrt 2000 2000**), and VC3 has PCR and SCR line rates of 496 kbps (command **vbr-rt 496 496**), then when no oversubscription bandwidth is available, VC1 and VC 2 are configured with the specified PCR and SCR line rates, but VC3 is downgraded to UBR class.

If the DSL line rate goes down and comes back up with less than the trained rate (based on the trained bandwidth PVCs) and no bandwidth is left, some PVCs might be downgraded to UBR class.

The value of the oversubscription factor determines the maximum bandwidth that is configured, which is the sum of SCRs for all VBR-rt, VBR-nrt, and UBR+. PVCs. To disable oversubscription, the total configured bandwidth of CBR, VBR-rt, VBR-nrt, and UBR+ must not exceed actual trained bandwidth. The CBR bandwidth is counted when disabling oversubscription.

With oversubscription disabled, a PVC can be configured only up to the line rate. For example, if the line rate is 2304 kbps, the SCR or PCR of a VBR PVC cannot be more than 2304 kbps (assuming there are no other PVCs). If there is another PVC, such as a CBR PVC with a PCR of 500 kbps, that line rate is subtracted, and the maximum SCR or PCR allowed on the VBR PVC is 1804 kbps.

The first time VBR-rt, VBR-nrt, or UBR+ PVCs are configured with the oversubscription factor enabled, the available bandwidth is checked. If the required bandwidth is available, the service class commands (**vbr-rt**, **vbr-nrt**, and **ubr+**) are accepted. If there is not enough requested bandwidth, the service class commands are rejected, and the PVC state will be UP with service class set to UBR.

After VBR-rt, VBR-nrt, or UBR+ PVCs are configured, a dynamic line rate modification occurs when the **atm oversubscribe factor**command is enabled. The available bandwidth is checked, and if the required amount is available, the PVC state will be UP with the configured service class. If there is not enough bandwidth, the PVC state will be UP with service class UBR.

DSL ATM interfaces do not support switched virtual circuits (SVCs).

Examples

The following example shows how to set oversubscription on the link by a factor of 2.

```
interface ATM0/0
 no ip address
 atm oversubscribe factor 2
 no atm ilmi-keepalive
 pvc 2/100
  vbr-nrt 2304 2304 1
 !
 pvc 3/100
  cbr 2304
 !
 pvc 4/100
  ubr+ 2304 2304
 !
 pvc 5/100
 !
```

The oversubscription configuration can be verified by using the **show atm interface** EXEC command. The report from the command indicates that the link is oversubscribed by 4608 kbps.

```
Router# show atm interface atm 0/0
Interface ATM0/0:
AAL enabled:  AAL5  , Maximum VCs: 23, Current VCCs: 4
VCIs per VPI: 256,
Max. Datagram Size: 4528
PLIM Type: GSHDSL - 2304Kbps, Framing is Unknown,, TX clocking: LINE
0 input, 0 output, 0 IN fast, 0 OUT fastCBR : 2304 UBR+ : 2304 VBR-NRT : 2304
Link oversubscribed by 4608 kbps
Config. is ACTIVE
```

Related Commands

Command	Description
atm oversubscribe	Disables bandwidth management for service categories other than CBR.
show atm interface atm	Displays ATM-specific information about an ATM interface.
ubr+	Configures unspecified bit rate plus for an ATM PVC.
vbr-nrt	Configures variable bit rate-nonreal time for an ATM PVC.
vbr-rt	Configures variable bit rate real-time for VoATM voice connections.

atm over-subscription-factor

To oversubscribe ATM virtual circuits (VCs), use the atm over-subscription-factor command in interface configuration mode. To disable oversubscription of ATM VCs, use the no form of this command.

atm over-subscription-factor value

no atm over-subscription-factor

Syntax Description

value	Oversubscription factor. The range is from 1 to 500.

Command Default

The default factor is 1 (no oversubscription).

Command Modes

Interface configuration

Command History

Release	Modification
12.2(16)BX	This command was introduced. on the Cisco 10000 series Performance Routing Engine (PRE-2).
12.3(7)XI3	This command was integrated into Cisco IOS Release 12.3(7)XI3, and the maximum oversubscription factor was increased from 50 to 500.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB.

Usage Guidelines

Restrictions and Limitations for Interface Oversubscription

Because of a mismatch of rates between the packet scheduler and the network, interface oversubscription can degrade system performance during congestion.

With oversubscription, network congestion can occur if all of the network capacity is used concurrently. However, the risk is low if you avoid oversubscribing a network that is likely to congest and if you do not oversubscribe a service excessively.

The router uses the atm over-subscription-factor command in conjunction with the atm oversubscribe command to enable or disable oversubscription for a particular interface. When enabling ATM oversubscription for a particular interface, specify the atm over-subscription-factor command. Do not use the atm oversubscribe command to enable oversubscription, because this can cause undesirable results.

An ATM variable bit rate (VBR) VC uses the sustained cell rate (SCR) to define the VC's average transmission rate. Therefore, use the atm over-subscription-factor command, but not the service-policy command, to specify the ATM VC oversubscription.

Because the oversubscription of VBR-nrt VCs requires resources from the entire line card, apply the atm over-subscription-factor command on all ports of the ATM interface (for example, the 4-port OC-3 ATM line

card). If you enable oversubscription on only one port, the other ports might use more resources than they were configured to use. As a result, some ports might not receive adequate resources, which would cause VC creation failures.

Examples

The following example shows how to configure an ATM interface with an oversubscription factor of 500:

```
Router(config)# interface atm 4/0/0
Router(config-if)# atm oversubscribe
Router(config-if)# atm over-subscription-factor 500
```

The following example shows how to disable oversubscription of the ATM 4/0/0 interface to prevent oversubscription of the interface:

```
Router(config)# interface atm 4/0/0
Router(config-if)# no atm oversubscribe
```

Related Commands

Command	Description
atm oversubscribe	Disables bandwidth management for service categories other than CBR.
service-policy	Attaches a policy map to an input interface or virtual circuit (VC), or an output interface or VC, to be used as the service policy for that interface or VC
show atm interface atm	Displays ATM interface information.

atm pppatm passive

To place an ATM subinterface in passive mode, use the **atm pppatm passive** command in ATM subinterface configuration mode. To change the configuration back to the default (active) mode, use the **no** form of this command.

atm pppatm passive

no atm pppatm passive

Syntax Description

This command has no arguments or keywords.

Command Default

Active mode

Command Modes

ATM subinterface configuration

Command History

Release	Modification
12.2(13)T	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.

Usage Guidelines

The **atm pppatm passive**command places PPP over ATM (PPPoA) sessions on an ATM subinterface in "listening" mode. Rather than trying to establish the sessions actively by sending out Link Control Protocol (LCP) packets, these sessions listen to the incoming LCP packets and become active only after they have received their first LCP packet. This feature is useful for L2TP access concentrators (LACs) in the broadband access deployments where thousands of PPPoA sessions are configured on LACs. When PPPoA is in the passive mode, the LAC brings up the sessions only when the subscribers become active and not use its processing power on polling all sessions.

For better scalability and faster convergence of PPP sessions, you should set the PPPoA sessions to passive mode at the LAC.

Cisco 10000 Series Router

For better scalability and faster convergence of PPPoA, PPP over Ethernet over ATM (PPPoEoA), or LAC sessions, set the sessions to passive mode.

You must use the atm pppatm passive command for large-scale PPP terminated aggregation (PPPoA and PPPoEoA) and Layer 2 Tunnel Protocol (L2TP) access concentrator (LAC). Instead of sending out LCP packets to establish the sessions actively, the sessions listen to the incoming LCP packets and become active only after they receive their first LCP packet. When PPPoX is in the passive mode, the LAC brings up the sessions only when the subscribers become active and does not use processing power polling all sessions.

Examples The following example configures the passive mode for the PPPoA sessions on an ATM subinterface:

```
Router(config)# interface atm 1/0.1 multipoint
Router(config-subif)# atm pppatm passive
Router(config-subif)# range range-pppoa-1 pvc 100 199
Router(config-subif-atm-range)# protocol ppp virtual-template 1
```

Examples The following example configures passive mode for the PPPoA sessions on an ATM multipoint subinterface:

```
Router(config)# interface atm 1/0.1 multipoint
Router(config-subif)# atm pppatm passive
Router(config-subif)# range range-pppoa-1 pvc 100 199
Router(config-subif-atm-range)# encapsulation aal5mux ppp virtual-template 1
```

atm pvp

To create a permanent virtual path (PVP) used to multiplex (or bundle) one or more virtual circuits (VCs), use the **atm pvp**command in interface configuration mode. To remove a PVP, use the **no** form of this command.

atm pvp *vpi* [*peak-rate*] **[l2transport]**

no atm pvp *vpi*

Cisco 10000 Series Router

atm pvp *vpi* [*peak-rate*] [**cdvt [no-f4-oam]| no-f4-oam**]

no atm pvp *vpi*

Syntax Description

vpi	ATM network virtual path identifier (VPI) of the VC to multiplex on the permanent virtual path. The range is 0 to 255. The VPI is an 8-bit field in the header of the ATM cell. Because it has local significance only, the VPI value is unique only on a single link, not throughout the ATM network. The VPI value must match that of the switch. The number specified for the *vpi* argument must not already exist in a VC. If the number specified for the *vpi* is already used by an existing VC, this command is rejected.
peak-rate	(Optional) Maximum rate in kbps at which the PVP can transmit data. The range is 84 kbps to line rate. The default is the line rate.
l2transport	(Optional) Specifies that the PVP is for the Any Transport over MPLS (AToM) ATM cell relay feature or the ATM Cell Relay over L2TPv3 feature.
cdvt	(Optional) Cell delay variation tolerance (CDVT) in tenths of a microsecond. The range is 1 to 7140.
no-f4-oam	(Optional) Inhibits the creation of F4 (virtual path connection [VPC] level) Operation, Administration, and Maintenance (OAM) VCs.

Command Default

A PVP is not configured.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.
12.0(17)SL	This command was integrated into Cisco IOS Release 12.0(17)SL.
12.0(25)S	This command was integrated into Cisco IOS Release 12.0(25)S, and the l2transport keyword was added.
12.2(16)BX	This command was integrated into Cisco IOS Release 12.2(16)BX.
12.2(25)S	This command was integrated into Cisco IOS Release 12.2(25)S.
12.2(27)SBC	This command was integrated into Cisco IOS Release 12.2(27)SBC.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB.

Usage Guidelines

This command is commonly used to create a PVP that is used to multiplex circuit emulation service (CES) and data VCs.

The ATM-CES port adapter supports multiplexing of one or more VCs over a virtual path that is shaped at a constant bandwidth. For example, you can buy a virtual path service from an ATM service provider and multiplex both the CES and data traffic over the virtual path.

All subsequently created VCs with a *vpi* argument matching the *vpi* specified with the **atm pvp** command are multiplexed onto this PVP. This PVP connection is an ATM connection where switching is performed on the VPI field of the cell only.

A PVP is created and left up indefinitely. All VCs that are multiplexed over a PVP share and are controlled by the traffic parameters associated with the PVP.

Changing the *peak-rate* value causes the ATM-CES port adapter to go down and then back up.

When you create a PVP, two VCs are created (VCI 3 and 4) by default. These VCs are created for VP end-to-end loopback and segment loopback OAM support.

When you use the l2transport keyword with the atm pvp command, the router enters l2transport PVP configuration mode. You must issue the l2transport keyword to configure the ATM cell relay over multiprotocol label switching (MPLS) feature in port mode or to configure the ATM cell relay over L2TPv3 feature.

To verify the configuration of a PVP, use the **show atm vp** command.

Examples

The following example creates a PVP with a peak rate of 2000 kbps. The subsequent VCs created are multiplexed onto this virtual path.

```
interface atm 6/0
 atm pvp 1 2000
 atm pvc 13 1 13 aal5snap
 exit
interface cbr 6/1
 ces circuit 0
 ces pvc 9 interface atm6/0 vpi 1 vci 100
 exit
```

The following example configures ATM cell relay over MPLS in port mode:

```
interface atm5/0
 atm pvp 1 l2transport
 xconnect 10.0.0.1 123 encapsulation mpls
```

The following example configures ATM cell relay over L2TPv3:

```
pw-class atm-xconnect
 encapsulation l2tpv3
interface atm 4/1/0
 atm pvp 5 l2transport
 xconnect 10.0.3.201 888 pw-class atm-xconnect
```

Related Commands

Command	Description
show atm vp	Displays the statistics for all VPs on an interface or for a specific VP.

atm rate-queue

To create a permanent rate queue or specify a rate queue tolerance, use the **atm rate-queue** command in interface configuration mode. To remove a rate queue or rate queue tolerance, use the **no** form of this command.

atm rate-queue {*queue-number speed*| **tolerance svc [pvc]** *tolerance-value* **[strict]**}

no atm rate-queue {*queue-number speed*| **tolerance svc [pvc]** *tolerance-value* **[strict]**}

Syntax Description

queue-number	Queue number in the range 0 through 7 on the ATM Interface Processor (AIP) for Cisco 7500 series routers, and in the range 0 through 3 on the network processing module (NPM) for Cisco 4500 and Cisco 4700 routers. On the AIP, queues 0 through 3 are in the high-priority bank, and queues 4 through 7 are in the low-priority bank. Queues in the same priority bank have the same priority; for example, queues 0 and 3 have the same priority. On the NPM, all 4 queues have the same priority.
speed	Speed in megabits per second (Mbps) in the range from 1 through 155. The maximum speed is determined by the detected physical layer inteface module (PLIM) type on the AIP or NPM: • 34 Mbps for E3 • 45 Mbps for DS-3 • 100 Mbps for Transparent Asynchronous Transmitter/Receiver Interface (TAXI) • 155 Mbps for Synchronous Optical Network (SONET)
tolerance	Specifies that you want to use a rate queue tolerance value.
svc	Specifies that the *tolerance-value* will be applied to SVCs.
pvc	(Optional) If specified, the *tolerance-value* will be applied to PVCs.

tolerance-value	A tolerance level expressed as a percentage used for assigning rate queues for each virtual circuit (VC) with a requested peak rate. This value is applied to switched virtual circuits (SVCs), discovered VCs, and permanent virtual circuits (PVCs) (when the **pvc** keyword is used). This value can be 0 or 5 through 99. For SVCs and discovered VCs, the default value is 10. For PVCs, the default value is 0.
strict	(Optional) Indicates whether SVC traffic-shaping parameters are altered beyond the SVC tolerance or rejects the incoming call.

Command Default

No rate queue is defined.

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
11.3	The following keywords were added: • **tolerance** • **svc**
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

If a PVC or SVC is created, and its rate queue does not match a permanent rate queue that was created using the **atm-rate queue** *queue-number speed* command, one of the following will occur:

- The PVC or SVC will use an existing rate queue if the PVC's or SVC's rate queue falls within the *tolerance-value* specified.
- The software will dynamically create a new and unique rate queue if the PVC or SVC does not fall within a previously configured rate-queue tolerance.

If you do not create permanent rate queues or if you create PVCs with peak or average rates that are not matched by the rate queues you configure, the software dynamically creates rate queues as necessary to satisfy the requests of the **atm pvc** commands.

You can create multiple rate queues. A warning message appears if all rate queues are deconfigured or if the combined rate queues exceed the PLIM rate.

Examples

The following example configures a permanent rate queue with a *queue-number* of 1 and a *speed* of 100 Mbps:

```
atm rate-queue 1 100
```

The following example configures a rate queue with a *tolerance-value* of 20, which will apply to SVCs, discovered VCs, and PVCs.

```
interface atm 2/0
 atm rate-queue tolerance svc pvc 20
```

Related Commands

Command	Description
pvc	Configures the PVC interface.
svc	Creates an ATM SVC and specifies the destination NSAP address on a main interface or subinterface.

atm rawq-size

To define the ATM Interface Processor (AIP) raw-queue size , use the **atm rawq-size** command in interface configuration mode. To restore the default value, use the **no** form of this command.

atm rawq-size *number*

no atm rawq-size

Syntax Description

number	Maximum number of cells in the raw queue simultaneously. Range is from 8 to 256. Default is 32.

Command Default

32 cells

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is supported on the Cisco 7200 and 7500 series routers, but not on the Cisco 4500 and Cisco 4700 routers.

The raw queue is used for raw ATM cells, which include Operation, Administration, and Maintenance (OAM) (F4 and F5) and Interim Local Management Interface (ILMI) cells.

Examples

The following example allows a maximum of 48 cells in the raw queue:

```
atm rawq-size 48
```

atm rxbuff

To set the maximum number of receive buffers for simultaneous packet reassembly, use the **atm rxbuff** command in interface configuration mode. To restore the default value, use the **no** form of this command.

atm rxbuff *number*

no atm rxbuff

Syntax Description

number	Maximum number of packet reassemblies that the ATM Interface Processor (AIP) can perform simultaneously. Range is from 0 to 512. Default is 256.

Command Default

256 packet reassemblies

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is supported on AIP for Cisco 7500 series routers. This command is not supported on the ATM port adapter for Cisco 7200 and 7500 series routers, nor is it supported on Cisco 4500 and Cisco 4700 routers.

Examples

The following example allows the AIP to perform a maximum of 300 packet reassemblies simultaneously:

```
atm rxbuff 300
```

atm sig-traffic-shaping strict

To specify that a switched virtual circuit (SVC) should be established on an ATM interface only if shaping can be done in accordance with the signaled traffic parameters, use the **atm sig-traffic-shaping strict** command in inter face configuration mode. To disable strict traffic shaping, use the **no** form of this command.

atm sig-traffic-shaping strict

no atm sig-traffic-shaping strict

Syntax Description

This command has no arguments or keywords.

Command Default

The default value is lenient (not strict) traffic shaping for SVCs.

Command Modes

Interface configuration

Command History

Release	Modification
10.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is supported on the Cisco 7500 series routers, Cisco 4500 routers, and Cisco 4700 routers. This command is not supported on the ATM port adapter.

If strict traffic shaping is configured on the router ATM interface, then an SVC is established only if traffic shaping can be provided for the transmit cell flow according to the signaled traffic parameters. If such shaping cannot be provided, the SVC is released.

If strict traffic shaping is not configured on the router ATM interface, an attempt is made to establish an SVC with traffic shaping for the transmit cell flow according to the signaled traffic parameters. If such shaping cannot be provided, the SVC is installed with default shaping parameters (it behaves as though a permanent virtual circuit (PVC) were created without specifying traffic parameters).

The signalling SETUP message carries the forward and backward traffic parameters. For connections initiated by the source router, traffic is shaped to the SETUP message forward parameters. For connections initiated by another router or host, traffic is shaped to the backward parameters.

Examples

The following example allows an SVC to be established on an ATM interface using only signaled traffic parameters:

```
atm sig-traffic-shaping strict
```

atm smds-address

To assign a unicast E.164 address to the ATM subinterface that supports ATM adaptation layer 3/4 (AAL3/4) and Switched Multimegabit Data Service (SMD S) encapsulation, use the **atm smds-address** command in interface configuration mode.

atm smds-address *address*

Syntax Description

address	Unicast E.164 address assigned to the subinterface.

Command Default

No E.164 address is assigned.

Command Modes

Interface configuration

Command History

Release	Modification
10.3	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is supported on Cisco 7500 series routers, Cisco 4500 routers, and Cisco 4700 routers. This command is not supported on the ATM port adapter.

Each AAL3/4 subinterface is allowed only one unicast E.164 address.

Examples

The following example assigns a unicast E.164 address to the ATM subinterface that is being configured:

```
atm smds-address c141.555.1212
```

Related Commands

Command	Description
abr	Selects ABR QoS and configures output peak cell rate and output minimum guaranteed cell rate for an ATM PVC or VC class.
atm aal aal3/4	Enables support for AAL3/4 on an ATM interface.

Command	Description
atm multicast	Assigns an SMDS E.164 multicast address to the ATM subinterface that supports AAL3/4 and SMDS encapsulation.
pvc	Configures the PVC interface.

atm sonet ignore s1

To direct a router to ignore an S1 Synchronous Optical Network (SONET) overhead byte set to 0xF and not switch to internal clocking, use the **atm sonet ignore s1** command in interface configuration mode. To stop ignoring S1 SONET overhead bytes set to 0xF, use the **no** form of this command.

atm sonet ignore s1

no atm sonet ignore s1

Syntax Description

This command has no arguments or keywords.

Command Default

This command is disabled. A packet received with an S1 SONET overhead byte set to 0xF causes the router to switch the clock source to internal.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
15.1(3)S1	This command was introduced.

Usage Guidelines

An S1 SONET overhead byte set to 0xF switches the clock source to internal; however, in the event that a packet is received with an S1 byte value of 0xF, the **atm sonet ignore s1** command ensures that the clock source does not change.

Examples

The following example shows how a router can be configured to ignore an S1 byte set to 0xF:

```
Router> enable
Router# configure terminal
Router(config)# interface atm2/3/1
Router(config-if))# atm sonet ignore s1
Router(config-if))# end
```

atm sonet report

To enable the reporting of some or all ATM Synchronous Optical Network (SONET) alarms, use the **atm sonet report**command in interface or subinterface configuration mode. To disable the reporting of some or all ATM SONET alarms, use the **no** form of this command.

atm sonet report {**all**| **b1-tca**| **b2-tca**| **b3-tca**| **lais**| **lrdi**| **none [ignore]**| **pais**| **plop**| **pplm**| **prdi**| **ptim**| **puneq**| **sd-ber**| **sf-ber**| **slof**| **slos**}

no atm sonet report {**all**| **b1-tca**| **b2-tca**| **b3-tca**| **lais**| **lrdi**| **none [ignore]**| **pais**| **plop**| **pplm**| **prdi**| **ptim**| **puneq**| **sd-ber**| **sf-ber**| **slof**| **slos**}

Syntax Description

all	Enables the reporting of all ATM SONET alarms.
b1-tca	Enables the reporting of B1 threshold crossing alarms (B1-TCA).
b2-tca	Enables the reporting of B2 threshold crossing alarms (B2-TCA).
b3-tca	Enables the reporting of B3 threshold crossing alarms (B3-TCA).
lais	Enables the reporting of line alarm indication signal (LAIS) alarms.
lrdi	Enables the reporting of line remote defect indication (LRDI) alarms.
none [**ignore**]	Disables the reporting of all ATM SONET alarms. The optional ignore keyword supports only OSM and SPA ATM interfaces, and instructs the ATM interface to ignore any ATM SONET alarms and to remain up and continue operation. This option allows the ATM interface to be used in a "transmit-only" mode, without a receive fiber being connected, so as to support one-way applications, such as video-on-demand. **Note** You must remove all IP (layer 3) configuration (such as the IP address) from the interface before you can use the **none** [**ignore**] option. Also, the **none** [**ignore**] option cannot be used with any of the other **atm sonet report** options.
pais	Enables the reporting of path alarm indication signal (PAIS) alarms.

plop	Enables the reporting of path loss of pointer (PLOP) alarms.
pplm	Enables the reporting of path payload mismatch (PPLM) alarms.
prdi	Enables the reporting of path remote defect indication (PRDI) alarms.
ptim	Enables the reporting of path trace identifier mismatch (PTIM) alarms.
puneq	Enables the reporting of path label equivalent to zero (path unequal, PUNEQ) alarms.
sd-ber	Enables the reporting of signal degrade bit error rate (SD-BER) alarms.
sf-ber	Enables the reporting of signal failure bit error rate (SF-BER) alarms.
slof	Enables the reporting of signal loss of frame (SLOF) alarms.
slos	Enables the reporting of signal loss of signal (SLOS) alarms.

Command Default

PLOP, SLOF, and SLOS alarms are enabled. All other alarms are not enabled.

Command Modes

Interface or subinterface configuration

Command History

Release	Modification
12.1(7)E	This command was introduced.
12.2(14)SX	This command was integrated into Cisco IOS Release 12.2(14)SX to support OSM ATM interfaces.
12.2(18)SXE	This command was integrated into Cisco IOS Release 12.2(18)SXE to support ATM shared port adapters (SPAs) on the Cisco 7600 series routers and Catalyst 6500 series switches. The **none** [**ignore**] option was also added to support one-way applications.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The **atm sonet report**command enables one or more of the possible SONET alarms that can be generated by the ATM interface. By default, only the PLOP, SLOF, and SLOS alarms are enabled, but you can enable the other alarms or all alarms, as well. You can also disable one or all of the alarms using the **no** form of the command.

Examples

The following example shows how to enable the alarm for B1 threshold crossings:

Router# **configure terminal**

Router(config)# **interface atm 3/1/1**

Router(config-if)# **atm sonet report b1-tca**

Router(config-if)# **end**

Router#

The following example shows multiple SONET alarms being enabled for an ATM interface:

```
Router# configure terminal

Router(config)# interface atm 5/0/1

Router(config-if)# atm sonet report b1-tca
Router(config-if)# atm sonet report b2-tca
Router(config-if)# atm sonet report b3-tca
Router(config-if)# atm sonet report plop
Router(config-if)# atm sonet report sf-ber
Router(config-if)# atm sonet report slof
Router(config-if)# atm sonet report slos
Router(config-if)# end

Router#
```

The following example shows an ATM interface being configured to ignore all ATM SONET alarms, so as to allow transmit-only operation. This example shows the error message that appears if you attempt to give this command when an IP address is configured on the interface. To resolve the problem, you must first remove the IP address and then repeat the command.

```
Router# configure terminal

Router(config)# interface atm 3/1/1

Router(config-if)# ip address 192.168.100.12 255.255.255.0

Router(config-if)# atm sonet report none ignore
%Configuration is not allowed: IP address is already configured on ATM3/1/1
Router(config-if)# no ip address 192.168.100.12 255.255.255.0

Router(config-if)# atm sonet report none ignore
Router(config-if)#
```

Note When an ATM interface is configured to ignore ATM SONET alarms, you cannot then configure any IP (Layer 3) parameters on the interface. If you attempt to do so, the CLI displays the following error message: %Configuration is not allowed: <interface> is already configured to ignore alarms

Related Commands

Command	Description
set mpls experimental imposition	Configures a policy map class with the value of the Multiprotocol Label Switching (MPLS) experimental (EXP) field to be set on all imposed label entries.
set mpls experimental topmost	Configures a policy map class to set the topmost MPLS label on outgoing packets with one or more specified experimental values.
show class-map	Displays information about the configured traffic classes.
show policy-map	Displays information about the configured policy maps and the interfaces on which they are applied.

atm sonet stm-1

To set the mode of operation and thus control type of ATM cell used for cell-rate decoupling on the SONET physical layer interface module (PLIM) , use the **atm sonet stm-1**command in interface configuration mode. To restore the default Synchronous Transport Signal level 3, concatenated (STS-3c) operation, use the **no** form of this command.

atm sonet stm-1

no atm sonet stm-1

Syntax Description

This command has no arguments or keywords.

Command Default

STS-3c is used.

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use STM-1 in applications where the ATM switch requires “idle cells” for rate adaptation. An idle cell contains 31 zeros followed by a one. STM-1 is defined as a Synchronous Digital Hierarchy/Synchronous Transport Signal level 1 (SDH/STM-1) operation (ITU-T specification).

Use the default (STS-3c) in applications where the ATM switch requires “unassigned cells” for rate adaptation. An unassigned cell contains 32 zeros.

Examples

The following example specifies ATM SONET STM-1:

```
atm sonet stm-1
```