



ATM Commands

This chapter describes the commands available to configure Asynchronous Transfer Mode (ATM) interfaces on the following:

- Cisco 2600 series routers
- Cisco 3600 series routers
- Cisco 4500 routers
- Cisco 4700 routers
- Cisco 7200 series routers
- Cisco 7500 series routers

This chapter also describes the commands available to configure a serial interface for ATM access in other routers.



Beginning in Cisco IOS Release 11.3, all commands supported on the Cisco 7500 series routers are also supported on the Cisco 7000 series routers equipped with RSP7000.

For ATM configuration information and examples, refer to the ATM chapters in the *Wide-Area Networking Configuration Guide*.

abr

To select Available Bit Rate (ABR) QOS and configure the output peak cell rate and output minimum guaranteed cell rate for an ATM PVC or VC class, use the **abr** command in the appropriate command mode. Use the **no** form of this command to remove the ABR parameters.

abr *output-pcr output-mcr*

no abr *output-pcr output-mcr*

Syntax Description

<i>output-pcr</i>	The output peak cell rate in kilobits per second.
<i>output-mcr</i>	The output minimum guaranteed cell rate in kilobits per second.

Defaults

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)

Command History

Release	Modification
11.1	This command was introduced.

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 next highest 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.

Available bit rate (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* to be 100,000 kbps and the *output-mcr* to be 3000 Kbps for an ATM PVC:

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

Related Commands

Command	Description
ubr	Selects UBR QoS and configures the output peak cell rate for an ATM PVC, SVC, or VC class.
ubr+	Selects UBR QoS and configures the output peak cell rate and output minimum guaranteed cell rate for an ATM PVC, SVC, or VC class.
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 aal aal3/4

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

atm aal aal3/4

no atm aal aal3/4

Syntax Description This command has no arguments or keywords.

Defaults Support for AAL3/4 is disabled.

Command Modes Interface configuration

Command History	Release	Modification
	10.3	This command was introduced.

Usage Guidelines This command is supported on Cisco 7500 series routers with 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	Configures the PVC interface.

atm abr rate-factor

To configure the amount that 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** interface configuration command. 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.

Defaults

ABR rate increase and decrease factor is 16.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

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** interface configuration command. 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.

Defaults Enabled

Command Modes Interface configuration

Command History	Release	Modification
	11.0	This command was introduced.

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 I/O 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** interface configuration command. To remove the definition of an ATM ARP server, use the **no** form of this command.

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

```
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 <i>minutes</i>	(Optional) Number of minutes 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.
nsap <i>nsap-address</i>	(Optional) Network service access point (NSAP) address of an ATM ARP server.

Defaults

The default timeout value is 20 minutes. The ARP server process is disabled.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

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 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).

Defaults

Redundant ATM ARP server support is not enabled.

Command Modes

Interface configuration

Command History

Release	Modification
11.2	This command was introduced.

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-atm 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** interface configuration command. The **no** form of this command restores the default value.

atm clock internal

no atm clock internal

Syntax Description This command has no arguments or keywords.

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

Command Modes Interface configuration

Command History	Release	Modification
	10.0	This command was introduced.

Usage Guidelines 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:

```
atm clock internal
```

atm ds3-scramble

To enable scrambling of the ATM cell payload for the DS-3 PLIM on an ATM interface, use the **atm ds3-scramble** interface configuration command. To disable scrambling of the ATM cell payload for the DS-3 PLIM, use the **no** form of this command.

```
atm ds3-scramble
```

```
no atm ds3-scramble
```

Syntax Description This command has no arguments or keywords.

Defaults Disabled.

Command Modes Interface configuration

Command History	Release	Modification
	11.0	This command was introduced.
	11.1	Command syntax changed from ds3 scramble to atm ds3-scramble .

Usage Guidelines D3 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 auto conversion, use the **atm e164 auto-conversion** interface configuration command. To disable auto conversion, 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.

Defaults Disabled

Command Modes Interface configuration

Command History	Release	Modification
	11.3	This command was introduced.

Usage Guidelines The ATM interface must be enabled 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 PLIM on an ATM interface, use the **atm e3-scramble** interface configuration command. 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.

Defaults E3 scrambling is enabled.

Command Modes Interface configuration

Command History	Release	Modification
	11.1	This command was introduced.

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 esi-address

To enter the end station ID (ESI) and selector byte fields of the ATM NSAP address, use the **atm esi-address** interface configuration command. The NSAP address prefix is filled in via ILMI from the ATM switch. The **no** form deletes the end station address.

atm esi-address *esi.selector*

no atm esi-address *esi.selector*

Syntax Description

<i>esi</i>	End station ID field value in hexadecimal; 6 bytes long.
<i>selector</i>	Selector field value in hexadecimal; 1 byte long.

Defaults

No ESI is defined.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

Usage Guidelines

Before Cisco IOS Release 11.1, ATM addresses were configured on the router only by use of the **atm nsap-address** interface configuration command. The complete 20-byte NSAP (40 hexadecimal characters) had to be configured.

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*.



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** commands are 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** interface configuration command. The **no** form of this command restores the default value.

atm exception-queue *number*

no atm exception-queue

Syntax Description	<i>number</i>	Number of entries in the range of 8 to 256. Default is 32 entries.
--------------------	---------------	--

Defaults	32 entries
----------	------------

Command Modes	Interface configuration
---------------	-------------------------

Command History	Release	Modification
	10.0	This command was introduced.

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.
------------------	---

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 DS3 line framing on an ATM interface, use the **atm framing** interface configuration command. 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.
cbitplcp	(Optional) Specifies C-bit with PLCP framing. This is the default.
m23adm	(Optional) Specifies M23 ATM direct mapping.
m23plcp	(Optional) Specifies M23 with PLCP framing.

Defaults

cbitplcp

Command Modes

Interface configuration

Command History

Release	Modification
11.2	This command was introduced.
11.1	This command was modified to include the Cisco 7200 series routers with the ATM-CES port adapter.

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** interface configuration command. 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.
g832adm	(Optional) Specifies G.832 ATM Direct Mapping.
g751plcp	(Optional) Specifies G.751 PLCP encapsulation.

Defaults

g751plcp

Command Modes

Interface configuration

Command History

Release	Modification
11.0	This command was introduced.
11.1	The g751plcp keyword was added, plus information on the Cisco 7200 series router with the ATM-CES port adapter.

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** interface configuration command. To disable ILMI keepalives, use the **no** form of this command.

atm ilmi-keepalive [*seconds*]

no atm ilmi-keepalive [*seconds*]

Syntax Description	<i>seconds</i> (Optional) Number of seconds between keepalives. Values less than 3 seconds are rounded up to 3 seconds, and there is no upper limit.				
Defaults	3 seconds				
Command Modes	Interface configuration				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.0</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	11.0	This command was introduced.
Release	Modification				
11.0	This command was introduced.				
Examples	<p>The following example enables ILMI keepalives for the ATM interface 1/0:</p> <pre>interface atm 1/0 atm address-registration atm ilmi-keepalive</pre>				
Related Commands	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>atm address-registration</td> <td>Enables the router to engage in address registration and callback functions with the ILMI.</td> </tr> </tbody> </table>	Command	Description	atm address-registration	Enables the router to engage in address registration and callback functions with the ILMI.
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 PVC discovery, use the **atm ilmi-pvc-discovery** interface configuration command. Use the **no** form of this command to disable PVC Discovery.

atm-ilmi-pvc-discovery [subinterface]

no atm-ilmi-pvc-discovery [subinterface]

Syntax Description	subinterface	(Optional) When this keyword is used, the discovered PVCs are assigned to the ATM subinterface whose number matches the discovered PVC's VPI number. For example, a PVC with VPI 1 will be assigned to ATM subinterface 2/0.1.
---------------------------	---------------------	--

Defaults	Disabled
-----------------	----------

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	11.3	This command was introduced.

Examples The following example enables PVC Discovery on the ATM main interface 2/0. The keyword **subinterface** 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** interface configuration command. 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 of less than 50 feet.

Defaults short

Command Modes Interface configuration

Command History	Release	Modification
	11.1	This command was introduced.

Examples The following example specifies that the ATM interface use a cable less than 50 feet:

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

Related Commands	Command	Description
	ces dsx1 lbo	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** interface configuration command. 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 64 to 2048 channels.

Defaults

64 channels

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

Usage Guidelines

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

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*.

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 (default) numbers of transmit channels for the interface, 255 transmit descriptors are associated per transmit channel and for 512 numbers of transmit channels for the interface, 31 transmit descriptors are associated per transmit channel.

To display information about the transmit descriptors, use the **show atm interface atm EXEC** 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** interface configuration command. To restore the default value, use the **no** form of this command.

atm maxvc *number*

no atm maxvc

Syntax Description	<i>number</i>	Maximum number of supported virtual circuits. Valid values are 256, 512, 1024, or 2048.
---------------------------	---------------	---

Defaults	2048 virtual circuits
-----------------	-----------------------

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	10.0	This command was introduced.

Usage Guidelines	<p>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.</p> <p>This command sets the maximum value supported for the <i>vcd</i> 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 <i>vcd</i> argument, the software does not generate an error message.</p> <p>This command does not affect the virtual path identifier (VPI)-virtual channel identifier (VCI) pair of each virtual circuit.</p>
-------------------------	--

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 the PVC interface.

atm mid-per-vc

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

atm mid-per-vc *maximum*

Syntax Description	<i>maximum</i>	Number of MIDs allowed per virtual circuit on this interface. The values allowed are 16, 32, 64, 128, 256, 512, and 1024.
---------------------------	----------------	---

Defaults	16 MIDs per virtual circuit.
-----------------	------------------------------

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	10.3	This command was introduced.

Usage Guidelines	<p>This command is supported on Cisco 7200 and 7500 series routers.</p> <p>Message identifier (MID) numbers are used by receiving devices to reassemble cells from multiple sources into packets.</p> <p>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.</p> <p>The <i>maximum</i> set by the atm mid-per-vc command overrides the range between the <i>midhigh</i> and <i>midlow</i> values set by the atm pvc command. If you set a <i>maximum</i> of 16 but a <i>midlow</i> of 0 and a <i>midhigh</i> of 255, only 16 MIDs (not 256) are allowed on the virtual circuit.</p>
-------------------------	--

Examples	<p>The following example allows 64 MIDs per ATM virtual circuit:</p> <pre>atm mid-per-vc 64</pre>
-----------------	---

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 AAL3/4 and SMDS encapsulation, use the **atm multicast** interface configuration command.

atm multicast *address*

Syntax Description

address Multicast E.164 address assigned to the subinterface.

Defaults

No multicast E.164 address is defined.

Command Modes

Interface configuration

Command History

Release	Modification
10.3	This command was introduced.

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.
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** interface configuration command. To return to the default interval, use the **no** form of this command.

atm multipoint-interval *interval*

no atm multipoint-interval *interval*

Syntax Description	<i>interval</i> Interval length in seconds, in the range between 0 and 4294967.
---------------------------	---

Defaults	30 seconds
-----------------	------------

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	11.0	This command was introduced.

Usage Guidelines	<p>This command applies to SVCs only, not to PVCs.</p> <p>This command has no effect unless ATM multipoint signalling is enabled on the interface.</p>
-------------------------	--

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

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

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

atm multipoint-signalling

To enable point-to-multipoint signalling to the ATM switch, use the **atm multipoint-signalling** interface configuration command. 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.

Defaults

Disabled

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.

Usage Guidelines

If multipoint signalling 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 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 NSAP address for an ATM interface using SVC mode, use the **atm nsap-address** interface configuration command. The **no** form of this command removes any configured address for the interface.

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).

Defaults

No NSAP address is defined for this interface.

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.

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 ILMI is configured, use the **atm esi-address** command instead of the **atm nsap-address** command. The **atm esi-address** and **atm nsap-address** commands are 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 flush

To drop all current and future OAM cells received on an ATM interface, use the **atm oam flush** interface configuration command. Use the **no** form of this command to receive OAM cells on an ATM interface.

atm oam flush

no atm oam flush

Syntax Description This command has no arguments or keywords.

Defaults Dropping of OAM cells is disabled.

Command Modes Interface configuration

Command History	Release	Modification
	11.3	This command was introduced.

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 pvc

The **atm pvc** command has been replaced by a set of new commands. See the Cisco IOS Release 11.3(2)T feature document “Enhanced ATM VC Configuration and Management” for more information.

atm pvp

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

```
atm pvp vpi [peak-rate]
```

```
no atm pvp vpi
```

Syntax Description

<i>vpi</i>	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. The VPI value is unique only on a single link, not throughout the ATM network because it has local significance only. The VPI value must match that of the switch. The number specified for the <i>vpi</i> must not already exist. If the number specified for the <i>vpi</i> is already being used by an existing VC, this command is rejected.
<i>peak-rate</i>	(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.

Defaults

PVP is not configured.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

Usage Guidelines

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

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

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

Examples

The following example creates a permanent virtual path with a peak rate of 2000 kbps. The subsequent VC 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
```

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** interface configuration command. The **no** form of this command removes a rate queue or rate queue tolerance.

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

<i>queue-number</i>	Queue number in the range 0 through 7 on the AIP for Cisco 7500 series routers, and in the range 0 through 3 on the 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.
<i>speed</i>	Speed in megabits per second (Mbps) in the range from 1 through 155. The maximum speed is determined by the detected PLIM type on the AIP or NPM: <ul style="list-style-type: none"> • 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 <i>tolerance-value</i> will be applied to SVCs.
pvc	(Optional) If specified, the <i>tolerance-value</i> will be applied to PVCs.
<i>tolerance-value</i>	A tolerance level expressed as a percentage used for assigning rate queues for each VC with a requested peak rate. This value is applied to SVCs, discovered VCs, and 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.

Defaults

No rate queue is defined. The default rate-queue tolerance for SVCs and discovered VCs is 10. For PVCs, it is 0.

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.
11.3	The following keywords were added: <ul style="list-style-type: none"> tolerance svc

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 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 AIP raw-queue size, use the **atm rawq-size** interface configuration command. The **no** form of this command restores the default value.

atm rawq-size *number*

no atm rawq-size

Syntax Description	<i>number</i>	Maximum number of cells in the raw queue simultaneously, in the range 8 through 256.
---------------------------	---------------	--

Defaults	32 cells
-----------------	----------

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	10.0	This command was introduced.

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 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** interface configuration command. The **no** form of this command restores the default value.

atm rxbuff *number*

no atm rxbuff

Syntax Description	<i>number</i> Maximum number of packet reassemblies that the AIP can perform simultaneously, between 0 and 512.
---------------------------	---

Defaults	256
-----------------	-----

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	10.0	This command was introduced.

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
```

atmsig close atm

To disconnect an SVC, use the **atmsig close atm EXEC** command.

AIP on Cisco 7500 series; ATM, ATM-CES, enhanced ATM port adapter on Cisco 7200 series; 1-port ATM-25 network module on Cisco 2600 and 3600 series

```
atmsig close atm slot/0 vcd
```

ATM and enhanced ATM port adapter on Cisco 7500 series

```
atmsig close atm slot/port-adapter/0 vcd
```

NPM on Cisco 4500 and Cisco 4700

```
atmsig close atm number vcd
```

Syntax Description	slot	ATM slot number. Use this format for the following platform configurations:
		<ul style="list-style-type: none"> AIP on Cisco 7500 series routers. ATM port adapter, ATM-CES port adapter, or enhanced ATM port adapter on Cisco 7200 series routers. 1-port ATM-25 network module on Cisco 2600 and 3600 series routers.
	/0	ATM port number. Because the AIP and all ATM port adapters have a single ATM interface, the port number is always 0.
	vcd	Virtual circuit descriptor of the signalling SVC to close.
	slot/port-adapter	ATM slot number and port adapter number. Use this format for the ATM port adapter or ATM-CES port adapter on Cisco 7500 series routers.
	number	ATM network processor module number for the NPM on Cisco 4500 and Cisco 4700 routers.

Command Modes	EXEC

Command History	Release	Modification
	10.3	The atmsig close atm slot/0 vcd command was introduced.
	11.1	The atmsig close atm number vcd command was introduced.

Usage Guidelines	Execute this command if you want to close a particular SVC. Because virtual circuits are numbered per interface, you must specify the ATM interface by its slot number.

Examples	The following example closes SVC 2 on ATM interface 4/0:
	atmsig close atm4/0 2

atm sig-traffic-shaping strict

To specify that an SVC should be established on an ATM interface only if shaping can be done per the signaled traffic parameters, use the **atm sig-traffic-shaping strict** interface configuration command. To disable strict traffic shaping, use the **no** form of this command.

atm sig-traffic-shaping strict

no atm sig-traffic-shaping

Syntax Description

This command has no arguments or keywords.

Defaults

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.

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 per 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 per the signaled traffic parameters. If such shaping cannot be provided, the SVC is installed with default shaping parameters (behaves as though a 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/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 AAL3/4 and SMDS encapsulation, use the **atm smds-address** interface configuration command.

atm smds-address *address*

Syntax Description	<i>address</i>	Unicast E.164 address assigned to the subinterface.
--------------------	----------------	---

Defaults	No E.164 address is assigned.
----------	-------------------------------

Command Modes	Interface configuration
---------------	-------------------------

Command History	Release	Modification
	10.3	This command was introduced.

Usage Guidelines	<p>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.</p> <p>Each AAL3/4 subinterface is allowed only one unicast E.164 address.</p>
------------------	--

Examples	<p>The following example assigns a unicast E.164 address to the ATM subinterface that is being configured:</p>
----------	--

```
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 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 stm-1

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

atm sonet stm-1

no atm sonet stm-1

Defaults

STS-3c

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.

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
```