



## Wide-Area Networking Commands

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This chapter presents the commands for configuring and maintaining Cisco IOS wide-area networking protocols and broadband access applications. The commands are presented in alphabetical order. For a list of the wide-area networking and broadband access commands that is organized by technology, see the “[Introduction](#)” chapter in this book.

# 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

<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)  
 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.

## 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
<b>ubr</b>	Configures UBR QoS and specifies the output peak cell rate for an ATM PVC, SVC, VC class, or VC bundle member.
<b>ubr+</b>	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.
<b>vbr-nrt</b>	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.

# arp

To enable Address Resolution Protocol (ARP) entries for static routing over the Switched Multimegabit Data Service (SMDS) network, use the following variation of the **arp** command in global configuration mode. To disable this capability, use the **no** form of this command.

```
arp ip-address smds-address smds
```

```
no arp ip-address smds-address smds
```

## Syntax Description

<i>ip-address</i>	IP address of the remote router.
<i>smds-address</i>	12-digit SMDS address in the dotted notation <i>nnnn.nnnn.nnnn</i> (48 bits long).
<b>smds</b>	Enables ARP for SMDS.

## Defaults

Static ARP entries are not created.

## Command Modes

Global configuration

## Command History

Release	Modification
10.3	This command was introduced.

## Usage Guidelines

This command requires a 12-digit (48-bit) dotted-format SMDS address. It does not support 15-digit SMDS addresses.

## Examples

The following example creates a static ARP entry that maps the IP address 172.20.173.28 to the SMDS address C141.5797.1313 on interface serial 0:

```
interface serial 0
  arp 172.20.173.28 C141.5797.1313 smds
```

## Related Commands

Command	Description
<b>smds enable-arp</b>	Enables dynamic ARP. The multicast address for ARP must be set before this command is issued.
<b>smds static-map</b>	Configures a static map between an individual SMDS address and a higher-level protocol address.

# 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 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 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
<b>atm mid-per-vc</b>	Limits the number of MID numbers allowed on each VC.
<b>atm multicast</b>	Assigns an SMDS E.164 multicast address to the ATM subinterface that supports AAL3/4 and SMDS encapsulation.
<b>atm smds-address</b>	Assigns a unicast E.164 address to the ATM subinterface that supports AAL3/4 and SMDS encapsulation.
<b>pvc</b>	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

<i>rate-increase-factor</i>	(Optional) Factor by which to increase the data rate. The rate increase factor is specified in powers of 2 from 1 to 32768.
<i>rate-decrease-factor</i>	(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
<b>pvc</b>	Configures the PVC interface.
<b>show atm interface atm</b>	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.

**Defaults** Enabled

**Command Modes** Interface configuration

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	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 1/0 to register its address:

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

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>atm ilmi-keepalive</b>	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

<b>self</b>	(Optional) Specifies the current router as the ATM ARP server.
<b>time-out</b> <i>minutes</i>	(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.
<b>nsap</b> <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.1533.66.020000.0000.0000.0000.0000.0000.00
atm rate-queue 1 100
atm maxvc 1024
atm pvc 1 0 5 qsaal
atm arp-server self
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>atm classic-ip-extensions</b>	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-extensions BFI
Router(config-if)# atm arp-server nsap 47.000580FFE100000F21A3167.666666666666.00
Router(config-if)# atm arp-server nsap 47.000580FFE100000F21A3167.555555555555.00
```

Related Commands	Command	Description
	<b>atm arp-server</b>	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.

---

**Defaults**

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

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**Command Modes**

Interface configuration

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**Command History**

Release	Modification
10.0	This command was introduced.

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**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:

```
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

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

## Defaults

**per-packet**

## Command Modes

Interface configuration

## Command History

Release	Modification
11.3(1)MA	This command was introduced on the Cisco MC3810 multiservice concentrator.

## 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.

---

**Defaults** DS3 scrambling is not enabled.

---

**Command Modes** Interface configuration

---

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

---

---

**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.

---

**Defaults** E.164 auto conversion is not enabled.

---

**Command Modes** Interface configuration

---

Command History	Release	Modification
	11.3	This command was introduced.

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**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.

---

**Defaults** E3 scrambling is enabled.

---

**Command Modes** Interface configuration

---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	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 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

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

### Defaults

No ESI is defined.

### Command Modes

Interface configuration

### Command History

Release	Modification
11.1	This command was introduced.

### 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** 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**

<b>Command</b>	<b>Description</b>
<b>atm nsap-address</b>	Sets the NSAP address for an ATM interface using SVC mode.
<b>ilmi manage</b>	Enables ILMI management on an ATM PVC.
<b>pvc</b>	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	<i>number</i>	Number of entries. Range is from 8 to 256. Default is 32.
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Defaults	32 entries
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Command Modes	Interface configuration
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Command History	Release	Modification
	10.0	This command was introduced.

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.
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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:
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```
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

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

### Defaults

**cbitplcp**

### 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.

### 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

<b>g751adm</b>	(Optional) Specifies G.751 ATM direct mapping (ADM).
<b>g832adm</b>	(Optional) Specifies G.832 ATM direct mapping.
<b>g751plcp</b>	(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 <b>g751plcp</b> keyword was added, together with 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** 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*]

<b>Syntax Description</b>	<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.
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<b>Defaults</b>	3 seconds
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<b>Command Modes</b>	Interface configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.0	This command was introduced.

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

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

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>atm address-registration</b>	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]

<b>Syntax Description</b>	<b>subinterface</b> (Optional) Causes discovered PVCs to be assigned to the ATM subinterface whose number matches the discovered PVC's VPI number.				
<b>Defaults</b>	PVC discovery is not enabled.				
<b>Command Modes</b>	Interface configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.3</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	11.3	This command was introduced.
Release	Modification				
11.3	This command was introduced.				

### 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.

Defaults	short
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Command Modes	Interface configuration
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Command History	Release	Modification
	11.1	This command was introduced.

**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**

<b>Syntax Description</b>	<i>number</i>	Maximum number of transmit channels for the interface. The range is from 64 to 2048 channels. The default is 64 channels.
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<b>Defaults</b>	64 channels
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<b>Command Modes</b>	Interface configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.1	This command was introduced.

**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**

<b>Command</b>	<b>Description</b>
<b>show atm interface atm</b>	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**

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

<b>Defaults</b>	2048 virtual circuits
-----------------	-----------------------

<b>Command Modes</b>	Interface configuration
----------------------	-------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.0	This command was introduced.

<b>Usage Guidelines</b>	<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 VCs.</p> <p>This command sets the maximum value supported for the <i>vcd</i> argument in the <b>atm pvc</b> 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 <b>maxvc</b> limit and then enter the <b>atm pvc</b> 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>
-------------------------	--

<b>Examples</b>	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
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>pvc</b>	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*

<b>Syntax Description</b>	<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.
---------------------------	--

<b>Defaults</b>	16 MIDs per virtual circuit.
-----------------	------------------------------

<b>Command Modes</b>	Interface configuration
----------------------	-------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.3	This command was introduced.

<b>Usage Guidelines</b>	<p>This command is supported on Cisco 7200 and 7500 series routers.</p> <p>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 <b>atm mid-per-vc</b> command overrides the range between the <i>midhigh</i> and <i>midlow</i> values set by the <b>atm pvc</b> 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>
-------------------------	---

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

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>pvc</b>	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.

## 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
<b>abr</b>	Selects ABR QoS and configures output peak cell rate and output minimum guaranteed cell rate for an ATM PVC or VC class.
<b>atm smds-address</b>	Assigns a unicast E.164 address to the ATM subinterface that supports AAL3/4 and SMDS encapsulation.
<b>pvc</b>	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*

<b>Syntax Description</b>	<i>interval</i>	Interval length, in seconds. Range is from 0 to 4294967. Default is 30.
<b>Defaults</b>	30 seconds	
<b>Command Modes</b>	Interface configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.0	This command was introduced.
<b>Usage Guidelines</b>	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.	
<b>Examples</b>	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: <pre>interface atm 2/0   atm multipoint-signalling   atm multipoint-interval 60</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>atm multipoint-signalling</b>	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 signaling 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** 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.

## 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
<b>atm multipoint-interval</b>	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).

## 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 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** 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 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.

---

**Defaults** Dropping of OAM cells is disabled.

---

**Command Modes** Interface configuration

---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	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 oversubscribe

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

**atm oversubscribe**

**no atm oversubscribe**

## Syntax Description

This command has no arguments or keywords.

## Defaults

The default is to allow as much bandwidth as possible with no upper limits. The **no** form of the **atm oversubscribe** command enables bandwidth management on any ATM interface you specify.

## Command Modes

Interface configuration

## Command History

Release	Modification
12.0(3)T	This command was introduced.

## Usage Guidelines

When you type the enabling command (the **no** version), a check 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 is displayed in the output of the **show atm interface atm** command.

The ATM bandwidth manager keeps track of bandwidth used by VCs on a per-interface basis. Because many services require guaranteed bandwidth (for variable bit rate-real time (VBR-RT), available bit rate (ABR), CBR, for instance), 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 any guarantees, bandwidth specified for a UBR connection is not used in any calculations.

In all cases, bandwidth check for a PVC is done when the PVC is configured. Bandwidth check for a SVC is done when a signaling call is placed or received.

When you specify 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 steps taken to check for bandwidth available are to ascertain if 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 steps taken are to check if the new bandwidth requirement can be fulfilled for all VCs using the class (on a per-interface basis) by comparing 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.

## Examples

The following example displays the available bandwidth after you enter VC mode. Notice that the bandwidth is specified in 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
```

Notice that the bandwidth is specified as 139000 kbps.

# atm pppatm link reset

To configure the system to bring down PPP over ATM (PPPoA) sessions when the virtual circuit (VC) is deactivated, use the **atm pppatm link reset** command in subinterface configuration mode. To return to the default behavior (PPPoA sessions are not brought down), use the **no** form of this command.

**atm pppatm link reset**

**no atm pppatm link reset**

**Syntax Description** This command has no arguments or keywords.

**Defaults** PPPoA sessions are not brought down when the VC is deactivated.

**Command Modes** Subinterface configuration

Command History	Release	Modification
	12.3	This command was introduced.

**Usage Guidelines** Use the **atm pppatm link reset** command to configure the system to place PPPoA sessions in a nonoperational state when a VC is deactivated. This command is useful on customer premises equipment (CPE) that is not configured with Dialer. On L2TP access concentrators (LACs), issues of scalability make it useful to allow PPPoA sessions to remain up when a VC is deactivated.

**Examples** In the following example, PPPoA sessions on permanent virtual circuit (PVC) 3/501 will be brought down when that PVC is deactivated:

```
interface ATM4/0
  atm pppatm link reset
  pvc 3/501
    encapsulation aal5snap
    protocol ppp virtual-template 1
  !

interface virtual-template 1
  no ip address
  ppp chap hostname boston
  ppp chap password 7 111F1111
  ppp multilink
  ppp multilink group 1

interface multilink1
  ip unnumbered loopback 0
  ppp multilink
  ppp multilink group 1
```

# 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.

## Defaults

Active mode

## Command Modes

ATM subinterface configuration

## Command History

Release	Modification
12.2(13)T	This feature was introduced.

## 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 will bring up the sessions only when the subscribers become active and not waste its processing power on polling all the sessions.

For better scalability and faster convergence of PPP sessions, Cisco recommends setting the PPPoA sessions to passive mode at the LAC.

## Examples

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

```
interface atm 1/0.1 multipoint
 atm pppatm passive
 range range-pppoa-1 pvc 100 199
 protocol 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*]

**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.  
The default *peak-rate* is the line rate.

## Command Modes

Interface configuration

## Command History

Release	Modification
11.1	This command was introduced.

## Usage Guidelines

This command is commonly used to create a PVP that is used 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* argument 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** command in EXEC mode.

**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
<code>show atm vp</code>	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

<i>queue-number</i>	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.
<i>speed</i>	Speed in megabits per second (Mbps) in the range from 1 through 155. The maximum speed is determined by the detected physical layer interface module (PLIM) type on the AIP or NPM: <ul style="list-style-type: none"> <li>• 34 Mbps for E3</li> <li>• 45 Mbps for DS-3</li> <li>• 100 Mbps for Transparent Asynchronous Transmitter/Receiver Interface (TAXI)</li> <li>• 155 Mbps for Synchronous Optical Network (SONET)</li> </ul>
<b>tolerance</b>	Specifies that you want to use a rate queue tolerance value.
<b>svc</b>	Specifies that the <i>tolerance-value</i> will be applied to SVCs.
<b>pvc</b>	(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 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 <b>pvc</b> 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.
<b>strict</b>	(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"> <li>• <b>tolerance</b></li> <li>• <b>svc</b></li> </ul>

### 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
<b>pvc</b>	Configures the PVC interface.
<b>svc</b>	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**

<b>Syntax Description</b>	<i>number</i> Maximum number of cells in the raw queue simultaneously. Range is from 8 to 256. Default is 32.				
<b>Defaults</b>	32 cells				
<b>Command Modes</b>	Interface configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>10.0</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	10.0	This command was introduced.
Release	Modification				
10.0	This command was introduced.				
<b>Usage Guidelines</b>	<p>This command is supported on the Cisco 7200 and 7500 series routers, but not on the Cisco 4500 and Cisco 4700 routers.</p> <p>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.</p>				
<b>Examples</b>	<p>The following example allows a maximum of 48 cells in the raw queue:</p> <pre>atm rawq-size 48</pre>				

# atm route-bridge

To configure an interface to use the ATM routed bridge encapsulation (RBE), use the **atm route-bridge** command in interface configuration mode.

**atm route-bridge** *protocol*

## Syntax Description

<i>protocol</i>	Protocol to be route-bridged. IP and IPv6 are the only protocols that can be route-bridged using ATM RBE.
-----------------	---

## Defaults

ATM routed bridge encapsulation is not configured.

## Command Modes

Interface configuration

## Command History

Release	Modification
12.0(5)DC	This command was introduced.
12.1(2)T	This command was integrated in Cisco IOS Release 12.1(2)T.
12.3(4)T	The <b>ipv6</b> keyword was added to support RBE of IPv6 packets as specified in RFC 1483.

## Usage Guidelines

### Routing of IPv6 Packets

IPv6 packets can be routed using RBE only over ATM point-to-point subinterfaces.

Routing of IP packets and IPv6 half-bridging, bridging, PPP over Ethernet (PPPoE), or other Ethernet 802.3-encapsulated protocols can be configured on the same subinterface.

### Router Advertisements with IPv6

Router advertisements are suppressed by default. For stateless autoconfiguration, router advertisements must be allowed with the **no ipv6 nd suppress-ra** command. For static configuration, router advertisement is not required, however, the aggregator should either have the RBE interface on the same subnet as the client or have a static IPv6 route to that subnet through the RBE interface.

## Examples

### IP Encapsulation Example

The following example configures ATM routed bridge encapsulation on an interface:

```
interface atm 4/0.100 point-to-point
 ip address 172.16.5.9 255.255.255.0
 pvc 0/32
 atm route-bridge ip
```

### IPv6 Encapsulation Example

The following example shows a typical configuration on an RBE interface to allow routing of IPv6 encapsulated Ethernet packets. IPv6 packets sent out of the subinterface are encapsulated over Ethernet over the RBE interface.

```
interface ATM1/0.1 point-to-point
  ipv6 enable
  ipv6 address 3FEE:12E1:2AC1:EA32::/64
  no ipv6 nd suppress-ra
  atm route-bridge ipv6
pvc 1/101
```

In this example, the **ipv6 enable** command allows the routing of IPv6 packets. The **ipv6 address** command specifies an IPv6 address for the interface and an IPv6 prefix to be advertised to a peer. The **no ipv6 nd suppress-ra** command enables router advertisements on the interface.

### IPv6 Routing and Bridging of Other Traffic Example

The following example shows a configuration in which IPv6 packets are routed and all other packets are bridged.

```
interface ATM1/0.1 point-to-point
  ipv6 enable
  ipv6 address 3FEE:12E1:2AC1:EA32::/64
  atm route-bridge ipv6
  bridge-group 1
pvc 1/101
```

### IP and IPv6 Routing with Bridging of Other Protocols Example

IP and IPv6 routing can be configured on the same interface as shown in this example. All other packets are bridged. PPPoE could also be configured on this same interface.

```
interface ATM1/0.1 point-to-point
  ipv6 enable
  ipv6 address 3FEE:12E1:2AC1:EA32::/64
  ip address 10.0.0.1 255.255.255.0
  atm route-bridge ipv6
  atm route-bridge ip
  bridge-group 1
pvc 1/101
```

### Static Configuration Example

The following example shows the IPv6 static route configured. Unlike, IP, the IPv6 interface on an aggregator is always numbered and, minimally, has a link local IPv6 address.

```
router# configure terminal
router(config)# ipv6 route 3FEE:12E1:2AC1:EA32::/64 atm1/0.3
router(config)# end
router#
```

### show ipv6 interface Example

Notice in this **show ipv6 interface** output display that each RBE link has its own subnet prefix. Unlike proxy ARP in IPv4 RBE configurations, the aggregator does not require proxy ND in IPv6 RBE deployments.

```
router#show ipv6 interface atm1/0.1

ATM1/0.1 is up, line protocol is up
  IPv6 is enabled, link-local address is FE80::203:FDFE:FE3B:B400
```

```
Global unicast address(es):
  3FEE:12E1:2AC1:EA32::, subnet is 3FEE:12E1:2AC1:EA32::/64
Joined group address(es):
  FF02::1
  FF02::2
  FF02::1:FF00:0
  FF02::1:FF3B:B400
MTU is 4470 bytes
ICMP error messages limited to one every 100 milliseconds
ICMP redirects are enabled
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds
ND advertised reachable time is 0 milliseconds
ND advertised retransmit interval is 0 milliseconds
ND router advertisements are sent every 200 seconds
ND router advertisements live for 1800 seconds
Hosts use stateless autoconfig for addresses
```

---

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>no ipv6 nd suppress-ra</b>	Suppresses IPv6 router advertisement transmissions on a LAN interface.

---

# 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**

<b>Syntax Description</b>	<i>number</i> Maximum number of packet reassemblies that the ATM Interface Processor (AIP) can perform simultaneously. Range is from 0 to 512. Default is 256.
---------------------------	--

<b>Defaults</b>	256 packet reassemblies
-----------------	-------------------------

<b>Command Modes</b>	Interface configuration
----------------------	-------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.0	This command was introduced.

<b>Usage Guidelines</b>	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.
-------------------------	---

<b>Examples</b>	The following example allows the AIP to perform a maximum of 300 packet reassemblies simultaneously: <pre>atm rxbuff 300</pre>
-----------------	---

# 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 interface 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.

---

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

---

**Command Modes** Interface configuration

---

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 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 (SMDS) encapsulation, use the **atm smds-address** command in interface configuration mode.

**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

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
<b>abr</b>	Selects ABR QoS and configures output peak cell rate and output minimum guaranteed cell rate for an ATM PVC or VC class.
<b>atm aal aal3/4</b>	Enables support for AAL3/4 on an ATM interface.
<b>atm multicast</b>	Assigns an SMDS E.164 multicast address to the ATM subinterface that supports AAL3/4 and SMDS encapsulation.
<b>pvc</b>	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 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.

---

**Defaults** STS-3c

---

**Command Modes** Interface configuration

---

<b>Release</b>	<b>Modification</b>
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
```

## atm svc-upc-intent

To change the intended usage parameter control (UPC) mode that is to be used on the cell flow received into the switch fabric for switched virtual circuits (SVCs) or destination legs of soft permanent virtual circuits (PVCs) on an interface, use the **atm svc-upc-intent** command in interface configuration mode. Any change in this parameter is applied to SVCs or soft PVCs subsequently established on the interface. To assign the default value to the parameter, use the **no** form of this command.

```
atm svc-upc-intent [abr | cbr | vbr-rt | vbr-nrt | ubr] {tag | pass | drop}
```

```
no atm svc-upc-intent
```

Syntax Description	abr   cbr   vbr-rt   vbr-nrt   ubr	(Optional) Specifies the service category:
		<ul style="list-style-type: none"> <li>• <b>abr</b>—available bit rate</li> <li>• <b>cbr</b>—constant bit rate</li> <li>• <b>vbr-rt</b>—variable bit rate, real time</li> <li>• <b>vbr-nrt</b>—variable bit rate, nonreal time</li> <li>• <b>ubr</b>—unspecified bit rate</li> </ul>
	<b>tag</b>	Specifies that cells that are received on the interface and that violate the traffic contract have their CLP bit set prior to entering the switching fabric.
	<b>pass</b>	Specifies that cells received on the interface are passed to the switching fabric with no change, regardless of their conformance to the traffic contract.
	<b>drop</b>	Specifies that cells that are received on the interface and that violate the traffic contract are dropped.

Defaults	pass

Command Modes	Interface configuration

Command History	Release	Modification
	11.1(4)	This command was introduced on the LS1010.
	12.2(4)B	This command was modified for the Cisco 6400 NSP.
	12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.

Usage Guidelines	This configuration parameter determines the UPC to use for SVCs and for the destination leg of soft VC and VP. If policing is desired, it should be applied once for traffic entering a network.

---

**Examples**

In the following example, the intended UPC for SVCs on an interface is set to tagging:

```
Router(config-if)# atm svc-upc-intent tag
```

In the following example, the UBR traffic on an interface is passed while all other traffic is policed:

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

---

**Related Commands**

Command	Description
<code>show atm interface</code>	Displays ATM-specific information about an ATM interface.

---

# atm txbuff

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

**atm txbuff** *number*

**no atm txbuff**

<b>Syntax Description</b>	<i>number</i>	Maximum number of packet fragmentations that the ATM Interface Processor (AIP) can perform simultaneously. Range is from 0 to 512. Default is 256.
---------------------------	---------------	--

<b>Defaults</b>	256
-----------------	-----

<b>Command Modes</b>	Interface configuration
----------------------	-------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.0	This command was introduced.

**Usage Guidelines** This command is supported on the 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 configures the AIP to perform up to 300 packet fragmentations simultaneously:

```
atm txbuff 300
```

## atm uni-version

To specify the User-Network Interface (UNI) version (3.0 or 3.1) the router should use when Interim Local Management Interface (ILMI) link autodetermination is unsuccessful or ILMI is disabled, use the **atm uni-version** command in interface configuration mode. To restore the default value to 3.0, use the **no** form of this command.

**atm uni-version** *version-number*

**no atm uni-version** *version-number*

Syntax Description	<i>version-number</i>	UNI version selected on an interface. Valid values are 3.0 and 3.1.
--------------------	-----------------------	---

Defaults	Version 3.0
----------	-------------

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

Command History	Release	Modification
	11.2	This command was introduced.

Usage Guidelines	Normally, when the ILMI link autodetermination is enabled on the interface and is successful, the router accepts the UNI version returned by ILMI. If the ILMI link autodetermination is unsuccessful or ILMI is disabled, the UNI version defaults to 3.0. You can override the default UNI version by using this command to enable UNI 3.1 signalling support. The <b>no</b> form of the command sets the UNI version to one returned by ILMI if ILMI is enabled and the link autodetermination process is successful. Otherwise, the UNI version reverts to 3.0.
------------------	---

Examples	The following example specifies UNI version 3.1 signaling port on the ATM interface 2/0:
----------	--

```
interface atm 2/0
 atm uni-version 3.1
```

## atm vc-per-vp

To set the maximum number of virtual channel identifier (VCIs) to support per virtual path identifier (VPI), use the **atm vc-per-vp** interface configuration command. To restore the default value, use the **no** form of this command.

**atm vc-per-vp** *number*

**no atm vc-per-vp**

### Syntax Description

*number* Maximum number of VCIs to support per VPI. See the following list for valid values:

- AIP for Cisco 7500 series—Valid values are 16, 32, 64, 128, 256, 512, and 1024.
- ATM port adapter for Cisco 7200 series and 7500 series—Valid values are 16, 32, 64, 128, 256, 512, 1024, and 2048.
- NPM for Cisco 4500 and Cisco 4700 routers—Valid values are 32, 64, 128, 256, 512, 1024, 2048, 4096, and 8192.
- Network module with IMA for the Cisco 2600 series and 3600 series—Valid values are 256, 512, and 1024.

### Defaults

1024

### Command Modes

Interface configuration

### Command History

Release	Modification
10.0	This command was introduced.

### Usage Guidelines

This command controls the memory allocation in the ATM Interface Processor (AIP), ATM port adapter, ATM network module, or network processor module (NPM) to deal with the VCI table. It defines the maximum number of VCIs to support per VPI; it does not bound the VCI numbers.

An invalid VCI causes a warning message to be displayed.

#### Cisco 2600 and 3600 Series with IMA



#### Note

For Cisco 2600 and 3600 series with IMA, changing the value of the **atm vc-per-vp** command on one interface affects all of the interfaces on that network module.

[Table 1](#) lists the possible VCI ranges and corresponding VPI ranges for the Cisco 2600 and 3600 series with IMA.

**Table 1** VCI and VPI Ranges for Cisco 2600 and 3600 Series with IMA

VCI Range	VPI Range
0–255	0–15, 64–79, 128–143, and 192–207
0–511	0–15, 64–79
0–1023	0–15

**Examples**

The following example sets the maximum number of VCIs per VPI to 512:

```
atm vc-per-vp 512
```

**Related Commands**

Command	Description
<code>pvc</code>	Configures the PVC interface.

# atm vp-filter

To set the ATM Interface Processor (AIP) filter register, use the **atm vp-filter** command in interface configuration mode. To restore the default value, use the **no** form of this command.

**atm vp-filter** *hexvalue*

**no atm vp-filter**

Syntax Description	<i>hexvalue</i>	Value in hexadecimal format.
--------------------	-----------------	------------------------------

Defaults	0x7B
----------	------

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

Command History	Release	Modification
	10.0	This command was introduced.

**Usage Guidelines** This command is supported on Cisco 7500 series routers, but not on Cisco 4500 and Cisco 4700 routers. This command is not supported on ATM port adapters.

This command allows you to specify a virtual path identifier (VPI) or range of VPIs to be used for ATM adaptation layer 3/4 (AAL3/4) processing. All other VPIs map to AAL5 processing. If only AAL5 processing is required, you can either let the virtual path filter default or set it to an arbitrary VPI so that AAL5 processing is performed on all VPIs.

This command configures the hexadecimal value used in the virtual path filter register in the reassembly operation. The virtual path filter comprises 16 bits. The virtual path filter register uses the most significant bits (bits 15 through 8, the left half of the filter) as mask bits, and uses bits 7 through 0 (the right half of the filter) as compare bits.

When a cell is received, the right half of the filter is exclusively NORed with the binary value of the incoming VPI. The result is then ORed with the left half of the filter (the mask). If the result is all ones, reassembly is done using the VCI/message identifier (MID) table (AAL3/4 processing). Otherwise, reassembly is done using the VPI-VCI pair table (AAL5 processing).

**Examples** In the following example, all incoming cells are reassembled using AAL3/4 processing:

```
atm vp-filter ff00
```

In the following example, all incoming cells with the virtual path equal to 0 are reassembled using AAL3/4 processing; all other cells are reassembled using AAL5 processing:

```
atm vp-filter 0
```

In the following example, all incoming cells with the most significant bit of the virtual path set are reassembled using AAL3/4 processing; all other cells are reassembled using AAL5 processing:

```
atm vp-filter 7f80
```

# atmsig close atm

To disconnect a switched virtual circuit (SVC), use the **atmsig close atm** command in EXEC mode.

**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"> <li>AIP on Cisco 7500 series routers.</li> <li>ATM port adapter, ATM-CES port adapter, or enhanced ATM port adapter on Cisco 7200 series routers.</li> <li>1-port ATM-25 network module on Cisco 2600 and 3600 series routers.</li> </ul>
	/0	ATM port number. Because the AIP and all ATM port adapters have a single ATM interface, the port number is always 0. The slash (/) is required.
	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	This command was introduced.
	11.1	The <i>number</i> argument was added.

**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
```

# authentication (L2TP)

To enable Layer 2 Tunnel Protocol (L2TP) or L2TP Version 3 (L2TPv3) authentication, use the **authentication** command in L2TP class configuration mode. To disable Layer 2 authentication, use the **no** form of this command.

**authentication**

**no authentication**

## Syntax Description

This command has no arguments or keywords.

## Defaults

Authentication is disabled.

## Command Modes

L2TP class configuration

## Command History

Release	Modification
12.0(23)S	This command was introduced.
12.3(2)T	This command was integrated into Cisco IOS Release 12.3(2)T.

## Usage Guidelines

Use the **authentication** command to enable Layer 2 authentication.

## Examples

The following example enables authentication in Layer 2 pseudowires that have been configured using the L2TP class configuration named "l2tp class1":

```
Router(config)# l2tp-class l2tp-class1
Router(config-l2tp-class)# authentication
```

## Related Commands

Command	Description
<b>l2tp-class</b>	Creates a template of L2TP control plane configuration settings that can be inherited by different pseudowire classes and enters L2TP class configuration mode.
<b>password</b>	Configures the password used by a PE router for L2TPv3 authentication.

# authorization list

To specify the server group that Service Selection Gateway (SSG) uses for authorization of transparent autologon users, use the **authorization list** command in transparent auto-logon configuration mode. To remove the server group specification, use the **no** form of this command.

**authorization list** *list-name*

**no authorization list** *list-name*

## Syntax Description

<i>list-name</i>	Name of the server group that will be used for authorization of transparent autologon users.
------------------	--

## Defaults

If no server group is specified, or if the server group configuration is removed with the **no** form of the command, SSG uses the default server group for user authorization.

## Command Modes

Transparent auto-logon configuration

## Command History

Release	Modification
12.3(1a)BW	This command was introduced.
12.3(3)B	This command was integrated into Cisco IOS Release 12.3(3)B.
12.3(7)T	This command was integrated into Cisco IOS Release 12.3(7)T.

## Usage Guidelines

The server group must be configured using authentication, authorization, and accounting (AAA) commands.

## Examples

The following example configures SSG to use the server group named “alpha” for authorization of transparent autologon users:

```
Router(config-login-transparent)# authorization list alpha
```

## Related Commands

Command	Description
<b>ssg login transparent</b>	Enables the SSG Transparent Autologon feature.

# authorization pending maximum

To specify the maximum number of Service Selection Gateway (SSG) transparent autologon access requests that can be pending at a given time, use the **authorization pending maximum** command in transparent auto-logon configuration mode. To remove the specification, use the **no** form of this command.

**authorization pending maximum** *number*

**no authorization pending maximum** *number*

<b>Syntax Description</b>	<i>number</i>	Maximum number of access requests that can be pending at a given time. Range is 1 to 5000.
---------------------------	---------------	--

<b>Defaults</b>	No maximum limit
-----------------	------------------

<b>Command Modes</b>	Transparent auto-logon configuration
----------------------	--------------------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.3(1a)BW	This command was introduced.
	12.3(3)B	This command was integrated into Cisco IOS Release 12.3(3)B.
	12.3(7)T	This command was integrated into Cisco IOS Release 12.3(7)T.

<b>Usage Guidelines</b>	When the number of SSG transparent autologon access requests reaches the configured maximum, SSG issues a syslog message. Any received packets that cause SSG to send a new RADIUS request are dropped at the Cisco Express Forwarding (CEF) path.
-------------------------	--

<b>Examples</b>	The following example specifies that the maximum number of access requests that can be pending is 10: <pre>Router(config-login-transparent)# <b>authorization pending maximum 10</b></pre>
-----------------	---

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>ssg login transparent</b>	Enables the SSG Transparent Autologon feature.

# authorization rate-limit

To specify the maximum number of Service Selection Gateway (SSG) transparent autologon authorization requests sent per second to the authentication, authorization, and accounting (AAA) server, use the **authorization rate-limit** command in transparent auto-logon configuration mode. To remove the specification, use the **no** form of this command.

**authorization rate-limit** *number*

**no authorization rate-limit** *number*

<b>Syntax Description</b>	<i>number</i>	Maximum number of authorization requests sent per second. Range is from 1 to 10000.
---------------------------	---------------	---

<b>Defaults</b>	No rate limit
-----------------	---------------

<b>Command Modes</b>	Transparent auto-logon configuration
----------------------	--------------------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.3(1a)BW	This command was introduced.
	12.3(3)B	This command was integrated into Cisco IOS Release 12.3(3)B.
	12.3(7)T	This command was integrated into Cisco IOS Release 12.3(7)T.

<b>Usage Guidelines</b>	This command must be configured on the basis of the number of requests that the AAA server can handle per second. When the number of authorization requests per second reaches the configured rate limit, SSG issues a syslog message. A syslog message is generated only once for each time the rate-limit value is reached.
-------------------------	---

<b>Examples</b>	The following example specifies that the maximum number of authorization requests is 10:
-----------------	--

```
Router(config-login-transparent)# authorization rate-limit 10
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>ssg login transparent</b>	Enables the SSG Transparent Autologon feature.

# backup active interface

To activate primary and backup lines on specific X.25 interfaces, use the **backup active interface** command in interface configuration mode. To disable active backup behavior on the X.25 interface, use the **no** form of this command.

**backup active interface** *X.25-interface number*

**no backup active interface** *X.25-interface number*

## Syntax Description

*X.25-interface number* X.25 interface type and number, such as serial 1/3.

## Defaults

No default behavior or values

## Command Modes

Interface configuration

## Command History

Release	Modification
12.2(13)T	This command was introduced.

## Usage Guidelines

The **backup active interface** command is available only on serial interfaces configured for the X.25 protocol. Use this command to activate dual serial lines (a primary and a backup) to maintain the redundancy and monitoring capability available from the SCC0 and SCC1 links on a Lucent 5ESS switch in a telco data communication network (DCN). The DCN provides telco service providers with communications for network management applications.

This configuration requires that both serial interfaces be on the same Cisco router. Once the **backup active interface** command is configured, the router will bring up leads on the backup X.25 interface, but will ignore Set Asynchronous Balanced Mode (SABM) messages from the Lucent 5ESS switch until the primary interface fails.

## Examples

The following partial example shows how to configure a primary and backup X.25 interface for dual serial line management of the Lucent 5ESS switch in a DCN:

```
interface serial 1/0
  description SCC0
  backup active interface serial 1/1
  encapsulation x25 dce
  x25 address 66666666
  x25 ltc 8
  x25 ips 256
  x25 ops 256
  clock rate 9600
!
interface serial 1/1
  description SCC1
  encapsulation x25 dce
  x25 address 66666666
```

## ■ backup active interface

```
x25 ltc 8
x25 ips 256
x25 ops 256
clock rate 9600
.
.
.
```

---

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>debug backup</b>	Monitors the transitions of an interface going down and then back up.
<b>show backup</b>	Displays interface backup status.

# bba-group pppoe

To create a PPP over Ethernet (PPPoE) profile, use the **bba-group pppoe** command in global configuration mode. To delete a PPPoE profile, use the **no** form of this command.

```
bba-group pppoe {group-name | global}
```

```
no bba-group pppoe {group-name | global}
```

## Syntax Description

<i>group-name</i>	Name of the PPPoE profile.
<b>global</b>	PPPoE profile that serves as the default profile for any PPPoE port—Ethernet interface, VLAN, or permanent virtual circuit (PVC)—that has not been assigned a specific PPPoE profile.

## Defaults

A PPPoE profile is not configured.

## Command Modes

Global configuration

## Command History

Release	Modification
12.2(15)T	This command was introduced.

## Usage Guidelines

PPPoE profiles contain the configuration for a group of PPPoE sessions. Once a profile has been defined, it can be assigned to a PPPoE port (Ethernet interface, VLAN, or PVC), a virtual circuit (VC) class, or an ATM PVC range. PPPoE profiles can also be used with PPP over ATM (PPPoA)/PPPoE autosense. Multiple PPPoE profiles can be created and assigned to different ports.

The global PPPoE profile serves as the default profile for any port that has not been assigned a specific PPPoE profile.

## Examples

The following example shows the configuration of a global PPPoE profile and a profile called “vpn1”. PPPoE sessions established on PVCs that use the VC class “class-pppoe-global” will use the global profile. PVCs in the range “range-pppoe-1” will use the “vpn1” profile.

```
bba-group pppoe global
  virtual-template 1
  sessions max limit 8000
  sessions per-vc limit 8
  sessions per-mac limit 2
!
bba-group pppoe vpn1
  virtual-template 1
  sessions per-vc limit 2
  sessions per-mac limit 1
!
vc-class atm class-pppoe-global
  protocol pppoe
```

## ■ bba-group pppoe

```

!
interface ATM1/0.10 multipoint
  range range-pppoe-1 pvc 100 109
  protocol pppoe group vpn1
!
interface ATM1/0.20 multipoint
  class-int class-pppoe-global
  pvc 0/200

```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>encapsulation aal5autopp virtual-template</b>	Enables PPPoA/PPPoE autosense.
<b>pppoe enable</b>	Enables PPPoE sessions on an Ethernet interface or subinterface.
<b>protocol pppoe (ATM VC)</b>	Enables PPPoE sessions to be established on PVCs.
<b>sessions max limit</b>	Configures a PPPoE global profile with the maximum number of PPPoE sessions permitted on a router and sets the PPPoE session-count threshold.
<b>sessions per-mac limit</b>	Sets the maximum number of PPPoE sessions allowed per MAC address in a PPPoE profile.
<b>sessions per-vc limit</b>	Sets the maximum number of PPPoE sessions to be established over a VC and sets the PPPoE session-count threshold.
<b>sessions per-vlan limit</b>	Sets the maximum number of PPPoE sessions per VLAN in a PPPoE profile.

# bfe

This command is no longer supported.

# broadcast

To configure broadcast packet duplication and transmission for an ATM virtual circuit (VC) class, permanent virtual circuit (PVC), switched virtual circuit (SVC), or VC bundle, use the **broadcast** command in the appropriate command mode. To disable transmission of broadcast packets for your ATM VC class, PVC, SVC, or VC bundle, use the **no** form of this command. To restore the default behavior according to the description in the “Usage Guidelines” section, use the **default** form of this command.

**broadcast**

**no broadcast**

**default broadcast**

## Syntax Description

This command has no arguments or keywords.

## Defaults

Broadcast transmission is not enabled.  
For classical IP SVCs, broadcast is enabled.

## Command Modes

Interface-ATM-VC configuration (for ATM PVCs and SVCs)  
VC-class configuration (for a VC-class)  
Bundle configuration (for a VC bundle)  
PVC range configuration (for an ATM PVC range)  
PVC-in-range configuration (for an individual PVC within a PVC range)

## Command History

Release	Modification
11.3 T	This command was introduced.
12.0(3)T	Enhancements were added for configuration of broadcast packet duplication and transmission for an ATM VC bundle.
12.1(5)T	This command was made available in PVC range and PVC-in-range configuration modes.

## Usage Guidelines

If broadcasting and multipoint signalling are enabled on an SVC, a multipoint SVC will be created to handle the SVC.



### Note

If you use the **broadcast** command to configure broadcasting for an ATM PVC or SVC, VC-class, or VC bundle, this configuration takes precedence over any previous configuration using the **broadcast** command.

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

- Configuration of the **broadcast** command in a VC class assigned to the PVC, SVC, or VC bundle itself.

- Configuration of the **broadcast** command in a VC class assigned to the PVC's, SVC's, or VC bundle's ATM subinterface.
- Configuration of the **broadcast** command in a VC class assigned to the PVC's, SVC's, or VC bundle's ATM main interface.

**Note**

When a VC is a member of a VC bundle, configuration using the **broadcast** command in VC-class configuration mode no longer applies to the VC. Bundle configuration takes precedence.

To use the **broadcast** command in bundle configuration mode, enter the **bundle** command to enact bundle configuration mode for the bundle for which you want to enable broadcast forwarding.

**Examples**

The following example enables the transmission of broadcast packets on an ATM PVC named "router5":

```
pvc router5 1/32
 broadcast
```

The following example enables the transmission of broadcast packets on an ATM PVC bundle named "bundle1":

```
bundle bundle1
 broadcast
```

**Related Commands**

Command	Description
<b>class-int</b>	Assigns a VC class to an ATM main interface or subinterface.
<b>class-vc</b>	Assigns a VC class to an ATM PVC, SVC, or VC bundle member.
<b>encapsulation</b>	Sets the encapsulation method used by the interface.
<b>inarp</b>	Configures the Inverse ARP time period for an ATM PVC, VC class, or VC bundle.
<b>oam-bundle</b>	Enables end-to-end F5 OAM loopback cell generation and OAM management for a virtual circuit class that can be applied to a virtual circuit bundle.
<b>oam retry</b>	Configures parameters related to OAM management for an ATM PVC, SVC, VC class, or VC bundle.
<b>protocol (ATM)</b>	Configures a static map for an ATM PVC, SVC, VC class, or VC bundle. Enables Inverse ARP or Inverse ARP broadcasts on an ATM PVC by either configuring Inverse ARP directly on the PVC, on the VC bundle, or in a VC class (applies to IP and IPX protocols only).
<b>ubr</b>	Configures UBR QoS and specifies the output peak cell rate for an ATM PVC, SVC, VC class, or VC bundle member.
<b>ubr+</b>	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.
<b>vbr-nrt</b>	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, VC class, or VC bundle member.

## bump (Frame Relay VC-bundle-member)

To configure the bumping rules for a Frame Relay permanent virtual circuit (PVC) bundle member, use the **bump** command in Frame Relay VC-bundle-member configuration mode. To specify that the PVC bundle member does not accept any bumped traffic, use the **no bump traffic** command. (The **no bump explicit** and **no bump implicit** commands have no effect.)

**bump** { **explicit** *level* | **implicit** | **traffic** }

**no bump traffic**

Syntax Description		
	<b>explicit</b> <i>level</i>	Specifies the precedence, experimental (EXP), or differentiated services code point (DSCP) level to which traffic on a PVC will be bumped when the PVC goes down. For PVC bundles that use precedence or EXP mapping, valid values for the <i>level</i> argument are from 0 to 7. For PVC bundles that use DSCP mapping, valid values are from 0 to 63.
	<b>implicit</b>	Applies the implicit bumping rule, which is the default, to a single PVC bundle member. The implicit bumping rule stipulates that bumped traffic is to be carried by a PVC that has the lower precedence level.
	<b>traffic</b>	Specifies that the PVC accepts bumped traffic (the default condition). The <b>no</b> form stipulates that the PVC does not accept any bumped traffic.

Defaults	
	Implicit bumping Bumping permitted (PVCs accept bumped traffic)

Command Modes	
	Frame Relay VC-bundle-member configuration

Command History	Release	Modification
	12.2(13)T	This command was introduced.

**Usage Guidelines** Use the **bump** command to configure bumping rules for a discrete PVC bundle member. To change the configured bumping rules for a PVC bundle member, override the current configuration with a new **bump** command entry.

To return to the default condition of implicit bumping, use the **bump implicit** command.

The effects of different bumping configuration approaches are as follows:

- **Implicit bumping:** If you configure implicit bumping, bumped traffic is sent to the PVC configured to handle the next-lower service level. When the original PVC that bumped the traffic comes back up, it will resume transmission of the configured service level. When **bump explicit** is not configured, the **bump implicit** command takes effect by default; however, **bump implicit** will not appear in the **show running-config** and **show startup-config** output.

- **Explicit bumping:** If you configure a PVC with the **bump explicit** command, you can specify the service level to which traffic will be bumped when that PVC goes down, and the traffic will be directed to a PVC mapped with that level. If the PVC that picks up and carries the traffic goes down, the traffic is subject to the bumping rules for that PVC. You can specify only one service level for bumping.
- **Permit bumping:** The PVC accepts bumped traffic by default. If the PVC has been previously configured to reject bumped traffic, you must use the **bump traffic** command to return the PVC to its default condition.
- **Reject bumping:** To configure a discrete PVC to reject bumped traffic when the traffic is directed to it, use the **no bump traffic** command.

**Note**

When no alternative PVC can be found to handle bumped traffic, even when there are no packets of that traffic type present, the bundle is declared down. In the case where default (implicit) bumping is used for all PVCs, the PVC that is handling the lowest service level can be configured to bump explicitly to a PVC handling a higher service level.

The following warnings appear during configuration and let you know about configuration problems that may prevent the bundle from coming up or cause the bundle to go down unexpectedly.

- The following warning occurs when the **bump explicit** command is configured. It warns that PVC 300 may be configured to bump to a PVC that will in turn bump back to PVC 300, in which case the bundle will go down.  
%DLCI 300 could end up bumping traffic to itself
- The following warning occurs when a PVC that is explicitly bumped to is configured with the **no bump traffic** command.  
%DLCI 306 is configured for bumping traffic to level 7
- The following warning occurs when the service levels handled by a PVC are changed, leaving other PVCs explicitly configured to bump to levels that are no longer being handled by that PVC.  
%DLCI(s) configured for explicitly bumping traffic to DLCI 300
- The following warning occurs when a PVC is configured to explicitly bump to a level that is not yet handled by any PVCs.  
%Presently no member is configured for level 3
- The following warning occurs when you attempt to explicitly configure bumping to a PVC that is already configured with **no bump traffic**.  
%DLCI configured for level 0 does not accept bumping

**Examples**

The following example configures PVC 101 in the Frame Relay PVC bundle “bundle1” with explicit bumping to the PVC bundle member having a precedence level of 7. PVC 101 is also configured to prohibit traffic from other PVCs from being bumped to it.

```
frame-relay vc-bundle bundle1
match precedence
pvc 101
precedence 5
no bump traffic
bump explicit 7
```

Related Commands	Command	Description
	<b>class</b>	Associates a map class with a specified DLCI.
	<b>dscp (Frame Relay VC-bundle-member)</b>	Specifies the DSCP value or values for a specific Frame Relay PVC bundle member.
	<b>exp</b>	Configures MPLS EXP levels for a Frame Relay PVC bundle member.
	<b>precedence (Frame Relay VC-bundle-member)</b>	Configures the precedence levels for a Frame Relay PVC bundle member.
	<b>protect (Frame Relay VC-bundle-member)</b>	Configures a Frame Relay PVC bundle member with protected group or protected PVC status.
	<b>pvc (Frame Relay VC-bundle)</b>	Creates a PVC and PVC bundle member and enters Frame Relay VC-bundle-member configuration mode.

