



ATM Commands

This module provides command line interface (CLI) commands for configuring ATM on your router.

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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 keywords or arguments.

Command Default If ILMI is configured on a PVC and its host ATM interface, then address registration and callback function enabled on the router by default.

If ILMI is not configured on a PVC and its host ATM interface, then address registration and callback functionality is disabled on the router and must be enabled with the **atm address-registration** command.

Command Modes Interface configuration (config-if)

Command History	Release	Modification
	Release 3.9.2	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note The **atm address-registration** command is effective only when an ILMI PVC is created under the physical ATM interface.

Task ID	Task ID	Operations
	atm	read, write

Examples

The following example shows how to enable the ATM interface 0 in slot 6 to register its address:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/0
RP/0/RP0/CPU0:router(config-if)# atm address-registration
```

atm ilmi-config disable

To disable Interim Local Management Interface (ILMI) on an ATM interface, use the **atm ilmi-config disable** command in interface configuration mode. To re-enable ILMI on an ATM interface, use the **no** form of this command.

atm ilmi-config disable
no atm ilmi-config disable

Syntax Description This command has no keywords or arguments.

Command Default If an ILMI PVC is configured on the ATM interface, then ILMI is automatically enabled on the ATM interface that hosts that PVC.

If an ILMI PVC is not configured on the ATM interface, then ILMI is disabled by default on the ATM interface.

Command Modes Interface configuration (config-if)

Command History

Release	Modification
Release 3.9.2	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note The **atm ilmi-config disable** command is effective only when an ILMI PVC is created under the physical ATM interface.

Task ID

Task ID	Operations
atm	read, write

Examples

The following example shows how to disable ILMI on an ATM interface:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/0
RP/0/RP0/CPU0:router(config-if)# atm ilmi-config disable
```

The following example shows how to re-enable ILMI on an ATM interface:

```
RP/0/RP0/CPU0:router# configure
```

```
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/0
RP/0/RP0/CPU0:router(config-if)# no atm ilmi-config disable
```

Related Commands

Command	Description
show atm ilmi-status, on page 53	Displays status information that is related to ILMI.

atm ilmi-keepalive

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

```
atm ilmi-keepalive [act-poll-freq frequency] [retries count] [inact-poll-freq frequency]
no atm ilmi-keepalive [act-poll-freq frequency] [retries count] [inact-poll-freq frequency]
```

Syntax Description	
act-poll-freq <i>frequency</i>	(Optional) Number of polling seconds between active keepalives. Range is from 1 through 65535 seconds. Default is 5 seconds.
retries <i>count</i>	(Optional) ILMI keepalive retry count. Range is from 2 through 5. Default is 4 retries.
inact-poll-freq <i>frequency</i>	(Optional) Number of polling seconds between inactive keepalives. Range is from 1 through 65535 seconds. Default is 1 second.

Command Default	
act-poll-freq <i>frequency</i> : 5	
retries <i>count</i> : 4	
inact-poll-freq <i>frequency</i> : 1	

Command Modes	
	Interface configuration (config-if)

Command History	Release	Modification
	Release 3.9.2	This command was introduced.

Usage Guidelines	
	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note	
	The atm ilmi-keepalive command is effective only when an ILMI PVC is created under the physical ATM interface.

Task ID	Task ID	Operations
	atm	read, write

Examples	
	The following example shows how to enable ILMI keepalives for the ATM interface 0 in slot 6:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/0
RP/0/RP0/CPU0:router(config-if)# atm ilmi-keepalive
```

The following example shows how to configure the ATM interface 1 in slot 6 to poll the number of inactive keepalives every 10 seconds:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/1
RP/0/RP0/CPU0:router(config-if)# atm ilmi-keepalive inact-poll-freq 10
```

The following example shows how to disable ILMI keepalives for the ATM interface 0 in slot 6:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/0
RP/0/RP0/CPU0:router(config-if)# no atm ilmi-keepalive
```

Related Commands

Command	Description
show atm ilmi-status, on page 53	Displays status information that is related to ILMI.

atm ilmi-trap disable

To disable Interim Local Management Interface (ILMI) trap generation on an ATM interface, use the **atm ilmi-trap disable** command in interface configuration mode. To reenable ILMI trap generation, use the **no** form of this command.

```
atm ilmi-trap disable
no atm ilmi-trap disable
```

Syntax Description This command has no keywords or arguments.

Command Default Support for ATM ILMI trap generation is enabled.

Command Modes Interface configuration (config-if)

Command History	Release	Modification
	Release 3.9.2	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	atm	read, write

Examples

The following example shows how to disable ILMI trap generation on the ATM interface 0 in slot 6:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/0
RP/0/RP0/CPU0:router(config-if)# atm ilmi-trap disable
```

The following example shows how to reenable ILMI trap generation on the ATM interface 0 in slot 6:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/1
RP/0/RP0/CPU0:router(config-if)# no atm ilmi-trap disable
```

Related Commands	Command	Description
	show atm interface atm, on page 55	Displays ATM-specific information about an ATM interface.

atm maxvpi-bits 12

To enable support for the 12-bits virtual path identifier (VPI) Network-Node Interface (NNI) cell format, use the **atm maxvpi-bits 12** command in interface configuration mode. To disable support for the 12-bits VPI NNI cell format, use the **no** form of this command.

atm maxvpi-bits 12
no atm maxvpi-bits 12

Syntax Description This command has no keywords or arguments.

Command Default Support for the 12-bits VPI NNI cell format is disabled.

Command Modes Interface configuration (config-if)

Command History	Release	Modification
	Release 3.9.2	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note Out of the twelve bits, four bits in the ATM UNI cell header are reserved for local standardized generic flow control (GFC).

Task ID	Task ID	Operations
	atm	read, write

Examples

The following example shows how to enable support for the 12-bits VPI NNI cell format on the ATM interface 0 in slot 6:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/0
RP/0/RP0/CPU0:router(config-if)# atm maxvpi-bits 12
```

The following example shows how to disable support for the 12-bits VPI NNI cell format on the ATM interface 1 in slot 6:

```
RP/0/RP0/CPU0:router# configure
```



```
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/1  
RP/0/RP0/CPU0:router(config-if)# no atm maxvpi-bits 12
```

Related Commands

Command	Description
show atm interface atm, on page 55	Displays ATM-specific information about an ATM interface.

atm mcpt-timers

To define the three Maximum Cell Packing Timeout (MCPT) timers under a main ATM interface, use the **atm mcpt-timers** command in interface configuration mode. To return the three timers to the default configuration, use the **no** form of this command.

atm mcpt-timers *timer-1 timer-2 timer-3*

no atm mcpt-timers

Syntax Description

timer-1 Maximum number of microseconds to wait to complete cell packing on a single packet before that packet is transmitted. Range is from 50 through 4095.

Note To associate this timer with an interface, use the **cell-packing** command and replace the *timer* argument **1**.

timer-2 Maximum number of microseconds to wait to complete cell packing on a single packet before that packet is transmitted. Range is from 50 through 4095.

Note To associate this timer with an interface, use the **cell-packing** command and replace the *timer* argument **2**.

timer-3 Maximum number of microseconds to wait to complete cell packing on a single packet before that packet is transmitted. Range is from 50 through 4095.

Note To associate this timer with an interface, use the **cell-packing** command and replace the *timer* argument **3**.

Command Default

timer-1 : 50

timer-2 : 50

timer-3 : 50

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Release 3.7.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **cell-packing** command to attach one of the three MCPT timers to an individual L2VPN port, PVC, or PVP. If the associated MCPT timer expires before the maximum number of cells that can be packed is reached, then the packet is transmitted with the number of cells that have been packed thus far.



Note We recommend configuring a low, medium, and high value for the three MCPT timers to accommodate the different ATM traffic classes. Low- latency CBR traffic typically uses a low MCPT timer value, while high-latency UBR traffic typically requires a high MCPT timer value. VBR-rt and VBR-nrt traffic typically use a median MCPT timer value.

Task ID	Task ID	Operations
	atm	read, write

Examples

The following example shows how to configure the three MCPT timers and then apply one of them to an interface with the **cell-packing** command:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/0
RP/0/RP0/CPU0:router(config-if)# atm mcpt-timers 50 100 200
RP/0/RP0/CPU0:router(config-if)# l2transport
RP/0/RP0/CPU0:router(config-if-l2)# cell-packing 6 1
```

Related Commands	Command	Description
	cell-packing, on page 14	Configures the maximum number of cells allowed per packet, and specifies a MCPT timer for cell packing.
	show atm interface atm, on page 55	Displays ATM-specific information about an ATM interface.

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 keywords or arguments.
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Command Default	The dropping of OAM cells is disabled.
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Command Modes	Interface configuration (config-if)
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Command History	Release	Modification
	Release 3.9.2	This command was introduced.

Usage Guidelines	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
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Task ID	Task	Operations
	atm	read, write

Examples

The following example shows how to enable the dropping of all current and future OAM cells received on the ATM interface 0 in slot 6:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/0
RP/0/RP0/CPU0:router(config-if)# atm oam flush
```

The following example shows how to disable the dropping of all current and future OAM cells received on the ATM interface 1 in slot 6:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/0
RP/0/RP0/CPU0:router(config-if)# no atm oam flush
```

Related Commands	Command	Description
	show atm interface atm, on page 55	Displays ATM-specific information about an ATM interface.

Command	Description
show atm class-link, on page 50	Displays configuration information for the parameters on a VC class that is associated with a particular PVC.
show atm vc-class, on page 71	Displays information about all ATM VC classes on the router or for a specific ATM VC-class.

cell-packing

To configure the maximum number of cells allowed per packet, and specify a Maximum Cell Packing Timeout (MCPT) timer for cell packing, use the **cell-packing** command in the appropriate mode. To return the interface to the default cell packing configuration, use the **no** form of this command.

cell-packing *cells timer*
no cell-packing

Syntax Description	<p>cells Maximum number of cells to use per packet. Range is from 2 through 86.</p> <p>timer Indicates the appropriate MCPT timer to use for cell packing. Can be 1, 2, or 3.</p> <p>Note You can configure up to three different MCPT values for a single main interface with the atm mcpt-timers command.</p>
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Command Default If you do not configure the maximum number of cells allowed per packet, only one cell is carried per packet.

Command Modes ATM layer 2 transport interface configuration (config-if-l2)
 ATM layer 2 transport PVC configuration (config-atm-l2transport-pvc)
 ATM layer 2 transport PVP configuration (config-atm-l2transport-pvp)

Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 3.7.0</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 3.7.0	This command was introduced.
Release	Modification				
Release 3.7.0	This command was introduced.				

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the [atm mcpt-timers, on page 10](#) command to configure the three MCPT timers under the main ATM interface.

Task ID	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>atm</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operations	atm	read, write
Task ID	Operations				
atm	read, write				

Examples The following example shows how to configure cell packing parameters on an ATM interface:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router (config)# interface atm 0/6/0/0
```

```
RP/0/RP0/CPU0:router(config-if)# l2transport  
RP/0/RP0/CPU0:router(config-if-l2)# cell-packing 6 3
```

Related Commands

Command	Description
atm mcpt-timers, on page 10	Defines the three MCPT timers under a main ATM interface.
show atm cell-packing, on page 48	Displays cell packing information for the Layer 2 attachment circuits (ACs) configured on your system.
show atm interface atm, on page 55	Displays ATM-specific information about an ATM interface.
show atm pvc, on page 60	Displays ATM PVC and traffic information for the entire router.
show atm pvp, on page 66	Displays ATM PVP and traffic information for the entire router, or a specific VPI or ATM interface.

class-int

To assign a virtual circuit (VC) class to an ATM main interface, use the **class-int** command in interface configuration mode. To remove a VC-class, use the **no** form of this command.

class-int *vc-class-name*

no class-int *vc-class-name*

Syntax Description

vc-class-name Name of the VC-class you are assigning to your ATM main interface or subinterface.

Command Default

No VC-class is assigned to an ATM main interface or subinterface.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Release 3.9.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

When you create a VC-class for an ATM main interface or subinterface, you can use the **shape** and **encapsulation** commands to define your parameters.

Parameters that are applied to an individual VC supersede interface- and subinterface-level parameters. Parameters that are configured for a VC through discrete commands entered in interface-ATM-VC configuration mode supersede VC-class parameters assigned to an ATM main interface or subinterface by the **class-int** command.



Note

This command is not available for Layer 2 interfaces.

Task ID

Task ID	Operations
atm	read, write

Examples

The following example shows how to create a class called “classA” and then apply that class to ATM main interface 1 in slot 6:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router (config)#vc-class atm classA
RP/0/RP0/CPU0:router (config-vc-class-atm) # shape cbr 40000
RP/0/RP0/CPU0:router (config-vc-class-atm) # encapsulation aal5snap
```



```
RP/0/RP0/CPU0:router(config-vc-class-atm)# oam-pvc manage 300
RP/0/RP0/CPU0:router(config-vc-class-atm)# commit
RP/0/RP0/CPU0:router(config-vc-class-atm)# exit
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/1
RP/0/RP0/CPU0:router(config-if)# class-int classA
RP/0/RP0/CPU0:router(config-if)#
```

Related Commands

Command	Description
show atm class-link, on page 50	Displays configuration information for the parameters on a VC class that is associated with a particular PVC.
show atm vc-class, on page 71	Displays information about all ATM VC classes on the router or for a specific ATM VC-class.

class-vc

To attach a virtual circuit (VC) class to an ATM permanent virtual circuit (PVC), use the **class-vc** command in ATM PVC configuration mode for a PVC that is configured on an ATM subinterface. To remove a VC-class from a PVC, use the **no** form of this command.

class-vc *vc-class-name*
no class-vc *vc-class-name*

Syntax Description

vc-class-name Name of the VC-class you are assigning to your ATM PVC.

Command Default

No VC-class is assigned to an ATM PVC.

Command Modes

ATM PVC configuration (config-atm-vc)

Command History

Release	Modification
Release 3.9.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

When you create a VC-class for an ATM subinterface PVC, you can use the **shape** and **encapsulation** commands to define your parameters.

Parameters that are applied to an individual VC supersede PVC-level parameters. Parameters that are configured for a VC through discrete commands entered in interface-ATM-VC configuration mode supersede VC-class parameters assigned to a PVC by the **class-vc** command.



Note

The **class-vc** command is available in ATM PVC configuration mode for a PVC that is configured on an ATM subinterface only. This command is not available in ATM PVC configuration mode for an ATM main interface.

Task ID

Task ID	Operations
atm	read, write

Examples

The following example shows how to create a class called “classA” and then apply that class to the subinterface 1 on the ATM main interface 1 in slot 6:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router (config)# vc atm classA
RP/0/RP0/CPU0:router (config-vc-class-atm) # shape cbr 40000
```

```
RP/0/RP0/CPU0:router(config-vc-class-atm)# commit
RP/0/RP0/CPU0:router(config-vc-class-atm)# exit
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/1.1 point-to-point
RP/0/RP0/CPU0:router(config-if)# pvc 10/100
RP/0/RP0/CPU0:router(config-atm-vc)# class-vc classA
RP/0/RP0/CPU0:router(config-atm-vc)#
```

Related Commands

Command	Description
show atm class-link, on page 50	Displays configuration information for the parameters on a VC class that is associated with a particular PVC.
show atm vc-class, on page 71	Displays information about all ATM VC classes on the router or for a specific ATM VC-class.

encapsulation (ATM)

To configure the ATM adaptation layer (AAL) and encapsulation type for a virtual circuit (VC) class, ATM permanent virtual circuit (PVC), or ATM permanent virtual path (PVP), use the **encapsulation** command in the appropriate configuration mode. To remove an encapsulation type, use the **no** form of this command.

For point-to-point ATM PVCs and vc-classes:

```
encapsulation aal5mux ipv4 | aal5nlpid | aal5snap
no encapsulation aal5mux ipv4 | aal5nlpid | aal5snap
```

For ATM Layer 2 PVCs:

```
encapsulation aal0 | aal5
no encapsulation aal0 | aal5
```

Syntax Description	
aal5mux ipv4	Specifies IPv4 encapsulation for multiplex (MUX)-type VCs. Note The aal5mux ipv4 keywords are available in ATM PVC configuration and ATM VC-class configuration modes only.
aal5nlpid	Specifies the AAL and encapsulation type that allows ATM interfaces to interoperate with High-Speed Serial Interfaces (HSSIs), which are using an ATM data service unit (ADSU) and running ATM-Data Exchange Interface (DXI). Supported on ATM PVCs only. Note The aal5nlpid keyword is available in ATM PVC configuration and ATM VC-class configuration modes only.
aal5snap	Specifies the AAL encapsulation type that supports Inverse ARP. Logical Link Control/Subnetwork Access Protocol (LLC/SNAP) precedes the protocol datagram. Note The aal5snap keyword is available in ATM PVC configuration and ATM VC-class configuration modes only.
aal0	Specifies the AAL encapsulation type that contains 48 bytes of data within an ATM cell. AAL0 cells are also referred to as “raw cells.” The payload consists of 48 bytes. Note The aal0 keyword is available in the ATM Layer 2 transport PVC configuration mode only.
aal5	Specifies the AAL encapsulation type that carries higher-layer datagrams while enhancing the link layer with services available through ATM. AAL5 is defined in the ITU standard I.363.5, and is typically used to carry IP datagrams over ATM. Note The aal5 keyword is available in the ATM Layer 2 transport PVC configuration mode only.

Command Default For point-to-point PVCs, the default encapsulation type is **aal5snap**.
For Layer 2 PVCs, the default encapsulation type is **aal5**.

Command Modes

ATM PVC configuration (config-atm-vc)

ATM VC-class configuration (config-vc-class-atm)

ATM layer 2 transport PVC configuration (config-atm-l2transport-pvc)

Command History

Release	Modification
Release 3.7.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **aal5mux ipv4** encapsulation option to dedicate the specified PVC to a single protocol; use the **aal5snap** encapsulation option to multiplex two or more protocols over the same PVC. Whether you select **aal5mux ipv4** or **aal5snap** encapsulation depends on the type of network you are configuring, and the pricing offered by that network. If the pricing of the network depends on the number of PVCs set up, we recommend **aal5snap** encapsulation. If pricing depends on the number of bytes transmitted, we recommend **aal5mux ipv4** encapsulation because it has less overhead than **aal5snap** and **aal5mux ipv4** encapsulation.

If you configure VC-class parameters for a PVC after that PVC is configured, you must enter the **shutdown** command followed by the **no shutdown** command on the ATM subinterface that hosts the PVC. This action restarts the interface, causing the newly configured VC-class parameters to take effect on that interface.

Unless specifically configured otherwise, a PVC automatically inherits the encapsulation type of the VC-class that is assigned to the main interface or subinterface that hosts the PVC. If no VC-class is assigned, then the PVC inherits the encapsulation type of the main interface or subinterface that hosts the PVC. If no encapsulation is configured of the main interface or subinterface, then the PVC inherits the default **aal5snap** encapsulation.

Use the **encapsulation** command in ATM PVC configuration mode to modify the inherited or default encapsulation assigned to a PVC. You can modify the encapsulation for each individual PVC to be different from the encapsulation configured for the VC-class that is assigned to the ATM main interface or subinterface that hosts the PVC.

If you do not use the **encapsulation** command to configure the encapsulation type for a new ATM PVC, then the PVC inherits the one of the following default configurations (listed in order of precedence from lowest to highest):

- The encapsulation assigned to the VC-class that is assigned to the PVC itself.
- The encapsulation assigned to the VC-class that is assigned to the ATM subinterface that hosts the PVC.
- The encapsulation assigned to the VC-class that is assigned to the ATM main interface that hosts the PVC
- The default **aal5snap** encapsulation

When configuring a PVC range or an individual PVC within a PVC range, the following encapsulation types are supported:

- **encapsulation aal5mux ipv4**
- **encapsulation aal5snap**



Note For Layer 2 PVCs, the default encapsulation type is **aal5**, and the encapsulation type is not inherited from the VC-class.

Task ID	Task ID	Operations
	atm	read, write

Examples

The following example shows how to configure a VC-class with **aal5snap** encapsulation:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# vc atm classA
RP/0/RP0/CPU0:router(config-vc-class-atm)# encapsulation aal5snap
```

The following example shows how to configure an individual PVC with **aal5mux** encapsulation:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/2/0/0.1 point-to-point
RP/0/RP0/CPU0:router(config-subif)# pvc 10/100
RP/0/RP0/CPU0:router(config-atm-vc)# encapsulation aal5mux
```

The following example shows how to remove **aal5mux ipv4** encapsulation from a VC-class:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# vc atm classA
RP/0/RP0/CPU0:router(config-vc-class-atm)# no encapsulation aal5mux ipv4
```

The following example shows how to configure an individual Layer 2 PVC with **aal0** encapsulation:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/1.10 l2transport
RP/0/RP0/CPU0:router(config-if)# pvc 30/300
RP/0/RP0/CPU0:router(config-atm-l2transport-pvc)# encapsulation aal0
```

Related Commands	Command	Description
	show atm pvc, on page 60	Displays ATM PVC and traffic information for the entire router.
	show atm vc-class, on page 71	Displays information about all ATM VC classes on the router or for a specific ATM VC-class.

interface atm

To configure an ATM interface and enter ATM interface configuration mode, use the **interface atm** command in global configuration mode. To delete the interface configuration, use the **no** form of this command.

```
interface atm interface-path-id[. subinterface][point-to-point | l2transport]
no interface atm interface-path-id[. subinterface]
```

Syntax Description

<i>interface-path-id</i> . [<i>subinterface</i>]	Physical interface or virtual interface followed by the optional subinterface path ID. Naming notation is <i>interface-path-id.subinterface</i> . The period in front of the subinterface value is required as part of the notation. For more information about the syntax for the router, use the question mark (?) online help function.
point-to-point	Interface functions as one endpoint of a point-to-point link.
l2transport	Interface functions as one endpoint on an Layer 2 link.

Command Default

No interfaces are configured.

Command Modes

Global configuration (config)

Command History

Release	Modification
Release 3.7.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **interface** command enters interface configuration mode to allow you to configure interfaces. If a virtual interface is configured, then the interface is created if it did not already exist.

When you issue the **interface atm** command in global configuration mode, the CLI prompt changes to “config-if,” indicating that you have entered interface configuration submode for an ATM interface.



Note

Although the CLI prompt looks the same in the interface configuration mode for an ATM main interface and for an ATM subinterface, the commands that are available under each interface type vary.

In the following sample output, the question mark (?) online help function displays all the commands available under the interface configuration submode for a ATM main interface:

```
RP/0/RP0/CPU0:router(config)# interface atm 0/2/0/0
RP/0/RP0/CPU0:router(config-if)#?

affinity          Affinity to include/exclude
  atm              Global ATM interface configuration subcommands
```

```

bandwidth      Set the bandwidth of an interface
cdp            Enable CDP on an interface
class-int     Apply a VC class
commit        Commit the configuration changes to running
crypto        Set crypto parameters
dampening     configure state dampening on the given interface
describe      Describe a command without taking real actions
description   Set description for this interface
do            Run an exec command
exit          Exit from this submode
flow          Netflow configuration
frame-relay   Frame Relay interface configuration commands
ipv4          IPv4 interface subcommands
ipv6          IPv6 interface subcommands
l2transport   Enable Layer 2 transport and enter its configuration submode
load-interval Specify interval for load calculation for an interface
mpls         MPLS interface subcommands
mtu          Set the MTU on an interface
no           Negate a command or set its defaults
pvc         Configure a pvc on this interface
root        Exit to the global configuration mode
show        Show contents of configuration
--More--

```

In the following sample output, the question mark (?) online help function displays all the commands available under the interface configuration submode for a point-to-point ATM subinterface:

```

RP/0/RP0/CPU0:router(config)# interface atm 0/2/0/0.1 point-to-point
RP/0/RP0/CPU0:router(config-if)# ?

```

```

affinity      Affinity to include/exclude
bandwidth     Set the bandwidth of an interface
cdp           Enable CDP on an interface
class-int     Apply a VC class
commit        Commit the configuration changes to running
crypto        Set crypto parameters
dampening     configure state dampening on the given interface
describe      Describe a command without taking real actions
description   Set description for this interface
do            Run an exec command
exit          Exit from this submode
flow          Netflow configuration
frame-relay   Frame Relay interface configuration commands
ipv4          IPv4 interface subcommands
ipv6          IPv6 interface subcommands
load-interval Specify interval for load calculation for an interface
logging       Per-interface logging configuration
mpls         MPLS interface subcommands
mtu          Set the MTU on an interface
no           Negate a command or set its defaults
pvc         Configure a pvc on this interface
root        Exit to the global configuration mode
show        Show contents of configuration
shutdown     shutdown the given interface
--More--

```

In the following sample output, the question mark (?) online help function displays all the commands available under the interface configuration submode for an ATM Layer 2 subinterface:

```

RP/0/RP0/CPU0:router(config)#interface atm 0/2/0/0.1 l2transport
RP/0/RP0/CPU0:router(config-if)#?

```


bandwidth	Set the bandwidth of an interface
cdp	Enable CDP on an interface
commit	Commit the configuration changes to running
crypto	Set crypto parameters
dampening	configure state dampening on the given interface
describe	Describe a command without taking real actions
description	Set description for this interface
do	Run an exec command
exit	Exit from this submode
firewall	Configure a Virtual Firewall on this Interface
flow	Netflow configuration
frame-relay	Frame Relay interface configuration commands
ipv4	IPv4 interface subcommands
ipv6	IPv6 interface subcommands
load-interval	Specify interval for load calculation for an interface
logging	Per-interface logging configuration
mpls	MPLS interface subcommands
mtu	Set the MTU on an interface
no	Negate a command or set its defaults
pvc	Configure a pvc on this interface
pvp	Configure a pvp on this interface
pwd	Commands used to reach current submode
root	Exit to the global configuration mode
show	Show contents of configuration

Cisco IOS XR software supports bulk removal of subinterfaces. To remove several subinterfaces with a single command enter, replace the *subinterface* argument with an asterisk (*), as shown in the following example:

```
RP/0/RP0/CPU0:router(config)# no interface atm 0/6/0/1.*
```



Note Before you can perform a bulk removal of several subinterfaces, OAM F5 loopback cell generation must be enabled on the PVCs that are configured under the subinterfaces you want to remove. To enable OAM F5 loopback cell generation on a PVC, use the [oam-pvc manage, on page 31](#) command.



Note The **I2transport** keyword is mutually exclusive with any Layer 3 interface configuration.

Task ID

Task ID	Operations
---------	------------

interface	read, write
-----------	----------------

Examples

The following example shows how to enter interface configuration mode for the ATM main interface 1 in slot 6:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/1
RP/0/RP0/CPU0:router(config-if)#
```

The following example shows how to enter ATM interface configuration mode for a point-to-point subinterface. In this example, the user adds a subinterface to the ATM main interface 0 in slot 2:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/2/0/0.1 point-to-point
RP/0/RP0/CPU0:router(config-if)#
```

The following example shows how to enter ATM interface configuration mode for a Layer 2 subinterface. In this example, the user adds a subinterface to the ATM main interface 0 in slot 2:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/2/0/0.1 l2transport
RP/0/RP0/CPU0:router(config-if)#
```

Related Commands

Command	Description
show atm interface atm, on page 55	Displays ATM-specific information about an ATM interface.

l2transport (ATM)

To enable Layer 2 transport port mode on an ATM interface and enter Layer 2 transport configuration mode, use the **l2transport** command in interface configuration mode. To disable Layer 2 transport port mode on an ATM interface, use the **no** form of this command.

l2transport
no l2transport

Syntax Description This command has no keywords or arguments.

Command Default No default behavior or values

Command Modes Interface configuration (config-if)

Command History	Release	Modification
	Release 3.7.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

When you issue the **l2transport** command in interface configuration mode, the CLI prompt changes to “config-if-l2,” indicating that you have entered the Layer 2 transport configuration submenu. In the following sample output, the question mark (?) online help function displays all the commands available under Layer 2 transport configuration submenu for an ATM interface:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/2/0/0
RP/0/RP0/CPU0:router(config-if)# l2transport
RP/0/RP0/CPU0:router(config-if-l2)# ?

cell-packing    Configure L2VPN cell packing parameters
  commit        Commit the configuration changes to running
  describe      Describe a command without taking real actions
  do            Run an exec command
  exit          Exit from this submenu
  no            Negate a command or set its defaults
  pwd          Commands used to reach current submenu
  root          Exit to the global configuration mode
  service-policy Configure QoS Service policy
  show          Show contents of configuration

RP/0/RP0/CPU0:router(config-if-l2)#
```



Note The **l2transport** command is mutually exclusive with any Layer 3 interface configuration.

Task ID	Task ID	Operations
	l2vpn	read, write

Examples

The following example shows how to enable Layer 2 transport port mode on an ATM interface and enter Layer 2 transport configuration mode:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface ATM 0/2/0/0
RP/0/RP0/CPU0:router(config-if)# l2transport
RP/0/RP0/CPU0:router(config-if-l2)#
```

Related Commands

Command	Description
show l2vpn xconnect	Displays brief information on configured xconnects.

oam ais-rdi

To configure the behavior of an ATM permanent virtual circuit (PVC) when it receives Operation, Administration, and Maintenance (OAM) alarm indication signal and remote defect indication (AIS/RDI) cells, use the **oam ais-rdi** command in ATM PVC configuration or ATM VC-class configuration mode. To return the PVC to the default behavior, use the **no** form of this command.

```
oam ais-rdi [down-count [up-count]]
no oam ais-rdi [down-count [up-count]]
```

Syntax Description

down-count (Optional) Number of consecutive OAM AIS/RDI cells received on a PVC before that PVC is brought down. Range is from 1 through 60. The default is 1.

up-count (Optional) Number of seconds after which a down PVC is brought up if no OAM AIS/RDI cells are received. Range is from 3 through 60. The default is 3.

The specified *up-count* applies under the following conditions only:

- OAM F5 loopback cell generation must be enabled on the PVC.
- The PVC is in a down state because it received AIS/RDI cells.

Note To enable OAM F5 loopback cell generation on a PVC, use the [oam-pvc manage, on page 31](#) command.

Command Default

down-count: 1

up-count: 3

Command Modes

ATM VC-class configuration (config-vc-class-atm)

ATM PVC configuration (config-atm-vc)

Command History

Release	Modification
Release 3.9.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **oam ais-rdi** command to configure the following:

- the maximum number of Operation, Administration, and Maintenance (OAM) alarm indication signals and remote defect indication (AIS/RDI) cells that can be received on a PVC before it is brought down.
- the interval after which a downed PVC comes back up if no OAM AIS/RDI cells have been received.

Use the **oam ais-rdi** command in ATM PVC configuration mode to configure the OAM AIS/RDI down count and up count for a specific PVC.

Use the **oam ais-rdi** command in ATM VC-class configuration mode to configure the OAM AIS/RDI down count and up count for all PVCs that are associated with the specified class map.

Keep the following in mind when configuring the OAM AIS/RDI down count and up count:

- Unless specifically configured otherwise, a PVC automatically inherits the OAM AIS/RDI down count and up count of the VC-class that is assigned to the main interface or subinterface that hosts the PVC.
- If the OAM AIS/RDI down count and up count is not configured for the VC-class, or if no VC-class is assigned to the main interface or subinterface that hosts the PVC, or to the PVC itself, then the PVC inherits the default OAM AIS/RDI down count and up count.

The default values for the OAM AIS/RDI down count and up count are used in the following situations:

- If the **oam ais-rdi** command has not been entered
- If the **oam ais-rdi** command is entered without the *up-count* or *down-count* argument
- If the **no oam ais-rdi** command is entered

If the **oam ais-rdi** command is entered without the *up-count* or *down-count* argument, the command does not appear in the **show running-config** command output.

Task ID

Task ID	Operations
atm	read, write

Examples

The following example shows how to bring down a PVC after 25 consecutive OAM AIS/RDI cells have been received on the PVC. The PVC is brought up when no OAM AIS/RDI cells have been received for 5 seconds.

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/2/0/0.1 point-to-point
RP/0/RP0/CPU0:router(config-subif)# pvc 50/100
RP/0/RP0/CPU0:router(config-atm-vc)# oam ais-rdi 25 5
```

The following example shows how to configure the OAM AIS/RDI down count and up count for a VC-class. In this example, all PVCs that are associated with the VC-class called “classA” inherit an OAM AIS/RDI down count of 30 and up count of 10:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# vc atm classA
RP/0/RP0/CPU0:router(config-vc-class-atm)# oam ais-rdi 30 10
```

Related Commands

Command	Description
show atm class-link, on page 50	Displays configuration information for the parameters on a VC class that is associated with a particular PVC.
show atm pvc, on page 60	Displays ATM PVC and traffic information for the entire router.

oam-pvc manage

To enable ATM Operation, Administration, and Maintenance (OAM) F5 loopback cell generation and configure continuity check (CC) management for an ATM permanent virtual circuit (PVC), use the **oam-pvc manage** command in ATM PVC configuration or ATM VC-class configuration mode. To disable OAM F5 continuity checking on a PVC, use the **no** form of this command.

In ATM PVC configuration mode:

```
oam-pvc manage [f frequency] [disable] [keep-vc-up [seg-aisrdi-failure]]
no oam-pvc manage [frequency] [disable] [keep-vc-up [seg-aisrdi-failure]]
```

In ATM VC class configuration mode:

```
oam-pvc manage [frequency]
no oam-pvc manage [frequency]
```

Syntax Description	
frequency	(Optional) Frequency (in seconds) at which end-to-end F5 OAM loopback cells are transmitted. Range is from 0 through 600.
disable	(Optional) Disables OAM management on the specified PVC. Note The disable keyword is available in ATM PVC configuration mode only.
keep-vc-up	(Optional) Specifies that PVC remains in the UP state when CC cells detect connectivity failure. Note The keep-vc-up keyword is available in ATM PVC configuration mode only.
seg-aisrdi-failure	(Optional) Specifies that if segment AIS/RDI cells are received, the VC will not be brought down because of end CC failure or loopback failure. Note The seg-aisrdi-failure keyword is available in ATM PVC configuration mode only.

Command Default *frequency*: 10 seconds

Command Modes ATM PVC configuration (config-atm-vc)
ATM VC class configuration (config-vc-class-atm)

Command History	Release	Modification
	Release 3.9.2	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Keep the following in mind when configuring the OAM F5 loopback cell generation and CC management for an ATM PVC:

- Unless specifically configured otherwise, a PVC automatically inherits the OAM F5 loopback cell management configuration from the VC-class that is assigned to the main interface or subinterface that hosts the PVC.
- If OAM F5 loopback cell generation is not enabled for the assigned VC-class, or if no VC-class is assigned to the PVC itself, or to main interface or subinterface that hosts the PVC, then OAM F5 loopback cell generation is disabled on that PVC. To enable OAM F5 loopback cell generation on that PVC, you need to use the **oam-pvc manage** command in ATM PVC configuration mode.
- VC-classes support the configuration of the *seconds* argument only; the **keep-vc-up**, **disable**, and **seg-aisrldi-failure** keywords are available in ATM PVC configuration mode only and are configured directly on each individual PVC.

Task ID	Task ID	Operations
	atm	read, write

Examples

The following example shows how to enable OAMF5 loopback cell generation on a PVC, and configure the PVC to remain up when CC cells detect connectivity failure:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/2/0/0.1 point-to-point
RP/0/RP0/CPU0:router(config-subif)# pvc 10/100
RP/0/RP0/CPU0:router(config-atm-vc)# oam-pvc manage 200 keep-vc-up
```

The following example shows how to disable OAMF5 loopback cell generation on a PVC:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/2/0/0.1 point-to-point
RP/0/RP0/CPU0:router(config-subif)# pvc 10/100
RP/0/RP0/CPU0:router(config-atm-vc)# oam-pvc manage disable
```

The following example shows how to configure the OAM F5 loopback frequency for a VC-class. In this example, all PVCs associated with the VC-class called “classA” transmit end-to-end F5 OAM loopback cells every 300 seconds:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# vc atm classA
RP/0/RP0/CPU0:router(config-vc-class-atm)# oam-pvc manage 300
```

The following example shows how to remove the configured ATM OAM F5 loopback frequency from a VC-class:

```
RP/0/RP0/CPU0:router# configure
```



```
RP/0/RP0/CPU0:router(config)# vc atm classA  
RP/0/RP0/CPU0:router(config-vc-class-atm)# no oam-pvc manage
```

Related Commands	Command	Description
	show atm class-link, on page 50	Displays configuration information for the parameters on a VC class that is associated with a particular PVC.
	show atm pvc, on page 60	Displays ATM PVC and traffic information for the entire router.

oam retry

To configure the number of F5 Operation, Administration, and Maintenance (OAM) loopback cells that need to be successfully transmitted by a down ATM permanent virtual circuit (PVC) before it is brought up, use the **oam retry** command in ATM PVC configuration or ATM VC-class configuration mode. To return the PVC to the default behavior, use the **no** form of this command

```
oam retry [up-count [down-count [retry-frequency]]]
no oam retry [up-count [down-count [retry-frequency]]]
```

Syntax Description

retry-count	(Optional) Number of consecutive end-to-end F5 OAM loopback cell responses that must be received to change a connection state to up.
down-count	(Optional) Number of consecutive unreceived end-to-end F5 OAM loopback cells allowed on a PVC before its state changes to down.
retry-frequency	(Optional) Frequency (in seconds) at which end-to-end F5 OAM loopback cells are transmitted when a change in the up or down state is being verified. For example, if a PVC is up and a loopback cell response is not received after the frequency (in seconds) is specified using the oam-pvc manage command, loopback cells are sent at the retry frequency to verify whether the PVC is down.

Command Default

```
up-count: 3
down-count: 5
retry-frequency: 1 second
```

Command Modes

```
ATM PVC configuration (config-atm-vc)
ATM VC-class configuration (config-vc-class-atm)
```

Command History

Release	Modification
Release 3.9.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Keep the following in mind when configuring the OAM AIS/RDI down count and up count:

- Unless specifically configured otherwise, a PVC automatically inherits the OAM AIS/RDI down count and up count of the VC-class that is assigned to the main interface or subinterface that hosts the PVC.
- If no encapsulation is configured for the VC-class, or if no VC-class is assigned to the main interface or subinterface that hosts the PVC, or to the PVC itself, then the PVC inherits the default OAM AIS/RDI down count and up count.

Keep the following in mind when configuring the F5 OAM loopback cell up count, down count, and retry frequency:

- Unless specifically configured otherwise, a PVC automatically inherits the F5 OAM loopback cell up count, down count, and retry frequency of the VC-class that is assigned to the main interface or subinterface that hosts the PVC.
- If the F5 OAM loopback cell up count, down count, and retry frequency are not configured for the VC-class, or if no VC-class is assigned to the PVC itself, or to the main interface or subinterface that hosts the PVC, then the PVC inherits the default F5 OAM loopback cell up count, down count, and retry frequency.

In other words, if the **oam retry** command is not explicitly configured on an individual PVC, then that PVC inherits the following default configuration (listed in order of precedence):

- F5 OAM loopback cell up count, down count, and retry frequency configured for the VC-class that is assigned to the PVC itself
- F5 OAM loopback cell up count, down count, and retry frequency configured for VC-class assigned to the ATM subinterface that hosts the PVC
- F5 OAM loopback cell up count, down count, and retry frequency configured for the VC-class assigned to the ATM main interface that hosts the PVC



Note For the defaults, it is assumed that OAM loopback cell generation is enabled on the PCV. To enable OAM F5 loopback cell generation, use the **oam-pvc manage** command.

Task ID

Task ID	Operations
atm	read, write

Examples

The following example shows how to OAM management parameters for an ATM PVC. In this example, the PVC is brought down after five consecutive OAM AIS/RDI cells are received and then brought back up when no OAM AIS/RDI cells are received for 10 seconds. End-to-end F5 OAM loopback cells are transmitted every five seconds if a change in the up or down state is verified.

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/2/0/0.1 point-to-point
RP/0/RP0/CPU0:router(config-subif)# pvc 10/100
RP/0/RP0/CPU0:router(config-atm-vc)# oam retry 5 10 5
```

The following example shows how to configure OAM management parameters for a VC-class. In this example, all PVCs that are associated with the VC-class called “classA” inherit an OAM up-count of 3, down-count of 5, and retry-frequency of 10:

```
RP/0/RP0/CPU0:router# configure
```

```
RP/0/RP0/CPU0:router(config)# vc atm classA  
RP/0/RP0/CPU0:router(config-vc-class-atm)# oam retry 10 20 10
```

Related Commands

Command	Description
show atm class-link, on page 50	Displays configuration information for the parameters on a VC class that is associated with a particular PVC.
show atm pvc, on page 60	Displays ATM PVC and traffic information for the entire router.

ping atm interface atm

To verify connectivity between two ATM connection endpoints through a permanent virtual circuit (PVC) or VP-tunnel, use the **ping atm interface atm** command in EXEC mode.

ping atm interface atm *interface-path-id* [*. subinterface*] [*vpi/vci*] [**end-loopback** *packets* | **seg-loopback** *packets*] [**timeout** *seconds*]

Syntax Description

<i>interface-path-id</i> [<i>.subinterface</i>]	Physical interface or virtual interface followed by the optional subinterface path ID. Naming notation is <i>interface-path-id.subinterface</i> . The period in front of the subinterface value is required as part of the notation. For more information about the syntax for the router, use the question mark (?) online help function.
<i>vpi/vci</i>	(Optional) ATM virtual path identifier (VPI) and virtual channel identifier (VCI) numbers. The absence of the slash (/) and a <i>vpi</i> value defaults the <i>vpi</i> value to 0. Note A VPI of 0 is not applicable to VP-tunnels or Layer 2 PVPs.
end-loopback <i>packets</i>	(Optional) Sends a specified number of end-to-end OAM loopback packets over the connection. Replace <i>packets</i> with the number of end-to-end OAM loopback packets you want to send over the ATM interface.
seg-loopback <i>packets</i>	(Optional) Sends a specified number of segmented OAM loopback packets over the connection. Replace <i>packets</i> with the number of OAM loopback packets you want to send over the ATM interface.
timeout <i>seconds</i>	Predetermined time during which the destination can send an OAM loopback response cell back to the source. Replace <i>seconds</i> with number of seconds to wait for an OAM loopback response before the ping times out. The default value of the timeout is 2 seconds on Cisco routers.

Command Default

seconds: 2

Command Modes

EXEC (#)

Command History

Release	Modification
Release 3.9.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The following guidelines apply to PVCs and VC-classes.

The **ping atm interface atm** command sends an OAM packet to verify ATM PVC connectivity. The status of the PVC is displayed when a response to the OAM packet is received. This is a common method for testing the accessibility of the devices.

The **ping atm interface atm** command is used to determine the following:

- Whether a remote host is active or inactive.
- The round-trip delay in communicating with the host.
- Packet loss.

For the *interface-path-id* argument, use the following guidelines:

- If specifying a physical interface, the naming notation is *rack/slot/module/port*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:
 - *rack*: Chassis number of the rack.
 - *slot*: Physical slot number of the line card.
 - *module*: Module number. A physical layer interface module (PLIM) is always 0.
 - *port*: Physical port number of the interface.
- If specifying a virtual interface, the number range varies, depending on interface type.

Include the **end-loopback packets** keyword argument with the **ping atm interface atm** command to verify end-to-end PVC integrity.

Include the **seg-loopback packets** keyword argument with the **ping atm interface atm** command to verify PVC integrity to the immediate neighboring ATM device.



Note The **ping** command is not available for Layer 2 ACs.

Task ID

Task ID	Operations
basic-services	execute
atm	read

Examples

The following example shows how verify connectivity between two ATM connection endpoints through a PVC with a VPI of 10 and a VCI of 100.

```
RP/0/RP0/CPU0:router# ping atm interface atm 0/2/0/0.10 10/100
```

Related Commands

Command	Description
show atm interface atm, on page 55	Displays ATM-specific information about an ATM interface.

pvc (ATM)

To create an ATM permanent virtual circuit (PVC) with Interim Local Management Interface (ILMI) encapsulation and enter ATM virtual circuit configuration mode, use the **pvc** command in interface configuration mode or subinterface configuration mode. To remove an ATM PVC from an interface, use the **no** form of this command.

In interface configuration mode for a point-to-point ATM main interface:

```
pvc vpi/vci ilmi
no pvc vpi/vci ilmi
```

In interface configuration mode for an ATM subinterface:

```
pvc vpi/vci
no pvc vpi/vci
```

Syntax Description

vpi ATM network virtual path identifier (VPI) for this PVC.

If support for the 12-bits VPI Network-Node Interface (NNI) cell format is enabled on the ATM main interface that hosts this PVC, then the range is from 0 through 4095.

If support for the 12-bits VPI NNI cell format is not enabled on the host ATM main interface, then the range is from 0 through 255.

Note To enable support for the 12-bits VPI NNI cell format on the main ATM interface hosting the specified PVC, use the **atm maxvpi-bits 12** command.

vci ATM network virtual channel identifier (VCI) for this PVC. Range is from 1 through 65535.

The VCI is a 16-bit field in the header of the ATM cell. The VCI value is unique only on a single link, not throughout the ATM network, because it has local significance only.

Note Typically, lower values from 1 through 18 are reserved for specific traffic (for example, F4 OAM, ILMI, and so on), and should not be used.

Note The *vpi* and *vci* arguments cannot both be set to 0; if one is 0, the other cannot be 0.

ilmi Sets up communication with the Interim Local Management Interface (ILMI). The associated VPI is 0, and VCI the associated VCI is any VCI.

Note VCI 16 is typically used for ILMI.

Note The **ilmi** keyword is available for point-to-point ATM interfaces only.

Command Default

No PVC is defined.

Command Modes

Interface configuration (config-if)

Subinterface configuration (config-subif)

Command History

Release	Modification
Release 3.9.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **pvc** command creates a PVC and attaches it to the specified VPI and VCI. Both the *vpi* and *vci* arguments cannot be simultaneously specified as 0; if one is 0, the other cannot be 0.

Cisco IOS XR software dynamically creates rate queues as necessary to satisfy the requests of the PVC commands.

When you issue the **pvc** command in interface or subinterface configuration mode for a point-to-point ATM main interface, the CLI prompt changes to “config-atm-vc,” indicating that you have entered the ATM virtual circuit configuration submode.

**Note**

Although the CLI prompt looks the same for the ATM virtual circuit configuration submode under the ATM main interface and the ATM subinterface in point-to-point configurations, the commands that are available under each interface type vary.

When you issue the **pvc** command in subinterface configuration mode for an ATM AC, the CLI prompt changes to “config-atm-l2transport-pvc,” indicating that you have entered the ATM layer 2 transport PVC configuration submode.

**Note**

For the 4-Port OC-3 and 4-Port OC-12 line cards, the VCI range is 19 through 65535.

In the following sample output, the question mark (?) online help function displays all the commands available under the ATM virtual circuit configuration submode for the main ATM interface:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/2/0/0.1 point-to-point
RP/0/RP0/CPU0:router(config-if)# pvc 10/100
RP/0/RP0/CPU0:router(config-atm-vc ?

  commit      Commit the configuration changes to running
  describe    Describe a command without taking real actions
  do          Run an exec command
  exit        Exit from this submode
  no          Negate a command or set its defaults
  root        Exit to the global configuration mode

RP/0/0/CPU0:router(config-atm-vc)#
```

In the following sample output, the question mark (?) online help function displays all the commands available under the ATM virtual circuit configuration submode for the ATM subinterface:

```
RP/0/RP0/CPU0:router# configure
```



```
RP/0/RP0/CPU0:router(config-if)# interface atm 0/2/0/0.1 point-to-point
RP/0/RP0/CPU0:router(config-subif)# pvc 20/200
RP/0/RP0/CPU0:router(config-atm-vc)# ?
```

```
class-vc      Configure vc-class
commit        Commit the configuration changes to running
describe      Describe a command without taking real actions
do            Run an exec command
encapsulation Configure encapsulation on this PVC
exit          Exit from this submode
no            Negate a command or set its defaults
oam           Configure ATM OAM VC commands
oam-pvc       Enter OAM to generate OAM cells
root          Exit to the global configuration mode
service-policy Configure QoS Service policy
shape         ATM Traffic Shaping
show          Show contents of configuration
```

```
RP/0/RP0/CPU0:router(config-atm-vc)#
```

In the following sample output, the question mark (?) online help function displays all the commands available under the ATM layer 2 transport PVC configuration submode for the ATM interface:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config-if)# interface atm 0/2/0/0.1 l2transport
RP/0/RP0/CPU0:router(config-subif)# pvc 20/200
RP/0/RP0/CPU0:router(config-atm-l2transport-pvc)# ?
```

```
cell-packing  Configure L2VPN cell packing parameters
class-vc      Configure vc-class
commit        Commit the configuration changes to running
describe      Describe a command without taking real actions
do            Run an exec command
encapsulation Configure encapsulation on this PVC
exit          Exit from this submode
no            Negate a command or set its defaults
oam           Configure ATM OAM VC commands
oam-ac        Configure L2VPN OAM parameters
oam-pvc       Enter OAM to generate OAM cells
pwd           Commands used to reach current submode
root          Exit to the global configuration mode
service-policy Configure QoS Service policy
shape         ATM Traffic Shaping
show          Show contents of configuration
```

Task ID

Task ID	Operations
atm	read, write

Examples

The following example shows how to create an ATM PVC with ILMI encapsulation on an ATM main interface, and enter ATM virtual circuit configuration mode:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/1
RP/0/RP0/CPU0:router(config-if)# pvc 5/100 ilmi
```

```
RP/0/RP0/CPU0:router(config-atm-vc)#
```

The following example shows how to create an ATM PVC on a point-to-point ATM subinterface and enter ATM virtual circuit configuration mode:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config-if)# interface atm 0/2/0/0.1 point-to-point
RP/0/RP0/CPU0:router(config-subif)# pvc 20/200
RP/0/RP0/CPU0:router(config-atm-vc)#
```

The following example shows how to create an ATM PVC on an ATM layer 2 subinterface and enter ATM layer 2 transport PVC configuration mode:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config-if)# interface atm 0/2/0/0.1 l2transport
RP/0/RP0/CPU0:router(config-subif)# pvc 20/200
RP/0/RP0/CPU0:router(config-atm-l2transport-pvc)#
```

Related Commands

Command	Description
show atm class-link, on page 50	Displays configuration information for the parameters on a VC class that is associated with a particular PVC.
show atm pvc, on page 60	Displays ATM PVC and traffic information for the entire router.

pvp (ATM)

To create an ATM permanent virtual path (PVP) and enter ATM layer 2 transport PVP configuration mode, use the **pvp** command in subinterface configuration mode. To remove an ATM PVP from an interface, use the **no** form of this command.

pvp *vpi*
no pvp *vpi*

Syntax Description

vpi ATM network virtual path identifier (VPI) for this PVC.

If support for the 12-bit VPI Network-Node Interface (NNI) cell format is enabled on the ATM main interface that hosts this PVP, then the range is from 1 through 4095.

If support for the 12-bit VPI NNI cell format is not enabled on the host ATM main interface, then the range is from 1 through 255.

Note To enable support for the 12-bit VPI NNI cell format on the main ATM interface hosting the specified PVP, use the **atm maxvpi-bits 12** command.

Command Default

No PVC is defined.

Command Modes

Subinterface configuration (config-subif)

Command History

Release	Modification
Release 3.7.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **pvp** command creates a PVP and attaches it to the specified VPI.

Cisco IOS XR software dynamically creates rate queues as necessary to satisfy the requests of the PVP commands.

When you issue the **pvp** command in subinterface configuration mode, the CLI prompt changes to “config-atm-l2transport-pvp,” indicating that you have entered the ATM layer 2 transport PVP configuration submode.



Note The **pvp** command is available for layer 2 subinterfaces only.



Note PVPs do not support a VPI of 0.

In the following sample output, the question mark (?) online help function displays all the commands available under the ATM layer 2 transport PVP configuration submode for the ATM subinterface:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config-if)# interface atm 0/2/0/0.1 l2transport
RP/0/RP0/CPU0:router(config-subif)# pvp 20
RP/0/RP0/CPU0:router(config-atm-l2transport-pvp)# ?

  cell-packing    Configure L2VPN cell packing parameters
  commit          Commit the configuration changes to running
  describe        Describe a command without taking real actions
  do              Run an exec command
  exit            Exit from this submode
  no              Negate a command or set its defaults
  pwd             Commands used to reach current submode
  root            Exit to the global configuration mode
  shape           ATM Traffic Shaping
  show            Show contents of configuration
```

Task ID	Task ID	Operations
	atm	read, write

Examples

The following example shows how to create an ATM PVP on an ATM subinterface, and enter ATM layer 2 transport PVP configuration mode:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config-if)# interface atm 0/2/0/0.1 l2transport
RP/0/RP0/CPU0:router(config-subif)# pvp 20
RP/0/RP0/CPU0:router(config-atm-l2transport-pvp)#
```

Related Commands	Command	Description
	show atm pvp, on page 66	Displays ATM PVP and traffic information for the entire router, or a specific VPI or ATM interface.

shape

To configure ATM traffic shaping for a PVC, use the **shape** command in the appropriate command mode. To remove the configured ATM traffic shaping and return the PVC to using the default constant bit rate (CBR) traffic shaping, use the **no** form of this command.

```
shape cbr peak_output_rate |ubr peak_output_rate |vbr-nrt peak_output_rate sustained_output_rate
burst_size |vbr-rt peak_output_rate sustained_output_rate burst_size
no shape
```

Syntax Description

cbr	Configures the service class for the VC or VP-tunnel to be CBR. Range is from 38 through 622000 kbps. This is the default service class.
ubr	Configures the service class for the VC or VP-tunnel to be unspecified bit rate (UBR). UBR is intended for non-real-time applications that do not require any maximum bound on the transfer delay or on the cell loss ratio. Ranges follow: <ul style="list-style-type: none"> • OC12—from 38 through 622000 • OC3—from 38 through 155000
vbr-nrt	Configures the service class for the VC or VP-tunnel to be variable Bit Rate-Non Real Time (VBR-nrt).
vbr-rt	Configures the service class for the VC or VP-tunnel to be variable bit rate-real time (VBR-rt).
<i>peak_output_rate</i>	Peak output rate for the bit rate. Replace the <i>peak_output_rate</i> argument with the peak output rate in kbps. For VP-tunnels, the ranges follow: <ul style="list-style-type: none"> • OC12—84 through 622000 • OC3—84 through 155000 For VCs, the ranges follow: <ul style="list-style-type: none"> • OC12—38 through 622000 • OC3—38 through 155000 <p>Note The <i>peak_output_rate</i> must be to be greater than <i>sustained_output_rate</i>.</p>

sustained_output_rate Sustained output rate for the bit rate. Replace the *sustained_output_rate* argument with the sustained output rate in kbps.

For VP-tunnels, the ranges follow:

- OC12—84 through 622000
- OC3—84 through 155000

For VCs, the ranges follow:

- OC12—38 through 622000
- OC3—38 through 155000

Note The *sustained_output_rate* must be to be less than *peak_output_rate*.

burst_size Burst cell size for the bit rate. Replace the *sustained_output_rate* argument with the burst size. Range is from 1 through 8192.

Command Default The default service class for the VC is **cbr**.

Command Modes ATM PVC configuration (config-atm-vc)
 ATM VC-class configuration (config-vc-class-atm)
 ATM Layer 2 transport PVC configuration (config-atm-l2transport-pvc)
 ATM Layer 2 transport PVP configuration (config-atm-l2transport-pvp)

Command History	Release	Modification
	Release 3.7.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	atm	read, write

Examples The following example shows how to configure the service class for a PVC to be UBR, with a peak output of 150,000 kbps:

```
RP/0/RP0/CPU0:router#config
RP/0/RP0/CPU0:router(config)# interface atm 0/6/0/0.2 point-to-point
RP/0/RP0/CPU0:router(config-subif)# pvc 20/200
RP/0/RP0/CPU0:router(config-atm-vc)# shapeubr 150000
```

The following example shows how to configure the service class for a VC to be VBR-nrt:

```
RP/0/RP0/CPU0:router# config
RP/0/RP0/CPU0:router(config)# vc-class atm class1
RP/0/RP0/CPU0:router(config-vc-class-atm)# shape vbr-nrt 100000 100000 8000
RP/0/RP0/CPU0:router(config-vc-class-atm)# exit
RP/0/RP0/CPU0:router(config)# exit
Uncommitted changes found, commit them before exiting(yes/no/cancel)? [cancel]:y
RP/0/RP0/CPU0:router#
```

Related Commands

Command	Description
show atm pvc, on page 60	Displays ATM PVC and traffic information for the entire router.
show atm pvp, on page 66	Displays ATM PVP and traffic information for the entire router, or a specific VPI or ATM interface.

show atm cell-packing

To display cell packing information for the Layer 2 attachment circuits (ACs) configured on your system, use the **show atm cell-packing** command in EXEC mode.

show atm cell-packing

Syntax Description This command has no keywords or arguments.

Command Default No default behavior or values

Command Modes EXEC (#)

Command History	Release	Modification
	Release 3.7.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operations
	atm	read

Examples

The following sample output is from the **show atm cell-packing** command:

```
RP/0/RP0/CPU0:router# show atm cell-packing

          Circuit                local   avg #   negotiated   avg #
          Type                   MNCP   cells/pkt  MNCP         cells/pkt  MCPT
ATM0/2/0/1.200   vc 1/200    1         0           1            0          50
ATM0/2/0/1.300   vc 1/300    1         0           1            0          50
```

Table 1: show atm cell-packing Field Descriptions

Field	Description
Circuit Type	AC instance and virtual channel identifier. <ul style="list-style-type: none"> The AC instance is expressed in the <i>rack/slot/module/port.subinterface</i> format. The virtual channel identifier is expressed in the <i>subinterface/vci</i> format.
Local MNCP	Maximum number of cells that can be packed on the local AC.
AVG cells/pkt rcvd	Average number of cells in a packed cell received from the peer, or the average number of cells packed by the peer.

Field	Description
negotiated MNCP	Negotiated maximum number of cells that can be packed on a psuedowire between PE routers.
AVG cells/pkt sent	Maximum number of cells that can be packed on the peer AC.
MCPT	Maximum number of cells allowed per packet configured on the local MCPT.

show atm class-link

To display configuration information for the parameters on a virtual circuit (VC) class that is associated with a particular PVC, use the **show atm class-link** command in privileged EXEC mode.

show atm class-link *vpi/vci*

Syntax Description *vpi/vci* ATM VPI and VCI numbers. The absence of the slash (/) and a *vpi* value defaults the *vpi* value to 0.

Note A VPI of 0 is not applicable to VP-tunnels.

Command Default The absence of the slash (/) and a *vpi* value defaults the *vpi* value to 0.

Command Modes EXEC (#)

Command History	Release	Modification
	Release 3.9.2	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note If a PVC or its host interface is associated with a VC-class, then that PVC inherits all the values configured for that VC-class. If no VC-class is configured for a PVC or its host interface, then the command output displays a message that says “VC class not supported on this VC.”

Task ID	Task ID	Operations
	atm	read

Examples

The following sample output is from the **show atm class-link** command:

```
RP/0/RP0/CPU0:router# show atm class-link 10/100

ATM0/2/0/0.1: VPI: 10 VCI: 100
shape : cbr 100000 (VC-class configured on VC)
encapsulation : aal5snap (VC-class configured on VC)
oam-pvc : manage 300 (VC-class configured on VC)
oam retry : 3 5 1 (Default value)
oam ais-rdi : 1 3 (Default value)
```

[Table 2: show atm class-link Field Descriptions, on page 51](#) describes the significant fields shown in the display.

Table 2: show atm class-link Field Descriptions

Field	Description
ATM <i>rack/slot/module/port</i>	Interface instance, expressed in the <i>rack/slot/module/port</i> format.
VPI	Virtual path identifier.
VCI	Virtual channel identifier.
shape	Service class for the VC or VP-tunnel and the peak output rate for the bit rate. Possible service classes follow: <ul style="list-style-type: none"> • cbr • ubr • vbr-nrt • vbr-rt
encapsulation	Encapsulation type for this VC.
oam-pvc	Frequency (in seconds) at which end-to-end F5 OAM loopback cells are transmitted on this PVC. Range is from 0 through 600. Note Use the oam-pvc manage command to modify the current configuration for this field.
oam retry	Displays the following F5 OAM loopback cell retry count, down count, and retry frequency that has been configured on the VC-class that is associated with the specified PVC: <ul style="list-style-type: none"> • Number of consecutive end-to-end F5 OAM loopback cell responses that must be received to change a connection state to up. (Retry count) • Number of consecutive unreceived end-to-end F5 OAM loopback cells allowed on a PVC before its state changes to down. (down count) • Frequency (in seconds) at which end-to-end F5 OAM loopback cells are transmitted when a change in the up or down state is being verified. (retry frequency) Note Use the oam retry command to modify the current configuration for this field. Note If the F5 OAM loopback cell retry count, down count, or retry frequency was not configured on the VC-class map that is associated with the specified PVC, then the command output does not display information for the oam retry field.

Field	Description
oam ais-rdi	<p>Displays the following OAM AIS/RDI-related information for the PVC:</p> <ul style="list-style-type: none"> • the maximum number of OAM AIS/RDI cells that can be received on a PVC before it is brought down. • the interval after which a downed PVC comes back up if no OAM AIS/RDI cells have been received. <p>Note Use the oam ais-rdi command in to modify the current configuration for this field.</p>

The following sample output is from the **show atm class-link** command when there is no VC-class associated with the specified PVC:

```
RP/0/RP0/CPU0:router# show atm class-link 0/50

Detailed display of VC(s) with VPI/VCI = 0/50

Class link for VC 0/50
ATM0/2/0/2: VPI: 0 VCI: 50
ILMI VC (VC class not supported on this VC)
```

Related Commands

Command	Description
class-int, on page 16	Assigns a VC class to an ATM main interface.
vc-class atm, on page 79	Creates a VC class for an ATM PVC or an ATM interface and enters VC-class configuration mode.

show atm ilmi-status

To display status information that is related to Interim Local Management Interface (ILMI), use the **show atm ilmi-status** command in EXEC mode.

```
show atm ilmi-status[atm interface-path-id[.subinterface]]
```

Syntax Description	<p>atm (Optional) ATM interface for which you want to display information. Use the <i>interface-path-id</i> argument to specify the ATM interface.</p> <p><i>interface-path-id[.subinterface]</i> Physical interface or virtual interface followed by the optional subinterface path ID. Naming notation is <i>interface-path-id.subinterface</i>. The period in front of the subinterface value is required as part of the notation.</p> <p>For more information about the syntax for the router, use the question mark (?) online help function.</p>
---------------------------	---

Command Default Entering the **show atm ilmi-status** command without specifying an interface displays ILMI-related status information for all ATM interfaces.

Command Modes EXEC (#)

Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 3.9.2</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 3.9.2	This command was introduced.
Release	Modification				
Release 3.9.2	This command was introduced.				

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>atm</td> <td>read</td> </tr> </tbody> </table>	Task ID	Operations	atm	read
Task ID	Operations				
atm	read				

Examples The following sample output is from the **show atm ilmi-status** command:

```
RP/0/RP0/CPU0:router# show atm ilmi-status

Interface : ATM0/2/0/1 Interface Type : Private UNI (User-side)
ILMI VCC : (20, 30)
ILMI Keepalive : Disabled
ILMI State:      WaitDevType
Peer IP Addr : 0.0.0.0      Peer IF Name : ATM1/2
Active Prefix(s) :
```

The following sample output is from the **show atm ilmi-status** command with the **atm instance** keyword and argument:

```
RP/0/RP0/CPU0:router# show atm ilmi-status atm 0/2/0/2
```

```
Interface : ATM0/2/0/2 Interface Type : Private UNI (User-side)
ILMI VCC : (0, 16) ILMI Keepalive : Disabled
ILMI State: UpAndNormal
Peer IP Addr: 0.0.0.0 Peer IF Name: ATM1/2
Active Prefix(s) :
```

Table 3: show atm ilmi-status Field Descriptions

Field	Description
Interface	Interface type and instance. The instance is displayed in the <i>rack/slot/module/port</i> format.
Interface Type	ATM interface type (Private or Public), and the communication protocol used by this interface. Note Currently, Cisco IOS XR software supports UNI only.
ILMI VCC	The virtual channel connection associated with this interface.
ILMI Keepalive	ILMI keepalives polling frequency configured on this interface. To modify the ILMI keepalives polling frequency, use the atm ilmi-keepalive command.
ILMI State	Status of ILMI for this interface. Possible ILMI states are: <ul style="list-style-type: none"> • Link failing • Establishing connection • Configuring peer information • Retrieving network prefix from peer • Registering network prefix to peer • Retrieving ATM network addresses from peer • Registering ATM network addresses to peer • Verifying configuration and ATM network addresses • WaitDevType — ILMI process is initialized and in the process of sending ILMI packets to a neighbor. In this case, the ILMI PVC is not yet established. • UpAndNormal — ILMI traps are received by the neighbors, and the PVC is established.
Peer IP Addr	IP address for the remote (neighbor) end point of the connection.
Peer IF Name	Identifies the interface at the remote (neighbor) end point of the connection.
Active Prefix(s)	Network prefix that is registered from the switch side and is active and valid.

Related Commands

Command	Description
atm ilmi-config disable, on page 3	Disables ILMI on an ATM interface.
atm ilmi-keepalive, on page 5	Enables ILMI keepalives on an ATM interface and configure keepalive polling frequency.

show atm interface atm

To display ATM-specific information about an ATM interface, use the **show atm interface atm** command in EXEC mode.

show atm interface atm *interface-path-id*

Syntax Description

interface-path-id Physical interface or virtual interface.

Note Use the **show interfaces** command to see a list of all interfaces currently configured on the router.

For more information about the syntax for the router, use the question mark (?) online help function.

Command Default

No default behavior or values

Command Modes

EXEC (#)

Command History

Release	Modification
Release 3.7.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
atm	read

Examples

The following sample output is from the **show atm interface atm** command:

```
RP/0/RP0/CPU0:router# show atm interface atm 0/2/0/3

Interface                               : ATM0/2/0/3
AAL Enabled                             : AAL5
Max-VP                                  : 254
Max-VC                                  : 2046
Configured L2 PVPs                      : 0
Configured L2 PVCs                      : 0
Configured L3 VP-Tunnels                : 0
Configured L3 PVCs                      : 1
L2 PVPs in Down State                   : 0
L2 PVCs in Down State                   : 0
L3 VP-Tunnels in Down State             : 0
L3 PVCs in Down State                   : 0
Cell packing count                       : 0
```

```

Received Side Statistics:
  Received Cells           : 0
  Received Bytes          : 0
  Received AAL Packets    : 0

Receive Side Cells Dropped:
  Unrecognized VPI/VCI    : 0

Receive Side AAL5 Packets Dropped:
  Unavailable SAR Buffer   : 0
  Non-Resource Exhaustion : 0
  Reassembly Timeout     : 0
  Zero Length             : 0
  Unavailable Host Buffer  : 0
  Packet size exceeds MPS : 0
  AAL5 Trailer Length Errors : 0

Transmit Side Statistics:
  Transmitted Cells       : 1899716067
  Transmitted Bytes      : 0
  Transmitted AAL Packets : 0

Transmit Side Cells Dropped:
  Unrecognized VPI/VCI    : 0

Transmit Side AAL5 Packets Dropped:
  Unavailable SAR Buffer   : 0
  Non-Resource Exhaustion : 0
  WRED Threshold         : 0
  WRED Random             : 0

```

Table 4: show atm interface atm Field Descriptions

Field	Description
Interface	Interface type and instance. The instance is displayed in the <i>rack/slot/module/port</i> format.
Layer2 Transport Port Mode	Displays whether Layer 2 transport mode is enabled or disabled on this interface.
Cell Packing Data Unavailable	Displays whether cell packing is enabled or disabled on this interface.
Received Side Statistics	Displays the following statistical information for the receiving end of this interface: <ul style="list-style-type: none"> • Received Cells—Total number of cells received from the remote end. • Received Bytes—Total number of bytes received from the remote end. • Received AAL5 Packets—Total number of AAL5 packets received from the remote end.

Field	Description
Receive Side Cells Dropped	<p>Displays the following information about AAL5 packets received from the remote end that were dropped by this end of the interface:</p> <ul style="list-style-type: none"> • Unavailable SAR Buffer—Total number of AAL5 packets received from the remote end that were dropped because the Segmentation and Reassembly (SAR) buffer was unavailable. • Non-Resource Exhaustion—Total number of packets received from the remote end that were discarded due to events other than resource exhaustion, including raw or non AAL5 cells. • Reassembly Timeout—Number of AAL5 packets received from the remote end that were dropped because the reassembly of those packets took too long and the system timed-out. • CRC-32 Errors—Number of AAL5 packets received from the remote end that were dropped due to CRC-32 errors. • Zero Length—Number of AAL5 packets received from the remote end that were dropped due to • Unavailable Host Buffer—Number of AAL5 packets received from the remote end that were dropped because the host buffer was unavailable. • Packet size exceeds MPS—Number of AAL5 packets received from the remote end that were dropped due to a mismatch between the actual packet length and the reassembled packet length. • AAL5 Trailer Length Errors—Number of AAL5 packets received from the remote end that were dropped because their packet length was bigger than the AAL5 trailer.
Receive Side AAL5 Packets Dropped	<p>Displays the number of received AAL5 packet drops that occurred on this interface due to the following errors:</p> <ul style="list-style-type: none"> • Unavailable SAR Buffer—Number of AAL5 packets that were dropped because the SAR buffer was unavailable. • Non-Resource Exhaustion— • Reassembly Timeout— • CRC-32 Errors— • Zero Length— • Unavailable Host Buffer— • Packet size exceeds MPS— • AAL5 Trailer Length Errors—
Receive Side Cells Dropped	<p>Number of unrecognized VPI and VCI cells received from the remote end that were dropped.</p>

Field	Description
Receive side AAL5 Packets Dropped:	<p>Displays the following information about AAL5 packets received from the remote end that were dropped by this end of the interface:</p> <ul style="list-style-type: none"> • Unavailable SAR Buffer—Total number of AAL5 packets received from the remote end that were dropped because the Segmentation and Reassembly (SAR) buffer was unavailable. • Non-Resource Exhaustion—Total number of packets received from the remote end that were discarded due to events other than resource exhaustion, including raw or non AAL5 cells. • Reassembly Timeout—Number of AAL5 packets received from the remote end that were dropped because the reassembly of those packets took too long and the system timed-out. • CRC-32 Errors—Number of AAL5 packets received from the remote end that were dropped due to CRC-32 errors. • Zero Length—Number of AAL5 packets received from the remote end that were dropped due to • Unavailable Host Buffer—Number of AAL5 packets received from the remote end that were dropped because the host buffer was unavailable. • Packet size exceeds MPS—Number of AAL5 packets received from the remote end that were dropped due to a mismatch between the actual packet length and the reassembled packet length. • AAL5 Trailer Length Errors—Number of AAL5 packets received from the remote end that were dropped because their packet length was bigger than the AAL5 trailer.
Transmit Side Statistics	<p>Displays the following statistical information for the transmit side of this interface:</p> <ul style="list-style-type: none"> • Transmitted Cells—Total number of cells that were transmitted to the remote end. • Transmitted Bytes—Total number of bytes that were transmitted to the remote end. • Transmitted AAL5 Packets—Total number of AAL5 packets that were transmitted to the remote end.
Transmit side Cells Dropped	<p>Number of VPI and VCI cells transmitted to the remote end that were dropped because they were not recognized by the remote end.</p>

Field	Description
Transmit Side AAL5 Packets Dropped	<p>Displays the following information about transmitted AAL5 packets that were dropped by the remote end:</p> <ul style="list-style-type: none"> • Unavailable SAR Buffer—Number of transmitted AAL5 packets that were dropped by the remote end because the Segmentation and Reassembly (SAR) buffer was unavailable. • Non-Resource Exhaustion—Total number of packets dropped by the remote end due to events other than resource exhaustion, including raw or non AAL5 cells. • WRED Threshold—Gives the value of the packets dropped by WRED QoS mechanism. It is dropped when queue length exceeds the configured WRED max-threshold value. • WRED Random—Gives the value of the early dropped packets by WRED QoS mechanism. It is early dropped when queue length is between WRED min-threshold and max-threshold.
Cell-packing statistics	<p>Displays the following cell packing statistics for the specified interface:</p> <ul style="list-style-type: none"> • Average number of cells sent—Average number of cells in a packed cell that were packed on this interface. • Average number of cells received—Average number of cells in a packed cell that were received by this interface.

Related Commands

Command	Description
interface atm, on page 23	Configures an ATM interface and enters ATM interface configuration mode.

show atm pvc

To display ATM permanent virtual circuit (PVC) and traffic information for the entire router, or a specific VPI/VCI or ATM interface, use the **show atm pvc** command in EXEC mode.

show atm pvc [*vpi/vci* | **interface atm interface-path-id**]

Syntax Description

vpi/vci (Optional) ATM virtual path identifier (VPI) and virtual channel identifier (VCI) numbers. The absence of the slash (/) and a *vpi* value defaults the *vpi* value to 0.

Note A VPI of 0 is not applicable to VP-tunnels.

interface atm (Optional) ATM interface for which you want to display information. Use the *interface-path-id* argument to specify the ATM interface.

interface-path-id Physical interface or virtual interface.

Note Use the **show interfaces** command to see a list of all interfaces currently configured on the router.

For more information about the syntax for the router, use the question mark (?) online help function.

Command Default

Entering the **show atm pvc** command without specifying the *vpi/vci* argument or **interface atm instance** keyword argument displays ATM PVC and traffic information for the entire router.

Command Modes

EXEC (#)

Command History

Release	Modification
Release 3.9.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
atm	read

Examples

The following sample output is from the **show atm pvc** command:

```
RP/0/RP0/CPU0:router# show atm pvc
```

```
Interface          VPI  VCI  Type  Encaps  SC      Peak  Avg/Min  Burst
                   Kbps   Kbps   Cells  Sts
```

```

ATM0/1/0/0.230      15 230 PVC  AAL0  UBR  622000  N/A  N/A  UP
ATM0/1/0/3.19      17 19  PVC  SNAP  UBR  622000  N/A  N/A  UP

```

Table 5: show pvc (all PVCs) Field Descriptions

Field	Description
Interface	Interface type and instance. The instance is displayed in the <i>rack/slot/module/port</i> format.
VPI	ATM network virtual path identifier (VPI) associated with the specified interface.
VCI	ATM network virtual channel identifier (VCI) associated with the specified interface.
Type	Type of VPI/VCI associated with the specified interface. In this release, only PVCs are supported.
Encaps	<p>Encapsulation type that configured on the specified interface. Possible encapsulation types follow:</p> <ul style="list-style-type: none"> • ILMI—Interim Local Management Interface. ILMI encapsulation is available for point-to-point PVCs only. • MUX—aal5mux ipv4; IPv4 encapsulation for multiplex (MUX)-type VCs. MUX encapsulation is available for point-to-point PVCs only. • NLPID—aal5nlpid; AAL and encapsulation type that allows ATM interfaces to interoperate with High-Speed Serial Interfaces (HSSIs), which are using an ATM data service unit (ADSU) and running ATM-Data Exchange Interface (DXI). Supported on ATM PVCs only. NLPID encapsulation is available for point-to-point PVCs only. • SNAP—aal5snap; AAL and encapsulation type that supports Inverse ARP. Logical Link Control/Subnetwork Access Protocol precedes the protocol datagram. SNAP encapsulation is available for point-to-point PVCs only. • AAL0— • AAL5— <p>Note To disable ILMI on a point-to-point ATM interface, use the atm ilmi-config disable command in interface configuration mode for an ATM interface. To configure aal5mux, aal5nlpid, or aal5snap encapsulation on an ATM interface, use the encapsulation command in ATM VC-class configuration mode, and then assign that VC-class to the appropriate ATM main interface.</p>
SC	<p>Service class that is assigned to the specified ATM interface. Possible service classes follow:</p> <ul style="list-style-type: none"> • cbr • ubr • vbr-nrt • vbr-rt <p>Note To modify a configured ATM service class, use the shape command in the appropriate command mode.</p>
Peak Kbps	<p>Peak output rate for the bit rate in kbps.</p> <p>Note To modify the Peak output rate, use the shape command.</p>

Field	Description
Avg/Min Kbps	Number of kilobits per second sent at the average (sustained) rate. Note To modify the average (or sustained) rate, use the shape command.
Burst cells	Identifies the burst cell size in terms of number of cells. This number is the maximum number of ATM cells the VC can send at the peak rate. Note To modify the burst cell size, use the shape command.
Sts	Status of the PVC. Can be "UP" or "DOWN."

The following sample output is from the **show atm pvc** command with the *vpi/vci* argument included:

```
RP/0/RP0/CPU0:router# show atm pvc 10/100

Detailed display of VC(s) with VPI/VCI = 10/100

ATM0/2/0/3.100: VPI: 10 VCI: 100
UBR, PeakRate: 622000 Kbps
AAL5-LLC/SNAP
OAM frequency: 10 second(s), OAM retry frequency: 1 second(s),
OAM up retry count: 3, OAM down retry count: 5,
OAM Keep-vc-up: False, OAM AIS-RDI failure: None,
OAM AIS-RDI down count: 1, OAM AIS-RDI up time: 3 second(s),
OAM Loopback status: No loopback enabled,
OAM VC state: Loopback Not verified,
VC is not managed by OAM,

OAM cells received: 0,
F5 InEndLoop: 0, F5 InSegLoop: 0,
F5 InEndAIS: 0, F5 InSegAIS: 0,
F5 InEndRDI: 0, F5 InSegRDI: 0,
OAM cells sent: 0,
F5 OutEndLoop: 0, F5 OutSegLoop: 0,
F5 OutEndAIS: 0, F5 OutSegAIS: 0,
F5 OutEndRDI: 0, F5 OutSegRDI: 0,
OAM cells drops: 0

InPkts: 0                OutPkts: 0
InBytes: 0                OutBytes: 0
WRED pkt drop: 0
Non WRED pkt drop: 0

Internal state: READY
Status: UP
```

Table 6: show atm pvc Field Descriptions

Field	Description
Detailed display of VC(s) with VPI/VCI	<p>Displays the following general information for the specified PVC:</p> <ul style="list-style-type: none"> • VPI and VCI in the <i>VPI/VCI</i> format • associated interface type and instance in the <i>type rack/slot/module/port</i> format. • associated VPI • associated VCI • Service class that is assigned to the specified ATM interface. Possible service classes follow: <ul style="list-style-type: none"> • cbr • ubr • vbr-nrt • vbr-rt • Peak line rate (bandwidth) required for the specified ATM interface, in kilobits per second. • Whether ILMI is enabled on the interface. <p>Note To modify a configured ATM service class, use the shape command in the appropriate command mode.</p> <p>Note To modify the bandwidth required for an ATM interface (peak line rate), use the shape command in interface configuration mode.</p>
OAM frequency	<p>Frequency (in seconds) at which end-to-end F5 OAM loopback cells are transmitted when a change in the up or down state of a PVC is being verified.</p> <p>Note To modify the OAM frequency, use the oam-pvc manage command in ATM virtual circuit (VC) class configuration mode.</p>
OAM retry frequency	<p>Frequency (in seconds) at which end-to-end F5 OAM loopback cells are transmitted when a change in the up or down state is being verified.</p> <p>Note To modify the OAM retry frequency, use the oam retry command in the appropriate command mode.</p>
OAM up retry count	Number of consecutive end-to-end F5 OAM loopback cell responses that must be received in order to modify a PVC state to up.
OAM down retry count	Number of consecutive unreceived end-to-end F5 OAM loopback cell responses allowed before a PVC state changes to down.
OAM AIS-RDI down count:	<p>Number of OAM AIS/RDI cells received on a PVC before it is brought down.</p> <p>Note To modify the OAM AIS-RDI down count, use the oam ais-rdi command in ATM VC-class configuration mode</p>

Field	Description
OAM AIS-RDI up time	Interval after which a PVC is brought up if it has not received any OAM AIS/RDI cells. Note To modify the OAM AIS-RDI uptime, use the oam ais-rdi command in ATM VC-class configuration mode
OAM Loopback status	Status of end-to-end F5 OAM loopback cell generation for this VC. Possible value follow: <ul style="list-style-type: none"> • No loopback enabled—No loopback is enabled on this interface. • OAM Disabled—End-to-end F5 OAM loopback cell generation is disabled. • OAM Sent—OAM cell was sent. • OAM Received—OAM cell was received. • OAM Failed—OAM reply was not received within the frequency period or contained bad correlation tag.
OAM VC state	Current state of the specified VC. Possible VC states follow: <ul style="list-style-type: none"> • AIS/RDI—The VC received AIS/RDI cells. End-to-end F5 OAM loopback cells are not sent in this state. • Down Retry—An OAM loopback failed. End-to-end F5 OAM loopback cells are sent at retry frequency to verify that the VC is really down. After down-count unsuccessful retries, the VC goes to the Not Verified state. • Loopback Not Managed—VC is not being managed by OAM. • Loopback Not Verified—VC has not been verified by end-to-end F5 OAM loopback cells. AIS and RDI conditions are cleared. • Up Retry—An OAM loopback was successful. End-to-end F5 OAM loopback cells are sent at retry frequency to verify the VC is really up. After up-count successive and successful loopback retries, the VC goes to the Verified state. • Loopback Verified—Loopbacks are successful. AIS/RDI cell was not received.
OAM cells received	Number of OAM cells that have been received by this interface.
F5 InEndLoop:	Number of end-to-end F5 OAM loopback cells received by this interface.
F5 InSegLoop	Number of segment F4 OAM loopback cells received by this interface.
F5 InAIS	Number of F4 OAM AIS cells received by this interface.
F5 InRDI	Number of F4 OAM RDI cells received by this interface.
OAM cells sent	Total number of OAM cells sent on this VC.
F5 OutEndLoop	Number of end-to-end F5 OAM loopback cells sent from this interface.
F5 OutSegLoop	Number of segment F5 OAM loopback cells sent from this interface.
F5 OutAIS	Number of F5 OAM AIS cells sent from this interface.
F5 OutRDI	Number of F5 OAM RDI cells sent from this interface.

Field	Description
OAM cells drops	Number of OAM cells dropped (or flushed) by this interface.
InPkts	Total number of packets received on this VC. This number includes all fast-switched and process-switched packets.
OutPkts	Total number of packets sent on this VC. This number includes all fast-switched and process-switched packets.
InBytes	Total number of bytes received on this VC. This number includes all fast-switched and process-switched bytes.
OutBytes	Total number of bytes sent on this VC. This number includes all fast-switched and process-switched bytes.
WRED pkt drop	Total number of AAL5 packets that were dropped by this interface because their size exceeded the maximum threshold set for Weighted Random Early Discard (WRED).
Non WRED pkt drop	Total number of dropped AAL5 packets that did not exceed the maximum threshold set for Weighted Random Early Discard (WRED).
Internal state	Internal PVC state.
Status	Current status of this PVC. Can be "Up" or "Down."

Related Commands

Command	Description
pvc (ATM), on page 39	Creates an ATM PVC with ILMI encapsulation and enters ATM virtual circuit configuration mode.

show atm pvp

To display ATM PVP and traffic information for the entire router, or a specific VPI or ATM interface, use the **show atm pvp** command in EXEC mode.

show atm pvp [*vpi* | **interface atm instance**]

Syntax Description	<i>vpi</i>	(Optional) ATM virtual path identifier (VPI) number. Replace <i>vpi</i> with the VPI of the PVP whose information you want to display.
	interface atm instance	(Optional) Displays all PVCs on the specified ATM interface.
	Note	To determine the appropriate form of the <i>instance</i> argument, see your ATM network module, port adapter, or router documentation.

Command Default Entering the **show atm pvp** command without specifying the *vpi* argument or **interface atm instance** keyword argument displays ATM PVP and traffic information for the entire router.

Command Modes EXEC (#)

Command History	Release	Modification
	Release 3.7.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task Operations ID
	atm read

Examples The following example shows how to display ATM PVP and traffic information for the entire router:

```
RP/0/RP0/CPU0:router# show atm pvp interface atm 0/3/0/1
```

Interface	VPI	SC	Peak Kbps	Avg/Min Kbps	Burst Cells	Sts
ATM0/3/0/1.100	100	UBR	155000	N/A	N/A	UP

Table 7: show pvp (all PVPs) Field Descriptions

Field	Description
Interface	Interface type and instance. The instance is displayed in the <i>rack/slot/module/port</i> format.
VPI	ATM network virtual path identifier (VPI) associated with the specified interface.

Field	Description
SC	Service class that is assigned to the specified ATM interface. Possible service classes follow: <ul style="list-style-type: none"> • cbr • ubr • vbr-nrt • vbr-rt <p>Note To modify a configured ATM service class, use the shape command in the appropriate command mode.</p>
Peak Kbps	Peak output rate for the bit rate in kbps. <p>Note To modify the Peak output rate, use the shape command.</p>
Avg/Min Kbps	Number of kilobits per second sent at the average (sustained) rate. <p>Note To modify the average (or sustained) rate, use the shape command.</p>
Burst cells	Identifies the burst cell size in terms of number of cells. This number is the maximum number of ATM cells the PVP can send at the peak rate. <p>Note To modify the burst cell size, use the shape command.</p>
Sts	Status of the PVP. Can be "UP" or "DOWN."

The following example shows how to display ATM PVP and traffic information for the a specific VPI:

```
RP/0/RP0/CPU0:router# show atm pvp 100

Detailed display of L2PVP(s) with VPI = 100

ATM0/3/0/1.100: VPI: 100
UBR, PeakRate: 155000 Kbps
AAL0
OAM frequency: 10 second(s), OAM retry frequency: 1 second(s),
OAM up retry count: 3, OAM down retry count: 5,
OAM AIS-RDI down count: 1, OAM AIS-RDI up time: 3 second(s),
OAM Loopback status: No loopback enabled,
OAM L2PVP state: Unknown,
L2PVP is not managed by OAM,

OAM cells received: 0,
F4 InEndLoop: 0, F4 InSegLoop: 0,
F4 InEndAIS: 0, F4 InSegAIS: 0,
F4 InEndRDI: 0, F4 InSegRDI: 0,
OAM cells sent: 8948,
F4 OutEndLoop: 0, F4 OutSegLoop: 0,
F4 OutEndAIS: 8948, F4 OutSegAIS: 0,
F4 OutEndRDI: 0, F4 OutSegRDI: 0,
OAM cells drops: 0

InPkts: 8948          OutPkts: 0
InBytes: 465296      OutBytes: 0
```

```
Internal state: READY
Status: UP
```

Table 8: show atm pvp Field Descriptions

Field	Description
ATM0/1/0/0.30	<p>Associated interface type and instance in the <i>type rack/slot/module/port.subinterface</i> format.</p> <ul style="list-style-type: none"> • Service class that is assigned to the specified ATM interface. Possible service classes follow: <ul style="list-style-type: none"> • cbr • ubr • vbr-nrt • vbr-rt • Peak line rate (bandwidth) required for the specified ATM interface, in kilobits per second. <p>Note To modify a configured ATM service class, use the shape command in the appropriate command mode.</p> <p>Note To modify the bandwidth required for an ATM interface (peak line rate), use the shape command in interface configuration mode.</p>
VPI	VPI associated with the specified PVP.
UBR	<p>Service class that is assigned to the specified ATM interface. The example shows that vbr-rt is assigned to the interface that hosts the specified PVP. Possible service classes are:</p> <ul style="list-style-type: none"> • cbr • ubr • vbr-nrt • vbr-rt
PeakRate	<p>Peak output rate for the bit rate in kbps.</p> <p>Note To modify the peak output rate, use the shape command.</p>
AAAL0	ATM adaptation layer (AAL) and encapsulation type for the PVP. Currently, only AAL0 is the only supported encapsulation type for PVPs.
OAM frequency	<p>Frequency (in seconds) at which end-to-end F5 OAM loopback cells are transmitted when a change in the up or down state of a PVC is being verified.</p> <p>Note To modify the OAM frequency, use the oam-pvc manage command in ATM virtual circuit (VC) class configuration mode.</p>

Field	Description
OAM retry frequency	Frequency (in seconds) at which end-to-end F5 OAM loopback cells are transmitted when a change in the up or down state is being verified. Note To modify the OAM retry frequency, use the oam retry command in the appropriate command mode.
OAM up retry count	Number of consecutive end-to-end F5 OAM loopback cell responses that must be received in order to modify a PVC state to up.
OAM down retry count	Number of consecutive unreceived end-to-end F5 OAM loopback cell responses allowed before a PVC state changes to down.
OAM AIS-RDI down count	Number of OAM AIS/RDI cells received on a PVC before it is brought down. Note To modify the OAM AIS-RDI down count, use the oam ais-rdi command in ATM VC-class configuration mode
OAM AIS-RDI up time	Interval after which a PVC is brought up if it has not received any OAM AIS/RDI cells. Note To modify the OAM AIS-RDI uptime, use the oam ais-rdi command in ATM VC-class configuration mode
OAM Loopback status	Status of end-to-end F5 OAM loopback cell generation for this VC. Possible value follow: <ul style="list-style-type: none"> • No loopback enabled—No loopback is enabled on this interface. • OAM Disabled—End-to-end F5 OAM loopback cell generation is disabled. • OAM Sent—OAM cell was sent. • OAM Received—OAM cell was received. • OAM Failed—OAM reply was not received within the frequency period or contained bad correlation tag.
OAM L2PVP state	Current state of the specified VC. Note OAM management is not supported on Layer 2 PVPs in the current release of Cisco IOS XR software.
OAM cells received	Number of OAM cells that have been received by this interface.
F4 InEndLoop:	Number of end-to-end F4 OAM loopback cells received by this interface.
F4 InSegLoop	Number of segment F4 OAM loopback cells received by this interface.
F4 InEndAIS	Number of F4 OAM AIS cells received by this interface.
F4 InSegAIS	Number of segment F4 OAM AIS cells received by this interface.
F4 InEndRDI	Number of F4 OAM RDI cells received by this interface.
F4 InSegRDI	Number of F4 segment OAM RDI cells received by this interface.

Field	Description
OAM cells drops	Number of OAM cells dropped (or flushed) by this interface.
InPkts	Total number of packets received on this VC. This number includes all fast-switched and process-switched packets.
OutPkts	Total number of packets sent on this VC. This number includes all fast-switched and process-switched packets.
InBytes	Total number of bytes received on this VC.
OutBytes	Total number of bytes sent on this VC.
Internal state	Internal PVC state.
Status	Current status of this PVC. Can be "Up" or "Down."

Related Commands

Command	Description
pvp (ATM), on page 43	Creates an ATM PVP and enters ATM layer 2 transport PVP configuration mode.

show atm vc-class

To display information about all ATM virtual circuit (VC) classes on the router or for a specific ATM VC-class, use the **show atm vc-class** command in EXEC mode.

show atm vc-class *vc-class-name*

Syntax Description

vc-class-name Name of the VC-class whose information you want to display.

Command Default

Entering the **show atm vc-class** command without specifying the *vc-class-name* argument displays ATM PVC and traffic information for the entire router.

Command Modes

EXEC (#)

Command History

Release	Modification
Release 3.9.2	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
atm	read

Examples

The following sample output is from the **show atm vc-class** command:

```
RP/0/RP0/CPU0:router# show atm vc-class

ATM vc-class class1

  encapsulation - aal5mux ip
  shape        - cbr 100000
  oam ais-rdi  - 35
  oam retry    - 300
  oam-pvc     - manage 300

ATM vc-class class2

  encapsulation - aal5nlpid
  shape        - ubr 40000
  oam ais-rdi  - 30
  oam retry    - 30
  oam-pvc     - manage 300

ATM vc-class class3

  encapsulation - aal5snap
```

```

shape                -   vbr-nrt 60000 60000 1000
oam ais-rdi         -   30
oam retry           -   30
oam-pvc             -   manage 300

```

Table 9: show atm vc-class Field Descriptions

Field	Description
encapsulation	<p>Type of ATM adaptation layer (AAL) encapsulation type that is enabled on the specified VC-class. Possible AAL encapsulation types follow:</p> <ul style="list-style-type: none"> • aal5mux ipv4—IPv4 encapsulation for multiplex (MUX)-type VCs • aal5nlpid—AAL and encapsulation type that allows ATM interfaces to interoperate with High-Speed Serial Interfaces (HSSIs), which are using an ATM data service unit (ADSU) and running ATM-Data Exchange Interface (DXI). Supported on ATM PVCs only. • aal5snap—AAL and encapsulation type that supports Inverse ARP. Logical Link Control/Subnetwork Access Protocol (LLC/SNAP) precedes the protocol datagram. <p>Note To modify the AAL encapsulation type on an interface, use the encapsulation command in ATM VC-class configuration mode.</p>
shape	<p>Displays traffic shaping information for the service class that is assigned to the specified VC-class. Possible service classes follow:</p> <ul style="list-style-type: none"> • cbr—command output shows the peak output rate for the bit rate in kbps. • ubr—command output shows the peak output rate for the bit rate in kbps. • vbr-nrt—command output shows the peak output rate, sustained output rate, and burst size for the bit rate in kbps. • vbr-rt—command output shows the peak output rate, sustained output rate, and burst size for the bit rate in kbps. <p>Note To modify a configured ATM service class and peak output rate for the bit rate, use the shape command in the appropriate command mode.</p>
oam ais-rdi	<p>Displays the maximum number of OAM AIS/RDI cells that can be received on a PVC before it is brought down.</p> <p>Note Use the oam ais-rdi command in to modify the current configuration for this field.</p>

Field	Description
oam retry	<p>Displays the following information related to F5 OAM loopback cells, if this information was configured for the specified VC-class:</p> <ul style="list-style-type: none"> • Number of consecutive end-to-end F5 OAM loopback cell responses that must be received to change a connection state to up. (Retry count) • Number of consecutive unreceived end-to-end F5 OAM loopback cells allowed on a PVC before its state changes to down. (down count) • Frequency (in seconds) at which end-to-end F5 OAM loopback cells are transmitted when a change in the up or down state is being verified. (retry frequency) <p>Note Use the oam retry command to modify the current configuration for this field.</p> <p>Note If the oam retry command was not use to configure the F5 OAM loopback retry count, down count, or retry frequency, then this information is not displayed in the command output for the show atm vc-class command.</p>
oam-pvc	<p>Frequency (in seconds) at which end-to-end F5 OAM loopback cells are transmitted on this PVC. Range is from 0 through 600.</p> <p>Note Use the oam-pvc manage command to modify the current configuration for this field.</p>

The following sample output is from the **show atm vc-class** command with the *vc-class-name* argument included:

```
RP/0/RP0/CPU0:router# show atm vc-class class1

ATM vc-class class1

encapsulation      -   aa15mux ip
shape              -   cbr 100000
oam ais-rdi        -   35
oam retry          -   300
oam-pvc            -   manage 300
```

Related Commands	Command	Description
	class-vc, on page 18	Attaches a VC class to an ATM PVC.
	vc-class atm, on page 79	Creates a VC class for an ATM PVC or an ATM interface and enters VC-class configuration mode.

show controllers atm

To display information about the physical status of the ATM interface, use the **show controllers atm** command in EXEC mode.

show controllers atm *interface-path-id* [**all** | **traffic** **f4oam** | **port** | **vc** *vpi/vci* | **vp** *vpi*]

Syntax Description

interface-path-id Physical interface or virtual interface.

Note Use the **show interfaces** command to see a list of all interfaces currently configured on the router.

For more information about the syntax for the router, use the question mark (?) online help function.

f4oam Displays information about the ATM layer f4oam traffic that is transmitted and received on the specified interface.

port (Optional) Displays information about the ATM layer traffic that is transmitted and received by the ports associated with the specified interface.

vc *vpi/vci* (Optional) Displays information about the ATM layer traffic carried by specific ATM VC (virtual channel). Replace *vpi/vci* with the ATM virtual path identifier (VPI) and virtual channel identifier (VCI) of the VC whose information you want to display.

vp *vpi* (Optional) Displays information about the ATM layer traffic carried by specific ATM virtual path. Replace *vpi* with the ATM virtual path identifier (VPI) whose information you want to display.

Command Default

Entering the **show controllers atm** command without specifying the *instance* argument displays ATM controller status and configuration information for the entire router.

Command Modes

EXEC (#)

Command History

Release	Modification
Release 3.7.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
interface	read

Examples

The following example shows partial output from the **show controllers atm** command:

```

RP/0/RP0/CPU0:router# show controllers atm 0/6/0/0

SAR Counters:
  tx_packets           :4085                tx_bytes           :212420
  tx_total_resource_errs:0                tx_total_other_errs :0
  tx_wred_thresh_drops :0                tx_wred_random_drops :0
  rx_packets          :0                rx_bytes           :0
  rx_total_resource_errs:0                rx_total_other_errs :0
  rx_buffer_exhaust_errs:0                rx_CRC32_errors     :0
  rx_packet_abort_errs :0                rx_trailer_len_errs :0
  rx_mps_errors       :0                rx_reassembly_timeout:0

The following are per-SAR counters:
Reassembly SAR:
  sys_rx_unopen_vc_cls :0                sys_tx_unopen_vc_cls :0
  sys_ecc_errors        :0                sys_ecc_and_addr     : 0xf
  ffffffff
  sys_ecc_or_addr      : 0x0
Segmentation SAR:
  sys_rx_unopen_vc_cls :0                sys_tx_unopen_vc_cls:0
  sys_ecc_errors        :0                sys_ecc_and_addr     : 0xf
  ffffffff
  sys_ecc_or_addr      : 0x0
RSAR 0: (6.0.2.1c)
RSAR Build ID= E7EE
SSAR 0: (6.0.2.1c)
SSAR Build ID= 570

--More--

```

Table 10: show controllers atm Field Descriptions

Field	Description
SAR Counters	Counters that provide information about the Segmentation and Reassembly (SAR) chip.
tx_packets	Number of AAL5 packets transmitted.
tx_bytes	A 64-bit counter of the bytes transmitted on this interface, including OAM cells and AAL5 header encapsulations (such as AAL5SNAP). This should be approximately the total number of bytes transmitted on each of the VCs.
tx_total_resource_errs	Total number of packets that were not transmitted because of any resource exhaustion error. This does not necessarily imply an error, because this counter includes tx_wred_thresh_drops and tx_wred_random_drops, as well as packet drops due to complete buffer exhaustion on the SAR. This should be equal to the sum of the number of resource errors that occur on all the VCs.

Field	Description
tx_total_other_errs	Total number of packets that were not transmitted because of any error other than resource exhaustion, but not including no-vc drops. This includes malformed packets, CRC errors, and so on. This should be approximately the total number of tx_other_errors that occur on all the VCs on this interface.
tx_wred_thresh_drops	Total number of WRED maximum threshold drops on this interface. This counter is included in the tx_total_resource_errs counter.
tx_wred_random_drops	Total number of WRED random drops on this interface. This counter is included in the tx_total_resource_errs counter.
rx_packets	Total number of packets reassembled on this interface by the SAR, including OAM cells.
rx_bytes	Number of AAL5 packets received on this interface.
rx_total_resource_errs	Total number of packet reassemblies that failed due to resource exhaustion. This error should not occur if the queue thresholds are not oversubscribed. This error includes rx_buffer_exhaust_errs.
rx_total_other_errs	Total number of packet reassemblies that failed due to errors besides resource exhaustion (not including "no-vc" cells), including rx_crc32_errors, rx_packet_abort_errs, rx_trailer_len_errs, rx_mps_errors, and rx_reassembly_timeout.
rx_buffer_exhaust_errs	Total number of packet reassemblies that failed due to complete buffer exhaustion on the SAR. This error should not occur if the queue thresholds are not oversubscribed. This is included in rx_total_resource_errs.
sys_tx_unopen_vc_cls	Total number of packets transmitted by this endpoint that failed due to an error other than those listed in the show controllers atm command output.
Reassembly SAR	Counters that provide information specific to the reassembly chip.
sys_ecc_and_addr	Total number of single bit end and addressing errors detected on the reassembly SAR.
sys_ecc_errors	Total number of single bit errors detected on the reassembly SAR.
sys_ecc_or_addr	Total number of single bit end or addressing errors detected on the reassembly SAR.
Segmentation SAR	Counters that provide information specific to the segmentation chip.
sys_tx_unopen_vc_cls	Total number of packet reassemblies transmitted by this endpoint that failed due to errors other than those listed in the show controllers atm command output.
sys_rx_unopen_vc_cls	Total number of packet reassemblies received by this endpoint that failed due to errors other than those listed in the show controllers atm command output.
rx_CRC32_errors	Total number of packet reassemblies that failed due to an invalid AAL5 CRC32 trailer. This is included in rx_total_other_errs.
rx_packet_abort_errs	Total number of packet reassemblies that failed due to receiving a trailer length of 0. This is included in rx_total_other_errs.

Field	Description
rx_trailer_len_errs	Total number of packet reassemblies that failed due to a packet whose AAL5 trailer had an invalid trailer length. This is included in rx_total_other_errs.
rx_mps_errors	Total number of packet reassemblies that failed due to a packet size greater than the maximum allowed packet size. This is included in rx_total_other_errs.
rx_reassembly_timeout	Total number of packet reassemblies that failed due to timing out before receiving the last cell of a packet. This is included in rx_total_other_errs.
sys_rx_unopen_vc_cls	Packets received on nonexistent VC.
RSAR 0	RSAR ID.
RSAR Build ID	Unique number that identifies the RSAR build.
SSAR 0	SSAR ID.
SSAR Build ID	Unique number that identifies the SAR build.

Related Commands

Command	Description
show atm interface atm, on page 55	Displays ATM-specific information about an ATM interface.

shutdown (ATM)

To disable an ATM interface, use the **shutdown** command in interface configuration mode. To re-enable an ATM interface, use the **no** form of this command.

shutdown
no shutdown

Syntax Description This command has no keywords or arguments.

Command Default The ATM interface is up.

Command Modes Interface configuration (config-if)

Command History	Release	Modification
	Release 3.7.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **show interface atm** command in EXEC mode to verify that the ATM interface is administratively up or down.

Task ID	Task ID	Operations
	interface	read, write

Examples

The following example shows how to bring down an ATM interface:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface atm 0/2/0/0
RP/0/RP0/CPU0:router(config-if)# shutdown
```

The following example shows how to re-enable an ATM interface that has been brought down with the **shutdown** command:

```
RP/0/RP0/CPU0:router# no shutdown
```

Related Commands	Command	Description
	show atm interface atm, on page 55	Displays ATM-specific information about an ATM interface.

vc-class atm

To create a virtual circuit (VC) class for an ATM permanent virtual circuit (PVC) or an ATM interface and enter VC-class configuration mode, use the **vc-class atm** command in global configuration mode. To remove a VC-class, use the **no** form of this command.

vc-class atm *name*
no vc-class atm *name*

Syntax Description	<i>name</i> Name of your VC class.
---------------------------	------------------------------------

Command Default	No VC-class is defined.
------------------------	-------------------------

Command Modes	Global configuration (config)
----------------------	-------------------------------

Command History	Release	Modification
	Release 3.9.2	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

When you issue the **vc-class atm** command in global configuration mode, the CLI prompt changes to “config-vc-class-atm,” indicating that you have entered the VC-class configuration submode. In the following sample output, the question mark (?) online help function displays all the commands available under the VC-class configuration submode:

```
RP/0/RP0/CPU0:router(config)# vc-class atm classA
RP/0/RP0/CPU0:router(config-vc-class-atm)# ?

  commit          Commit the configuration changes to running
  describe        Describe a command without taking real actions
  do              Run an exec command
  encapsulation   Configure encapsulation
  exit            Exit from this submode
  no              Negate a command or set its defaults
  oam             Configure OAM parameters
  oam-pvc         OAM PVC management configuration
  shape           ATM Traffic Shaping
  show           Show contents of configuration

RP/0/RP0/CPU0:router(config-vc-class-atm)#
```

Task ID	Task ID	Operations
	atm	read, write

Examples

The following example shows how to create a VC-class. In this example, the class is called “class1.”

```
RP/0/RP0/CPU0:router(config)# vc-class atm class1  
RP/0/RP0/CPU0:router(config-vc-class-atm)#
```

Related Commands

Command	Description
class-vc, on page 18	Attaches a VC class to an ATM PVC.
show atm vc-class, on page 71	Displays information about all ATM VC classes on the router or for a specific ATM VC-class.
