atm sonet threshold through client-atm-address name

atm sonet threshold

To configure the bit error rate (BER) threshold values for an ATM interface, use the **atm sonet threshold**command in interface configuration mode. To reset a threshold value to its default value, use the **no** form of this command.

atm sonet threshold {**b1-tca** *value* | **b2-tca** *value* | **b3-tca** *value* | **sd-ber** *value* | **sf-ber** *value*}
no atm sonet threshold {**b1-tca** | **b2-tca** | **b3-tca** | **sd-ber** | **sf-ber**}

Syntax Description

b1-tca *value*	Sets the threshold for B1 threshold crossing (B1-TCA) alarms. The *value* specifies a negative exponent to the power of 10 (10 to the power of minus *value*) for the threshold value, with a default value of 6 (10e-6).
b2-tca *value*	Sets the threshold for B2 threshold crossing (B2-TCA) alarms. The *value* specifies a negative exponent to the power of 10 (10 to the power of minus *value*) for the threshold value, with a default value of 6 (10e-6).
b3-tca *value*	Sets the threshold for B3 threshold crossing (B3-TCA) alarms. The *value* specifies a negative exponent to the power of 10 (10 to the power of minus *value*) for the threshold value, with a default value of 6 (10e-6).
sd-ber *value*	Sets the threshold for signal degrade bit error rate (SD-BER) alarms. The *value* specifies a negative exponent to the power of 10 (10 to the power of minus *value*) for the threshold value, with a default value of 6 (10e-6).
sf-ber *value*	Sets the threshold for signal failure bit error rate (SF-BER) alarms. The *value* specifies a negative exponent to the power of 10 (10 to the power of minus *value*) for the threshold value, with a default value of 3 (10e-3).

Command Default

The default values are 6 (10e-6) for **b1-tca**, **b2-tca**, **b3-tca**, and **sd-ber**. The default value is 3 (10e-3) for **sf-ber**.

Command Modes

Interface configuration

Command History

Release	Modification
12.1(7)E	This command was introduced.
12.2(14)SX	This command was integrated into Cisco IOS Release 12.2(14)SX.
12.2(18)SXE	This command was integrated into Cisco IOS Release 12.2(18)SXE to support ATM shared port adapters (SPAs) on the Cisco 7600 series router and Catalyst 6500 series switch.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The **atm sonet threshold**command configures the allowable threshold for errors before a Synchronous Optical Network (SONET) alarm is reported. The different SONET alarms report on errors at different points in the SONET network, allowing for the source of a problem to be more easily identified.

Use the **atm sonet threshold**command to increase or decrease the sensitivity of the ATM interface to these SONET alarms, depending on the nature of your network and application needs. In particular, if a particular problem seems to be occurring, you can increase the sensitivity of the related alarm to help you more quickly troubleshoot and diagnose the problem.

Examples

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

Router# **configure terminal**

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

```
Router(config-if)# atm sonet threshold b1-tca 9
```

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

Router#

Use the **show controllers atm** command to display the currently configured BER threshold values:

```
Router# show controllers atm 5/1/0

Interface ATM5/1/0 is up
 Framing mode: SONET OC3 STS-3c Clock source: Line
ATM framing errors:
  HCS (correctable):   0
  HCS (uncorrectable): 0
SONET Subblock:
APS
  COAPS = 0           PSBF = 0
  State: PSBF_state = false
  Rx(K1/K2): 0 /0   Tx(K1/K2): 0 /0
SECTION
  LOF = 0         LOS    = 0                          BIP(B1) = 603
LINE
  AIS = 0         RDI    = 2         FEBE = 2332       BIP(B2) = 1018
PATH
  AIS = 0         RDI    = 1         FEBE = 28         BIP(B3) = 228
  LOP = 0         NEWPTR = 0         PSE  = 1          NSE     = 2
Active Defects: None
Active Alarms:  None
Alarm reporting enabled for: SF SLOS SLOF B1-TCA B2-TCA PLOP B3-TCA
BER thresholds:  SF = 10e-3, SD = 10e-6
TCA thresholds:  B1 = 10e-6, B2 = 10e-6, B3 = 10e-6
Rx S1S0 = 00, Rx C2 = 13
PATH TRACE BUFFER : STABLE
Router#
```

Note The actual display from the **show controllers atm** command varies slightly, depending on the type of line card.

Related Commands

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

atm svc-upc-intent

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

atm svc-upc-intent [{**abr** | **cbr** | **vbr-rt** | **vbr-nrt** | **ubr**}] {**tag** | **pass** | **drop**}
no atm svc-upc-intent

Syntax Description

abr | cbr | vbr-rt vbr-nrt | ubr	(Optional) Specifies the service category: • **abr** --available bit rate • **cbr** --constant bit rate • **vbr-rt** --variable bit rate, real time • **vbr-nrt** --variable bit rate, nonreal time • **ubr** --unspecified bit rate
tag	Specifies that cells that are received on the interface and that violate the traffic contract have their CLP bit set prior to entering the switching fabric.
pass	Specifies that cells received on the interface are passed to the switching fabric with no change, regardless of their conformance to the traffic contract.
drop	Specifies that cells that are received on the interface and that violate the traffic contract are dropped.

Command Default

Cells received on the interface are passed to the switching fabric with no change, regardless of their conformance to the traffic contract.

Command Modes

Interface configuration

Command History

Release	Modification
11.1(4)	This command was introduced on the LS1010.
12.2(4)B	This command was modified for the Cisco 6400 NSP.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

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

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

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

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

```
Router(config-if)# atm svc-upc-intent ubr pass
Router(config-if)# atm svc-upc-intent cbr tag
Router(config-if)# atm svc-upc-intent vbr-rt tag
Router(config-if)# atm svc-upc-intent vbr-nrt tag
Router(config-if)# atm svc-upc-intent abr drop
```

Related Commands

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

atm txbuff

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

atm txbuff *number*
no atm txbuff

Syntax Description

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

Command Default

256

Command Modes

Interface configuration

Command History

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

Usage Guidelines

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

Examples

The following example configures the AIP to perform up to 300 packet fragmentations simultaneously:

```
atm txbuff 300
```

atm tx-latency

To specify the default transmit latency for an ATM Shared Port Adapter (SPA) interface, use the **atm tx-latency** command in interface configuration mode. To reset the default transmit latency to its default value, use the **no** form of this command.

atm tx-latency *milliseconds*
no atm tx-latency

Syntax Description

milliseconds	The default transmit latency for the interface, in milliseconds. The valid range is from 1 to 200, with a default of 100 milliseconds.

Command Default

100 milliseconds

Command Modes

Interface configuration (ATM interface only)

Command History

Release	Modification
12.2(18)SXE	This command was introduced for the ATM Shared Port Adapters (SPA) on the Cisco 7600 series router and Catalyst 6500 series switch.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The **atm tx-latency** command specifies the default maximum latency for all virtual circuits (VC) on a particular ATM SPA interface. This value is used, together with the value of the **tx-limit** command, to configure the interface and its VCs for the maximum number of transmit buffers for each VC, so that each VC can maintain the desired latency at the VC's configured line rate.

Caution

When the **atm tx-latency** command is configured on an interface, all VCs on that interface are torn down and then set up again, so that the VCs are using the correct latency and buffer values. If you have a large number of VCs configured on the interface, we recommend using this command only during scheduled maintenance times, or at other times where disruption to customer traffic can be minimized.

Tip

Use the **atm tx-latency** command to specify the default latency value for all VCs on the interface, and then use the **tx-limit** command to fine-tune the configuration for a particular VC, as needed.

Examples

The following example shows the default transmit latency for a particular ATM SPA interface being set to 20 milliseconds:

```
Router# configure terminal

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

```
Router(config-if)# atm tx-latency 20

Router(config-if)#
```

Related Commands

Command	Description
tx-limit	Specifies the maximum number of transmit buffers for an ATM virtual circuit (VC).

atm uni-version

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

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

Syntax Description

| *version-number* | UNI version selected on an interface. Valid values are 3.0 and 3.1. |

Command Default

Version 3.0

Command Modes

Interface configuration

Command History

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

Usage Guidelines

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

Examples

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

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

atm vc-per-vp

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

atm vc-per-vp *number*
no atm vc-per-vp

Syntax Description

number	Maximum number of VCIs to support per VPI. See the following list for valid values: • AIP for Cisco 7500 series--Valid values are 16, 32, 64, 128, 256, 512, and 1024. • ATM port adapter for Cisco 7200 series and 7500 series--Valid values are 16, 32, 64, 128, 256, 512, 1024, and 2048. • NPM for Cisco 4500 and Cisco 4700 routers--Valid values are 32, 64, 128, 256, 512, 1024, 2048, 4096, and 8192. • Network module with IMA for the Cisco 2600 series and 3600 series--Valid values are 256, 512, and 1024.

Command Default

1024

Command Modes

Interface configuration

Command History

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

Usage Guidelines

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

An invalid VCI causes a warning message to be displayed.

Cisco 2600 and 3600 Series with IMA

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

The table below lists the possible VCI ranges and corresponding VPI ranges for the Cisco 2600 and 3600 series with IMA.

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

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

Examples

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

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

Related Commands

Command	Description
pvc	Configures the PVC interface.

atm vp-filter

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

atm vp-filter *hexvalue*
no atm vp-filter

Syntax Description

hexvalue	Value in hexadecimal format.

Command Default

0x7B

Command Modes

Interface configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

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

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

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

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

Examples

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

```
atm vp-filter ff00
```

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

```
atm vp-filter 0
```

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

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

atm-address

To override the control ATM address of a Multiprotocol over ATM client (MPC) or a Multiprotocol over ATM server (MPS), use the **atm-address** command in interface configuration mode. To revert to the default address, use the **no** form of this command.

atm-address *atm-address*
no atm-address

Syntax Description

atm-address	Control ATM address.

Command Default

An automatically-generated ATM address is used.

Command Modes

Interface configuration

Command History

Release	Modification
11.3(3a)WA4(5)	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command specifies the control ATM address that an MPC or MPS should use when it comes up if it is associated with a hardware interface.

The **atm-address** command overrides the default operational control address of the MPC or MPS. When this address is deleted (using the **no** form of the command), the MPC or MPS uses an automatically generated address as its control address.

Examples

The following example shows how to specify the ATM address for an MPC:

```
Router(config-if)# atm-address 47.009181000000061705b7701.00400BFF0011.00
```

The following example shows how to specify the ATM address for an MPS:

```
Router(config-if)# atm-address 47.009181000000061705C2B01.00E034553024.00
```

atmsig close atm

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

AIP on Cisco 7500 series; ATM, ATM-CES, Enhanced ATM Port Adapter on Cisco 7200 Series; 1-port ATM-25 Network Module on Cisco 2600 and 3600 Series
atm sig close atm *slot/port vcd*

ATM and Enhanced ATM Port Adapter on Cisco 7500 series
atm sig close atm *slot/port-adaptor port vcd*

NPM on Cisco 4500 and Cisco 4700
atmsig close atm *number vcd*

Syntax Description

slot	ATM slot number. Use this format for the following platform configurations: • AIP on Cisco 7500 series routers. • ATM port adapter, ATM-CES port adapter, or enhanced ATM port adapter on Cisco 7200 series routers. • 1-port ATM-25 network module on Cisco 2600 and 3600 series routers.
/ port	ATM port number. Because the AIP and all ATM port adapters have a single ATM interface, the port number is always 0. The slash (/) is required.
vcd	Virtual circuit descriptor of the signalling SVC to close.
slot / port-adapter	ATM slot number and port adapter number. Use this format for the ATM port adapter or ATM-CES port adapter on Cisco 7500 series routers.
number	ATM network processor module number for the NPM on Cisco 4500 and Cisco 4700 routers.

Command Modes

EXEC

Command History

Release	Modification
10.3	This command was introduced.
11.1	The *number* argument was added.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

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

Examples

The following example closes SVC 2 on ATM interface 4/0:

```
atmsig close atm4/0 2
```

bre-connect

To enable the bridging of routed encapsulations (BRE) over a permanent virtual circuit (PVC) or switched virtual circuit (SVC), use the **bre-connect** command in VC configuration mode. To disable the bridging of routed encapsulations, use the **no** form of this command.

bre-connect *vlan-id* [**mac** *mac-address*]
no bre-connect

Syntax Description

| *vlan-id* | Specifies the number of the virtual LAN (VLAN) to be used in this bridging configuration. The valid range is from 2 to 4094. |
| **mac** *mac-address* | (Optional) Specifies the hardware (MAC) address of the Ethernet customer premises equipment (CPE) device at the remote end of this VLAN. |

Command Default

Bridging of route encapsulations is disabled.

Command Modes

VC configuration mode

Command History

Release	Modification
12.1(12)E	This command was introduced for the 2-port OC-12 ATM WAN Optical Services Modules (OSMs) on Cisco 7600 series routers and Catalyst 6500 series switches.
12.1(19)E1	The ip ip-address keyword and argument were removed because they were not needed.
12.2(17)S	This command, as modified in Cisco IOS Release 12.1(19)E1, was integrated into Cisco IOS Release 12.2(18)S.
12.2(17a)SX	This command was integrated into Cisco IOS Release 12.2(17a)SX.
12.2(18)SXE	Support was added for the 2-Port and 4-Port OC-3c/STM-1 ATM SPAs and the 1-Port OC-12c/STM-4 ATM SPA on the Cisco 7600 series routers and Catalyst 6500 series switches.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The **bre-connect** command allows the OC-12 ATM OSM or ATM SPA to receive RFC 1483 routed encapsulated packets and forward them as Layer 2 frames. When the **bre-connect** command is configured on a PVC (or SVC), the PVC (or SVC) receives routed packets, removes the RFC 1483 routed encapsulation header, and adds an Ethernet MAC header to the packet. The Layer 2 encapsulated packet is then switched to the Layer 2 interface that is determined by the VLAN number and the MAC address for the remote CPE device (if specified).

Note The **bridge-vlan** and **bre-connect** commands are mutually exclusive. You cannot use both commands on the same PVC for concurrent RFC 1483 and BRE bridging.

Note If the ATM interface is configured with only BRE VLANs, you must also use the **spanning-tree bpdufilter enable** command on the main ATM interface, so that the interface blocks all Spanning Tree BPDUs. If RFC 1483 bridged VLANs are also configured on the same ATM interface, or on one of its subinterfaces, do not enter the **spanning-tree bpdufilter enable** command unless you explicitly intend to block BPDUs on the interface.

Examples

The following example shows a PVC being configured for BRE bridging using a VLAN ID of 10:

Router# **configure terminal**

Router(config)# **interface atm3/1.1 point-to-point**

Router(config-subif)# **pvc 1/101**

Router(config-if-atm-vc)# **bre-connect 10**

```
Router(config-if-atm-vc)# end
```

Related Commands

Command	Description
bridge-vlan	Configures a PVC for RFC 1483 -compliant, point-to-point bridging of Layer 2 packets over an ATM interface.
show atm pvc	Displays the configuration of a particular permanent virtual circuit (PVC).

bridge-dot1q encap

To add a VLAN ID to an ATM permanent virtual circuit (PVC) over an ATM xDSL link or a PVC configured using Route-Bridge Encapsulation (RBE), use the **bridge-dot1q encap** command in ATM PVC configuration mode. To prevent a VLAN ID from being sent across the link, use the **no** form of this command.

bridge-dot1q encap *outgoing-vlan-id*
no bridge-dot1q encap *outgoing-vlan-id*

Syntax Description

outgoing-vlan-id	The VLAN ID to be carried over an ATM xDSL link. The valid value of the VLAN ID can range from 1 to 4094.

Command Default

If this command is not used a VLAN ID is not added to an ATM PVC configured over an ATM xDSL link or a PVC configured using RBE.

Command Modes

ATM PVC configuration (config-if-atm-vc)

Command History

Release	Modification
15.0(1)XA	This command was introduced.
15.2(3)T	This command was modified. Support for PVCs configured using RBE was added.

Usage Guidelines

You can configure only one 802.1Q VLAN tag under a PVC.

If the incoming packet at the Fast Ethernet port contains an ingress 802.1Q tag, the ingress 802.1Q tag is replaced by the egress 802.1Q tag while the packet is forwarded over an ATM xDSL link.

The **bridge-dot1q encap** *outgoing-vlan-id* command can also be used to tag packets on a PVC that is configured on an RBE subinterface.

The Transporting 802.1Q Tag over PVC feature is supported only for ATM Adaptation Layer 5 Subnetwork Protocol Access Protocol (AAL5-SNAP) encapsulation.

Examples

The following example shows how to configure an 802.1Q VLAN tag under a PVC:

```
Device> enable
Device# configure terminal
Device(config)# interface ATM0.100 point-to-point
Device(config-if)# pvc 1/1
Device(config-if-atm-vc)# bridge-dot1q encap 100
Device(config-if-atm-vc)# end
```

Related Commands

Command	Description
show atm pvc	Displays all ATM PVCs and traffic information.

bridge-domain

To enable RFC 1483 ATM bridging or RFC 1490 Frame Relay bridging to map a bridged VLAN to an ATM permanent virtual circuit (PVC) or Frame Relay data-link connection identifier (DLCI), use the **bridge-domain**command in Frame Relay DLCI configuration, interface configuration, interface ATM VC configuration, or PVC range configuration mode. To disable bridging, use the **no** form of this command.

bridge-domain *vlan-id* [{**access**|**dot1q** [*tag*]|**dot1q-tunnel**}] [**broadcast**] [**ignore-bpdu-pid**] [**pvst-tlv** *CE-vlan*] [**increment**] [**lan-fcs**] [**split-horizon**]
no **bridge-domain** *vlan-id*

Syntax Description		
vlan-id	The number of the VLAN to be used in this bridging configuration. The valid range is from 2 to 4094.	
access	(Optional) Enables bridging access mode, in which the bridged connection does not transmit or act upon bridge protocol data unit (BPDU) packets.	
dot1q	(Optional) Enables Institute of Electrical and Electronic Engineers (IEEE) 802.1Q tagging to preserve the class of service (CoS) information from the Ethernet frames across the ATM network. If this keyword is not specified, the ingress side assumes a CoS value of 0 for quality of service (QoS) purposes.	
tag	(Optional--ATM PVCs only) Specifies the 802.1Q value in the range 1 to 4095. You can specify up to 32 **bridge-domain** command entries using **dot1q** *tag* for a single PVC. The highest tag value in a group of **bridge-domain** commands must be greater than the first tag entered (but no more than 32 greater).	
dot1q-tunnel	(Optional) Enables IEEE 802.1Q tunneling mode, so that service providers can use a single VLAN to support customers who have multiple VLANs, while preserving customer VLAN IDs and segregating traffic in different customer VLANs.	
broadcast	(Optional) Enables bridging broadcast mode on this PVC. This option is not supported for multipoint bridging. Support for this option was removed in Cisco IOS Release 12.2(18)SXF2 and Cisco IOS Release 12.2(33)SRA.	
ignore-bpdu-pid	(Optional for ATM interfaces only) Ignores BPDU protocol identifiers (PIDs) and treats all BPDU packets as data packets to allow interoperation with ATM customer premises equipment (CPE) devices that do not distinguish BPDU packets from data packets.	
pvst-tlv	(Optional) When the router or switch is transmitting, translates Per-VLAN Spanning Tree Plus (PVST+) BPDUs into IEEE BPDUs. When the router or switch is receiving, translates IEEE BPDUs into PVST+ BPDUs.	
CE-vlan	Customer-edge VLAN in the Shared Spanning Tree Protocol (SSTP) tag-length-value (TLV) to be inserted in an IEEE BPDU to a PVST+ BPDU conversion.	
increment	(PVC range configuration mode only) (Optional) Increments the bridge domain number for each PVC in the range.	

lan-fcs	(Optional) Specifies that the VLAN bridging should preserve the Ethernet LAN frame checksum (FCS) of the Ethernet frames across the ATM network.
	Note This option applies only to routers using a FlexWAN module. Support for this option was removed in Cisco IOS Release 12.2(18)SXF2 and Cisco IOS Release 12.2(33)SRA.
split-horizon	(Optional) Enables RFC 1483 split horizon mode to globally prevent bridging between PVCs in the same VLAN.

Command Default

Bridging is disabled.

Command Modes

Frame Relay DLCI configuration (config-fr-dlci)
Interface configuration (config-if)--Only the **dot1q** and **dot1q-tunnel** keywords are supported in interface configuration mode.
Interface ATM VC configuration (config-if-atm-vc)
PVC range configuration (config-if-atm-range)

Command History

Release	Modification
12.1(13)E	This command was introduced as the **bridge-vlan** command for the 2-port OC-12 ATM WAN Optical Services Modules (OSMs) on Cisco 7600 series routers and Catalyst 6500 series switches.
12.1(12c)E	This command was integrated into Cisco IOS Release 12.1(12c)E.
12.1(14)E1	This command was integrated into Cisco IOS Release 12.1(14)E1. The **dot1q-tunnel** keyword was added.
12.2(14)SX	This command was integrated into Cisco IOS Release 12.2(14)SX. The **dot1q-tunnel** keyword is not supported in this release.
12.1(19)E	The **split-horizon** keyword was added.
12.2(18)S	This command was integrated into Cisco IOS Release 12.2(18)S. The **dot1q-tunnel** and **split-horizon** keywords are supported in this release.
12.2(17a)SX	Support was added for the **dot1q-tunnel** keyword in Cisco IOS Release 12.2(17a)SX.
12.2(18)SXE	This command was renamed from **bridge-vlan** to **bridge-domain**. The **access**, **broadcast**, **ignore-bpdu-pid**, and **increment** keywords were added.
12.2(18)SXF2	Support for the **lan-fcs** and **broadcast**keywords was removed. The **ignore-bpdu-pid**and **pvst-tlv**keywords were added.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

RFC 1483 bridging on ATM interfaces supports the point-to-point bridging of Layer 2 packet data units (PDUs) over Ethernet networks. RFC 1490 Frame Relay bridging on Packet over SONET (POS) or serial interfaces that are configured for Frame Relay encapsulation provides bridging of Frame Relay packets over Ethernet networks.

The Cisco 7600 router can transmit BPDUs with a PID of either 0x00-0E or 0x00-07. When the router connects to a device that is fully compliant with RFC 1483 Appendix B, in which the IEEE BPDUs are sent and received by the other device using a PID of 0x00-0E, you must not use the **ignore-bpdu-pid**keyword.

If you do not enter the **ignore-bpdu-pid** keyword, the PVC between the devices operates in compliance with RFC 1483 Appendix B. This is referred to as *strict mode* . Entering the **ignore-bpdu-pid** keyword creates *loose mode* . Both modes are described as follows:

- Without the **ignore-bpdu-pid**keyword, in strict mode, IEEE BPDUs are sent out using a PID of 0x00-0E, which complies with RFC 1483.

- With the **ignore-bpdu-pid**keyword, in loose mode, IEEE BPDUs are sent out using a PID of 0x00-07, which is normally reserved for RFC 1483 data.

Cisco-proprietary PVST+ BPDUs are always sent out on data frames using a PID of 0x00-07, regardless of whether you enter the **ignore-bpdu-pid** keyword.

Use the **ignore-bpdu-pid** keyword when connecting to devices such as ATM digital subscriber line (DSL) modems that send PVST (or 802.1D) BPDUs with a PID of 0x00-07.

The **pvst-tlv** keyword enables BPDU translation when the router interoperates with devices that understand only PVST or IEEE Spanning Tree Protocol. Because the Catalyst 6500 series switch ATM modules support PVST+ only, you must use the **pvst-tlv** keyword when connecting to a Catalyst 5000 family switch that understands only PVST on its ATM modules, or when connecting with other Cisco IOS routers that understand IEEE format only.

When the router or switch is transmitting, the **pvst-tlv** keyword translates PVST+ BPDUs into IEEE BPDUs.

When the router or switch is receiving, the **pvst-tlv** keyword translates IEEE BPDUs into PVST+ BPDUs.

Note The **bridge-domain**and **bre-connect** commands are mutually exclusive. You cannot use both commands on the same PVC for concurrent RFC 1483 and BRE bridging.

To preserve class of service (CoS) information across the ATM network, use the **dot1q** option. This configuration uses IEEE 802.1Q tagging to preserve the VLAN ID and packet headers as they are transported across the ATM network.

To enable service providers to use a single VLAN to support customers that have multiple VLANs, while preserving customer VLAN IDs and segregating traffic in different customer VLANs, use the **dot1q-tunnel** option on the service provider router. Then use the **dot1q** option on the customer routers.

Note The **access**, **dot1q**, and **dot1q-tunnel** options are mutually exclusive. If you do not specify any of these options, the connection operates in "raw" bridging access mode, which is similar to access, except that the connection does act on and transmit BPDU packets.

RFC 1483 bridging is supported on AAL5-MUX and AAL5-LLC Subnetwork Access Protocol (SNAP) encapsulated PVCs. RFC-1483 bridged PVCs must terminate on the ATM interface, and the bridged traffic must be forwarded over an Ethernet interface, unless the **split-horizon** option is used, which allows bridging of traffic across bridged PVCs.

> **Note** RFC 1483 bridging is not supported for switched virtual circuits (SVCs). It also cannot be configured for PVCs on the main interface.

In interface configuration mode, only the **dot1q** and **dot1q-tunnel** keyword options are supported.

Examples

The following example shows a PVC being configured for IEEE 802.1Q VLAN bridging using a VLAN ID of 99:

```
Router# configure terminal

Router(config)# interface ATM6/2

Router(config-if)# pvc 2/101

Router(config-if-atm-vc)# bridge-domain 99 dot1q

Router(config-if-atm-vc)# end
```

The following example shows how to enable BPDU translation when a Catalyst 6500 series switch is connected to a device that understands only IEEE BPDUs in an RFC 1483-compliant topology:

```
Router(config-if-atm-vc)# bridge-domain
100 pvst-tlv 150
```

The **ignore-bpdu-pid** keyword is not used because the device operates in an RFC 1483-compliant topology for IEEE BPDUs.

The following example shows how to enable BPDU translation when a Catalyst 5500 ATM module is a device that understands only PVST BPDUs in a non-RFC1483-compliant topology. When a Catalyst 6500 series switch is connected to a Catalyst 5500 ATM module, you must enter both keywords.

```
Router(config-if-atm-vc)# bridge-domain
100 ignore-bpdu-pid pvst-tlv 150
```

To enable BPDU translation for the Layer 2 Protocol Tunneling (L2PT) topologies, use the following command:

```
Router(config-if-atm-vc)# bridge-domain
100 dot1q-tunnel ignore-bpdu-pid pvst-tlv 150
```

The following example shows a range of PVCs being configured, with the bridge domain number being incremented for each PVC in the range:

```
Router(config)# interface atm 8/0.100

Router(config-if)# range pvc 102/100 102/199
Router(config-if-atm-range)# bridge-domain 102 increment
```

Related Commands

Command	Description
bre-connect	Enables the BRE over a PVC or SVC.

Command	Description
show atm pvc	Displays the configuration of a particular PVC.

broadcast

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

broadcast
no broadcast
default broadcast

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

| **Command Default** | Broadcast transmission is not enabled. For classical IP SVCs, broadcast is enabled. |

Command Modes

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

Command History

Release	Modification
11.3 T	This command was introduced.
12.0(3)T	Enhancements were added for configuration of broadcast packet duplication and transmission for an ATM VC bundle.
12.1(5)T	This command was made available in PVC range and PVC-in-range configuration modes.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

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

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

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

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

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

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

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

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

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

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

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

```
bundle bundle1
 broadcast
```

Related Commands

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

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

card type (T3/E3)

To configure a T3 or E3 card, use the **card type** command in the global configuration mode. To undo the card type configuration, use the **no** form of this command.

T3 or E3 Controllers

card type {**t3** | **e3**}*slot*
no card type {**t3** | **e3**}*slot*

Clear Channel T3/E3 Shared Port Adapters

card type {**t3** | **e3**}*slot subslot*
no card type {**t3** | **e3**}*slot subslot*

Clear Channel T3/E3 Shared Port Adapters on the Cisco 12000 Series Routers

card type {**t3** | **e3**}*slot subslot*

Syntax Description		
	t3	Specifies T3 connectivity of 44,210 kb/s through the network, using binary 8-zero substitution (B8ZS) coding.
	e3	Specifies a wide-area digital transmission scheme (used predominantly in Europe) that carries data at a rate of 34,010 kb/s.
	slot	Slot number of the interface.
	subslot	(Clear Channel T3/E3 Shared Port Adapters only) Secondary slot number on a session initiation protocol (SIP) interface where a shared port adapter (SPA) is installed.
		Refer to the platform-specific SPA hardware installation guide and the corresponding "Specifying the Interface Address on a SPA" topic in the platform-specific SPA software configuration guide for subslot information.

Command Default   No default behavior or values are available.

Command Modes

Global configuration (config)

Command History	Release	Modification
	12.1(1)T	This command was introduced.
	12.2(11)YT	This command was integrated into Cisco IOS Release 12.2(11)YT and implemented on: Cisco 2650XM, Cisco 2651XM, Cisco 2691, Cisco 3660 Series, Cisco 3725, and Cisco 3745.
	12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.

Release	Modification
12.3(1)	This command was integrated into Cisco IOS Release 12.3(1) and support was added for Cisco 2610XM, Cisco 2611XM, Cisco 2620XM, Cisco 2621XM, Cisco 2650XM, Cisco 2651XM, Cisco 2691, Cisco 3631, Cisco 3660, Cisco 3725, and Cisco 3745.
12.2S	This command was integrated into Cisco IOS Release 12.2S.
12.2(25)S3	This command was integrated into Cisco IOS Release 12.2(25)S3 to support the SPAs on the Cisco 7304 routers.
12.2(18)SXE	This command was integrated into Cisco IOS Release 12.2(18)SXE to support the SPAs on the Cisco 7600 Series Routers and the Catalyst 6500 Series Switches.
12.0(31)S	This command was integrated into Cisco IOS Release 12.0(31)S to support the SPAs on the Cisco 12000 Series Routers.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
Cisco IOS XE Release 3.4.0S	This command was implemented on the Cisco ASR 1000 platform with support for configuring the T3 card type.
Cisco IOS XE Release 3.5.0S	This command was implemented on the Cisco ASR 1000 Series Aggregation Services Routers and support was added.

Usage Guidelines   Usage guidelines vary slightly from platform to platform and are described in the following sections.

T3 or E3 Controllers

After a card type is issued, you enter the **no card type** command and then another card type command to configure a new card type. Save the configuration to the NVRAM and reboot the router in order for the new configuration to take effect.

When the router comes up, the software comes up with the new card type. Note that the software will reject the configuration associated with the old controller and the old interface. Configure the new controller and serial interface and save them.

Clear Channel T3/E3 Shared Port Adapters

To change all the SPA ports from T3 to E3 or vice versa, enter the **no card type** command and then another **card type** command to configure a new card type.

When the router comes up, the software comes up with the new card type. Note that the software will reject the configuration associated with the old controller and the old interface. Configure the new controller and serial interface, and save them.

Clear Channel T3/E3 Shared Port Adapters on the Cisco 12000 Series Routers

The **no** form of this command is not available on the 2-Port and 4-Port Clear Channel T3/E3 SPA on the Cisco 12000 Series Routers. To change an existing card type on the Cisco 12000, perform the following steps:

1. Remove the SPA from its subslot.

2. Save the configuration.

3. Reboot the router.

4. Insert the new SPA into the subslot.

5. Configure the new card using the **card type** command.

Examples

The following example shows how to configure T3 data transmission in slot 1:

```
Device(config)# card type t3 1
```

The following example shows how to configure all the ports of the 2-Port and 4-Port Clear Channel T3/E3 SPA, seated in slot 5, subslot 2, in the T3 mode:

```
Device(config)# card type t3 5 2
```

The following example shows how to configure all the ports of the SPA-2CHT3-CE-ATM, seated in slot 0, subslot 1 of the Cisco ASR 1000 Series Router, in the T3 mode:

```
Device(config)# card type t3 0 1
```

SPA reloads after the card type command is configured. Configure the controller as T3 or E3 only after the SPA is UP.

The following example shows how to configure all the ports of the SPA-2CHT3-CE-ATM, seated in slot 0, subslot 2 of the Cisco ASR 1000 Series Router, in the E3 mode:

```
Router(config)# card type e3 0 2
```

SPA reloads after the card type command is configured. Configure the controller as T3 or E3 only after the SPA is UP.

Related Commands

Command	Description
controller	Configures a T3 or E3 controller, and enters controller configuration mode.
reload	Reloads the operating system.
show interface serial	Displays the serial interface type and other information.

cbr

To configure the constant bit rate (CBR) for the ATM circuit emulation service (CES) for an ATM permanent virtual circuit (PVC) on the Cisco MC3810 or the PA-A3 port adapter for the Cisco 7200 and 7500 series routers, use the **cbr** command in the appropriate configuration mode. To restore the default, use the **no** form of this command.

cbr *rate*
no cbr *rate*

Syntax Description

rate	Constant bit rate (also known as the average cell rate) for ATM CES. The valid range for this command is from 56 to 10000 kbps for ATM CES on the Cisco MC3810 or from 1 to 155000 kbps for the PA-A3 port adapter on the Cisco 7200 and 7500 series routers.

Command Default

The CBR is not configured.

Command Modes

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

Command History

Release	Modification
12.0	This command was introduced for the ATM CES on the Cisco MC3810.
12.1(5)T	This command was made available in PVC range and PVC-in-range configuration modes.
12.2(5)	Support was added for the PA-A3 port adapter on the Cisco 7200 series routers.
12.2(7)	Support was added for the PA-A3 port adapter on the Cisco 7500 series routers.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
Cisco IOS XE Release 2.3	This command was made available in ATM PVP configuration mode.

Usage Guidelines

This command applies to ATM configuration on the Cisco MC3810 and the PA-A3 port adapter on the Cisco 7200 and 7500 series routers.

Examples

The following example configures the constant bit rate on ATM PVC 20 on the Cisco MC3810:

```
pvc 20
 cbr 56
```

Related Commands

Command	Description
ces cell-loss-integration-period	Sets the CES cell-loss integration period on the Cisco MC3810 multiservice concentrator.
ces clockmode synchronous	Configures the ATM CES synchronous clock mode on the Cisco MC3810 multiservice concentrator.
ces connect	Maps the CES service to an ATM PVC on the Cisco MC3810 multiservice concentrator.
ces initial-delay	Configures the size of the receive buffer of a CES circuit on the Cisco MC3810 multiservice concentrator.
ces max-buf-size	Configures the send buffer of a CES circuit on the Cisco MC3810 multiservice concentrator.
ces partial-fill	Configures the number of user octets per cell for the ATM CES on the Cisco MC3810 multiservice concentrator.
ces service	Configures the ATM CES type on the Cisco MC3810 multiservice concentrator.
encapsulation atm-ces	Enables CES ATM encapsulation on the Cisco MC3810 multiservice concentrator.

ces

To configure circuit emulation service (CES) on a router port and enter CES configuration mode, use the **ces** command in global configuration mode.

ces *slot/port*

Syntax Description	*slot* **/** *port*	Backplane slot number and port number on the interface. The port value is always 0 because the interface configuration applies to all ports in the slot. The slash (/) is required.

Command Default

No CES interface is configured.

Command Modes

Global configuration

Command History

Release	Modification
12.1(2)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is used on Cisco 2600 series and 3600 series routers that have OC-3/STM-1 ATM CES network modules.

The **ces** command enters CES configuration mode. Use CES configuration mode to configure CES parameters such as the CES clock.

Examples

The following example configures the CES interface in slot 2:

```
ces 2/0
```

Related Commands

Command	Description
clock-select	Allows the selection of clock sources and priority.

ces aal1 clock

To configure the ATM adaptation layer 1 (AAL1) timing recovery clock for the constant bit rate (CBR) interface, use the **ces aal1 clock** command in interface configuration mode. To return the clock to the default, use the **no** form of this command.

ces aal1 clock {**adaptive** | **srts** | **synchronous**}
no ces aal1 clock

Syntax Description

adaptive	Adjusts output clock on a received AAL1 on FIFO basis. Use in unstructured mode.
srts	Sets the clocking mode to synchronous residual time stamp.
synchronous	Configures the timing recovery to synchronous for structured mode.

Command Default

The timing recovery is set to synchronous for structured mode.

Command Modes

Interface configuration

Command History

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

Usage Guidelines

The clock mode must be **synchronous** for structured mode. In unstructured mode, use the **adaptive**keyword when a network-derived clock is not available.

Use the **srts** keyword when a network-derived clock is available but devices attached to the CES port use a different clock reference. The **srts** keyword samples the incoming clock, subtracts from the network clock, and sends the remainder in an AAL1 header. The clock is reconstructed during output by adding the residual to the network reference.

Use the **synchronous** keyword for all other modes.

Examples

The following command sets the AAL1 timing recovery clock to adaptive mode:

```
interface cbr 4/0
 ces aal1 clock adaptive
```

Related Commands

Command	Description
ces aal1 service	Configures the type of CES used on the CBR interface.
ces dsx1 clock source	Configures a transmit clock source for the CBR interface.

Command	Description
network-clock-select (ATM)	Establishes the sources and priorities of the requisite clocking signals for an ATM-CES port adapter.

ces aal1 service

To configure the type of circuit emulation service used on the constant bit rate (CBR) interface, use the **ces aal1 service** command in interface configuration mode. To return the type of service to unstructured, use the **no** form of this command.

ces aal1 service {**structured** | **unstructured**}
no ces aal1 service

Syntax Description

structured	Sets the type of service to structured (cross-connect).
unstructured	Sets the type of service to unstructured (clear-channel).

Command Default

The type of service is set to unstructured (clear-channel).

Command Modes

Interface configuration

Command History

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

Usage Guidelines

The **structured** keyword means that each time slot is an independent entity grouped into circuits, where each circuit has an independent permanent virtual circuit (PVC).

The **unstructured** keyword reduces the incoming serial data on the receiving end of the ATM network. The keyword also sets the service to single circuit, single PVC, where all time slots are carried.

Examples

The following example changes the mode for the **ces aal1 service** command to structured:

```
interface cbr 4/0
 ces aal1 service structured
```

Related Commands

Command	Description
ces aal1 clock	Configures the AAL1 timing recovery clock for the CBR interface.
ces circuit	Configures the connection attributes for the CBR interface.
ces dsx1 clock source	Configures a transmit clock source for the CBR interface.
ces dsx1 framing	Selects the frame type for the data line on the CBR interface.
ces dsx1 lbo	Configures cable length for the CBR interface.

Command	Description
ces dsx1 linecode	Selects the line code type for the CBR interface.
ces dsx1 loopback	Enables a loopback for the CBR interface.
ces dsx1 signalmode robbedbit	Enables the signal mode as robbed bit on a CBR interface.
ces pvc	Configures the destination port for the circuit on the CBR interface.
show ces circuit	Displays detailed circuit information for the CBR interface.
show ces interface cbr	Displays detailed CBR port information.
show ces status	Displays the status of the ports on the ATM-CES port adapter.
show interface cbr	Displays the information about the CBR interface on the ATM-CES port adapter.

ces circuit

To configure the connection attributes for the constant bit rate (CBR) interface , use the **ces circuit**command in interface configuration mode. To return the connection attributes to the default or to enable the circuit, use the **no** form of this command.

ces circuit *circuit-number* [{**cas** | **no cas**}] [**cdv** *range*] [**circuit-name** *name*] [**on-hook-detection** *hex-number*] [**partial-fill** *range*] [{**shutdown** | **no shutdown**}] [**timeslots** *range*]
no ces circuit *circuit-number* [[**no**] **cas**] [**cdv** *range*] [**circuit-name** *name*] [**on-hook-detection** *hex-number*] [**partial-fill** *range*] [[**no**] **shutdown**] [**timeslots** *range*]

Syntax Description

circuit-number	Selects the circuit identification. For unstructured service, use 0. For T1 structured service, the range is from 1 to 24. For E1 structure service, the range is from 1 to 31.
cas	(Optional) Enables channel-associated signaling for structured service only. no cas disables channel-associated signaling. The default is **no cas**.
no cas	(Optional) Disables channel-associated signaling for structured service only. This is the default.
cdv *range*	(Optional) Enables the peak-to-peak cell delay variation requirement. The range for CDV is 1 through 65535 milliseconds. The default is 2000 milliseconds.
circuit-name *name*	(Optional) Sets the ASCII name for the circuit emulation service internetworking function CES-IWF circuit. The string for the circuit name ranges from 0 to 255. The default is CBR*x* /*x* :0.
on-hook-detection *hex-number*	(Optional) Enables detection of whether the circuit is on-hook. Hex values are 0 through F to indicate a 2- or 4-bit AB[CD] pattern to detect on-hook. The AB[CD] bits are determined by the manufacturer of the voice/video telephony device that is generating the CBR traffic.
partial-fill *range*	(Optional) Enables the partial AAL1 cell fill service for structured service only. The range is from 0 to 47. The default is 47.
shutdown	(Optional) Marks the CES-IWF circuit administratively down. The default is **no shutdown**.
no shutdown	(Optional) Returns the CES-IWF circuit to an administrative up state.
timeslots *range*	(Optional) Configures the time slots for the CES-IWF circuit for structured service only. The range is from 1 to 24 for T1. The range is from 1 to 31 for E1.

Command Default   No circuit is configured.

Command Modes

Interface configuration

Command History

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

Usage Guidelines

Channel-associated signalling (CAS) provides information about the time slot (on or off the hook) and is updated once per multiframe.

With both the CAS and on-hook detection features enabled, these features work together to enable an ingress node in an ATM network to monitor on-hook and off-hook conditions for a specified 1 x 64 structured CES circuit. As implied by the notation "1 x 64," the on-hook detection (or bandwidth-release) feature is supported only in a structured CES circuit that involves a single time slot at each end of the connection.

The time slot configured for the structured CES circuit at the ingress node (time slot 2) can be different from the DS0 time slot configured at the egress node (time slot 4). Only one such time slot can be configured at each end of the circuit when the on-hook detection feature is used.

When you invoke the on-hook feature, the ingress ATM-CES port adapter monitors the ABCD bits in the incoming CBR bit stream to detect on-hook and off-hook conditions in the circuit. In an "off-hook" condition, all the bandwidth provisioned for the specified CES circuit is used for transporting ATM AAL1 cells across the network from the ingress node to the egress node.

In an on-hook condition, the network periodically sends dummy ATM cells from the ingress node to the egress node to maintain the connection. However, these dummy cells consume only a fraction of the circuit's reserved bandwidth, leaving the rest of the bandwidth available for use by other network traffic. This bandwidth-release feature enables the network to make more efficient use of its resources.

When the CAS feature is enabled for a CES circuit, the bandwidth of the DS0 channel is limited to 56 kbps for user data, because CAS functions consume 8 kbps of channel bandwidth for transporting the ABCD signalling bits. These signalling bits are passed transparently from the ingress node to the egress node as part of the ATM AAL1 cell stream.

In summary, when the optional CAS and on-hook detection features are enabled, the following conditions apply:

- The permanent virtual connection (PVC) provisioned for the CES circuit always exists.

- The bandwidth for the CES circuit is always reserved.

- During an on-hook state, most of the bandwidth reserved for the CES circuit is not in use. (Dummy cells are sent from the ingress node to the egress node to maintain the connection.) Therefore, this bandwidth becomes available for use by other network traffic, such as available bit rate (ABR) traffic.

- During an off-hook state, all the bandwidth reserved for the CES circuit is dedicated to that circuit.

Examples

The following example sets the structured service CDV range to 5000 milliseconds and enables the interface:

```
interface cbr 4/0
 ces circuit 3 cdv 5000
 ces circuit 3 no shutdown
```

Related Commands

Command	Description
ces aal1 service	Configures the type of CES used on the CBR interface.
show ces circuit	Displays detailed circuit information for the CBR interface.
show ces interface cbr	Displays detailed CBR port information.
show ces status	Displays the status of the ports on the ATM-CES port adapter.
show interface cbr	Displays the information about the CBR interface on the ATM-CES port adapter.

ces dsx1 clock source

To configure a transmit clock source for the constant bit rate (CBR) interface , use the **ces dsx1 clock source** command in interface configuration mode. To return the clock source to the default, use the **no** form of this command.

ces dsx1 clock source {**loop-timed** | **network-derived**}
no ces dsx1 clock source

Syntax Description

loop-timed	Configures the transmit clock to loop (RX-clock to TX-clock).
network-derived	Configures the transmit clock to be derived from the network.

Command Default

The transmit clock is derived from the network.

Command Modes

Interface configuration

Command History

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

Examples

The following example sets the clock source to loop-timed:

```
interface cbr 4/0
 ces dsx1 clock source loop-timed
```

Related Commands

Command	Description
ces aal1 clock	Configures the AAL1 timing recovery clock for the CBR interface.
ces aal1 service	Configures the type of CES used on the CBR interface.
network-clock-select (ATM)	Establishes the sources and priorities of the requisite clocking signals for an ATM-CES port adapter.
show ces circuit	Displays detailed circuit information for the CBR interface.
show ces interface cbr	Displays detailed CBR port information.
show interface cbr	Displays the information about the CBR interface on the ATM-CES port adapter.

ces dsx1 framing

To select the frame type for the data line on the constant bit rate (CBR) interface, use the **ces dsx1 framing** command in interface configuration mode. To return the frame type to the default, use the **no** form of this command.

T1
ces dsx1 framing {**esf** | **sf**}
no ces dsx1 framing

E1
ces dsx1 framing {**e1_crc_mfCASlt** | **e1_crc_mf_lt** | **e1_lt** | **e1_mfCAS_lt**}
no ces dsx1 framing

Syntax Description		
	esf	Configures the line type to extended super frame for T1.
	sf	Configures the line type to super frame for T1.
	e1_crc_mfCASlt	Configures the line type to E1 CRC with channel-associated signalling (CAS) enabled.
	e1_crc_mf_lt	Configures the line type to E1 CRC with CAS disabled.
	e1_lt	Configures the line type to E1 with CAS disabled.
	e1_mfCAS_lt	Configures the line type to E1 with CAS enabled.

Command Default **esf** (for T1) **e1_lt**(for E1)

Command Modes

Interface configuration

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

Usage Guidelines Use this command in configurations where the router communicates with the data line. The service provider determines which framing type is required for your circuit.

Examples The following example sets the data line type to super frame:

```
interface cbr 4/0
 ces dsx1 framing sf
```

Related Commands

Command	Description
ces aal1 service	Configures the type of CES used on the CBR interface.
show ces circuit	Displays detailed circuit information for the CBR interface.
show ces interface cbr	Displays detailed CBR port information.
show ces status	Displays the status of the ports on the ATM-CES port adapter.
show interface cbr	Displays the information about the CBR interface on the ATM-CES port adapter.

ces dsx1 lbo

To configure cable length for the constant bit rate (CBR) interface , use the **ces dsx1 lbo**command in interface configuration mode. To return the cable length to the default, use the **no** form of this command.

ces dsx1 lbo *length*
no ces dsx1 lbo

Syntax Description	*length*	Sets the cable length. Values (in feet) are **0_110**, **110_200**, **220_330**, **330_440**, **440_550**, **550_660**, **660_above**, and **square_pulse**. Values represent a range in feet.

Command Default **0_110** feet

Command Modes

Interface configuration

Command History

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

Usage Guidelines Set the cable length to the desired number of feet on your system.

Examples The following example sets the cable length to 440 feet:

```
interface cbr 4/0
 ces dsx1 lbo 440_550
```

Related Commands

Command	Description
atm lbo	Specifies the cable length (line build-out) for the ATM interface.
ces aal1 service	Configures the type of CES used on the CBR interface.
show ces circuit	Displays detailed circuit information for the CBR interface.
show ces interface cbr	Displays detailed CBR port information.
show ces status	Displays the status of the ports on the ATM-CES port adapter.
show interface cbr	Displays the information about the CBR interface on the ATM-CES port adapter.

ces dsx1 linecode

To select the line code type for the constant bit rate (CBR) interface, use the **ces dsx1 linecode** command in interface configuration mode. To return the line code to the default, use the **no** form of this command.

T1
ces dsx1 linecode {**ami** | **b8zs**}
no ces dsx1 linecode

E1
ces dsx1 linecode {**ami** | **hdb3**}
no ces dsx1 linecode

Syntax Description

ami	Specifies the alternate mark inversion (AMI) as the line code type. Valid for T1 and E1 interfaces.
b8zs	Specifies B8ZS as the line code type. Valid for T1 interfaces. This is the default for T1.
hdb3	Specifies HDB3 as the line code type. Valid for E1 interfaces. This is the default for E1.

Command Default

For T1 interfaces, B8ZS is used as the line code type. For E1 interfaces, HDB3 is used as the line code type.

Command Modes

Interface configuration

Command History

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

Usage Guidelines

Use this command in configurations where the switch communicates with the data line. The service provider determines which line code type is required for your circuit.

Examples

The following example specifies B8ZS as the line code type:

```
interface cbr 4/0
 ces dsx1 linecode b8zs
```

Related Commands

Command	Description
ces aal1 service	Configures the type of CES used on the CBR interface.
show ces circuit	Displays detailed circuit information for the CBR interface.
show ces interface cbr	Displays detailed CBR port information.

Command	Description
show ces status	Displays the status of the ports on the ATM-CES port adapter.
show interface cbr	Displays the information about the CBR interface on the ATM-CES port adapter.

ces dsx1 loopback

To enable a loopback for the constant bit rate (CBR) interface, use the **ces dsx1 loopback** command in interface configuration mode. To disable the loopback, use the **no** form of this command.

ces dsx1 loopback {**line** | **noloop** | **payload**}
no ces dsx1 loopback {**line** | **noloop** | **payload**}

Syntax Description

line	Sets the received signal to be looped at the line (does not penetrate the line).
noloop	Sets the interface to no loop.
payload	Sets the received signal to be looped through the device and returned.

Command Default

No loopback is enabled.

Command Modes

Interface configuration

Command History

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

Usage Guidelines

This command is useful for testing the circuit emulation port adapter module.

Examples

The following example sets a payload loopback:

```
interface cbr 4/0
 ces dsx1 loopback payload
```

Related Commands

Command	Description
ces aal1 service	Configures the type of CES used on the CBR interface.
loopback	Configures the ATM interface into loopback mode.
show ces circuit	Displays detailed circuit information for the CBR interface.
show ces interface cbr	Displays detailed CBR port information.
show ces status	Displays the status of the ports on the ATM-CES port adapter.
show interface cbr	Displays the information about the CBR interface on the ATM-CES port adapter.

ces dsx1 signalmode robbedbit

To enable the signal mode as robbed bit on a constant bit rate (CBR) interface, use the **ces dsx1 signalmode robbedbit** command in interface configuration mode. To return the signal mode to the default, use the **no** form of this command.

ces dsx1 signalmode robbedbit
no ces dsx1 signalmode robbedbit

Syntax Description   This command has no arguments or keywords.

Command Default   No signal mode is enabled.

Command Modes

Interface configuration

Command History

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

Usage Guidelines   A T1 frame consists of 24 time slots (DS0) that send at a rate of 64 kbps. T1 defines the ability to send signaling in-band on individual time slots by removing the low bit of each byte for signaling in robbedbit mode. This procedure allows 8 kbps for signalling and leaves 56 kbps for data.

In structured mode, you can send the T1 signalling information across the network. Structured mode means that after you enable **robbedbit** signalling mode on the port, and enable CAS on individual circuits that need this type of service, you are robbing bits from the DS0. The system then puts the bits in the specified format to be sent across the network and reinserts them at the passive side on the CES-IWF connection.

Examples   The following example enables channel-associated signaling and robbed-bit signaling:

```
interface cbr 4/0
 ces circuit 1 cas
 ces dsx1 signalmode robbedbit
```

Related Commands

Command	Description
ces aal1 service	Configures the type of CES used on the CBR interface.
ces circuit	Configures the connection attributes for the CBR interface.
show ces circuit	Displays detailed circuit information for the CBR interface.
show ces interface cbr	Displays detailed CBR port information.

Command	Description
show ces status	Displays the status of the ports on the ATM-CES port adapter.
show interface cbr	Displays the information about the CBR interface on the ATM-CES port adapter.

ces partial-fill

To configure the number of user octets per cell for the ATM circuit emulation service (CES), use the **ces partial-fill** command in interface configuration mode. To delete the CES partial-fill value, use the no form of this command.

ces partial-fill *octets*
no ces partial-fill *octets*

Syntax Description

octets	Number of user octets per cell for the CES. Possible values of octet range from 0 to 47. The default is 47.

Command Default 47 octets

Command Modes

Interface configuration

Command History

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

Usage Guidelines This command applies to ATM configuration on the Cisco MC3810.

Setting the value of the **ces partial-fill** command to zero disables partial cell fill and causes all cells to be completely filled before they are sent. This command is supported on serial ports 0 and 1 when the **encapsulation atm-ces** command is enabled.

Examples The following example sets the CES partial cell fill to 20 octets per cell for serial port 0:

```
interface serial 0
 ces partial-fill 20
```

Related Commands

Command	Description
ces cell-loss-integration-period	Sets the CES cell-loss integration period on the Cisco MC3810 multiservice concentrator.
ces clockmode synchronous	Configures the ATM CES synchronous clock mode on the Cisco MC3810 multiservice concentrator.
ces connect	Maps the CES service to an ATM PVC on the Cisco MC3810 multiservice concentrator.

Command	Description
ces initial-delay	Configures the size of the receive buffer of a CES circuit on the Cisco MC3810 multiservice concentrator.
ces max-buf-size	Configures the send buffer of a CES circuit on the Cisco MC3810 multiservice concentrator.
ces service	Configures the ATM CES type on the Cisco MC3810 multiservice concentrator.

ces pvc

To configure the destination port for the circuit on the constant bit rate (CBR) interface, use the **ces pvc**command in interface configuration mode. To remove the destination port on the circuit, use the **no** form of this command.

ces pvc *circuit-number* **interface atm** *slot/port* **vpi** *number* **vci** *number*
no ces pvc *circuit-number* **interface atm** *slot/port* **vpi** *number* **vci** *number*

Syntax Description

circuit-number	Selects the circuit identification. The range is from 0 to 24. For unstructured service, use 0. For T1 structure service, the range is from 1 to 24. For E1 structure service, the range is from 1 to 31.
interface atm *slot* **/** *port*	Slot and port number of the ATM interface. The slash (/) is required. Used to create a hard permanent virtual circuit (PVC). Only a hard PVC can be configured for the CBR interfaces on the ATM-CES port adapter.
vpi *number*	Virtual path identifier of the destination PVC. Range is from 0 to 255.
vci *number*	Virtual channel identifier of the destination PVC. Range is from 1 to 16383.

Command Default

No destination port is configured.

Command Modes

Interface configuration

Command History

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

Usage Guidelines

Use the **interface** option to create a hard PVC. Use the **dest-atm-addr** option to create a soft PVC. Soft PVCs are not supported on Cisco 7200 series routers.

You must configure both sides of the CES circuits because at the source (the active side in CES-IWF), the time slots are not recognized at the destination (the passive side).

Each CES circuit has an ATM address. When configuring the source PVC, you need the destination ATM address.

Examples

The following example shows setting a hard PVC. In this example, the destination of ATM port 0 in slot 1 is assigned to circuit 31 on CBR port 0 in slot 1.

```
interface cbr 1/0
 ces pvc 31 interface atm 1/0 vpi 0 vci 512
```

Related Commands

Command	Description
ces aal1 service	Configures the type of CES used on the CBR interface.
show ces circuit	Displays detailed circuit information for the CBR interface.
show ces interface cbr	Displays detailed CBR port information.
show ces status	Displays the status of the ports on the ATM-CES port adapter.
show interface cbr	Displays the information about the CBR interface on the ATM-CES port adapter.

ces-cdv

To set the cell delay variation, use the **ces-cdv**command in interface-ATM-VC configuration mode.

ces-cdv *time*

Syntax Description

| *time* | Maximum tolerable cell arrival jitter with a range from 1 to 65535 microseconds. Default is 5000. |

Command Default

5000 microseconds

Command Modes

Interface-ATM-VC configuration

Command History

Release	Modification
12.1(2)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is used on Cisco 2600 series and 3600 series routers that have OC-3/STM-1 ATM CES network modules.

Examples

The following example configures the maximum tolerable cell arrival jitter at 7500 microseconds:

```
interface atm1/0
 pvc 0 0/41 ces
  ces-cdv 7500
```

Related Commands

Command	Description
interface atm	Configures the ATM interface.
svc	Configures the SVC.

class-int

To assign a virtual circuit (VC) class to an ATM main interface or subinterface, 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

Command History

Release	Modification
11.3(4)T	This command was introduced, replacing the **class** command for assigning VC classes to ATM main interfaces or subinterfaces.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use this command to assign a previously defined set of parameters (defined in a VC class) to an ATM main interface or subinterface. To create a VC class that defines these parameters, use the vc-class atm command. Refer to the section "Configuring VC Classes" in the "Configuring ATM" chapter of the *Cisco IOS Wide-Area Networking Configuration Guide* for more information.

To use this command for assigning a VC class to an ATM main interface or subinterface, you must first enter the **interface atm** command to enter interface configuration mode.

When you create a VC class for an ATM main interface or subinterface, you can use the following commands to define your parameters: **abr**, **broadcast**, **bump**, **encapsulation**, **idle-timeout**, **ilmi manage**, **inarp**, **oam-bundle**, **oam-pvc**, **oam retry**, **oam-svc**, **protocol**, **ubr**, **ubr+**, and **vbr-nrt**.

Parameters 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.

Examples

In the following example, a class called "classA" is first created and then applied to ATM main interface 2/0:

```
! The following commands create the class classA:
vc-class atm classA
 ubr 10000
 encapsulation aal5mux ip
! The following commands apply classA to ATM main interface 2/0:
interface atm 2/0
 class-int classA
```

Related Commands

Command	Description
protocol (ATM)	Configures a static map for an ATM PVC, SVC, VC class, or VC bundle and enables Inverse ARP or Inverse ARP broadcasts on an ATM PVC.
show atm map	Displays the list of all configured ATM static maps to remote hosts on an ATM network.
vc-class atm	Configures a VC class for an ATM VC or interface.

class-vc

To assign a virtual circuit (VC) class to an ATM permanent virtual circuit (PVC), switched virtual circuit (SVC), or VC bundle member, use the **class-vc** command in the appropriate configuration mode. To remove a VC class, use the **no** form of this command.

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

Syntax Description

name	Name of the VC class.

Command Default

No VC class is assigned.

Command Modes

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

Command History

Release	Modification
11.3(4)T	This command was introduced.
12.0(3)T	This command was modified to support application of a VC class to an ATM VC bundle and an ATM VC bundle member.
12.1(5)T	This command was made available in PVC-in-range configuration mode.
12.2(16)BX	This command was integrated into Cisco IOS Release 12.2(16)BX.
12.0(26)S	This command was integrated into Cisco IOS Release 12.0(26)S.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use this command to assign a previously defined set of parameters (defined in a VC class) to an ATM PVC, SVC, or VC bundle member. To create a VC class that defines these parameters, use the vc-class atm command.

ATM PVCs and SVCs

To use this command for assigning a VC class to an ATM PVC or SVC, you must first enter the **interface atm** command in global configuration mode and then the **pvc** or **svc** command in interface configuration mode.

When you create a VC class for an ATM PVC or SVC, you can use the following commands to define your parameters: **abr**, **broadcast**, **bump**, **encapsulation**, **idle-timeout**, **ilmi manage**, **inarp**, **oam-bundle**, **oam-pvc**, **oam retry**, **oam-svc**, **protocol**, **ubr**, **ubr**+, and **vbr-nrt**.

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

ATM VC Bundle Members

To use this command for assigning a VC class to a VC bundle member, you must first use the **pvc-bundle** command to enter bundle-vc configuration mode.

When you create a VC class for a VC bundle member, you can use the following commands to define your parameters: **bump**, **precedence**, **protect**, **ubr**, **ubr+**, and **vbr-nrt**.

You cannot use the following commands in vc-class configuration mode to configure a VC bundle member: **broadcast, encapsulation**, **inarp**, and **protocol**. These commands are usable only at the bundle level, not the bundle member level.

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

Examples

In the following example, a class named classA is created and then applied to an ATM PVC:

```
! The following commands create the class classA:
vc-class atm classA
 ubr 10000
 encapsulation aal5mux ip
! The following commands apply classA to an ATM PVC:
interface atm 2/0
 pvc router5 1/32
 class-vc classA
```

In the following example, a class named classA is created and then applied to a bundle member named vcmember, which is a member of bundle bundle1:

```
! The following commands create the class classA:
vc-class atm classA
 precedence 6-5
 no bump traffic
 protect group
 bump explicitly 7
 vbr-nrt 20000 10000 32
! The following commands create bundle1, add vcmember to bundle1, and then applies classA
! to vcmember:
bundle bundle1
 pvc-bundle vcmember
  class-vc classA
```

In the preceding example, because of hierarchy precedence rules, the VC bundle member named vcmember has the following characteristics:

- It carries traffic whose IP Precedence level is 6 and 5.

- It does not allow other traffic to be bumped onto it. When the VC goes down, its bumped traffic will be redirected to a VC whose IP Precedence level is 7.

- It is a member of the protected group of the bundle. When all members of a protected group go down, the bundle goes down.

- It has variable bit rate-nonreal-time (VBR-NRT) quality of service traffic parameters.

Related Commands	Command	Description
	abr	Selects available bit rate (ABR) quality of service (QoS) and configures the output peak cell rate and output minimum guaranteed cell rate for an ATM PVC or VC class.
	broadcast	Configures broadcast packet duplication and transmission for an ATM VC class, PVC, SVC, or VC bundle.
	bump	Configures the bumping rules for a VC class that can be assigned to a VC bundle.
	class-bundle	Configures a VC bundle with the bundle-level commands in the specified VC class.
	encapsulation	Sets the encapsulation method used by the interface.
	idle-timeout	Configures the idle timeout parameter for tearing down an ATM switched virtual circuit (SVC) connection.
	ilmi manage	Enables Integrated Local Management Interface (ILMI) management on an ATM PVC.
	inarp	Configures the Inverse ARP time period for an ATM PVC, VC class, or VC bundle.
	oam-bundle	Enables end-to-end F5 Operation, Administration, and Maintenance (OAM) loopback cell generation and OAM management for a VC class that can be applied to a VC bundle.
	oam-pvc	Enables end-to-end F5 OAM loopback cell generation and OAM management for an ATM PVC or VC class.
	oam retry	Configures parameters related to OAM management for an ATM PVC, SVC, VC class, or VC bundle.
	oam-svc	Enables end-to-end F5 OAM loopback cell generation and OAM management for an ATM SVC or VC class.
	precedence	Configures precedence levels for a VC class that can be assigned to a VC bundle and thus applied to all VC members of that bundle.
	protect	Configures a VC class with protected group or protected VC status for application to a VC bundle member.
	protocol	Configures a static map for an ATM PVC, SVC, or VC class or enables Inverse Address Resolution Protocol (ARP) or Inverse ARP broadcasts on an ATM PVC.
	pvc	Creates or assigns a name to an ATM PVC, specifies the encapsulation type on an ATM PVC, and enters interface-ATM-VC configuration mode.
	pvc-bundle	Adds a PVC to a bundle as a member of the bundle and enters bundle-vc configuration mode in order to configure that PVC bundle member.

Command	Description
show atm bundle	Displays the bundle attributes assigned to each bundle VC member and the current working status of the VC members.
show atm bundle statistics	Displays statistics on the specified bundle.
show atm map	Displays the list of all configured ATM static maps to remote hosts on an ATM network.
svc	Creates an ATM SVC and specifies the destination network service access point (NSAP) address on a main interface or subinterface.
ubr	Configures unspecified bit rate (UBR) quality of service (QoS) and specifies the output peak cell rate (PCR) for an ATM PVC, PVC range, SVC, VC class, or VC bundle member.
ubr+	Configures UBR QoS and specifies the output peak cell rate and output minimum guaranteed cell rate for an ATM PVC, SVC, VC class, or VC bundle member.
vbr-nrt	Configures the VBR-NRT QoS and specifies output peak cell rate, output sustainable cell rate, and output maximum burst cell size for an ATM PVC, SVC, VC class, or VC bundle member.
vc-class atm	Configures a VC class for an ATM VC or interface.

clear atm arp

To clear Address Resolution Protocol (ARP) entries for an ATM interface that is configured as an ARP server, use the **clear atm arp** command in privileged EXEC mode.

clear atm arp *atm-interface* {*ip-address* | *****}

Syntax Description

atm-interface	ATM interface number (for example, 3/0).
ip-address	Clears the ARP entry for the specified IP address.
*	Clears all ARP entries on the interface.

Command Default

None

Command Modes

Privileged EXEC

Command History

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

Usage Guidelines

Use this command to clear ARP entries for an ATM interface. Specify the IP address of a particular entry to be deleted, or use the asterisk (*) to delete all the ARP entries for the interface.

If an ARP entry for an existing virtual circuit (VC) is deleted, the ARP server will immediately try to get another entry for that VC.

Examples

The following example shows how to delete the ARP entry for 172.20.173.28:

```
Router# clear atm arp 3/0 172.20.173.28
```

clear atm atm-vc

To clear ATM virtual circuits on an interface, use the **clear atm atm-vc**command in privileged EXEC mode.

clear atm atm-vc interface *type number vpi vci*

Syntax Description

interface *type number*	Clears ATM virtual circuits on the specified interface.
vpi	Virtual path identifier (VPI). The value range is from 0 to 4095.
vci	Virtual circuit identifier (VCI). The value range is from 0 to 65535.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced in a release earlier than Cisco IOS Release 15.0(1)M.
12.2(33)SRC	This command was integrated into a release earlier than Cisco IOS Release 12.2(33)SRC.

Examples

The following example shows how to clear ATM virtual circuits on the specified interface:

```
Router# clear atm atm-vc atm 2/0 5 2
```

Related Commands

Command	Description
show atm vc	Displays all ATM PVCs, SVCs, and traffic information.

clear atm signalling statistics

To clear ATM signaling statistics for all interfaces, use the **clear atm signalling statistics** command in privileged EXEC mode.

clear atm signalling statistics [**interface** *type number*]

Syntax Description

interface *type number*	(Optional) Specifies the type and number of the interface.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced in a release earlier than Cisco IOS Release 15.0(1)M.
12.2(33)SRC	This command was integrated into a release earlier than Cisco IOS Release 12.2(33)SRC.

Examples

The following example shows how to clear ATM signaling statistics for all interfaces:

```
Router# clear atm signalling statistics interface atm2/0/0
```

Related Commands

Command	Description
show atm signalling statistics	Displays ATM signaling statistics counters.

clear atm vc

To release a specified switched virtual circuit (SVC), use the **clear atm vc** command in privileged EXEC mode.

clear atm vc *vcd*

Syntax Description

vcd	Virtual channel descriptor of the channel to be released.

Command Modes

Privileged EXEC

Command History

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

Usage Guidelines

For multicast or control virtual channel connections (VCCs), this command causes the LAN emulation (LANE) client to exit and rejoin an emulated LAN.

For data VCCs, this command also removes the associated LAN Emulation Address Resolution Protocol (LE ARP) table entries.

Examples

The following example shows how to release SVC 1024:

```
Router# clear atm vc 1024
```

clear lane le-arp

To clear the dynamic LAN Emulation Address Resolution Protocol (LE ARP) table or a single LE ARP entry of the LANE client configured on the specified subinterface or emulated LAN, use the **clear lane le-arp** command in user EXEC or privileged EXEC mode.

Cisco 7500 Series

clear lane le-arp [{**interface** *slot/port* [**.** *subinterface-number*] | **name** *elan-name*}] [{**mac-address** *mac-address* | **route-desc segment** *segment-number* **bridge** *bridge-number*}]

Cisco 4500 and 4700 Routers

clear lane le-arp [{**interface** *number* [**.** *subinterface-number*] | **name** *elan-name*}] [{**mac-address** *mac-address* | **route-desc segment** *segment-number* **bridge** *bridge-number*}]

Syntax Description

interface *slot/port* **.** *subinterface-number*]	(Optional) Interface or subinterface for the LAN emulation (LANE) client whose LE ARP table or entry is to be cleared for the Cisco 7500 series routers. The space between the **interface** keyword and the *slot* argument is optional.
interface *number* **.** *subinterface-number*	(Optional) Interface or subinterface for the LANE client whose LE ARP table or entry is to be cleared for the Cisco 4500 or 4700 routers. The space between the **interface** keyword and the *number* argument is optional.
name *elan-name*	(Optional) Name of the emulated LAN for the LANE client whose LE ARP table or entry is to be cleared. Maximum length is 32 characters.
mac-address *mac-address*	(Optional) Keyword and MAC address of the LANE client.
route-desc segment *segment-number*	(Optional) Keywords and LANE segment number. The segment number ranges from 1 to 4095.
bridge *bridge-number*	(Optional) Keyword and bridge number that is contained in the route descriptor. The bridge number ranges from 1 to 15.

Command Modes

User EXEC
Privileged EXEC

Command History

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

Usage Guidelines

This command removes dynamic LE ARP table entries only. It does not remove static LE ARP table entries.

If you do not specify an interface or an emulated LAN, this command clears all the LE ARP tables of any LANE client in the router.

If you specify a major interface (not a subinterface), this command clears all the LE ARP tables of every LANE client on all the subinterfaces of that interface.

This command also removes the fast-cache entries built from the LE ARP entries.

Examples

The following example shows how to clear all the LE ARP tables for all clients on the router:

```
Router# clear lane le-arp
```

The following example shows how to clear all the LE ARP tables for all LANE clients on all the subinterfaces of interface 1/0:

```
Router# clear lane le-arp interface 1/0
```

The following example shows how to clear the entry corresponding to MAC address 0800.aa00.0101 from the LE ARP table for the LANE client on the emulated LAN named red:

```
Router# clear lane le-arp name red 0800.aa00.0101
```

The following example shows how to clear all dynamic entries from the LE ARP table for the LANE client on the emulated LAN named red:

```
Router# clear lane le-arp name red
```

The following example shows how to clear the dynamic entry from the LE ARP table for the LANE client on segment number 1, bridge number 1 in the emulated LAN named red:

```
Router# clear lane le-arp name red route-desc segment 1 bridge 1
```

Note   MAC addresses are written in the same dotted notation for the **clear lane le-arp** command as they are for the global IP **arp** command.

clear lane server

To force a LAN emulation (LANE) server to drop a client and allow the LANE configuration server to assign the client to another emulated LAN (ELAN), use the **clear lane server** command in user EXEC or privileged EXEC mode.

Cisco 7500 Series

clear lane server {**interface** *slot/port* [**.** *subinterface-number*] | **name** *elan-name*} [{**mac-address** *mac-address* | **client-atm-address** *atm-address* | **lecid** *lecid* | **route-desc segment** *segment-number* **bridge** *bridge-number*}]

Cisco 4500 and 4700 Routers

clear lane server {**interface** *number* [**.** *subinterface-number*] | **name** *elan-name*} [{**mac-address** *mac-address* | **client-atm-address** *atm-address* | **lecid** *lecid* | **route-desc segment** *segment-number* **bridge** *bridge-number*}]

Syntax Description

interface *slot/port* **.** *subinterface-number*]	Interface or subinterface where the LANE server is configured for the Cisco 7500 series. The space between the **interface** keyword and the *slot* argument is optional.
interface *number* **.** *subinterface-number*]	Interface or subinterface where the LANE server is configured for the Cisco 4500 or 4700 routers. The space between the **interface** keyword and the *number*argument is optional.
name *elan-name*	Name of the emulated LAN on which the LANE server is configured. Maximum length is 32 characters.
mac-address *mac-address*	(Optional) Keyword and MAC address of the LANE client.
client-atm-address *atm-address*	(Optional) Keyword and ATM address of the LANE client.
lecid *lane-client-id*	(Optional) Keyword and ID of the LANE client. The LANE client ID is a value from 1 to 4096.
route-desc segment *segment-number*	(Optional) Keywords and LANE segment number. The segment number ranges from 1 to 4095.
bridge *bridge-number*	(Optional) Keyword and bridge number that is contained in the route descriptor. The bridge number ranges from 1 to 15.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
11.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Release	Modification
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

After changing the bindings on the configuration server, use this command on the LANE server to force the client to leave one emulated LAN. The LANE server will drop the Control Direct and Control Distribute virtual channel connections (VCCs) to the LANE client. The client will then ask the LANE configuration server for the location of the LANE server of the emulated LAN it should join.

If no LANE client is specified, all LANE clients attached to the LANE server are dropped.

Examples

The following example shows how to force all the LANE clients on the emulated LAN named red to be dropped. The next time they try to join, they will be forced to join a different emulated LAN.

```
Router# clear lane server name red
```

Related Commands

Command	Description
client-atm-address name	Adds a LANE client address entry to the configuration database of the configuration server.
lane database	Creates a named configuration database that can be associated with a configuration server.
mac-address	Sets the MAC layer address of the Cisco Token Ring.
show lane server	Displays global information for the LANE server configured on an interface, on any of its subinterfaces, on a specified subinterface, or on an ELAN.

clear mpoa client cache

To clear the ingress and egress cache entries of one or all Multiprotocol over ATM (MPOA) Clients MPCs, use the **clear mpoa client cache**command in user EXEC or privileged EXEC mode.

clear mpoa client [**name** *mpc-name*] **cache** [{**ingress** | **egress**}] [**ip-address** *ip-address*]

Syntax Description

name *mpc-name*	(Optional) Specifies the name of the MPC with the specified name.
ingress	(Optional) Clears ingress cache entries associated with the MPC.
egress	(Optional) Clears egress cache entries associated with the MPC.
ip-address *ip-address*	(Optional) Clears matching cache entries with the specified IP address.

Command Default

The system defaults are:

- All MPC cache entries are cleared.

- Both caches are cleared.

- Entries matching only the specified destination IP address are cleared.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
11.3(3a)WA4(5)	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following example shows how to clear the ingress and egress cache entries for the MPC named ip_mpc:

```
Router# clear mpoa client name ip_mpc cache
```

Related Commands

Command	Description
show mpoa client cache	Displays the ingress or egress cache entries matching the IP addresses for the MPCs.

clear mpoa server cache

To clear the ingress and egress cache entries, use the **clear mpoa server cache** command in user EXEC or privileged EXEC mode.

clear mpoa server [**name** *mps-name*] **cache** [{**ingress** | **egress**}] [**ip-address** *ip-address*]

Syntax Description

name *mps-name*	(Optional) Specifies the name of the Multiprotocol over ATM (MPOA) Server (MPS). If this keyword is omitted, this command will apply to all servers.
ingress	(Optional) Clears ingress cache entries associated with the MPS.
egress	(Optional) Clears egress cache entries associated with the MPS.
ip-address *ip-address*	(Optional) Clears matching cache entries with the specified IP address. If this keyword is omitted, this command will clear all entries.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
11.3(3a)WA4(5)	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following example shows how to clear all cache entries:

```
Router# clear mpoa server cache
```

Related Commands

Command	Description
show mpoa server cache	Displays ingress and egress cache entries associated with the MPS.

clear pppatm interface atm

To clear PPP ATM sessions on an ATM interface, use the **clear pppatm interface atm**command in privileged EXEC mode.

clear pppatm interface atm *interface-number*[{*sub-interface-number*}][{**vc**{[{[*vpif*]}]*vci* | *virtual-circuit-name*}}]

Syntax Description

interface-number	ATM interface number.
. *subinterface-number*	(Optional) ATM subinterface number. A period must precede the number.
vc *vpi* **/** *vci*	(Optional) Specifies virtual circuit (VC) by virtual path identifier (VPI) and virtual channel identifier (VCI). A slash must follow the VPI.
vc *virtual-circuit-name*	(Optional) Specifies VC by name.

Command Modes

Privileged EXEC

Command History

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

Usage Guidelines

This command clears the PPP over ATM (PPPoA) sessions in an interface, or in a VC when the VC is specified.

When the **clear pppatm interface atm**command is used to clear sessions on an interface, PPP keepalives continue to work and can be used to detect a broken link.

Examples

The following example clears a PPP ATM session on ATM interface 1/0.10:

```
Router# clear pppatm interface atm 1/0.10
```

Related Commands

Command	Description
debug pppatm	Enables reports for PPPoA events, errors, and states either globally or conditionally on an interface or VC.
show pppatm summary	Displays PPPoA session counts.

client-atm-address name

To add a LAN emulation (LANE) client address entry to the configuration server's configuration database, use the **client-atm-address name**command in database configuration mode. To remove a client address entry from the table, use the **no** form of this command.

client-atm-address *atm-address-template* **name** *elan-name*
no **client-atm-address** *atm-address-template*

Syntax Description		
	atm-address-template	Template that explicitly specifies an ATM address or a specific part of an ATM address and uses wildcard characters for other parts of the ATM address, making it easy and convenient to specify multiple addresses matching the explicitly specified part.
		Wildcard characters can replace any nibble or group of nibbles in the prefix, the end-system identifier (ESI), or the selector fields of the ATM address.
	name *elan-name*	Name of the emulated LAN. Maximum length is 32 characters.

Command Default

No address and no emulated LAN name are provided.

Command Modes

Database configuration

Command History

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

Usage Guidelines

The effect of this command is to bind any client whose address matches the specified template into the specified emulated LAN. When a client comes up, it consults the LANE configuration server, which responds with the ATM address of the LANE server for the emulated LAN. The client then initiates join procedures with the LANE server.

Before this command is used, the emulated LAN specified by the *elan-name* argument must have been created in the configuration server's database by use of the **name server-atm-address** command.

If an existing entry in the configuration server's database binds the LANE client ATM address to a different emulated LAN, the new command is rejected.

This command affects only the bindings in the named configuration server database. It has no effect on the LANE components themselves.

See the **lane database** command for information about creating the database, and the **name server-atm-address** command for information about binding the emulated LAN's name to the server's ATM address.

The **client-atm-address name**command is a subcommand of the global **lane database** command.

ATM Addresses

A LANE ATM address has the same syntax as a network service access point (NSAP), but it is not a network-level address. It consists of the following:

- A 13-byte prefix that includes the following fields defined by the ATM Forum:

    - AFI (Authority and Format Identifier) field (1 byte), DCC (Data Country Code) or ICD (International Code Designator) field (2 bytes), DFI (Domain Specific Part Format Identifier) field (1 byte), Administrative Authority field (3 bytes), Reserved field (2 bytes), Routing Domain field (2 bytes), and the Area field (2 bytes)

- A 6-byte ESI

- A 1-byte selector field

Address Templates

LANE ATM address templates can use two types of wildcards: an asterisk (*) to match any single character (nibble), and an ellipsis (...) to match any number of leading, middle, or trailing characters. The values of the characters replaced by wildcards come from the automatically assigned ATM address.

In LANE, a *prefix template* explicitly matches the prefix but uses wildcards for the ESI and selector fields. An *ESI template* explicitly matches the ESI field but uses wildcards for the prefix and selector.

In our implementation of LANE, the prefix corresponds to the switch, the ESI corresponds to the ATM interface, and the selector field corresponds to the specific subinterface of the interface.

Examples

The following example shows how to use an ESI template to specify the part of the ATM address corresponding to the interface. This example allows any client on any subinterface of the interface that corresponds to the displayed ESI value, no matter to which switch the router is connected, to join the emulated LAN named engineering:

```
ATM(lane-config-database)# client-atm-address ...0800.200C.1001.** name engineering
```

The following example shows how to use a prefix template to specify the part of the ATM address corresponding to the switch. This example allows any client on a subinterface of any interface connected to the switch that corresponds to the displayed prefix to join the emulated LAN named marketing:

```
ATM(lane-config-database)# client-atm-address 47.000014155551212f.00.00... name marketing
```

Related Commands

Command	Description
default-name	Provides an ELAN name in the database of the configuration server for those client MAC addresses and client ATM addresses that do not have explicit ELAN name bindings.
lane database	Creates a named configuration database that can be associated with a configuration server.
mac-address	Sets the MAC layer address of the Cisco Token Ring.
name server-atm-address	Specifies or replaces the ATM address of the LANE server for the ELAN in the configuration database of the configuration server.

controller e3

To configure an E3 controller and enter controller configuration mode, use the **controller e3** command in the global configuration mode.

controller e3 *slot/port*

Cisco ASR 1000 Series Aggregation Services Routers

controller e3 *slot/subslot/port*

Syntax Description	*slot//port* — Number of the slot and port being configured. Refer to the appropriate hardware manual for slot and port information. The slash mark is required.

Syntax	Description
slot//port	Number of the slot and port being configured. Refer to the appropriate hardware manual for slot and port information. The slash mark is required.
/slot	Slot number of the Shared Port Adapter Interface Processor (SIP) for the Cisco ASR 1000 Series Aggregation Services Router.
/subslot	Subslot number of the Shared Port Adapter (SPA) for which the interface is configured as controller E3 for the Cisco ASR 1000 Series Aggregation Services Router.
/port	Port number of the interface that needs to be configured as the controller E3 for the Cisco ASR 1000 Series Aggregation Services Router.

Command Default No default behavior or values are available.

Command Modes

Global configuration (config)

Command History

Release	Modification
11.1	This command was introduced.
12.2(11)YT	This command was integrated into Cisco IOS Release 12.2(11)YT and implemented on: Cisco 2650XM, Cisco 2651XM, Cisco 2691, Cisco 3660 series, Cisco 3725, and Cisco 3745.
12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.
Cisco IOS XE Release 3.5.0S	This command was implemented on the Cisco ASR 1000 Series Router.

Usage Guidelines For the Cisco ASR 1000 Series Routers, perform the following steps to configure an E3 ATM controller:

- **1.** Enter the **card type e3** *slot subslot* command to configure the card type as E3. The SPA reloads and is UP.
- **2.** Once the SPA is UP, enter the **card type e3** *slot /subslot/port* command to configure the controller as E3.
- **3.** Use the **atm** command in controller configuration mode (config-controller) to create an E3 ATM interface.

There is no **no** form of this command therefore, to remove the T3/E3 controller configuration, remove the card type using the **no card type** command and reload the router using the **reload** command.

Examples

The following example shows how the E3 controller is configured in slot 0, port 0 on Cisco ASR Series Router:

```
Device config# card type e3 0/0
<The SPA reloads after the card type is configured. Configure the controller as t3 or e3
only after the SPA is UP.>
Device config# controller e3 0/0/1
```

Related Commands

Command	Description
controller t3	Configures a T3 controller, and enters controller configuration mode.
show controllers e3	Displays information about E3 controllers.
show controllers t3	Displays information about T3 controllers.

controller t3

To configure the Channelized T3 Interface Processor (CT3IP) in Cisco 7500 Series Routers, or the CT3 feature board in the Cisco AS5800 Access Servers, or the clear channel T3 controller for the SPA-2CHT3-CE-ATM interface on the Cisco ASR 1000 Series Aggregation Services Routers, use the **controller t3** command in global configuration mode. To unconfigure the defined controller, use the **no** form of this command.

Cisco 7500 Series

controller t3 *slot* /*subslot*/*port*
no controller t3*slot* /*subslot*/*port*

Cisco AS5800 Access Server

controller t3*dial-shelf*/*slot*/*t3-port*
no controller t3*dial-shelf*/*slot*/*t3-port*

Cisco ASR 1000 Series Aggregation Services Routers

controller t3*slot*/*subslot*/*port*

Syntax Description

slot	Number of the slot being configured. Refer to the appropriate hardware manual for slot and port information.
/port-adapter	Number of the port adapter being configured. Refer to the appropriate hardware manual for information about port adapter compatibility.
/port	Number of the port being configured. Refer to the appropriate hardware manual for slot and port information.
dial-shelf	Dial shelf chassis in the Cisco AS5800 Access Server containing the CT3 interface card.
/slot	Location of the CT3 interface card in the dial shelf chassis.
/t3-port	T3 port number. The only valid value is 0.
slot	Slot number of the Shared Port Adapter Interface Processor (SIP) for the Cisco ASR 1000 Series Aggregation Services Router.
/subslot	Subslot number of the Shared Port Adapter (SPA) for which the interface is configured as the T3 controller for the Cisco ASR 1000 Series Router.
/port	Port number of the interface that is to be configured as the T3 controller for the Cisco ASR 1000 Series Router.

Command Default

Cisco 7500 Series

No T3 controller is configured.

Cisco AS5800 Access Server

No default behavior or values.

Cisco ASR 100 Series Aggregation Services Routers

No default behavior or values.

Command Modes

Global configuration ((config)

Command History

Release	Modification
11.3	This command was introduced.
12.3(0)T	This command was implemented on the Cisco AS5800 Access Server.
Cisco IOS XE Release 3.4.0S	This command was implemented on the Cisco ASR 1000 Series Router.

Usage Guidelines

This command is used to configure the CT3IP and the 28 T1 channels. After the T1 channels are configured, continue to configure each T1 channel as a serial interface by using the **interface serial global configuration** command.

Cisco ASR 1000 Series Aggregation Serives Router

Perform the following steps to configure a T3 ATM controller:

- **1.** Enter the **card tyoe t3***slot subslot* command to configure the card type as T3. The SPA reloads and is UP.
- **2.** After the SPA is UP, enter the **controller t3***slot/subslot/port* command to configure the controller as T3.
- **3.** Enter the **atm** command in controller configuration mode (config-controller) to create a T3 ATM interface.

To remove the T3/E3 controller configuration, remove the card type by using the **no card type** command and reload the router by using the **reload** command. There is no **no** form of the command for the Cisco ASR 1000 Series Aggregation Services Router.

Note
If you enter the **no controller {t3 | e3}** *slot/subslot/port* command the following error message is displayed: "Cannot remove controllers this way."

Examples

Cisco 7500 Series Routers

The following example shows how to configure the CT3IP in slot 3:

```
Device(config)#controller t3 3/0/0
```

Cisco AS5800 Access Server

The following example shows how to configure the T3 controller in shelf 3, slot 0, port 0:

```
Device(config)#controller t3 3/0/0
```

Cisco ASR 1000 Series Aggregation Serives Router

The following example shows how to configure the T3 controller in slot 0, subslot 0, and port 1 for the SPA-2CHT3-CE-ATM:

```
Device(config)# card type t3 0 1
<SPA reloads after card type is configured. Only after the SPA is UP, configure the controller
 as t3 or e3>
Device(config)# controller t3 0/1/1
```

Related Commands

Command	Description
controller	Configures a T1, E1, or J1 controller and enters controller configuration mode.
interface	Specifies a serial interface created on a channelized E1 or channelized T1 controller (for ISDN PRI, CAS, or robbed-bit signaling).

create on-demand

To configure ATM PVC autoprovisioning, which enables a permanent virtual circuit (PVC) or range of PVCs to be created automatically on demand, use the **create on-demand** command in ATM PVC range configuration mode, Interface-ATM-VC configuration mode, PVC-in-range configuration mode or VC-class configuration mode. To disable the ATM PVC autoprovisioning configuration, use the **no** form of this command.

create on-demand [*type*]
no create on-demand [*type*]

Syntax Description

type	(Optional) Indicates the means by which the VCs are provisioned. Two options are available:
	• **aaa--** Indicates that the VC/range are provisioned from a RADIUS AAA server.
	• **default--** Disables create on-demand under current mode but allows inheritance.

Command Default   PVCs or range of PVCs cannot be created automatically.

Command Modes

ATM PVC range configuration (config-if-atm-range)
Interface-ATM-VC configuration (config-if-atm-range-pvc)
PVC-in-range (config-if-atm-range-pvc)
VC-class configuration (config-vc-class)

Command History

Release	Modification
11.3	This command was introduced.
12.2(15)B	This command was integrated into Cisco IOS Release 12.2(15)B. Support for this command was extended to be applied on create-on-demand PVCs
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
Cisco IOS XE Release 2.5	This command was implemented on Cisco ASR 1000 series routers.

Usage Guidelines   Use the **create on-demand** command to configure ATM PVC autoprovisioning, which enables a PVC or range of PVCs to be created automatically on demand. A VC will not be created until there is an activity on that virtual path identifier (VPI)/virtual channel identifier (VCI) pair. When you use the **shutdown**or **no shutdown** on an ATM interface, all create on-demand VCs on that interface will remain in INACTIVE state until the first incoming packet triggers the VC creation. During router reload, the create-on-demand VCs will not be established until there is incoming traffic.

You can erase, modify and restore the configuration. To erase the configuration, enter the **no create on-demand aaa** command.

To erase an individual PVC configuration within a range, use the **no create on-demand aaa** command in PVC-in-range mode on the VC.

To erase the entire RADIUS configuration from the router, use the **erase** command.

To modify VC attributes from the command, you must erase the configuration and disable the create-on-demand VCs by using **no create on-demand aaa**.

To restore configuration from RADIUS, you can use the **create** command.

To provision VC Class attributes from RADIUS server, you must enable the **create on-demand aaa** in the VC class. The RADIUS user-name attribute for each VC Class is uniquely defined as **hostname** {*ip address / vc-class-name*}.

You can configure the password by using **radius-server** command. You can use the **create** command to manually download the configuration.

After receiving RADIUS response to a VC provisioning request, if the VC-class name is specified in the response, the VC-class will be searched for locally on the router. If the VC-class is configured as create-on-demand and not yet provisioned, VC-class RADIUS request will be sent.

Examples

The following example shows how to configure VPI/VCI from 0/50 to 0/60 via RADIUS, on subinterface ATM 5/0.1:

```
Router> enable
Router# configure terminal
Router(config)# interface atm 5/0.1 multipoint
Router(config-subif) range auto pvc 0/50 0/60
Router(config-if-atm-range)# create on-demand aaa
```

The following example shows how to configure ATM PVC autoprovisioning on VC class:

```
Router> enable
Router# configure terminal
Router(config)# interface atm 5/0 multipoint
Router(config)# vc-class atm vctest
Router(config-vc-class)# create on-demand
```

Related Commands

Command	Description
idle-timeout	Configures the idle timeout parameter for tearing down an ATM SVC connection
radius-server	Specifies the default direction of filters from RADIUS.
range pvc	Defines a range of ATM PVCs.
vc-class atm	Creates a VC class for an ATM PVC, SVC, or ATM interface.