

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, 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

<i>rate</i>	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.
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Defaults

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)

Command History

Release	Modification
12.0	This command was introduced.
12.1(5)T	This command was made available in PVC range and PVC-in-range configuration modes.

Usage Guidelines

This command applies to ATM configuration on the Cisco MC3810.

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.

Command	Description
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	<i>slot/port</i>	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.
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Defaults	No CES interface is configured.
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Command Modes	Global configuration
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Command History	Release	Modification
	12.1(2)T	This command was introduced.

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

Defaults **synchronous**

Command Modes Interface configuration

Command History	Release	Modification
	11.1	This command was introduced.

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.
	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).

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

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.
	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.

Command	Description
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

<i>circuit-number</i>	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 <i>range</i>	(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 <i>name</i>	(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 <i>x</i> : <i>x</i> :0.
on-hook-detection <i>hex-number</i>	(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 <i>range</i>	(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 <i>range</i>	(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.

Defaults

No circuit is configured.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

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.

Defaults

network-derived

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

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.

Defaults

esf (for T1)
e1_lt (for E1)

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

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	<i>length</i> 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.
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Defaults	0_110 feet
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Command Modes	Interface configuration
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Command History	Release	Modification
	11.1	This command was introduced.

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

Defaults

b8zs (for T1)
hdb3 (for E1)

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

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.

Command	Description
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 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.

Defaults No loopback

Command Modes Interface configuration

Command History	Release	Modification
	11.1	This command was introduced.

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.

Defaults

No signal mode is enabled.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

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

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

47 octets

Command Modes

Interface configuration

Command History

Release	Modification
11.3 MA	This command was introduced.

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.
ces initial-delay	Configures the size of the receive buffer of a CES circuit on the Cisco MC3810 multiservice concentrator.

Command	Description
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

<i>circuit-number</i>	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 <i>slot/port</i>	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 <i>number</i>	Virtual path identifier of the destination PVC. Range is from 0 to 255.
vci <i>number</i>	Virtual channel identifier of the destination PVC. Range is from 1 to 16383.

Defaults

No destination port is configured.

Command Modes

Interface configuration

Command History

Release	Modification
11.1	This command was introduced.

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	<i>time</i>	Maximum tolerable cell arrival jitter with a range from 1 to 65535 microseconds. Default is 5000.
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Defaults	5000 microseconds
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Command Modes	Interface-ATM-VC configuration
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Command History	Release	Modification
	12.1(2)T	This command was introduced.

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

To associate a map class with a specified data-link connection identifier (DLCI), use the **class** command in Frame Relay DLCI configuration mode or Frame Relay VC-bundle-member configuration mode. To remove the association between the DLCI and the map class, use the **no** form of this command.

class *name*

no class *name*

Syntax Description

<i>name</i>	Name of the map class to associate with the specified DLCI.
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Defaults

No map class is defined.

Command Modes

Frame Relay DLCI configuration
Frame Relay VC-bundle-member configuration

Command History

Release	Modification
11.2	This command was introduced.
12.2(13)T	This command was made available in Frame Relay VC-bundle-member configuration mode.

Usage Guidelines

This command applies to DLCIs that are created using the **frame-relay interface-dlci** command and to DLCIs that are created as permanent virtual circuit (PVC) bundle members within a specified Frame Relay PVC bundle. The PVC bundle is created using the **frame-relay vc-bundle** command. The Frame Relay PVC bundle member DLCIs are then created using the **pvc** command in Frame Relay VC-bundle configuration mode.

A map class applied to the interface will be applied to all PVC members in a PVC bundle. A class applied to an individual PVC-bundle member supersedes the class applied at the interface level.

The map class is created using the **map-class frame-relay** command in global configuration mode.

Examples

The following example shows how to define a map class called “slow_vcs” and apply it to DLCI 100:

```
interface serial 0.1 point-to-point
  frame-relay interface-dlci 100
  class slow_vcs
```

```
map-class frame-relay slow_vcs
  frame-relay cir out 9600
```

The following example shows how to apply a map class to a DLCI for which a **frame-relay map** statement exists. The **frame-relay interface-dlci** command must also be used.

```
interface serial 0.2 point-to-multipoint
  frame-relay map ip 131.26.13.2 100
```

```

frame-relay interface-dlci 100
  class slow_vcs

map-class frame-relay slow_vcs
  frame-relay traffic-rate 56000 128000
  frame-relay idle-timer 30

```

The following example creates a Frame Relay map-class “HI” and shows how to assign it to PVC 300 in a Frame Relay PVC bundle called “MP-3-static”:

```

map-class frame-relay HI
interface serial 1/4
  frame-relay map ip 13.2.2.2 vc-bundle MP-3-static
  frame-relay vc-bundle MP-3-static
    pvc 300
      class HI

```

Related Commands	Command	Description
	frame-relay interface-dlci	Assigns a DLCI to a specified Frame Relay subinterface on the router or access server.
	frame-relay map	Defines mapping between a destination protocol address and the DLCI used to connect to the destination address.
	frame-relay vc-bundle	Creates a Frame Relay PVC bundle and enters Frame Relay VC-bundle configuration mode.
	map-class frame-relay	Creates a map class for which unique QoS values can be assigned.
	pvc (frame-relay vc-bundle)	Creates a PVC and PVC bundle member and enters Frame Relay VC-bundle-member configuration mode.

class (map-list)

To associate a map class with a protocol-and-address combination, use the **class** command in map-list configuration mode.

```
protocol protocol-address class map-class [broadcast] [trigger] [ietf]
```

Syntax Description

<i>protocol</i>	Supported protocol, bridging, or logical link control keywords: appletalk , bridging , clns , decnet , dls , ip , ipx , llc2 , and rsrb .
<i>protocol-address</i>	Protocol address. The bridge and clns keywords do not use protocol addresses.
<i>map-class</i>	Name of the map class from which to derive quality of service (QoS) information.
broadcast	(Optional) Allows broadcasts on this switched virtual circuit (SVC).
trigger	(Optional) Enables a broadcast packet to trigger an SVC. If an SVC that uses this map class already exists, the SVC will carry the broadcast. This keyword can be configured only if broadcast is also configured.
ietf	(Optional) Specifies RFC 1490 encapsulation. The default is Cisco encapsulation.

Defaults

No protocol, protocol address, and map class are defined. If the **ietf** keyword is not specified, the default is Cisco encapsulation. If the **broadcast** keyword is not specified, no broadcasts are sent.

Command Modes

Map-list configuration

Command History

Release	Modification
11.2	This command was introduced.
12.2(13)T	The vines and xns arguments were removed because Banyan VINES and Xerox Network Systems are no longer available in the Cisco IOS software.

Usage Guidelines

This command is used for Frame Relay SVCs; the parameters within the map class are used to negotiate for network resources. The class is associated with a static map that is configured under a map list.

Examples

In the following example, if IP triggers the call, the SVC is set up with the QoS parameters defined within the class “classip”. However, if AppleTalk triggers the call, the SVC is set up with the QoS parameters defined in the class “classapple”. An SVC triggered by either protocol results in two SVC maps, one for IP and one for AppleTalk.

Two maps are set up because these protocol-and-address combinations are heading for the same destination, as defined by the **dest-addr** keyword and the values following it in the **map-list** command.

```
map-list maplist1 source-addr E164 14085551212 dest-addr E164 15085551212
ip 131.108.177.100 class classip
appletalk 1000.2 class classapple
```

In the following example, the **trigger** keyword allows AppleTalk broadcast packets to trigger an SVC:

```
ip 172.21.177.1 class class1 broadcast ietf
appletalk 1000.2 class class1 broadcast trigger ietf
```

Related Commands

Command	Description
map-class frame-relay	Specifies a map class to define QoS values for an SVC.
map-list	Specifies a map group and links it to a local E.164 or X.121 source address and a remote E.164 or X.121 destination address for Frame Relay SVCs.

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

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

Defaults

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.

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-range

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

class-range *class-name*

no class-range *class-name*

Syntax Description

<i>class-name</i>	Name of the VC class.
-------------------	-----------------------

Defaults

No VC class is assigned to the PVC range.

Command Modes

PVC range configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.

Usage Guidelines

When you create a VC class for an ATM PVC range, you can use the following commands to define your parameters: **abr**, **broadcast**, **cbr**, **encapsulation aal5**, **ilmi manage**, **inarp**, **oam-pvc**, **oam retry**, **protocol**, **ubr**, **ubr+**, **vbr-nrt**, and **vbr-rt**.

Parameters that are configured for a PVC range through discrete commands entered in PVC range configuration mode supersede VC class parameters assigned to an ATM PVC range using the **class-range** command.

Examples

In the following example, a class called “classA” is created and then applied to an ATM PVC range called “range-pppoa-1”:

```
! The following commands create the class classA:
vc-class atm classA
ubr 10000
encapsulation aal5snap

! The following commands apply classA to an ATM PVC range:
interface atm 6/0.110 multipoint
range range-pppoa-1 pvc 0/102 0/199
class-range classA
```

Related Commands

Command	Description
shutdown (PVC-in-range)	Deactivates an individual PVC within a PVC range.
shutdown (PVC range)	Deactivates an ATM PVC range.

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 *vc-class-name*

no class-vc *vc-class-name*

Syntax Description

<i>vc-class-name</i>	Name of the VC class you are assigning to your ATM PVC, SVC, or VC bundle member.
----------------------	---

Defaults

No VC class is assigned to an ATM PVC, SVC, or VC bundle member.

Command Modes

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

Command History

Release	Modification
11.3(4)T	This command was introduced, replacing the class command for assigning VC classes to ATM PVCs and SVCs.
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.

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. Refer to the section “Configuring VC Classes” in the “Configuring ATM” chapter of the *Cisco IOS Wide-Area Networking Configuration Guide* for more information.

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: **encapsulation**, **protocol**, **inarp**, and **broadcast**. These commands are useful 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

The following sections show examples for applying the **class-vc** command to ATM PVC, SVC, and VC bundle members.

In the following example, a class called “classA” is first 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 called “classA” is first created and then applied to the bundle member called “vcmember”, a member of “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
```

Taking into account hierarchy precedence rules, the VC bundle member “vcmember” will be characterized by these parameters:

- 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-Non Real Time (VBR-NRT) quality of service traffic parameters.

Related Commands	Command	Description
	class-bundle	Configures a VC bundle with the bundle-level commands contained in the specified VC class.
	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.
	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.
	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

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

Defaults

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.2	This command was introduced.

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 frame-relay-inarp

To clear dynamically created Frame Relay maps, which are created by the use of Inverse Address Resolution Protocol (ARP), use the **clear frame-relay-inarp** command in privileged EXEC mode.

clear frame-relay-inarp

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC

Command History	Release	Modification
	10.0	This command was introduced.

Examples The following example clears dynamically created Frame Relay maps:

```
clear frame-relay-inarp
```

Related Commands	Command	Description
	frame-relay inverse-arp	Reenables Inverse ARP on a specified interface or subinterface.
	show frame-relay map	Displays the current map entries and information about the connections.

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 [.subinterface-number] [vc {[vpi]/vci | virtual-circuit-name}]
```

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

Command Modes Privileged EXEC

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

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.

clear pppoe

To clear PPP over Ethernet (PPPoE) sessions, use the **clear pppoe** command in privileged EXEC mode.

```
clear pppoe {interface type number [vc {[vpi/vci | vc-name]}] [vlan vlan-id] | rmac mac-address
[sid session-id] | all}
```

Syntax Description

interface <i>type number</i>	Interface keyword followed by the interface type and number.
vc [<i>vpi/vci</i>]	(Optional) Virtual circuit (VC) keyword followed by a virtual path identifier (VPI), virtual channel identifier (VCI). A slash (/) follows the VPI.
<i>vc-name</i>	(Optional) Name of the VC.
vlan <i>vlan-id</i>	(Optional) VLAN identifier.
rmac <i>mac-address</i>	(Optional) Remote MAC address.
sid <i>session-id</i>	(Optional) Session identifier.
all	(Optional) Specifies that all PPPoE sessions will be cleared.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(13)T	This command was introduced.
12.3(2)T	The vlan <i>vlan-id</i> keyword and argument were added.

Usage Guidelines

Use the **clear pppoe all** command to clear all PPPoE sessions.

Use the **interface** keyword and arguments and the **vlan** keyword and argument to clear PPPoE sessions on a specific Ethernet 802.1Q VLAN.

Use the **interface**, **vc**, and **vlan** keywords and arguments to clear PPPoE over 802.1Q VLAN sessions on an ATM PVC.

Examples

The following example clears all PPPoE sessions:

```
Router# clear pppoe all
```

clear pppoe derived

To clear the cached PPP over Ethernet (PPPoE) configuration of a PPPoE profile and force the PPPoE profile to reread the configuration from the assigned subscriber profile, use the **clear pppoe derived** command in privileged EXEC mode.

```
clear pppoe derived group group-name
```

Syntax Description	group <i>group-name</i>	PPPoE profile for which the cached PPPoE configuration will be cleared.
---------------------------	--------------------------------	---

Command Modes	Privileged EXEC
----------------------	-----------------

Command History	Release	Modification
	12.3(4)T	This command was introduced.

Usage Guidelines

A subscriber profile can be configured locally on the router or remotely on a authentication, authorization, and accounting (AAA) server. The PPPoE configuration that is derived from a subscriber profile is cached locally under the PPPoE profile. Use the **clear pppoe derived** command to clear the cached PPPoE configuration of a specified PPPoE profile and force the PPPoE profile to reread the configuration from the assigned subscriber profile.

A subscriber profile contains a list of PPPoE service names. The PPPoE server will advertise the service names that are listed in the subscriber profile to each PPPoE client connection that uses the configured PPPoE profile. A subscriber profile is assigned to a PPPoE profile by using the **service profile** command in BBA group configuration mode.

Examples

The following example clears the cached PPPoE configuration for PPPoE profile “sp_group_a”. The PPPoE profile will reread the configuration from the subscriber profile that is assigned to that PPPoE profile.

```
clear pppoe derived group sp_group_a
```

Related Commands	Command	Description
	service profile	Assigns a subscriber profile to a PPPoE profile.
	show pppoe derived	Displays the cached PPPoE configuration that is derived from the subscriber profile for a specified PPPoE profile.
	subscriber profile	Defines Subscriber Service Switch policy for searches of a subscriber profile database.

clear pppoe relay context

To clear the PPP over Ethernet (PPPoE) relay context created for relaying PPPoE Active Discovery (PAD) messages, use the **clear pppoe relay context** command in privileged EXEC mode.

```
clear pppoe relay context {all | id session-id}
```

Syntax Description	all	Clears all relay contexts.
	id <i>session-id</i>	Clears a specific relay context identified in the output of the show pppoe relay context all command.

Command Modes	Privileged EXEC
---------------	-----------------

Command History	Release	Modification
	12.3(4)T	This command was introduced.

Usage Guidelines	Use this command to clear relay contexts created for relaying PAD messages.
------------------	---

Examples	The following example clears all PPPoE relay contexts created for relaying PAD messages:
----------	--

```
Router# clear pppoe relay context all
```

Related Commands	Command	Description
	show pppoe relay context all	Displays PPPoE relay contexts created for relaying PAD messages.
	show pppoe session	Displays information about currently active PPPoE sessions.

clear vpdn tunnel pppoe

To clear all PPP over Ethernet (PPPoE) sessions, use the **clear vpdn tunnel pppoe** command in privileged EXEC configuration mode.

clear vpdn tunnel pppoe

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC

Command History	Release	Modification
	12.1(1)T	This command was introduced.

Usage Guidelines Use this command to clear all PPPoE sessions on the device. To clear a specific PPPoE session or set of sessions, use the **clear pppoe** command.

Examples The following example clears all PPPoE sessions on the device:

```
Router# clear vpdn tunnel pppoe
```

Related Commands	Command	Description
	clear pppoe	Clears PPPoE sessions.

clear x25

To restart an X.25 service or Connection-Mode Network Service (CMNS), to clear a switched virtual circuit (SVC), or to reset a permanent virtual circuit (PVC), use the **clear x25** command in privileged EXEC mode.

```
clear x25 {serial number | {ethernet | fastethernet | tokenring | fddi} number mac-address}
         [vc-number] | [dlci-number]
```

Syntax Description

serial number	Local serial interface being used for X.25 service.
{ethernet fastethernet tokenring fddi} number mac-address	Local CMNS interface (Ethernet, Fast Ethernet, Token Ring, or FDDI interface) and MAC address of the remote device; this information identifies a CMNS service.
vc-number	(Optional) SVC or PVC number, in the range 1 to 4095. If specified, the SVC is cleared or the PVC is reset. If not specified, the X.25 or CMNS service is restarted.
dlci-number	(Optional) When combined with a serial interface number, it triggers a restart event for an Annex G logical X.25 VC.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.2	This command was introduced.
12.0(3)T	Annex G restart or clear options were added.

Usage Guidelines

This command replaces the **clear x25-vc** command, which first appeared in Cisco IOS Release 8.3.

This command is used to disrupt service forcibly on an individual circuit or on all circuits using a specific X.25 service or CMNS service.

If this command is used without the *vc-number* value, a restart event is initiated, which implicitly clears all SVCs and resets all PVCs.

This command allows the option of restarting an Annex G connection per data-link connection identifier (DLCI) number, clearing all X.25 connections, or clearing a specific X.25 logical circuit number on that Annex G link.

Examples

The following example clears the SVC or resets the PVC specified:

```
clear x25 serial 0 1
```

The following example forces an X.25 restart, which implicitly clears all SVCs and resets all PVCs using the interface:

```
clear x25 serial 0
```

The following example restarts the specified CMNS service (if active), which implicitly clears all SVCs using the service:

```
clear x25 ethernet 0 0001.0002.0003
```

The following example clears the specified DLCI Annex G connection (40) from the specified interface:

```
clear x25 serial 1 40
```

Related Commands

Command	Description
clear xot	Clears an XOT SVC or resets an XOT PVC.
frame-relay interface-dlci	Assigns a DLCI to a specified Frame Relay subinterface on the router or access server.
show x25 context	Displays details of an Annex G DLCI link.
show x25 services	Displays information about X.25 services.
show x25 vc	Displays information about active X.25 virtual circuits.

clear xot

To clear an X.25 over TCP (XOT) switched virtual circuit (SVC) or reset an XOT permanent virtual circuit (PVC), use the **clear xot** command in privileged EXEC mode.

clear xot remote *ip-address port* **local** *ip-address port*

Syntax Description

remote <i>ip-address port</i>	Remote IP address and port number of an XOT connection ID.
local <i>ip-address port</i>	Local IP address and port number of an XOT connection ID.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.2	This command was introduced.

Usage Guidelines

Each SVC or PVC supported by the XOT service uses a TCP connection to communicate X.25 packets. A TCP connection is uniquely identified by the data quartet: remote IP address, remote TCP port, local IP address, and local TCP port. This command form is used to forcibly disrupt service on an individual XOT circuit.

XOT connections are sent to TCP port 1998, so XOT connections originated by the router will have that remote port number, and connections received by the router will have that local port number.

Examples

The following command will clear or reset, respectively, the SVC or PVC using the TCP connection identified:

```
clear xot remote 10.1.1.1 1998 local 172.2.2.2 2000
```

Related Commands

Command	Description
show x25 services	Displays information pertaining to the X.25 services.

clp-bit

To set the ATM cell loss priority (CLP) field in the ATM cell header, use the **clp-bit** command in FRF.5 or FRF.8 connect mode. To disable ATM CLP bit mapping, use the **no** form of this command.

```
clp-bit {0 | 1 | map-de}
```

```
no clp-bit {0 | 1 | map-de}
```

Syntax Description	0	The CLP field in the ATM cell header is always set to 0.
	1	The CLP field in the ATM cell header is always set to 1.
	map-de	The discard eligible (DE) field in the Frame Relay header is mapped to the CLP field in the ATM cell header.

Defaults The default is set to **map-de**.

Command Modes FRF.5 connect configuration
FRF.8 connect configuration

Command History	Release	Modification
	12.1(2)T	This command was introduced.

Usage Guidelines This command maps from Frame Relay to ATM.

Examples

FRF.5 Example

The following example sets the CLP field in the ATM header to 1 for FRF.5:

```
Router(config)# connect network-1 vc-group network-1 ATM3/0 1/35
Router(config-frf5)# clp-bit 1
```

FRF.8 Example

The following example sets the CLP field in the ATM header to 1 for FRF.8:

```
C3640(config)# connect service-1 Serial1/0 16 ATM3/0 1/32 service-interworking
C3640(config-frf8)# clp-bit 1
```

Related Commands	Command	Description
	connect (FRF.5)	Connects a Frame Relay DLCI or VC group to an ATM PVC.
	de-bit map-clp	Sets the Frame Relay DE bit field in the Frame Relay cell header.

cmns enable

To enable the Connection-Mode Network Service (CMNS) on a nonserial interface, use the **cmns enable** command in interface configuration mode. To disable this capability, use the **no** form of this command.

cmns enable

no cmns enable

Syntax Description This command has no arguments or keywords.

Defaults Each nonserial interface must be explicitly configured to use CMNS.

Command Modes Interface configuration

Command History	Release	Modification
	10.0	This command was introduced.

Usage Guidelines After this command is processed on the LAN interfaces—Ethernet, Fiber Distributed Data Interface (FDDI), and Token Ring—all the X.25-related interface configuration commands are made available.

Examples The following example enables CMNS on Ethernet interface 0:

```
interface ethernet 0
  cmns enable
```

Related Commands	Command	Description
	x25 route	Creates an entry in the X.25 routing table (to be consulted for forwarding incoming calls and for placing outgoing PAD or protocol translation calls).

connect (Frame Relay)

To define connections between Frame Relay permanent virtual circuits (PVCs), use the **connect** command in global configuration mode. To remove connections, use the **no** form of this command.

```
connect connection-name interface dlc {interface dlc | l2transport}
```

```
no connect connection-name interface dlc {interface dlc | l2transport}
```

Syntax Description

<i>connection-name</i>	A name for this connection.
<i>interface</i>	Interface on which a PVC connection will be defined.
<i>dlci</i>	Data-link connection identifier (DLCI) number of the PVC that will be connected.
l2transport	Specifies that the PVC will not be a locally switched PVC, but will be tunneled over the backbone network.

Defaults

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
12.1(2)T	This command was introduced.
12.0(23)S	The l2transport keyword was added.
12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.

Usage Guidelines

When Frame Relay switching is enabled, the **connect** command creates switched PVCs in Frame Relay networks.

Examples

The following example shows how to define a connection called “frompls1” with DLCI 100 on serial interface 5/0.

```
connect frompls1 Serial5/0 100 l2transport
```

The following example shows how to enable Frame Relay switching and define a connection called “one” between DLCI 16 on serial interface 0 and DLCI 100 on serial interface 1.

```
frame-relay switching
connect one serial0 16 serial1 100
```

■ connect (Frame Relay)

Related Commands	Command	Description
	frame-relay switching	Enables PVC switching on a Frame Relay DCE or NNI.
	mpls l2transport route	Enables routing of Frame Relay packets over a specified VC.

connect (FRF.5)

To configure an FRF.5 one-to-one or many-to-one connection between two Frame Relay end users over an intermediate ATM network, use the **connect** command in global configuration mode. To remove a connection, use the **no** form of this command.

```
connect connection-name { vc-group group-name | fr-interface fr-dlci } atm-interface atm-vpilvci
network-interworking
```

```
no connect connection-name { vc-group group-name | fr-interface fr-dlci } atm-interface
atm-vpilvci network-interworking
```

Syntax Description

<i>connection-name</i>	Connection name. Enter as a string of 15 characters maximum.
vc-group <i>group-name</i>	VC group name for a many-to-one FRF.5 connection. Enter as a string of 11 characters maximum. (If the vc-group keyword is specified, the interworking type is always network-interworking and does not need to be set as such.)
<i>fr-interface</i>	Frame Relay interface type and number; for example, serial1/0 .
<i>fr-dlci</i>	Frame Relay data-link connection identifier (DLCI) in the range from 16 to 1007.
<i>atm-interface</i>	ATM interface type and number; for example, atm1/0 .
<i>atm-vpilvci</i>	ATM virtual path identifier/virtual channel identifier (VPI/VCI). If a VPI is not specified, the default VPI is 0.
network-interworking	FRF.5 network interworking connection. This keyword is not valid if the vc-group keyword is specified. (If the vc-group keyword is specified, the interworking type is always network-interworking and does not need to be set as such.)

Defaults

No default behavior or values

Command Modes

Global configuration

Command History

Release	Modification
12.1(2)T	This command was introduced.
12.2(8)YN	Enhanced QoS features were added for Cisco 1720, Cisco 1750, Cisco 1751, Cisco 1760, Cisco 2610XM-2651XM, Cisco 3640, Cisco 3640A, and Cisco 3660.
12.3(2)T	This feature was integrated into Cisco IOS Release 12.3(2)T for the following platforms: Cisco 1720, Cisco 1721, Cisco 1750, Cisco 1751, Cisco 1760, Cisco 2610-2651, Cisco 2610XM-2651XM, Cisco 2691, Cisco 3620, Cisco 3640, Cisco 3640A, and Cisco 3660.

Usage Guidelines

Use the **connect** command to connect a group of Frame Relay DLCIs to an ATM permanent virtual circuit (PVC).

To connect to the Frame Relay DLCI that has been configured on the interface, the Frame Relay DLCI must be configured on the interface using the **frame-relay interface-dlci switched** command.

To disconnect the FRF.5 interworking connection, use the **shutdown** command in FRF.5 connect mode.

Examples

The following example shows how to create an FRF.5 one-to-one connection (not using the **vc-group** keyword):

```
Router(config)# interface serial0/0
Router(config-if)# frame-relay interface-dlci 100 switched
Router(config-if)# interface atm1/0
Router(config-if)# pvc 0/32
Router(config-if-atm-vc)# encapsulation aal5mux frame-relay
Router (config-if-atm-vc)# exit
Router (config-if)# exit
Router(config)# connect frf5 serial0/0 100 atm1/0 0/32 network-interworking
Router(config-frf5)# clp-bit 1
Router(config-frf5)# de-bit map-clp
```

The following example shows how to create an FRF.5 many-to-one connection (using the **vc-group** keyword):

```
Router(config)# interface serial1/0
Router(config-if)# frame-relay interface-dlci 100 switched
Router (config-if)# exit
Router(config)# vc-group friends
Router(config-vc-group)# serial1/0 16 16
Router(config-vc-group)# serial1/0 17 17
Router(config-vc-group)# serial1/0 18 18
Router(config-vc-group)# serial1/0 19 19
Router (config-vc-group)# exit
Router(config)# interface atm1/0
Router(config-if)# pvc 0/32
Router (config-if-atm-vc)# encapsulation aal5mux frame-relay
Router (config-if-atm-vc)# exit
Router (config-if)# exit
Router(config)# connect frf5-v vc-group friends atm1/0 0/32
Router(config-frf5)# de-bit map-clp
```

Related Commands

Command	Description
clp-bit	Sets the ATM CLP field in the ATM cell header.
de-bit	Sets the Frame Relay DE bit field in the Frame Relay cell header for FRF.5 and FRF.8 service interworking.
encapsulation aal5	Configures the AAL and encapsulation type for an ATM PVC, SVC, VC class, or VC bundle.
frame-relay interface-dlci switched	Indicates that a Frame Relay DLCI is switched.
pvc	Creates or assigns a name to an ATM PVC, specifies the encapsulation type on an ATM PVC, or enters interface-AMT-VC configuration mode.
vc-group	Assigns multiple Frame Relay DLCIs to a VC group.

controller shdsl

To configure a controller for single-pair high-bit-rate digital subscriber line (SHDSL) mode, use the **controller shdsl** command in global configuration mode.

controller shdsl *number*

Syntax Description

number Contoller number. The valid controller number is 0.

Defaults

Controller number: 0

Command Modes

Global configuration

Command History

Release	Modification
11.3(5)AAA	This command was introduced.
12.2(8)T	This command was implemented on Cisco IAD2420 series IADs.

Usage Guidelines

This command is used to configure the controller mode and the controller number.

Examples

The following example enters SHDSL controller mode on controller number 0 and configures ATM mode on a Cisco IAD2420 series IAD:

```
Router# controller shdsl 0
Router# mode atm
```

Related Commands

Command	Description
show controller shdsl	Displays the controller status and statistics.

