



C Commands

The commands shown in this chapter apply to the Catalyst 8540 MSR, Catalyst 8510 MSR, and LightStream 1010 ATM switch routers. Where an entire command or certain attributes of a command have values specific to a particular switch or switch router, an exception is indicated by the following callouts:

- Catalyst 8540 MSR
- Catalyst 8510 MSR and LightStream 1010



Note

Commands that are identical to those documented in the Cisco IOS software documentation have been removed from this chapter.



Note

Commands that no longer function as expected in ATM environments have also been removed from this chapter.

Refer to Appendix D of this command reference for a detailed list of commands that have been removed, changed or replaced.

cablelength

To configure the cable length for a channelized DS-3 (CDS3) Frame Relay port adapter, use the **cablelength** controller configuration command. To restore the default cable length, use the **no** form of this command.

cablelength *value*

no cablelength *value*

Syntax Description	<i>value</i> Cable length of 0 to 450 feet.				
Defaults	224 feet				
Command Modes	Controller configuration				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>12.0(3c)W5(9)</td> <td>New command</td> </tr> </tbody> </table>	Release	Modification	12.0(3c)W5(9)	New command
Release	Modification				
12.0(3c)W5(9)	New command				

Usage Guidelines Although you can specify a cable length from 0 to 450 feet, the hardware only recognizes two ranges: 0 to 224, and 225 to 450.

For example, if you enter 150 feet, the 0 to 224 range is used. If you later change the cable length to 200 feet, there is no change because 200 is within the 0 to 224 range. However, if you change the cable length to 250, the 225 to 450 range is used. The actual number you enter is stored in the configuration file.

Examples The following example configures the cable length on controller t3 to 450 feet.

```
Switch(config)# controller t3 4/0/0
Switch(config-controller)# cablelength 450
Switch# show running-config
controller T3 4/0/0
  clock source reference
  cablelength 450
```

called-address-mask

To configure the address mask for identifying valid bits of the called NSAP address field, use the **called-address-mask** ATM signalling diagnostics configuration command. To return the address mask to the default, use the **no** form of this command.

called-address-mask *atm-address-mask*

no called-address-mask

Syntax Description	<i>atm-address-mask</i> Denotes the valid bits in the called NSAP address.				
Defaults	NULL				
Command Modes	ATM signalling diagnostics configuration				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.2(8.0.1)</td> <td>New command</td> </tr> </tbody> </table>	Release	Modification	11.2(8.0.1)	New command
Release	Modification				
11.2(8.0.1)	New command				
Usage Guidelines	To match this selection criteria, a failed connect setup must have a called party address value equal to the configured called party address for all bits that are 1 in the value of the mask specified with the command. When the default value is retained, the rejected call matches the filter criteria for any called address in the rejected call.				
Examples	<p>The following example shows configuring a called address mask string.</p> <pre>Switch# configure terminal Switch(config)# controller atm 0/0/0 Switch(config-if)# atm signalling diagnostics 1 Switch(cfg-atmsig-diag)# called-address-mask ff.ff.ff</pre>				

called-nsap-address

To configure the NSAP-format ATM address for the signalling diagnostics filter entry, use the **called-nsap-address** ATM signalling diagnostics configuration command. To remove any configured address, use the **no** form of this command.

called-nsap-address *nsap-address*

no called-nsap-address

Syntax Description	<i>nsap-address</i> A 40-digit hexadecimal NSAP address.				
Defaults	NULL				
Command Modes	ATM signalling diagnostics configuration				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.2(8.0.1)</td> <td>New command</td> </tr> </tbody> </table>	Release	Modification	11.2(8.0.1)	New command
Release	Modification				
11.2(8.0.1)	New command				

Usage Guidelines NSAP-format ATM end-system addresses have a fixed length of 40 hexadecimal digits. You should configure the address using the following dotted format:

```
xx.xxxx.xxxx.xxxx.xxxx.xxxx.xxxx.xxxx.xxxx.xx
```



Note

The dots can be omitted.

Examples

The following example shows setting a called NSAP address.

```
Switch# configure terminal
Switch(config)# controller atm 0/0/0
Switch(config-if)# atm signalling diagnostics 1
Switch(cfg-atmsig-diag)# called-nsap-address 47.111122223333444455556666.777788881111.00
```

calling-address-mask

To configure the address mask for identifying valid bits of the calling-nsap-address field in the signalling diagnostics filter table entry, use the **calling-address-mask** ATM signalling diagnostics configuration command. To set to the default value, use the **no** form of this command.

calling-address-mask *atm-address-mask*

no calling-nsap-address

Syntax Description	<i>atm-address-mask</i> Use the address mask to denote the valid bits of the calling address field in the signalling diagnostics filter table entry.				
Defaults	NULL				
Command Modes	ATM signalling diagnostics configuration				
Command History	<table border="1"> <thead> <tr> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Release</th> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Modification</th> </tr> </thead> <tbody> <tr> <td style="border-bottom: 1px solid black;">11.2(8.0.1)</td> <td style="border-bottom: 1px solid black;">New command</td> </tr> </tbody> </table>	Release	Modification	11.2(8.0.1)	New command
Release	Modification				
11.2(8.0.1)	New command				
Usage Guidelines	To match this selection criteria, a failed connect setup must have a calling party address value equal to the configured calling party address for all bits that are 1 in the value of the mask specified through the command. When the default value is retained, the rejected call matches the filter criteria for any calling address in the rejected call.				
Examples	<p>The following example shows a calling address mask.</p> <pre>Switch# configure terminal Switch(config)# controller atm 0/0/0 Switch(config-if)# atm signalling diagnostics 1 Switch(cfg-atmsig-diag)# calling-address-mask ff.ff.ff</pre>				

calling-nsap-address

To configure the NSAP-format ATM address for the signalling diagnostics filter entry, use the **calling-nsap-address** ATM signalling diagnostics configuration command. To remove any configured address, use the **no** form of this command.

calling-nsap-address *nsap-address*

no calling-nsap-address

Syntax Description	<i>nsap-address</i>	The 40-digit, hexadecimal NSAP address.
---------------------------	---------------------	---

Defaults	NULL
-----------------	------

Command Modes	ATM signalling diagnostics configuration
----------------------	--

Command History	Release	Modification
	11.2(8.0.1)	New command

Usage Guidelines NSAP-format ATM end-system addresses have a fixed length of 40 hexadecimal digits. You should configure the address using the following dotted format:

```
xx.xxxx.xxxx.xxxx.xxxx.xxxx.xxxx.xxxx.xxxx.xx
```



Note

The dots can be omitted.

Examples The following example shows setting a calling NSAP address.

```
Switch# configure terminal
Switch(config)# controller atm 0/0/0
Switch(config-if)# atm signalling diagnostics 1
Switch(cfg-atmsig-diag)# calling-nsap-address 47.111122223333444455556666.777788881111.00
```

cast-type

To filter ATM signalling call failures by connection type (point-to-point or point-to-multipoint), use the **cast-type** ATM signalling diagnostics configuration command. To disable this feature, use the **no** form of this command.

```
cast-type { all | p2p | p2mp }
```

```
no cast-type
```

Syntax Description

all	Set the cast type to point-to-point and point-to-multipoint.
p2p	Point-to-point.
p2mp	Point-to-multipoint.

Defaults

all

Command Modes

ATM signalling diagnostics configuration

Command History

Release	Modification
11.2(8.0.1)	New command

Examples

The following example shows call failures filtered by point-to-point connection.

```
Switch# configure terminal
Switch(config)# controller atm 0/0/0
Switch(config-if)# atm signalling diagnostics 1
Switch(cfg-atmsig-diag)# cast-type p2p
```

ces aal1 clock

To configure the AAL1 timing recovery clock for T1/E1 interfaces, use the **ces aal1 clock** interface configuration command. To revert to the default setting, use the **no** form of this command.

```
ces aal1 clock {adaptive | srts | synchronous}
```

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

Syntax Description

adaptive	Adjusts the output clock on a received AAL1 on a first-in, first-out basis. Use in unstructured mode.
srts	Adjusts the output clock on a received AAL1 on a first-in, first-out basis.
synchronous	Configures the timing recovery to synchronous for structured mode.

Defaults

synchronous

Command Modes

Interface configuration

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

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

Use **srts** 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 **synchronous** for all other modes.

Examples

The following command shows setting the AAL1 timing recovery clock to adaptive mode.

```
Switch# configure terminal
Switch(config)# controller cbr 3/0/0
Switch(config-if)# ces aal1 clock adaptive
```


ces aal1 service

To configure the type of ces service, use the **ces aal1 service** interface configuration command. To revert to the default setting, use the **no** form of this command.

```
ces aal1 service {structured | unstructured}
```

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

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

Defaults	unstructured
----------	--------------

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

Command History	Release	Modification
	11.2(5)	New command

Usage Guidelines	The structured keyword means that each time slot is an independent entity grouped into circuits, where each circuit has an independent 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 shows changing the mode for the ces aal1 service command to structured .
----------	--

```
Switch# configure terminal
Switch(config)# controller cbr 3/0/0
Switch(config-if)# ces aal1 service structured
```

ces circuit

To configure the CES connection attributes, use the **ces circuit** interface configuration command. To revert to the default setting, use the **no** form of this command.

```
ces circuit circuit-id [cas] [cdv max-req] [circuit-name name] [partial-fill num] [shutdown | timeslots num] [on-hook-detect pattern]
```

```
no ces circuit circuit-id [cas] [cdv] [circuit-name name] [partial-fill num] [shutdown] [timeslots num] [on-hook-detect pattern]
```

Syntax Description	
<i>circuit-id</i>	Selects the circuit identification. For unstructured service, use 0. For T1 structure service, the range is 1 through 24. For E1 structure service, the range is 1 through 31.
cas	Enables channel-associated signalling for structured service only. The default is no cas .
cdv <i>max-req</i>	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>	Sets the ASCII name for the CES-IWF circuit. The string for the circuit name is 0 through 255. The default is CBRx/x/x:0.
partial-fill <i>num</i>	Enables the partial AAL1 cell fill service for structured service only. The range is 0 through 47. The default is 47.
shutdown	Marks the CES-IWF circuit administratively down. The default is no shutdown .
timeslots <i>num</i>	Configures the time slots for the CES-IWF circuit for structured service only. The range is 1 through 24 for T1. The range is 1 through 31 for E1.
on-hook-detect <i>pattern</i>	Configures on-hook detection on the CES circuit.

Defaults See "Syntax Description."

Command Modes Interface configuration

Command History	Release	Modification
	11.2(5)	New command

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

Examples

The following example shows setting the structured service CDV range to 5000 milliseconds.

```
Switch# configure terminal  
Switch(config)# controller cbr 3/0/0  
Switch(config-if)# ces circuit 3 cdv 5000
```

ces dsx1 clock source

To configure a transmit clock source to the T1/E1 CES port adapter, use the **ces dsx1 clock source** interface configuration command. To revert to the default value, use the **no** form of this command.

```
ces dsx1 clock source {loop-timed | network-derived}
```

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

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 mode	
Command History	Release	Modification
	11.2(5)	New command
Examples	<p>The following example shows setting the clock source to loop-timed.</p> <pre>Switch# configure terminal Switch(config)# controller cbr 3/0/0 Switch(config-if)# ces dsx1 clock source loop-timed</pre>	
Related Commands	Command	Description
	ces aal1 clock	Configures the AAL1 timing recovery clock for T1/E1 interfaces.

ces dsx1 framing

To select the frame type for the E1 or T1 data line, use the **ces dsx1 framing** interface configuration command. To restore the default setting, use the **no** form of this command.

(For E1) **ces dsx1 framing {e1_crc_mfCASlt | e1_crc_mflt | e1_lt | e1_mfCAS_lt}**

(For T1) **ces dsx1 framing {sf | esf}**

To restore the default setting, use the **no** form of these commands.

(For E1) **no ces dsx1 framing {e1_crc_mfCASlt | e1_crc_mflt | e1_lt | e1_mfCAS_lt}**

(For T1) **no ces dsx1 framing {sf | esf}**

Syntax Description	Command	Description
	e1_crc_mfCAS_lt	Configures the frame type to e1_crc_mf: CAS enabled.
	e1_crc_mf_lt	Configures the frame type to e1_crc_mf: CAS not enabled.
	e1_lt	Configures the frame type to e1_lt.
	e1_mfCAS_lt	Configures the frame type to e1_mf: CAS enabled.
	sf	Configures the frame type to super frame.
	esf	Configures the frame type to extended super frame.

Defaults	Default
	For E1: e1_lt
	For T1: esf

Command Modes	Mode
	Interface configuration

Command History	Release	Modification
	11.2(5)	New command

Usage Guidelines	Guidelines
	Use this command in configurations where the switch router communicates with either the T1 or the E1 data line to configure the frame type for your circuit.

Examples	Example
	The following example shows setting the E1 data line frame type to e1_mfCAS_lt .

```
Switch# configure terminal
Switch(config)# controller cbr 3/0/0
Switch(config-if)# ces dsx1 framing e1_mfCAS_lt
```

Related Commands	Command	Description
	linecode	Selects the linecode type for the T1 or E1 line.

ces dsx1 lbo

To configure T1 port parameters, use the **ces dsx1 lbo** interface configuration command. To revert to the default setting, use the **no** form of this command.

ces dsx1 lbo length

no ces dsx1 lbo length

Syntax Description	<p><i>length</i> Specifies the cable length as one of the following:</p> <ul style="list-style-type: none"> • 0-110 • 110-200 • 220-330 • 330-440 • 440-550 • 550-660 • 660_above • square_pulse
---------------------------	--

Defaults	0-110
-----------------	--------------

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

Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.2(5)</td> <td>New command</td> </tr> </tbody> </table>	Release	Modification	11.2(5)	New command
Release	Modification				
11.2(5)	New command				

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

Examples	The following example shows setting the cable length to 440 feet using the ces dsx1 lbo interface configuration command.
-----------------	---

```
Switch# configure terminal
Switch(config)# controller cbr 3/0/0
Switch(config-if)# ces dsx1 lbo 440_550
```

ces dsx1 linecode

To select the linecode type for the T1 or E1 line, use the **ces dsx1 linecode** interface configuration command. To restore the default setting, use the **no** form of this command.

(For E1) **ces dsx1 linecode {ami | hdb3}**

(For T1) **ces dsx1 linecode {ami | b8zs}**

To restore the default setting, use the no form of these commands.

(For E1) **no ces dsx1 linecode {ami | hdb3}**

(For T1) **no ces dsx1 linecode {ami | b8zs}**

Syntax Description	ami	Specifies the AMI as the linecode type. Valid for the T1 or E1 interfaces.				
	b8zs	Specifies B8Zs as the linecode type. Valid for the T1 interface only.				
	hdb3	Specifies the HDB3 as the linecode type. Valid for the E1 interface only.				
Defaults	For T1: b8zs For E1: hdb3					
Command Modes	Interface configuration					
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.2(5)</td> <td>New command</td> </tr> </tbody> </table>	Release	Modification	11.2(5)	New command	
Release	Modification					
11.2(5)	New command					
Usage Guidelines	The T1 service provider determines which linecode type (ami or b8zs) is required for your circuit. The E1 service provider determines which linecode type (ami or hdb3) is required for your circuit.					
Examples	<p>The following example specifies b8zs as the linecode type for the T1 interface.</p> <pre>Switch# configure terminal Switch(config)# controller cbr 3/0/0 Switch(config-if)# ces dsx1 linecode b8zs</pre>					

ces dsx1 loopback

To configure loopback for the T1 or E1 circuit emulation port adapter module, use the **ces dsx1 loopback** interface configuration command. To revert to the default setting, 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 line).
noloop	Sets the interface to no loop.
payload	Sets the received signal to be looped through the device and returned.

Defaults

noloop

Command Modes

Interface configuration

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

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

Examples

The following example shows setting the loopback to **payload**.

```
Switch# configure terminal
Switch(config)# controller cbr 3/0/0
Switch(config-if)# ces dsx1 loopback payload
```


ces dsx1 signalmode robbedbit

To configure the **signalmode** to **robbedbit**, use the **ces dsx1 signalmode robbedbit** interface configuration command. To restore the default setting, use the **no** form of this command.

ces dsx1 signalmode robbedbit

no ces dsx1 signalmode robbedbit

Syntax Description This command has no keywords or arguments.

Defaults Disabled

Command Modes Interface configuration

Command History	Release	Modification
	11.2(5)	New command

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 signalling in-band on individual time slots by removing the low bit of each byte for signalling 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 BISDN network. This means that after you set the port in **robbedbit** signalling mode, 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 BISDN network and reinserts them at the passive side on the CES-IWF connection.

Examples

```
Switch# configure terminal
Switch(config)# controller cbr 3/0/0
Switch(config-if)# ces dsx1 signalmode robbedbit
```

Related Commands	Command	Description
	ces aal1 service	Used to configure the type of CES service.
	ces circuit	Used to configure the CES connection attributes.

ces pvc (Hard PVC)

To configure the destination port for the circuit, use the **ces pvc** (hard PVC) interface configuration command. To disable this feature, use the **no** form of this command.

```
ces pvc circuit-id interface atm card/subcard/port [vpi vpi-number] vci vci-number
```

```
no ces pvc circuit-id interface atm card/subcard/port [vpi vpi-number] vci vci-number
```

Syntax Description

<i>circuit-id</i>	Sets the type of service. For unstructured service, use 0. For T1 structured service, the range is 1 through 24. For E1 structured service, the range is 1 through 31.
<i>card/subcard/port</i>	Card number, subcard number, and port number of the ATM interface.
<i>vpi-number</i>	Virtual path identifier of the destination PVC.
<i>vci-number</i>	Virtual channel identifier of the destination PVC.

Defaults

None.

Command Modes

Interface configuration

Command History

Release	Modification
12.1(6)	New command

Usage Guidelines

You must configure both sides of the CES circuits because the source (the active side in CES-IWF) 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. See the **show ces address** command.

Examples

The following example shows how to set a hard PVC on interface ATM 1/0/0.

```
Switch# configure terminal
Switch(config)# controller cbr 3/0/0
Switch(config-if)# ces pvc 31 interface atm 1/0/0
```

The following example shows how to set an unstructured CES soft PVC.

```
Switch(config-if)# ces pvc 0 dest-atm-addr atm 1/0/0 vpi 1 vci 1
```

The following example shows how to set a structured hard PVC.

```
Switch(config-if)# ces pvc 24 interface atm 1/0/1 vpi 1 vci 1
```

Related Commands	Command	Description
	ces pvc (Soft PVC)	Used to establish a soft pvc circuit
	show ces address	Used to show all the configured CES-IWF ATM addresses.

ces pvc (Soft PVC)

To configure the destination port for the circuit, use the **ces pvc** (soft PVC) interface configuration command. To disable this feature, use the **no** form of this command.

```
ces pvc circuit-id dest-address atm-address [[vpi vpi-number] vci vci-number] [follow-ifstate]
[retry-interval [first retry-interval] [maximum retry-interval]]
```

```
no ces pvc circuit-id dest-address atm-address [[vpi vpi-number] vci vci-number] [follow-ifstate]
[retry-interval [first retry-interval] [maximum retry-interval]]
```

Syntax Description	
<i>circuit-id</i>	Sets the type of service. For unstructured service, use 0. For T1 structured service, the range is 1 through 24. For E1 structured service, the range is 1 through 31.
dest-address	Creates a soft PVC and is specified as the string 0 through 255.
<i>vpi vpi</i>	Virtual path identifier of the destination PVC.
<i>vci vci</i>	Virtual channel identifier of the destination PVC.
retry-interval	Configures retry interval timers for a soft VC.
first <i>retry-interval</i>	<p>Retry interval for the first retry after the first failed attempt, specified in milliseconds.</p> <p>If the first retry after the first failed attempt also fails, the subsequent attempts will be made at intervals computed using the first <i>retry-interval</i> as follows:</p> $(2^{**} (k-1)) * \mathbf{first\ retry-interval}$ <p>Where the value of <i>k</i> is 1 for the first retry after the first failed attempt and will be incremented by 1 for every subsequent attempt.</p> <p>Range is from 100 to 3600000 milliseconds; the default is 5000 milliseconds.</p>
maximum <i>retry-interval</i>	<p>The maximum retry interval between any two attempts specified in seconds.</p> <p>Once the retry interval is computed in the first <i>retry-interval</i> and becomes equal to or greater than the maximum <i>retry-interval</i> configured, the subsequent retries are done at regular intervals of maximum <i>retry-interval</i> seconds until the call is established.</p> <p>Range is from 1 to 65535 seconds; the default is 60.</p>
follow-ifstate	When it is determined that the parent interface transitions from the down state to up, the soft PVC setup sequence is started. When it is determined that the parent interface transitions from the up state to down, an established soft PVC is released. Any soft PVC setup sequence in progress is terminated.

Defaults None.

Command Modes Interface configuration

Command History

Release	Modification
12.1(6)	New command

Usage Guidelines

You must configure both sides of the CES circuits because the source (the active side in CES-IWF) 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. See the **show ces address** command.

Examples

The following example shows how to set a soft PVC with the **follow-ifstate** option enabled.

```
Switch# configure terminal
Switch(config)# interface cbr 3/1/0
Switch(config-if)# ces pvc 1 dest-address 47.009144556677114410173322.00603E899901.01
follow-ifstate
```

Related Commands

Command	Description
ces pvc (Hard PVC)	Used to establish a hard pvc circuit.
show ces address	Used to show all the configured CES-IWF ATM addresses.

ces pvc passive follow-ifstate

To enable the passive circuit to mirror the interface state, use the **ces pvc passive** command. To disable this feature, use the **no** form of this command.

ces pvc *circuit_id* passive follow-ifstate

no ces pvc *circuit_id* passive follow-ifstate

Syntax Description	<i>circuit_id</i>	Sets the type of service. For unstructured service, use 0. For T1 structured service, the range is 1 through 24. For E1 structured service, the range is 1 through 31.
Defaults	None.	
Command Modes	Interface configuration	
Command History	Release	Modification
	12.1(6)	New command
Usage Guidelines	When it is determined that the parent interface transitions from the down state to up, the soft PVC setup sequence is started. When it is determined that the parent interface transitions from the up state to down, an established soft PVC is released. Any soft PVC setup sequence in progress is terminated.	
Examples	<p>The following example shows how to enable the passive circuit state to mirror the interface state.</p> <pre>Switch# configure terminal Switch(config)# controller cbr 3/0/0 Switch(config-if)# ces pvc 31 passive follow-ifstate</pre>	
Related Commands	Command	Description
	show ces address	Used to show all the configured CES-IWF ATM addresses.

channel-group

To form a serial interface, or channel-group, by aggregating time slots on a channelized DS3 (CDS3) or channelized E1 (CE1) line, use the **channel-group** controller configuration command. To delete a serial interface or channel-group, use the **no** form of this command.

For the CDS3 Frame Relay line, use the following syntax:

```
channel-group cg-number t1 line-number {timeslots list [speed {64 | 56}]}  
no channel-group cg-number
```

For the CE1 Frame Relay line, use the following syntax:

```
channel-group cg-number {{timeslots list | {unframed}}
```

Syntax Description	
<i>cg-number</i>	Channel-group number. <ul style="list-style-type: none"> For the CDS3, the range is 1 to 127. For the CE1, the range is 1 to 31.
t1 <i>line-number</i>	Identifies the T1 line number. The range is 1 to 28.
timeslots <i>list</i>	Specifies the time slots assigned to the channel. <ul style="list-style-type: none"> For the CDS3, the range is 1 to 24. For the CE1, the range is 1 to 31. <p>A dash represents a range of time slots; a comma separates time slots. For example, 1-10, 15-18 assigns time slots 1 through 10 and 15 through 18.</p>
[speed { 64 56 }]	Specifies the speed in Kbps. If you use this keyword, the value you enter must be either 64 or 56. The default speed is 64 kbps. <p>This option is not available for the CE1 line.</p>
unframed	Configures a CE1 interface as clear channel (unframed).

Defaults	
	For CDS3: 64 kbps Not applicable to CE1

Command Modes	
	Controller configuration

Command History	Release	Modification
	12.0(1a)W5(5b)	New command

Usage Guidelines	
	If the serial interface has encapsulation set to Frame Relay, then the no form of this command works only if you shut down the interface or the controller so that it tears down all soft VCs automatically. Otherwise, an error is returned.

Examples

The following example shows how to configure a channel group (#2), assigning time slots 6 to 31, and creating a logical serial port on interface 1/0/0:2.

```
Switch(config)# controller e1 1/0/0  
Switch(config-control)# channel-group 2 timeslots 6-31
```


class

To associate a connect-class with a specific interface, use the **class** interface configuration command. To break the association, use the **no** form of this command.

class *connect-class-name*

no class *connect-class-name*

Syntax Description	<i>connect-class-name</i> Name of the predefined connect-class.				
Defaults	Disabled				
Command Modes	Interface configuration				
Command History	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Release</th> <th style="text-align: left;">Modification</th> </tr> </thead> <tbody> <tr> <td>11.1(4)</td> <td>New command</td> </tr> </tbody> </table>	Release	Modification	11.1(4)	New command
Release	Modification				
11.1(4)	New command				
Usage Guidelines	<p>The precedence of inheriting parameters is as follows:</p> <ul style="list-style-type: none"> • A class is directly configured on the VC in the frame-relay pvc/soft-vc or atm pvc/soft-vc command. • A class is configured on the VC in the frame-relay pvc/soft-vc or atm pvc/soft-vc command and contains the parameter. • A class is configured on the VC subinterface and contains the parameter. • A class is configured on the VC main interface and contains the parameter. • Use the default. 				
Examples	<p>The following example creates a connection class named fr-siw-params on serial interface 1/1/0:16.</p> <pre>Switch(config)# interface serial 1/1/0:16 Switch(config-if)# class fr-siw-params</pre>				
Related Commands	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Command</th> <th style="text-align: left;">Description</th> </tr> </thead> <tbody> <tr> <td>connect-class</td> <td>Defines parameters used to configure interworking PVCs or soft VCs.</td> </tr> </tbody> </table>	Command	Description	connect-class	Defines parameters used to configure interworking PVCs or soft VCs.
Command	Description				
connect-class	Defines parameters used to configure interworking PVCs or soft VCs.				

clear atm pnni

To clear PNNI-related data, use the **clear atm pnni** privileged EXEC command.

```
clear atm pnni {debug packets | statistics {call | flooding | traffic}}
```

Syntax Description	Parameter	Description
	debug packets	Clears the PNNI debug memory blocks.
	call	Clears the PNNI call statistics.
	flooding	Clears the PNNI flooding statistics.
	traffic	Clears the PNNI traffic statistics.

Command Modes Privileged EXEC

Command History	Release	Modification
	11.1(4)	New command

Examples The following example shows how to clear the PNNI flooding statistics.

```
Switch# clear atm pnni statistics flooding
```

Related Commands	Command	Description
	atm pnni node	Specifies which PNNI node in the switch runs on an interface when the interface runs PNNI.
	show atm pnni local-node	Displays information about a PNNI logical node running on the switch.

clear atm signalling statistics

To clear existing ATM signalling statistics, use the **clear atm signalling statistics** EXEC command.

clear atm signalling statistics [**interface atm** *card/subcard/port*]

Syntax Description	<i>card/subcard/port</i>	Specifies the card, subcard, and port number of the ATM interface.				
Command Modes	EXEC					
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.2(5)</td> <td>New command</td> </tr> </tbody> </table>	Release	Modification	11.2(5)	New command	
Release	Modification					
11.2(5)	New command					
Usage Guidelines	This command clears the statistics for all the interfaces or a specific interface.					
Examples	<p>The following example shows how to clear the ATM signalling statistics for interface 1/0/0.</p> <pre>Switch# clear atm signalling statistics interface atm 1/0/0</pre>					
Related Commands	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>show atm signalling statistics</td> <td>Displays the ATM signalling statistics.</td> </tr> </tbody> </table>	Command	Description	show atm signalling statistics	Displays the ATM signalling statistics.	
Command	Description					
show atm signalling statistics	Displays the ATM signalling statistics.					

clear atm-vc

To release a specified SVC, use the **clear atm vc** privileged EXEC command.

clear atm-vc *card/subcard/port vpi vci*

Syntax Description		
	<i>card/subcard/port</i>	Card number, subcard number, and port number of the ATM interface.
	<i>vpi</i>	Virtual path identifier of the signalling SVC to clear.
	<i>vci</i>	Virtual channel identifier of the signalling SVC to clear.

Command Modes	
	Privileged EXEC

Command History	Release	Modification
	11.1(4)	New command

Examples The following is an example of the **clear atm-vc** command, which releases interface 3/1/0 on VPI 0 and VCI 99.

```
Switch# clear atm-vc atm 3/1/0 0 99
```

Related Commands	Command	Description
	show atm vc	Displays the ATM layer connection information about the virtual connection.

clear-cause

To configure the release cause code value in the signalling diagnostics filter table entry, use the **clear-cause** ATM signalling diagnostics configuration command. To disable this feature, use the **no** format of this command.

clear-cause *clear-cause-code*

no clear-cause

Syntax Description	<i>clear-cause-code</i> Decimal number denoting the release cause codes, as specified in the ATM Forum UNI 3.1 specification.				
Defaults	0				
Command Modes	ATM signalling diagnostics configuration				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.2(8.0.1)</td> <td>New command</td> </tr> </tbody> </table>	Release	Modification	11.2(8.0.1)	New command
Release	Modification				
11.2(8.0.1)	New command				
Usage Guidelines	Only the call failure records that match this configured clear-cause value are collected and stored. The default value zero (0) means the cause code is not considered during filtering.				
Examples	<p>The following example shows setting a value of 100.</p> <pre>Switch(cfg-atmsig-diag)# clear-cause 100</pre>				

clear counters

It is recommended that you only use this command for debugging purposes because it clears all counters displayed in the **show interfaces** and **show controllers** commands. To clear the interface counters, use the **clear counters** privileged EXEC command.

clear counters [*type card/subcard/port*]

Syntax Description	<i>type</i>	Specifies the interface type as atm , atm-p , cbr , ethernet , line , null , serial , or tunnel .
	<i>card/subcard/port</i>	Specifies the card, subcard, and port of the interface to clear.

Command Modes Privileged EXEC

Command History	Release	Modification
	11.1(4)	New command

Usage Guidelines This command clears all the current interface counters from the interface unless the optional arguments *type* and *card/subcard/port* are specified to clear only a specific interface type such as ATM, Ethernet, and so on.



Note

This command does not clear counters retrieved using SNMP.

Examples The following example illustrates how to clear all interface counters.

```
Switch# clear counters
```

Related Commands	Command	Description
	show ip access-lists	Displays the contents of all current IP access lists.

clear facility-alarm (Catalyst 8540 MSR)

Use the **clear facility-alarm** command to clear alarm conditions and reset the alarm contacts.

clear facility-alarm [**critical** | **major** | **minor**]

Syntax Description	critical	Clears critical facility alarms.
	major	Clears major facility alarms.
	minor	Clears minor facility alarms.

Defaults Clears all facility alarms.

Command Modes Privileged EXEC

Command History	Release	Modification
	12.0(3c)W5(9)	New command

Usage Guidelines The **clear facility-alarm** command acts like an ACO. Only a reoccurrence of the original alarm source after the original alarm condition is removed can restart the alarm.

Examples The following example shows how to clear minor facility alarms only.

```
Switch# clear facility-alarm minor
Clearing minor alarms
Switch#
```

The following example shows how to clear all facility alarms.

```
Switch# clear facility-alarm
Clearing all alarms
Switch#
```

Related Commands	Command	Description
	facility-alarm (Catalyst 8540 MSR)	Configures the temperatures so that the ATM switch router declares a major or minor alarm condition.
	show facility-alarm status (Catalyst 8540 MSR)	Displays the current major and minor alarm status, if any, and displays the configuration of the alarm thresholds.

clear host

To delete entries from the host-name-and-address cache, use the **clear host** privileged EXEC command.

clear host {*name* | *}

Syntax Description	
	<i>name</i> Particular host entry to remove.
	* Removes all entries.

Command Modes Privileged EXEC

Command History	Release	Modification
	11.1(4)	New command

Usage Guidelines The host name entries are cleared in running memory.

Examples The following example clears all entries from the host-name-and-address cache.

```
Switch# clear host *
```

Related Commands	Command	Description
	show hosts	Displays the default domain name, the style of the name lookup service, a list of name server hosts, and the cached list of host names and addresses.

clear interface

To reset the hardware logic on an interface, use the **clear interface** privileged EXEC command.

clear interface *type card/subcard/port*

Syntax Description	<i>type</i>	Specifies the interface type as atm , atm-p , cbr , ethernet , or null .
	<i>card/subcard/port</i>	Specifies the card, subcard, and port of the interface to clear.

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

Command History	Release	Modification
	11.1(4)	New command

Usage Guidelines	Under normal circumstances, you do not need to clear the hardware logic on interfaces.
-------------------------	--

Examples	The following example resets the interface logic on ATM interface 1/0/1.
	Switch# clear interface ATM 1/0/1

clear ip accounting



Note

This command or some of its parameters might not function as expected.

To delete the cache table entries, use the **clear ip cache** privileged EXEC command.

clear ip cache [*address-prefix address-mask*]

Syntax Description

<i>address-prefix</i>	Specifies the IP address.
<i>address-mask</i>	Required if <i>address prefix</i> is specified.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1(4)	New command

Related Commands

Command	Description
show ip interface	Displays the usability status of interfaces configured for IP.

clear ip redirect

To redirect an IP cache, use the **clear ip redirect** privileged EXEC command.

clear ip redirect

Syntax Description This command has no keywords or arguments.

Command Modes Privileged EXEC

Command History	Release	Modification
	11.1(4)	New command

Related Commands	Command	Description
	show ip redirects	Displays the address of a default gateway and the address of hosts for which a redirect has been received.

clear lane client

To clear the LANE client counter configured on the specified LEC interface, use the **clear lane client** privileged EXEC command.

```
clear lane client join-cnt [interface atm card/subcard/port]
```

Syntax Description	<i>card/subcard/port</i> Specifies the LEC interface to clear.
---------------------------	--

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

Command History	Release	Modification
	11.2(5)	New command

Usage Guidelines	If you do not specify an interface, this command clears all the counters of any LANE client in the switch.
	When you specify an interface, this command clears all the LANE client counters on that interface.

Examples	The following example shows clearing the counters on ATM 1/0/0 interface using the clear lane client privileged EXEC command.
	Switch# clear lane client join-cnt interface atm 1/0/0

Related Commands	Command	Description
	show lane client	Displays global and per-VCC LANE information for all the LANE clients configured on an interface, or any of its subinterfaces, on a specified subinterface, or on an emulated LAN.

clear lane le-arp

To clear the dynamic 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** privileged EXEC command.

```
clear lane le-arp [{interface atm card/subcard/port[,subinterface-num] | name elan-name}
  [mac-address mac-addr | route-desc segment seg-num bridge bridge-num]]
```

Syntax Description	
<i>card/subcard/port</i>	ATM interface for the LANE client whose LE_ARP table or entry is to be cleared.
<i>subinterface-num</i>	Subinterface for the LANE client whose LE_ARP table or entry is to be cleared.
<i>elan-name</i>	Name of the emulated LAN for the LANE client whose LE_ARP table or entry is to be cleared. Maximum length is 32 characters.
<i>mac-addr</i>	MAC address of the entry to be cleared from the LE ARP table.
<i>seg-num</i>	Segment number of the next-hop route descriptor. The segment number ranges from 1 to 4095.
<i>bridge-num</i>	Bridge number of the next-hop route descriptor. The bridge number ranges from 1 to 15.

Command Modes Privileged EXEC

Command History	Release	Modification
	11.1(4)	New command

Usage Guidelines This command only removes dynamic LE_ARP table entries. 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 LANE ARP tables of any LANE client in the switch.

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

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

Examples The following example clears all the LANE ARP tables for all clients on the switch router.

```
Switch# clear lane le-arp
```

The following example clears all the LANE ARP tables for all LANE clients on all the subinterfaces of interface atm 0.

```
Switch# clear lane le-arp interface atm 0
```

The following example clears the entry corresponding to MAC address 0800.AA00.0101 from the LE_ARP table for the LANE client on the emulated LAN named *red*.

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

The following example clears all dynamic entries from the LE_ARP table for the LANE client on the emulated LAN named *red*.

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

The following example clears the dynamic entry from the LE_ARP table for the LANE client with next-hop router descriptor segment number 1, bridge number 1, on the emulated LAN named *red*.

```
Switch# 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 LANE server on a specified subinterface or emulated LAN to drop the Control Direct and Control Distribute VCCs to a given LANE client and force the client to rejoin, subject to the new bindings, use the **clear lane server** privileged EXEC command.

```
clear lane server { interface card/subcard/port[.subinterface-num] | name elan-name }
  [client-atm-address client-atm-addr | lecid lecid | mac-address mac-addr |
  route-desc segment seg-num bridge bridge-num]
```

Syntax Description		
<i>card/subcard/port</i>	Card, subcard, and port number of the ATM interface.	
<i>subinterface-num</i>	Subinterface on which the LANE server is configured.	
<i>elan-name</i>	Name of the emulated LAN on which the LANE server is configured. Maximum length is 32 characters.	
<i>client-atm-addr</i>	ATM address of the LANE client.	
<i>lecid</i>	LANE client ID, a value between 1 and 4096.	
<i>mac-addr</i>	MAC address of the LANE client.	
<i>seg-num</i>	Segment number of the next-hop route descriptor. The segment number ranges from 1 to 4095.	
<i>bridge-num</i>	Bridge number of the next-hop route descriptor. The bridge number ranges from 1 to 15.	

Command Modes Privileged EXEC

Command History	Release	Modification
	11.2(5)	New command

Usage Guidelines After changing the bindings on the configuration server, enter this command on the LANE server. The LANE server drops the Control Direct and Control Distribute VCCs to the LANE client. The client then asks the LANE configuration server for the location of the LANE server of the emulated LAN it is requesting to join.

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

Examples The following example forces all the LANE clients on the emulated LAN named *red* to be dropped. When they try to join again, they are forced to join a different emulated LAN.

```
Switch# clear lane server red
```

Related Commands	Command	Description
	show lane server	Used to display global information for the LANE server configured on an interface or any of its subinterfaces.

clear rif-cache

To clear the RIF cache, use the **clear rif-cache** privileged EXEC command.

clear rif-cache

Syntax Description This command has no keywords or arguments.

Command Modes Privileged EXEC

Command History	Release	Modification
	11.3(3a)	New command

Usage Guidelines Some entries in the RIF cache are dynamically added, while others are static.

Related Commands	Command	Description
	rif	Used to enter static source-route information into the RIF cache.
	rif timeout	Used to specify the number of minutes an inactive entry is kept in the RIF cache.
	show rif	Used to display the current contents of the RIF cache.

clear sgcp statistics

To clear all SGCP statistics, use the **clear sgcp statistics** privileged EXEC command.

clear sgcp statistics

Syntax Description This command has no arguments or keywords.

Defaults None

Command Modes Privileged EXEC

Command History	Release	Modification
	12.0(3c)W5(9)	New command

Usage Guidelines This command clears global and per-endpoint statistics.

Examples The following example clears the SGCP statistics.

```
Switch# clear sgcp statistics
```

Related Commands	Command	Description
	show sgcp	Displays global configuration, operational state, and a summary of connection activity for SGCP.
	show sgcp endpoint	Displays CES circuit endpoints that might or might not have connections created.

client-atm-address name

To add a LANE client address entry to the configuration servers configuration database, use the **client-atm-address name** lane configuration server database command. 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

<i>atm-address-template</i>	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, enabling you to specify multiple addresses matching the explicitly specified part. Wildcard characters can replace any nibble or group of nibbles in the prefix, the ESI, or the selector fields of the ATM address.
<i>elan-name</i>	Name of the emulated LAN. Maximum length is 32 characters.

Defaults

No address and no emulated LAN name are provided.

Command Modes

LANE configuration server database

Command History

Release	Modification
11.2(5)	New command

Usage Guidelines

This command binds 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 be created in the configuration server's database by using the **national reserve (Catalyst 8510 MSR and LightStream 1010)** 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.

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

ATM Addresses. A LANE ATM address has the same syntax as an 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 field (1 byte), DCC or ICD field (2 bytes), DFI 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.

With the Cisco 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 enter database configuration mode using the database *lane_db*.

```
Switch(config)# lane database lane_db
Switch(lane-config-database)#
```

The following example uses 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 where the switch is connected, to join the engineering emulated LAN.

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

The following example uses 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 marketing emulated LAN.

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

Related Commands

Command	Description
delay	This command or some of its parameters might not function as expected.
lane database	Cisco IOS command removed from this manual. Refer to Appendix D.
name	Specifies or replaces the ATM address of the LANE server for the emulated LAN in the configuration server's configuration database.
server-atm-address	

clock source (controller)

To select a transmit clock source for a channelized DS3 (CDS3) or a channelized E1 (CE1) Frame Relay port adapter, or for a 16-port OC-3c MMF port adapter, use the **clock source** controller configuration command. To return the clock source to the default, use the **no** form of this command.

clock source { **free-running** | **loop-timed** | **network-derived** | **reference** }

no clock source { **free-running** | **loop-timed** | **network-derived** | **reference** }

Syntax Description

free-running	The transmit clock is derived from the local oscillator on the port adapter.
loop-timed	The transmit clock is derived from the receive (rx) clock.
network-derived	The transmit clock is derived from the port system clock specified as highest priority when you use the network-clock-select global configuration command.
reference	The oscillator on the route processor is used as the transmit clock source.

Defaults

For CDS3 and CE1 Frame Relay port adapters: Default clock source is loop-timed.

For the OC-3c MMF port adapter: Default clock source is **network-derived**.

Command Modes

Controller configuration

Command History

Release	Modification
11.1(4)	New command. Originally clock source
12.0(1a)W5(5b)	Added: (controller)

Usage Guidelines

Currently, all types of OC-12 port adapters do not support **loop-timed** mode.

When a transmit clock port is set to **free-running**, if there is a local oscillator present on the port adapter, the port uses the port adapter's oscillator as the clock source. If there is no local oscillator present on the port adapter, the port uses the route processor oscillator.

Examples

The following example shows how to enable the reference clocking mode on an E1 interface.

```
Switch# configure terminal
Switch(config)# controller e1 1/0/0
Switch(config-controller)# clock source reference
```

Related Commands	Command	Description
	network-clock-select	Allows the recovered clock to specify a particular port to provide network clocking.
	show controllers	Displays information about a physical port device.

clock source (interface) (Catalyst 8510 MSR and LightStream 1010)

To select a transmit clock source for a physical device such as a port, use the **clock source** interface configuration command. To return the clock source to the default, use the **no** form of this command.

clock source { **free-running** | **loop-timed** | **network-derived** }

no clock source { **free-running** | **loop-timed** | **network-derived** }

Syntax Description		
	free-running	The transmit clock is derived from the local oscillator on the port adapter.
	loop-timed	The transmit clock is derived from the receive (rx) clock.
	network-derived	The transmit clock is derived from the port system clock specified at highest priority when you use the network-clock-select global configuration command.

Defaults **network-derived**

Command Modes Interface configuration

Command History	Release	Modification
	12.0(1a)W5(5b)	New command. Originally clock source (interface)
	12.0(3c)W5(9)	Added: (Catalyst 8510 MSR and LightStream 1010)

Usage Guidelines

This command applies to all interfaces except older versions of the DS3/E3 and the 25-Mbps interfaces. This subcommand allows selection of the transmit clock source for the physical device of a port. Currently, all types of OC-12 port adapters do not support **loop-timed** mode.

When a transmit clock port is set to **free-running**, if there is a local oscillator present on the port adapter, the port uses the port adapter's oscillator as the clock source. If there is no local oscillator present on the port adapter, the port uses the route processor oscillator.

Examples

The following example shows how to enable the loop-timed clocking mode.

```
Switch(config-if)# clock source loop-timed
```

Related Commands	Command	Description
	framing (interface)	Selects the frame type for the data line.
	network-clock-select	Allows the recovered clock to specify a particular port to provide network clocking.

clock source (Catalyst 8540 MSR)

To select a transmit clock source for a physical device such as a port, use the **clock source** interface configuration command. To return the clock source to the default, use the **no** form of this command.

clock source { **free-running** | **loop-timed** | **network-derived** | **reference** }

no clock source { **free-running** | **loop-timed** | **network-derived** | **reference** }

Syntax Description	free-running	The transmit clock is derived from the local oscillator on the port adapter.
	loop-timed	The transmit clock is derived from the receive (rx) clock.
	network-derived	The transmit clock is derived from the port system clock specified at highest priority when you use the network-clock-select global configuration command.
	reference	The oscillator on the route processor is used as the transmit clock source.
Defaults	network-derived	
Command Modes	Interface configuration	
Command History	Release	Modification
	12.0(3c)W5(9)	New command
Usage Guidelines	<p>This command applies to all interfaces except older versions of the DS3/E3 and the 25-Mbps interfaces. This subcommand allows selection of the transmit clock source for the physical device of a port. Currently, all types of OC-12 port adapters do not support loop-timed mode.</p> <p>When a transmit clock port is set to free-running, if there is a local oscillator present on the port adapter, the port uses the port adapter's oscillator as the clock source. If there is no local oscillator present on the port adapter, the port uses the route processor oscillator.</p>	
Examples	<p>The following example shows how to enable the loop-timed clocking mode.</p> <pre>Switch(config-if)# clock source loop-timed</pre>	
Related Commands	Command	Description
	framing (interface)	Selects the frame type for the data line.
	network-clock-select	Allows the recovered clock to specify a particular port to provide network clocking.

collection-modes

To initialize the collection mode and specify at what time accounting data is recorded in the accounting file, use the **collection-modes** ATM accounting file subcommand. To disable the collection mode, use the **no** form of this command.

collection-modes [**periodic**] [**on-release**]

no collection-modes

Syntax Description

periodic	Data is recorded at recurring time intervals.
on-release	Data is recorded on the release of a connection.

Command Modes

ATM accounting file

Command History

Release	Modification
11.1(4)	New command

Examples

The following example initializes the collection mode and specifies that the accounting data is recorded on the release of a connection.

```
Switch# configure terminal
Switch(config)# atm accounting file acctng_file1
Switch(config-acct-file)# collection-modes on-release
```

Related Commands

Command	Description
atm accounting file	Enables an ATM accounting file and enters the accounting file configuration mode.
failed-attempts	Configures the writing of records for initial connection attempts.
multiring	Enables collection and use of RIF information on a subinterface.

connection-category

To filter ATM signalling call failures by virtual circuit category, use the **connection-category** ATM signalling diagnostics configuration command. To return the connection category to the default, use the **no** form of this command.

connection-category { **all** | **soft-vc** | **soft-vp** | **switched-vc** | **switched-vp** }

no connection-category

Syntax Description

all	Sets the connection category to soft-vc , soft-vp , switched-vc , and switched-vp .
soft-vc	Specifies soft virtual circuit.
soft-vp	Specifies soft virtual path.
switched-vc	Specifies switched virtual circuit.
switched-vp	Specifies switched virtual path.

Defaults

all

Command Modes

ATM signalling diagnostics configuration

Command History

Release	Modification
11.2(8.0.1)	New command

Usage Guidelines

Use the **atm signalling diagnostics** command to enter diagnostics configuration mode.

Examples

In the following example, call failures are filtered by soft virtual circuits.

```
Switch# configure terminal
Switch(config)# controller atm 0/0/0
Switch(config-if)# atm signalling diagnostics 1
Switch(cfg-atmsig-diag)# connection-category soft-vc
```

connection-types

To set types of connections for atm accounting selection, use the **connection-types** ATM accounting selection command. To return the connection-type to the default, use the **no** form of this command.

```
connection-types [pvc | pvp | spvc-originator | spvc-target | spvp-originator | spvp-target |
svc-in | svc-out | svp-in | svp_out]
```

```
no connection-types [pvc | pvp | spvc-originator | spvc-target | spvp-originator | spvp-target |
svc-in | svc-out | svp-in | svp_out]
```

Syntax Description		
	pvc	Sets the permanent virtual circuit.
	pvp	Sets the permanent virtual path.
	spvc-originator	Sets the originating SPVC.
	spvc-target	Sets the target SPVC.
	spvp-originator	Sets the originating SPVP.
	spvp-target	Sets the target SPVP.
	svc-in	Sets the incoming switched virtual circuit.
	svc-out	Sets the outgoing switched virtual circuit.
	svp-in	Sets the incoming switched virtual path.
	svp_out	Sets the outgoing switched virtual path.

Defaults The default value for the connection type is **svc-in**, **svc-out**, and **svp-out**.

Command Modes ATM accounting selection

Command History	Release	Modification
	12.0(1a)W5(5b)	New command

Usage Guidelines Changes to **connection-types** take effect immediately.

Examples The following example shows specifying the connection types for ATM accounting selection index 1 as spvc-originator and spvp-originator.

```
Switch(config)# atm accounting selection 1
Switch(config-acct-sel)# connection-types spvc-originator spvp-originator
```

Related Commands	Command	Description
	atm accounting selection	Enables ATM accounting selection and enters the ATM accounting selection configuration mode.
	atm accounting collection	Controls collection of ATM accounting data into a specific file.
	atm accounting file	Enables an ATM accounting file and enters the accounting file configuration mode.
	list	Cisco IOS command has been removed from this manual.

controller

To select a port on a Frame Relay port adapter, use the **controller** global configuration command.

```
controller {t3 | e1} card/subcard/port
```

Syntax Description	t3	Channelized DS3 (CDS3) Frame Relay port adapter.
	e1	Channelized E1 (CE1) Frame Relay port adapter.
	<i>card/subcard/port</i>	Specifies the card, subcard, and port of the T3 or E1 interface. The card number is displayed using the show interfaces command. The subcard number can be either 0 or 1. The port number is 0 for a single-port CDS3 Frame Relay port adapter.

Command Modes	Global configuration
---------------	----------------------

Command History	Release	Modification
	12.0(1a)W5(5b)	New command

Usage Guidelines	Specify the controller to configure by entering the controller subcommand, followed by e1 or t3 , and <i>card/subcard/port</i> .
------------------	---

Examples	The following example begins configuration of the CE1 Frame Relay interface on card 11, subcard 0, and port 0 using the controller global configuration command.
----------	---

```
Switch# configure terminal
Switch(config)# controller e1 11/0/0
```

Related Commands	Command	Description
	show controllers	Displays information about a physical port device.
	show ima interface	Displays the IMA interface, IMA group, and ATM layer hardware configuration.

copy

To copy any file from a Flash device to another destination, use the **copy** privileged EXEC command.

```
copy { device:filename | source } { device:filename | destination }
```

Syntax Description	
<i>device:filename</i>	<p>Specifies a device and filename as the source or destination of the copy operation. The <i>device</i> is optional; but when it is used, the colon (:) is required. Valid devices are as follows:</p> <ul style="list-style-type: none"> • bootflash: is the internal Flash memory. • sec-bootflash: is the secondary internal Flash memory on the redundant route processor. (Catalyst 8540 MSR) • nvr: is the NVRAM on the route processor card. • sec-nvr: is the NVRAM on the redundant route processor card. (Catalyst 8540 MSR) • slot0: is the first PC slot on the route processor card and is the initial default device. • sec-slot0: is the first PC slot on the redundant route processor card. (Catalyst 8540 MSR) • slot1: is the second PC slot on the route processor card. • sec-slot1: is the second PC slot on the redundant route processor card. (Catalyst 8540 MSR) <p>The <i>filename</i> is the name of the source or destination file. You must always provide a source filename. You can omit the destination filename, in which case the system uses the source filename. Wildcards are not permitted. The maximum filename length is 63 characters.</p>
<i>source/destination</i>	<p>Specifies a copy source or destination using rcp or TFTP, the running configuration, the startup configuration, or Flash memory. Refer to the copy flash, copy rcp, copy running-config, copy startup-config, and copy tftp commands.</p>

Defaults

If you omit the source or destination device, the switch uses the default device specified by the **cd** command. If you omit the destination filename, the switch uses the source filename.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The **copy** commands generally copy a file from a source to a destination. Some invalid combinations exist. Specifically, you cannot copy a running configuration to a running configuration, a startup configuration to a startup configuration, or TFTP to rcp.

When the destination is specified by the *config_file* or BOOTLDR environment variable, the switch prompts you for confirmation before proceeding with the copy. When the destination is the only valid image in the BOOT environment variable, the switch also prompts you for confirmation before proceeding with the copy.

The *config_file* environment variable specifies the configuration used during switch initialization. The BOOTLDR environment variable specifies the Flash device and filename containing the rxboot image for booting. The BOOT environment variable specifies a list of bootable images on various devices. To view the contents of environment variables, use the **show bootvar** command. To modify the *config_file* environment variable, use the **boot config** command. To modify the BOOTLDR environment variable, use the **boot bootldr** command. To modify the BOOT environment variable, use the **boot system** command. To save your modifications, use the **copy running-config startup-config** command.

If you do not specify a source or destination device, the switch uses the default device specified by the **cd** command.

Examples

The following example copies the *switch-config1* file from the internal Flash memory of a switch router to the *switch-backupconfig* file on the Flash memory card inserted in the first slot of the route processor card.

```
Switch# copy bootflash:switch-config1 slot0:switch-backupconfig
```

In the following example, the switch copies the *switch-config* file from the Flash memory card inserted in slot 0 of the route processor card to the startup configuration.

```
Switch# copy slot0:switch-config startup-config
```

Related Commands

Command	Description
boot system	Specifies the system image that the switch router loads at startup.
copy flash	Copies a file from Flash memory to another destination.
copy rcp	Copies a file from a network server to the switch router, or to another destination using rcp .
copy running-config	Copies the switch router's running configuration file to another destination.
copy startup-config	Copies the switch router's startup configuration file to another destination.
copy tftp	Copies a file from a TFTP server to the switch router or to another destination.
dialer-list list	This command or some of its parameters might not function as expected. See Appendix D of this command reference.

copy flash

To copy a file from Flash memory to another destination, use the **copy flash** privileged EXEC command.

```
copy flash {rcp | tftp | device:filename}
```

Syntax Description					
rcp	Specifies a copy operation to a network server using rcp.				
tftp	Specifies a TFTP server as the destination of the copy operation.				
<i>device:filename</i>	<p>Specifies a <i>device:filename</i> as the destination of the copy operation. The <i>device</i> argument is optional, but when it is used, the colon (:) is required. Valid devices are as follows:</p> <ul style="list-style-type: none"> • bootflash: is the internal Flash memory. • sec-bootflash: is the secondary internal Flash memory on the redundant route processor. (Catalyst 8540 MSR) • nvr: is the NVRAM on the route processor card. • sec-nvr: is the NVRAM on the redundant route processor card. (Catalyst 8540 MSR) • slot0: is the first PC slot on the route processor card and is the initial default device. • sec-slot0: is the first PC slot on the redundant route processor card. (Catalyst 8540 MSR) • slot1: is the second PC slot on the route processor card. • sec-slot1: is the second PC slot on the redundant route processor card. (Catalyst 8540 MSR) <p>The <i>filename</i> argument is the name of the destination file. You must always provide a source filename. You can omit the destination filename, in which case the system uses the source filename. Wildcards are not permitted. The maximum filename length is 63 characters.</p>				
Defaults	If you omit the destination device, the switch router uses the default device specified by the cd command. If you omit the destination filename, the switch router uses the source filename.				
Command Modes	Privileged EXEC				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.1(4)</td> <td>New command</td> </tr> </tbody> </table>	Release	Modification	11.1(4)	New command
Release	Modification				
11.1(4)	New command				

Usage Guidelines

The **copy flash** command copies from one of the three Flash memory devices. The system prompts you to enter a specific device and filename. You can enter one of the following as the source device:

- **bootflash:** This device is the internal Flash memory in the switch. router.
- **slot0:** This device is the first PC slot on the route processor card.
- **slot1:** This device is the second PC slot on the route processor card.

You must follow the source device with a colon (:) and a filename.

Use the **copy flash rcp** command to copy a system image from Flash memory to a network server using **rcp**. You can use the copy of the system image as a backup copy. You can also use it to verify that the copy in Flash memory is the same as the original file.

The rcp software requires that a client send the remote username on each **rcp** request to the server. When you issue the **copy flash rcp** command, by default the switch router software sends the remote username associated with the current TTY if that name is valid. For example, if the user is connected to the switch router through Telnet and was authenticated through the **username** command, the switch router software sends that username as the remote username.

If the TTY username is invalid, the switch router software uses the switch router host name as both the remote and local usernames.

**Note**

TTYs are commonly used in Cisco communications servers. The concept of TTY originated with UNIX. For UNIX systems, each physical device is represented in the file system. Terminals are called *TTY devices*, which stands for *teletype*, the original UNIX terminal.

To specify a different remote username to be sent to the server, use the **ip rcmd remote-username** command. You can also specify the path of an existing directory along with the remote username.

**Caution**

The remote username must be associated with an account on the destination server. If you do not use the **ip rcmd remote-username** command to specify the name of a remote user associated with an account on the server, the remote username associated with the current TTY process must be associated with an account on the server. If there is no username for the current TTY process, the switch router host name must be associated with an account on the server. If the network administrator of the destination server did not establish accounts for the remote username used, this command does not execute successfully when a default remote username is used.

If you copy the system image to a personal computer used as a file server, the computer must support the rsh protocol.

Use the **copy flash tftp** command to copy a system image from Flash memory to a TFTP server. As with the **copy flash rcp** command, you can use the copy of the system image as a backup or verification that the copy in Flash is the same as the original file.

The **copy** commands generally copy a file from a source to a destination. Some invalid combinations exist. Specifically, you cannot copy a running configuration to a running configuration, a startup configuration to a startup configuration, or TFTP to rcp. If you do not specify a source or destination device, the switch router uses the default device specified by the **cd** command.

When the destination is also specified by the *config_file* environment variable, the switch router prompts you for confirmation before proceeding with the copy. The *config_file* environment variable specifies the configuration used during switch initialization. To view the contents of the *config_file* environment

variable, use the **show bootvar** command. To modify the *config_file* environment variable, use the **boot config** command. To save your modifications to the *config_file* environment variable, use the **copy running-config startup-config** command.

Examples

The following example shows how to use the **copy flash rcp** command.

```
Switch# configure terminal
Switch# ip rcmd remote-username netadmin1
Ctrl-Z
Switch# copy flash rcp

System flash directory, partition 2:
File Length Name/status
  1  984   junk
[1048 bytes used, 8387560 available, 8388608 total]
Address or name of remote host [223.255.254.254]?
Source file name? junk
Destination file name [junk]? junk
Verifying checksum for 'junk' (file # 1)... OK
Copy 'junk' from Flash to server
  as 'junk'? [yes/no]y
-
Upload to server done
Flash copy took 0:00:00 [hh:mm:ss]
```

You see a spinning line during the copy process.

The following example illustrates how to use the **copy flash rcp** command when copying from a particular partition of Flash memory.

```
Switch# copy flash rcp
System flash partition information:
Partition  Size  Used  Free  Bank-Size  State  Copy-Mode
  1         4096K  2048K  2048K  2048K      Read Only  RXBOOT-FLH
  2         4096K  2048K  2048K  2048K      Read/Write  Direct

[ Type ?number for partition directory; ? for full directory; q to abort]
Which partition? [default = 1]
```

The system prompts you if there are two or more partitions. If the partition entered is not valid, the process terminates. You have the option to enter a partition number, a question mark (?) for a directory display of all partitions, or a question mark and a number (?*number*) for a directory display of a particular partition. The default is the first partition.

```
System flash directory, partition 2:
File Length Name/status
  1  3459720 master/igs-bfpx.100-4.3
[3459784 bytes used, 734520 available, 4194304 total]
Address or name of remote host [ABC.CISCO.COM]?
Source file name?
```

The file is copied from the partition given earlier by the user.

```
Destination file name [default = source name]?
Verifying checksum for 'master/igs-bfpx.100-4.3' (file # 1)... OK
Copy 'master/igs-bfpx.100-4.3' from Flash to server
as 'master/igs-bfpx.100-4.3'? [yes/no] yes
```

The following is sample output from the **copy flash tftp** command.

```
Switch# copy flash tftp:
Enter source file name: bootflash:test-image
Enter destination file name [test-image]: tftpboot/backup-image
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Address or name of remote host []? 172.20.46.50
!
```

The following example illustrates how to use the **copy flash tftp** command when copying from a particular partition of Flash memory.

```
Switch# copy flash tftp
System flash partition information:
Partition  Size      Used      Free      Bank-Size  State      Copy-Mode
   1         4096K    2048K    2048K    2048K      Read Only  RXBOOT-FLH
   2         4096K    2048K    2048K    2048K      Read/Write Direct

[Type ?number for partition directory; ? for full directory; q to abort]
Which partition? [default = 1]
```

The system prompts you if there are two or more partitions. If the partition entered is not valid, the process terminates. You have the option to enter a partition number, a question mark (?) for a directory display of all partitions, or a question mark and a number (?number) for a directory display of a particular partition. The default is the first partition.

```
System flash directory, partition 2:
File Length Name/status
   1  3459720 master/igs-bfpx.100-4.3
[3459784 bytes used, 734520 available, 4194304 total]
Address or name of remote host [ABC.CISCO.COM]?
Source file name?
```

The file is copied from the partition given earlier by the user.

```
Destination file name [default = source name]?
Verifying checksum for 'master/igs-bfpx.100-4.3' (file # 1)... OK
Copy 'master/igs-bfpx.100-4.3' from Flash to server
as 'master/igs-bfpx.100-4.3'? [yes/no] yes
```

The following example shows how to use the **copy flash** command.

```
Switch# copy flash slot0:new-config
```

Related Commands

Command	Description
boot config	Used to modify the device and filename of the configuration file from which the switch configures itself during initialization.
boot system flash	Boots the switch router from internal Flash memory.
config-register	Cisco IOS command removed from this manual.
copy running-config startup-config	Copies the switch router's running configuration file to another destination. Specifies the configuration used for initialization as the destination of the copy operation.
ip rcmd remote-username	Cisco IOS command removed from this manual. See Appendix D.
show bootvar	Cisco IOS command removed from this manual. See Appendix D.

copy rcp

To copy a file from a network server to the switch router or to another destination using rcp, use the **copy rcp** privileged EXEC command.

copy rcp { *device:filename* | **running-config** | **startup-config** | **system** | **tftp** }

Syntax Description

device:filename Specifies a *device:filename* as the destination of the copy operation. The *device* is optional, but when used, the colon (:) is required. Valid devices are as follows:

- **bootflash:** is the internal Flash memory.
- **sec-bootflash:** is the secondary internal Flash memory on the redundant route processor. (Catalyst 8540 MSR)
- **nvr:** is the NVRAM on the route processor card.
- **sec-nvr:** is the NVRAM on the redundant route processor card. (Catalyst 8540 MSR)
- **slot0:** is the first PC slot on the route processor card and is the initial default device.
- **sec-slot0:** is the first PC slot on the redundant route processor card. (Catalyst 8540 MSR)
- **slot1:** is the second PC slot on the route processor card.
- **sec-slot1:** is the second PC slot on the redundant route processor card. (Catalyst 8540 MSR)

The *filename* is the name of the destination file. You must always provide a source filename. You can omit the destination filename, in which case the system uses the source filename. Wildcards are not permitted. The maximum filename length is 63 characters.

rcp	Specifies a server as the destination of the copy operation.
running-config	Specifies the currently running configuration as the destination of the copy operation.
startup-config	Specifies the configuration used for initialization as the destination of the copy operation.
tftp	Specifies a TFTP server as the destination of the copy operation.

Defaults

If you omit the destination device, the switch router uses the default device specified by the **cd** command. If you omit the destination filename, the switch router uses the source filename.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The **rcp** protocol requires that a client send the remote username of an rcp request to the server. When you issue one of the **copy rcp** commands, by default the switch router software sends the username associated with the current TTY if that name is valid. For example, if the user is connected to the switch router through Telnet and the user was authenticated through the **username** command, the switch router software sends that username as the remote username.

**Note**

For Cisco, TTYs are commonly used in communication servers. The concept of TTY originated with UNIX. For UNIX systems, each physical device is represented in the file system. Terminals are called *TTY devices*, which stands for *teletype*, the original UNIX terminal.

If the TTY username is invalid, the switch router software uses the switch router host name as both the remote and local usernames. To specify a different remote username to be sent to the rcp server, use the **ip rcmd remote-username** command. You can also specify the path of an existing directory along with the remote username.

**Caution**

The remote username must be associated with an account on the destination server. If you do not use the **ip rcmd remote-username** command to specify the name of a remote user associated with an account on the server, the remote username associated with the current TTY process must be associated with an account on the server. If there is no username for the current TTY process, the switch router host name must be associated with an account on the server. If the network administrator of the destination server did not establish accounts for the remote username used, this command does not execute successfully when a default remote username is used.

If you copy a bootstrap image, system image, or configuration file from a personal computer used as a file server, the remote host computer must support the rsh protocol.

Use the **copy rcp bootflash** command to copy a bootstrap image from a network server to Flash memory using rcp. The switch prompts for the name or address of the server and the name of the file to be copied. It provides an option to erase existing Flash memory before writing onto it and allows you to confirm the erasure. The entire copying process takes several minutes and differs from network to network.

Before loading the switch from Flash memory, verify that the checksum of the bootstrap image in Flash memory matches the checksum listed in the README file that was distributed with the system software image.

The checksum of the bootstrap image in Flash memory is displayed at the bottom of the screen when you issue the **copy rcp bootflash** command. The README file was copied to the server automatically when you installed the system software.

**Caution**

If the checksum value does not match the value in the README file, do not reboot the switch. Reissue the **copy rcp bootflash** command and compare the checksums again. If the checksum is repeatedly wrong, copy the original bootstrap image back into Flash memory *before* you reboot the switch from Flash memory. If you have a corrupted image in Flash memory and try to boot from Flash, the switch router starts the system image (assuming booting from a network server is not configured).

Use the **copy rcp running-config** command to copy a configuration file from a network server to the switch router's running configuration environment using rcp. You can copy either a host configuration file or a network configuration file. Accept the default value of *host* to copy and load a host

configuration file containing commands that apply to one network server in particular. Enter value of *network* to copy and load a network configuration file containing commands that apply to all network servers on a network.



Note The **copy rcp running-config** command replaces the **configure network** command when using **rcp**.

Use the **copy rcp startup-configuration** command to copy a host or network configuration file from a network server to the switch router's startup configuration environment using **rcp**. Accept the default value of *host* to copy and store a host configuration file containing commands that apply to one network server in particular. Enter value of *network* to copy and store a network configuration file containing commands that apply to all network servers on a network.

The command copies a configuration file from the network server to the location specified by the *config_file* environment variable. The *config_file* environment variable specifies the configuration used during switch router initialization.



Note The **copy rcp startup-config** command replaces the **configure overwrite-network** command when using **rcp**.

The **copy** commands generally copy a file from a source to a destination. Some invalid combinations exist. Specifically, you cannot copy a running configuration to a running configuration, a startup configuration to a startup configuration, or TFTP to **rcp**.

The **copy rcp** command generally copies a file from a network server to another destination using **rcp**. If you do not specify a source or destination device, the switch uses the default device specified by the **cd** command.

When the destination is also specified by the *config_file* environment variable, the switch prompts you for confirmation before proceeding with the copy. To view the contents of the *config_file* environment variable, use the **show bootvar** command. To modify the *config_file* environment variable, use the **boot config** command. To save your modifications, use the **copy running-config startup-config** command.

Examples

The following example shows sample output resulting from copying a system image into a partition of Flash memory. The system prompts only if there are two or more read/write partitions or one read-only and one read/write partition and dual-Flash bank support in boot ROMs. If the partition entered is not valid, the process terminates. You have the option to enter a partition number, a question mark (?) for a directory display of all partitions, or a question mark and a number (*?number*) for a directory display of a particular partition. The default is the first read/write partition.

```
Switch# copy rcp flash
```

```
System flash partition information:
```

Partition	Size	Used	Free	Bank-Size	State	Copy-Mode
1	4096K	2048K	2048K	2048K	Read Only	RXBOOT-FLH
2	4096K	2048K	2048K	2048K	Read/Write	Direct

```
[Type ? no for partition directory; ? for full directory; q to abort]
Which partition? [default = 2]
```

If the partition is read-only and has dual-Flash bank support in boot ROM, the session continues as shown in the following display.

```

**** NOTICE ****

Flash load helper v1.0
This process will accept the copy options and then terminate
the current system image to use the ROM based image for the copy.
Routing functionality will not be available during that time.
If you are logged in via telnet, this connection will terminate.
Users with console access can see the results of the copy operation.
      ---- ***** ----

Proceed? [confirm]
System flash directory, partition 1:
File Length Name/status
   1  3459720 master/igs-bfpx.100-4.3
[3459784 bytes used, 734520 available, 4194304 total]
Address or name of remote host [255.255.255.255]? 131.108.1.1
Source file name? master/igs-bfpx-100.4.3
Destination file name [default = source name]?

```

The file is copied into the partition given by the user earlier.

```

Loading master/igs-bfpx.100-4.3 from 131.108.1.111: !
Erase flash device before writing? [confirm]
Flash contains files. Are you sure? [confirm]
Copy 'master/igs-bfpx.100-4.3' from TFTP server
as 'master/igs-bfpx.100-4.3' into Flash WITH erase? [yes/no] yes

```

If the partition is read-write, the session continues as follows.

```

System flash directory, partition 2:
File Length Name/status
   1  3459720 master/igs-bfpx.100-4.3
[3459784 bytes used, 734520 available, 4194304 total]
Address or name of remote host [255.255.255.255]? 131.108.1.1
Source file name? master/igs-bfpx.100-4.3
Destination file name [default = source name]?

```

The file is copied into the partition given by the user earlier.

```

Accessing file 'master/igs-bfpx.100-4.3' on ABC.CISCO.COM...
Loading master/igs-bfpx.100-4.3 from 131.108.1.111: !
Erase flash device before writing? [confirm]
Flash contains files. Are you sure? [confirm]
Copy 'master/igs-bfpx.100-4.3' from TFTP server
as 'master/igs-bfpx.100-4.3' into Flash WITH erase? [yes/no] yes

```

The following example uses the **copy rcp device** command to copy the *switch-image* file from a network server using rcp to the Flash memory card inserted in slot 0 of the route processor card.

```
Switch# copy rcp slot0:switch-image
```

Related Commands

Command	Description
boot config	Used to modify the device and filename of the configuration file from which the switch configures itself during initialization.
boot system flash	Boots the switch router from internal Flash memory.
config-register	Cisco IOS command removed from this manual. See Appendix D.
copy flash rcp	Specifies a copy operation to a network server using rcp.

Command	Description
copy running-config rcp	Copies the switch router's running configuration file to another destination, and specifies a server as the destination of the copy operation.
copy running-config startup-config	Copies the switch router's running configuration file to another destination.
copy startup-config rcp	Specifies the configuration used for initialization as the destination of the copy operation.
ip rcmd remote-username	Cisco IOS command removed from this manual. See Appendix D.
show bootvar	Cisco IOS command removed from this manual. See Appendix D.

copy running-config

To copy the switch router's running configuration file to another destination, use the **copy running-config** privileged EXEC command.

```
copy running-config { rcp | startup-config | tftp | device:filename }
```

Syntax Description	
rcp	Specifies a server as the destination of the copy operation.
startup-config	Specifies the configuration used for initialization as the destination of the copy operation.
tftp	Specifies a TFTP server as the destination of the copy operation.
<i>device:filename</i>	Specifies a <i>device:filename</i> as the destination of the copy operation. The <i>device</i> is optional, but when used, the colon (:) is required. Valid devices are as follows: <ul style="list-style-type: none"> • bootflash: is the internal Flash memory. • sec-bootflash: is the secondary internal Flash memory on the redundant route processor. (Catalyst 8540 MSR) • nvr: is the NVRAM on the route processor card. • sec-nvr: is the NVRAM on the redundant route processor card. (Catalyst 8540 MSR) • slot0: is the first PC slot on the route processor card and is the initial default device. • sec-slot0: is the first PC slot on the redundant route processor card. (Catalyst 8540 MSR) • slot1: is the second PC slot on the route processor card. • sec-slot1: is the second PC slot on the redundant route processor card. (Catalyst 8540 MSR) <p>The <i>filename</i> is the name of the destination file. You must always provide a source filename. You can omit the destination filename, in which case the system uses the source filename. Wildcards are not permitted. The maximum filename length is 63 characters.</p>

Defaults	
	If you omit the destination device, the switch router uses the default device specified by the cd command. If you omit the destination filename, the switch router uses the source filename.

Command Modes	
	Privileged EXEC

Command History	Release	Modification
	11.1(4)	New command

Usage Guidelines

Save the configuration file to your startup configuration. This setup saves the configuration to the location specified by the *config_file* environment variable.

The **copy running-config startup-config** command replaces the **write memory** command.

The **copy running-config rcp** or **copy running-config tftp** command replaces the **write network** command.

Related Commands

Command	Description
boot config	Used to modify the device and filename of the configuration file from which the switch configures itself during initialization.
boot system flash	Boots the switch router from internal Flash memory.
cd	Cisco IOS command removed from this manual. See Appendix D.
config-register	Cisco IOS command removed from this manual. See Appendix D.
copy running-config startup-config	Copies the switch router's running configuration file to another destination, and specifies the configuration used for initialization as the destination of the copy operation.
copy startup-config rcp	Copies the switch router's startup configuration file to another destination, and specifies an rcp server as the destination of the copy operation.

copy startup-config

To copy the switch router's startup configuration file to another destination, use the **copy startup-config** privileged EXEC command.

```
copy startup-config { rcp | running-config | tftp | device:filename }
```

Syntax Description

running-config	Specifies the currently running configuration as the destination of the copy operation.
startup-config	Specifies the configuration used for initialization as the destination of the copy operation.
rcp	Specifies an rcp server as the destination of the copy operation.
tftp	Specifies a TFTP server as the destination of the copy operation.
<i>device:filename</i>	Specifies a <i>device:filename</i> as the destination of the copy operation. The <i>device</i> argument is optional, but when it is used, the colon (:) is required. Valid devices are as follows: <ul style="list-style-type: none"> • bootflash: is the internal Flash memory. • sec-bootflash: is the secondary internal Flash memory on the redundant route processor. (Catalyst 8540 MSR) • nvr: is the NVRAM on the route processor card. • sec-nvr: is the NVRAM on the redundant route processor card. (Catalyst 8540 MSR) • slot0: is the first PC slot on the route processor card and is the initial default device. • sec-slot0: is the first PC slot on the redundant route processor card. (Catalyst 8540 MSR) • slot1: is the second PC slot on the route processor card. • sec-slot1: is the second PC slot on the redundant route processor card. (Catalyst 8540 MSR) <p>The <i>filename</i> argument is the name of the destination file. You must always provide a source filename. You can omit the destination filename, in which case the system uses the source filename. Wildcards are not permitted. The maximum filename length is 63 characters.</p>

Defaults

If you omit the destination device, the switch router uses the default device specified by the **cd** command. If you omit the destination filename, the switch router uses the source filename.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

The **copy** commands generally copy a file from a source to a destination. Some invalid combinations exist. Specifically, you cannot copy a running configuration to a running configuration, a startup configuration to a startup configuration, or TFTP to rcp.

This command copies the configuration file pointed to by the *config_file* environment variable to another destination. To view the contents of the *config_file* environment variable, use the **show bootvar** command. To modify the *config_file* environment variable, use the **boot config** command.

The **rcp** protocol requires that a client send the remote username of an **rcp** request to the server. When you issue the **copy startup-config-rcp** command, by default the switch router software sends the username associated with the current TTY if that name is valid. For example, if the user is connected to the switch router software through Telnet and the user was authenticated through the **username** command, the switch router sends that username as the remote username.

**Note**

For Cisco, TTYs are commonly used in communication servers. The concept of TTY originated with UNIX. For UNIX systems, each physical device is represented in the file system. Terminals are called *TTY devices*, which stands for *teletype*, the original UNIX terminal.

To specify a different remote username to be sent to the server, use the **ip rcmd remote-username** command. You can also specify the path of an existing directory along with the remote username.

**Caution**

The remote username must be associated with an account on the destination server. If you do not use the **ip rcmd remote-username** command to specify the name of a remote user associated with an account on the server, the remote username associated with the current TTY process must be associated with an account on the server. If there is no username for the current TTY process, the switch router host name must be associated with an account on the server. If the network administrator of the destination server did not establish accounts for the remote username used, this command does not execute successfully when a default remote username is used.

If you copy the configuration file to a personal computer used as a server, the computer must support the rsh protocol.

Examples

The following example uses the **copy startup-config** command to copy the startup configuration file (specified by the *config_file* environment variable) to a Flash memory card inserted in slot 0 of the route processor card.

```
Switch# copy startup-config slot0:switch-config
```

The following is sample output from the **copy startup tftp** command.

```
Switch# copy startup tftp
Remote host []? 172.20.46.50
Name of configuration file to write [Switch-config]? tftpboot/test-config
Write file tftpboot/test-config on host 172.20.46.50? [confirm]
Writing tftpboot/test-config !! [OK]
```

Related Commands	Command	Description
	boot config	Used to modify the device and filename of the configuration file from which the switch configures itself during initialization.
	cd	Cisco IOS command removed from this manual. See Appendix D.
	copy rcp	Copies a file from a network server to the switch or to another destination using rcp.
	copy running-config	Copies the switch's running configuration file to another destination.
	ip rcmd remote-username	Cisco IOS command removed from this manual. See Appendix D.
	show bootvar	Cisco IOS command removed from this manual. See Appendix D.

copy tftp

To copy a file from a TFTP server to the switch router or to another destination, use the **copy tftp** privileged EXEC commands.

```
copy tftp { running-config | startup-config | device:filename }
```

Syntax Description

running-config	Specifies the currently running configuration as the destination of the copy operation.
startup-config	Specifies the configuration used for initialization as the destination of the copy operation.
<i>device:filename</i>	Specifies a <i>device:filename</i> as the destination of the copy operation. The <i>device</i> is optional, but when used, the colon (:) is required. Valid devices are as follows: <ul style="list-style-type: none"> • bootflash: is the internal Flash memory. • sec-bootflash: is the secondary internal Flash memory on the redundant route processor. (Catalyst 8540 MSR) • nvr: is the NVRAM on the route processor card. • sec-nvr: is the NVRAM on the redundant route processor card. (Catalyst 8540 MSR) • slot0: is the first PC slot on the route processor card and is the initial default device. • sec-slot0: is the first PC slot on the redundant route processor card. (Catalyst 8540 MSR) • slot1: is the second PC slot on the route processor card. • sec-slot1: is the second PC slot on the redundant route processor card. (Catalyst 8540 MSR) <p>The <i>filename</i> is the name of the destination file. You must always provide a source filename. You can omit the destination filename, in which case the system uses the source filename. Wildcards are not permitted. The maximum filename length is 63 characters.</p>

Defaults

If you omit the destination device, the switch router uses the default device specified by the **cd** command. If you omit the destination filename, the switch router uses the source filename. If you enter a **cd** command to the device, then that device becomes the default. For example, if you enter **cd slot0:** and then enter **copy tftp bootflash**, then “flash” means slot0.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1(4)	New command

Usage Guidelines

Refer to the following guidelines:

- The system prompts for the address of the TFTP server and TFTP filename if you do not provide them at the command line.
- The system provides an option to erase existing internal Flash memory before copying to internal Flash memory.
- The entire copying process takes several minutes and differs from network to network.

Table 4-1 The following table describes the characters that you might see during processing of the **copy tftp** command.

Table 4-1 copy tftp Character Descriptions

Character	Description
!	An exclamation point indicates that the copy process is taking place. Each exclamation point indicates that ten packets (512 bytes each) have been successfully transferred.
.	A period indicates the copy process timed out. Many periods in a row typically mean that the copy process might fail.
O	An uppercase O indicates a packet was received out of order and the copy process might fail.
e	A lowercase e indicates a device is being erased.
E	An uppercase E indicates an error and the copy process might fail.
V	A series of uppercase Vs indicates the progress during the verification of the image checksum.

When you enter the **copy tftp flash** command, the Flash memory checksum image displays on the bottom of the screen. *Before* booting from Flash memory, verify that this checksum identifier matches the checksum listed in the README file that was distributed with the system software image. You can find the README file on the TFTP server.

**Caution**

If the checksum value is not correct according to the value in the README file, do not reboot the switch. Enter the **copy tftp flash** command and compare the checksums again. If the checksum is wrong, copy the original system software image back into Flash memory *before* you reboot the switch from Flash memory. If you have a corrupted image in Flash memory and try to boot from Flash, the switch router starts the system image contained in ROM (assuming booting from a network server is not configured). If ROM does not contain a fully functional system image, the switch router cannot function and must be reconfigured through a direct console port connection.

**Note**

When using TFTP, the **copy tftp running-config** command replaces the **configure network** command and the **copy tftp startup-config** command replaces the **configure overwrite-network** command.

The **copy** commands generally copy a file from a source to a destination. Some invalid combinations exist. Specifically, you cannot copy a running configuration to a running configuration, a startup configuration to a startup configuration, or TFTP to rcp.

The following example shows how to use the **copy tftp bootflash** command.

```
Switch# copy tftp bootflash

Boot flash directory:
File Length Name/status
  1 2622607 ls1010-xboot
[2622672 bytes used, 1571632 available, 4194304 total]

Address or name of remote host [255.255.255.255]? 223.255.254.254
Source file name? ls1010-xboot.101
Destination file name [ls1010-xboot.101]?
Accessing file 'ls1010-xboot.101' on 223.255.254.254...
Loading ls1010-xboot.101 from 223.255.254.254 (via Ethernet0): ! [OK]

Erase flash device before writing? [confirm]
Flash contains files. Are you sure you want to erase? [confirm]

Copy 'ls1010-xboot.101' from TFTP server into
bootflash as 'ls1010-xboot.101' WITH erase? [yes/no] yes
Erasing device... eeeeeeeeeeeeeeeeeee ...erased
Loading ls1010-xboot.101 from 223.255.254.254 (via Ethernet0): !!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 2622607/4194304 bytes]

Verifying checksum... OK (0xE408)
Flash copy took 0:00:10 [hh:mm:ss]
```

Related Commands

Command	Description
boot config	Used to modify the device and filename of the configuration file from which the switch configures itself during initialization.
boot system	Specifies the system image that the switch router loads at startup.
cd	Cisco IOS command removed from this manual. See Appendix D.
copy flash	Copies a file from Flash memory to another destination.
show flash	Displays the layout and contents of Flash memory.
verify	Verifies the checksum of a file on a Flash device.

