slave auto-sync config

To turn on automatic synchronization of configuration files for a Cisco 7507 or Cisco 7513 router that is configured for High System Availability (HSA) using Dual RSP Cards, use the **slave auto-sync config** global configuration command. To turn off automatic synchronization, use the **no** form of the command.

slave auto-sync config

no slave auto-sync config

Syntax Description

This command has no arguments or keywords.

Defaults

Enabled

Command Modes

Global configuration

Command History

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

Usage Guidelines

Use this command for a Cisco 7507 or Cisco 7513 router that is configured for dual RSP cards. On the Cisco 7507 and Cisco 7513 router, you can install two RSP cards in a single router to improve system availability. Dual RSP Cards is a High System Availability (HSA) feature.

In automatic synchronization mode, when you issue a **copy** EXEC command that specifies the master's startup configuration (**nvram:startup-config**) as the target, the master also copies the same file to the slave's startup configuration (**slavenvram:startup-config**). Use this command when implementing HSA for simple hardware backup or for software error protection to ensure that the master and slave RSP contain the same configuration files.

Examples

The following example turns on automatic configuration file synchronization. When the **copy system:running-config nvram:startup-config** command is entered, the running configuration is saved to the startup configurations of both the master RSP and the slave RSP.

```
Router(config)# slave auto-sync config
Router(config)# end
Router# copy system:running-config nvram:startup-config
```

Related Commands

Command	Description
show controller cbus	Displays detailed information on the cards connected to the CBus controller.
show stacks	Displays the stack trace and version information of the master and slave RSP cards.

Command	Description
show version	Displays the software version running on the master and slave RSP cards.
slave sync config	Manually synchronizes configuration files on the master and slave RSP cards of a Cisco 7507 or Cisco 7513 router.

slave default-slot

To specify the default slave Route Switch Processor (RSP) card on a Cisco 7507 or Cisco 7513 router, use the **slave default-slot** global configuration command.

slave default-slot *processor-slot-number*

Syntax Description

processor-slot-number	Number of a processor slot that contains the default slave RSP. On the Cisco 7507 router, valid values are 2 or 3. On the Cisco 7513 router, valid values are 6 or 7. The default is the higher number processor slot.

Defaults

The default slave is the RSP card located in the higher number processor slot. On the Cisco 7507 router, processor slot 3 contains the default slave RSP. On the Cisco 7513 router, processor slot 7 contains the default slave RSP.

Command Modes

Global configuration

Command History

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

Usage Guidelines

Use this command for a Cisco 7507 or Cisco 7513 router that is configured for Dual RSP Cards. On the Cisco 7507 and Cisco 7513 router, you can install two RSP cards in a single router to improve system availability. Dual RSP Cards is a High System Availability (HSA) feature.

The router uses the default slave information when booting as follows:

- If a system boot is due to powering up the router or using the **reload** EXEC command, then the specified default slave will be the slave RSP.
- If a system boot is due to a system crash or hardware failure, then the system ignores the default slave designation, and makes the crashed or faulty RSP card the slave RSP.

Examples

In the following example, the user sets the default slave RSP to processor slot 2 on a Cisco 7507 router:

```
c7507(config)# slave default-slot 2
```

Related Commands

Command	Description
reload	Reloads the operating system.
show controller cbus	Displays detailed information on the cards connected to the CBus controller.

Command	Description
show stacks	Displays the stack trace and version information of the master and slave RSP cards.
show version	Displays the software version running on the master and slave RSP cards.

slave image

To specify the image that the slave Route Switch Processor (RSP) runs on a Cisco 7507 or Cisco 7513 router, use the **slave image** command in global configuration mode.

slave image {**system** | *file-url*}

Syntax Description

system	Loads the slave image that is bundled with the master system image. This is the default.
file-url	The specified file in Flash file system from which the slave image will be load. If you do not specify a filename, the first file in the specified Flash file system is the default file.

Defaults

The default is to load the image from the system bundle.

Command Modes

Global configuration (config)

Command History

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

Usage Guidelines

Use this command for a Cisco 7507 or Cisco 7513 router that is configured for Dual RSP Cards. On the Cisco 7507 and Cisco 7513 router, you can install two RSP cards in a single router to improve system availability. Dual RSP Cards is a High System Availability (HSA) feature.

Use the **slave image** command to override the slave image that is bundled with the master image.

When using HSA for simple hardware backup, ensure that the slave image is in the same location on the master and the slave RSP card. Thus, if the slave RSP card becomes the master, it will be able to find the slave image and download it to the new slave.

Note The default length of the bootstring filename is 64 characters. Depending on the platform a longer bootstring filename can be used and supported.

Examples

In the following example, the slave RSP is specified to run the rsp-dw-mz.ucode.111-3.2 image from slot 0:

```
Router(config)# slave image slot0:rsp-dw-mz.ucode.111-3.2
```

Related Commands

Command	Description
show controller cbus	Displays detailed information on the cards connected to the CBus controller.
show stacks	Displays the stack trace and version information of the master and slave RSP cards.
show version	Displays the software version running on the master and slave RSP cards.
slave reload	Forces a reload of the image that the slave RSP card is running on a Cisco 7507 or Cisco 7513 router.

slave reload

To force a reload of the image that the slave Route Switch Processor (RSP) card is running on a Cisco 7507 or Cisco 7513 router, use the **slave reload** global configuration command.

slave reload

Syntax Description

This command has no arguments or keywords.

Defaults

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
11.1	The command was introduced.
12.2913)T	This command is no longer supported in Cisco IOS Mainline or Technology-based releases. It may appear in 12.2S-family releases.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Use this command for a Cisco 7507 or Cisco 7513 router that is configured for Dual RSP Cards. On the Cisco 7507 and Cisco 7513 router, you can install two RSP cards in a single router to improve system availability. Dual RSP Cards is a High System Availability (HSA) feature.

After using the **slave image** global configuration command to specify the image that the slave RSP runs on a Cisco 7507 or Cisco 7513 router, use the **slave reload** command to reload the slave with the new image. The **slave reload** command can also be used to force the slave to reboot its existing image.

Examples

In the following example, an inactive slave RSP card is reloaded. If the slave reloads, it will return to an active slave state. If the master RSP fails, the slave RSP will become the master.

```
c7507(config)# slave reload
```

Related Commands

Command	Description
show controller cbus	Displays detailed information on the cards connected to the CBus controller.
show stacks	Displays the stack trace and version information of the master and slave RSP cards.
show version	Displays the software version running on the master and slave RSP cards.
slave image	Specifies the image that the slave RSP runs on a Cisco 7507 or Cisco 7513 router.

slave sync config

To manually synchronize configuration files on the master and slave Route Switch Processor (RSP) cards of a Cisco 7507 or Cisco 7513 router, use the **slave sync config** privileged EXEC command.

slave sync config

Syntax Description

This command has no arguments or keywords.

Defaults

Automatic synchronization is turned on.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1	The command was introduced.
12.2(13)T	This command is no longer supported in Cisco IOS Mainline or Technology-based releases. It may appear in 12.2S-family releases.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Use this command for a Cisco 7507 or Cisco 7513 router that is configured for Dual RSP Cards. On the Cisco 7507 and Cisco 7513 router, you can install two RSP cards in a single router to improve system availability. Dual RSP Cards is a High System Availability (HSA) feature.

This command allows you to synchronize the configuration files of the master and slave RSP cards on a case-by-case basis when you do not have automatic synchronization turned on. This command copies the master's configuration file to the slave RSP card.

Note You *must* use this command when you insert a new slave RSP card into a Cisco 7507 or Cisco 7513 router for the first time to ensure that the new slave is configured consistently with the master.

Examples

In the following example, the configuration files on the master and slave RSP card are synchronized:

```
c7507(config)# slave sync config
```

Related Commands

Command	Description
show controller cbus	Displays detailed information on the cards connected to the CBus controller.
show stacks	Displays the stack trace and version information of the master and slave RSP cards.

Command	Description
show version	Displays the software version running on the master and slave RSP cards.
slave auto-sync config	Turns on automatic synchronization of configuration files for a Cisco 7507 or Cisco 7513 router that is configured for HSA.

slave terminal

To enable access to the slave Route Switch Processor (RSP) console, use the **slave terminal** global configuration command. To disable access to the slave RSP console, use the **no** form of this command.

slave terminal

no slave terminal

Syntax Description

This command has no arguments or keywords.

Defaults

Enabled

Command Modes

Global configuration

Command History

Release	Modification
11.1	The command was introduced.
12.2(13)T	This command is no longer supported in Cisco IOS Mainline or Technology-based releases. It may appear in 12.2S-family releases.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The slave console does not have enable password protection. Thus, an individual connected to the slave console port can enter privileged EXEC mode and view or erase the configuration of the router. Use the **no slave terminal** command to disable slave console access and prevent security problems. When the slave console is disabled, users cannot enter commands.

If slave console access is disabled, the following message appears periodically on the slave console:

```
%%Slave terminal access is disabled. Use "slave terminal" command in master RSP
configuration mode to enable it.
```

Examples

In the following example, the user disables console access to the slave RSP:

```
c7507(config)# no slave terminal
```

Related Commands

Command	Description
show controller cbus	Displays detailed information on the cards connected to the CBus controller.
show stacks	Displays the stack trace and version information of the master and slave RSP cards.
show version	Displays the software version running on the master and slave RSP cards.
slave auto-sync config	Turns on automatic synchronization of configuration files for a Cisco 7507 or Cisco 7513 router that is configured for Dual RSP Cards.

special-character-bits

To configure the number of data bits per character for special characters such as software flow control characters and escape characters, use the **special-character-bits** command in line configuration mode. To restore the default value, use the **no** form of this command.

special-character-bits {**7** | **8**}

no special-character-bits

Syntax Description

7	Selects the 7-bit ASCII character set. This is the default.
8	Selects the full 8-bit character set for special characters.

Defaults

7-bit ASCII character set

Command Modes

Line configuration

Command History

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

Usage Guidelines

Setting the special character bits to 8 allows you to use twice as many special characters as with the 7-bit ASCII character set. The special characters affected by this setting are the escape, hold, stop, start, disconnect, and activation characters.

Examples

The following example allows the full 8-bit international character set for special characters on line 5:

```
Router(config)# line 5
Router(config-line)# special-character-bits 8
```

Related Commands

Command	Description
default-value exec-character-bits	Defines the EXEC character width for either 7 bits or 8 bits.
default-value special-character-bits	Configures the flow control default value from a 7-bit width to an 8-bit width.
exec-character-bits	Configures the character widths of EXEC and configuration command characters.
terminal exec-character-bits	Locally changes the ASCII character set used in EXEC and configuration command characters for the current session.
terminal special-character-bits	Changes the ASCII character widths to accept special characters for the current terminal line and session.

squeeze

To permanently erase files tagged as "deleted" or "error" on Class A flash file systems, use the **squeeze** command in privileged EXEC mode.

squeeze [**/nolog**] [**/quiet**] *filesystem***:**

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squeeze *filesystem*:

Syntax Description

/nolog	(Optional) Disables the squeeze log (recovery data) and accelerates the squeeze process.
/quiet	(Optional) Disables status messages during the squeeze process.
*filesystem***:**	The flash file system, followed by a colon. For the Cisco 7600 series router, the valid values for the flash file system are **bootflash:** and **flash:**.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1	This command was introduced.
12.2(1)	This command was implemented on the Cisco 2600 and Cisco 3600 series routers.
12.0(17)S	This command was integrated into Cisco IOS Release 12.0(17)S, and the **/nolog** and **/quiet** keywords were added.
12.2(1a)	The **/nolog** and **/quiet** keywords were added.
12.0(17)ST	This command was integrated into Cisco IOS Release 12.0(17)ST.
12.1(9)E	This command was integrated into Cisco IOS Release 12.1(9)E.
12.2(2)B	This command was integrated into Cisco IOS Release 12.2(2)B.
12.2(4)XL	This command was implemented on the Cisco 1700 series routers.
12.2(14)SX	Support for this command was implemented on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was integrated into Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

When flash memory is full, you might need to rearrange the files so that the space used by the files marked "deleted" can be reclaimed. (This "squeeze" process is required for linear flash memory cards to make sectors contiguous; the free memory must be in a "block" to be usable.)

When you enter the **squeeze** command, the router copies all valid files to the beginning of flash memory and erases all files marked "deleted." After the squeeze process is completed, you can write to the reclaimed flash memory space.

Caution After performing the squeeze process, you cannot recover deleted files using the **undelete** EXEC mode command.

In addition to removing deleted files, use the **squeeze** command to remove any files that the system has marked as "error". An error file is created when a file write fails (for example, the device is full). To remove error files, you must use the **squeeze** command.

Rewriting flash memory space during the squeeze operation may take several minutes.

Using the **/nolog** keyword disables the log for the squeeze process. In most cases, this process will speed up the squeeze process. However, if power is lost or the flash card is removed during the squeeze process, all the data on the flash card will be lost, and the device will have to be reformatted.

Note Using the **/nolog** keyword makes the squeeze process uninterruptible.

Using the **/quiet** keyword disables the output of status messages to the console during the squeeze process.

If the optional keywords are not used, the progress of the squeeze process will be displayed to the console, a log for the process will be maintained, and the squeeze process is interruptible.

On Cisco 2600 or Cisco 3600 series routers, the entire file system has to be erased once before the **squeeze** command can be used. After being erased once, the **squeeze** command should operate properly on the flash file system for the rest of the flash file system's history.

To erase an entire flash file system on a Cisco 2600 or 3600 series router, perform the following steps:

Step 1 If the flash file system has multiple partitions, enter the **no partition** command to remove the partitions. The reason for removing partitions is to ensure that the entire flash file system is erased. The **squeeze** command can be used in a flash file system with partitions after the flash file system is erased once.

Step 2 Enter the **erase** command to erase the flash file system.

Examples

Supported Platforms Other tha the Cisco 7600 Series Router

In the following example, the file named config1 is deleted, and then the **squeeze** command is used to reclaim the space used by that file. The **/nolog** option is used to speed up the squeeze process.

```
Router# delete config1

Delete filename [config1]?
Delete slot0:conf? [confirm]

Router# dir slot0:

! Note that the deleted file name appears in square brackets
Directory of slot0:/

    1  -rw-     4300244   Apr 02 2001 03:18:07  c7200-boot-mz.122-0.14
    2  -rw-        2199   Apr 02 2001 04:45:15  [config1]
    3  -rw-     4300244   Apr 02 2001 04:45:23  image
20578304 bytes total (11975232 bytes free)
!20,578,304 - 4,300,244 - 4,300,244 - 2,199 - 385 = 11975232
```

```
Router# squeeze /nolog slot0:

%Warning: Using /nolog option would render squeeze operation uninterruptible.
All deleted files will be removed. Continue? [confirm]
Squeeze operation may take a while. Continue? [confirm]

Squeeze of slot0 completed in 291.832 secs .

Router# dir slot0:

Directory of slot0:/

    1  -rw-     4300244   Apr 02 2001 03:18:07  c7200-boot-mz.122-0.14
    2  -rw-     4300244   Apr 02 2001 04:45:23  image

20578304 bytes total (11977560 bytes free)
!20,578,304 - 4,300,244 - 4,300,244 - 256 = 11977560
```

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This example shows how to permanently erase the files that are marked "deleted" from the flash memory:

```
Router# squeeze flash:
```

Related Commands

Command	Description
delete	Deletes a file on a flash memory device.
dir	Displays a list of files on a file system.
erase	Erases a file system.
undelete	Recovers a file marked "deleted" on a Class A or Class B flash file system.

stack-mib portname

To specify a name string for a port, use the **stack-mib portname** command in interface configuration mode.

stack-mib portname *portname*

Syntax Description

portname	Name for a port.

Defaults

This command has no default settings.

Command Modes

Interface configuration

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Using the **stack-mib** command to set a name string to a port corresponds to the portName MIB object in the portTable of CISCO-STACK-MIB. portName is the MIB object in the portTable of CISCO-STACK-MIB. You can set this object to be descriptive text describing the function of the interface.

Examples

This example shows how to set a name to a port:

```
Router(config-if)# stack-mib portname portall

Router(config-if)#
```

state-machine

To specify the transition criteria for the state of a particular state machine, use the **state-machine** command in global configuration mode. To remove a particular state machine from the configuration, use the **no** form of this command.

state-machine *name state first-character last-character* [*next-state* **delay** | **transmit**]

no state-machine *name*

Syntax Description

name	Name for the state machine (used in the **dispatch-machine** line configuration command). The user can specify any number of state machines, but each line can have only one state machine associated with it.
state	State being modified. There are a maximum of eight states per state machine. The range is from 0 to 7. Lines are initialized to state 0 and return to state 0 after a packet is transmitted.
first-character last-character	A range of characters. Use ASCII numerical values. The range is from 0 to 255. If the state machine is in the indicated state, and the next character input is within this range, the process goes to the specified next state. Full 8-bit character comparisons are performed, so the maximum value is 255. Ensure that the line is configured to strip parity bits (or not generate them), or duplicate the low characters in the upper half of the space.
next-state	(Optional) State to enter if the character is in the specified range. The range is from 0 to 7.
delay	(Optional) Transmits the packet if there is no input within 50 milliseconds.
transmit	(Optional) Causes the packet to be transmitted and the state machine to be reset to state 0. Recurring characters that have not been explicitly defined to have a particular action return the state machine to state 0.

Defaults

No transition criteria are specified.

Command Modes

Global configuration (config)

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
15.0(1)M	This command was modified in a release earlier than Cisco IOS Release 15.0(1)M. The **delay** keyword was added.

Usage Guidelines

This command is paired with the **dispatch-machine** line configuration command, which defines the line on which the state machine is effective.

Examples

In the following example a dispatch machine named "function" is configured to ensure that the function key characters on an ANSI terminal are kept in one packet. Because the default in the example is to remain in state 0 without sending anything, normal key signals are sent immediately.

```
Router(config)# line 1 20
Router(config-line)# dispatch-machine function
Router(config-line)# exit
Router(config)# state-machine function 0 0 255 6 transmit
```

Related Commands

Command	Description
dispatch-character	Defines a character that causes a packet to be sent.
dispatch-machine	Specifies an identifier for a TCP packet dispatch state machine on a particular line.
dispatch-timeout	Sets the character dispatch timer.

stopbits

To set the number of the stop bits transmitted per byte, use the **stopbits** command in line configuration mode. To restore the default value, use the **no** form of this command.

stopbits {**1** | **1.5** | **2**}

no stopbits

Syntax Description

1	One stop bit.
1.5	One and one-half stop bits.
2	Two stop bits.This is the default.

Defaults

2 stop bits per byte

Command Modes

Line configuration

Command History

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

Usage Guidelines

Communication protocols provided by devices such as terminals and modems often require a specific stop-bit setting.

Examples

In the following example, the stop bits transmitted per byte are changed from the default of two stop bits to one stop bit as a performance enhancement for line 4:

```
Router(config)# line 4
Router(config-line)# stopbits 1
```

Related Commands

Command	Description
terminal stopbits	Changes the number of stop bits sent per byte by the current terminal line during an active session.

storm-control level

To set the suppression level, use the **storm-control level** command in interface configuration mode. To turn off the suppression mode, use the **no** form of this command.

storm-control {**broadcast** | **multicast** | **unicast**} **level** *level*[**.***level*]

no storm-control {**broadcast** | **multicast** | **unicast**} **level**

Syntax Description

broadcast	Specifies the broadcast traffic.
multicast	Specifies the multicast traffic.
unicast	Specifies the unicast traffic.
level	Integer-suppression level; valid values are from 0 to 100 percent.
.*level*	(Optional) Fractional-suppression level; valid values are from 0 to 99.

Defaults

All packets are passed.

Command Modes

Interface configuration

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

You can enter this command on switch ports and router ports.

Enter the **storm-control level** command to enable traffic storm control on the interface, configure the traffic storm-control level, and apply the traffic storm-control level to all traffic storm-control modes that are enabled on the interface.

Only one suppression level is shared by all three suppression modes. For example, if you set the broadcast level to 30 and set the multicast level to 40, both levels are enabled and set to 40.

The Cisco 7600 series router supports storm control for multicast and unicast traffic only on Gigabit Ethernet LAN ports. The switch supports storm control for broadcast traffic on all LAN ports.

The **multicast** and **unicast** keywords are supported on Gigabit Ethernet LAN ports only. These keywords are not supported on 10 Mbps, 10/100 Mbps, 100 Mbps, or 10-Gigabit Ethernet modules.

The period is required when you enter the fractional-suppression level.

The suppression level is entered as a percentage of the total bandwidth. A threshold value of 100 percent means that no limit is placed on traffic. A threshold value of 0 or 0.0 (fractional) percent means that all specified traffic is blocked on a port, with the following guidelines:

- A fractional level value of 0.33 or lower is the same as 0.0 on the following modules:
  - WS-X6704-10GE
  - WS-X6748-SFP
  - WS-X6724-SFP
  - WS-X6748-GE-TX
- Enter 0 on all other modules to block all specified traffic on a port.

Enter the **show interfaces counters broadcast** command to display the discard count.

Enter the **show running-config** command to display the enabled suppression mode and level setting.

To turn off suppression for the specified traffic type, you can do one of the following:

- Set the *level* to 100 percent for the specified traffic type.
- Use the **no** form of this command.

Examples

This example shows how to enable and set the suppression level:

```
Router(config-if)# storm-control broadcast level 30
```

This example shows how to disable the suppression mode:

```
Router(config-if)# no storm-control multicast level
```

Related Commands

Command	Description
show interfaces counters	Displays the traffic that the physical interface sees.
show running-config	Displays the status and configuration of the module or Layer 2 VLAN.

sync-restart-delay

To set the synchronization-restart delay timer to ensure accurate status reporting, use the **sync-restart-delay** command in interface configuration mode. To disable the synchronization-restart delay timer, use the **no** form of this command.

sync-restart-delay *timer*

no sync-restart-delay *timer*

Syntax Description

timer	Interval between status-register resets; valid values are from 200 to 60000 milliseconds.

Defaults

timer is **210** milliseconds.

Command Modes

Interface configuration

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

This command is supported on Gigabit Ethernet fiber ports only.

The status register records the current status of the link partner.

Examples

This example shows how to set the Gigabit Ethernet synchronization-restart delay timer:

```
Router(config-if)# sync-restart-delay 2000
```

Related Commands

Command	Description
show running-config	Displays the status and configuration of the module or Layer 2 VLAN.

systat

Note This command has been replaced by the **show users** command.

To display information about the active lines on the router, use the **systat** command in user EXEC or privileged EXEC mode.

systat all

Syntax Description

all	Displays all lines, regardless of whether the lines are used or not.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced in a release earlier than Cisco IOS Release 15.0(1)M.
12.2(33)SRB	This command was integrated into a release earlier than Cisco IOS Release 12.2(33)SRB.
12.2(33)SXI	This command was integrated into a release earlier than Cisco IOS Release 12.2(33)SXI.
Cisco IOS XE Release 2.1	This command was implemented on the Cisco ASR 1000 Series Aggregation Services Routers.

Examples

The following example shows how to display the active lines:

```
Router# systat

Line       User       Host(s)              Idle       Location
*  0 con 0                 idle                 00:00:00

  Interface    User               Mode         Idle     Peer Address
```

Related Commands

Command	Description
show users	Displays information about the active lines on the router.

system flowcontrol bus

To set the FIFO overflow error count, use the **system flowcontrol bus** command in global configuration mode. To return to the original FIFO threshold settings, use the **no** form of this command.

[**default**] **system flowcontrol bus** {**auto** | **on**}

no system flowcontrol bus

Syntax Description

default	(Optional) Specifies the default settings.
auto	Monitors the FIFO overflow error count and sends a warning message if the FIFO overflow error count exceeds a configured error threshold in 5-second intervals.
on	Specifies the original FIFO threshold settings.

Defaults

auto

Command Modes

Global configuration

Command History

Release	Modification
12.2(18)SXF	Support for this command was introduced on the Supervisor Engine 720 and the Supervisor Engine 32.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Note We recommend that you leave the system flow control in auto mode and use the other modes under the advice of Cisco TAC only.

Examples

This example shows how to monitor the FIFO overflow error count and send a warning message if the FIFO overflow error count exceeds a configured error threshold in 5-second intervals:

```
Router(config)# system flowcontrol bus auto
```

This example shows how to specify the original FIFO threshold settings:

```
Router(config)# system flowcontrol bus on
```

system jumbomtu

To set the maximum size of the Layer 2 and Layer 3 packets, use the **system jumbomtu** command in global configuration mode. To revert to the default MTU setting, use the **no** form of this command.

system jumbomtu *mtu-size*

no system jumbomtu

Syntax Description

mtu-size	Maximum size of the Layer 2 and Layer 3 packets; valid values are from 1500 to 9216 bytes.

Defaults

mtu-size is **9216** bytes.

Command Modes

Global configuration

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The *mtu-size* parameter specifies the Ethernet packet size, not the total Ethernet frame size. The Layer 3 MTU is changed as a result of entering the **system jumbomtu** command.

The **system jumbomtu** command enables the global MTU for port ASICs. On a port ASIC after jumbo frames are enabled, the port ASIC accepts any size packet on the ingress side and checks the outgoing packets on the egress side. The packets on the egress side that exceed the global MTU are dropped by the port ASIC.

For example, if you have port A in VLAN 1 and Port B in VLAN 2, and if VLAN 1 and VLAN 2 are configured for **mtu 9216** and you enter the **system jumbomtu 4000** command, the packets that are larger than 4000 bytes are not transmitted out because Ports B and A drop anything larger than 4000 bytes.

Examples

This example shows how to set the global MTU size to 1550 bytes:

```
Router(config)# system jumbomtu 1550
```

This example shows how to revert to the default MTU setting:

```
Router(config)# no system jumbomtu
```

Related Commands

Command	Description
mtu	Adjusts the maximum packet size or MTU size.
show interfaces	Displays traffic that is seen by a specific interface.
show system jumbomtu	Displays the global MTU setting.

tdm clock priority

To configure the clock source and priority of the clock source used by the time-division multiplexing (TDM) bus on the Cisco AS5350, AS5400, and AS5850 access servers, use the **tdm clock priority** command in global configuration mode. To return the clock source and priority to the default values, use the **no** form of this command.

tdm clock priority *priority-number* {*slot*/*ds1-port* | *slot*/*ds3-port*:*ds1-port* | **external** | **freerun**}

no tdm clock priority *priority-number* {*slot*/*ds1-port* | *slot*/*ds3-port*:*ds1-port* | **external** | **freerun**}

Syntax Description

priority-number	Priority of the clock source. The priority range is from 1 to 99. A clock set to priority 100 will not drive the TDM bus.
slot/*ds1-port*	Trunk-card slot is a value from 1 to 7. DS1 port number controller is a value between 0 and 7. Specify with a slash separating the numbers; for example, 1/1.
slot/*ds3-port*:*ds1-port*	Trunk-card slot is a value from 1 to 7. DS3 port specifies the T3 port. DS1 port number controller is a value from 1 to 28. Specify with a slash separating the slot and port numbers, and a colon separating the DS1 port number. An example is 1/0:19.
external	Synchronizes the TDM bus with an external clock source that can be used as an additional network reference.
freerun	Selects the free-running clock from the local oscillator when there is no good clocking source from a trunk card or an external clock source.

Defaults

If no clocks are configured, the system uses a default, primary clock. An external clock is never selected by default; it must be explicitly configured.

Command Modes

Global configuration

Command History

Release	Modification
12.2(8)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The TDM bus can receive an input clock from one of three sources on the gateway:

- CT1, CE1, and CT3 trunk cards
- An external T1/E1 clock source feed directly through the Building Integrated Timing Supply (BITS) interface port on the motherboard
- Free-running clock providing clock from an oscillator

Note BITS is a single building master timing supply. BITS generally supplies DS1- and DS0-level timing throughout an office. BITS is the clocks that provide and distribute timing to a wireline network's lower levels.

Trunk-Card Ports

The TDM bus can be synchronized with any trunk cards. On the CT1/CE1 trunk card, each port receives the clock from the T1/E1 line. The CT3 trunk card uses an M13 multiplexer to receive the DS1 clock. Each port on each trunk-card slot has a default clock priority. Also, clock priority is configurable through the **tdm clock priority** command.

External Clock

The TDM bus can be synchronized with an external clock source that can be used as an additional network reference. If no clocks are configured, the system uses a primary clock through a software-controlled default algorithm. If you want the external T1/E1 clock (from the BITS interface) as the primary clock source, you must configure it using the **external** keyword with the **tdm clock priority** command; the external clock is never selected by default.

The BITS interface requires a T1 line composite clock reference set at 1.544 MHz and an E1 line composite clock reference set at 2.048 MHz.

Free-Running Clock

If there is no good clocking source from a trunk card or an external clock source, then select the free-running clock from the internal oscillator using the **freerun** keyword with the **tdm clock priority** command.

Examples

In the following example, BITS clock is set at priority 1:

```
AS5400(config)# tdm clock priority priority 1 external
```

In the following example, a trunk clock from a CT1 trunk card is set at priority 2 and uses slot 4 and DS1 port (controller) 6:

```
AS5400(config)# tdm clock priority priority 2 4/6
```

In the following example, a trunk clock from a CT3 trunk card is set at priority 2 and uses slot 1, DS3 port 0, and DS1 port 19:

```
AS5400(config)# tdm clock priority priority 2 1/0:19
```

In the following example, free-running clock is set at priority 3:

```
AS5400(config)# tdm clock priority priority 3 freerun
```

Related Commands

Command	Description
dial-tdm-clock	Configures the clock source and priority of the clock source used by the TDM bus on the dial shelf of the Cisco AS5800.
show tdm clocks	Displays default system clocks and clock history.

terminal databits

To change the number of data bits per character for the current terminal line for this session, use the **terminal databits** command in EXEC mode.

terminal databits {**5** | **6** | **7** | **8**}

Syntax Description

5	Five data bits per character.
6	Six data bits per character.
7	Seven data bits per character.
8	Eight data bits per character. This is the default.

Defaults

8 data bits per character

Command Modes

EXEC

Command History

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

Usage Guidelines

Communication protocols provided by devices such as terminals and modems often require a specific data bit setting. The **terminal databits** command can be used to mask the high bit on input from devices that generate 7 data bits with parity. If parity is being generated, specify 7 data bits per character. If no parity generation is in effect, specify 8 data bits per character. The other keywords (**5** and **6**) are supplied for compatibility with older devices and are generally not used.

Examples

In the following example, the databits per character is changed to seven for the current session:

```
Router# terminal databits 7
```

Related Commands

Command	Description
databits	Sets the number of data bits per character that are interpreted and generated by the router hardware.
terminal parity	Defines the generation of the parity bit for the current terminal line and session.

terminal data-character-bits

To set the number of data bits per character that are interpreted and generated by the Cisco IOS software for the current line and session, use the **terminal data-character-bits** command in EXEC mode.

terminal data-character-bits {**7** | **8**}

Syntax Description

7	Seven data bits per character.
8	Eight data bits. This is the default.

Defaults

8 data bits per character

Command Modes

EXEC

Command History

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

Usage Guidelines

This command is used primarily to strip parity from X.25 connections on routers with the protocol translation software option. The **terminal data-character-bits** command does not work on hard-wired lines.

Examples

The following example sets the data bits per character to seven on the current line:

```
Router# terminal data-character-bits 7
```

Related Commands

Command	Description
data-character-bits	Sets the number of data bits per character that are interpreted and generated by the Cisco IOS software.

terminal dispatch-character

To define a character that causes a packet to be sent for the current session, use the **terminal dispatch-character** command in EXEC mode.

terminal dispatch-character *ascii-number* [*ascii-number2 . . . ascii-number*]

Syntax Description

ascii-number	The ASCII decimal representation of the character, such as Return (ASCII character 13) for line-at-a-time transmissions.
ascii-number2 . . . ascii-number	(Optional) Additional decimal representations of characters. This syntax indicates that you can define any number of characters as dispatch characters.

Command Modes

EXEC

Command History

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

Usage Guidelines

At times, you might want to queue up a string of characters until they fill a complete packet and then transmit the packet to a remote host. This can make more efficient use of a line, because the access server or router normally dispatches each character as it is entered.

Examples

The following example defines the characters Ctrl-D (ASCII decimal character 4) and Ctrl-Y (ASCII decimal character 25) as the dispatch characters:

```
Router# terminal dispatch-character 4 25
```

Related Commands

Command	Description
dispatch-character	Defines a character that causes a packet to be sent.

terminal dispatch-timeout

To set the character dispatch timer for the current terminal line for the current session, use the **terminal dispatch-timeout** command in EXEC mode.

terminal dispatch-timeout *milliseconds*

Syntax Description

milliseconds	Integer that specifies the number of milliseconds that the router waits after it puts the first character into a packet buffer before sending the packet. During this interval, more characters can be added to the packet, which increases the processing efficiency of the remote host.

Command Modes

EXEC

Command History

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

Usage Guidelines

Use this command to increase the processing efficiency of the remote host.

The **dispatch-timeout** line configuration command causes the software to buffer characters into packets for transmission to the remote host. The Cisco IOS software sends a packet a specified amount of time after the first character is put into the buffer. You can use the **terminal dispatch-timeout** and **terminal dispatch-character** line configuration commands together. In this case, the software dispatches a packet each time the dispatch character is entered, or after the specified dispatch timeout interval, depending on which condition is met first.

Note The router response time might appear intermittent if the timeout interval is greater than 100 milliseconds and remote echoing is used.

Examples

In the following example, the dispatch timeout timer is set to 80 milliseconds:

```
Router# terminal dispatch-timeout 80
```

Related Commands

Command	Description
dispatch-timeout	Sets the character dispatch timer for a specified line or group of lines.

terminal download

To temporarily set the ability of a line to act as a transparent pipe for file transfers for the current session, use the **terminal download** command in EXEC mode.

terminal download

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled

Command Modes

EXEC

Command History

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

Usage Guidelines

You can use this feature to run a program such as KERMIT, XMODEM, or CrossTalk that downloads a file across an access server or router line. This command configures the terminal line to send data and is equivalent to entering all the following commands:

- terminal telnet transparent
- **terminal no escape-character** (see **terminal escape-character**)
- **terminal no hold-character** (see **terminal hold-character**)
- **terminal no padding 0** (see **terminal padding**)
- **terminal no padding 128** (see **terminal padding**)
- terminal parity **none**
- terminal databits **8**

Examples

The following example configures a line to act as a transparent pipe:

```
Router# terminal download
```

terminal editing

To reenable the enhanced editing mode for only the current terminal session, use the **terminal editing** command in EXEC mode. To disable the enhanced editing mode on the current line, use the **no** form of this command.

terminal editing

terminal no editing

Syntax Description

This command has no arguments or keywords.

Defaults

Enabled

Command Modes

EXEC

Command History

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

Usage Guidelines

This command is identical to the **editing** EXEC mode command, except that it controls (enables or disables) enhanced editing for only the terminal session you are using. For a description of the available editing keys, see the description of the **editing** command in this document.

Examples

In the following example, enhanced editing mode is reenabled for only the current terminal session:

```
Router> terminal editing
```

Related Commands

Command	Description
editing	Controls CLI enhanced editing features for a particular line.

terminal escape-character

To set the escape character for the current terminal line for the current session, use the **terminal escape-character** command in EXEC mode.

terminal escape-character *ascii-number*

Syntax Description

ascii-number	ASCII decimal representation of the escape character or control sequence (for example, Ctrl-P).

Defaults

Ctrl-^ (Ctrl-Shift-6)

Command Modes

EXEC

Command History

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

Usage Guidelines

See the "ASCII Character Set and Hexidecimal Values" appendix for a list of ASCII characters and their numerical representation.

This command is useful, for example, if you have the default escape character defined for a different purpose in your keyboard file. Entering the escape character followed by the X key returns you to EXEC mode when you are connected to another computer.

Note The Break key generally cannot be used as an escape character on the console terminal because the operating software interprets the Break command on a console line as an instruction to halt the system.

Examples

In the following example, the escape character to Ctrl-P (ASCII decimal character 16) for the current session:

```
Router# terminal escape-character 16
```

Related Commands

Command	Description
escape-character	Defines a system escape character.

terminal exec-character-bits

To locally change the ASCII character set used in EXEC and configuration command characters for the current session, use the **terminal exec-character-bits** command in EXEC mode.

terminal exec-character-bits {**7** | **8**}

Syntax Description

7	Selects the 7-bit ASCII character set. This is the default.
8	Selects the full 8-bit character set.

Defaults

7-bit ASCII character set (unless set otherwise in global configuration mode)

Command Modes

EXEC

Command History

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

Usage Guidelines

This EXEC command overrides the **default-value exec-character-bits** global configuration command. Configuring the EXEC character width to 8 bits enables you to view special graphical and international characters in banners, prompts, and so on.

When the user exits the session, the character width is reset to the default value established by the **exec-character-bits** global configuration command. However, setting the EXEC character width to 8 bits can also cause failures. For example, if a user on a terminal that is sending parity enters the **help** command, an "unrecognized command" message appears because the system is reading all 8 bits, and the eighth bit is not needed for the **help** command.

Examples

The following example temporarily configures the system to use a full 8-bit user interface for system banners and prompts, allowing the use of additional graphical and international characters:

```
Router# terminal exec-character-bits 8
```

Related Commands

Command	Description
exec-character-bits	Configures the character widths of EXEC and configuration command characters.

terminal flowcontrol

To set flow control for the current terminal line for the current session, use the **terminal flowcontrol** command in EXEC mode.

terminal flowcontrol {**none** | **software** [**in** | **out**] | **hardware**}

Syntax Description

none	Prevents flow control.
software	Sets software flow control.
in | **out**	(Optional) Specifies the direction of flow control: **in** causes the router to listen to flow control from the attached device, and **out** causes the router to send flow control information to the attached device. If you do not specify a direction, both directions are assumed.
hardware	Sets hardware flow control. For information about setting up the EIA/TIA-232 line, see the manual that was shipped with your product.

Command Modes

EXEC

Command History

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

Usage Guidelines

Flow control enables you to regulate the rate at which data can be transmitted from one point so that it is equal to the rate at which it can be received at another point. Flow control protects against loss of data because the terminal is not capable of receiving data at the rate it is being sent. You can set up data flow control for the current terminal line in one of two ways: software flow control, which you do with control key sequences, and hardware flow control, which you do at the device level.

For software flow control, the default stop and start characters are Ctrl-S and Ctrl-Q (XOFF and XON). You can change them with the **terminal stop-character** and **terminal start-character** EXEC commands.

Examples

In the following example, incoming software flow control is set for the current session:

```
Router# terminal flowcontrol software in
```

Related Commands

Command	Description
flowcontrol	Sets the method of data flow control between the terminal or other serial device and the router.

terminal full-help

To get help for the full set of user-level commands, use the **terminal full-help** command in EXEC mode.

terminal full-help

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled

Command Modes

EXEC

Command History

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

Usage Guidelines

The **terminal full-help** command enables a user to see all of the help messages available from the terminal. It is used with the **show ?** command.

Examples

In the following example, the difference between the output of the **show ?** command before and after using the **terminal full-help** command is shown:

```
Router> show ?

  bootflash  Boot Flash information
  calendar   Display the hardware calendar
  clock      Display the system clock
  context    Show context information
  dialer     Dialer parameters and statistics
  history    Display the session command history
  hosts      IP domain-name, lookup style, nameservers, and host table
  isdn       ISDN information
  kerberos   Show Kerberos Values
  modemcap   Show Modem Capabilities database
  ppp        PPP parameters and statistics
  rmon       rmon statistics
  sessions   Information about Telnet connections
  snmp       snmp statistics
  terminal   Display terminal configuration parameters
  users      Display information about terminal lines
  version    System hardware and software status


Router> terminal full-help
Router> show ?

  access-expression  List access expression
  access-lists       List access lists
```

```
aliases            Display alias commands
apollo             Apollo network information
appletalk          AppleTalk information
arp                ARP table
async              Information on terminal lines used as router interfaces
bootflash          Boot Flash information
bridge             Bridge Forwarding/Filtering Database [verbose]
bsc                BSC interface information
bstun              BSTUN interface information
buffers            Buffer pool statistics
calendar           Display the hardware calendar
cdp                CDP information
clns               CLNS network information
clock              Display the system clock
cls                DLC user information
cmns               Connection-Mode networking services (CMNS) information
compress           Show compression statistics.
.
.
.
x25                X.25 information
xns                XNS information
xremote            XRemote statistics
```

Related Commands

Command	Description
full-help	Gets help for the full set of user-level commands.
help	Displays a brief description of the help system.

terminal history

To enable the command history function with 10 lines for the current terminal session, use the **terminal history** command in user EXEC or privileged EXEC mode. To disable the command history function, use the **no** form of this command.

terminal history

terminal no history

Syntax Description

This command has no arguments or keywords.

Defaults

Enabled, history buffer of 10 lines

Command Modes

User EXEC

Privileged EXEC

Command History

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

Usage Guidelines

The history function provides a record of commands you have entered. This function is particularly useful for recalling long or complex commands or entries for the purposes of modifying them slightly and reexecuting them.

The **terminal history** command enables the command history function with the default buffer size or the last buffer size specified using the **terminal history size** command.

Table 1 lists the keys and functions you can use to recall commands from the history buffer.

Table 166 History Keys

Key(s)	Function
Ctrl-P or Up Arrow[1]	Recalls commands in the history buffer in a backward sequence, beginning with the most recent command. Repeat the key sequence to recall successively older commands.
Ctrl-N or Down Arrow[1]	Returns to more recent commands in the history buffer after recalling commands with Ctrl-P or the Up Arrow. Repeat the key sequence to recall successively more recent commands.

1. The arrow keys function only with ANSI-compatible terminals.

Examples

In the following example, the command history feature is disabled for the current terminal session:

```
Router> terminal no history
```

Related Commands

Command	Description
history	Enables the command history function, or changes the command history buffer size for a particular line.
show history	Lists the commands you have entered in the current EXEC session.
terminal history size	Sets the size of the history buffer for the command history feature for the current terminal session.

terminal history size

To change the size of the command history buffer for the current terminal session, use the **terminal history size** command in EXEC mode. To reset the command history buffer to its default size of 10 lines, use the **no** form of this command.

terminal history size *number-of-lines*

terminal no history size

Syntax Description

number-of-lines	Number of command lines that the system will record in its history buffer. The range is from 0 to 256. The default is 10.

Defaults

10 lines of command history

Command Modes

EXEC

Command History

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

Usage Guidelines

The history feature provides a record of commands you have entered. This feature is particularly useful for recalling long or complex commands or entries for the purposes of modifying them slightly and reissuing them.

The **terminal history size** command enables the command history feature and sets the command history buffer size. The **terminal no history size** command resets the buffer size to the default of 10 command lines.

Table 2 lists the keys and functions you can use to recall commands from the history buffer. When you use these keys, the commands recalled will be from EXEC mode if you are in EXEC mode, or from all configuration modes if you are in any configuration mode.

Table 167 History Keys

Key	Function
Ctrl-P or Up Arrow[1]	Recalls commands in the history buffer in a backward sequence, beginning with the most recent command. Repeat the key sequence to recall successively older commands.
Ctrl-N or Down Arrow[1]	Returns to more recent commands in the history buffer after recalling commands with Ctrl-P or the Up Arrow. Repeat the key sequence to recall successively more recent commands.

1. The arrow keys function only with ANSI-compatible terminals.

In EXEC mode, you can also use the **show history** command to show the contents of the command history buffer.

To check the current settings for the command history feature on your line, use the **show line** command.

Examples

In the following example, the number of command lines recorded is set to 15 for the current terminal session. The user then checks to see what line he/she is connected to using the **show users** command. The user uses this line information to issue the show line command. (In this example, the user uses the **show begin** option in the **show line** command to start the output at the "Editing is enabled/disabled" line.)

```
Router# terminal history size 15
Router# show users

    Line       User       Host(s)              Idle       Location
* 50 vty 0     admin      idle                 00:00:00
! the * symbol indicates the active terminal session for the user (line 50)

Router# show line 50 | begin Editing

Editing is enabled.
! the following line shows the history settings for the line
History is enabled, history size is 15.
DNS resolution in show commands is enabled
Full user help is disabled
Allowed transports are telnet.  Preferred is none.
No output characters are padded
No special data dispatching characters
```

Related Commands

Command	Description
history	Enables the command history function, or changes the command history buffer size for a particular line.
show <command> begin	Searches the output of any show command and displays the output from the first instance of a specified string.
show history	Lists the commands you have entered in the current EXEC session.
terminal history	Enables the command history feature for the current terminal session.

terminal hold-character

To define the hold character for the current session, use the **terminal hold-character** command in EXEC mode. To return the hold character definition to the default, use the **no** form of this command.

terminal hold-character *ascii-number*

terminal no hold-character

Syntax Description

ascii-number	ASCII decimal representation of a character or control sequence (for example, Ctrl-P).

Defaults

The default hold character is defined by the **hold-character** global configuration command.

Command Modes

EXEC

Command History

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

Usage Guidelines

You can define a local hold character that temporarily suspends the flow of output on the terminal. When information is scrolling too quickly, you can enter the hold character to pause the screen output, then enter any other character to resume the flow of output.

You cannot suspend output on the console terminal. To send the hold character to the host, precede it with the escape character.

Examples

In the following example, the hold character for the current (local) session is set to Ctrl-P. The **show terminal** output is included to show the verification of the setting (the value for the hold character is shown in the "Special Characters" listing).

```
Router# terminal hold-character 16
"^P" is the local hold character
Router# show terminal
Line 50, Location: "", Type: "VT220"
Length: 24 lines, Width: 80 columns
Baud rate (TX/RX) is 9600/9600
Status: PSI Enabled, Ready, Active, No Exit Banner, Automore On
Capabilities: none
Modem state: Ready
Group codes:    0
```

```
Special Chars: Escape  Hold  Stop  Start  Disconnect  Activation
                ^^x     ^P    -     -       none
Timeouts:      Idle EXEC    Idle Session   Modem Answer  Session   Dispatch
               00:10:00        never                        none     not set
                            Idle Session Disconnect Warning
                              never
                            Login-sequence User Response
                             00:00:30
                            Autoselect Initial Wait
                              not set
Modem type is unknown.
Session limit is not set.
Time since activation: 00:04:13
Editing is enabled.
History is enabled, history size is 10.
.
.
.
```

Related Commands

Command	Description
hold-character	Defines the local hold character used to pause output to the terminal screen.
show terminal	Displays settings for terminal operating characteristics.

terminal international

If you are using Telnet to access a Cisco IOS platform and you want to display 8-bit and multibyte international characters (for example, Kanji) and print the Escape character as a single character instead of as the caret and bracket symbols (^[) for a current Telnet session, use the **terminal international** command in user EXEC or priviledged mode. To display characters in 7-bit format for a current Telnet session, use the **no** form of this command.

terminal international

no terminal international

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled

Command Modes

User EXEC

Privileged EXEC

Command History

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

Usage Guidelines

If you are configuring a Cisco IOS platform using the Cisco web browser UI, this feature is enabled automatically when you enable the Cisco web browser UI using the **ip http server** global configuration command.

Examples

The following example enables a Cisco IOS platform to display 8-bit and multibyte characters and print the Escape character as a single character instead of as the caret and bracket symbols (^[) when you are using Telnet to access the platform for the current Telnet session:

```
Router# terminal international
```

Related Commands

Command	Description
international	Prints the Escape character as a single character instead of as the caret and bracket symbols (^[) in instances when you are using Telnet to access a Cisco IOS platform and you want to display 8-bit and multibyte international characters (for example, Kanji).

terminal keymap-type

To specify the current keyboard type for the current session, use the **terminal keymap-type** command in EXEC mode.

terminal keymap-type *keymap-name*

Syntax Description

keymap-name	Name defining the current keyboard type.

Defaults

VT100

Command Modes

EXEC

Command History

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

Usage Guidelines

You must use this command when you are using a keyboard other than the default of VT100.

Examples

The following example specifies a VT220 keyboard as the current keyboard type:

```
Router# terminal keymap-type vt220
```

Related Commands

Command	Description
show keymap	Displays the current keymap settings.

terminal length

To set the number of lines on the current terminal screen for the current session, use the **terminal length** command in EXEC, privileged EXEC, and diagnostic mode.

terminal length *screen-length*

Syntax Description

screen-length	Number of lines on the screen. A value of zero disables pausing between screens of output.

Defaults

24 lines

Command Modes

EXEC (>)
Privileged EXEC (#)
Diagnostic (diag)

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
Cisco IOS XE Release 2.1	This command was introduced on the Cisco ASR 1000 Series Routers, and became available in diagnostic mode.

Usage Guidelines

The system uses the length value to determine when to pause during multiple-screen output. A value of zero prevents the router from pausing between screens of output.

Some types of terminal sessions do not require you to specify the screen length because the screen length specified can be learned by some remote hosts. For example, the rlogin protocol uses the screen length to set up terminal parameters on a remote UNIX host.

Examples

In the following example, the system is configured to prevent output from pausing if it exceeds the length of the screen:

```
Router# terminal length 0
```

Related Commands

Command	Description
length	Sets the terminal screen length.

terminal monitor

To display **debug** command output and system error messages for the current terminal and session, use the **terminal monitor** command in EXEC mode.

terminal monitor

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled

Command Modes

EXEC

Command History

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

Usage Guidelines

Remember that all terminal parameter-setting commands are set locally and do not remain in effect after a session is ended.

Examples

In the following example, the system is configured to display **debug** command output and error messages during the current terminal session:

```
Router# terminal monitor
```

terminal notify

To enable terminal notification about pending output from other Telnet connections for the current session, use the **terminal notify** command in EXEC mode. To disable notifications for the current session, use the **no** form of this command.

terminal notify

terminal no notify

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

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

Usage Guidelines

Enabling notifications may be useful if, for example, you want to know when another connection receives mail, or when a process has been completed.

This command enables or disables notifications for only the current session. To globally set these notifications, use the **notify** line configuration command.

Examples

In the following example, notifications will be displayed to inform the user when output is pending on another connection:

```
Router# terminal notify
```

Related Commands

Command	Description
notify	Enables terminal notification about pending output from other Telnet connections.

terminal padding

To change the character padding on a specific output character for the current session, use the **terminal padding** command in EXEC mode.

terminal padding *ascii-number count*

Syntax Description

ascii-number	ASCII decimal representation of the character.
count	Number of NULL bytes sent after the specified character, up to 255 padding characters in length.

Defaults

No padding

Command Modes

EXEC

Command History

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

Usage Guidelines

Character padding adds a number of null bytes to the end of the string and can be used to make a string an expected length for conformity.

Use this command when the attached device is an old terminal that requires padding after certain characters (such as ones that scrolled or moved the carriage). See the"ASCII Character Set and Hexidecimal Values" appendix for a list of ASCII characters.

Examples

The following example pads Ctrl-D (ASCII decimal character 4) with 164 NULL bytes:

```
Router# terminal padding 4 164
```

Related Commands

Command	Description
padding	Sets the padding on a specific output character.

terminal parity

To define the generation of the parity bit for the current terminal line and session, use the **terminal parity** command in EXEC mode.

terminal parity {**none** | **even** | **odd** | **space** | **mark**}

Syntax Description

none	No parity. This is the default.
even	Even parity.
odd	Odd parity.
space	Space parity.
mark	Mark parity.

Defaults

No parity.

Command Modes

EXEC

Command History

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

Usage Guidelines

Communication protocols provided by devices such as terminals and modems will sometimes require a specific parity bit setting. Refer to the documentation for your device to determine required parity settings.

Examples

In the following example, odd parity checking is enabled for the current session:

```
Router# terminal parity odd
```

Related Commands

Command	Description
parity	Defines generation of a parity bit for connections on a specified line or lines.

terminal rxspeed

To set the terminal receive speed (how fast information is sent to the terminal) for the current line and session, use the **terminal rxspeed** command in EXEC mode.

terminal rxspeed *bps*

Syntax Description

bps	Baud rate in bits per second (bps). The default is 9600.

Defaults

9600 bps

Command Modes

EXEC

Command History

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

Usage Guidelines

Set the speed to match the baud rate of whatever device you have connected to the port. Some baud rates available on devices connected to the port might not be supported on the system. The system will indicate if the speed you select is not supported.

Examples

The following example sets the current auxiliary line receive speed to 115200 bps:

```
Router# terminal rxspeed 115200
```

Related Commands

Command	Description
rxspeed	Sets the terminal receive speed for a specified line or lines.
terminal rxspeed	Sets the terminal receive speed for the current session.
terminal txspeed	Sets the terminal transmit speed for a specified line or lines.
terminal speed	Sets the transmit and receive speeds for the current session.

terminal special-character-bits

To change the ASCII character widths to accept special characters for the current terminal line and session, use the **terminal special-character-bits** command in EXEC mode.

terminal special-character-bits {**7** | **8**}

Syntax Description

7	Selects the 7-bit ASCII character set. This is the default.
8	Selects the full 8-bit ASCII character set.

Defaults

7-bit ASCII character set

Command Modes

EXEC

Command History

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

Usage Guidelines

Configuring the width to 8 bits enables you to use twice as many special characters as with the 7-bit setting. This selection enables you to add special graphical and international characters in banners, prompts, and so on.

This command is useful, for example, if you want the router to provide temporary support for international character sets. It overrides the **default-value special-character-bits** global configuration command and is used to compare character sets typed by the user with the special character available during a data connection, which includes software flow control and escape characters.

When you exit the session, character width is reset to the width established by the **default-value exec-character-bits** global configuration command.

Note that setting the EXEC character width to eight bits can cause failures. For example, if a user on a terminal that is sending parity enters the **help** command, an "unrecognized command" message appears because the Cisco IOS software is reading all eight bits, and the eighth bit is not needed for the **help** command.

Examples

The following example temporarily configures a router to use a full 8-bit user interface for system banners and prompts.

```
Router# terminal special-character-bits 8
```

Related Commands

Command	Description
default-value exec-character-bits	Globally defines the character width as 7-bit or 8-bit.
special-character-bits	Configures the number of data bits per character for special characters such as software flow control characters and escape characters.

terminal speed

To set the transmit and receive speeds of the current terminal line for the current session, use the **terminal speed** command in EXEC mode.

terminal speed *bps*

Syntax Description

bps	Baud rate in bits per second (bps). The default is 9600.

Defaults

9600 bps

Command Modes

EXEC

Command History

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

Usage Guidelines

Set the speed to match the transmission rate of whatever device you have connected to the port. Some baud rates available on devices connected to the port might not be supported on the router. The router indicates whether the speed you selected is not supported.

Examples

The following example restores the transmit and receive speed on the current line to 9600 bps:

```
Router# terminal speed 9600
```

Related Commands

Command	Description
speed	Sets the terminal baud rate.

terminal start-character

To change the flow control start character for the current session, use the **terminal start-character** command in EXEC mode.

terminal start-character *ascii-number*

Syntax Description

ascii-number	ASCII decimal representation of the start character.

Defaults

Ctrl-Q (ASCII decimal character 17)

Command Modes

EXEC

Command History

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

Usage Guidelines

The flow control start character signals the start of data transmission when software flow control is in effect.

Examples

The following example changes the start character to Ctrl-O (ASCII decimal character 15):

```
Router# terminal start-character 15
```

Related Commands

Command	Description
start-character	Sets the flow control start character.

terminal stopbits

To change the number of stop bits sent per byte by the current terminal line during an active session, use the **terminal stopbits** command in EXEC mode.

terminal stopbits {**1** | **1.5** | **2**}

Syntax Description

1	One stop bit.
1.5	One and one-half stop bits.
2	Two stop bits. This is the default.

Defaults

2 stop bits

Command Modes

EXEC

Command History

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

Usage Guidelines

Communication protocols provided by devices such as terminals and modems often require a specific stop-bit setting.

Examples

In the following example, the setting for stop bits is changed to one for the current session:

```
Router# terminal stopbits 1
```

Related Commands

Command	Description
stopbits	Sets the number of the stop bits sent per byte.

terminal stop-character

To change the flow control stop character for the current session, use the **terminal stop-character** command in EXEC mode.

terminal stop-character *ascii-number*

Syntax Description

ascii-number	ASCII decimal representation of the stop character.

Defaults

Ctrl-S (ASCII character decimal 19)

Command Modes

EXEC

Command History

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

Usage Guidelines

The flow control stop character signals the end of data transmission when software flow control is in effect.

See the "ASCII Character Set and Hexidecimal Values" appendix for a list of ASCII characters.

Examples

In the following example, the stop character is configured as Ctrl-E (ASCII character decimal 5) for the current session:

```
Router# terminal stop-character 5
```

Related Commands

Command	Description
stop-character	Sets the flow control stop character.

terminal telnet break-on-ip

To cause an access server to generate a hardware Break signal when an interrupt-process (ip) command is received, use the **terminal telnet break-on-ip** command in EXEC mode.

terminal telnet break-on-ip

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled

Command Modes

EXEC

Command History

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

Usage Guidelines

The hardware Break signal occurs when a Telnet interrupt-process (ip) command is received on that connection. The **terminal telnet break-on-ip** command can be used to control the translation of Telnet interrupt-process commands into X.25 Break indications.

Note In this command, the acronym "ip" indicates "interrupt-process," not Internet Protocol (IP).

This command is also a useful workaround in the following situations:

- Several user Telnet programs send an ip command, but cannot send a Telnet Break signal.
- Some Telnet programs implement a Break signal that sends an ip command.

Some EIA/TIA-232 hardware devices use a hardware Break signal for various purposes. A hardware Break signal is generated when a Telnet Break command is received.

You can verify if this command is enabled with the **show terminal** EXEC command. If enabled the following line will appear in the output: `Capabilities: Send BREAK on IP`.

Examples

In the following example, a Break signal is generated for the current connection when an interrupt-process command is issued:

```
Router# terminal telnet break-on-ip
```

Related Commands

Command	Description
terminal telnet ip-on-break	Configures the system to send an interrupt-process (ip) signal when the Break command is issued.

terminal telnet refuse-negotiations

To configure the current session to refuse to negotiate full-duplex, remote echo options on incoming connections, use the **terminal telnet refuse-negotiations** command in EXEC mode.

terminal telnet refuse-negotiations

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled

Command Modes

EXEC

Command History

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

Usage Guidelines

You can set the line to allow access server to refuse full-duplex, remote echo connection requests from the other end. This command suppresses negotiation of the Telnet Remote Echo and Suppress Go Ahead options.

Examples

In the following example, the current session is configured to refuse full-duplex, remote echo requests:

```
Router# terminal telnet refuse-negotiations
```

terminal telnet speed

To allow an access server to negotiate transmission speed for the current terminal line and session, use the **terminal telnet speed** command in EXEC mode.

terminal telnet speed *default-speed maximum-speed*

Syntax Description

default-speed	Line speed, in bits per second (bps), that the access server will use if the device on the other end of the connection has not specified a speed.
maximum-speed	Maximum line speed in bits per second (bps), that the device on the other end of the connection can use.

Defaults

9600 bps (unless otherwise set using the **speed**, **txspeed** or **rxspeed** line configuration commands)

Command Modes

EXEC

Command History

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

Usage Guidelines

You can match line speeds on remote systems in reverse Telnet, on host machines connected to an access server to access the network, or on a group of console lines connected to the access server when disparate line speeds are in use at the local and remote ends of the connections listed above. Line speed negotiation adheres to the Remote Flow Control option, defined in RFC 1080.

Note This command applies only to access servers. It is not supported on standalone routers.

Examples

The following example enables the access server to negotiate a bit rate on the line using the Telnet option. If no speed is negotiated, the line will run at 2400 bps. If the remote host requests a speed greater than 9600 bps, then 9600 bps will be used.

```
Router# terminal telnet speed 2400 9600
```

terminal telnet sync-on-break

To cause the access server to send a Telnet Synchronize signal when it receives a Telnet Break signal on the current line and session, use the **terminal telnet sync-on-break** command in EXEC mode.

terminal telnet sync-on-break

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled

Command Modes

EXEC

Command History

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

Usage Guidelines

You can configure the session to cause a reverse Telnet line to send a Telnet Synchronize signal when it receives a Telnet Break signal. The TCP Synchronize signal clears the data path, but still interprets incoming commands.

Note This command applies only to access servers. It is not supported on standalone routers.

Examples

The following example sets an asynchronous line to cause the access server to send a Telnet Synchronize signal:

```
Router# terminal telnet sync-on-break
```

terminal telnet transparent

To cause the current terminal line to send a Return character (CR) as a CR followed by a NULL instead of a CR followed by a Line Feed (LF) for the current session, use the **terminal telnet transparent** command in EXEC mode.

terminal telnet transparent

Syntax Description

This command has no arguments or keywords.

Defaults

CR followed by an LF

Command Modes

EXEC

Command History

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

Usage Guidelines

The end of each line typed at the terminal is ended with a Return (CR). This command permits interoperability with different interpretations of end-of-line demarcation in the Telnet protocol specification.

Note This command applies only to access servers. It is not supported on stand-alone routers.

Examples

In the following example, the session is configured to send a CR signal as a CR followed by a NULL:

```
Router# terminal telnet transparent
```

terminal terminal-type

To specify the type of terminal connected to the current line for the current session, use the **terminal terminal-type** command in EXEC, privileged EXEC, and diagnostic mode.

terminal terminal-type *terminal-type*

Syntax Description

terminal-type	Defines the terminal name and type, and permits terminal negotiation by hosts that provide that type of service. The default is VT100.

Defaults

VT100

Command Modes

EXEC (>)
Privileged EXEC (#)
Diagnostic (diag)

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
Cisco IOS XE Release 2.1	This command was introduced on the Cisco ASR 1000 Series Routers, and became available in diagnostic mode.

Usage Guidelines

Indicate the terminal type if it is different from the default of VT100.

The terminal type name is used by TN3270s for display management and by Telnet and rlogin to inform the remote host of the terminal type.

Examples

In the following example, the terminal type is defined as VT220 for the current session:

```
Router# terminal terminal-type VT220
```

Related Commands

Command	Description
terminal keymap-type	Specifies the current keyboard type for the current session.
terminal-type	Specifies the type of terminal connected to a line.

terminal txspeed

To set the terminal transmit speed (how fast the terminal can send information) for the current line and session, use the **terminal txspeed** command in EXEC mode.

terminal txspeed *bps*

Syntax Description

bps	Baud rate in bits per second (bps). The default is 9600 bps.

Defaults

9600 bps

Command Modes

EXEC

Command History

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

Examples

In the following example, the line transmit speed is set to 2400 bps for the current session:

```
Router# terminal txspeed 2400
```

Related Commands

Command	Description
rxspeed	Sets the terminal receive speed for a specified line or lines.
terminal rxspeed	Sets the terminal receive speed for the current line and session.
terminal terminal-type	Specifies the type of terminal connected to the current line for the current session.
txspeed	Sets the terminal transmit speed for a specified line or lines.

terminal width

To set the number of character columns on the terminal screen for the current line for a session, use the **terminal width** command in EXEC, privileged EXEC, or diagnostic mode.

terminal width *characters*

Syntax Description

characters	Number of character columns displayed on the terminal. The default is 80 characters.

Defaults

80 characters

Command Modes

EXEC (>)
Privileged EXEC (#)
Diagnostic (diag)

Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
Cisco IOS XE Release 2.1	This command was introduced on the Cisco ASR 1000 Series Routers, and became available in diagnostic mode.

Usage Guidelines

By default, the route provides a screen display width of 80 characters. You can reset this value for the current session if it does not meet the needs of your terminal.

The rlogin protocol uses the value of the *characters* argument to set up terminal parameters on a remote host.

Examples

The following example sets the terminal character columns to 132:

```
Router# terminal width 132
```

Related Commands

Command	Description
width	Sets the terminal screen width (the number of character columns displayed on the attached terminal).

terminal-queue entry-retry-interval

To change the retry interval for a terminal port queue, use the **terminal-queue entry-rety-interval** command in global configuration mode. To restore the default terminal port queue interval, use the **no** form of this command.

terminal-queue entry-retry-interval *seconds*

no terminal-queue entry-retry-interval

Syntax Description

seconds	Number of seconds between terminal port retries. The default is 60 seconds.

Defaults

60 seconds

Command Modes

Global configuration

Command History

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

Usage Guidelines

If a remote device (such as a printer) is busy, the connection attempt is placed in a terminal port queue. If you want to decrease the waiting period between subsequent connection attempts, decrease the default of 60 to an interval of 10 seconds. Decrease the time between subsequent connection attempts when, for example, a printer queue stalls for long periods.

Examples

The following example changes the terminal port queue retry interval from the default of 60 seconds to 10 seconds:

```
Router# terminal-queue entry-retry-interval 10
```

terminal-type

To specify the type of terminal connected to a line, use the **terminal-type** command in line configuration mode. To remove any information about the type of terminal and reset the line to the default terminal emulation, use the **no** form of this command.

terminal-type {*terminal-name* | *terminal-type*}

no terminal-type

Syntax Description

terminal-name	Terminal name.
terminal-type	Terminal type.

Defaults

VT100

Command Modes

Line configuration

Command History

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

Usage Guidelines

This command records the type of terminal connected to the line. The *terminal-name* argument provides a record of the terminal type and allows terminal negotiation of display management by hosts that provide that type of service.

For TN3270 applications, this command must follow the corresponding ttycap entry in the configuration file.

Examples

The following example defines the terminal on line 7 as a VT220:

```
Router(config)# line 7
Router(config-line)# terminal-type VT220
```