

# call progress tone country

To specify the country code for retrieving the call progress tone parameters from the call progress tone database, use the **call progress tone country** command in configuration mode. Use the **no** version of this command to cancel the previous setting and to generate the call progress tones according to modem settings.

**call progress tone country** *country-name*

**no call progress tone country** *country-name*

<b>Syntax Description</b>	<i>country-name</i> Selects default call progress tones (ring and cadence settings) for the specified country. Valid entries are: <b>argentina, australia, austria, belgium, brazil, canada, china, colombia, cyprus, czech-republic, denmark, finland, france, germany, greece, hongkong, hungary, iceland, india, indonesia, ireland, israel, italy, japan, korea, luxembourg, malaysia, mexico, netherlands, peru, philippines, poland, portugal, russia, singapore, slovakia, slovenia, south-africa, spain, sweden, switzerland, taiwan, thailand, turkey, unitedkingdom, usa, and venezuela.</b>
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<b>Defaults</b>	Modem default settings. (The <i>country-name</i> keyword <b>northamerica</b> was the default in Cisco IOS Release versions earlier than release 12.0(3)XG; <b>usa</b> is the default country keyword for Cisco IOS Release 12.0(3)XG and later releases.)
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<b>Command Modes</b>	Configuration mode
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.0(3)XG	This command was introduced.
	12.0(4)XI	This command was enhanced with additional and different country keywords.

<b>Usage Guidelines</b>	Use the <b>call progress tone</b> configuration to specify the country for call progress tone generation. While in many cases the country is chosen automatically based on the modem setting, automatic selection won't work for all users because many modems do not support all countries and many users choose the "us" or "default-t1" or "default-e1" setting on their modem.
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This command affects the tones generated at the local interface and does not affect any information passed to the remote end of a connection or any tones generated at the remote end of a connection.

For dial platforms (AS5200, AS5300, and AS5800), call progress tones are used only for the resource pool management application. Resource pool management assumes that the call progress tone selection is global. Select only one call progress tone set for the whole box, and it will globally override country settings on all ports.

## ■ call progress tone country

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**Examples**

The following example shows the call progress tone set for Japan tone parameters:

```
call progress tone country japan
```

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**Related Commands**

Command	Description
<b>show call progress</b>	Displays the contents of the internal CP tone database for a specific country.

# callback forced-wait

To force the Cisco IOS software to wait before initiating a callback to a requesting client, use the **callback forced-wait** command in global configuration mode. Use the **no** form of this command to disable the forced waiting period.

**callback forced-wait**

**no callback forced-wait**

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

**Defaults** The forced waiting period is not set.

**Command Modes** Global configuration

Command History	Release	Modification
	11.1	This command was introduced.

**Usage Guidelines** Use this command when the router is calling back a modem that initiated a call, then dropped the connection, but requires a rest period before subsequent input is accepted.

**Examples** The following example sets a waiting period during which a callback chat script is delayed from being sent on an outgoing target line:

```
callback-forced-wait
```

Related Commands	Command	Description
	<b>arap callback</b>	Enables an ARA client to request a callback from an ARA client.
	<b>chat-script</b>	Places calls over a modem and logs in to remote systems.
	<b>debug callback</b>	Displays callback events when the router is using a modem and a chat script to call back on a terminal line.
	<b>ppp callback (DDR)</b>	Enables a dialer interface that is not a DTR interface to function either as a callback client that requests callback or as a callback server that accepts callback requests.
	<b>server (RLM)</b>	Enables the Cisco IOS software to call back clients that request a callback from the EXEC level.
	<b>virtual-profile aaa</b>	Enables virtual profiles by AAA configuration.

# callback nodsr-wait

To set the time period for which an asynchronous callback waits to see the DSR signal go low after the router signals a hang-up request on the incoming call, use the **callback nodsr-wait** command in line configuration mode. To negate or change the line setting, use the **no** form of this command.

**callback nodsr-wait** *milliseconds*

**no callback nodsr-wait**

<b>Syntax Description</b>	<i>milliseconds</i>	The timeout value in a range from 5000 to 30,000 milliseconds (ms). Default is 5000 ms.
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<b>Defaults</b>	5000 ms
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<b>Command Modes</b>	Line configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.2(6.1)P	This command was introduced.

**Usage Guidelines** Use the **callback nodsr-wait** command when the dial-out modem takes longer than 5000 ms to drop a carrier after the router signals a hang-up on the incoming call.

Increase the duration of the callback if the **debug callback** command displays the following failed callback attempt message:

```
callback process fail - timeout with DSR up
```

**Examples** The following example sets the callback duration to 10 seconds for lines 1/0 to 1/107:

```
line 1/0 1/107
callback nodsr-wait 10000
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>callback forced-wait</b>	Sets a waiting period when DSR signals decrease after a callback, before the router attempts another callback.
	<b>debug callback</b>	Displays callback events when the router is using a modem and a chat script to call back on a terminal line.

# called-number

To assign a called party number to a pool of modems, use the **called-number** command in modem pool configuration mode. Use the **no** form of this command to remove a number from a modem pool.

**called-number** *number* [**max-conn** *number*]

**no called-number** *number* [**max-conn** *number*]

Syntax Description	
<i>number</i>	Called number for a modem pool.
<b>max-conn</b> <i>number</i>	(Optional) Maximum number of simultaneous connections allowed for the called party number.

**Defaults** Disabled

**Command Modes** Modem pool configuration

Command History	Release	Modification
	11.2P	This command was introduced.

**Usage Guidelines** A called party number is a telephone number that is used to reach a remote destination. For example, a mobile laptop dials a called party number to reach an ISP's POP. Some ISPs set up several called party numbers to enable remote clients to dial in, but to the end user, it appears and functions as one unified service.

Cisco's implementation of a called party number is based on the dialed number identification service (DNIS). You can configure multiple DNIS numbers in a single modem pool. However, the same DNIS number cannot be used in multiple modem pools. Each modem pool must be assigned different DNIS numbers.

Use the **max-conn** option to provide overflow protection, which specifies a maximum number of simultaneous connections that a called party number can consume. For example, if you create one modem pool to serve two or more services or customers, this option guarantees how many modems each service or customer can have access to at any given time.

The Cisco IOS software also includes a feature that simplifies the called number configuration. By using an x variable as the last digit in a called telephone number (for example, issuing the **called-number 408555121x** command), clients dialing different called numbers such as 4085551214 or 4085551215 will automatically be sent to the same modem pool. The x variable is a floating place holder for digits 1 through 9.



**Note**

Modem pools using MICA technologies or Microcom modems support incoming analog calls over ISDN PRI. However, only MICA modems support modem pooling for CT1 and CE1 configurations with channel associated signalling.

**Examples**

In the following example, the modem pool called v90service is virtually partitioned between two customers using different DNIS numbers. The **pool-range** command assigns modems 1 to 110 to the shared modem pool. The **called-number 5551212 max-conn 55** command assigns the DNIS number 5551212 to the v90service modem pool. The total number of simultaneous connections is limited to 55. The **called-number 4441212 max-conn 55** command assigns the DNIS number 4441212, which is for a different customer, to the same v90service modem pool. The total number of simultaneous connections is also set to 55.

```
modem-pool v90service
  pool-range 1-110
  called-number 5551212 max-conn 55
  called-number 4441212 max-conn 55
```

The following configuration rejects the **pool-range 30** command because modem TTY line 30 is already a member of the modem pool v90service, which was configured in the previous example. Each modem in the access server is automatically assigned to a unique TTY line. TTY line numbers are assigned according to your shelf, slot, or port hardware configuration.

```
modem-pool v34service
# pool-range 30
```

**Related Commands**

Command	Description
<b>clear modempool-counters</b>	Clears active or running counters associated with one or more modem pools.
<b>modem-pool</b>	Creates a new modem pool or specifies an existing modem pool, which allows you to physically or virtually partition your access server for dial-in and dial-out access.
<b>pool-member</b>	Assigns a range of modems to a modem pool.
<b>show modem-pool</b>	Displays the configuration and connection status for one or more modem pools.

# call-type

To reject particular types of calls, use the **call-type** command in call discriminator profile configuration mode, use the **no** form of this command to disable this feature.

```
call-type {all | digital | speech | v110 | v120}
```

```
no call-type {all | digital | speech | v110 | v120}
```

Syntax Description	all	Rejects all calls.
	<b>digital</b>	Rejects digital calls.
	<b>speech</b>	Rejects speech calls.
	<b>v110</b>	Rejects V.110 calls.
	<b>v120</b>	Rejects V.120 calls.

**Defaults** All calls are accepted by the network access server.

**Command Modes** Call discriminator profile configuration

Command History	Release	Modification
	12.0(4)XI	This command was introduced.

**Usage Guidelines** Use the **call-type** call discriminator command to reject particular types of calls. Call type “all” is mutually exclusive for all other call types. If call type “all” is set in the discriminator, no other call types are allowed. Also, once a DNIS is associated with a call type in a discriminator, it cannot be used in any other discriminator.

**Examples** The following example shows the call discriminator being configured to reject speech calls for the call discriminator profile named *userd3*:

```
resource-pool profile discriminator userd3
  call-type speech
```

# call-type cas

To statically set the call-type override for incoming channel-associated signalling (CAS) calls, use the **call-type cas** command in DNIS group configuration mode. Use the **no** form of this command to disable this service.

**call-type cas {digital | speech}**

**no call-type cas {digital | speech}**

Syntax Description	digital	speech
	Override call type to digital. The incoming call with the DNIS in the called group is treated as a digital call type.	Override call-type to speech. The incoming call with the DNIS in the called group is treated as a speech call type.

**Defaults** No default behavior or values.

**Command Modes** DNIS group configuration

Command History	Release	Modification
	12.0(4)XI	This command was introduced.

**Usage Guidelines** Use the **call-type cas** DNIS group configuration command to set the call-type override. From the resource pooling call-type perspective, use CT1 (CAS) to support either analog calls (speech) or digital calls (switched 56K).

Switched 56K calls are digital calls that connect to HDLC framers. Unlike ISDN, it is impossible to communicate the call type in CT1. Therefore, switched 56K services in CT1 can be differentiated by the DNIS numbers. This command identifies that the call arriving with the DNIS in the DNIS group is assigned to the call type specified in the command.

**Examples** The following example shows the DNIS group configuration mode being accessed to use the **call-type cas** command to set the call type override for CAS to speech:

```
dialer dnis group modem-group1
  call-type cas speech
```

## cas-custom

To customize E1 R2 signalling parameters for a particular E1 channel group on a channelized E1 line, use the **cas-custom** command in controller configuration mode. Use the **no** form of this command to disable the signalling customization.

**cas-custom** *channel*

**no cas-custom** *channel*

<b>Syntax Description</b>	<i>channel</i>	Specifies a single channel group number, which can be from 0 to 30. This channel group number must match the channel number specified in the <b>cas-group</b> command.
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<b>Defaults</b>	No customized signalling parameters are set. If you do not specify a country name using the <b>country name</b> command, which is described in Table 4, ITU is the selected default signal.
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<b>Command Modes</b>	Controller configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.2P	This command was introduced.
	12.0(1)T	This command was introduced for the Cisco 3600 series routers.

<b>Usage Guidelines</b>	The customization parameters set by the <b>cas-custom channel</b> command are applied to the same channel group number used in the <b>cas-group channel timeslots range type signal</b> command. These channel group numbers must match. Otherwise, the customized features specified by the <b>cas-custom</b> command will not be applied to the <b>cas-group</b> command's configuration. The signalling customization will not take effect. See Example 1.
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However, you will not need to configure or set more than one channel group number per E1 line in most cases. Though rarely used, it is possible to split a single E1 (time slots 1 to 31) into two groups (for example, 1 to 15 on group 1 and time slots 17 to 31 in group 2).

Cisco strongly recommends that you use the optional **use-defaults** keyword when specifying a particular country type; see the **country name** command in Table 4. This additional keyword ensures that all the local country settings are correctly enabled. For example, issue the **country greece use-defaults** command. If the **use-defaults** option is not specified, generic ITU will be the default setting for all countries. See Example 2.

You can configure the system to deviate from a country's default settings as defined by Cisco. To do this, choose from the following list of commands described in Table 4: **ani-digits min number max number**, **answer-signal {group-a | group-b} number**, **caller-digits number**, **category number**, **dnis-digits min number max number**, **invert-abcd**, **ka number**, **kd number**, **metering**, **nc-congestion**, and **unused-abcd value**. To return a country back to its country specific default settings, issue the **country name use-defaults** command. To return a country back to the ITU standard, issue the **default country name use-defaults** command. See Example 3 and Example 4.

**Note**

Only integrated MICA technologies modems support E1 R2 signalling on Cisco 5000 series access servers and Cisco 3600 series routers.

Table 4 shows a list of command options in cas-custom mode, which is used to customize R2 signalling settings.

**Table 4** Available Commands in cas-custom Mode

CAS Custom Command	Purpose
<b>ani-digits</b> <i>min number max number</i>	Expected number of ANI digits. The minimum number of collected digits is set by <b>min number</b> . Replace <i>number</i> with a value between 0 and 64. The maximum number of collected digits is set by <b>max number</b> . Replace <i>number</i> with a value between 3 and 64. The default is 0 digits, which is the ITU default.
<b>answer-signal</b> { <b>group-a</b>   <b>group-b</b> } <i>number</i>	Answer signal to be used. You can specify the group A signal or the group B signal. The signal <i>number</i> can be 1 to 15. Default is group-b 6, which is the ITU default.
<b>caller-digits</b> <i>number</i>	Specifies the number of digits the access server needs to collect before it requests ANI or CallerID information. The digits can be from 1 to 10. Default is 1, which is the ITU default.
<b>category</b> <i>number</i>	Specifies the type of incoming call, which is mapped to a group signal <i>number</i> . Signal numbers from 1 to 15 are available. Default is 1, which is the ITU default.

Table 4 Available Commands in cas-custom Mode (continued)

CAS Custom Command	Purpose
<b>country</b> <i>name</i>	<p>Specifies local country settings to use with R2 signalling. Replace the <i>name</i> variable with one of the following supported country names. Cisco strongly recommends that you include the <b>use-defaults</b> option, which enables the default settings for a specific country. Default country setting is ITU.</p> <ul style="list-style-type: none"> <li>• <b>argentina</b> [use-defaults]</li> <li>• <b>australia</b> [use-defaults]</li> <li>• <b>brazil</b> [use-defaults]</li> <li>• <b>china</b> [use-defaults]</li> <li>• <b>columbia</b> [use-defaults]</li> <li>• <b>costarica</b> [use-defaults]</li> <li>• <b>easteurope</b> [use-defaults]</li> </ul> <p>The <b>easteurope</b> option supports Croatia, Russia, and the Slovak Republic.</p> <ul style="list-style-type: none"> <li>• <b>ecuador-itu</b> [use-defaults]</li> <li>• <b>ecuador-lme</b> [use-defaults]</li> <li>• <b>greece</b> [use-defaults]</li> <li>• <b>guatemala</b> [use-defaults]</li> <li>• <b>hongkong-china</b> [use-defaults]</li> </ul> <p>The Hong Kong options uses the China variant.</p> <ul style="list-style-type: none"> <li>• <b>indonesia</b> [use-defaults]</li> <li>• <b>israel</b> [use-defaults]</li> <li>• <b>itu</b></li> </ul> <p>ITU is the signalling default. ITU provides support for the following list of countries: Denmark, Finland, Germany, Russia (ITU variant), Hong Kong (ITU variant), and South Africa (ITU variant).</p> <p>The expression “ITU variant” means that there are multiple R2 signalling types deployed in the specified country, but Cisco supports the ITU variant.</p> <ul style="list-style-type: none"> <li>• <b>korea</b> [use-defaults]</li> <li>• <b>malaysia</b> [use-defaults]</li> <li>• <b>newzealand</b> [use-defaults]</li> </ul>

Table 4 Available Commands in cas-custom Mode (continued)

CAS Custom Command	Purpose
	<ul style="list-style-type: none"> <li>• <b>paraguay</b> [use-defaults]</li> <li>• <b>peru</b> [use-defaults]</li> <li>• <b>philippines</b> [use-defaults]</li> <li>• <b>saudi Arabia</b> [use-defaults]</li> <li>• <b>singapore</b> [use-defaults]</li> <li>• <b>southafrica-panafel</b> [use-defaults] The South Africa option uses the Panafel variant.</li> <li>• <b>telmex</b> [use-defaults]</li> <li>• <b>telnor</b> [use-defaults] The telemex and telnor options are used in Mexico.</li> <li>• <b>thailand</b> [use-defaults]</li> <li>• <b>uruguay</b> [use-defaults]</li> <li>• <b>venezuela</b> [use-defaults]</li> <li>• <b>vietnam</b> [use-defaults]</li> </ul>
<b>default</b>	Sets a command to its default setting.
<b>dnis-digits</b> <i>min number max number</i>	Expected number of DNIS digits. The minimum number of collected digits is set by <b>min number</b> . Replace <i>number</i> with a value between 3 and 64. The maximum number of collected digits is set by <b>max number</b> . Replace <i>number</i> with a value between 3 and 64. The default is 0 digits, which is the ITU default.
<b>exit</b>	Takes you out of cas custom mode.
<b>invert-abcd</b>	Inverts the ABCD bits before tx and after rx. This feature is disabled by default, which is the ITU default.
<b>ka</b> <i>number</i>	Specifies the KA signal code. You can choose 1 to 15. Default is 0, which is the ITU default.
<b>kd</b> <i>number</i>	Specifies the KD signal code. You can choose 1 to 15. Default is 0, which is the ITU default.
<b>metering</b>	Specifies sending a metering pulse when the access server is making an outgoing call. Metering is turned off by default, which is the ITU default.
<b>nc-congestion</b>	Specifies the noncompelled congestion signal. This signal is sent to the central office when the access server is congested and cannot accept the call. The default is B4, which is the ITU default.
<b>no</b>	Negates a command or sets its defaults.

Table 4 Available Commands in cas-custom Mode (continued)

CAS Custom Command	Purpose
<b>request-category</b>	Specifies a range of 1 to 64, but using this command you either turn on the request-category or turn it off by eliminating the line in your configuration.
<b>unused-abcd</b> <i>value</i>	Specifies unused ABCD bit values, which can have a 0 or 1 bit value. This feature is disabled by default, which is the ITU default.

## Examples

### Example 1

The following example displays the available signalling parameters after you enter cas-custom mode. Notice that the same channel group 1 is specified in the **cas-group** command and the **cas-custom** command.

```

configure terminal
Enter configuration commands, one per line. End with CNTL/Z
# controller e1 1
cas-group 1 timeslots 1-31 type r2-digital r2-compelled
cas-custom 1
# ?
CAS custom commands:
  ani-digits      Expected number of ANI digits
  answer-signal  Answer signal to be used
  caller-digits  Digits to be collected before requesting CallerID
  category       Category signal
  country        Country Name
  default        Set a command to its defaults
  dnis-digits    Expected number of DNIS digits
  exit           Exit from cas custom mode
  invert-abcd    invert the ABCD bits before tx and after rx
  ka             KA Signal
  kd            KD Signal
  metering      R2 network is sending metering signal
  nc-congestion Non Compelled Congestion signal
  no            Negate a command or set its defaults
  unused-abcd   Unused ABCD bit values

```

**Example 2**

You can localize your R2 configuration for a specific country. Do not forget to include the **use-defaults** option as described in Table 4. For example, use the **country argentina use-defaults** command for a R2 scenario in Argentina.

```
country ?
  argentina          Argentina
  australia          Australia
  bolivia            Bolivia
  brazil            Brazil
  bulgaria          Bulgaria
  china             China
  colombia          Colombia
  costarica         Costa Rica
  croatia           Croatia
  easteurope        East Europe
  ecuador-itu       Ecuador ITU
  ecuador-lme       Ecuador LME
  greece            Greece
  guatemala         Guatemala
  hongkong-china    Hong Kong (China variant)
  india             India
  indonesia         Indonesia
  israel            Israel
  itu               ITU
  korea             Korea
  laos              LAOS Network (Thailand Variant)
  malaysia          Malaysia
  malta             Malta
  newzealand        New Zealand
  paraguay          Paraguay
  peru              Peru
  philippines        Philippines
  saudiarabia       Saudi Arabia
  singapore         Singapore
  southafrica-panaftel South Africa Panaftel
  telmex            Telmex
  telnor            Telnor
  thailand          Thailand
  uruguay           Uruguay
  venezuela         Venezuela
  vietnam           Vietnam

country argentina ?
  use-defaults      Use Country defaults
  <cr>
```

```
country argentina use-defaults
```

**Example 3**

The following example customizes the signalling for channel group 1. The configuration collects three digits before it requests ANI information for analog calls received on a Cisco AS5800 in Argentina.

```
cas-custom 1
country argentina use-defaults
caller-digits 3
^z
```

**Example 4**

Because cas-custom mode gives you the flexibility to customize R2 parameters, the margin for user error increases. Therefore, the Cisco IOS software enables you to return a country back to its default R2 settings using the **use-defaults** option. The following example begins by bringing up Argentina's default settings, changing a few customization parameters, then returning the Argentina R2 setting back to its original state.

```
country argentina use-defaults
caller-digits 3
unused-abcd 1
metering
country argentina use-defaults
```

**Related Commands**

Command	Description
<b>cas-group (E1 controller )</b>	Configures channel associated signalling on an E1 controller.

## cas-group (E1 controller)

To configure channel-associated signalling (CAS) on an E1 controller, use the **cas-group** command in controller configuration mode. Use the **no** form of this command to disable CAS for one or more time slots.

**cas-group** *channel* **timeslots** *range* **type** *signal*

**no cas-group** *channel* **timeslots** *range* **type** *signal*

Syntax Description	
<i>channel</i>	Specifies a single channel group number. Replace the <i>channel</i> variable with a number between 0 and 30.
<b>timeslots</b> <i>range</i>	Specifies a time slot range, which can be from 1 to 31. You can specify a time slot range (for example, 1-29), individual time slots separated by commas (for example 1, 3, 5), or a combination of the two (for example 1-14, 15, 17-31). The 16th time slot is reserved for out-of-band signalling.
<b>type</b> <i>signal</i>	<p>Specifies the type of channel associated signalling. Configure the signal type that your central office uses.</p> <p>For a Cisco 5800 series access servers, replace the <i>signal</i> variable with one of the following signal types:</p> <ul style="list-style-type: none"> <li>• <b>e&amp;m-fgb [dtmf [dnis]   mf [dnis]]</b>—Specifies ear and mouth channel signalling with feature group B support, which includes the wink start protocol. The optional signal tones are DTMF and MF with the option of provisioning DNIS.</li> <li>• <b>e&amp;m-fgd</b>—Specifies ear and mouth channel signalling with feature group D support, which includes the wink start protocol.</li> <li>• <b>e&amp;m-immediate-start</b>—Specifies ear and mouth channel signalling with immediate start support.</li> <li>• <b>fxs-ground-start</b>—Specifies Foreign Exchange Station ground start signalling support.</li> <li>• <b>fxs-loop-start</b>—Specifies Foreign Exchange Station loopstart signalling support.</li> <li>• <b>p7</b>—Specifies the P7 switch type.</li> <li>• <b>sas-ground-start</b>—Specifies Special Access Station ground start signalling support.</li> <li>• <b>sas-loop-start</b>—Specifies Special Access Station loopstart signalling support.</li> </ul>

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- **r2-analog** [dtmf | r2-compelled [ani] | r2-non-compelled [ani] | r2-semi-compelled [ani]]
  - **r2-digital** [dtmf | r2-compelled [ani] | r2-non-compelled [ani] | r2-semi-compelled [ani]]
  - **r2-pulse** [dtmf | r2-compelled [ani] | r2-non-compelled [ani] | r2-semi-compelled [ani]]

For the Cisco 3600 series access servers, replace the *signal* variable with one of the following signal types:

- **r2-analog** {r2-compelled [ani] | r2-non-compelled [ani] | r2-semi-compelled [ani]}
- **r2-digital** {r2-compelled [ani] | r2-non-compelled [ani] | r2-semi-compelled [ani]}
- **r2-pulse** {r2-compelled [ani] | r2-non-compelled [ani] | r2-semi-compelled [ani]}

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The following descriptions are provided for the previous R2 syntax bullets:

**r2-analog**—Specifies R2 ITU Q411 analog line signalling, which reflects the on/off switching of a tone in frequency-division multiplexing circuits (before TDM circuits were created). The tone is used for line signalling.

**r2-digital**—Specifies R2 ITU Q421 digital line signalling, which is the most common signalling configuration. The A and B bits are used for line signalling.

**r2-pulse**—Specifies R2 ITU supplement 7 pulse line signalling, which is a transmitted pulse that indicates a change in the line state.

**dtmf**—Specifies the DTMF tone signalling (Cisco 5800 series access server only).

**r2-compelled [ani]**—Specifies R2 compelled register signalling. You can also specify provisioning the ANI address option.

**r2-non-compelled [ani]**—Specifies R2 noncompelled register signalling.

**r2-semi-compelled [ani]**—Specifies R2 semicompelled register signalling.

---



---

#### Defaults

No CAS is configured on the controller. All R2 signalling types have DNIS turned on by default.

---

#### Command Modes

Controller configuration

---

#### Command History

Release	Modification
11.2P	This command was introduced.
12.0(1)T	This command was introduced for the Cisco 3600 series router.

---

**Usage Guidelines**

Use this command to configure support for incoming and outgoing call signals (such as on-hook and off-hook) on each E1 controller.

If you specify the time slot range 1-31, the system software automatically uses the 16th time slot to transmit the channel associated signalling.

The signalling you configure on the access server must match the signalling used by the central office. For example if the central office switch is forwarding R2 analog signalling to a Cisco AS5800, then the access server's E1 controller must also be configured for R2 analog signalling (**r2-analog**).

All R2 signalling options have DNIS support turned on by default. If you enable the **ani** option, the collection of DNIS information is still performed. Specifying the **ani** option does not disable DNIS. DNIS is the number being called. ANI is the caller's number. For example, if you are configuring router A to call router B, then the DNIS number is router B, the ANI number is router A. ANI is very similar to Caller ID.

To customize the R2 signalling parameters, refer to the **cas-custom** controller configuration command. When you enable the **cas-group** command, the **cas-custom** command is automatically setup to be polled for configuration information. However, unless you enable or turn on specific features with the **cas-custom** command, the cas-custom feature has an empty set of signalling parameters.

**Note**

Only integrated MICA modems support E1 R2 signalling on Cisco access servers.

DNIS is automatically collected for modem pools and R2 tone signalling. You do not need to specify the collection of DNIS information with the **cas-group** command. However, if you are using non-R2 tone signalling, the system must be manually configured to collect DNIS information. For non-R2 cas signalling, DNIS collection is done only for E&M-fgb.

**Examples**

In most cases, you will configure the same channel-associated signalling on each E1 controller. The following examples configure signalling and customized parameters on controller E1 2 using the **cas-group** and **cas-custom** controller configuration commands.

The following example configures the E1 controller on a Cisco 5800 series access server.

To configure a Cisco 3600 series access server, replace the command:

```
controller e1 2/1/0
```

with the command:

```
controller e1 2
```

**Note**

The actual channel associated signalling is configured on the 16th time slot, which is the reason why this time slot does not come up in the following output.

**configure terminal**

Enter configuration commands, one per line. End with CNTL/Z.

**controller e1 2/1/0**

**cas-group 1 timeslots 1-31 type r2-digital r2-compelled ani**

```
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 1 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 2 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 3 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 4 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 5 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 6 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 7 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 8 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 9 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 10 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 11 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 12 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 13 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 14 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 15 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 17 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 18 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 19 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 20 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 21 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 22 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 23 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 24 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 25 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 26 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 27 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 28 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 29 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 30 is up
%DSX0-5-RBSLINEUP: RBS of controller 0 timeslot 31 is up
```

The following example shows all the supported E1 signalling types on a Cisco AS5800:

**cas-group 1 timeslots 1-31 type ?**

```
e&m-fgb          E & M Type II FGB
e&m-fgd          E & M Type II FGD
e&m-immediate-start E & M Immediate Start
fxs-ground-start FXS Ground Start
fxs-loop-start   FXS Loop Start
p7              P7 Switch
r2-analog        R2 ITU Q411
r2-digital       R2 ITU Q421
r2-pulse         R2 ITU Supplement 7
sas-ground-start SAS Ground Start
sas-loop-start   SAS Loop Start
```

**cas-group 1 timeslots 1-31 type r2-analog ?**

```
dtmf            DTMF tone signaling
r2-compelled    R2 Compelled Register signaling
r2-non-compelled R2 Non Compelled Register signaling
r2-semi-compelled R2 Semi Compelled Register signaling
<cr>
```

R2 signalling parameters can be customized with the **cas-custom** controller configuration command:

**cas-custom 1**

?

CAS custom commands:

caller-digits	Digits to be collected before requesting CallerID
category	Category signal
country	Country Name
default	Set a command to its defaults
exit	Exit from cas custom mode
invert-abcd	invert the ABCD bits before tx and after rx
metering	R2 network is sending metering signal
nc-congestion	Non Compelled Congestion signal
no	Negate a command or set its defaults

## cas-group (t1 controller)

To configure channelized T1 time slots with robbed-bit signalling, and R1 channel-associated signalling, use the **cas-group** command in controller configuration mode. Use the **no** form of this command to disable signalling for one or more time slots.

Cisco AS5200, Cisco AS5300 and Cisco AS5800 series access servers

**cas-group** *channel timeslots range type signal*

**no cas-group** *channel timeslots range type signal*

R1 channel-associated signalling

**cas-group** *channel timeslots range type r1-modified { ani-dnis | dnis }*

**no cas-group** *channel timeslots range type r1-modified { ani-dnis | dnis }*

Syntax Description	
<i>channel</i>	Specifies a single channel group number. Replace the <i>channel</i> variable with a number between 0 and 30.
<i>timeslots range</i>	Specifies a time slot range, which can be from 1 to 24 for T1, and from 1 to 31 for E1. You can specify a time slot range (for example, 1-31), individual time slots separated by commas (for example 1, 3, 5), or a combination of the two (for example 1-7, 8, 17-31). The 16th time slot is reserved for out-of-band signalling.
<i>type signal</i>	Specifies a type of robbed-bit signalling. Replace the <i>signal</i> variable with one of the following signal types. The keywords <b>service</b> , <b>data</b> , and <b>voice</b> are used for switched 56K configuration. These keywords are described at the end of this syntax description table. <ul style="list-style-type: none"> <li>• <b>e&amp;m-fgb [dtmf [dnis]   [service {data   voice}]]   [service {data   voice}]   [mf [dnis]   [service {data   voice}]]</b>—Specifies ear and mouth channel signalling with feature group B support, which includes the wink start protocol. Use the options <b>dtmf [dnis]</b> to configure DTMF tone signalling with optional DNIS provisioning. Use the options <b>mf [dnis]</b> to configure MF tone signalling with optional DNIS provisioning. Use the options <b>service {data   voice}</b> for switched 56K configurations. (See the end of this syntax description table for more information about these switched 56K keywords.)</li> <li>• <b>e&amp;m-fgd [service {data   voice}]</b>—Specifies ear and mouth channel signalling with feature group D support, which includes the wink start protocol. Use the options <b>service {data   voice}</b> for switched 56K configurations. (See the end of this syntax description table for more information.)</li> </ul>

- 
- **e&m-immediate-start** [**service** {**data** | **voice**}]—Specifies ear and mouth channel signalling with immediate start support. Use the options **service** {**data** | **voice**} for switched 56K configurations. (See the end of this syntax description table for more information.)
  - **e&m-immediate-start** [**service** {**data** | **voice**}]—Specifies ear and mouth channel signalling with immediate start support. Use the options **service** {**data** | **voice**} for switched 56K configurations. (See the end of this syntax description table for more information.)
  - **fxs-ground-start** [**service** {**data** | **voice**}]—Specifies Foreign Exchange Station ground start signalling support. Use the options [**service** {**data** | **voice**} for switched 56K configurations. (See the end of this syntax description table for more information.)
  - **fxs-loop-start** [**service** {**data** | **voice**}]— Specifies Foreign Exchange Station loopstart signalling support. Use the options **service** {**data** | **voice**} for switched 56K configurations. (See the end of this syntax description table for more information.)
  - **r1-modified ani-dnis**—Indicates R1 signalling will collect ani and dnis information.
  - **r1-modified dnis**—Indicates R1 signalling will collect only dnis information.
  - **sas-ground-start** [**service** {**data** | **voice**}]—Specifies Special Access Station ground start signalling support. Use the options **service** {**data** | **voice**} for switched 56K configurations. (See the end of this syntax description table for more information.)
  - **sas-loop-start** [**service** {**data** | **voice**}]—Specifies Special Access Station loopstart signalling support. Use the options **service** {**data** | **voice**} for switched 56K configurations.
  - **service**—(Optional) Specifies the type of services provided for scenarios involving switched 56K connections. Do not include this option in the **cas-group** command statement if you are not using the access server to provide switched 56K connections.
  - **data**—Enables switched 56K digital data services on the specified range of time slots. The data is directly read from the time slot or channel. Time slots configured with this option will not accept analog modem calls.
  - **voice**—Enables analog modem services on the specified range of time slots. The call is forwarded to the modems for demodulation. Time slots configured with this option will not accept switched 56K digital calls.
- 

## Defaults

For ISDN PRI, the **cas-group** command is disabled.

If the channelized T1 is not configured as a PRI, the default value for line signalling is **e&m-rgb** and the default value for tone signalling is **DTMF**.

The R1 signalling default value is **ani-dnis**.

**Command Modes** Controller configuration

Command History	Release	Modification
	11.2	This command was introduced.
	11.3T	The following signalling options were added: <ul style="list-style-type: none"> <li>• <b>service</b></li> <li>• <b>data</b></li> <li>• <b>voice</b></li> </ul> The <b>R1</b> keyword was added.

**Usage Guidelines** Use the **cas-group** command to configure T1 controllers with different types of robbed-bit signalling, such as on-hook and off-hook for E&M feature group B (**e&m-fgb**).

If you want to collect DNIS information on a T1 controller, you must manually configure it on the access server. DNIS collection is performed only for E&M-fgb. To collect DTMF DNIS for E&M-fgb under a controller T1 configuration, enter the **cas-group 0 timeslots 1-24 type e&m-fgb dtmf dnis** command. To collect MF DNIS for E&M-fgb, enter the **cas-group 0 timeslots 1-24 type e&m-fgb mf dnis** command.

**Examples** The following example configures all 24 channels with ear and mouth robbed-bit signalling with feature group B support:

```
# controller T1 0
cas-group 1 timeslots 1-24 type e&m-fgb

%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 1 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 2 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 3 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 4 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 5 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 6 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 7 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 8 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 9 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 10 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 11 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 12 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 13 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 14 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 15 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 16 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 17 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 18 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 19 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 20 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 21 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 22 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 23 is up
%DSX0-5-RBSLINEUP: RBS of controller 1 timeslot 24 is up
```

The following example configures the required signalling to support modem pooling and the digital number identification service (DNIS) over channelized T1 lines on a Cisco AS5300. The only supported signalling and tone types for modem pooling over CT1 RBS are E&M feature group B, DTMF tones, and MF tones. By configuring DNIS as part of the **cas-group** command, the system can collect DNIS digits for incoming calls, which can be redirected to specific modem pools setup for different customers or services. Additionally, you must be running MICA modems in the system and have at least 10% of your total modems in the default modem pool. Free modems are needed in the default pool to detect the incoming called number or DNIS before handing the call off to the appropriate modem pool. Therefore, two modems are actually needed to handle each incoming call.

**Note**

Make sure that your switch provides inband address information for incoming analog calls before you enable this feature.

```
controller t1 0
cas-group 0 timeslots 1-24 type e&m-fgb dtmf dnis
exit

modem-pool accounts1
pool-range 30-50
called-number 2000 max-conn 21
exit
```

The next example configures a Cisco AS5200 to accept switched 56K digital calls on both of its T1 controllers:

**copy running-config startup-config**

The next example configures switched 56K digital services and analog modem services on one controller. Each service is assigned its own range of timeslots. Switched 56K calls are assigned to timeslots 1 through 15. Analog modem calls are assigned to timeslots 16 through 24. However, you must use different channel group numbers in each **cas-group** command entry.

```
controller T1 0
cas-group 0 timeslots 1-15 type e&m-fgb service data
cas-group 1 timeslots 16-24 type e&m-fgb service voice
framing esf
clock source line secondary
linecode b8zs
exit
```

The following example would configure R1 signalling on a Cisco AS5200 (T1 interface) and specify the collection of both ANI and DNIS information:

```
cas-group 1 timeslots 1-24 type r1-modified ani-dnis
```

The following example would configure R1 modified signalling on a Cisco AS5800 (T1 interface) and specify the collection of both ani and dnis information:

```
# cas-group 1 timeslots 1-24 type r1-modified ani-dnis
# ^Z
debug csm
Call Switching Module debugging is on

1d16h:%CONTROLLER-5-UPDOWN:Controller E1 1/1/0, changed state to up
*Dec 17 11:27:47.946:allocate slot 4 and port 2 is allocated

*Dec 17 11:27:47.946:CSM v(4/2) c(E1 1/1/0:0):CSM_PROC_IDLE: ev_DSX0_CALL.
*Dec 17 11:27:47.961:CSM v(4/2) c(E1 1/1/0:0):CSM_PROC_IC1_RING: ev_MODEM_OFFHOOK.
*Dec 17 11:27:49.413:CSM v(4/2) c(E1 1/1/0:0):CSM_PROC_IC2_COLLECT_ADDR_INFO:
ev_IC_DNIS_INFO_COLLECTED.
*Dec 17 11:27:50.265:CSM v(4/2) c(E1 1/1/0:0):CSM_PROC_IC2_COLLECT_ADDR_INFO:
ev_IC_ADDR_INFO_COLLECTED.
*Dec 17 11:27:50.265:CSM v(4/2) c(E1 1/1/0:0):CSM_PROC_IC4_WAIT_FOR_CARRIER:
ev_DSX0_CONNECTED.

show modem csm 1/4/2
VDEV_INFO:slot 4, port 2
vdev_status(0x00000001):VDEV_STATUS_ACTIVE_CALL.
csm_state(0x00000205)=CSM_IC5_CONNECTED, csm_event_proc=0x60665CB0, current call thru
Channelize line
invalid_event_count=0, wdt_timeout_count=0
watchdog timer is not activated
wait_for_dialing:False, wait_for_bchan:
pri_chnl=(E1 1/1/0:0), vdev_chnl=(s4, c2)
start_chan_p=0, chan_p=61994BC4, time_slot=0
The calling party phone number =
The called party phone number = 6789
ring_no_answer=0, ic_failure=0, ic_complete=1
dial_failure=0, oc_failure=0, oc_complete=0
oc_busy=0, oc_no_dial_tone=0, oc_dial_timeout=0
remote_link_disc=0, busyout=0, modem_reset=0
call_duration_started=1d16h, call_duration_ended=00:00:00, total_call_duration=00:00:00

debug mica msm
MICA modems state machine debugging is on
DA-Slot4#
1d16h:Msm2:MSM_IN_SERVICE:n_ring_ind:cc0x200 si5 dc3 ms0 cr56000,75
1d16h:Msm2:MSM_PREPARE:m_state_trans:newst MODEM_STATE_SETUP
1d16h:Msm2:MSM_SETUP:m_dig_det:di=0x23 (#)
1d16h:Msm2:MSM_COLLECTING_DNIS:m_dig_det:di=0x41 (A)
1d16h:Msm2:MSM_COLLECTING_DNIS:m_dig_det:di=0x36 (6)
1d16h:Msm2:MSM_COLLECTING_DNIS:m_dig_det:di=0x37 (7)
1d16h:Msm2:MSM_COLLECTING_DNIS:m_dig_det:di=0x38 (8)
1d16h:Msm2:MSM_COLLECTING_DNIS:m_dig_det:di=0x39 (9)
1d16h:Msm2:MSM_COLLECTING_DNIS:m_dig_det:di=0x42 (B)
1d16h:Msm2:MSM_COLLECTING_ANI_PREFIX:m_dig_det:di=0x23 (#)
1d16h:Msm2:MSM_COLLECTING_ANI:m_dig_det:di=0x41 (A)
1d16h:Msm2:MSM_COLLECTING_ANI:m_dig_det:di=0x42 (B)
1d16h:Msm2:MSM_COLLECTING_ANI_SUFFIX:t_timeout:
1d16h:Msm2:MSM_CALL_VERIFICATION:n_call_acc:
1d16h:Msm2:MSM_TRAINING_NEGNG:m_state_trans:newst MODEM_STATE_CONNECT
1d16h:Msm2:MSM_TRAINING_NEGNG:m_state_trans:newst MODEM_STATE_LINK
1d16h:Msm2:MSM_TRAINING_NEGNG:m_state_trans:newst MODEM_STATE_TRAINUP
1d16h:Msm2:MSM_TRAINING_NEGNG:m_state_trans:newst MODEM_STATE_EC_NEGOTIATING
1d16h:Msm2:MSM_TRAINING_NEGNG:m_state_trans:newst MODEM_STATE_STEADY_STATE
```

# channel-group

To define the time slots that belong to each T1 or E1 circuit, use the **channel-group** command in controller configuration mode. Use the **no** form of this command to clear the time slots for the T1 or E1 circuit.

**channel-group** *channel-number* **timeslots** *range* [**speed** {**48** | **56** | **64**}]

**no channel-group** [*channel-number* **timeslots** *range*]

## Syntax Description

<i>channel-number</i>	Channel-group number. When configuring a T1 data line, channel-group numbers can be values from 0 to 23. When configuring an E1 data line, channel-group numbers can be values from 0 to 30.
<b>timeslots</b> <i>range</i>	One or more time slots or ranges of time slots belonging to the channel group. The first time slot is numbered 1. For a T1 controller, the time slot range is from 1 to 24. For an E1 controller, the time slot range is from 1 to 31.
<b>speed</b> { <b>48</b>   <b>56</b>   <b>64</b> }	(Optional) The speed of the underlying DS0s. See Usage Guidelines for additional information.

## Defaults

The default line speed when configuring a T1 controller is 56 kbps.

The default line speed when configuring an E1 controller is 64 kbps.

## Command Modes

Controller configuration

## Command History

Release	Modification
11.3MA	This command was introduced.

## Usage Guidelines

Use this command in configurations where the router or access server must communicate with a T1 or E1 fractional data line. The channel-group number may be arbitrarily assigned and must be unique for the controller. The time slot range must match the time slots assigned to the channel group. The service provider defines the time slots that comprise a channel group.



### Note

Channel groups, CAS voice groups, and TDM groups all use group numbers. All group numbers configured for channel groups, CAS voice groups and TDM groups must be unique on the local Cisco MC3810 concentrator. For example, you cannot use the same group number for a channel group and for a TDM group. Furthermore, on the Cisco MC3810 concentrator, only one channel group can be configured on a controller.

If you specify 56 kbps, the channel group is limited to 14 channels on the Cisco MC3810 MultiFlex Trunk (MFT). Because **56** is the default, you should specify **64** if you need more than 14 channels.

This command also applies to Voice over Frame Relay, Voice over ATM, and Voice over HDLC on the Cisco MC3810.

---

**Examples**

The following example defines three channel groups. Channel-group 0 consists of a single time slot, channel-group 8 consists of 7 time slots and runs at a speed of 64 kbps per time slot, and channel-group 12 consists of a single time slot.

```
channel-group 0 timeslots 1
channel-group 8 timeslots 5,7,12-15,20 speed 64
channel-group 12 timeslots 2
```

The following example configures a channel group on controller T1 0 on a Cisco MC3810:

```
controller T1 0
channel-group 10 timeslots10 64
```

---

**Related Commands**

Command	Description
<b>force-local-chap</b>	Selects the frame type for the T1 or E1 data line.
<b>linecode</b>	Selects the linecode type for T1 or E1 line.

# chat-script

To create a script that will place a call over a modem, use the **chat-script** command in global configuration mode. Use the **no** form of this command to disable the specified chat script.

**chat-script** *script-name expect-send*

**no chat-script** *script-name expect-send*

## Syntax Description

<i>script-name</i>	Name of the chat script.
<i>expect-send</i>	Pairs of information elements: an item to expect and an item to send in response.

## Defaults

No chat scripts are defined.

## Command Modes

Global configuration

## Command History

Release	Modification
10.0	This command was introduced.

## Usage Guidelines

Chat scripts are used in dial-on-demand routing (DDR) to give commands to dial a modem and commands to log on to remote systems. The defined script will be used to place a call over a modem.

Some characteristics of chat scripts are as follows:

- Chat scripts are case sensitive.
- You can have any number of ABORT sequences active at once.
- When a chat script starts, the default timeout is 5 seconds. Changes to the timeout persist until the next time you change them in the script.
- A string within quotation marks is treated as a single entity.

We recommend that one chat script (a “modem” chat script) be written for placing a call and another chat script (a “system” or “login” chat script) be written to log on to remote systems, where required.

### Suggested Chat Script Naming Conventions

A suggested chat script naming convention is as follows:

*vendor-type-modulation*

If you follow this convention, the syntax of the **chat-script** command becomes the following:

**chat-script** *vendor-type-modulation expect-send*

For example, if you have a Telebit T3000 modem that uses V.32*bis* modulation, you would name your chat script `telebit-t3000-v32bis`.

The **chat-script** command could be written as follows:

```
chat-script telebit-t3000-v32bis ABORT ERROR ABORT BUSY ABORT "NO ANSWER" "" "AT H" OK
"AT DT \T" DIALING \c TIMEOUT 30 CONNECT \c
```

The following is a list of standard chat script names:

- telebit-tb-b103
- telebit-tb-v21
- telebit-tb-v22
- codex-326x-b103
- codex-326x-v21
- codex-326x-v22
- codex-326x-v22bis
- codex-326x-v32
- codex-326x-v32bis
- usr-courier-v22bis
- usr-courier-hst
- usr-courier-v32
- usr-courier-v32bis

Adhering to this naming convention allows you to use partial chat script names with regular expressions to specify a range of chat scripts that can be used. This capability is particularly useful for dialer rotary groups and is explained further in the next section.

Chat scripts are in the form *expect-send*, where the send string following the hyphen (-) is executed if the preceding expect string fails. Each send string is followed by a return unless it ends with the escape sequence `\c`. The sequence `^x` is translated into the appropriate control character, and the sequence `\x` is translated into *x* if `\x` is not one of the special sequences listed in Table 5.

See the book titled *Managing uucp and Usenet* by Tim O'Reilly and Grace Todino for more information about chat scripts.

### Escape Sequences

The escape sequences used in chat scripts are listed in Table 5.

**Table 5** Chat Script Escape Sequences

Escape Sequence	Description
" "	Expect a null string.
EOT	Send an end-of-transmission character.
BREAK	Cause a BREAK. This sequence is sometimes simulated with line speed changes and null characters. May not work on all systems.
\c	Suppress new line at the end of the send string.

**Table 5** Chat Script Escape Sequences (continued)

Escape Sequence	Description
\d	Delay for 2 seconds.
\K	Insert a BREAK
\n	Send a newline or linefeed character.
\p	Pause for .25 seconds.
\r	Send a return.
\s	Send a space character.
\t	Send a tab character.
\\	Send a backslash (\) character.
\T	Replaced by phone number.
\q	Reserved, not yet used.

**Expect-Send Pairs**

Sample supported *expect-send* pairs are described in Table 6.

**Table 6** Sample Supported Expect-Send Pairs

Expect and Send Pair	Function
<b>ABORT</b> <i>string</i>	Designates a string whose presence in the input indicates that the chat script has failed.
<b>TIMEOUT</b> <i>time</i>	Sets the time to wait for input, in seconds. The default is 5 seconds.

For example, if a modem reports BUSY when the number dialed is busy, you can indicate that you want the attempt stopped at this point by including ABORT BUSY in your chat script.

**Alternate Handlers**

If you use the *expect-send* pair ABORT SINK instead of ABORT ERROR, the system terminates abnormally when it encounters SINK instead of ERROR.

**Missed Characters**

After the connection is established and you press the Return key, you must often press Return a second time before the prompt appears.

For example, you might include the following as part of your chat script:

```
ssword:-/r-ssword
```

This part of the script specifies that, after the connection is established, you want **ssword** to be displayed. If it is not displayed, you must press Return again after the timeout passes.

**Examples**

The following example shows the **chat-script** command being used to create a chat script named t3000:

```
chat-script t3000 ABORT ERROR ABORT BUSY ABORT "NO ANSWER" "" "AT H" OK "AT DT \T"
DIALING \c TIMEOUT 30 CONNECT \c
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>dialer map</b>	Configures a serial interface or ISDN interface to call one or multiple sites or to receive calls from multiple sites.
	<b>script dialer</b>	Specifies a default modem chat script.

# clear controller

To reset the T1 or E1 controller, use the **clear controller EXEC**.

**Cisco 7200 series and Cisco 7500 series routers**

```
clear controller {t1 | e1} slot/port
```

**Cisco AS5200 and Cisco AS5300 series routers**

```
clear controller {t1 | e1} number
```

Syntax	Description
<b>t1</b>	Specifies the T1 controller.
<b>e1</b>	Specifies the E1 controller.
<i>slot/port</i>	Backplane slot number and port number on the interface. See your hardware installation manual for the specific slot and port numbers.
<i>number</i>	Network interface module (NIM) number, in the range 0 through 2.

**Command Modes** EXEC

Command History	Release	Modification
	10.1	This command was introduced.

**Examples** The following example resets the T1 controller at slot 4, port 0 on a Cisco 7500 series router:

```
clear controller t1 4/0
```

The following example resets the E1 controller at NIM 0:

```
clear controller e1 0
```

Related Commands	Command	Description
	<b>controller</b>	Configures a T1 or E1 controller and enters controller configuration mode.

# clear cot summary

To reset the counters, use the **clear cot summary** in privileged EXEC mode command.

**clear cot summary**

---

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

---

**Command Modes** Privileged EXEC

---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.3(7)	This command was introduced.

---

---

**Examples** There is no display generated, but the counters in the **show cot summary** command would be all zeros.

---

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show cot dsp</b>	Displays information about the COT DSP configuration or current status.
	<b>show cot request</b>	Displays COT request information.
	<b>show cot summary</b>	Displays information about the COT activity.

---

## clear counters (async)

To clear the counters of a specified asynchronous interface or specified asynchronous interface group, as displayed by the **show interface async** command, use the **clear counters** command in EXEC mode.

```
clear counters { async async-interface-number | group-async group-async-interface-number }
```

Syntax Description		
<b>async</b>		Clears the counters in a specified asynchronous interface.
<i>async-interface-number</i>		Required async interface number of the asynchronous interface that has been previously created with this number specification. The range is from 1 through 49.
<b>group-async</b>		Clears the counters in a specified asynchronous interface group.
<i>group-async-interface-number</i>		Required group-async interface number that has been previously created with this number specification. The range is from 0 through 49.

<b>Defaults</b>	Disabled
-----------------	----------

<b>Command Modes</b>	EXEC
----------------------	------

Command History	Release	Modification
	12.0	This command was introduced.

<b>Usage Guidelines</b>	Before using this command, use the <b>show interface async</b> command to display the asynchronous related counters on the specified asynchronous interface.
-------------------------	--

**Examples**

The following example uses the **show interface async** command to display the asynchronous related counters on the asynchronous interface named 1. The example then uses the **clear counters group-async** command to clear the counters. After the counters are cleared, the configuration file for the interface is displayed.

```
as5300# show interface async 1
Asyncl is down, line protocol is down
  modem(slot/port)=1/0, state=IDLE
  dsxl(slot/unit/channel)=NONE, status=VDEV_STATUS_UNLOCKED
  Hardware is Async Serial
  Interface is unnumbered. Using address of Ethernet0 (1.18.31.9)
  MTU 1500 bytes, BW 115 Kbit, DLY 100000 usec, rely 255/255, load 1/255
  Encapsulation PPP, loopback not set, keepalive not set
  DTR is pulsed for 5 seconds on reset
  LCP Closed
  Closed: IPCP, CDPCP
  Last input never, output never, output hang never
  Last clearing of "show interface" counters 00:03:46
  Input queue: 0/10/0 (size/max/drops); Total output drops: 0/////
  Queueing strategy: weighted fair
  Output queue: 0/1000/64/0 (size/max total/threshold/drops)
    Conversations 0/0/256 (active/max active/max total)
    Reserved Conversations 0/0 (allocated/max allocated)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer
    Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 collisions, 0 interface resets
    0 output buffer failures, 0 output buffers swapped out
    0 carrier transitions
5300#
5300# clear counters group-async 1
Clear "show interface" counters on this interface [confirm]
5300#
*Oct 17 00:42:27.083: %CLEAR-5-COUNTERS: Clear counter on interface Group-Asynce
```

**Related Commands**

Command	Description
<b>clear modem counters</b>	Clears the statistical counters on one or more manageable modems on access servers or routers.
<b>show interface async</b>	Displays the asynchronous related counters on the specified asynchronous interface.

## clear counters line

To clear line counters, use the **clear counters line** command in EXEC mode.

**clear counters line** {*type* | *number*}

Syntax Description	<i>type</i>	Type of line you want to clear. Replace the <i>type</i> argument with one of the following: <b>aux</b> , <b>console</b> , <b>tty</b> , or <b>vtty</b> .
	<i>number</i>	Specifies the first line number to clear, which can be between 0 and 54.

Defaults	Disabled
----------	----------

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

Command History	Release	Modification
	11.2P	This command was introduced.

Usage Guidelines	This command clears the line counters shown by the <b>show line</b> command.
------------------	--

**Examples**

The following example shows the available options under the **clear counters line** command. When you issue this command, the counters (for example, Uses and Noise) displayed by the **show line** command are cleared.

```

router# clear counters line ?
  <0-54>  First Line number
  aux     Auxiliary line
  console Primary terminal line
  tty     Terminal controller
  vty     Virtual terminal

router# exit
router> show line
  Tty Typ   Tx/Rx   A Modem  Roty AccO AccI  Uses   Noise  Overruns
*  0 CTY             -  -      -  -  -    0      4      0/0
A  1 TTY 115200/115200 - inout  -  -  -    1      0      0/0
A  2 TTY 115200/115200 - inout  -  -  -    1      0      0/0
A  3 TTY 115200/115200 - inout  -  -  -    1      0      0/0
*  4 TTY 115200/115200 - inout  -  -  -    0      0      0/0
*  5 TTY 115200/115200 - inout  -  -  -    0      0      0/0
*  6 TTY 115200/115200 - inout  -  -  -    0      0      0/0
*  7 TTY 115200/115200 - inout  -  -  -    0      0      0/0
*  8 TTY 115200/115200 - inout  -  -  -    0      0      0/0
*  9 TTY 115200/115200 - inout  -  -  -    0      0      0/0
* 10 TTY 115200/115200 - inout  -  -  -    0      0      0/0
* 11 TTY 115200/115200 - inout  -  -  -    0      0      0/0
* 12 TTY 115200/115200 - inout  -  -  -    0      0      0/0
* 13 TTY 115200/115200 - inout  -  -  -    0      0      0/0
* 14 TTY 115200/115200 - inout  -  -  -    0      0      0/0
* 15 TTY 115200/115200 - inout  -  -  -    0      0      0/0
A 16 TTY 115200/115200 - inout  -  -  -    1      0      0/0
A 17 TTY 115200/115200 - inout  -  -  -    1      0      0/0
A 18 TTY 115200/115200 - inout  -  -  -    1      0      0/0
A 19 TTY 115200/115200 - inout  -  -  -    1      0      0/0
A 20 TTY 115200/115200 - inout  -  -  -    1      0      0/0
A 21 TTY 115200/115200 - inout  -  -  -    1      0      0/0

```

**Related Commands**

Command	Description
show line	Displays the parameters of a terminal line.

# clear dialer

To clear the values of dialer statistics for one or more serial interfaces or BRIs configured for dial-on-demand routing (DDR), use the **clear dialer** command in privileged EXEC mode.

**clear dialer** [**interface** *type number*]

**Cisco 7500 series routers**

**clear dialer** [**interface serial** *slot/port*]

Syntax Description	Parameter	Description
	<b>interface</b>	(Optional) Indicates that one interface will be specified.
	<i>type</i>	(Optional) Interface type, either <b>async</b> , <b>serial</b> , or <b>bri</b> .
	<i>number</i>	(Optional) Interface number.
	<i>slot/port</i>	(Optional) Backplane slot number and port number on the interface. See your hardware installation manual for the specific slot and port numbers.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	11.0	This command was introduced.

**Usage Guidelines** If the **interface** keyword and the arguments are not used, dialer statistics are cleared on all interfaces.

**Examples** The following example clears the dialer statistics on serial interface 1:

```
clear dialer interface serial 1
```

# clear dialer dnis

To reset the counter statistics associated with a specific dialed number identification service (DNIS) group or number, use the **clear dialer dnis** command in privileged EXEC mode.

```
clear dialer dnis {group name | number number}
```

<b>Syntax Description</b>	<b>group</b> <i>name</i>	Clears dialer DNIS group statistics.
	<b>number</b> <i>number</i>	Clears dialer DNIS number statistics.

<b>Command Modes</b>	Privileged EXEC
----------------------	-----------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.0(4)XI	This command was introduced.

<b>Usage Guidelines</b>	Use the <b>clear dialer dnis</b> EXEC command to reset the counter statistics associated with a specific DNIS group or number. This command clears the counters for a DNIS group to reset the counter statistics associated with a specific DNIS group or number. If an ISP is charging a customer for the number of calls to a DNIS, it can clear the number after a week or month by using this command.
-------------------------	--

**Examples**

The following example shows the result of using the **clear dialer dnis** command for the DNIS group named dg1. Note that the counters have been cleared after the **clear dialer dnis** command has been entered:

```
Router# show dialer dnis group dg1
DNIS Number:71028
  4 total connections
  3 peak connections
  1 calltype mismatches
DNIS Number:4156266541
  8 total connections
  5 peak connections
  0 calltype mismatches
DNIS Number:4085541628
  3 total connections
  2 peak connections
  0 calltype mismatches
DNIS Number:71017
  2 total connections
  1 peak connections
  0 calltype mismatches

Router# clear dialer dnis group dg1

Router# show dialer dnis group dg1
DNIS Number:71028
  0 total connections
  0 peak connections
  0 calltype mismatches
DNIS Number:4156266541
  0 total connections
  0 peak connections
  0 calltype mismatches
DNIS Number:4085541628
  0 total connections
  0 peak connections
  0 calltype mismatches
DNIS Number:71017
  0 total connections
  0 peak connections
  0 calltype mismatches
```

**Related Commands**

Command	Description
<b>show dialer dnis</b>	Displays how many calls DNIS groups have had.

# clear dialer sessions

To remove all dialer sessions and disconnect links when connected, use the **clear dialer sessions** command in EXEC configuration mode.

## **clear dialer sessions**

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

**Command Modes** EXEC

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.0(3)T	This command was introduced.

**Examples** The following example of how to use the **clear dialer sessions** command:

```
router# clear dialer sessions
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show dialer sessions</b>	Displays all dialer sessions.

# clear entry

To delete an entry from the list of queued host-initiated connections, use the **clear entry** command in EXEC mode at the system prompt.

**clear entry** *number*

---

## Syntax Description

<i>number</i>	An entry number obtained from the <b>show entry</b> EXEC command.
---------------	---

---



---

## Command Modes

EXEC

---

## Command History

Release	Modification
10.0	This command was introduced.

---



---

## Examples

The following example deletes pending entry number 3 from the queue:

```
router# clear entry 3
```

---

## Related Commands

Command	Description
<b>show entry</b>	Displays the list of queued host-initiated connections to a router.

---

# clear interface

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

**clear interface** *name-tag*

<b>Syntax Description</b>	<i>name-tag</i>	The logic name to identify the server configuration so that multiple entries of server configuration can be entered.
---------------------------	-----------------	--

<b>Command Modes</b>	Privileged EXEC
----------------------	-----------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.3(7)	This command was introduced.

## Examples

The following example shows how to reset the hardware logic on the loopback 1 link:

```
Router# clear interface loopback 1

Router#
02:48:52: rlm 1: [State_Up, rx ACTIVE_LINK_BROKEN] over link [10.1.1.1(Loopback1),
10.1.4.1]
02:48:52: rlm 1: link [10.1.1.2(Loopback2), 10.1.4.2] requests activation
02:48:52: rlm 1: link [10.1.1.1(Loopback1), 10.1.4.1] is deactivated
02:48:52: rlm 1: link [10.1.1.1(Loopback1), 10.1.4.1] = socket[10.1.1.1, 10.1.4.1]
02:48:52: rlm 1: [State_Recover, rx USER_SOCKET_OPENED] over link [10.1.1.1(Loopback1),
10.1.4.1] for user RLM_MGR
02:48:52: rlm 1: link [10.1.1.1(Loopback1), 10.1.4.1] is opened
02:48:52: rlm 1: link [10.1.1.1(Loopback1), 10.1.5.1] = socket[10.1.1.1, 10.1.5.1]
02:48:52: rlm 1: [State_Recover, rx USER_SOCKET_OPENED] over link [10.1.1.1(Loopback1),
10.1.5.1] for user RLM_MGR
02:48:52: rlm 1: link [10.1.1.1(Loopback1), 10.1.5.1] is opened
02:48:52: rlm 1: [State_Recover, rx START_ACK] over link [10.1.1.2(Loopback2), 10.1.4.2]
02:48:52: rlm 1: link [10.1.1.2(Loopback2), 10.1.4.2] is activated
02:48:52: rlm 1: [State_Up, rx LINK_OPENED] over link [10.1.1.1(Loopback1), 10.1.4.1]

Router# show rlm group 1 status
RLM Group 1 Status
User/Port: RLM_MGR/3000
Link State: Up          Last Link Status Reported: Up_Recovered
Next tx TID: 4          Last rx TID: 0
Server Link Group[r1-server]:
  link [10.1.1.1(Loopback1), 10.1.4.1] = socket[standby, 10.1.1.1, 10.1.4.1]
  link [10.1.1.2(Loopback2), 10.1.4.2] = socket[active, 10.1.1.2, 10.1.4.2]
Server Link Group[r2-server]:
  link [10.1.1.1(Loopback1), 10.1.5.1] = socket[opening, 10.1.1.1, 10.1.5.1]
  link [10.1.1.2(Loopback2), 10.1.5.2] = socket[opening, 10.1.1.2, 10.1.5.2]
```

## ■ clear interface

```

Router#
Router#
02:49:52: rlm 1: [State_Up, rx UP_RECOVERED_MIN_TIMEOUT]
02:49:52: rlm 1: link [10.1.1.1(Loopback1), 10.1.4.1] requests activation
02:49:52: rlm 1: [State_Switch, rx SWITCH_ACK] over link [10.1.1.1(Loopback1), 10.1.4.1]
02:49:52: rlm 1: link [10.1.1.2(Loopback2), 10.1.4.2] is deactivated
02:49:52: rlm 1: link [10.1.1.1(Loopback1), 10.1.4.1] is activated

```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>clear rlm group</b>	Clears all RLM group time stamps to zero.
<b>interface</b>	Defines the IP addresses of the server, configures an interface type, and enters interface configuration mode.
<b>link (RLM)</b>	Specifies the link preference.
<b>protocol rlm port</b>	Reconfigures the port number for the basic RLM connection for the whole rlm-group.
<b>retry keepalive</b>	Allows consecutive keepalive failures a certain amount of time before the link is declared down.
<b>server (RLM)</b>	Defines the IP addresses of the server.
<b>show rlm group statistics</b>	Displays the network latency of the RLM group.
<b>show rlm group status</b>	Displays the status of the RLM group.
<b>show rlm group timer</b>	Displays the current RLM group timer values.
<b>shutdown (RLM)</b>	Shuts down all of the links under the RLM group.
<b>timer</b>	Overwrites the default setting of timeout values.

# clear interface virtual-access

To tear down the virtual access interface and free the memory for other dial-in uses, use the **clear interface virtual-access** command in EXEC mode.

**clear interface virtual-access** *number*

<b>Syntax Description</b>	<i>number</i>	Number used to identify the virtual access interface.
---------------------------	---------------	---

<b>Command Modes</b>	EXEC
----------------------	------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.2F	This command was introduced.

<b>Usage Guidelines</b>	This command does not free the memory for uses unrelated to dial-in access.
-------------------------	---

**Examples** The following example clears a specified virtual access interface. You can use the **show interfaces virtual-access** command to display the interface numbers before you clear any specific one.

```
clear interface virtual access 1
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>interface virtual-template</b>	Creates a virtual template interface that can be configured and applied dynamically in creating virtual access interfaces.

# clear ip route download

To clear static routes downloaded from an authentication, authorization, and accounting (AAA) server, use the **clear ip route download** command in EXEC mode.

```
clear ip route download { * | network-number network-mask | reload }
```

Syntax Description		
	*	Deletes all routes.
	<i>network-number</i> <i>network-mask</i>	Deletes only the destination network route; indicate the value in standard IP address notation. Example: 1.1.1.1 255.255.255.255.
	<b>reload</b>	Deletes all routes, then reloads static routes from the AAA server and resets the timer configured by the <b>aaa route download</b> command.

Command Modes	
	EXEC

Command History	Release	Modification
	12.0(3)T	This command was introduced.

Usage Guidelines	
	This command forces the router to reload static routes from the AAA server before the update timer expires.

Examples	
	The following example shows how to clear all routes:

```
clear ip route download *
```

Related Commands	Command	Description
	<b>aaa authorization configuration default</b>	Downloads static route configuration information from the AAA server using TACACS+ or RADIUS.
	<b>aaa route download</b>	Enables the download static route feature and sets the amount of time between downloads.
	<b>show ip route</b>	Displays all static IP routes, or those installed using the AAA route download function.

# clear line

To return a terminal line to idle state, use the **clear line** command in EXEC mode.

**clear line** *line-number*

---

<b>Syntax Description</b>	<i>line-number</i>	Absolute line number.
---------------------------	--------------------	-----------------------

---

---

<b>Command Modes</b>	EXEC
----------------------	------

---

---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.0	This command was introduced.

---

---

<b>Usage Guidelines</b>	Use this command to log out of a specific session running on another line. If the line uses a modem, the modem will be disconnected.
-------------------------	--

---

---

<b>Examples</b>	The following example resets line 3 to idle state: <pre>clear line 3</pre>
-----------------	---

---

# clear modem

To reset the hardware for one or more manageable modems on an access server or router, use the **clear modem** command in EXEC mode.

```
clear modem {slot/port | all | group group-number | at-mode slot/port |
test}
```

Syntax Description		
<i>slot/port</i>		Clear the modem at the specified slot and modem port number. Remember to include the forward slash (/) when entering this variable. For example: <b>1/1</b> . This variable can also be used with the <b>clear modem at-mode</b> and <b>clear modem counters</b> subcommands .
<b>all</b>		Clear all modems. This command disconnects any active calls.
<b>group</b> <i>group-number</i>		Clears the modem hardware for a group of modems. The modem group-number is the number of the group you have previously created.
<b>at-mode</b> <i>slot/port</i>		Tears down an AT directly connected session. The variable, <i>slot/port-number</i> , is required. This EXEC command clears an attention (AT) directly connected session to a manageable Microcom modem from a second Telnet session.
<b>test</b>		Clears the log or test report that is displayed by the <b>show modem test</b> command. If you do not clear the test regularly, eventually the oldest test report will replace the current test report.

<b>Defaults</b>	Disabled
-----------------	----------

<b>Command Modes</b>	EXEC
----------------------	------

Command History	Release	Modification
	11.2	This command was introduced.

**Usage Guidelines**

The modem hardware is reset for modems that are idle or busied out for long periods of time.

An AT directly connected session is usually initiated and closed from the same Telnet session when you enter the **modem at-mode** command and press **Ctrl-C**. However, you can clear an AT directly connected session that was mistakenly left open by enabling the **clear modem at-mode** command from a second Telnet session in to the access server.

**Examples**

The following example of the **clear modem slot/port** command resets the hardware for manageable modem 1/1:

```
clear modem 1/1
```

The following is an example of using the **clear modem all** command:

```
as5300# clear modem all
This command will disconnect any active calls.
Clear (reset) all modems? [confirm]
Clearing modems.....
Done
as5300#
```

The following examples of the **clear modem group** command clear the manageable modems in group 1:

```
clear modem group 1
clear modem group1
```

The following example executes the **clear modem at-mode** command from a Telnet session:

```
router# modem at-mode 1/1
```

The following example executes the **clear modem at-mode** command from a second Telnet session while the first Telnet session is connected to the modem:

```
router# clear modem at-mode 1/1
clear "modem at-mode" for modem 1/1 [confirm]
router#
```

The following output is displayed in the first Telnet session after the modem is cleared by the second Telnet session:

```
Direct connect session cleared by vty0 (171.69.1.164)
```

## Related Commands

Command	Description
<b>clear modem counters</b>	Clears the statistical counters on one or more manageable modems on access servers or routers.
<b>interface group-async</b>	Creates a group interface that will serve as master, to which asynchronous interfaces can be associated as members.
<b>modem at-mode</b>	Opens a directly connected session and enters AT command mode, which is used for sending AT commands to Microcom manageable modems.

# clear modem counters

To clear the statistical counters on one or more manageable modems installed in an access server, use the **clear modem counters** EXEC command.

**clear modem counters** [*slot/port-number* | **group** [*group-number*]]

<b>Syntax Description</b>	<i>slot/port-number</i>	(Optional) Slot and modem port number. (Include the forward slash (/) when entering this variable. For example: <b>1/1</b> .)
	<b>group</b> [ <i>group-number</i> ]	(Optional) One or all groups of modems. The optional modem group number is the number of a group-async interface. The group number range is 1 through 1002.

<b>Defaults</b>	Disabled
-----------------	----------

<b>Command Modes</b>	EXEC
----------------------	------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.2	This command was introduced.

<b>Usage Guidelines</b>	Entering the <b>clear modem counters</b> command without specifying an optional keyword or argument resets the modem statistics on each modem and the summary statistics displayed in the <b>show modem summary</b> command.
-------------------------	--

<b>Examples</b>	The following example of the <b>clear modem counters slot/port</b> command clears the statistical counters on manageable modem 1/1:
-----------------	---

```
clear modem counters 1/1
```

The following example of the <b>clear modem counters group</b> command clears the statistical counters on all manageable modem groups:
--

```
5300# clear modem counters group
Clear "show modem" counters for all modem groups [confirm]
5300#
*Oct 17 20:20:24.974: %CLEAR-5-COUNTERS: Clear counter on modems in all groups e
5300#
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>clear cot summary</b>	Clears the counters of a specified asynchronous interface or specified asynchronous interface group.
	<b>show modem summary</b>	Displays a high-level report for all manageable modems dialing into and out of the network.

# clear modempool-counters

To clear the active or running counters associated with one or more modem pools, use the **clear modempool-counters** command in EXEC mode. This command is used only with MICA technologies digital modems.

**clear modempool-counters** [*name*]

<b>Syntax Description</b>	<i>name</i> (Optional) Modem pool name. If you do not include this option, all counters for all modem pools will be cleared.
---------------------------	--

<b>Defaults</b>	Disabled
-----------------	----------

<b>Command Modes</b>	EXEC
----------------------	------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.2P	This command was introduced.

<b>Usage Guidelines</b>	The <b>clear modempool-counters</b> command clears the counters that are displayed in the <b>show modem-pool</b> command.
-------------------------	---

**Examples** The following examples show three modem pools set up on the access server: System-def-Mpool, v90service, and v34service.

```
as5300# show modem-pool
modem-pool: System-def-Mpool
modems in pool: 20   active conn: 15
0 no free modems in pool

modem-pool: v90service
modems in pool: 50   active conn: 43
 3 no free modems in pool
called_party_number: 4441000
  max conn allowed: 50, active conn: 43
  3 max-conn exceeded, 3 no free modems in pool

modem-pool: v34service
modems in pool: 50   active conn: 30
 1 no free modems in pool
called_party_number: 4443000
  max conn allowed: 50, active conn: 30
  0 max-conn exceeded, 0 no free modems in pool
```

In the following example, the **clear modempool-counters v90service** command clears the running counters for the v90services modem pool.

```
as5300# clear modempool-counters v90service
as5300# show modem-pool
modem-pool: System-def-Mpool
modems in pool: 20  active conn: 15
0 no free modems in pool

modem-pool: v90service
modems in pool: 50  active conn: 0
0 no free modems in pool
called_party_number: 4441000
max conn allowed: 50, active conn: 0
0 max-conn exceeded, 0 no free modems in pool

modem-pool: v34service
modems in pool: 50  active conn: 30
1 no free modems in pool
called_party_number: 4443000
max conn allowed: 50, active conn: 30
0 max-conn exceeded, 0 no free modems in pool
```

#### Related Commands

Command	Description
<b>called-number</b>	Assigns a called party number to a pool of modems.
<b>modem-pool</b>	Creates a new modem pool or specifies an existing modem pool, which allows you to physically or virtually partition your access server for dial-in and dial-out access.
<b>pool-member</b>	Assigns a range of modems to a modem pool.
<b>show modem-pool</b>	Displays the configuration and connection status for one or more modem pools.

# clear resource-pool

To reset the counter statistics associated with a specific customer profile, call discriminator, or physical resource, use the **clear resource-pool** command in privileged EXEC mode.

```
clear resource-pool {customer | discriminator | resource} {name | all}
```

## Syntax Description

<b>customer</b>	Clears a customer profile.
<b>discriminator</b>	Clears a call discriminator.
<b>resource</b>	Clears a physical resource. Checks the counters maintained for resource groups.
<i>name</i>	Clears a specific customer profile, discriminator, or physical resource in the access server.
<b>all</b>	Clears all customer profiles, discriminators, or physical resources in the access server.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
12.0(4)XI	This command was introduced.

## Usage Guidelines

Use the **clear resource-pool privileged EXEC** command to reset the counter statistics associated with a specific customer profile, call discriminator, or physical resource.

## Examples

The following example shows the use of the **clear resource-pool** command for the specific customer named customer-isp:

```
Router# clear resource-pool customer ?
  WORD  Customer profile name
  all   Clear all customer profiles

Router# clear resource-pool customer customer_isp
Router#
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show resource-pool customer</b>	Displays the contents of one or more customer profiles.
	<b>show resource-pool resource</b>	Displays the resource groups configured in the network access server (NAS).
	<b>show resource-pool call</b>	Displays all active call information for all customer profiles and resource groups.

# clear rlm group link

To clear all time stamps to zero, use the **clear rlm group link** command in privileged EXEC mode.

**clear rlm group** *group-number* **link**

<b>Syntax Description</b>	<i>group-number</i> RLM group number (0 to 255).				
<b>Command Modes</b>	Privileged EXEC				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.3(7)</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	11.3(7)	This command was introduced.
Release	Modification				
11.3(7)	This command was introduced.				

## Examples

The following example clears the time stamps on RLM group 1:

```
Router# clear rlm group 1 link

Router#
02:48:17: rlm 1: [State_Up, rx ACTIVE_LINK_BROKEN] over link [10.1.1.1(Loopback1),
10.1.4.1]
02:48:17: rlm 1: link [10.1.1.2(Loopback2), 10.1.4.2] requests activation
02:48:17: rlm 1: link [10.1.1.1(Loopback1), 10.1.4.1] is deactivated
02:48:17: rlm 1: [State_Recover, rx LINK_BROKEN] over link [10.1.1.2(Loopback2),
10.1.4.2]
02:48:17: rlm 1: link [10.1.1.1(Loopback1), 10.1.4.1] = socket[10.1.1.1, 10.1.4.1]
02:48:17: rlm 1: [State_Recover, rx USER_SOCKET_OPENED] over link [10.1.1.1(Loopback1),
10.1.4.1] for user RLM_MGR
02:48:17: rlm 1: link [10.1.1.1(Loopback1), 10.1.4.1] is opened
02:48:17: rlm 1: link [10.1.1.2(Loopback2), 10.1.4.2] = socket[10.1.1.2, 10.1.4.2]
02:48:17: rlm 1: [State_Recover, rx USER_SOCKET_OPENED] over link [10.1.1.2(Loopback2),
10.1.4.2] for user RLM_MGR
02:48:17: rlm 1: link [10.1.1.2(Loopback2), 10.1.4.2] is opened
02:48:17: rlm 1: link [10.1.1.1(Loopback1), 10.1.5.1] = socket[10.1.1.1, 10.1.5.1]
02:48:17: rlm 1: [State_Recover, rx USER_SOCKET_OPENED] over link [10.1.1.1(Loopback1),
10.1.5.1] for user RLM_MGR
02:48:17: rlm 1: link [10.1.1.1(Loopback1), 10.1.5.1] is opened
02:48:17: rlm 1: link [10.1.1.2(Loopback2), 10.1.5.2] = socket[10.1.1.2, 10.1.5.2]
02:48:17: rlm 1: [State_Recover, rx USER_SOCKET_OPENED] over link [10.1.1.2(Loopback2),
10.1.5.2] for user RLM_MGR
02:48:17: rlm 1: link [10.1.1.2(Loopback2), 10.1.5.2] is opened
02:48:17: rlm 1: [State_Recover, rx LINK_OPENED] over link [10.1.1.1(Loopback1),
10.1.4.1]
02:48:17: rlm 1: link [10.1.1.1(Loopback1), 10.1.4.1] requests activation
02:48:17: rlm 1: [State_Recover, rx LINK_OPENED] over link [10.1.1.2(Loopback2),
10.1.4.2]
02:48:17: rlm 1: [State_Recover, rx START_ACK] over link [10.1.1.1(Loopback1), 10.1.4.1]
02:48:17: rlm 1: link [10.1.1.1(Loopback1), 10.1.4.1] is activated
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>clear interface</b>	Resets the hardware logic on an interface.
	<b>interface</b>	Defines the IP addresses of the server, configures an interface type, and enters interface configuration mode.
	<b>link (RLM)</b>	Specifies the link preference.
	<b>protocol rlm port</b>	Reconfigures the port number for the basic RLM connection for the whole rlm-group.
	<b>retry keepalive</b>	Allows consecutive keepalive failures a certain amount of time before the link is declared down.
	<b>server (RLM)</b>	Defines the IP addresses of the server.
	<b>show rlm group statistics</b>	Displays the network latency of the RLM group.
	<b>show rlm group status</b>	Displays the status of the RLM group.
	<b>show rlm group timer</b>	Displays the current RLM group timer values.
	<b>shutdown (RLM)</b>	Shuts down all of the links under the RLM group.
	<b>timer</b>	Overwrites the default setting of timeout values.

# clear snapshot quiet-time

To end the quiet period on a client router within 2 minutes, use the **clear snapshot quiet-time** command in EXEC mode.

**clear snapshot quiet-time** *interface*

## Syntax Description

<i>interface</i>	Interface type and number.
------------------	----------------------------

## Command Modes

EXEC

## Command History

Release	Modification
10.3	This command was introduced.

## Usage Guidelines

The **clear snapshot quiet-time** command places the client router in a state to reenter the active period within 2 minutes. The 2-minute hold period ensures a quiet period of at least 2 minutes between active periods.

## Examples

The following example ends the quiet period on dialer interface 1:

```
clear snapshot quiet-time dialer 1
```

## Related Commands

Command	Description
<b>show snapshot</b>	Displays snapshot routing parameters associated with an interface.
<b>snapshot client</b>	Configures a client router for snapshot routing.

# clear vpdn history failure

To clear the content of the failure history table, use the **clear vpdn history failure** command in EXEC mode.

**clear vpdn history failure**

---

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

---

**Command Modes** EXEC

---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.3T	This command was introduced.

---

---

**Examples** The following example clears the content of the failure history table:

```
clear vpdn history failure
```

# clear vpdn tunnel

To shut down a specified tunnel and all sessions within the tunnel, use the **clear vpdn tunnel** command in EXEC mode.

```
clear vpdn tunnel {l2f nas-name hgw-name | l2tp [remote-name] [local-name]}
```

## Syntax Description

<b>l2f</b>	Specifies the Layer 2 Forwarding (L2F) tunnel protocol.
<i>nas-name</i>	Name of the network access server at the far end of the tunnel.
<i>hgw-name</i>	Host name of the home gateway at the local end of the tunnel.
<b>l2tp</b>	Specifies the Layer 2 Tunneling Protocol (L2TP) tunnel protocol.
<i>remote-name</i>	(Optional) Host name of the tunnel peer. At the LNS, this is the name of the L2TP access concentrator (LAC); at the LAC, this is the name of the L2TP network server (LNS).
<i>local-name</i>	(Optional) Local host name for the tunnel.

## Command Modes

EXEC

## Command History

Release	Modification
11.2	This command was introduced.
11.3(5)AA	The following keywords and arguments were introduced: <ul style="list-style-type: none"> <li><b>l2f</b> <i>nas-name hgw-name</i></li> <li><b>l2tp</b> <i>remote-name local-name</i></li> </ul>
12.0(1)T	The above modifications were migrated to Release 12.0(1)T.

## Usage Guidelines

Use this command to clear a specific tunnel and all sessions within the tunnel. You can also use this command to isolate problems by forcing a tunnel to come down without deconfiguring the tunnel (the tunnel can be restarted immediately by a user logging in).

You can also use this command to isolate problems by forcing a tunnel to come down without deconfiguring the tunnel (the tunnel can be restarted immediately by having the user log in).

If you are using the **l2tp** keyword, you can clear the tunnel by matching either the remote name or remote name and local name.

## Examples

The following example clears a tunnel to a remote peer named sophia:

```
clear vpdn tunnel l2tp mugsy sophia
```

The following example clears a tunnel between a network access server called orion and a home gateway called sampson:

```
clear vpdn tunnel orion sampson
```

# clock source line

To set the E1 line clock source for the Cisco AS5200 access server, use the **clock source line** command in controller configuration mode . Use the **no** form of this command to change or remove the clocking source.

**clock source line {primary | secondary}**

**no clock source line {primary | secondary}**

Syntax Description	primary	Secondary TDM clock source.
	secondary	Primary TDM clock source.

**Defaults**  
 Primary TDM clock source is taken from the E1 controller 0 on the Cisco AS5200.  
 Secondary TDM clock source is taken from the E1 controller 1 on the Cisco AS5200.

**Command Modes**  
 Controller configuration

Command History	Release	Modification
	11.1	This command was introduced.

**Usage Guidelines**  
 Configure the **clock source line primary** command on the controller that takes the most reliable clocking from an E1 line. Configure the **clock source line secondary** command on the controller that has the next best known clocking. With this configuration, the primary line clocking is backed up to the secondary line if the primary clocking shuts down.

**Examples**  
 The following example configures the Cisco AS5200 to use E1 controller 0 as the primary clocking source and the E1 controller 1 as the secondary clocking source:

```
controller e1 0
  framing esf
  linecode hdb3
  pri-group timeslots 1-23
  clock source line primary
!
controller e1 1
  framing esf
  linecode hdb3
  pri-group timeslots 1-23
  clock source line secondary
```

■ clock source line

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>force-local-chap</b>	Selects the frame type for the T1 or E1 data line.
	<b>linecode</b>	Selects the linecode type for T1 or E1 line.

# connect

To log in to a host that supports Telnet, rlogin, or LAT, use the **connect** command in EXEC mode.

```
connect host [port] [keyword]
```

Syntax Description		
<i>host</i>		A host name or an IP address.
<i>port</i>		(Optional) A decimal TCP port number; the default is the Telnet router port (decimal 23) on the host.
<i>keyword</i>		(Optional) One of the keywords listed in Table 7.

**Command Modes** EXEC

Command History	Release	Modification
	10.0	This command was introduced in a release prior to Cisco IOS Release 10.0.
	12.1	The <b>/quiet</b> keyword was added.

**Usage Guidelines** Table 7 lists the optional **connect** command keywords.

*Table 7 connect Command Keyword Options*

Option	Description
<b>/debug</b>	Enables Telnet debugging mode.
<b>/encrypt kerberos</b>	Enables an encrypted Telnet session. This keyword is available only if you have the Kerberized Telnet subsystem. If you authenticate using Kerberos Credentials, the use of this keyword initiates an encryption negotiation with the remote server. If the encryption negotiation fails, the Telnet connection will be reset. If the encryption negotiation is successful, the Telnet connection will be established, and the Telnet session will continue in encrypted mode (all Telnet traffic for the session will be encrypted).
<b>/line</b>	Enables Telnet line mode. In this mode, the Cisco IOS software sends no data to the host until you press the <b>Enter</b> key. You can edit the line using the standard Cisco IOS software command editing characters. The <b>/line</b> keyword is a local switch; the remote router is not notified of the mode change.
<b>/noecho</b>	Disables local echo.
<b>/quiet</b>	Prevents onscreen display of all messages from the Cisco IOS software.
<b>/route path</b>	Specifies loose source routing. The <i>path</i> argument is a list of host names or IP addresses that specify network nodes and ends with the final destination.
<b>/source-interface</b>	Specifies the source interface.

Table 7 *connect Command Keyword Options (continued)*

Option	Description
<i>/stream</i>	Turns on <i>stream</i> processing, which enables a raw TCP stream with no Telnet control sequences. A stream connection does not process Telnet options and can be appropriate for connections to ports running Unix-to-Unix Copy Program (UUCP) and other non-Telnet protocols.
<b>port-number</b>	Port number.
<b>bgp</b>	Border Gateway Protocol.
<b>chargen</b>	Character generator.
<b>cmd</b> <i>rcmd</i>	Remote commands.
<b>daytime</b>	Daytime.
<b>discard</b>	Discard.
<b>domain</b>	Domain Naming Service.
<b>echo</b>	Echo.
<b>exec</b>	EXEC.
<b>finger</b>	Finger.
<b>ftp</b>	File Transfer Protocol.
<b>ftp-data</b>	FTP data connections (used infrequently).
<b>gopher</b>	Gopher.
<b>hostname</b>	Host name server.
<b>ident</b>	Ident Protocol.
<b>irc</b>	Internet Relay Chat.
<b>klogin</b>	Kerberos login.
<b>kshell</b>	Kerberos shell.
<b>login</b>	Login (rlogin).
<b>lpd</b>	Printer service.
<b>nntp</b>	Network News Transport Protocol.
<b>node</b>	Connect to a specific LAT node.
<b>pop2</b>	Post Office Protocol v2.
<b>pop3</b>	Post Office Protocol v3.
<b>port</b>	Destination LAT port name.
<b>smtp</b>	Simple Mail Transport Protocol.
<b>sunrpc</b>	Sun Remote Procedure Call.
<b>syslog</b>	Syslog.
<b>tacacs</b>	Specify TACACS security.
<b>talk</b>	Talk.
<b>telnet</b>	Telnet.
<b>time</b>	Time.
<b>uucp</b>	Unix-to-Unix Copy Program.

**Table 7** *connect Command Keyword Options (continued)*

Option	Description
<b>whois</b>	Nickname.
<b>www</b>	World Wide Web.

With the Cisco IOS software implementation of TCP/IP, you are not required to enter the **connect**, **telnet**, **lat**, or **rlogin** commands to establish a terminal connection. You can just enter the learned host name—as long as the host name is different from a command word in the Cisco IOS software.

To display a list of the available hosts, use the **show hosts** command. To display the status of all TCP connections, use the **show tcp** command.

The Cisco IOS software assigns a logical name to each connection, and several commands use these names to identify connections. The logical name is the same as the host name, unless that name is already in use, or you change the connection name with the **name-connection EXEC** command. If the name is already in use, the Cisco IOS software assigns a null name to the connection.

## Examples

The following example establishes an encrypted Telnet session from a router to a remote host named host1:

```
router> connect host1 /encrypt kerberos
```

The following example routes packets from the source system host1 to kl.sri.com, then to 10.1.0.11, and finally back to host1:

```
router> connect host1 /route:kl.sri.com 10.1.0.11 host1
```

The following example connects to a host with logical name host1:

```
router> host1
```

The following example suppresses all onscreen messages from the Cisco IOS software during login and logout:

```
router> connect host2 /quiet
```

The following example shows the limited messages displayed when connection is done using the optional **/quiet** keyword:

```
login:User2
Password:
      Welcome to OpenVMS VAX version V6.1 on node CRAW
      Last interactive login on Tuesday, 15-DEC-1998 11:01
      Last non-interactive login on Sunday,  3-JAN-1999 22:32

Server3)logout
      User2          logged out at  16-FEB-2000 09:38:27.85
```

Related Commands	Command	Description
	<b>kerberos clients mandatory</b>	Causes the <b>rsh</b> , <b>rcp</b> , <b>rlogin</b> , and <b>telnet</b> commands to fail if they cannot negotiate the Kerberos Protocol with the remote server.
	<b>l2f ignore-mid-sequence</b>	Specifies a connection to a particular LAT node that offers LAT services.
	<b>rlogin</b>	Logs in to a UNIX host using rlogin.
	<b>telnet</b>	Logs in to a host that supports Telnet.

# controller

To configure a T1 or E1 controller and enter controller configuration mode, use the **controller** command in global configuration mode.

## Cisco 7200 series and Cisco 7500 series routers

```
controller {t1 | e1} slot/port
```

## Cisco AS5200 and AS5300 access servers and Cisco 4000 series routers

```
controller {t1 | e1} number
```

Syntax	Description
<b>t1</b>	T1 controller.
<b>e1</b>	E1 controller.
<i>slot/port</i>	Backplane slot number and port number on the interface. See your hardware installation manual for the specific values and slot numbers.
<i>number</i>	Network processor module (NPM) number, in the range 0 through 2.

**Defaults** No T1 or E1 controller is configured.

**Command Modes** Global configuration

Command History	Release	Modification
	10.0	This command was introduced.
	10.3	The <b>e1</b> keyword was added.

**Usage Guidelines** This command is used in configurations where the router or access server is intended to communicate with a T1 or E1 fractional data line. Additional parameters for the T1 or E1 line must be configured for the controller before the T1 or E1 circuits can be configured by means of the **interface** global configuration command.

**Examples** The following example configures the MIP in slot 4, port 0 of a Cisco 7500 series router as a T1 controller:

```
controller t1 4/0
```

The following example configures NIM 0 of a Cisco 4000 series router as a T1 controller:

```
controller t1 0
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>channel-group</b>	Defines the time slots that belong to each T1 or E1 circuit.
	<b>clear controller</b>	Resets the T1 or E1 controller.
	<b>clock source line</b>	Sets the E1 line clock source for the Cisco AS5200.
	<b>force-local-chap</b>	Selects the frame type for the T1 or E1 data line.
	<b>linecode</b>	Selects the linecode type for T1 or E1 line.
	<b>show controllers e1</b>	Displays information about the E1 links supported by the NPM (Cisco 4000) or MIP (Cisco 7500 series).
	<b>show controllers t1 call-counters</b>	Displays the total number of calls and call durations on a T1 controller.

# copy modem

To copy modem firmware to integrated modems in an access server, use the **copy modem** command in EXEC mode.

**copy {flash | tftp | rcp} modem**

Syntax Description	flash	Copies firmware from Flash memory to the modems.
	tftp	Copies firmware from a local TFTP server on your network to the modems.
	rcp	Copies firmware from a local rcp server on your network to the modems.

**Defaults** Disabled

**Command Modes** EXEC

Command History	Release	Modification
	11.2	This command was introduced.

## Usage Guidelines



### Note

The **copy modem** command is no longer available for MICA portware and 56K Microcom modems on Cisco AS5200 and AS5300 access servers. Use the **spe** command instead.

The Microcom V.34 modems and Cisco AS5200 V.110 terminal adapter will continue to use the **copy modem** command. On bootup, because these modems do not require download, the command displays the location of the firmware as "feature\_card\_flash."

After you enable this command, you are asked to provide the download destination (a *slot/port* or **all**), the remote host name, and the path leading to the source modem firmware.

If a modem that you want to upgrade is busy with a call when the **copy modem** command is enabled, the upgrade for that modem yields until the active call is dropped. All other idle modems in the upgrade range proceed with the downloading operation.

## Examples

The following example copies the modem firmware file called `modem_upgrade` from the TFTP server called `Modem_Server` to modem 2/0, which is installed in a Cisco AS5200 access server:

```
router# copy tftp modem
Modem Numbers (<slot>/<port>[<-<slot>/<port>] | group <number> | all)? 2/0
Address or name of remote host [UNKNOWN]? Modem_Server
Source file name? dirt/elem/modem_upgrade
Accessing file 'dirt/elem/modem_upgrade on Modem_Server...
Loading dirt/elem/modem_upgrade .from 223.255.254.254 (via Ethernet0): ! [OK]
```

```

Loading dirt/elem/modem_upgrade from 223.255.254.254 (via Ethernet0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 237503/278528 bytes]

```

```

router#
%MODEM-5-DL_START: Modem (2/0) started firmware download
%MODEM-5-DL_GOOD: Modem (2/0) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85

```

As shown in this example, you might want to upgrade and test one modem's firmware before upgrading the firmware of all the modems on the access server, as shown in the next example.

The following example downloads the same modem firmware file from the TFTP server to all the modems in the Cisco AS5200 access server:

```

router# copy tftp modem
Modem Numbers (<slot>/<port>[-<slot>/<port>] | group <number> | all)? all
Address or name of remote host [UNKNOWN]? Modem_Server
Source file name? dirt/elem/modem_upgrade
Accessing file 'dirt/elem/modem_upgrade on Modem_Server...
Loading dirt/elem/modem_upgrade .from 223.255.254.254 (via Ethernet0): ! [OK]

Loading dirt/elem/modem_upgrade from 223.255.254.254 (via Ethernet0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 237503/278528 bytes]

```

```

router#
%MODEM-5-DL_START: Modem (2/0) started firmware download
%MODEM-5-DL_START: Modem (2/1) started firmware download
%MODEM-5-DL_START: Modem (2/2) started firmware download
%MODEM-5-DL_START: Modem (2/3) started firmware download
%MODEM-5-DL_START: Modem (2/4) started firmware download
%MODEM-5-DL_START: Modem (2/5) started firmware download
%MODEM-5-DL_START: Modem (2/6) started firmware download
%MODEM-5-DL_START: Modem (2/7) started firmware download
%MODEM-5-DL_START: Modem (2/8) started firmware download
%MODEM-5-DL_START: Modem (2/9) started firmware download
%MODEM-5-DL_START: Modem (2/10) started firmware download
%MODEM-5-DL_START: Modem (2/11) started firmware download
%MODEM-5-DL_START: Modem (2/12) started firmware download
%MODEM-5-DL_START: Modem (2/13) started firmware download
%MODEM-5-DL_START: Modem (2/14) started firmware download
%MODEM-5-DL_START: Modem (2/15) started firmware download
%MODEM-5-DL_START: Modem (2/16) started firmware download
%MODEM-5-DL_START: Modem (2/17) started firmware download
%MODEM-5-DL_START: Modem (2/18) started firmware download
%MODEM-5-DL_START: Modem (2/19) started firmware download
%MODEM-5-DL_START: Modem (2/20) started firmware download
%MODEM-5-DL_START: Modem (2/21) started firmware download
%MODEM-5-DL_START: Modem (2/22) started firmware download
%MODEM-5-DL_START: Modem (2/23) started firmware download
%MODEM-5-DL_GOOD: Modem (2/2) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/10) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/4) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/6) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/7) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85

```

```

%MODEM-5-DL_GOOD: Modem (2/12) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/11) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/13) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/1) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/14) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/19) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/22) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/5) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/8) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/9) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/17) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/0) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/3) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/21) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/16) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/15) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/18) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/20) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
%MODEM-5-DL_GOOD: Modem (2/23) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85

```

The following example copies the modem firmware file called STAR.M from Flash memory to the integrated modem 1/2:

```

router# copy flash modem
Modem Numbers (<slot>/<port> | group <number> | all)? 1/2

System flash directory:
File Length Name/status
  1 3539820 as5200-i-m.allcookies
  2 239203 STAR.M
  3 23072 BOOT.105 [3802288 bytes used, 4586320 available, 8388608 total]
Source file name? STAR.M
router#
%MODEM-5-DL_START: Modem (1/2) started firmware download
%MODEM-5-DL_GOOD: Modem (1/2) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.23/85.23/85
router#

```

Related Commands	Command	Description
	<b>copy</b>	Copies any file from a source to a destination.
	<b>spe</b>	Accesses SPE configuration mode and enables the downloading of firmware into modems.

# cpp authentication

To enable negotiation of authentication with a router or bridge that supports the Combinet Proprietary Protocol (CPP) and that is calling in to this router, use the **cpp authentication** command in interface configuration mode. To disable negotiation of CPP authentication, use the **no** form of this command.

**cpp authentication**

**no cpp authentication**

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

**Defaults** Disabled

**Command Modes** Interface configuration

Command History	Release	Modification
	11.2	This command was introduced.

**Usage Guidelines**

Use this command for authenticating the device that is calling in to this router.

Use this command to communicate over an ISDN interface with Cisco 700 and 800 series (formerly Combinet) routers that do not support PPP but do support the CPP.

Currently, most Cisco routers *do* support PPP. Cisco routers can communicate over ISDN with these devices by using PPP encapsulation, which supports both routing and fast switching.

This command is supported on ISDN and dialer interfaces.

This command uses names and passwords from the **username password** command. It does not support the TACACS.

**Examples** The following example configures a PRI to communicate with a bridge that does not support PPP:

```
controller t1 1/1
  framing esf
  linecode b8zs
  pri-group timeslots 1-23
  isdn switchtype primary-4ess

interface Serial1/1:23
  encapsulation cpp
  cpp callback accept
  cpp authentication
```

The following example configures a BRI to communicate with a bridge that does not support PPP:

```
interface bri 0
 encapsulation cpp
 cpp callback accept
 cpp authentication
```

---

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>cpp callback accept</b>	Enables the router to accept callback from a router or bridge that supports the CPP.
<b>encapsulation cpp</b>	Enables encapsulation for communication with routers or bridges using the CPP.
<b>virtual-profile aaa</b>	Enables virtual profiles by AAA configuration.

# cpp callback accept

To enable the router to accept callback from a router or bridge that supports the Combinet Proprietary Protocol (CPP), use the **cpp callback accept** command in interface configuration mode. Use the **no** form of this command to disable callback acceptance.

**cpp callback accept**

**no cpp callback accept**

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

**Defaults** Disabled

**Command Modes** Interface configuration

Command History	Release	Modification
	11.2	This command was introduced.

**Usage Guidelines** Use this command to communicate over an ISDN interface with Cisco 700 and 800 series (formerly Combinet) routers that do not support PPP but do support CPP.

Currently, most Cisco routers *do* support PPP. Cisco routers can communicate over ISDN with these devices by using PPP encapsulation, which supports both routing and fast switching.

This command is supported on ISDN and dialer interfaces.

**Examples** The following example configures the PRI interface serial1/1:23 to communicate with a router or bridge that does not support PPP:

```
controller t1 1/1
 framing esf
 linecode b8zs
 pri-group timeslots 1-23
 isdn switchtype primary-4ess
!
interface Serial1/1:23
 encapsulation cpp
 cpp callback accept
 cpp authentication
```

The following example configures BRI 0 to communicate with a router or bridge that does not support PPP:

```
interface bri 0
 encapsulation cpp
 cpp callback accept
 cpp authentication
```

■ **cpp callback accept****Related Commands**

<b>Command</b>	<b>Description</b>
<b>cpp authentication</b>	Enables negotiation of authentication with a router or bridge that supports the CPP and that is calling in to this router.
<b>encapsulation cpp</b>	Enables encapsulation for communication with routers or bridges using the CPP.



