Cisco CallManager Express 3.0 Commands: A through M

This chapter documents commands to configure and maintain Cisco CallManager Express. The commands are presented in alphabetical order. Some commands required for configuring voice may be found in other Cisco IOS command references. Use the Cisco IOS Release 12.3 Master Indexes or search online to find these commands.

For detailed information on how to configure Cisco CallManager Express applications and features, refer to the *Cisco CallManager Express System Administration Guide*.

Note Prior to Version 3.0, Cisco CallManager Express was known as Cisco IOS Telephony Services (Cisco ITS).

after-hour exempt

To specify that an IP phone does not have any of its outgoing calls blocked even though call blocking has been enabled, use the **after-hour exempt** command in ephone configuration mode. To remove the exemption, use the **no** form of this command.

after-hour exempt

no after-hour exempt

Syntax Description   This command has no arguments or keywords.

Defaults   The IP phone is not exempt from call blocking.

Command Modes   Ephone configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines   Call blocking on IP phones is defined in the following way. First, one or more patterns of outgoing digits are defined using the **after-hours block pattern** command. Next, one or more time periods during which calls that match those patterns are to be blocked are defined using the **after-hours date** or **after-hours day** command or both. By default, all IP phones in a Cisco CallManager Express system are restricted during the specified time if at least one pattern and at least one time period are defined. Individual phones can be exempted from call blocking using the **after-hour exempt** command.

Examples   The following example specifies that outgoing calls from this phone are not blocked:

```
Router(config)# ephone 23
Router(config-ephone)# mac 00e0.8646.9242
Router(config-ephone)# button 1:33
Router(config-ephone)# after-hour exempt
```

Related Commands

Command	Description
after-hours block pattern	Defines a pattern of digits for blocking outgoing calls from IP phones.
after-hours date	Defines a recurring period based on date during which outgoing calls that match defined block patterns are blocked on IP phones.

Command	Description
after-hours day	Defines a recurring period based on day of the week during which outgoing calls that match defined block patterns are blocked on IP phones.
ephone	Enters ephone configuration mode.

after-hours block pattern

To define a pattern of outgoing digits for call blocking from IP phones, use the **after-hours block pattern** command in telephony-service configuration mode. To delete a call-blocking pattern, use the **no** form of this command.

after-hours block pattern *pattern-tag pattern* [**7-24**]

no after-hours block pattern *pattern-tag*

Syntax Description

pattern-tag	Identifier for a call-blocking pattern. Up to 32 call-blocking patterns can be defined in separate commands.
pattern	Outgoing call digits to be matched for blocking.
7-24	(Optional) If the **7-24** keyword is specified, the pattern is always blocked, 7 days a week, 24 hours a day. If the **7-24** keyword is not specified, the pattern is blocked during the days and dates that are defined with the **after-hours day** and **after-hours date** commands.

Defaults

No pattern is defined.

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

Call blocking on IP phones is defined in the following way. First, one or more patterns of outgoing digits are defined using the **after-hours block pattern** command. Next, one or more time periods during which calls that match those patterns are to be blocked are defined using the **after-hours date** or **after-hours day** command or both. By default, all IP phones in a Cisco CallManager Express system are restricted during the specified time if at least one pattern and at least one time period are defined. Individual phones can be exempted from call blocking using the **after-hour exempt** command.

Blocked calls return a fast-busy tone to the user for approximately 10 seconds before the call is terminated and the line is returned to on-hook status.

Examples

The following example defines pattern 1, which blocks international calls after hours for a Cisco CallManager Express system that requires dialing 9 for external calls:

```
Router(config)# telephony-service
Router(config-telephony-service)# after-hours block pattern 1 9011
```

Related Commands	Command	Description
	after-hour exempt	Specifies that an IP phone does not have any of its outgoing calls blocked even though call blocking has been defined.
	after-hours date	Defines a recurring period based on date during which outgoing calls that match defined block patterns are blocked on IP phones.
	after-hours day	Defines a recurring period based on day of the week during which outgoing calls that match defined block patterns are blocked on IP phones.
	telephony-service	Enters telephony-service configuration mode.

after-hours date

To define a recurring period based on date during which outgoing calls that match defined block patterns are blocked on IP phones, use the **after-hours date** command in telephony-service configuration mode. To delete a defined time period, use the **no** form of this command.

after-hours date *month date start-time stop-time*

no after-hours date *month date*

Syntax Description

month	Abbreviated month. The following abbreviations for month are valid: **jan**, **feb**, **mar**, **apr**, **may**, **jun**, **jul**, **aug**, **sep**, **oct**, **nov**, **dec**.
date	Date of the month. Range is from 1 to 31.
start-time *stop-time*	Beginning and ending times for call blocking, in an HH:MM format using a 24-hour clock. The stop time must be greater than the start time. The value 24:00 is not valid. If 00:00 is entered as an stop time, it is changed to 23:59. If 00:00 is entered for both start time and stop time, calls are blocked for the entire 24-hour period on the specified date.

Defaults

No time period based on date is defined for call blocking.

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

Call blocking on IP phones is defined in the following way. First, one or more patterns of outgoing digits are defined using the **after-hours block pattern** command. Next, one or more time periods during which calls that match those patterns are to be blocked are defined using the **after-hours date** or **after-hours day** command or both. By default, all IP phones in a Cisco CallManager Express system are restricted during the specified time if at least one pattern and at least one time period are defined. Individual IP phones can be exempted from call blocking using the **after-hour exempt** command.

Call blocking for the time period that is defined in this command recurs annually on the date specified in the command.

Examples

The following example defines January 1 as an entire day on which calls that match the pattern specified in the **after-hours block pattern** command are blocked:

```
Router(config)# telephony-service
Router(config-telephony-service)# after-hours date jan 1 00:00 00:00
```

	Command	Description
Related Commands	**after-hour exempt**	Specifies that an IP phone does not have any of its outgoing calls blocked even though call blocking has been defined.
	after-hours block pattern	Defines a pattern of digits for blocking outgoing calls from IP phones.
	after-hours day	Defines a recurring period based on day of the week during which outgoing calls that match defined block patterns are blocked on IP phones.
	telephony-service	Enters telephony-service configuration mode.

after-hours day

To define a recurring period based on day of the week during which outgoing calls that match defined block patterns are blocked on IP phones, use the **after-hours day** command in telephony-service configuration mode. To delete a defined time period, use the **no** form of this command.

after-hours day *day start-time stop-time*

no after-hours day *day*

Syntax Description

day	Abbreviated day of the week. The following abbreviations for day of the week are valid: **sun**, **mon**, **tue**, **wed**, **thu**, **fri**, **sat**.
start-time *stop-time*	Beginning and ending times for call blocking, in an HH:MM format using a 24-hour clock. The stop time can be smaller than the start time. The value 24:00 is not valid. If 00:00 is entered as an stop time, it is changed to 23:59. If 00:00 is entered for both start time and stop time, calls are blocked for the entire 24-hour period on the specified day.

Defaults

No time period based on day of the week is defined for call blocking.

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

Call blocking on IP phones is defined in the following way. First, one or more patterns of outgoing digits are defined using the **after-hours block pattern** command. Next, one or more time periods during which calls that match those patterns are to be blocked are defined using the **after-hours date** or **after-hours day** command or both. By default, all IP phones in a Cisco CallManager Express system are restricted during the specified time if at least one pattern and at least one time period are defined. Individual phones can be exempted from call blocking using the **after-hour exempt** command.

Call blocking occurs during the hours between the start time and stop time on the day of the week that is specified in this command. This time period recurs weekly unless it is removed using the **no** form of this command.

Examples

The following example defines the period from Monday night at 7 p.m. to Tuesday morning at 7 a.m. as an after-hours call-blocking period:

```
Router(config)# telephony-service
Router(config-telephony-service)# after-hours day mon 19:00 07:00
```

Related Commands	Command	Description
	after-hour exempt	Specifies that an IP phone does not have any of its outgoing calls blocked even though call blocking has been defined.
	after-hours block pattern	Defines a pattern of digits for blocking outgoing calls from IP phones.
	after-hours date	Defines a recurring period based on date during which outgoing calls that match defined block patterns are blocked on IP phones.
	telephony-service	Enters telephony-service configuration mode.

application (ephone-dn)

To select a session-level application for a specific extension (ephone-dn) in a Cisco CallManager Express (Cisco CME) system, use the **application** command in ephone-dn configuration mode. To disable use of the application, use the **no** form of this command.

application *application-name* [**out-bound**]

no application *application-name* [**out-bound**]

Syntax Description	*application-name*	Interactive voice response (IVR) application name.
	out-bound	(Optional) Application handles the dial peer in outgoing mode.

Defaults

No application is selected for the phone.

Command Modes

Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(2)XT	2.0	This command was introduced on the Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725, Cisco 3745, and Cisco MC3810-V3.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines

Use this command to assign a Tool Command Language (Tcl) IVR application to a Cisco IP phone extension (ephone-dn).

Use the **show call application voice summary** command to display a list of applications.

Examples

The following example sets the IVR application for directory number 1:

```
Router(config)# ephone-dn 1
Router(config-ephone-dn) application TCL IVR
```

Related Commands	Command	Description
	ephone-dn	Enters ephone-dn configuration mode.
	show call application voice summary	Displays information about voice applications.

application (telephony-service)

To select a session-level application for all extensions (ephone-dns) in a Cisco CallManager Express (Cisco CME) system, use the **application** command in telephony-service configuration mode. To disable use of an application for all extensions, use the **no** form of this command.

application *application-name*

no application

Syntax Description

application-name	Interactive voice response (IVR) application name.

Defaults

No application is selected for all extensions.

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(11)YT	2.1	This command was introduced.
12.2(15)T	2.1	This command was integrated into Cisco IOS Release 12.2(15)T.

Usage Guidelines

Use this command to assign a Tool Command Language (Tcl) IVR application to all extensions served by the CME router.

Use the **show call application voice summary** command to display a list of applications.

Examples

The following example sets the IVR application for all phones:

```
Router(config)# telephony-service
Router(config-telephony-service) application TCL IVR
```

Related Commands

Command	Description
show call application voice summary	Displays information about voice applications.
telephony-service	Enters telephony-service configuration mode.

auto assign

To automatically assign ephone-dn tags to Cisco IP phones as they register for service with the Cisco CallManager Express (Cisco CME) router, use the **auto assign** command in telephony-service configuration mode. To return to the default of not automatically assigning ephone-dn tags to IP phones, use the **no** form of this command.

auto assign *dn-tag* **to** *dn-tag* [**type** *phone-type*] [**cfw** *extension-number* **timeout** *seconds*]

no auto assign *dn-tag* **to** *dn-tag* [**type** *phone-type*] [**cfw** *extension-number* **timeout** *seconds*]

Syntax Description		
	dn-tag **to** *dn-tag*	Range of ephone-dn tags. The maximum number of ephone-dns per Cisco CME system is platform-dependent and version-dependent. Refer to command-line interface (CLI) help for the maximum number on your system.
	type *phone-type*	(Optional) Type of Cisco IP phone to which to restrict automatic assignment of ephone-dn tags. Valid entries are the following:
		• **7902**—Cisco IP Phone 7902G.
		• **7905**—Cisco IP Phone 7905G.
		• **7910**—Cisco IP Phone 7910G.
		• **7912**—Cisco IP Phone 7912G.
		• **7935**—Cisco IP Conference Station 7935.
		• **7940**—Cisco IP Phone 7940G.
		• **7960**—Cisco IP Phone 7960G.
		• **ata**—Cisco ATA-186 or Cisco ATA-188.
	cfw	(Optional) Automatically assigned ephone-dns are provisioned for call-forward busy and no-answer to the specified extension number.
	extension-number	(Optional) Extension number to which calls are to be forwarded on busy and no-answer conditions.
	timeout *seconds*	(Optional; required if the **cfw** keyword is used) Amount of time, in seconds, to wait when a call is not being answered before forwarding it. Range is from 3 to 60000. There is no default.

Defaults   Ephone-dn tags are not automatically assigned to Cisco IP phones.

Command Modes   Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

This command lets you assign ranges of ephone-dn tags according to the physical phone type. Multiple **auto assign** commands can be used to provide discontinuous ranges and to support multiple types of IP phones. Overlapping ephone-dn ranges may be assigned so that they map to more than one type of phone. If no type is specified, the values in the range are assigned to phones of any type, but if a specific range is assigned for a phone type, the available ephone-dns in that range are used first.

This command is also used by the Cisco CME setup tool to automatically assign ephone-dns after the tool has gathered information about the desired setup from the user. When lines are assigned by the Cisco CME setup tool in keyswitch mode with two ephone-dn entries created for each individual extension number, the automatic assignment mechanism assigns both ephone-dn entries to an individual phone.

The **auto assign** command cannot be used for the Cisco IP Phone 7914 Expansion Module. Phones with one or more expansion modules must be configured manually.

Automatically assigned ephone-dn tags must belong to normal ephone-dns and cannot belong to paging ephone-dns, intercom ephone-dns, music-on-hold (MOH) ephone-dns, or message-waiting-indication (MWI) ephone-dns. The ephone-dn tags that are automatically assigned must have at least a primary number defined.

All the ephone-dns in a single automatic assignment set must be of the same kind (either single-line or dual-line). Automatic assignment cannot create shared lines.

If an insufficient number of ephone-dns is available in the automatic assignment set, some phones will not receive ephone-dns.

Reversal or undoing of automatic assignment must be performed by manual command-line interface (CLI) entry.

This command must be followed by a reboot of the phones that are assigned. If you use the **type** keyword with this command, use the **reset** command to reboot the phones. If you do not use the **type** keyword with this command, use the **restart** command to perform a quick reboot.

Note Care should be taken when using the **auto assign** command because this command grants telephony service to any IP phone that attempts to register. If you use the **auto assign** configuration option, make sure that your network is secure from unauthorized access by unknown IP phones.

Examples

The following example designates ephone-dn tags 1 through 4 for automatic assignment to any type of IP phone:

```
Router(config)# telephony-service
Router(config-telephony-service)# auto assign 1 to 4
```

The following example designates ephone-dn tags 1 through 12 for automatic assignment to a Cisco IP Phone 7910 and designates ephone-dn tags 13 through 20 for automatic assignment to a Cisco IP Phone 7960 with call forwarding to extension 5001 on busy or after 30 seconds of ringing with no answer:

```
Router(config)# telephony-service
Router(config-telephony-service)# auto assign 1 to 12 type 7910
Router(config-telephony-service)# auto assign 13 to 20 type 7960 cfw 5001 timeout 30
```

Related Commands	Command	Description
	reset (ephone)	Performs a complete reboot of a Cisco IP phone associated with a Cisco CME router.
	reset (telephony-service)	Performs a complete reboot of one or all phones associated with a Cisco CME router.
	restart (ephone)	Performs a fast reboot of a single phone associated with a Cisco CME router.
	restart (telephony-service)	Performs a fast reboot of one or all phones associated with a Cisco CME router.
	telephony-service	Enters telephony-service configuration mode.

auto-line

To enable automatic line selection on an IP phone in a Cisco CallManager Express (Cisco CME) system, use the **auto-line** command in ephone configuration mode. To disable automatic line selection, use the **no** form of this command.

> **auto-line** [**incoming**]

> **no auto-line**

Syntax Description

incoming	(Optional) Enables automatic line selection for incoming calls only.

Defaults

Automatic line selection is enabled.

Command Modes

Ephone configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

Using the **auto-line** command with no keywords enables automatic line selection on the ephone that is being configured. Picking up a handset answers the first ringing line or, if no line is ringing, selects the first idle line. This is also the default behavior if this command is not used.

Using the **no auto-line** command disables automatic line selection on the ephone that is being configured. Pressing the **Answer** soft key answers the first ringing line, and pressing a line button selects a line for an outgoing call. Picking up the handset does not answer calls or provide dial tone.

Using the **auto-line incoming** command enables automatic line selection only for incoming calls. Picking up the handset answers the first ringing line but, if no line is ringing, does not select an idle line for an outgoing call. Pressing a line button selects a line for an outgoing call.

Examples

The following example disables automatic line selection. The phone user must use the Answer soft key or press a line button for calls:

```
Router(config)# ephone 23
Router(config-ephone)# no auto-line
```

Related Commands

Command	Description
ephone	Enters ephone configuration mode.

button

To associate ephone-dns with individual buttons on a Cisco IP phone and to specify ring behavior, use the **button** command in ephone configuration mode. To remove an ephone-dn association from a button, use the **no** form of this command.

> **button** *button-number*{*separator*}*dn-tag* [[*button-number*{*separator*}*dn-tag*] ...]

> **no button** *button-number*{*separator*}*dn-tag* [[*button-number*{*separator*}*dn-tag*] ...]

Syntax Description		
button-number	Number of a line button on a Cisco IP phone to be associated with an extension (ephone-dn).	
	The maximum number of button–ephone-dn pairs is determined by phone type, as follows:	
	• Cisco IP Phone 7902G, Cisco IP Phone 7905G, Cisco IP Phone 7910G, Cisco IP Phone 7912G, Cisco IP Conference Station 7935, and Cisco IP Phone 7940G—One or two button–ephone-dn pairs.	
	• Cisco IP Phone 7960G—Up to six button–ephone-dn pairs.	
	• Cisco IP Phone 7914 Expansion Module—Up to 14 button–ephone-dn pairs.	
	Note The Cisco IP Phone 7910G has only one physical line button, but you can assign it up to two button–ephone-dn pairs.	
separator	Single character that denotes the characteristics to be associated with this button and extension or extensions. Valid entries include the following:	
	• **:** (colon)—Normal ring. For incoming calls on this extension, the phone produces audible ringing, a flashing ((< icon in the phone display, and a flashing red light on the handset. On the Cisco IP Phone 7914 Expansion Module, a flashing yellow light also accompanies incoming calls.	
	• **b**—Beep but no ring. Audible ring is suppressed for incoming calls, but call-waiting beeps are allowed. Visible cues are the same as those described for a normal ring.	
	• **f**—Feature ring. Differentiates incoming calls on a special line from incoming calls on other lines on the phone. The feature ring cadence is a triple pulse, as opposed to a single pulse for normal internal calls and a double pulse for normal external calls.	
	• **m**—Monitor mode for a shared line. Visible line status indicates in-use or not. Line cannot be used on this phone for incoming or outgoing calls.	
	• **o**—Overlay line. Multiple ephone-dns share a single button, up to a maximum of ten on a button. The *dn-tag* argument can contain up to ten individual dn-tags, separated by commas.	
	• **s**—Silent ring. Audible ring and call-waiting beep are suppressed for incoming calls. Visible cues are the same as those described for a normal ring.	
dn-tag	Ephone-dn tag previously defined using the **ephone-dn** command. Note that when used with the **o** keyword, the *dn-tag* argument can contain up to ten individual dn-tags, separated by commas.	

Defaults No buttons are defined for an ephone.

Command Modes Ephone configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.
12.2(11)YT	2.1	The **b** and **s** keywords were added.
12.2(15)ZJ	3.0	The **f**, **m**, and **o** keywords were added.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines The **button** command assigns telephone extensions to Cisco IP phones by associating a button number with one or more extensions (ephone-dns).

> **Note** After adding or changing the button configuration on a phone using this command, you must perform a quick reboot of the phone using the **restart** command.

Telephone services such as call waiting and three-party conferences require a minimum of two phone lines (ephone-dns defined with the **ephone-dn** command) to be available and configured on a Cisco IP phone. The Cisco IP Phone 7910 has only one physical line button. To support call waiting and three-party conferences on a Cisco IP Phone 7910, a second (hidden) line is required. This line cannot be selected directly using a line button. You can access the second line when you press the Conference button. You can also support multiple-call services using the **ephone-dn dual-line** configuration option.

Silent ring can be configured on any type of phone, but typically you set silent ring only on buttons of a phone with multiple lines, such as a Cisco IP Phone 7940, a Cisco IP Phone 7960, or a Cisco IP Phone 7914 Expansion Module.

A line button set in monitor mode on one phone provides visual line status for a line that also appears on another phone. When monitor mode is set for a button with a shared line, the line status indicates that the shared line is either idle (shows an idle phone icon) or in use (shows a phone icon with a flashing X through it). The line and line button are available in monitor mode for visual status only. Calls cannot be made or received using a line button that has been set in monitor mode. Incoming calls on a line button that is in monitor mode do not ring and do not display caller ID or call-waiting caller ID. Monitor mode is intended to be used only in the context of shared lines so that a receptionist can visually monitor the in-use status of several users' phone extensions (for example, as a busy-lamp field).

The line button for a monitored line can also be used as a direct-station-select for a call transfer when the monitored line is in an idle state. In this case, the receptionist who transfers a call from a normal line can press the Transfer button and then press the line button of the monitored line, causing the call to be transferred to the phone number of the monitored line. The direct-station-select operation is not supported when the monitored line is in use.

A feature ring is a third type of ring cadence in addition to internal call and external call ring cadences. For example, an internal call in the United States rings for 2 seconds on and 4 seconds off (single-pulse ring), and an external call rings for 0.4 seconds on, 0.2 seconds off, 0.4 seconds on, and 0.2 seconds off (double-pulse ring). A feature ring is a triple-pulse ring. The purpose of associating a feature ring with a line button is to be able to identify from a distance a special line that is ringing on a multiline phone.

Overlay lines are ephone-dns that share a single button on a multibutton phone. When more than one incoming call arrives on lines that are set on a single button, the line (ephone-dn) that is the left-most in the **button** command list is given the highest priority. If this call is answered by another phone or if the caller hangs up, the phone selects the next line in its overlay set to present as the ringing call. The caller ID display updates to show the caller ID for the currently presented call.

Ephone-dns that are part of an overlay set can be single-line ephone-dns or dual-line ephone-dns, but the set must contain all single-line ephone-dns or all dual-line ephone-dns, and not a mixture of the two.

Examples

The following example assigns four button numbers on the phone to ephone-dn tags, and button 4 has a silent ring:

```
Router(config)# ephone 1
Router(config-ephone)# button 1:1 2:4 3:16 4s19
```

The following example shows three phones that each have three instances of extension number 1001 overlaid onto a single button, which allows three simultaneous calls to extension 1001. The first call arrives on ephone-dn 1 and rings button 1 on all three phones. The call is answered on ephone 10. A second call for 1001 hunts onto ephone-dn 2 and rings on the remaining two ephones, ephones 11 and 12, and is answered by ephone 12. A third call to 1001 hunts onto ephone-dn 3 and rings on ephone 12, where it is answered. This configuration creates a three-way shared line across three IP phones and can handle three simultaneous calls to the same telephone number.

```
ephone-dn 1
 number 1001
 no huntstop
!
ephone-dn 2
 number 1001
 no huntstop
 preference 1
!
ephone-dn 3
 number 1001
 no huntstop
 preference 2
!
! The next ephone configuration includes the first instance of shared line 1001.
ephone 10
 mac-address 1111.2222.3333
 button 1o1,2,3
!
! The next ephone configuration includes the second instance of shared line 1001.
ephone 11
 mac-address 1111.2222.4444
 button 1o1,2,3
!
```

```
! The next ephone configuration includes the third instance of shared line 1001.
ephone 12
 mac-address 1111.2222.555
 button 1o1,2,3
!
```

Related Commands	Command	Description
	ephone	Enters ephone configuration mode to register Cisco IP phones.
	ephone-dn	Enters ephone-dn configuration mode to set ephone-dns and parameters for individual Cisco IP phone lines.
	restart (ephone)	Performs a fast reboot of a single phone associated with a Cisco CME router.
	restart (telephony-service)	Performs a fast reboot of one or all phones associated with a Cisco CME router.
	show ephone	Displays Cisco IP phone output.

caller-id

To specify whether to pass the local or original caller ID with calls from a Cisco CallManager Express extension (ephone-dn) that is using loopback, use the **caller-id** command in ephone-dn configuration mode. To return to the default, use the **no** form of this command.

caller-id {**local** | **passthrough**}

no caller-id {**local** | **passthrough**}

Syntax Description

local	Passes the local caller ID for redirected calls. For transferred calls, caller ID is provided by the original caller-ID information source (for example, from a separate loopback-dn that handles inbound calls or from a PSTN interface). For forwarded calls, caller ID is provided by the original caller-ID information source or, for local IP phones, is extracted from the redirected information associated with the call.
passthrough	Passes the original caller ID for redirected calls. For transferred calls, the caller ID is provided by the original caller-ID information that is obtained from the inbound side of the loopback-dn. For forwarded calls, the caller ID is provided by the original caller-ID information of the incoming call.

Defaults

For transferred calls, caller ID is provided by the number and name fields from the outbound side of the loopback-dn. For forwarded calls, caller ID is provided by the original caller ID of the incoming call. Settings for the **caller-id block** command and translation rules on the outbound side are executed.

Command Modes

Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ3	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

This command is valid only for ephone-dns that are being used for loopback.

Examples

The following example selects local caller ID for redirected calls:

```
Router(config) ephone-dn 1
Router(config-ephone-dn)# number 5001
Router(config-ephone-dn)# loopback-dn 15 forward 4
Router(config-ephone-dn)# caller-id local
Router(config-ephone-dn)# no huntstop
```

Related Commands	Command	Description
	ephone-**dn**	Enters ephone-dn configuration mode.
	loopback-dn	Creates a virtual loopback voice port (loopback-dn) to establish a demarcation point for VoIP voice calls and supplementary services.

caller-id block (ephone-dn)

To specify caller-ID blocking for outbound calls from a specific extension, use the **caller-id block** command in ephone-dn configuration mode. To disable caller-ID blocking for outbound calls, use the **no** form of this command.

> **caller-id block**

> **no caller-id block**

Syntax Description   This command has no arguments or keywords.

Defaults   Caller-ID display is not blocked on calls originating from a Cisco IP phone.

Command Modes   Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745 routers.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines   This command sets caller-ID blocking for outbound calls originating from a specific extension (ephone-dn). This command requests the far-end gateway device to block the display of the calling party information for calls received from the ephone-dn that is being configured. This command does not affect the ephone-dn calling party information display for inbound calls received by the ephone-dn.

If you want caller-ID name or number to be available on local calls but not on external calls, use the **clid strip name** command or the **clid strip** command in dial-peer configuration mode to remove caller-ID name or number from calls to VoIP. In this case, do not also use the **caller-id block** command, which blocks caller-ID information on all calls.

Note   This command is not valid for ephone-dns that are being used for loopback.

Examples   The following example shows how to set caller-ID blocking for the directory number 5001:

```
Router(config) ephone-dn 1
Router(config-ephone-dn)# number 5001
Router(config-ephone-dn)# caller-id block
```

Related Commands

Command	Description
clid strip	Prevents display of caller-ID number on calls to VoIP.
clid strip name	Prevents display of caller-ID name on calls to VoIP
ephone-dn	Enters ephone-dn configuration mode.

caller-id block code (telephony-service)

To set a code for a user to dial to block the display of caller ID on selected outgoing calls from Cisco IP phones, use the **caller-id block code** command in telephony-service configuration mode. To remove the code, use the **no** form of this command.

caller-id block code *code-string*

no caller-id block code

Syntax Description

code-string	Character string to dial to enable blocking of caller ID display on selected outgoing calls. The first character must be an asterisk (*) and the remaining characters must be digits. The string can contain a maximum of 16 characters.

Defaults

No caller-ID blocking code is defined.

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

Once the caller-ID blocking code has been defined using this command, phone users should enter the caller-ID blocking code before dialing any call on which they want their caller ID not to display.

Examples

The following example sets a caller-ID blocking code of *4321:

```
Router(config)# telephony-service
Router(config-telephony-service)# caller-id block code *4321
```

Related Commands

Command	Description
telephony-service	Enters telephony-service configuration mode.

call-forward all (ephone-dn)

To configure call forwarding so that all incoming calls to an extension (ephone-dn) are forwarded to another extension, use the **call-forward all** command in ephone-dn configuration mode. To disable call forwarding, use the **no** form of this command.

call-forward all *directory-number*

no call-forward all

Syntax Description	*directory-number* Telephone number to which calls are forwarded. Represents a fully qualified E.164 number.

Defaults Call forwarding for all calls is not set.

Command Modes Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines The call forwarding mechanism is applied to an individual extension (ephone-dn) and is not applied to the phone on which the extension appears.

Note The **call-forward all** command takes precedence over the **call-forward busy** and **call-forward noan** commands.

Examples The following example forwards to extension 5005 all incoming calls made to the ephone-dn with the dn-tag 1 and the number 5001.

```
Router(config)# ephone-dn 1
Router(config-ephone-dn)# number 5001
Router(config-ephone-dn)# call-forward all 5005
```

Related Commands	Command	Description
	call-forward busy	Configures call forwarding to another number when a Cisco IP phone is busy.
	call-forward noan	Configures call forwarding to another number when no answer is received from a Cisco IP phone.
	ephone-dn	Enters ephone-dn configuration mode.

call-forward busy (ephone-dn)

To configure call forwarding so that incoming calls to a busy extension (ephone-dn) are forwarded to another extension, use the **call-forward busy** command in ephone-dn configuration mode. To disable call forwarding, use the **no** form of this command.

call-forward busy *directory-number*

no call-forward busy

Syntax Description

directory-number	Telephone number to which calls are forwarded. Represents a fully qualified E.164 number.

Defaults

Call forwarding when the extension is busy is not set.

Command Modes

Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines

The call forwarding mechanism is applied to an individual extension (ephone-dn) and is not applied to the phone on which the extension appears.

Note The **call-forward all** command takes precedence over the **call-forward busy** and **call-forward noan** commands.

Examples

The following example sets call forwarding of incoming calls to directory number 5005 when the ephone-dn with the dn-tag 1 and the number 5001 is busy:

```
Router(config)# ephone-dn 1
Router(config-ephone-dn)# number 5001
Router(config-ephone-dn)# call-forward busy 5005
```

Related Commands	Command	Description
	call-forward all	Configures call forwarding for all incoming calls on one of the lines of a Cisco IP phone.
	call-forward noan	Configures call forwarding to another number when no answer is received from a Cisco IP phone.
	ephone-dn	Enters ephone-dn configuration mode.

call-forward noan (ephone-dn)

To configure call forwarding so that incoming calls to an extension (ephone-dn) that does not answer are forwarded to another extension, use the **call-forward noan** command in ephone-dn configuration mode. To disable call forwarding, use the **no** form of this command.

call-forward noan *directory-number* **timeout** *seconds*

no call-forward noan

Syntax Description

directory-number	Telephone number to which calls are forwarded. Represents a fully qualified E.164 number.
timeout *seconds*	Sets the duration that a call can ring with no answer before the call is forwarded to another extension. Range is from 3 to 60000. There is no default value.

Defaults

Call forwarding when the extension does not answer is not set.

Command Modes

Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines

The call forwarding mechanism is applied to an individual extension (ephone-dn) and is not applied to the phone on which the extension appears.

Note The **call-forward all** command takes precedence over the **call-forward busy** and **call-forward noan** commands.

Examples   The following example sets call forwarding of incoming calls to directory number 5005 when the ephone-dn with the dn-tag 1 and the number 5001 does not answer. The timeout before the call is forwarded to extension 5005 is set for 10 seconds.

```
Router(config)# ephone-dn 1
Router(config-ephone-dn)# number 5001
Router(config-ephone-dn)# call-forward noan 5005 timeout 10
```

Related Commands	Command	Description
	call-forward all	Configures call forwarding for all incoming calls on one of the lines of a Cisco IP phone.
	call-forward busy	Configures call forwarding to another number when a Cisco IP phone is busy.
	ephone-dn	Enters ephone-dn configuration mode.

call-forward pattern

To specify a pattern for calling-party numbers that are able to support the ITU-T H.450.3 standard for call forwarding, use the **call-forward pattern** command in telephony-service configuration mode. To remove the pattern, use the **no** form of this command.

    call-forward pattern *pattern*

    no call-forward pattern *pattern*

Syntax Description	*pattern* String that consists of one or more digits and wildcard markers or dots (.) to define a specific pattern. Calling parties that match a defined pattern use the H.450.3 standard if they are forwarded. A pattern of .T specifies the H.450.3 forwarding standard for all incoming calls.

Defaults　　No call-forward pattern is defined.

Command Modes　　Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(11)YT	2.1	This command was introduced.
12.2(15)T	2.1	This command was integrated into Cisco IOS Release 12.2(15)T.

Usage Guidelines　　Use this command with Cisco IOS Telephony Services (ITS) V2.1, Cisco CallManager Express 3.0, or a later version.

When H.450.3 call forwarding is selected, the router must be configured with a Tool Command Language (Tcl) script that supports the H.450.3 protocol. The Tcl script is loaded on the router by using the **call application voice** command.

The pattern match in this command is against the phone number of the calling party. When an extension number has forwarded its calls and an incoming call is received for that number, the router sends an H.450.3 response back to the original calling party to request that the call be placed again using the forward-to destination.

Calling numbers that do not match the patterns defined using this command are forwarded using Cisco-proprietary call forwarding for backward compatibility.

Examples   The following example specifies that all 4-digit directory numbers that begin with 4 should use the H.450.3 standard whenever they are forwarded:

```
Router(config)# telephony-service
Router(config-telephony-service)# call-forward pattern 4...
```

The following example forwards all calls that support the H.450.3 standard:

```
Router(config)# telephony-service
Router(config-telephony-service)# call-forward pattern .T
```

Related Commands

Command	Description
call application voice	Defines an application, indicates the location of the corresponding Tcl files that implement the application, and loads the selected Tcl script.
telephony-service	Enters telephony-service configuration mode.

calling-number local

To replace a calling-party number and name with the forwarding-party number and name (the local number and name) in calls forwarded using local hairpin call routing, use the **calling-number local** command in telephony-service configuration mode. To reset to the default, use the **no** form of this command.

calling-number local [**secondary**]

no calling-number local

Syntax Description

secondary	Uses the secondary number associated with the forwarding party instead of the primary number. The primary number is the default if this keyword is not used.

Defaults

Calling-party numbers and names are used in forwarded calls.

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ3	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.
12.3(15)ZJ4	3.0	The **secondary** keyword was introduced.

Usage Guidelines

This command is used with the Tool Command Language (Tcl) script app-h450-transfer.2.0.0.7 or a higher version.

If the ephone-dn used by a forwarding party has a secondary number in addition to its primary number and neither number is registered with the gatekeeper, then the primary number is the number that appears as the calling number on hairpin-forwarded calls when the **calling-number local** command is used. If only one of the numbers is registered with the gatekeeper, then the registered number is the number that appears as the calling number. If both numbers are registered with the gatekeeper, then the primary number is the number that appears as the calling number.

If the ephone-dn used by a forwarding party has a secondary number in addition to its primary number and the **calling-number local secondary** command is used, the secondary number is the number that appears as the calling number on hairpin-forwarded calls if both numbers are registered with the gatekeeper or if both numbers are not registered. If only one number is configured to register with the gatekeeper, then the number that is registered appears as the calling number.

See the "Examples" section for more information.

Examples The following example specifies use of the name and number of the local forwarding party in hairpin-forwarded calls:

```
Router(config)# telephony-service
Router(config-telephony-service)# calling-number local
```

The following examples demonstrate the use of the the **calling-number local** command without the **secondary** keyword.

- The calling number for hairpin calls forwarded from ephone-dn 1 is 1234 in the following example:

```
calling-number local
!
ephone-dn 1
 number 1234 secondary 4321 no-reg
```

- The calling number for hairpin calls forwarded from ephone-dn 1 is 4321 in the following example:

```
calling-number local
!
ephone-dn 1
 number 1234 secondary 4321 no-reg primary
```

- The calling number for hairpin calls forwarded from ephone-dn 1 is 1234 in the following example:

```
calling-number local
!
ephone-dn 1
 number 1234 secondary 4321 no-reg both
```

or

```
 number 1234 secondary 4321
```

The following examples demonstrate the use of the the **calling-number local secondary** command.

- The calling number for hairpin calls forwarded from ephone-dn 1 is 1234 in the following example:

```
calling-number local secondary
!
ephone-dn 1
 number 1234 secondary 4321 no-reg
```

- The calling number for hairpin calls forwarded from ephone-dn 1 is 4321 in the following example:

```
calling-number local secondary
!
ephone-dn 1
 number 1234 secondary 4321 no-reg primary
```

- The calling number for hairpin calls forwarded from ephone-dn 1 is 4321 in the following example:

```
calling-number local secondary
!
ephone-dn 1
 number 1234 secondary 4321 no-reg both
```

or

```
 number 1234 secondary 4321
```

Related Commands

Command	Description
telephony-**service**	Enters telephony-service configuration mode.

clid strip

To remove the calling-party number from calling-line-ID (CLID) information and to prevent the calling party number from being presented to the called party, use the **clid strip** command in dial-peer configuration mode. To remove the restriction, use the **no** form of this command.

clid strip [**name**]

no clid strip [**name**]

Syntax Description	
name	Removes the calling-party name for both incoming and outgoing calls.

Defaults   Calling-party number and name are included in the CLID information.

Command Modes   Dial-peer configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(11)T	2.01	This command was introduced.
12.2(15)ZJ1	3.0	The **name** keyword was added.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines   If the **clid strip** command is issued, the calling-party number is null in the information element, and the presentation indicator is set to "n" to prevent the presentation of the number to the called party.

If you want to remove both the number and the name, you must issue the command twice, once with the **name** keyword.

Examples   The following example removes the calling-party number from the CLID information and prevents the calling-party number from being presented:

```
Router(config-dial-peer)# clid strip
```

The following example removes both the calling-party number and the calling-party name from the caller-ID display:

```
Router(config-dial-peer)# clid strip
Router(config-dial-peer)# clid strip name
```

Related Commands

Command	Description
clid network-number	Configures a network number in the router for CLID and uses it as the calling-party number.

Command	Description
clid restrict	Prevents the calling-party number from being presented by CLID.
clid second-number strip	Prevents the second network number from being sent in the CLID information.

cor (ephone-dn)

To apply a class of restriction (COR) to the dial peers associated with a Cisco CallManager Express extension (ephone-dn), use the **cor** command in ephone-dn configuration mode. To disable the COR associated with an extension, use the **no** form of this command.

> **cor** {**incoming** | **outgoing**} *cor-list-name*

> **no cor** {**incoming** | **outgoing**}

Syntax Description

incoming	Specifies a COR list to be used by incoming dial peers.
outgoing	Specifies a COR list to be used by outgoing dial peers.
cor-list-name	COR list name.

Defaults

No COR is used by the dial peers associated with the extension that is being configured.

Command Modes

Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(2)XT	2.0	This command was introduced on the Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines

COR is used to specify which incoming dial peer can use which outgoing dial peer to make a call. COR denies certain call attempts on the basis of the incoming and outgoing class of restrictions that have been provisioned on the dial peers. This functionality provides flexibility in network design, allows administrators to block calls (for example, calls to 900 numbers), and applies different restrictions to call attempts from different originators.

Each dial peer can be provisioned with an incoming and an outgoing COR list.

Examples

The following example shows how to set a COR parameter for incoming calls to dial peers associated with the extension that has the dn-tag 1:

```
Router(config)# ephone-dn 1
Router(config-ephone-dn)# cor incoming corlist1
```

Related Commands	Command	Description
	corlist-**incoming**	Specifies the COR list to be used when a specified dial peer acts as the incoming dial peer.
	corlist-**outgoing**	Specifies the COR list to be used by an outgoing dial peer.
	dial-**peer cor list**	Defines a COR list name.
	ephone-**dn**	Enters ephone-dn configuration mode.

create cnf-files

To build the XML configuration files that are required for IP phones used with Cisco IOS Telephony Services V2.1, Cisco CallManager Express 3.0, or later versions, use the **create cnf-files** command in telephony-service configuration mode. To remove the configuration files and disable the automatic generation of configuration files, use the **no** form of this command.

create cnf-files

no create cnf-files

Syntax Description   This command has no arguments or keywords.

Defaults   Required XML configuration files are not built.

Command Modes   Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Release	Modification
12.2(11)YT	2.1	This command was introduced.
12.2(15)T	2.1	This command was integrated into Cisco IOS Release 12.2(15)T.

Usage Guidelines   Use this command to build XML configuration files for Cisco IP phones during initial system setup. The XML files created by this command are located in an in-RAM file system at system:/its.

The **no** form of this command removes configuration files and disables automatic configuration file generation.

Examples   The following example builds the necessary XML configuration files on the Cisco CallManager Express router:

```
Router(config)# telephony-service
Router(config-telephony-service)# create cnf-files
```

Related Commands

Command	Description
telephony-**service**	Enters telephony-service configuration mode.

date-format (telephony-service)

To set the date display format on the Cisco IP phones in a Cisco CallManager Express (Cisco CME) system, use the **date-format** command in telephony-service configuration mode. To display the date in the default format, use the **no** form of this command.

date-format {**dd-mm-yy** | **mm-dd-yy** | **yy-dd-mm** | **yy-mm-dd**}

no date-format

Syntax Description	**dd-mm-yy** **mm-dd-yy** **yy-dd-mm** **yy-mm-dd** Format in which dates are displayed on the IP phone: • **dd**—Two-digit date. • **mm**—Two-digit month. • **yy**—Two-digit year.

Defaults   **mm-dd-yy**

Command Modes   Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(2)XT	2.0	This command was introduced on the Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745 routers.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Examples   The following example sets the date format to date, month, and year, so that December 17, 2003 is represented as 17-12-03.

```
Router(config)# telephony-service
Router(config-telephony-service)# date-format dd-mm-yy
```

Related Commands

Command	Description
telephony-service	Enters telephony-service configuration mode.

description (ephone-dn)

To display a custom text-string description in the header bar of a Cisco IP Phone 7940 or Cisco IP Phone 7960, use the **description** command in ephone-dn configuration mode. To return to the default, use the **no** form of this command.

description *string*

no description

Syntax Description		
	string	Alphanumeric characters to be displayed in the header bar of the phone display. If spaces appear in the string, enclose the string in quotation marks. The maximum string length is 40 characters, but the string is truncated to 14 characters in the display of a Cisco IP Phone 7940 or Cisco IP Phone 7960.

Defaults
The extension number of the first line on the phone appears in the header bar.

Command Modes
Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(11)T	2.01	This command was introduced.
12.2(11)YT	2.1	The number of characters in the string was modified.
12.2(15)T	2.1	This command was integrated into Cisco IOS Release 12.2(15)T.

Usage Guidelines
Use this command with Cisco IOS Telephony Services V2.1, Cisco CallManager Express 3.0, or later versions.

You must use this command under the ephone-dn that is associated with the first line button on a Cisco IP phone. A typical use for the **description** command is to display in the header bar the entire E.164 telephone number associated with the first line button rather than just the extension number, which is the default.

Examples
The following example defines a header bar display for a phone on which the first line button is the extension number 50155:

```
Router(config)# ephone-dn 4
Router(config-ephone-dn)# number 50155
Router(config-ephone-dn)# description 888-555-0155
```

Related Commands	Command	Description
	ephone-dn	Enters ephone-dn configuration mode.
	number	Configures a valid number for a Cisco IP phone.

dialplan-pattern (telephony-service)

To create a global prefix that can be used to expand the extension numbers of inbound and outbound calls into fully qualified E.164 numbers, use the **dialplan-pattern** command in telephony-service configuration mode. To disable the **dialplan-pattern** command settings, use the **no** form of this command.

> **dialplan-pattern** *tag pattern* **extension-length** *extension-length* [**extension-pattern** *extension-pattern*] [**no-reg**]

> no **dialplan-pattern** *tag* [*pattern* **extension-length** *extension-length* **extension-pattern** *extension-pattern*] [**no-reg**]

Syntax Description

tag	Dial-plan string tag used before a ten-digit telephone number. The tag number is from 1 to 5.
pattern	Dial-plan pattern, such as the area code, the prefix, and the first one or two digits of the extension number, plus wild card markers or dots (.) for the remainder of the extension number digits.
extension-length	Sets the number of extension digits that will appear as a caller ID.
extension-length	The number of extension digits. The extension length must match the setting for IP phones. The range is from 1 to 32.
extension-pattern	(Optional) Sets an extension number's leading digit pattern when it is different from the E.164 telephone number's leading digits defined in the *pattern* variable.
extension-pattern	(Optional) The extension number's leading digit pattern. Consists of one or more digits and wild card markers or dots (.). For example, 5.. would include extension 500 to 599, 5... would include 5000 to 5999. The extension pattern must match the setting for IP phones in Cisco CallManager mode.
no-reg	(Optional) Prevents the E.164 numbers in the dial peer from registering with the gatekeeper.

Defaults   No dial-plan pattern prefix exists.

Command Modes   Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.

Cisco IOS Release	Cisco CME Version	Modification
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745 routers.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691 routers.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.
12.2(11)YT	2.1	The **extension-pattern** keyword was added.
12.2(15)T	2.1	This command was integrated into Cisco IOS Release 12.2(15)T.

Usage Guidelines   The **dialplan-pattern** command builds additional dial peers. For example, if a hidden Plain Old Telephone System (POTS) dial peer is created, such as the following:

```
Router(config)# dial-peer voice 20001 pots
Router(config-dial-peer)# destination-pattern 1001
Router(config-dial-peer)# voice-port 50/0/2
```

and a dial- plan pattern is created, such as 40855510.., then an additional dial peer will be created that allows calls to both the 1001 and 4085551001 numbers. For example:

```
Router(config)# dial-peer voice 20002 pots
Router(config-dial-peer)# destination-pattern 4085551001
Router(config-dial-peer)# voice-port 50/0/2
```

Both dial peers can be seen with the **show dial-peer** command.

The **dialplan-pattern** command also creates a global prefix that can be used by inbound calls (calls to an IP phone in a Cisco CME system) and outbound calls (calls made from an IP phone in a Cisco CME system) to expand their extension numbers to fully qualified E.164 numbers.

For inbound calls (calls to an IP phone in a Cisco CME system) where the calling party number matches the dial-plan pattern, the call is considered a local call and has a distinctive ring that identifies the call as internal. Any calling party number that does not match the dial-plan pattern is considered an external call and has a distinctive ring that is different from the internal ringing.

For outbound calls, the **dialplan-pattern** command converts the calling party's extension number to an E.164 calling party number. Outbound calls that do not use an E.164 number and go through a Primary Rate Interface (PRI) connection to the Public Switched Telephony Network (PSTN), may be rejected by the PRI link as the calling party identifier.

A dial-plan pattern is required to register the Cisco IP phone lines with a gatekeeper. Ephone-dn numbers for the Cisco IP phones must match the number the *extension-length* argument. For example, if the extension length is 3, then all extension must be three numbers in length. Otherwise, the extension number cannot be converted to a qualified E.164 number.

If there are multiple patterns, called-party numbers are checked in numeric order, starting with pattern 1, until a match is found or the until last pattern has been checked. The valid dial-plan pattern with the lowest tag is used as a prefix to all local Cisco IP phones.

When **extension-pattern** *extension-length* keyword and argument are used, the leading digits of an extension pattern are stripped and replaced with the corresponding leading digits of the dial-plan. For example, the following command maps all extension numbers 4xx to the PSTN number 40855501xx, so that extension 412 corresponds to 4085550112.

```
Router(config)# telephony-service
Router(config-telephony)# dialplan-pattern 1 4085550100 extension-length 3
extension-pattern 4..
```

The number of *extension-pattern* argument characters must match the *extension-length* argument. For example, if the *extension-length* is three, then the *extension-pattern* can be 8.., 1.., 51., and so forth.

The **no-reg** keyword provides the option of not registering specific numbers to the gatekeeper so that those numbers can be used for other telephony services.

Examples	The following example shows how to create dial-plan pattern 1 for extension numbers 5000 to 5099 with a prefix of 408555. If an inbound calling party number (4085555044) matches dial-plan pattern 1, then the recipient phone will display an extension (5044) as the caller ID and use an internal ringing tone. If an outbound calling party extension number (5044) matches dial-plan pattern 1, then the calling party extension will be converted to an E.164 number (4085555044). The E.164 calling party number that will appear as the caller ID.

```
Router(config)# telephony-service
Router(config-telephony)# dialplan-pattern 1 40855550.. extension-length 4
extension-pattern 50..
```

In the following example the **dialplan-pattern** command creates dial-plan pattern 1 for extensions 800 to 899 with the telephone prefix starting with 4085559. As each number in the extension pattern is declared with the **number** command, two POTs dial-peers are created. In the example, they are 801 (an internal office number) and 4085579001 (an external number).

```
Router(config)# telephony-service
Router(config-telephony)# dialplan-pattern 1 40855590.. extension-length 3
extension-pattern 8..
```

In the following example shows a configuration for two Cisco CME systems. Each is configured with the same **dialplan pattern** commands, but one system uses 50.. and the other uses 60.. for extension numbers. Calls from the "50.." system to the "60.." system, and vice versa, are treated as internal calls. Calls that go across a H.323 network and calls that go to a PSTN through an Integrated Service Digital Network (ISDN) interface on one of the configured Cisco CME routers are represented as E.164.

```
Router(config)# telephony-service
Router(config-telephony)# dialplan-pattern 1 40855550.. extension-length 4
extension-pattern 50..
Router(config-telephony)# dialplan-pattern 2 51055560.. extension-length 4
extension-pattern 60..
```

Related Commands	**Command**	**Description**
	ephone-**dn**	Enters ephone directory number configuration mode.
	telephony-**service**	Enters telephony-service configuration mode.

directory (telephony-service)

To define the order in which the names of Cisco IP phone users are displayed in the local directory, use the **directory** command in telephony-service configuration mode. To return to the default, use the **no** form of this command.

directory {**first-name-first** | **last-name-first**}

no directory {**first-name-first** | **last-name-first**}

Syntax Description

first-name-first	First name is entered first in the Cisco IP phone directory name field.
last-name-first	Last name is entered first in the Cisco IP phone directory name field.

Defaults **first-name-first**

Command Modes Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(2)XT	2.0	This command was introduced on the Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 2600-XM, Cisco 2691, Cisco 3725, and Cisco 3745.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines This command defines name order in the local directory. The directory itself is generated from entries made using the **name** command and the **number** command in ephone-dn configuration mode.

Note The name information must be entered in the correct order in the **name** command.

The location for the file that is accessed when the Directories button is pressed is specified in the **url** (telephony-service) command.

Examples The following example shows how to configure the local directory with the last name first:

```
Router(config)# telephony-service
Router(config-telephony-service)# directory last-name-first
```

Related Commands	Command	Description
	name	Specifies a name to be associated with an extension (ephone-dn).
	number	Specifies a telephone number to be associated with an extension (ephone-dn).
	telephony-service	Enters telephony-service configuration mode.
	url	Provisions uniform resource locations (URLs) for the displays associated with buttons on Cisco IP phones.

directory entry

To add an entry to a local phone directory that can be displayed on IP phones, use the **directory entry** command in telephony-service configuration mode. To remove a telephone directory listing, use the **no** form of this command.

directory entry {*directory-tag number* **name** *name* | **clear**}

no directory entry {*directory-tag* | **clear**}

Syntax Description

directory-tag	Digit string that provides a unique identifier for this particular directory entry. Range is from 1 to 100.
number	Telephone number or extension for the directory entry, up to 32 characters.
name *name*	Name that appears in the directory associated with the number. String of up to 24 characters.
clear	Removes all directory entries that were made with this command.

Defaults   Additional directory entries do not exist.

Command Modes   Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines   The Cisco CallManager Express system automatically creates a local phone directory consisting of the telephone numbers and names that are entered during ephone-dn configuration. Additional directory entries can be made by administrators using the **directory entry** command. Phone number directory listings are displayed in the order in which they are entered.

A single entry can be removed using the **no directory entry** *directory-tag* command.

Examples   The following example adds four telephone listings to the local directory:

```
Router(config)# telephony-service
Router(config-telephony-service)# directory entry 1 4045550110 name Atlanta
Router(config-telephony-service)# directory entry 2 3125550120 name Chicago
Router(config-telephony-service)# directory entry 4 2125550140 name New York City
Router(config-telephony-service)# directory entry 5 2065550150 name Seattle
```

Related Commands	Command	Description
	telephony-service	Enters telephony-service configuration mode.

dn-webedit

To enable the ability to add extensions (ephone-dns) through the Cisco CallManager Express graphical user interface (GUI), use the **dn-webedit** command in telephony-service configuration mode. To disable this feature, use the **no** form of this command.

dn-webedit

no dn-webedit

Syntax Description   This command has no arguments or keywords.

Defaults   Disabled

Command Modes   Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(2)XT	2.0	This command was introduced on the following platforms: Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745 routers.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691 routers.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines   The **dn-webedit** command enables the adding of extensions through the web-based GUI. If the **dn-webedit** command is enabled, a customer administrator or a system administrator can modify and assign extensions associated with the Cisco CallManager Express router. If this ability is disabled, extensions must be added using the router command-line interface (CLI).

If the set of extension numbers used by the router is part of a larger telephone network, limitations on modification might be needed to ensure network integrity. Disabling the **dn-webedit** command prevents an administrator from allocating phone numbers and prevents assignment of numbers that may already be used elsewhere in the network.

Examples   The following example enables editing of directory numbers through the web-based GUI interface:

```
Router(config)# telephony-service
Router(config-telephony-service)# dn-webedit
```

Related Commands	Command	Description
	telephony-**service**	Enters telephony-service configuration mode.
	time-**webedit**	Enables time setting through the web interface.

ephone

To enter Ethernet phone (ephone) configuration mode for an IP phone, use the **ephone** command in global configuration mode. To disable the ephone and remove the IP phone configuration, use the **no** form of this command.

ephone *phone-tag*

no ephone *phone-tag*

Syntax Description

phone-tag	Unique sequence number that identifies an ephone during configuration tasks. The maximum number is platform-dependent; refer to Cisco IOS command-line interface (CLI) help.

Defaults   No Cisco IP phone is configured.

Command Modes   Global configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines   The **ephone** command is used to enter ephone configuration mode. Use ephone configuration mode to provision Cisco IP phones in Cisco CallManager Express (Cisco CME) systems.

Before this command can be used for the first time, you must set the maximum number of ephones using the **max-ephones** command in telephony-service configuration mode. The maximum number of ephones varies by router platform and software version. For more information, refer to Cisco IOS CLI help by entering the command name and a question mark at the telephony-service configuration mode prompt:

```
Router(config-telephony-service)# max-ephones ?
```

When you are in ephone configuration mode, extensions (ephone-dns) that have already been defined using the **ephone-dn** command can be assigned to buttons on phones using the **button** command. You can also specify the MAC address of the phone instrument using the **mac-address** command. Other commands that are used in ephone configuration mode are described in the appropriate version of the

Cisco CallManager Express documentation. Note that many of the commands in ephone configuration mode must be followed by a restart of the phone using the **restart** (ephone) or **restart all** (telephony-service) command.

Examples

The following example enters ephone configuration mode for a phone with the identifier 4 and assigns ephone-dn 1 to button 1:

```
Router(config)# ephone 4
Router(config-ephone)# button 1:1
```

Related Commands

Command	Description
button	Assigns a button number to the Cisco IP phone directory number.
ephone-dn	Enters ephone-dn configuration mode.
mac-address	Configures the MAC address of a Cisco IP phone.
max-ephones	Configures the maximum number of Cisco IP phones that can be supported by a router.
restart (ephone)	Performs a fast reboot of a single phone associated with a Cisco CME router.
restart all (telephony-service)	Performs a fast reboot of all phones associated with a Cisco CME router.

ephone-dn

To enter ephone-dn configuration mode to create an extension (ephone-dn) for a Cisco IP phone line, an intercom line, a paging line, a voice-mail port, or a message-waiting indicator (MWI), use the **ephone-dn** command in global configuration mode. To delete an ephone-dn, use the **no** form of this command.

ephone-dn *dn-tag* [**dual-line**]

no ephone-dn *dn-tag* [**dual-line**]

Syntax Description

dn-tag	Unique sequence number that identifies this ephone-dn during configuration tasks. Range is from 1 to the maximum number of ephone-dns allowed on the router platform. Refer to CLI help for the maximum value for this argument.
dual-line	(Optional) Enables dual-line mode for the ephone-dn. See the "Usage Guidelines" section for restrictions.

Defaults   No ephone-dn is configured.

Command Modes   Global configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.
12.2(15)ZJ	3.0	The **dual-line** keyword was added.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines   The **ephone-dn** command is used to enter ephone-dn configuration mode. Use ephone-dn configuration mode to create extensions (ephone-dns) in a Cisco CallManager Express (Cisco CME) system. In ephone-dn configuration mode, you assign to the extension a number using the **number** command, a name to appear in the local directory using the **name** command, and other parameters using various commands.

Before using the **ephone-dn** command, you must set the maximum number of ephone-dns to appear in your system by using the **max-dn** command. The maximum number of ephone-dns that you can create depends on the router platform and software version that you are using. For this information, refer to the appropriate version-specific Cisco CallManager Express documentation or command-line interface (CLI) help.

A dual-line ephone-dn has one virtual voice port and two channels to handle two independent calls. This capacity allows call waiting, call transfer, and conference functions within a single ephone-dn. Dual-line mode is supported on all phone types, but is not appropriate for voice-mail numbers, intercoms, or ephone-dns used for message-waiting indicators, paging, loopback, or hunt groups. Overlays of single-line hunt groups onto dual-line buttons are supported.

Ephone-dns are created in single-line mode if the **dual-line** keyword is not used. Changing an ephone-dn from dual-line mode to single-line mode (and vice versa) requires that you delete the ephone-dn and then recreate it.

Examples

The following example enters ephone-dn configuration mode to create the ephone-dn 5576:

```
Router(config)# ephone-dn 1
Router(config-ephone-dn)# number 5576
Router(config-ephone-dn)# exit
```

The following example creates an ephone-dn with the number 1001 in dual-line mode. The **no huntstop** command allows calls to continue to hunt to other ephone-dns if this one is busy or does not answer. The **huntstop channel** command disables call hunting to the second channel of this ephone-dn if the first channel is busy or does not answer.

```
Router(config)# ephone-dn 10 dual-line
Router(config-ephone-dn)# number 1001
Router(config-ephone-dn)# no huntstop
Router(config-ephone-dn)# huntstop channel
Router(config-ephone-dn)# exit
```

Related Commands

Command	Description
huntstop	Sets the ephone-dn huntstop attribute or the ephone-dn dual-line channel huntstop attribute.
max-dn	Sets the maximum number of ephone-dns that can be supported by a router.
name	Associates a name with an extension (ephone-dn).
number	Associates a telephone or extension number with an extension (ephone-dn).

ephone-hunt

To enter ephone-hunt configuration mode to create a hunt group for use in a Cisco CallManager Express system, use the **ephone-hunt** command in global configuration mode. To delete a hunt group, use the **no** form of this command.

ephone-hunt *hunt-tag* {**sequential** | **peer**}

no ephone-hunt *hunt-tag*

Syntax Description

hunt-tag	Unique sequence number that identifies the ephone hunt group during configuration tasks. Range is from 1 to 10.
sequential	Hunt group in which extensions ring in the order in which they are listed, left to right, when the hunt group is defined.
peer	Hunt group in which the first extension to ring is the number to the right (in the list) of the extension that was the last one to ring when the hunt group was last called. Ringing proceeds in a circular manner, left to right, for the number of hops specified when the ephone hunt group is defined.

Defaults

No hunt group is defined.

Command Modes

Global configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

The **ephone-hunt** command is used to enter ephone-hunt configuration mode. Use ephone-hunt configuration mode to create ephone hunt groups in a Cisco CallManager Express (Cisco CME) system.

A hunt group is a list of phone numbers that are assigned to take turns receiving incoming calls for one number, a pilot number that is defined with the **pilot** command. The list of numbers in the hunt group is defined using the **list** command. If a number in the list is busy or does not answer, the call is redirected to the next number in the list. The last number tried is the final number, which is defined using the **final** command.

The order in which the numbers are chosen can be sequential or peer. If the order is sequential, the first number to which calls are directed is always the first number in the list. If that number is busy or does not answer, the call is redirected to the next available number in the list, from left to right. If the order is peer, the first number to which calls are directed is the number to the right of the number in the list that was the last number to ring on the previous occasion that the hunt group was called. If that number is busy or does not answer, the call is directed to the next number in the list and, in the process, circles

back to the beginning of the list. In peer hunt groups, the **hops** command specifies how many times a call can hop from number to number before going to the final number, after which the call is no longer forwarded.

✎
Note   If the number of times that a call is redirected to a new number exceeds 5, the **max-redirect** command must be used to increase the allowable number of redirects in the Cisco CallManager Express system.

To configure a new hunt group, you must specify the **peer** or **sequential** keyword. To change an existing ephone hunt group configuration, the keyword is not required. To change the type of hunt group from peer to sequential or sequential to peer, you must remove the existing hunt group first using the **no** form of the command.

Examples   The following example defines sequential hunt group number 1. When callers dial extension 5601, the first phone to ring is 5001, then 5002, 5017, and 5028. If none of those extensions answers, the call is forwarded to extension 6000, which is the number for the voice-mail service.

```
Router(config)# ephone-hunt 1 sequential
Router(config-ephone-hunt)# pilot 5601
Router(config-ephone-hunt)# list 5001, 5002, 5017, 5028
Router(config-ephone-hunt)# final 6000
Router(config-ephone-hunt)# preference 1
Router(config-ephone-hunt)# timeout 30
Router(config-ephone-hunt)# exit
```

The following example defines peer hunt group number 2. Callers dial the pilot number 5610 to reach the hunt group. The first extension to ring the first time that this hunt group is called is 5601. If 5601 does not answer, the hunt proceeds from left to right, beginning with the extension directly to the right of 5601, for four hops. If none of those extensions answers before the hops limit is reached, the call is forwarded to extension 6000, which is the number for the voice-mail service.

If extension 5601 answers the first call, then the second time someone calls the hunt group, the first extension to ring is 5602. If this call hops until extension 5617 answers it, then the third time someone calls the hunt group, the first extension to ring is 5633. If extension 5633 does not answer, the call is redirected to extension 5601, and so forth.

```
Router(config)# ephone-hunt 2 peer
Router(config-ephone-hunt)# pilot 5610
Router(config-ephone-hunt)# list 5601, 5602, 5617, 5633
Router(config-ephone-hunt)# final 6000
Router(config-ephone-hunt)# hops 4
Router(config-ephone-hunt)# preference 1
Router(config-ephone-hunt)# timeout 30
Router(config-ephone-hunt)# exit
```

Related Commands

Command	Description
final	Defines the last ephone-dn in an ephone hunt group.
hops	Defines the number of times that a call is redirected to the next ephone-dn in a peer ephone-hunt-group list before proceeding to the final ephone-dn.
list	Defines the ephone-dns that participate in an ephone hunt group.
max-redirect	Changes the current number of allowable redirects in a Cisco CME system.
no-reg (ephone-hunt)	Specifies that the pilot number of this ephone hunt group should not register with the H.323 gatekeeper.

Command	Description
pilot	Defines the ephone-dn that is dialed to reach an ephone hunt group.
preference (ephone-hunt)	Sets preference order for the ephone-dn associated with an ephone-hunt-group pilot number.
timeout (ephone-hunt)	Sets the number of seconds after which a call that is not answered is redirected to the next number in the hunt-group list.

fastdial

To create an entry for a personal speed-dial number, use the **fastdial** command in ephone configuration mode. To delete a personal speed-dial number, use the **no** form of this command.

fastdial *dial-tag number* **name** *name-string*

no fastdial *dial-tag*

Syntax Description

dial-tag	Unique sequence number that is used to identify this personal speed-dial number during configuration tasks. Range is from 1 to 24.
number	Telephone number or extension to be dialed.
name *name-string*	Label to appear in the Personal Speed Dial menu that consists of a string of up to 24 alphanumeric characters.

Defaults

No personal speed-dial numbers are present.

Command Modes

Ephone configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

The **fastdial** command is supported only on the Cisco IP Phone 7940 and the Cisco IP Phone 7960.

Phone users access personal speed-dial numbers through the **Directories > Local Services > Personal Speed Dial** menu. Personal speed-dial numbers appear on this menu in the order in which they are entered during configuration.

Examples

The following example creates a directory of five personal speed-dial numbers for an IP phone:

```
Router(config)# ephone 1
Router(config-ephone)# fastdial 1 5001 name Front Register
Router(config-ephone)# fastdial 2 5002 name Security
Router(config-ephone)# fastdial 3 5003 name Rear Register
Router(config-ephone)# fastdial 4 5004 name Office
Router(config-ephone)# fastdial 5 912135550122 Accounting
```

Related Commands

Command	Description
ephone	Enters ephone configuration mode to configure Cisco IP phones.

feed

To enable an audio stream for multicast from a external live audio feed connected directly to the router by an FXO or an E&M analog voice port, use the **feed** command in ephone-dn configuration mode. To disable the multicast audio stream, use the **no** form of this command.

feed ip *ip-address* **port** *port-number* [**route** *ip-address*] [**out-call** *outcall-number*]

no feed ip

Syntax Description		
ip *ip-address*	Indicates that this audio stream is to be used as a multicast source and specifies the destination IP address for multicast.	
port *port-number*	Specifies the media port for multicast. Range is from 2000 to 65535. Port 2000 is recommended because this port is already used for normal Real-Time Transport Protocol (RTP) media transmissions between IP phones and the Cisco CallManager Express router.	
route *ip-address*	(Optional) Indicates specific router interface on which to transmit the IP multicast packets. The default is that the audio stream is automatically output on the interface that corresponds to the address that was configured with the **ip source-address** command.	
out-call *outcall-number*	(Optional) Sets up a call to the outcall number in order to connect to a live audio feed. If this keyword is not used, the live feed is assumed to derive from an incoming call to the ephone-dn that is being configured.	

Defaults   No multicast audio stream is enabled on an extension.

Command Modes   Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines   When this command is used, a connection for a live feed audio stream is established as an automatically connected voice call. If the **out-call** keyword is used, the Cisco CallManager Express (Cisco CME) system calls out to the specified number for the audio stream. If the **out-call** keyword is not used, it is assumed that the call is incoming to the ephone-dn. This includes VoIP calls if voice activity detection (VAD) is disabled. The typical operation is for the Cisco CME ephone-dn to establish a call to a local router E&M voice port.

Connection via E&M is the recommended mechanism because it requires minimal external components. The E&M port must be placed in 4-wire operation, using E&M immediate signaling and with the auto-cut-through option enabled. You directly connect a line-level audio feed (standard audio jack) to pins 3 and 6 of an E&M RJ-45 connector. The E&M WAN interface card (WIC) has a built-in audio

transformer that provides appropriate electrical isolation for the external audio source. (The audio connection on the E&M port does not require loop current.) The **signal immediate** and **auto-cut-through** commands disable E&M signaling on this voice port. A G.711 audio packet stream is generated by the digital signal processor (DSP) on the E&M port.

If you are using an FXO voice port for live-feed audio stream instead of an E&M port, connect the source to the FXO voice port. This connection requires an external adapter to supply normal telephone company (telco) battery voltage with the correct polarity to the tip-and-ring leads of the FXO port. The adapter must also provide transformer-based isolation between the external audio source and the tip-and-ring leads of the FXO port.

If the **out-call** keyword is used, an outbound call to the live-feed source is attempted (or reattempted) every 30 seconds until the call is connected to the ephone-dn (extension) for which the **feed** command was configured. Note that this ephone-dn is not associated with a physical phone.

The related **moh** (ephone-dn) and **multicast moh** commands provide the ability to multicast an audio stream that is also being used as the source for Cisco CME system music on hold (MOH).

Note IP phones do not support multicast at 224.x.x.x addresses.

Examples   The following example sets up a call to extension 7777 for a live audio stream and sends it via multicast:

```
Router(config)# ephone-dn 55
Router(config-ephone-dn)# feed ip 239.1.1.1 port 2000 route 10.10.23.3 out-call 7777
```

Related Commands

Command	Description
auto-cut-through	Enables call completion when an M-lead response is not provided.
ephone-dn	Enters ephone-dn configuration mode to set extension numbers and parameters for individual Cisco IP phone lines.
ip source-address	Identifies the IP address and port through which IP phones communicate with a Cisco CME router.
moh (ephone-dn)	Enables music on hold from a live feed and multicast of the MOH audio stream.
moh (telephony-service)	Enables music on hold from an audio file.
multicast moh	Enables multicast of a music-on-hold audio stream.
signal	Specifies the type of signaling for a voice port.

final

To define the last extension (ephone-dn) in an ephone hunt group, use the **final** command in ephone-hunt configuration mode. To remove this number from the hunt group, use the **no** form of this command.

final *dn-number*

no final *dn-number*

Syntax Description

dn-number	Ephone-dn number. Can be an ephone-dn primary or secondary number, voice-mail number, pilot number of another hunt group, or FXS caller-ID number.

Defaults

No final number is defined.

Command Modes

Ephone-hunt configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

Once a final number in one hunt group is configured as a pilot number of another hunt group, the pilot number of the first hunt group cannot be configured as a final number in any hunt group.

Examples

The following example defines ephone-dn 6000 as the last number of hunt group number 1:

```
Router(config)# ephone-hunt 1 sequential
Router(config-ephone-hunt)# final 6000
```

Related Commands

Command	Description
ephone-hunt	Defines an ephone hunt group and enters ephone-hunt configuration mode.
hops	Defines the number of times that a call is redirected to the next ephone-dn in a peer ephone-hunt-group list before proceeding to the final ephone-dn.
list	Defines the ephone-dns that participate in an ephone hunt group.
max-redirect	Changes the current number of allowable redirects in a Cisco CME system.
no-reg (ephone-hunt)	Specifies that the pilot number of this ephone hunt group should not register with the H.323 gatekeeper.
pilot	Defines the ephone-dn that is dialed to reach an ephone hunt group.

Command	Description
preference (ephone-hunt)	Sets preference order for the ephone-dn associated with an ephone-hunt-group pilot number.
timeout (ephone-hunt)	Sets the number of seconds after which a call that is not answered is redirected to the next number in the ephone-hunt-group list.

fxo hook-flash

To enable display of a Flash soft key on a Cisco IP Phone 7940 or a Cisco IP Phone 7960 in a Cisco CallManager Express (Cisco CME) system, use the **fxo hook-flash** command in telephony-service configuration mode. To disable display of the Flash soft key, use the **no** form of this command.

fxo hook-flash

no fxo hook-flash

Syntax Description   This command has no arguments or keywords.

Defaults   The Flash soft key is disabled.

Command Modes   Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines   Certain PSTN services, such as three-way calling and call waiting, require hookflash intervention from the phone user. A new soft key, labeled Flash, has been introduced to provide this functionality for Cisco IP Phone 7940 and Cisco IP Phone 7960 users on Foreign Exchange Office (FXO) lines attached to the Cisco CallManager Express system. The Flash soft key is enabled using the **fxo hook-flash** command.

Once a Flash soft key has been enabled on an IP phone, it is available to provide hookflash functionality during all calls except local IP-phone-to-IP-phone calls. Note that hookflash-controlled services can be activated only if they are supported by the PSTN connection that is involved in the call. The availability of the Flash soft key does not guarantee that hookflash-based services are actually accessible to the phone user.

The Flash soft key display is automatically disabled for local IP-phone-to-IP-phone calls.

This command must be followed by a quick reboot of the phones using the **restart all** command.

Examples   The following example enables the Flash soft key on Cisco IP Phone 7940 and Cisco IP Phone 7960 phones in a Cisco CallManager Express system:

```
Router(config)# telephony-service
Router(config-telephony-service)# fxo hook-flash
```

Related Commands

Command	Description
restart (ephone)	Performs a fast reboot of a single phone associated with a Cisco CME router.
restart (telephony-service)	Performs a fast reboot of one or all phones associated with a Cisco CME router.
telephony-service	Enters telephony-service configuration mode.

hold-alert

To set a repeating audible alert notification when a call is on hold on a Cisco IP phone, use the **hold-alert** command in ephone-dn configuration mode. To disable this feature, use the **no** form of this command.

hold-**alert** *timeout* {**idle** | **originator** | **shared**}

no hold-**alert** *timeout* {**idle** | **originator** | **shared**}

Syntax Description

timeout	Interval after which an audible alert notification is repeated, in seconds. Range is from 15 to 300. There is no default
idle	Alerts only when the phone is idle.
originator	Alerts whether the phone is idle or busy.
shared	Alerts only when the extension is idle but alerts all phones that share the line.

Defaults

Audible alert notification for on-hold calls is disabled. Only a visual indication is provided.

Command Modes

Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(2)XT	2.0	This command was introduced on the following platforms: Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines

The **hold**-**alert** command sets an audible alert notification on a Cisco IP phone to remind the phone user that a call is on hold. The *timeout* argument specifies the time interval in seconds from the time the call is placed on hold to the time the on-hold audible alert is generated. The alert is repeated every *timeout* seconds.

When the **idle** keyword is enabled, a one-second burst of ringing on the phone is generated on the IP phone that placed the call into the hold state, only if the phone is in the idle state. If the phone is in active use, no on-hold alert is generated.

When the **originator** keyword is enabled, a one-second burst of ringing is generated on the phone that placed the call into the hold state, if the phone is in the idle state. If the phone is in use on another call, an audible beep is generated (call-waiting tone).

When the **shared** keyword is enabled, a one-second ring burst is generated for all the idle phones that share the extension with the on-hold call. Phones that are in use do not receive an audio beep (call-waiting tone) alert. Only the phone that placed the call on hold hears a call-waiting beep if it is busy.

Examples

The following example sets audible alert notification to idle on the Cisco IP phone for alerting the user about on-hold calls:

```
Router(config)# ephone-dn 1
Router(config-ephone-dn)# number 1111
Router(config-ephone-dn)# name phone1
Router(config-ephone-dn)# hold-alert 100 idle
```

Related Commands

Command	Description
ephone-dn	Enters ephone-dn configuration mode.

hops

To define the number of times that a call can hop to the next ephone-dn in a peer ephone hunt group before the call proceeds to the final ephone-dn, use the **hops** command in ephone hunt configuration mode. To return to the default number of hops, use the **no** form of this command.

hops *number*

no hops *number*

Syntax Description

number	Number of hops before the call proceeds to the final ephone-dn. Range is from 2 to 10. Default is 2.

Defaults Number of hops is 2.

Command Modes Ephone-hunt configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines This command is only valid for peer ephone hunt groups in Cisco CallManager Express systems.

Examples The following example sets the number of hops to 6 for peer hunt group 3:

```
Router(config)# ephone-hunt 3 peer
Router(config-ephone-hunt)# hops 6
```

Related Commands

Command	Description
ephone-hunt	Defines an ephone hunt group and enters ephone-hunt configuration mode.
final	Defines the last ephone-dn in an ephone hunt group.
list	Defines the ephone-dns that participate in an ephone hunt group.
max-redirect	Changes the current number of allowable redirects in a Cisco CME system.
no-reg (ephone-hunt)	Specifies that the pilot number of this ephone hunt group should not register with the H.323 gatekeeper.
pilot	Defines the ephone-dn that is dialed to reach an ephone hunt group.

Command	Description
preference (ephone-hunt)	Sets preference order for the ephone-dn associated with an ephone-hunt-group pilot number.
timeout (ephone-hunt)	Sets the number of seconds after which a call that is not answered is redirected to the next number in the hunt-group list.

huntstop (ephone-dn)

To discontinue call hunting behavior for an extension (ephone-dn) or an extension channel, use the **huntstop** command in ephone-dn configuration mode. To disable huntstop, use the **no** form of this command.

huntstop [**channel**]

no huntstop [**channel**]

Syntax Description

channel	(Optional) For dual-line ephone-dns, keeps incoming calls from hunting to the second channel if the first channel is busy or does not answer.

Defaults

Ephone-dn huntstop is enabled.
Channel huntstop is disabled.

Command Modes

Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.
12.2(15)ZJ	3.0	The **channel** keyword was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

When you use the **huntstop** command without the **channel** keyword, it affects call hunting behavior that relates to ephone-dns (lines or extensions). If the huntstop attribute is set, an incoming call does not roll over (hunt) to another ephone-dn if the called ephone-dn is busy or does not answer and a hunting strategy has been established that includes this ephone-dn. For example, this allows you to prevent hunt-on-busy from redirecting a call from a busy phone into a dial-peer setup with a catch-all default destination. Use the **no huntstop** command to disable huntstop and allow hunting for ephone-dns.

Channel huntstop works in a similar way, but it affects call hunting behavior for the two channels of a single dual-line ephone-dn. If the **huntstop channel** command is used, incoming calls do not hunt to the second channel of an ephone-dn if the first channel is busy or does not answer. For example, an incoming call might search through the following ephone-dns and channels:

    ephone-dn 10 (channel 1)
    ephone-dn 10 (channel 2)

    ephone-dn 11 (channel 1)
    ephone-dn 11 (channel 2)
    ephone-dn 12 (channel 1)
    ephone-dn 12 (channel 2)

When the **no huntstop channel** command is used (the default), you might have a call ring for 30 seconds on ephone-dn 10 (channel 1) and then after 30 seconds move to ephone-dn 10 (channel 2). This is usually not the behavior that you desire. Also, it is often useful to reserve the second channel of a dual-line ephone-dn for call transfer, call waiting, or conferencing. The **huntstop channel** command tells the system that if the first channel is in use or does not answer, an incoming call should hunt forward to the next ephone-dn in the hunt sequence instead of to the next channel on the same ephone-dn.

Examples

The following example shows how to disable huntstop for the destination dial peer with the extension 5001. The huntstop for the dial peer is set to OFF and prevents calls to extension 5001 from being rerouted to the on-net H.323 dial peer for the 5... destination when 5001 is busy (the three periods are used as wildcards).

```
ephone-dn 1
 number 5001
 no huntstop
```

The following example shows a typical configuration in which ephone-dn huntstop (default) is required:

```
ephone-dn 1
 number 5001

ephone 4
 button 1:1
 mac-address 0030.94c3.8724

dial-peer voice 5000 voip
 destination-pattern 5...
 session target ipv4:192.168.17.225
```

In the previous example, the huntstop attribute is set to ON by default and prevents calls to extension 5001 from being rerouted to the on-net H.323 dial peer for 5... when extension 5001 is busy.

The next example shows another instance in which huntstop is not desired and is explicitly disabled. In this example, ephone 4 is configured with two lines, each with the same extension number 5001. This is done in order to allow the second line to provide call-waiting notification for extension number 5001 when the first line is in use. Setting **no huntstop** on the first line (ephone-dn 1) allows incoming calls to hunt to the second line (ephone-dn 2) on ephone 4 when the ephone-dn 1 line is busy.

Ephone-dn 2 has call forwarding set to extension 6000, which corresponds to a locally attached answering machine connected to a Foreign Exchange Station (FXS) voice port. In this example, the POTS dial peer for extension 6000 also has the dial-peer huntstop attribute explicitly set to prevent further hunting.

```
ephone-dn 1
 number 5001
 no huntstop
 preference 1
 call-forward noan 6000

ephone-dn 2
 number 5001
 preference 2
 call-forward busy 6000
 call-forward noan 6000

ephone 4
 button 1:1 2:2
 mac-address 0030.94c3.8724

dial-peer voice 6000 pots
 destination-pattern 6000
 huntstop
 port 1/0/0
 description answering-machine
```

The next example shows a dual-line ephone-dn configuration in which calls do not hunt to the second channel of any ephone-dn, but they do hunt through the channel 1 for each ephone-dn in the order 10, 11, 12.

```
ephone-dn 10 dual-line
 number 1001
 no huntstop
 huntstop channel

ephone-dn 11 dual-line
 number 1001
 no huntstop
 huntstop channel
 preference 1

ephone-dn 12 dual-line
 number 1001
 no huntstop
 huntstop channel
 preference 2
```

Related Commands	Command	Description
	ephone-dn	Enters ephone-dn configuration mode.
	huntstop (dial-peer)	Disables all further dial-peer hunting if a call fails using hunt groups.

intercom (ephone-dn)

To create an intercom by programming a pair of extensions (ephone-dns) to automatically call and answer each other, use the **intercom** command in ephone-dn configuration mode. To remove an intercom, use the **no** form of this command.

> **intercom** *extension-number* [**barge-in** | **no-auto-answer**] [**label** *label*]

> **no intercom** *extension-number*

Syntax Description

extension-number	Telephone number to which intercom calls are placed.
barge-in	(Optional) Allows inbound intercom calls to force an existing call into the call-hold state and allows the intercom call to be answered immediately.
no-auto-answer	(Optional) Disables the intercom auto-answer feature.
label *label*	(Optional) Defines an alphanumeric label for the intercom, of up to 30 characters.

Defaults

Intercom functionality is disabled.

Command Modes

Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(2)XT	2.0	This command was introduced on the following platforms: Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines

This command is used to dedicate a pair of Cisco ephone-dns for use as a "press to talk" two-way intercom between Cisco IP phones. Intercom lines cannot be used in shared-line configurations. If an ephone-dn is configured for intercom operation, it must be associated with one Cisco IP phone only. The intercom attribute causes an IP extension (ephone-dn) to operate in autodial fashion for outbound calls and autoanswer-with-mute for inbound calls.

The **barge-in** keyword allows inbound intercom calls to force an existing call on the called phone into the call-hold state to allow the intercom call to be answered immediately. The **no-auto-answer** keyword creates for the IP phone line a connection that resembles a private line, automatic ringdown (PLAR). The **label** keyword defines a text label for the intercom.

Following this command, the intercom ephone-dns are assigned to ephones using the **button** command. Following the **button** command, the **restart** command must be used to initiate a quick reboot of the phones to which this intercom is assigned.

Examples

The following example sets the intercom on Cisco IP phone directory number 1:

```
Router(config)# ephone-dn 1
Router(config-ephone-dn) number A5001
Router(config-ephone-dn) name "intercom"
Router(config-ephone-dn) intercom A5002 barge-in
```

The following example shows intercom configuration between two Cisco IP phones:

```
ephone-dn 18
 number A5001
 name "intercom"
 intercom A5002 barge-in
ephone-dn 19
 number A5002
 name "intercom"
 intercom A5001 barge-in
ephone 4
 button 1:2 2:4 3:18
 ephone 5
 button 1:3 2:6 3:19
```

In the preceding example, ephone-dn 18 and ephone-dn 19 are set as an intercom pair. Ephone-dn 18 is associated with button 3 of Cisco IP phone (ephone) 4, and ephone-dn 19 is associated with button number 3 of Cisco IP phone (ephone) 5. Button 3 on Cisco IP phone 4 and button 3 on Cisco IP phone 5 are set as a pair to provide intercom service to each other.

The intercom feature acts as a combination speed-dial PLAR and autoanswer with mute. If the **barge-in** keyword is set on the ephone-dn that receives the intercom call, the existing call is forced into the hold state, and the intercom call is accepted. If the phone user has the handset off hook (that is, not in speakerphone mode), the user hears a warning beep, and the intercom call is immediately connected with two-way audio. If the phone user is using speakerphone mode, the intercom connects with the microphone mute activated.

Note   Any caller can dial in to an intercom extension, and a call to an intercom extension that is originated by a nonintercom caller triggers an automatic answer exactly like a legitimate intercom call. To prevent nonintercom originators from manually dialing an intercom destination, you can use alphabetic characters when you assign numbers to intercom extensions using the **number** command. These characters cannot be dialed from a normal phone but can be dialed by preprogrammed intercom extensions whose calls are made by the router.

Related Commands

Command	Description
button	Associates ephone-dns with individual buttons on Cisco IP phones and specifies ring behavior per button.
ephone-dn	Enters ephone-dn configuration mode.
number	Associates a telephone or extension number with an extension (ephone-dn).

Command	Description
restart (ephone)	Performs a fast reboot of a single phone associated with a Cisco CME router.
restart (telephony-service)	Performs a fast reboot of one or all phones associated with a Cisco CME router.

ip source-address (telephony-service)

To identify the IP address and port through which IP phones communicate with a Cisco CallManager Express (Cisco CME) router, use the **ip source-address** command in telephony-service configuration mode. To disable the router from receiving messages from Cisco IP phones, use the **no** form of this command.

ip source-address *ip-address* [**port** *port*] [**any-match** | **strict-match**]

no ip source-address

Syntax Description	*ip-address*	Preexisting router IP address, typically one of the addresses of the Ethernet port of the router.
	port *port*	(Optional) TCP/IP port number to use for Skinny Client Control Protocol (SCCP). Range is from 2000 to 9999. Default is 2000.
	any-match	(Optional) Disables strict IP address checking for registration. This is the default.
	strict-match	(Optional) Requires strict IP address checking for registration.

Defaults

Port number: 2000
Server address match: **any-match**

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines

This is a mandatory command. The Cisco CallManager Express router cannot communicate with the Cisco CME phones if the IP address is not provided. If the port number is not provided, the default is port 2000. The IP address is usually the IP address of the Ethernet port to which the phones are connected.

Use the **any-match** keyword to instruct the router to permit Cisco IP phone registration, and use the **strict-match** keyword to instruct the router to reject IP phone registration attempts if the IP server address used by the phone does not match the source address exactly.

This command enables a router to receive messages from Cisco IP phones through the specified IP address and port.

Prior to Cisco IOS Telephony Services (Cisco ITS) V2.1, this command helped the router to autogenerate the SEPDEFAULT.cnf file, which was stored in the Flash memory of the router. The SEPDEFAULT.cnf file contains the IP address of one of the Ethernet ports of the router to which the phone should register. In ITS V2.1, Cisco CME 3.0, and later versions, the configuration files have been moved to system:/its/. The file named Flash:SEPDEFAULT.cnf that was used with previous Cisco ITS versions is now obsolete, but is retained as system:/its/SEPDEFAULT.cnf to support upgrades from older phone firmware.

For systems using ITS V2.1, Cisco CME 3.0, or later versions, the IP phones receive their initial configuration information and phone firmware from the TFTP server associated with the router. In most cases, the phones obtain the IP address of their TFTP server using the **option 150** command and Dynamic Host Configuration Protocol (DHCP). For Cisco ITS or Cisco CME operation, the TFTP server address obtained by the Cisco IP phones should point to the router IP address. The Cisco IP phones attempt to transfer a configuration file called XmlDefault.cnf.xml. This file is automatically generated by the router through the **ip source-address** command and is placed in router memory. The XmlDefault.cnf.xml file contains the IP address that the phones use to register for service, using the Skinny Client Control Protocol (SCCP). This IP address should correspond to a valid Cisco CME router IP address (and may be the same as the router TFTP server address).

Similarly, when an analog telephone adapter (ATA) such as the ATA-186 is attached to the Cisco CME router, the ATA receives very basic configuration information and firmware from the TFTP server XmlDefault.cnf.xml file. The XmlDefault.cnf.xml file is automatically generated by the Cisco CME router with the **ip source-address** command and is placed in the router's Flash memory.

Examples   The following example sets the IP source address and port:

```
Router(config)# telephony-service
Router(config-telephony-service)# ip source-address 10.6.21.4 port 2000 strict-match
```

Related Commands

Command	Description
telephony-service	Enters telephony-service configuration mode.

keepalive (ephone)

To set the length of the time interval between successive keepalive messages from the Cisco CallManager Express router to a particular IP phone, use the **keepalive** command in ephone configuration mode. To reset this length to the default value, use the **no** form of this command.

keepalive *seconds*

no keepalive

Syntax Description	*seconds*	Interval time, in seconds. Range is from 10 to 65535. Default is 30.

Defaults   30 seconds

Command Modes   Ephone configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)T	2.1	This command was introduced.

Usage Guidelines   If the router fails to receive three successive keepalive messages, it considers the phone to be out of service until the phone reregisters.

This command allows the keepalive interval to be set for individual phones so that wireless phone batteries are not run down too quickly by overly frequent keepalive signals.

If the **keepalive** (telephony-service) command and the **keepalive** (ephone) command are set to different time intervals, the value that has been set using the **keepalive** (ephone) command is used for that phone only.

Examples   The following example sets the keepalive interval to 300 seconds:

```
Router(config)# ephone 1
Router(config-ephone)# keepalive 300
```

Related Commands

Command	Description
ephone	Enters ephone configuration mode.
keepalive (telephony-service)	Sets the time interval for keepalive messages between IP phones and the Cisco CME router.

keepalive (telephony-service)

To set the length of the time interval between successive keepalive messages from the Cisco CallManager Express router to IP phones, use the **keepalive** command in telephony-service configuration mode. To reset this length to the default value, use the **no** form of this command.

> **keepalive** *seconds*

> **no keepalive**

Syntax Description

seconds	Interval time, in seconds. Range is from 10 to 65535. Default is 30.

Defaults

30 seconds

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines

If the router fails to receive three successive keepalive messages, it considers the phone to be out of service until the phone reregisters.

If the **keepalive** (telephony-service) command and the **keepalive** (ephone) command are set to different time intervals, the value that is set for the **keepalive** (ephone) command is used for that phone only.

Examples

The following example sets the keepalive time interval to 40 seconds:

```
Router(config)# telephony-service
Router(config-telephony-service)# keepalive 40
```

Related Commands	Command	Description
	keepalive (ephone)	Sets the time interval for keepalive messages between a particular IP phone and the Cisco CME router.
	telephony-service	Enters telephony-service configuration mode.

keyphone (ephone)

To designate a Cisco IP phone as a marked phone when using the Cisco CallManager Express XML API, use the **keyphone** command in ephone configuration mode. To remove the keyphone designation, use the **no** form of this command.

keyphone

no keyphone

Syntax Description   This command has no arguments or keywords.

Defaults   The phone that is being configured is not a key phone.

Command Modes   Ephone configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines   This command marks a Cisco IP phone as a "key" phone to be tracked while using the XML API. The XML API can be instructed to report the status of only the key phones in the system for network management purposes, for example.

This command is only used with the XML API.

Examples   The following example sets the phone with the phone tag of 1 as a marked phone for the XML API:

```
Router(config)# ephone 1
Router(config-ephone)# keyphone
```

Related Commands

Command	Description
ephone	Enters ephone configuration mode.

label

To create a text identifier instead of a phone-number display for an extension on an IP phone console, use the **label** command in ephone-dn configuration mode. To delete a label, use the **no** form of this command.

label *string*

no label *string*

Syntax Description

string	Alphanumeric string of up to 30 characters.

Defaults

No label is defined.

Command Modes

Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

One label is allowed per extension (ephone-dn). The ephone-dn must already have a number that was set using the **number** command before a label can be created for it.

This command must be followed by a quick reboot of the phone on which the label appears, using the **restart** command.

Examples

The following example creates three phone labels to appear in place of three phone numbers on IP phone console displays:

```
Router(config)# ephone-dn 10
Router(config-ephone-dn)# label user10
Router(config-ephone-dn)# exit

Router(config)# ephone-dn 20
Router(config-ephone-dn)# label user20
Router(config-ephone-dn)# exit

Router(config)# ephone-dn 30
Router(config-ephone-dn)# label user30
Router(config-ephone-dn)# exit
```

	Command	Description
Related Commands	**ephone-dn**	Enters ephone-dn configuration mode.
	number	Associates a telephone or extension number with an extension (ephone-dn) in a Cisco CME system.
	restart (ephone)	Performs a fast reboot of a single phone associated with a Cisco CME router.
	restart (telephony-service)	Performs a fast reboot of one or all phones associated with a Cisco CME router.

list

To create a list of extensions that are members of a Cisco CallManager Express (Cisco CME) ephone hunt group, use the **list** command in ephone-hunt configuration mode. To remove a list from the router configuration, use the **no** form of this command.

list *dn-number***,** *dn-number*[**,** *dn-number...*]

no list

Syntax Description	*dn-number*	Extension (ephone-dn) number. There must be two to ten numbers in the hunt group list, and each number must be an ephone-dn primary or secondary number.

Defaults No list is defined.

Command Modes Ephone-hunt configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines The numbers in a hunt group must all be added or deleted from the hunt group list at one time. You cannot add a single number to an existing list or remove one number from a list.

Examples The following example creates sequential hunt group number 7, which contains four ephone-dns:

```
Router(config)# ephone-hunt 7 sequential
Router(config-ephone-hunt)# list 7711, 7712, 7713, 7714
```

Related Commands

Command	Description
ephone-hunt	Defines an ephone hunt group and enters ephone-hunt configuration mode.
final	Defines the last ephone-dn in an ephone hunt group.
hops	Defines the number of times that a call is redirected to the next ephone-dn in a peer ephone-hunt-group list before proceeding to the final ephone-dn.
max-redirect	Changes the current number of allowable redirects in a Cisco CallManager Express system.
no-reg (ephone-hunt)	Specifies that the pilot number of this ephone hunt group should not register with the H.323 gatekeeper.

Command	Description
pilot	Defines the ephone-dn that is dialed to reach an ephone hunt group.
preference (ephone-hunt)	Sets preference order for the ephone-dn associated with an ephone-hunt-group pilot number.
timeout (ephone-hunt)	Sets the number of seconds after which a call that is not answered is redirected to the next number in the hunt-group list.

load (telephony-service)

To associate a type of Cisco IP phone with a phone firmware file, use the **load** command in telephony-service configuration mode. To disassociate a type of phone from a phone firmware file, use the **no** form of this command.

load *phone-type firmware-file*

no load *phone-type*

Syntax Description

phone-type	Type of IP phone. The following choices are valid: • **7902**—Cisco IP Phone 7902G. • **7905**—Cisco IP Phone 7905G. • **7910**—Cisco IP Phone 7910G. • **7912**—Cisco IP Phone 7912G. • **7914**—Cisco IP Phone 7914 Expansion Module. • **7935**—Cisco IP Conference Station 7935. • **7960-7940**—Cisco IP Phone 7960G and Cisco IP Phone 7940G. • **ATA**—Cisco ATA-186 and Cisco ATA-188.
firmware-file	Filename for the IP phone firmware to be associated with the IP phone type. For every phone type except ATA, do not use the .bin file extension. Filenames are case-sensitive.

Defaults   No default behavior or values

Command Modes   Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.
12.2(11)YT	2.1	Support was added for the Cisco IP Phone 7914 Expansion Module.

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)T	2.1	This command was integrated into Cisco IOS Release 12.2(15)T.
12.2(15)ZJ	3.0	The following keywords were added to this command: **7902**, **7905**, and **7912**.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines   This command updates the Cisco CallManager Express (Cisco CME) configuration file for the specified type of IP phone to add the name of the correct firmware file that the phone should load. This filename also provides the version number for the phone firmware that is in the file. Later, whenever a phone is started up or rebooted, the phone reads the configuration file to determine the name of the firmware file that it should load and then looks for that firmware file on the TFTP server.

Cisco IP phones update themselves with new phone firmware whenever they are initially started up or rebooted.

A separate **load** command is needed for each type of phone. The Cisco IP Phone 7960 and Cisco IP Phone 7940 have the same phone firmware and share the **7960-7940** keyword.

When specifying the phone firmware filename in this command, for every phone type except ATA, do not use the .bin file extension. For example, if the firmware file for Cisco IP Phone 7914 Expansion Modules is named W05473955.bin, you enter the **load 7914 W05473955** command.

Following the **load** command, you use the **tftp-server** command to enable TFTP access to the file by Cisco IP phones. Note that the **tftp-server** command does require that you use the file extension as part of the filename.

The **load** command must be followed by a reboot of the phones using the **reset** command.

Examples   The following example identifies the Cisco IP phone firmware file that is used by the Cisco IP Phone 7960 and Cisco IP Phone 7910 and then defines the Cisco CME router Flash memory as the location of the phone firmware file:

```
Router(config)# telephony-service
Router(config-telephony-service)# load 7960-7940 P00303020209
Router(config-telephony-service)# load 7910 P00403020209
Router(config-telephony-service)# exit
Router(config)# tftp-server flash:P00303020209.bin
Router(config)# tftp-server flash:P00403020209.bin
```

Related Commands

Command	Description
reset	Resets a Cisco IP phone.
telephony-service	Enters telephony-service configuration mode.
tftp-server	Enables TFTP access to firmware files on the TFTP server.

log password

To set a local password for an XML API query, use the **log password** command in telephony-service configuration mode. To remove the password definition, use the **no** form of this command.

> **log password** *password-string*

> **no log password** *password-string*

Syntax Description	*password-string* Character string that is a password for XML API queries. Maximum length is 28 characters. Longer strings are truncated.

Defaults   No password is defined.

Command Modes   Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines   The local password is used to authenticate XML API requests on the network management server. If the password is not set, an XML API query fails local authentication.

The password string is stored as plain text. No encryption is supported.

Examples   The following example defines a local password for XML API requests:

```
Router(config)# telephony-service
Router(config-telephony-service)# log password ewvpil
```

Related Commands

Command	Description
telephony-service	Enters telephony-service configuration mode.

log table

To set parameters for the table used to capture phone events used for the XML API, use the **log table** command in telephony-service configuration mode. To reset parameters to their default values, use the **no** form of this command.

log table {**max-size** *entries* | **retain-timer** *minutes*}

no log table {**max-size** | **retain-timer**}

Syntax Description

max-size *entries*	Number of entries in the log table. Range is from 0 to 1000. Default is 150.
retain-timer *minutes*	Number of minutes to retain entries in the log table. Range is from 2 to 500. Default is 15.

Defaults

max-size: 150
retain-timer: 15

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

Cisco CallManager Express (Cisco CME) captures and time stamps events, such as phones registering and unregistering and extension status, and stores them in an internal buffer. This command sets the maximum number of events, or entries, that can be stored in the table. One event equals one entry. The **retain-timer** keyword sets the number of minutes that events are kept in the buffer before they are deleted.

The event table can be viewed using the **show fb-its-log** command.

Examples

The following example sets the maximum size of the table at 750 events and sets the retention time at 30 minutes:

```
Router(config)# telephony-service
Router(config-telephony-service)# log table max-size 750
Router(config-telephony-service)# log table retain-timer 30
```

Related Commands	Command	Description
	show fb-its-log	Displays information about the Cisco CallManager Express XML API configuration, statistics on XML API queries, and event logs.
	telephony-service	Enters telephony-service configuration mode.

login (telephony-service)

To define when users of IP phones in a Cisco CallManager Express (Cisco CME) system are logged out automatically, use the **login** command in telephony-service configuration mode. To revert to the default length of time before automatic logout, use the **no** form of this command.

> **login** [**timeout** [*minutes*]] [**clear** *time*]

> **no login**

Syntax Description	**timeout**	(Optional) Deactivates logins a given number of minutes after a phone becomes idle.
	minutes	(Optional) Number of minutes for which an IP phone can be idle before it is logged out automatically. Range is from 5 to 1440. Default is 60.
	clear *time*	(Optional) Deactivates user login for all IP phones at the specified time of day, using 00:00 to 24:00 on a 24-hour clock. For example, 10:30 p.m. is 22:30. Default is 24:00 (midnight).

Defaults

minutes: 60
clear *time*: 24:00 (midnight)

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

The **login** command is used in conjunction with the **pin** command to define the capability for individual phone users to override call blocking. Call blocking on IP phones is defined in the following way. First, one or more patterns of outgoing digits are defined using the **after-hours block pattern** command. Next, one or more time periods during which calls that match those patterns are to be blocked are defined using the **after-hours date** or **after-hours day** command or both. By default, all IP phones in a Cisco CME system are restricted if at least one pattern and at least one time period are defined. Individual phones can be exempted from call blocking using the **after-hour exempt** command. Individual users on specified phones can override call blocking by logging in with their PINs. Those logins are terminated at a specific time or after a specified period of idleness, as directed by the parameters in this command.

The **login** command applies only to IP phones that have soft keys, such as the Cisco IP Phone 7940 and the Cisco IP Phone 7960.

This command must be followed by a quick reboot of the phones using the **restart all** command.

When a Cisco CME router is rebooted, the login status for all phones is reset to the default.

Examples   The following example sets the login deactivation to occur after a 2-hour idle time and after 11:30 p.m.

```
Router(config)# telephony-service
Router(config-telephony-service)# login timeout 120 clear 2330
```

Related Commands

Command	Description
after-hour exempt	Specifies that an IP phone does not have any of its outgoing calls blocked even though call blocking has been defined.
after-hours block pattern	Defines a pattern of digits for blocking outgoing calls from IP phones.
after-hours date	Defines a recurring period based on date during which outgoing calls that match defined block patterns are blocked on IP phones.
after-hours day	Defines a recurring period based on day of the week during which outgoing calls that match defined block patterns are blocked on IP phones.
pin	Sets a global/individual PIN for phone users to deactivate call blocking during nonwork hours.
restart (ephone)	Performs a fast reboot of a single phone associated with a Cisco CallManager Express (Cisco CME) router.
restart (telephony-service)	Performs a fast reboot of one or all phones associated with a Cisco CallManager Express (Cisco CME) router.
show ephone login	Displays the login states of all phones.
telephony-service	Enters telephony-service configuration mode.

loopback-dn

To create a virtual loopback voice port (loopback-dn) to establish a demarcation point for VoIP calls and supplementary services, use the **loopback-dn** command in ephone-dn configuration mode. To delete a loopback-dn configuration, use the **no** form of this command.

> **loopback-dn** *dn-tag* [**forward** *number-of-digits* | **strip** *number-of-digits*] [**prefix** *prefix-digit-string*] [**suffix** *suffix-digit-string*] [**retry** *seconds*] [**auto-con**] [**codec** {**g711alaw** | **g711ulaw**}]

> **no loopback-dn**

Syntax Description		
dn-tag	Unique sequence number that identifies the ephone-dn that is being paired for loopback with the ephone-dn that is currently being configured. The paired ephone-dn must be one that is already defined in the system.
forward *number-of-digits*	(Optional) Number of digits in the original called number to forward to the other ephone-dn in the loopback-dn pair. Range is from 1 to 32 digits. Default is to forward all digits.
strip *number-of-digits*	(Optional) Number of leading digits to be stripped from the original called number before forwarding to the other ephone-dn in the loopback-dn pair. Range is from 1 to 32 digits. Default is to not strip any digits.
prefix *prefix-digit-string*	(Optional) Defines a string of digits to add in front of the forwarded called number. Maximum number of digits in the string is 32. Default is that no prefix is defined.
suffix *suffix-digit-string*	(Optional) Defines a string of digits to add to the end of the forwarded called number. Maximum number of digits in the string is 32. Default is that no suffix is defined. If you add a suffix that starts with the pound character (#), the string must be enclosed in quotation marks.
retry *seconds*	(Optional) Number of seconds to wait before retrying the loopback target when it is busy or unavailable. Range is from 0 to 32767. Default is that retry is disabled and appropriate call-progress tones are passed to the call originator.
auto-con	(Optional) Immediately connects the call and provides in-band alerting while waiting for the far-end destination to answer. Default is that automatic connection is disabled.
codec	(Optional) Explicitly forces the G.711 a-law or G.711 mu-law voice coding type to be used for calls that pass through the loopback-dn. This overrides the G.711 coding type that is negotiated for the call and provides mu-law to a-law conversion if needed. Default is that Real-Time Transport Protocol (RTP) voice packets are passed through the loopback-dn without considering the G.711 coding type negotiated for the calls.
g711alaw	G.711 a-law, 64000 bits per second, for T1.
g711ulaw	G.711 mu-law, 64000 bits per second, for E1.

Defaults   All calls are set to forward all digits and not to strip any digits.
Prefix is not defined.
Suffix is not defined.
Retry is disabled.
Automatic connection is disabled.
RTP voice packets are passed through the loopback-dn without considering the G.711 coding type
negotiated for the call.

Command Modes   Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(2)XT	2.0	This command was introduced on the following platforms: Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT3	2.0	The **suffix** keyword was added.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745 routers. The **auto-con** keyword was added.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691 routers.
12.2(11)T	2.01	This command was integrated into Cisco IOS Release 12.2(11)T and the **suffix** keyword was added**.**
12.2(11)YT	2.1	This command was integrated into Cisco IOS Release 12.2(11)YT and the **strip** keyword was added.
12.2(11)YT2	2.1	The **codec** keyword was added.
12.2(15)T	2.1	This command was integrated into Cisco IOS Release 12.2(15)T.

Usage Guidelines   The **loopback-dn** command is used to configure two ephone-dn virtual voice ports as
back-to-back-connected voice-port pairs. A call presented on one side of the loopback-dn pair is
reoriginated as a new call on the opposite side of the loopback-dn pair. The **forward**, **strip, prefix**, and
suffix keywords can be used to manipulate the original called number that is presented to the incoming
side of the loopback-dn pair to generate a modified called number to use when reoriginating the call at
the opposite side of the loopback-dn pair. For loopback-dn configurations, you must always configure
ephone-dn virtual voice ports as cross-coupled pairs.

Note   Use of loopback-dn configurations within a VoIP network should be restricted to resolving critical
network interoperability service problems that cannot otherwise be solved. Loopback-dn configurations
are intended to be used in VoIP network interworking situations in which the only other alternative would
be to make use of back-to-back-connected physical voice ports. Loopback-dn configurations emulate the
effect of a back-to-back physical voice-port arrangement without the expense of the physical voice-port
hardware. A disadvantage of loopback-dn configurations is that, because digital signal processors
(DSPs) are not involved in a loopback-dn arrangement, the configuration does not support interworking
or transcoding between calls that use different voice codecs. In many cases, the use of back-to-back

physical voice ports that do use DSPs to resolve VoIP network interworking issues is preferred, because it introduces fewer restrictions in terms of supported codecs and call flows. Also, loopback-dns do not support T.38 fax relay.

Note We recommend that you create the basic ephone-dn configuration for both ephone-dn entries before configuring the loopback-dn option under each ephone-dn. The loopback-dn mechanism should be used only in situations where the voice call parameters for the calls on either side of the loopback-dn use compatible configurations; for example, compatible voice codec and DTMF relay parameters. Loopback-dn configurations should be used only for G.711 voice calls.

The loopback-dn arrangement allows an incoming telephone call to be terminated on one side of the loopback-dn port pair and a new pass-through outgoing call to be originated on the other side of the loopback-dn port pair. The loopback-dn port pair normally works with direct cross-coupling of their call states; the alerting call state on the outbound call segment is associated with the ringing state on the inbound call segment.

The loopback-dn mechanism allows for call operations (such as call transfer and call forward) that are invoked for the call segment on one side of the loopback-dn port pair to be isolated from the call segment that is present on the opposite side of the loopback-dn port pair. This approach is useful when the endpoint devices associated with the two different sides have mismatched call transfer and call forwarding capabilities. The loopback-dn arrangement allows for call transfer and call forward requests to be serviced on one side of the loopback-dn port pair by creating hairpin-routed calls when necessary. The loopback-dn arrangement avoids the propagation of call transfer and call forward requests to endpoint devices that do not support these functions.

The **loopback-dn** command provides options for controlling the called-number digits that are passed through from the incoming side to the outgoing side. The available digits can be manipulated with the **forward**, **strip**, **prefix**, and **suffix** keywords.

The **forward** keyword defines the number of digits in the original called number to forward to the other ephone-dn in the loopback-dn pair. The default is set to forward all digits. The **strip** keyword defines the number of leading digits to be stripped from the original called number before forwarding to the other ephone-dn in the loopback-dn pair. The default is set to not strip any digits. The **forward** and **strip** commands are mutually exclusive and can be used with any combination of the **prefix** and **suffix** keywords.

The **prefix** keyword defines a string of digits to add in front of the forwarded number.

The **suffix** keyword is most commonly used to add a terminating "#" (pound-sign) character to the end of the forwarded number to indicate that no more digits should be expected. The pound-sign character indicates to the call-routing mechanism that is processing the forwarded number that the forwarded number is complete. Providing an explicit end-of-number character also avoids a situation in which the call-processing mechanism waits for the interdigit timeout period to expire before routing the call onward using the forwarded number.

Note The Cisco IOS command-line interface (CLI) requires that arguments with character strings that start with the pound-sign (#) character be enclosed within quotation marks; for example, "#".

The **retry** keyword is used to suppress a far-end busy indication on the outbound call segment. Instead of returning a busy signal to the call originator (on the incoming call segment), a loopback-dn presents alerting or ringing tone to the caller and then periodically retries the call to the final far-end destination (on the outgoing call segment). This is not bidirectional. To prevent calls from being routed into the idle

outgoing side of the loopback-dn port pair during the idle interval that occurs between successive outgoing call attempts, configure the outgoing side of the loopback-dn without a number so that there is no number to match for the inbound call.

The **auto-con** keyword is used to configure a premature trigger for a connected state for an incoming call segment while the outgoing call segment is still in the alerting state. This setup forces the voice path to open for the incoming call segment and support the generation of in-band call progress tones for busy, alerting, or ringback. The disadvantage of the **auto-con** keyword is premature opening of the voice path during the alerting stage and also triggering of the beginning of billing for the call before the call has been answered by the far end. These disadvantages should be considered carefully before you use the **auto-con** keyword.

The **codec** keyword is used to explicitly select the a-law or mu-law type of G.711 and to provide a-law to mu-law conversion if needed. Setting the codec type on one side of the loopback-dn forces the selection of a-law or mu-law for voice packets that are transmitted from that side of the loopback-dn. To force the a-law or mu-law G.711 codec type for both voice packet directions, set the codec type on both sides of the loopback-dn. Loopback-dn configurations are used only with G.711 calls. Other voice codec types are not supported.

Examples

The following example creates a loopback-dn configured with the **forward** and **prefix** keywords:

```
Router(config)# ephone-dn 7
Router(config-ephone-dn)# loopback-dn 15 forward 5 prefix 41
```

The following example creates a loopback-dn that appends the pound-sign (#) character to forwarded numbers to indicate the end of the numbers:

```
Router(config)# ephone-dn 7
Router(config-ephone-dn)# loopback-dn 16 suffix "#"
```

The following example shows a loopback-dn configuration that pairs ephone-dns 15 and 16. An incoming call (for example, from VoIP) to 4085550101 matches ephone-dn 16. The call is then reoriginated from ephone-dn 15 and sent to extension 50101. Another incoming call (for example, from a local IP phone) to extension 50151 matches ephone-dn 15. It is reoriginated from ephone-dn 16 and sent to 4085550151.

```
ephone-dn 15
 number 5015.
 loopback-dn 16 forward 5 prefix 40855
 caller-id local
 no huntstop
!
!
ephone-dn 16
 number 408555010.
 loopback-dn 15 forward 5
 caller-id local
 no huntstop
!
```

Related Commands

Command	Description
ephone-dn	Enters ephone-dn configuration mode.
show ephone-dn loopback	Displays information about loopback ephone-dns that have been created in a Cisco CallManager Express (Cisco CME) system.

mac-address

To associate the MAC address of a Cisco IP phone with an ephone configuration in a Cisco CallManager Express (Cisco CME) system, use the **mac-address** command in ephone configuration mode. To disassociate the MAC address from an ephone configuration, use the **no** form of this command.

mac-address [*mac-address*]

no mac-address

Syntax Description

mac-address	Identifying MAC address of an IP phone, which is found on a sticker located on the bottom of the phone.

Defaults

No default behavior or values

Command Modes

Ephone configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.
12.2(15)ZJ	3.0	The *mac-address* argument was made optional to enable automatic MAC address assignment after registration of phones.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

Use this command to specify the MAC address of a specific Cisco IP phone in order to physically identify the Cisco IP phone in a Cisco CME configuration. The MAC address of each Cisco IP phone is printed on a sticker that is placed on the bottom of the phone.

If you choose to register phones before configuring them, the **mac-address** command can be used during configuration without entering the *mac-address* argument. The Cisco CME system detects MAC addresses and automatically populates phone configurations with their corresponding MAC addresses and phone types. This capability is not supported for voice-mail ports and is supported only by

Cisco CME 3.0 and later versions. To use this capability, enable Cisco CME by using the following commands: **max-ephones**, **max-dn**, **create cnf-files**, and **ip source-address**. After these commands have been used, phones can start to register. Then, when you are configuring a registered ephone and you use the **mac-address** command with no argument, the MAC address of the phone is automatically read into the configuration. The equivalent functionality is available through the Cisco CME GUI.

If you choose to configure phones before registering them, the MAC address for each ephone must be entered during configuration.

Examples

The following example associates the MAC address CFBA.321B.96FA with the IP phone that has phone-tag 22:

```
Router(config)# ephone 22
Router(config-ephone)# mac-address CFBA.321B.96FA
```

Related Commands

Command	Description
create cnf-files	Builds the XML configuration files that are required for IP phones used with Cisco IOS Telephony Services V2.1, Cisco CallManager Express 3.0, or later versions.
ephone	Enters ephone configuration mode.
ip source-address	Identifies the IP address and port through which IP phones communicate with a Cisco CallManager Express (Cisco CME) router.
max-dn	Sets the maximum number of extensions (ephone-dns) to be supported by a Cisco CME router.
max-ephones	Sets the maximum number of IP phones (ephones) to be supported by a Cisco CME router.
show ephone registered	Displays status and information for registered IP phones.

max-conferences

To set the maximum number of three-party conferences simultaneously supported by the Cisco CallManager Express (Cisco CME) router, use the **max-conferences** command in telephony-service configuration mode. To reset this number to the default, use the **no** form of this command.

max-conferences *max-conference-number*

no max-conferences

Syntax Description

max-conference number	Maximum number of three-party conferences supported simultaneously by the router. This number is platform-dependent, and the default is half the maximum for each platform. The following are the maximum values for this argument:

- Cisco 1750, Cisco 1751, Cisco 2600 series, and Cisco 3640 routers—8 conferences.
- Cisco 3660, Cisco 3725, and Cisco 3745 routers—16 conferences.

Defaults

Half the maximum number of simultaneous three-party conferences for each platform

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(2)XT	2.0	This command was introduced on the following platforms: Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines

This command supports three-party conferences for local and on-net calls only when all conference participants are using the G.711 codec. Conversion between G.711 mu-law and a-law is supported. Mixing of the media streams is supported by the Cisco IOS processor. The maximum number of simultaneous conferences is limited to the platform-specific maximum.

Examples   The following example sets the maximum number of conferences for a Cisco IP phone to 4:

```
Router(config)# telephony-service
Router(config-telephony-service)# max-conferences 4
```

Related Commands

Command	Description
telephony-service	Enters telephony-service configuration mode.

max-dn (telephony-service)

To set the maximum number of extensions (ephone-dns) to be supported by a Cisco CallManager Express (Cisco CME) router, use the **max-dn** command in telephony-service configuration mode. To reset this number to the default, use the **no** form of this command.

max-dn *max-directory-numbers*

no max-dn

Syntax Description

max-directory-numbers	Maximum number of extensions (ephone-dns) supported by the router. The maximum number is version- and platform-dependent; refer to Cisco IOS command-line interface (CLI) help. The default is 0.

Defaults

max-directory-numbers: 0

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(11)T	2.01	This command was implemented on the Cisco 1760.

Usage Guidelines

The **max-dn** command limits the number of extensions (ephone-dns) available in a Cisco CME system. The maximum number of extensions is platform- and version-dependent. Use CLI help to determine the maximum number of extensions you can set, as shown in this example:

```
Router(config-telephony-service)# max-dn ?
 <1-192>  Maximum directory numbers supported
```

The **max-ephones** command similarly limits the number of IP phones in a Cisco CME system.

Note You can increase the number of allowable extensions to the maximum; but after the maximum allowable number is configured, you cannot reduce the limit without rebooting the router.

After using this command, configure individual extensions using the Cisco CME GUI or the router CLI in ephone-dn configuration mode.

Examples   The following example sets the maximum number of extensions (ephone-dns) to 12:

```
Router(config)# telephony-service
Router(config-telephony-service)# max-dn 12
```

Related Commands

Command	Description
ephone-dn	Enters ephone-dn configuration mode.
max-ephones	Configures the maximum number of Cisco IP phones that can be supported by the router.
telephony-service	Enters telephony-service configuration mode.

max-ephones (telephony-service)

To set the maximum number of Cisco IP phones to be supported by a Cisco CallManager Express (Cisco CME) router, use the **max-ephones** command in telephony-service configuration mode. To reset this number to the default, use the **no** form of this command.

>**max-ephones** *max-phones*

>**no max-ephones**

Syntax Description

max-phones	Maximum number of phones supported by the Cisco CME router. The maximum number is version- and platform-dependent; refer to Cisco IOS command-line interface (CLI) help. Default is 0.

Defaults

0 phones

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.1(5)YD	1.0	This command was introduced on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(2)XT	2.0	This command was implemented on the Cisco 1750 and Cisco 1751.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.

Usage Guidelines

The **max-ephones** command limits the number of Cisco IP phones supported on the router. The maximum number you can set is platform- and version-dependent. Use CLI help to determine the maximum number of ephones you can set, as shown in this example:

```
Router(config-telephony-service)# max-ephones ?
  <1-48>  Maximum phones to support
```

The **max-dn** command similarly limits the number of extensions (ephone-dns) in a Cisco CME system.

Note You can increase the number of phones; but after the maximum allowable number is configured, you cannot reduce the limit of the Cisco IP phones without rebooting the router.

After using this command, configure phones by using the Cisco CME GUI or the router CLI in ephone configuration mode.

Examples   The following example sets the maximum number of Cisco IP phones in a Cisco CME system to 24:

```
Router(config)# telephony-service
Router(config-telephony-service)# max-ephones 24
```

Related Commands

Command	Description
ephone	Enters ephone configuration mode.
max-dn	Sets the maximum number of extensions (ephone-dns) that can be supported by the router.
telephony-service	Enters telephony-service configuration mode.

max-redirect

To change the number of times that a call can be redirected by call forwarding or transfer within a Cisco CallManager Express (Cisco CME) system, use the **max-redirect** command in telephony-service configuration mode. To revert to the default number of redirects, use the **no** form of this command.

max-redirect *number*

no max-redirect

Syntax Description

number	Number of permissible redirects. Range is from 5 to 20. Default is 5.

Defaults

Number of redirects is 5.

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

This command supports Cisco CME ephone hunt groups by allowing calls to be redirected more than the default 5 times.

Examples

The following example sets the maximum number of redirects to 8:

```
Router(config)# telephony-service
Router(config-telephony-service)# max-redirect 8
```

Related Commands

Command	Description
telephony-service	Enters telephony-service configuration mode.

moh (ephone-dn)

To enable music on hold (MOH) from an external live audio feed (standard line-level audio connection) connected directly to the router by an FXO or an E&M analog voice port, use the **moh** command in ephone-dn configuration mode. To disable MOH from a live feed or to disable the outcall number or multicast capability, use the **no** form of this command

moh [**out-call** *outcall-number*] [**ip** *ip-address* **port** *port-number* [**route** *ip-address*]]

no moh [**out-call** *outcall-number* | **ip**]

Syntax Description	

out-call *outcall-number*	(Optional) Sets up a call to the outcall number in order to connect to the MOH feed. If this keyword is not used, the live feed is assumed to derive from an incoming call to the ephone-dn under which this command is used.
ip *ip-address*	(Optional) Indicates that this audio stream is to be used as a multicast source as well as the MOH source and specifies the destination IP address for multicast.
port *port-number*	(Optional) Specifies the media port for multicast. Range is from 2000 to 65535. Port 2000 is recommended because this port is already used for normal Real-Time Transport Protocol (RTP) media transmissions between IP phones and the Cisco CallManager Express router.
route *ip-address*	(Optional) Indicates specific router interface on which to transmit the IP multicast packets. The default is that the MOH multicast stream is automatically output on the interface that corresponds to the address that was configured with the **ip source-address** command.

Defaults   MOH is disabled on an extension.

Command Modes   Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(11)YT	2.1	This command was introduced.
12.2(15)T	2.1	This command was integrated into Cisco IOS Release 12.2(15)T.
12.2(15)ZJ	3.0	The **ip**, **port**, and **route** keywords were added.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines   This command takes the specified live-feed audio stream and uses it as MOH for a Cisco CallManager Express (CME) system. The connection for the live-feed audio stream is established as an automatically connected voice call. If the **out-call** keyword is used, the type of connection can include VoIP calls if voice activity detection (VAD) is disabled. The typical operation is for the MOH ephone-dn to establish a call to a local router E&M voice port.

Connection via E&M is the recommended mechanism because it requires minimal external components. The E&M port must be placed in 4-wire operation, using E&M immediate signaling and with the **auto-cut-through** option enabled. You directly connect a line-level audio feed (standard audio jack) to pins 3 and 6 of an E&M RJ-45 connector. The E&M WAN interface card (WIC) has a built-in audio transformer that provides appropriate electrical isolation for the external audio source. (The audio connection on the E&M port does not require loop current.) The **signal immediate** and **auto-cut-through** commands disable E&M signaling on this voice port. A G.711 audio packet stream is generated by the digital signal processor (DSP) on the E&M port.

If you are using an FXO voice port for live-feed MOH instead of an E&M port, connect the MOH source to the FXO voice port. This connection requires an external adapter to supply normal telephone company (telco) battery voltage with the correct polarity to the tip-and-ring leads of the FXO port. The adapter must also provide transformer-based isolation between the external audio source and the tip-and-ring leads of the FXO port.

Music from a live feed is continuously fed into the MOH playout buffer instead of being read from an audio file in Flash memory. There is typically a two-second delay with live-feed MOH.

If the **out-call** keyword is used, an outbound call to the MOH live-feed source is attempted (or reattempted) every 30 seconds until the call is connected to the ephone-dn (extension) that has been configured for MOH. Note that this ephone-dn is not associated with any physical phone.

If the **moh** (ephone-dn) command is used without any keywords or arguments, the ephone-dn will accept an incoming call and use the audio stream from the call as the source for the MOH stream, displacing any audio stream that is available from a Flash file. To accept an incoming call, the ephone-dn must have an extension or phone number configured for it. A typical usage would be for an external H.323-based server device to call the ephone-dn to deliver an audio stream to the Cisco CME system. Normally, only a single ephone-dn would be configured like this. If there is more than one ephone configured to accept incoming calls for MOH, the first ephone-dn that is successfully connected to a call (incoming or outgoing) is the MOH source for the system.

MOH can also be derived from an audio file when you use the **moh** command in telephony-service configuration mode with the *filename* argument. There can be only one MOH stream at a time in a Cisco CME system, and if both an audio file and a live feed have been specified for the MOH stream, the router seeks the live feed from the **moh** (ephone-dn) command first. If the live feed is found, the router displaces the audio file source. If the live feed is not found or fails at any time, the router falls back to the audio file source that was specified in the **moh** (telephony-service) command.

If you use the **ip** keyword to specify a multicast address in this command, the audio stream is sent to the multicast address in addition to serving as the MOH source. Additionally, if you specify a different multicast address using the **multicast moh** command under telephony-service configuration mode, the audio stream is also sent to the multicast address that you named in that command. It is therefore possible to send the live-feed audio stream to MOH and to two different multicast addresses: the one that is directly configured under the **moh** (ephone-dn) command and the one that is indirectly configured under the **multicast moh** (telephony-service) command.

A related command, the **feed** command, provides the ability to multicast an audio stream that is not the MOH audio stream.

Note   IP phones do not support multicast at 224.x.x.x addresses.

Examples   The following example establishes a live music-on-hold source by setting up a call to extension 7777:

```
Router(config)# ephone-dn 55
Router(config-ephone-dn)# moh out-call 7777
```

Related Commands

Command	Description
auto-cut-through	Enables call completion when an M-lead response is not provided.
ephone-dn	Enters ephone-dn configuration mode to set directory numbers and parameters for individual Cisco IP phone extensions.
feed	Enables multicast of an audio stream that is different from the music-on-hold audio stream.
ip source-address	Identifies the IP address and port through which IP phones communicate with a Cisco CME router.
moh (telephony-service)	Enables music on hold from an audio file.
multicast moh	Enables multicast of the music-on-hold audio stream.
signal	Specifies the type of signaling for a voice port.

moh (telephony-service)

To generate an audio stream from a file for music on hold (MOH) in a Cisco CallManager Express (Cisco CME) system, use the **moh** command in telephony-service configuration mode. To disable the MOH audio stream from this file, use the **no** form of this command.

moh *filename*

no moh

Syntax Description

filename	Name of the audio file to use for the MOH audio stream. The file must be copied to Flash memory on the Cisco CME router.

Defaults

Tone on hold (a periodic beep is played to the caller)

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(2)XT	2.0	This command was introduced on the Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.

Usage Guidelines

This command enables MOH from .au and .wav format music files. MOH is played for G.711 callers and on-net VoIP and PSTN callers who are on hold in a Cisco CME system. Local callers within a Cisco CME system hear a repeating tone while they are on hold.

Audio files that are used for MOH must be copied to the Cisco CME router Flash memory. A MOH file can be in .au or .wav file format; however, the file format must contain 8-bit 8-kHz data in a-law or mu-law data format.

If you want to replace or modify the audio file that is currently specified, you must first disable the MOH capability using the **no moh** command. The following example replaces file1 with file2:

```
Router(config-telephony-service)# moh file1
Router(config-telephony-service)# no moh
Router(config-telephony-service)# moh file2
```

If you specify a second file without first removing the original file, the MOH mechanism stops working and may require a router reboot to clear the problem.

A related command, the **moh** command in ephone-dn configuration mode, can be used to establish a MOH audio stream from a live feed. If you configure both commands, MOH falls back to playing music from the audio file if the live music feed is interrupted.

The **multicast moh** command allows you to use the MOH stream for a multicast broadcast.

When the **multicast moh** and **debug ephone moh** commands are both enabled, if you also use the **no moh** command, the debug output can be excessive and flood the console. Multicast MOH should be disabled before using the **no moh** command when the **debug ephone moh** command is enabled.

Examples

The following example enables music on hold and specifies a music file:

```
Router(config)# telephony-service
Router(config-telephony-service)# moh minuet.wav
```

Related Commands

Command	Description
debug ephone moh	Displays diagnostic information for music on hold.
moh (ephone-dn)	Enables music on hold from a live audio feed.
multicast moh	Enables multicast of the music-on-hold audio stream.
telephony-service	Enters telephony-service configuration mode.

multicast moh

To use the music-on-hold (MOH) audio stream as a multicast source in a Cisco CallManager Express (Cisco CME) system, use the **multicast moh** command in telephony-service configuration mode. To disable multicast use of the MOH stream, use the **no** form of this command.

> **multicast moh** *ip-address* **port** *port-number* [**route** *ip-address-list*]

> **no multicast moh**

Syntax Description

ip-address	Specifies the destination IP address for multicast.
port *port-number*	Specifies the media port for multicast. Range is from 2000 to 65535. Port 2000 is recommended because this port is already used for normal Real-Time Transport Protocol (RTP) media transmissions between IP phones and the Cisco CME router.
route *ip-address-list*	(Optional) Indicates specific router interfaces over which to transmit the IP multicast packets. Up to four IP addresses can be listed, each separated from the other by a space. The default is that the MOH multicast stream is automatically output on the interfaces that correspond to the address that was configured with the **ip source-address** command.

Defaults

No multicast is enabled.

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(15)ZJ	3.0	This command was introduced.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines

This command enables multicast of the audio stream that is designated for MOH in a Cisco CME system. A related command, the **moh** (ephone-dn) command, creates a MOH audio stream from an external live feed and optionally enables multicast on that stream. These two commands can be used concurrently to provide multicast of a live-feed MOH audio stream to two different multicast addresses.

Another related command, the **feed** command, enables multicast of an audio stream that is not the MOH audio stream.

When the **multicast moh** and **debug ephone moh** commands are both enabled, if you also use the **no moh** command, the debug output can be excessive and flood the console. Multicast MOH should be disabled before using the **no moh** command when the **debug ephone moh** command is enabled.

Note   IP phones do not support multicast at 224.x.x.x addresses.

Examples   The following example enables multicast of the MOH audio stream at multicast address 239.10.16.4 and names two router interfaces over which to send the multicast packets.

```
Router(config)# telephony-service
Router(config-telephony-service)# moh minuet.au
Router(config-telephony-service)# multicast moh 239.10.16.4 port 2000 route 10.10.29.17
10.10.29.33
```

Related Commands

Command	Description
feed	Enables multicast of an audio stream that is not the music-on-hold audio stream.
ip source-address	Identifies the IP address and port through which IP phones communicate with a Cisco CME router.
moh (ephone-dn)	Enables music on hold from a live audio feed.
moh (telephony-service)	Enables music on hold from an audio file.
telephony-service	Enters telephony-service configuration mode.

mwi

To enable a specific Cisco IP phone extension (ephone-dn) to receive message-waiting indication (MWI) notification from an external voice-messaging system, use the **mwi** command in ephone-dn configuration mode. To disable this feature, use the **no** form of this command.

mwi {**off** | **on** | **on-off**}

no mwi {**off** | **on** | **on-off**}

Syntax Description		
off		Sets a Cisco IP phone extension to process MWI to OFF, using either the main or secondary phone number.
on		Sets a Cisco IP phone extension to process MWI to ON, using either the main or secondary phone number.
on-off		Sets a Cisco IP phone extension to process MWI to both ON and OFF, using either the main or secondary phone number.

Defaults   MWI notification is disabled on an extension.

Command Modes   Ephone-dn configuration

Command History	Cisco IOS Release	Cisco CME Version	Modification
	12.2(2)XT	2.0	This command was introduced on the following platforms: Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
	12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
	12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.

Usage Guidelines   This command enables a Cisco IP phone extension to receive MWI notification from an external voice-messaging system for all the Cisco IP phones connected to the Cisco CallManager Express (CME) router. This extension is a "dummy" extension and is not associated with any physical phone. The external voice-messaging system is able to communicate MWI status by making telephone calls to the dummy extension number, with the MWI information embedded in either the called or calling-party IP phone number.

This command cannot be used unless the **number** command is already configured for this extension (ephone-dn).

Examples   The following example sets MWI to on:

```
Router(config)# ephone-dn 1
Router(config-ephone-dn) number 8000
Router(config-ephone-dn) mwi on
```
The following example sets MWI to off.

```
Router(config)# ephone-dn 2
Router(config-ephone-dn) number 8001
Router(config-ephone-dn) mwi off
```

The following example sets MWI to both on and off for the primary and secondary number, where the MWI information is embedded in the calling-party number:

```
Router(config)# ephone-dn 3
Router(config-ephone-dn) number 8002 secondary 8003
Router(config-ephone-dn) mwi on-off
```

In the example above, a call placed by the voice-mail system to 8002 turns on the MWI light for the extension number indicated by the calling-party number for the MWI call. A call placed to 8003 turns off the MWI light.

The following example sets MWI to both on and off for the primary and secondary number, where the MWI information is embedded in the called-party number:

```
Router(config)# ephone-dn 20
Router(config-ephone-dn) number 8000*....*1 secondary 8000*....*2
Router(config-ephone-dn) mwi on-off
```

In the example above, a call placed by the voice-mail system to 8000*5001*1 turns on the MWI light for extension 5001. A call placed to 8000*5001*2 turns off the MWI light.

Related Commands

Command	Description
ephone-dn	Enters ephone-dn configuration mode.
mwi expires	Sets the expiration timer for registration for either the client or the server.
mwi sip (ephone-dn)	Subscribes an extension in a Cisco CallManager Express router to receive MWI notification from a SIP MWI server.
mwi sip-server (telephony-service)	Configures the IP address and port number for an external SIP-based MWI server.
number	Associates a telephone or extension number with an extension (ephone-dn) in a Cisco CME system.

mwi expires

To set the expiration timer for registration for the message-waiting indication (MWI) client or server, use the **mwi expires** command in telephony-service configuration mode. To disable the timer, use the **no** form of this command.

mwi expires *seconds*

no mwi expires *seconds*

Syntax Description

seconds	Expiration time, in seconds. Range is from 600 to 99999. Default is 86400 (24 hours).

Defaults

86400 seconds (24 hours)

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(2)XT	2.0	This command was introduced on the following platforms: Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.

Examples

The following example sets the expiration timer to 1000 seconds:

```
Router(config)# telephony-service
Router(config-telephony-service)# mwi expires 1000
```

Related Commands

Command	Description
mwi relay (telephony-service)	Enables the Cisco CME router to relay MWI information to remote Cisco IP phones.
mwi sip-server (telephony-service)	Configures the IP address and port number for the external SIP-based MWI server.
telephony-service	Enters telephony-service configuration mode.

mwi relay

To enable a Cisco CallManager Express (Cisco CME) router to relay message-waiting indication (MWI) notification to remote Cisco IP phones, use the **mwi relay** command in telephony-service configuration mode. To disable MWI relay, use the **no** form of this command.

mwi relay

no mwi relay

Syntax Description   This command has no arguments or keywords.

Defaults   MWI is not enabled.

Command Modes   Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(2)XT	2.0	This command was introduced on the following platforms: Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.

Usage Guidelines   Use this command to enable the Cisco CME router to relay MWI notification to remote Cisco IP phones. The router at the central site acts as a notifier after this command is used.

Examples   The following example enables MWI relay:

```
Router(config)# telephony-service
Router(config-telephony-service)# mwi relay
```

Related Commands

Command	Description
mwi expires	Sets the expiration timer for registration for the client or the server.
show mwi relay clients	Displays registration information for MWI relay clients.
telephony-service	Enters telephony-service configuration mode.

mwi sip

To subscribe an extension in a Cisco CallManager Express (Cisco CME) system to receive message-waiting indication (MWI) from a SIP-based MWI server, use the **mwi sip** command in ephone-dn configuration mode. To remove the configuration, use the **no** form of this command.

mwi sip

no mwi sip

Syntax Description   This command has no arguments or keywords.

Defaults   An extension is not subscribed to receive MWI.

Command Modes   Ephone-dn configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(2)XT	2.0	This command was introduced on the following platforms: Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.

Usage Guidelines   Use this command to subscribe an extension in a Cisco CME router to receive MWI notification from a SIP-based MWI server, and use the **mwi sip-server** command to specify the IP address and port number for the external SIP-based MWI server. This function integrates a Cisco CME router with a SIP-protocol-based MWI service.

Examples   The following example subscribes extension 5001 to receive MWI notification from an external Session Initiation Protocol (SIP) MWI server and requests the SIP MWI server to send MWI notification messages through SIP to the Cisco CME router for extension 5001:

```
Router(config) ephone-dn 1
Router(config-ephone-dn) number 5001
Router(config-ephone-dn) name MWI
Router(config-ephone-dn) mwi sip

Router(config) telephony-service
Router(config-telephony-service) mwi sip-server 172.30.0.5
```

Related Commands	Command	Description
	ephone-dn	Enters ephone-dn configuration mode.
	mwi sip-server (telephony-service)	Configures the IP address and port number for the external SIP-based MWI server.
	show mwi relay clients	Displays registration information for MWI relay clients.

mwi sip-server

To configure the IP address and port number for an external SIP-based message-waiting indication (MWI) server, use the **mwi sip-server** command in telephony-service configuration mode. To disable the MWI server functionality, use the **no** form of this command.

> **mwi sip-server** *ip-address* [**transport tcp** | **transport udp**] [**port** *port-number*] [**reg-e164**] [**unsolicited**]

> **no mwi sip-server** *ip-address*

Syntax Description

ip-address	IP address of the MWI server.
transport tcp	(Optional) Selects TCP as the transport layer protocol. This is the default transport protocol.
transport udp	(Optional) Selects UDP as the transport layer protocol.
port *port-number*	(Optional) Specifies port number for the MWI server. Range is from 2000 to 9999. Default is 5060.
reg-e164	(Optional) Registers an E.164 number with a SIP proxy or registrar rather than an extension number. Registering with an extension number is the default.
unsolicited	(Optional) Sends SIP NOTIFY for MWI without any need to send a SUBSCRIBE from the Cisco CallManager Express router.

Defaults

Transport layer protocol: TCP
Port number: 5060 (SIP standard port)
Registration: with an extension number

Command Modes

Telephony-service configuration

Command History

Cisco IOS Release	Cisco CME Version	Modification
12.2(2)XT	2.0	This command was introduced on the following platforms: Cisco 1750, Cisco 1751, Cisco 2600 series, Cisco 3600 series, and Cisco IAD2420 series.
12.2(8)T	2.0	This command was integrated into Cisco IOS Release 12.2(8)T and implemented on the Cisco 3725 and Cisco 3745.
12.2(8)T1	2.0	This command was implemented on the Cisco 2600-XM and Cisco 2691.
12.2(15)ZJ	3.0	The **unsolicited** keyword was added.
12.3(4)T	3.0	This command was integrated into Cisco IOS Release 12.3(4)T.

Usage Guidelines   Use this command to configure the IP address of an external SIP MWI server. This IP address is used with the **mwi sip** (ephone-dn) command to subscribe individual ephone-dn extension numbers to the notification list of the MWI SIP server. A SIP MWI client runs TCP by default.

The **transport tcp** keyword is the default setting. The **transport udp** keyword allows you to integrate with a SIP MWI client. The optional **port** keyword is used to specify a port number other than 5060, the default. The default registration is with an extension number, so the **reg-e164** keyword allows you to register with an E.164 ten-digit number.

Examples   The following example sets MWI for the SIP server and sets individual ephone-dn extension numbers to the MWI SIP server's notification list:

```
Router(config) ephone-dn 1
Router(config-ephone-dn) number 5001
Router(config-ephone-dn) name Accounting
Router(config-ephone-dn) mwi sip
Router(config-ephone-dn) exit
Router(config) telephony-service
Router(config-telephony-service) mwi sip-server 192.168.0.5 transport udp
```

Related Commands

Command	Description
mwi (ephone-dn)	Configures specific Cisco IP phone directory numbers to receive MWI notification from an external voice-mail system.
mwi expires	Sets the expiration timer for registration for the client or the server.
mwi sip (ephone-dn)	Subscribes an extension in a Cisco CME router to receive MWI notification from a SIP MWI server.
show mwi relay clients	Displays the registration information for MWI relay clients.
telephony-service	Enters telephony-service configuration mode.