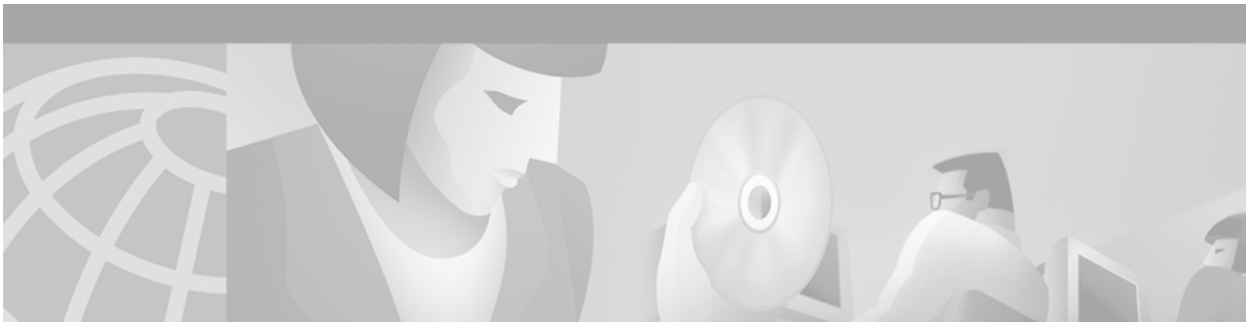

Dial Peer Enhancements

This feature module describes the Dial Peer Enhancements feature for Cisco IOS Release 12.1(2)T for the Cisco 2600 and Cisco 3600 series routers, and for the Cisco MC3810 series concentrators. It includes information on the benefits of the new feature, supported platforms, related documents, and more.

This document includes the following sections:

Feature Overview

The dial peer configuration enhancements described in this document were previously implemented in earlier releases for Voice over IP (VoIP) on several platforms. In the Cisco IOS Release 12.1(2)T, some of these same enhancements are now supported on additional platforms for Voice over Frame Relay (VoFR) and Voice over ATM (VoATM). In addition, these enhancments are now supported on the Cisco MC3810 series for VoIP.

This document describes the implementation of these enhancements on the Cisco 2600 series, Cisco 3600 series and Cisco MC3810 series. For more information on the earlier implementation on other platforms, see the Cisco IOS Release 12.1(1)T online document *Dial Peer Enhancements*.

Table 1 lists the Cisco IOS release in which these dial peer enhancements were first implemented for each voice technology on the different platforms.

Table 1 Support for Dial Peer Enhancements in Cisco IOS Releases

Hardware Platform	Voice over IP	Voice over Frame Relay	Voice over ATM
Cisco 2600 series	12.1(1)T	12.0(7)XK and 12.1(2)T	Not supported.
Cisco 3600 series	12.1(1)T	12.0(7)XK and 12.1(2)T	12.0(7)XK and 12.1(2)T
Cisco MC3810 series	12.0(7)XK and 12.1(2)T	12.0(7)XK and 12.1(2)T	12.0(7)XK and 12.1(2)T
Cisco 1750	12.1(1)T	Not supported.	Not supported.
Cisco AS5300	12.0(7)XR1 and 12.1(1)T	Not supported.	Not supported.
Cisco 7200 series	12.1(1)T	12.0(7)XK and 12.1(2)T	Not supported.
Cisco 7500 series	12.1(1)T	12.0(7)XK and 12.1(2)T	Not supported.

The following are the new dial peer enhancements supported in this release:

- Additional Dial String Symbols

  Beginning in this release, additional dial string symbols are supported that you use with the **destination-pattern** dial-peer configuration command to establish the digit pattern.

  For configuration information and a list of the dial string symbols supported, see the "Configuring the Destination Pattern Dial String Using New Regular Expression Symbols" section on page 5.

- Number-Type Matching

  To match on a number type for a dial peer call leg, the **numbering-type** command is used in dial-peer configuration mode. Number-type matching is supported on Plain Old Telephone Service (POTS), VoIP, VoFR, and VoATM dial peers.

  For configuration procedures, see the "Configuring Number-Type Matching" section on page 6.

- Digit-Strip Option

  When a called number is received and matched to a POTS dial peer, the matched digits are stripped and the remaining digits are forwarded to the voice interface. A new command called **digit-strip** makes this default behavior an option. The digit-strip option is supported on POTS dial peers only.

  For configuration procedures, see the "Configuring the Dial Peer to Strip Matched Digits (POTS Dial Peers only)" section on page 6.

- Translation Rule Implementation

  When configuring your dial peers, you are provided with an option called the translation rule. This rule applies a translation rule to a calling party number (Automatic Number Identification [ANI]) or a called party number (Dial Number Information Service [DNIS]) for both incoming and outgoing calls within Cisco H.323 voice-enabled gateways. Also, the rule allows translation of the *type of number.* Refer to the Q.931 ITU specification for details.

  For configuration procedures, see the "Configuring Digit Translation Rules for Dial Peer Call Legs" section on page 7.

Benefits

Reduced Number of Dial Peers

Currently, dial-peer configuration needs multiple dial peers to support a dialing plan. The dial-peer enhancements reduce the amount of effort in producing dial peer entries, improves VoIP system performance significantly because of less dial peer search, and uses less memory.

Digit Manipulation

When a called number is received and matched to a POTS dial peer, the matched digits are stripped and the remaining digits are forwarded to the voice interface. A new command, **digit-strip**, makes this default behavior an option. This means that you can easily get caller ID and restriction information, and that do not have to make long-distance calls between small, neighboring countries.

Restrictions

None.

Related Documents

- Cisco IOS Release 12.1 *Multiservice Applications Configuration Guide*
- Cisco IOS 12.1 Release *Multiservice Applications Command Reference*

Supported Platforms

This feature is supported on the following platforms beginning in this release:

- Cisco MC3810 series concentrators (VoIP, VoFR, VoATM)
- Cisco 2600 series routers (VoFR)*
- Cisco 3600 series routers (VoFR, VoATM)*
- Cisco 7200 series routers (VoFR)*
- Cisco 7500 series routers (VoFR)*

*These dial peer enhancements were supported on these platforms for VoIP in previous releases. See Table 1 on page 2 for more information.

Supported Standards, MIBs, and RFCs

Standards

No new or modified standards are supported by this feature.

MIBs

No new or modified MIBs are supported by this feature.

For descriptions of supported MIBs and how to use MIBs, see the Cisco MIB web site on CCO at http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml.

RFCs

No new or modified RFCs are supported by this feature.

Prerequisites

Before you can configure your platform to configure the dial-peer enhancements, you must do the following:

- Establish a working IP network. For more information about configuring IP, refer to the "IP Overview," "Configuring IP Addressing," and "Configuring IP Services" chapters in the Cisco IOS Release 12.1 *IP and IP Routing Configuration Guide.*
- Configure Voice over IP, Voice over Frame Relay, or Voice over ATM. For more information, refer to the Cisco IOS Release 12.1 *Cisco IOS Multiservice Applications Configuration Guide*.

Configuration Tasks

To configure the different dial-peer enhancements, see the following sections:

- Configuring the Destination Pattern Dial String Using New Regular Expression Symbols, page 5
- Configuring Number-Type Matching, page 6
- Configuring the Dial Peer to Strip Matched Digits (POTS Dial Peers only), page 6
- Configuring Digit Translation Rules for Dial Peer Call Legs, page 7

Configuring the Destination Pattern Dial String Using New Regular Expression Symbols

In this release, new dial string symbols have been added that provide you with new options for manipulating your dial string. The following new dial string symbols have been added:

- Percent sign (%)
- Plus sign (+)
- Question mark (?)
- Brackets ([ ])
- Parentheses "( )"

Table 2 lists the new and previously existing dial string symbols that are supported and how they are used.

Table 2 Symbols Used in Dial Peer and Regular Expression Comparison

Symbol	Description	Regular Expression/ Dial Peer
%	Indicates that a previous digit/pattern occurred zero or multiple times; similar to a wild card "*" used in a regular expression rule.	Yes / Yes
+	Indicates a sequence of one or more matches of the pattern.	Yes / Yes[1]
?	Indicates a pattern followed by "?" matching zero or one time.	Yes / Yes
.	Indicates a single character.	Yes / Yes
[ ]	Indicates a range. A range is a sequence of characters enclosed in "[ ]" and only numeric characters "0" to "9" are allowed in the range; similar to a regular expression rule.	Yes / Yes
( )	Indicates a pattern, and is the same as the regular expression rule.	Yes / Yes
$	Indicates a pattern matching the null string at the end of the input string.	Yes/No
****	Indicates a character followed by a single character matching the first character, or a single character with no other significance (matching that character)	Yes/No
^	Indicates a match to the beginning of the string.	Yes/No

1. The "+" symbol can be part of dialing numbers in some countries, where "+" is always a leading digit in the dialed number. However, this does not conflict with the regular expression rule; "+" in regular expressions will never be a leading symbol.

To configure the dial-peer destination pattern in conjunction with the dial string symbols now supported in this release, enter the following commands beginning in global configuration mode:

	Command	Purpose
Step 1	`Router(config)# dial-peer voice` *number* {**pots** | **voip** | **vofr** | **voatm**}	Enters dial-peer configuration mode.
Step 2	`Router(config-dial-peer)# destination-pattern` [**+**]*string*[**T**]	Specifies the destination pattern. You can use the symbols listed in Table 2 as part of the string digit pattern.

For more information, see the "destination-pattern" section on page 13

Configuring Number-Type Matching

Number-type matching is used in dial-peer configuration mode to match on a number type for a dial peer call leg. To configure number-type matching using the **numbering-type** command in dial-peer configuration mode, enter the following commands beginning in global configuration mode:

	Command	Purpose
Step 1	`Router(config)# dial-peer voice` *number* {**pots** | **voip** | **vofr** | **voatm**}	Enters dial-peer configuration mode.
Step 2	`Router(config-dial-peer)# numbering-type` { **abbreviated** | **international** | **national** | **network** | **reserved** | **subscriber** | **unknown**}	Specifies the numbering type, as defined by the ITU Q.931 specification.

Configuring the Dial Peer to Strip Matched Digits (POTS Dial Peers only)

When a called number is received and matched to a POTS dial peer, the matched digits are stripped and the remaining digits are forwarded to the voice interface. The **digit-strip** command makes this behavior an option.

Digit stripping is enabled by default. To disable digit strip for a POTS dial peer, enter the following commands beginning in global configuration mode:

	Command	Purpose
Step 1	`Router(config)# dial-peer voice` *number* **pots**	Enters dial-peer configuration mode to configure a POTs peer.
Step 2	`Router(config-dial-peer)# no digit-strip`	Disables digit-strip.

To reenable digit strip for a POTS dial peer, enter the following commands beginning in global configuration mode:

	Command	Purpose
Step 1	`Router(config)# dial-peer voice number pots`	Enters dial-peer configuration mode to configure a POTs peer.
Step 2	`Router(config-dial-peer)# digit-strip`	Enables digit-strip.

For more information about how the digit strip command, see the "digit-strip" section on page 16.

Configuring Digit Translation Rules for Dial Peer Call Legs

A dial peer defines the characteristics associated with a call leg. Dial peers are used to apply attributes to call legs and to identify call origin and destination. Attributes applied to a call leg include QoS, codec, VAD, and fax rate. A call leg is a discrete segment of a call connection that lies between two points in the connection. All of the call legs for a particular connection have the same connection ID.

A POTS dial peer points to a voice-port on the router, and the destination of a voice network dial peer points to the destination IP address of the voice-router that terminates the call.

Complete the following procedures to configure call legs using the **translation-rule** command:

Timesaver You should configure your translation rules before you apply rules to your dial peer call legs.

To enter the translation-rule configuration mode and specify a rule, enter the following commands in global configuration mode:

	Command	Purpose
Step 1	`Router(config)# translation-rule number`	Defines a translation-rule tag number and enters translation-rule configuration mode. All subsequent commands that you enter in this mode before you exit will apply to this translation-rule tag.
Step 2	`Router(config-translate)# rule tag input-match-pattern sub-pattern numbering-type numbering-type`	Specifies a translation rule. This command can be entered multiple times and is applied to the translation-rule defined in Step 1. The *tag* number represents the unique number you assign to the translation rule, and the valid values are from 0-10. The *input-match-patter*n and the *sub-pattern* must be entered to determine the rule parameters. In the *numbering-type* fields, you can enter one of the following keywords, as defined by the ITU Q.931 specification: • **any** • **international** • **abbreviated** • **national** • **network** • **reserved** • **subscriber** • **unknown**

Note Applying translation rules to more than one dial peer call leg in your end-to-end call is not recommended.

To create additional rules to apply to the translation-rule, repeat step 2.

To apply a rule to an inbound POTS call leg, enter the following commands beginning in global configuration mode:

	Command	Purpose
Step 1	`Router(config)# voice-port 0:D`	Specifies the voice port.
Step 2	`Router(config-voiceport)# translate { called-number | calling-number} name-tag`	Specifies the translation tag for the inbound called or calling number.

To apply a rule to an outbound VoIP call leg, enter the following commands beginning in global configuration mode:

	Command	Purpose
Step 1	`Router(config)# dial-peer voice number voip`	Enters the dial-peer configuration mode to configure a VoIP peer.
Step 2	`Router(config-dial-peer)# session target ipv:10.1.2.2`	Specifies a destination IP address for this dial peer.
Step 3	`Router(config-dial-peer)# translate-outgoing { calling-number | called-number} name-tag`	Translates outbound calling or called number.

To apply a rule to a VoIP call that originates from an H.323 node, enter the following global configuration command:

	Command	Purpose
Step 1	`Router(config)# voip-incoming translation-rule name-tag {calling-number | called-number}`	Specifies the translation tag for the VoIP inbound call leg that originates from an H.323 node.

Note There can be only one global VoIP incoming translation rule.

To apply a translation rule to an outbound POTS call leg, enter the following commands beginning in global configuration mode:

	Command	Purpose
Step 1	`Router(config)# dial-peer voice number pots`	Enters the dial-peer configuration mode to configure a POTS dial peer.
Step 2	`Router(config-dial-peer)# port 0:D`	Specifies the voice port.
Step 3	`Router(config-dial-peer)# translate-outgoing { calling-number | called-number} tag`	Specifies the translation tag for outbound called or calling number.

Verifying Digit Translation

To verify the digit translation, enter the **test translation-rule** global-configuration command.

```
Router# test translation-rule
translation-rule 21
 Rule 1 527.% 1408527 subscriber international
 Rule 2 7.% 1408527 abbreviated international


Router# test translation-rule 21 45678 abbreviated
Router#
*Jan 19 16:39:14.578:The replace number 45614085278
Router#
```

Monitoring and Maintaining Digit Manipulation and Translation

To monitor and maintain digit manipulation an translation rules, enter the following command in EXEC mode:

Command	Purpose
`router# show translation-rule [name-tag]`	Displays information about the rules that have been configured for a specific translation name.

Configuration Example

The following example includes a translation that uses the "%" symbol so that zero or matches of the preceding character/digit:

```
dial-peer voice 2 voip
 destination-pattern 1.........
 translate-outgoing called-number 1
 session target ras

translation-rule 1
 rule 0 10.% 0
 rule 1 11.% 1
 rule 2 12.% 2
 rule 3 13.% 3
 rule 4 14.% 4
 rule 5 15.% 5
 rule 6 16.% 6
 rule 7 17.% 7
 rule 8 18.% 8
 rule 9 19.% 9
```

Command Reference

This section documents modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.1 command reference publications. The following modified commands are described in this section:

- **destination-pattern**
- **digit-strip**
- **numbering-type**
- **rule**
- **show translation-rule**
- **test translation-rule**
- **translate**
- **translate-outgoing**
- **translation-rule**
- **voip-incoming translation-rule**

destination-pattern

To specify either the prefix or the full E.164 telephone number (depending on your dial plan) to be used for a dial peer, use the **destination-pattern** command in dial-peer configuration mode. Use the **no** form of this command to disable the configured prefix or telephone number.

destination-pattern [**+**]*string*[**T**]

no destination-pattern [**+**]*string*[**T**]

Syntax Description

+	(Optional) Character indicating an E.164 standard number.
string	Series of digits that specify the E.164 or private dialing plan telephone number. Valid entries are the digits 0 through 9, the letters A through D, and the following special characters: • The asterisk (*) and pound sign (#) that appear on standard touch-tone dial pads. On the Cisco 3600 Series only, these characters cannot be used as leading characters in a string (for example, *650). • Comma (,), which inserts a pause between digits. • Period (.), which matches any entered digit (this character is used as a wildcard). On the Cisco 3600 Series, the period cannot be used as a leading character in a string (for example, .650). • Percent sign (%), which indicates that the previous digit/pattern occurred zero or multiple times, similar to the wild card usage in the regular expression. • Plus sign (+), which matches a sequence of one or more matches of the character/pattern. **Note** The plus sign used as part of the digit string is different from the plus sign that can be used in front of the digit string to indicate that the string is an E.164 standard number. • Circumflex (^), which indicates a match to the beginning of the string. • Dollar sign ($), which matches the null string at the end of the input string. • Backslash symbol (\), which is followed by a single character matching that character, or used with a single character with no other significance (matching that character). • Question mark (?), which matches zero or one time. • Brackets ([ ]), which indicate a range. A range is a sequence of characters enclosed in the brackets, and only numeric characters “0” to “9” are allowed in the range. This is similar to a regular expression rule. • Parentheses, “( )”, which indicate a pattern.
T	(Optional) Control character indicating that the **destination-pattern** value is a variable length dial-string.

Defaults

Enabled with a null string.

Command Modes

Dial-peer configuration

Command History

Release	Modification
11.3(1)T	This command was introduced.
12.0(4)XJ	This command was modified for Store and Forward Fax.
12.0(7)XR	Support for the plus sign, percent sign, question mark, brackets, and parentheses symbols in the dial string were added to the Cisco AS5300.
12.0(7)XK	Support for the plus sign, percent sign, question mark, brackets, and parentheses in the dial string were added to the Cisco 2600, Cisco 3600, and Cisco MC3810 series.
12.1(1)T	The modifications made in the Cisco IOS 12.0(7)XR release for the Cisco Cisco AS5300 were first supported on the T train, and were first supported on the T train for the following additional platforms: Cisco 1750, Cisco 2600 series, Cisco 3600 series, Cisco 7200, and Cisco 7500.
12.1(2)T	The modifications made in the Cisco IOS 12.0(7)XK release for the Cisco MC3810 series were first supported on the T train.

Usage Guidelines

Use the **destination-pattern** command to define the E.164 telephone number for a dial peer.

This pattern is used to match dialed digits to a dial peer. The dial peer is then used to complete the call. When a router receives voice data, it compares the called number (the full E.164 telephone number) in the packet header with the number configured as the destination pattern for the voice-telephony peer. The router then strips out the left-justified numbers corresponding to the destination pattern. If you have configured a prefix, the prefix is appended to the front of the remaining numbers, creating a dial string, which the router then dials. If all numbers in the destination pattern are stripped-out, the user receives a dial tone.

There are certain areas in the world (for example, in certain European Union countries) where valid telephone numbers can vary in length. Use the optional control character **t** to indicate that a particular **destination-pattern** value is a variable-length dial string. In this case, the system does not match the dialed numbers until the interdigit timeout value has expired.

Note The Cisco IOS software does not check the validity of the E.164 telephone number; it accepts any series of digits as a valid number.

Examples

The following example configures the E.164 telephone number, 555-7922, for a dial peer:

```
Router(config)# dial-peer voice 10 pots
Router(config-dial-peer)# destination-pattern +5557922
```

The following example configures a destination pattern in which the pattern “43” is repeated multiple times preceding the digits “555”:

```
Router(config)# dial-peer voice 1 voip
Router(config-dial-peer)# destination-pattern 555(43)+
```

The following example configures a destination pattern in which the preceding digit/pattern was repeated multiple times:

```
Router(config)# dial-peer voice 2 voip
Router(config-dial-peer)# destination-pattern 555%
```

The following example configures a destination pattern in which the digit numbers range between 5553409 and 5559499:

```
Router(config)# dial-peer voice 3 vofr
Router(config-dial-peer)# destination-pattern 555[3-9]4[0=9]9
```

The following example configures a destination pattern in which the digit numbers range between 5551439, 5553439, 5555439, 5557439, and 5559439:

```
Router(config)# dial-peer voice 4 voatm
Router(config-dial-peer)# destination-pattern 555[13579]439
```

Related Commands

Command	Description
answer-address	Specifies the full E.164 telephone number to be used to identify the dial peer of an incoming call.
prefix	Specifies the prefix of the dialed digits for this dial peer.
timeouts interdigit	Configures the interdigit timeout value for a specified voice port.

digit-strip

To enable digit stripping on a POTS dial-peer call leg, use the **digit-strip** dial-peer configuration mode command. To disable digit stripping on the dial-peer call leg, use the **no** form of this command.

digit-strip

no digit-strip

Syntax Description

There are no arguments or keywords for this command.

Defaults

Digit stripping is enabled.

Command Modes

Dial-peer configuration mode

Command History

Release	Modification
12.0(7)XR1	This command was introduced for Voice over IP on the Cisco AS5300.
12.0(7)XK	This command was first supported for the following voice technologies on the following platforms: • Voice over IP (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over Frame Relay (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over ATM (Cisco 3600 series, Cisco MC3810 series)
12.1(1)T	This command was first supported on the T train for the following voice technology on the following platforms: • Voice over IP (1750, Cisco 2600 series, Cisco 3600 series, Cisco AS5300, Cisco 7200 series, and Cisco 7500 series)
12.1(2)T	This command was first supported on the T train for the following voice technologies on the following platforms: • Voice over IP (Cisco MC3810 series) • Voice over Frame Relay (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over ATM (Cisco 3600 series, Cisco MC3810 series)

Usage Guidelines

The **digit-strip** command is supported on POTS dial peers only.

When a called number is received and matched to a POTS dial peer, the matched digits are stripped and the remaining digits are forwarded to the voice interface.

Table 3 lists a series of dial peers configured with a specific destination pattern, and shows the longest matched number after the digit is stripped based on the dial string 408 555-3048.

Table 3 Digit-Strip Example for Longest Matched Number

Dial Peer	Destination Pattern	Preference	Session Target	Longest Matched Number
1	4085553048	0 (highest)	100-voip	10
2	408[0-9]553048	0	200-voip	9
3	408555	0	300-voip	6
4	408555	1(lower)	400-voip	6
5	408%	1	500-voip	3
6	.....	0	600-voip	0
7	.....	1	1:D (interface)	0

Table 4 lists a series of dial peers configured with a specific destination pattern, and shows the number after the digit strip based on the dial string 408 555-3048 and the different dial peer symbols applied.

Table 4 Digit Strip Example for Matching the Destination Pattern

Dial Peer	Destination Pattern	Number after the Digit Strip
1	408555....	3048
2	408555.%	3048
3	408525.+	3048
4	408555.?	3048
5	408555+	3048
6	408555%	53048
7	408555?	53048
8	408555[0-9].%	3048
9	408555(30).%	3048
10	408555(30)%	3048
11	408555..48	3048

Examples

The following example disables digit stripping on a POTS dial peer:

```
Router(config)# dial-peer voice 100 pots
Router(config-dial-peer)# no digit-strip
```

Related Commands

Command	Description
numbering-type	Specifies number type for the VoIP or POTS dial peer.
rule	Applies a translation rule to a calling party number or a called party number for both incoming and outgoing calls.
show translation-rule	Displays the contents of all the rules that have been configured for a specific translation name.
test translation-rule	Tests the execution of the translation rules on a specific name-tag.
translation-rule	Creates a translation name and enters translation-rule configuration mode.
voip-incoming translation-rule	Captures calls that originate from H.323-compatible clients.

numbering-type

To match on a number type for a dial-peer call leg, use the **numbering-type** dial-peer configuration command. To remove the numbering type for a dial-peer call leg, use the **no** form of this command.

numbering-type {**international** | **abbreviated** | **national** | **network** | **reserved** | **subscriber** | **unknown**}

no numbering-type {**international** | **abbreviated** | **national** | **network** | **reserved** | **subscriber** | **unknown**}

Syntax Description

international	Specifies international numbering type.
abbreviated	Specifies abbreviated numbering type.
national	Specifies national numbering type.
network	Specifies network numbering type.
reserved	Specifies reserved numbering type.
subscriber	Specifies subscriber numbering type.
unknown	Specifies if the numbering type is unknown.

Command Modes

Dial-peer configuration mode

Command History

Release	Modification
12.0(7)XR1	This command was introduced for Voice over IP on the Cisco AS5300.
12.0(7)XK	This command was first supported for the following voice technologies on the following platforms: • Voice over IP (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over Frame Relay (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over ATM (Cisco 3600 series, Cisco MC3810 series)

Release	Modification
12.1(1)T	This command was first supported on the T train for the following voice technology on the following platforms: • Voice over IP (1750, Cisco 2600 series, Cisco 3600 series, Cisco AS5300, Cisco 7200 series, and Cisco 7500 series)
12.1(2)T	This command was first supported on the T train for the following voice technologies on the following platforms: • Voice over IP (Cisco MC3810 series) • Voice over Frame Relay (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over ATM (Cisco 3600 series, Cisco MC3810 series)

Usage Guidelines

The **numbering-type** command is supported for POTS, VoIP, VoFR, and VoATM dial peers. The number-type options are implemented as defined by the ITU Q.931 specification.

Examples

The following example shows how to configure a POTS dial peer for network usage:

```
Router(config)# dial-peer voice 100 pots
Router(config-dial-peer)# numbering-type network
```

The following example shows how to configure a VoIP dial peer for subscriber usage:

```
Router(config)# dial-peer voice 200 voip
Router(config-dial-peer)# numbering-type subscriber
```

Related Commands

Command	Description
rule	Applies a translation rule to a calling party number or a called party number for both incoming and outgoing calls.
show translation-rule	Displays the contents of all the rules that have been configured for a specific translation name.
test translation-rule	Tests the execution of the translation rules on a specific name-tag.
translate	Applies a translation rule to a calling party number or a called party number for incoming calls.
translate-outgoing	Applies a translation rule to a calling party number or a called party number for outgoing calls.
translation-rule	Creates a translation name and enters translation-rule configuration mode.
voip-incoming translation-rule	Captures calls that originate from H.323-compatible clients.

rule

To apply a translation rule to a calling party number or a called party number for both incoming and outgoing calls, use the **rule** translation-rule configuration command. To remove the translation rule, use the **no** form of this command.

rule *name-tag input-matched-pattern substituted-pattern* [*match-type substituted-type*]

no rule *name-tag input-matched-pattern substituted-pattern* [*match-type substituted-type*]

Syntax Description

name-tag	The tag number by which the rule set will be referenced. This is an arbitrarily chosen number. Range is 1 through 2147483647.
input-matched-pattern	The input string of digits for which a pattern matching is performed.
substituted-pattern	The replacement digit string that results after a pattern matching is performed. Regular expressions are used to carry out this process.
match-type	(Optional) The choices for this field are **international**, **national**, **subscriber**, **abbreviated**, **unknown**, and **any**, as defined by the ITU Q.931 specification. If you enter the *match-type* value, then you must also enter the *substituted-type* value.
substituted-type	(Optional) The choices for this field are **international**, **national**, **subscriber**, **abbreviated** and **unknown**, as defined by the ITU Q.931 specification.

Defaults

No default behavior or values.

Command Modes

Translation-rule configuration

Command History

Release	Modification
12.0(7)XR1	This command was introduced for Voice over IP on the Cisco AS5300.
12.0(7)XK	This command was first supported for the following voice technologies on the following platforms: • Voice over IP (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series)

Release	Modification
12.1(1)T	This command was first supported on the T train for the following voice technology on the following platforms: • Voice over IP (1750, Cisco 2600 series, Cisco 3600 series, Cisco AS5300, Cisco 7200 series, and Cisco 7500 series)
12.1(2)T	This command was first supported on the T train for the following voice technology on the following platform: • Voice over IP (Cisco MC3810 series)

Usage Guidelines

When configuring your dial peers, you are provided with an option called the translation rule. This applies a translation rule to a calling party number (Automatic Number Identification [ANI]) or a called party number (Dial Number Information Service [DNIS]) for both incoming and outgoing calls within Cisco H.323 voice-enabled gateways. Also, the rule allows translation of the *type of number*.

Examples

The following example applies a translation-rule. If a called number starts with 5552205 or 52205, then the translation-rule 21 will use the rule command to forward the number to 14085552205 instead.

```
Router(config)# translation-rule 21
Router(config-translate)# rule 1 555.% 1408555 subscriber international
Router(config-translate)# rule 2 7.% 1408555 abbreviated international
```

In the next example, if a called number is either 14085552205 or 014085552205, then after the execution of the translation-rule 345, the forwarding digits will be 52205. If the match-type is configured and the type is not “unknown,” then the dial peer matching will be required to match input string numbering type.

```
Router(config)# translation-rule 345
Router(config-translate)# rule 1 .%555.% 7 any abbreviated
```

Related Commands

Command	Description
numbering-type	Specifies number type for the VoIP or POTS dial peer.
test translation-rule	Tests the execution of the translation rules on a specific name-tag.
translate	Applies a translation rule to a calling party number or a called party number for incoming calls
translate-outgoing	Applies a translation rule to a calling party number or a called party number for outgoing calls
translation-rule	Creates a translation name and enters translation-rule configuration mode.
voip-incoming translation-rule	Captures calls that originate from H.323-compatible clients.

show translation-rule

To display the contents of the rules that have been configured for a specific translation name, use the **show translation-rule** EXEC command.

show translation-rule [*name-tag*]

Syntax Description

name-tag	(Optional) The tag number by which the rule set will be referenced. This is an arbitrarily chosen number. Range is 1 through 2147483647.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.0(7)XR1	This command was introduced for Voice over IP on the Cisco AS5300.
12.0(7)XK	This command was first supported for the following voice technologies on the following platforms: • Voice over IP (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over Frame Relay (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over ATM (Cisco 3600 series, Cisco MC3810 series)
12.1(1)T	This command was first supported on the T train for the following voice technology on the following platforms: • Voice over IP (1750, Cisco 2600 series, Cisco 3600 series, Cisco AS5300, Cisco 7200 series, and Cisco 7500 series)
12.1(2)T	This command was first supported on the T train for the following voice technologies on the following platforms: • Voice over IP (Cisco MC3810 series) • Voice over Frame Relay (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over ATM (Cisco 3600 series, Cisco MC3810 series)

Usage Guidelines

This command gives detailed information about the configured rules under this rule name. If the name tag is not entered, a complete display of all the configured rules will be shown.

Examples

The following example shows output for the **show translation-rule** command:

```
Router# show translation-rule
Translation rule address:0x61AB94F8
Tag name:21
Translation rule in_used 1
**** Xrule rule table *******
        Rule :1
        in_used state:1
        Match pattern:555.%
        Sub  pattern:1408555
        Match  type:subscriber
        Sub type:international
**** Xrule rule table *******
        Rule :2
        in_used state:1
        Match pattern:8.%
        Sub  pattern:1408555
        Match  type:abbreviated
        Sub type:international
Translation rule address:0x61C2E6D4
Tag name:345
Translation rule in_used 1
**** Xrule rule table *******
        Rule :1
        in_used state:1
        Match pattern:.%555.%
        Sub  pattern:7
        Match  type:ANY
        Sub type:abbreviated
```

Table 5 show translation-rule Field Descriptions

Translation rule address	The translation rule address in hex.
Tag name	The translation rule tag name.
Translation rule in_used	The translation rule the tag is used in.
**** Xrule rule table *******	Specifies the beginning of the display for a specific rule.
Rule:x	The number of the rule.
in_used state:	The input-searched-pattern.
Match pattern:	The match pattern of the rule.
Sub pattern:	The substituted pattern.
Match type:	The match type.
Sub type:	The substituted pattern match type.

Related Commands

Command	Description
numbering-type	Specifies number type for the VoIP or POTS dial peer.
rule	Applies a translation rule to a calling party number or a called party number for both incoming and outgoing calls.
test translation-rule	Tests the execution of the translation rules on a specific name-tag.
translate	Applies a translation rule to a calling party number or a called party number for incoming calls.

Command	Description
translate-outgoing	Applies a translation rule to a calling party number or a called party number for outgoing calls.
translation-rule	Creates a translation name and enters translation-rule configuration mode.
voip-incoming translation-rule	Captures calls that originate from H.323-compatible clients.

test translation-rule

To test the execution of the translation rules on a specific name tag, use the **test translation-rule** global configuration command. To disable, use the **no** form of this command.

test translation-rule *name-tag input-number* [*input-numbering-type*]

no test translation-rule *name-tag input-number* [*input-numbering-type*

Syntax Description

name-tag	The tag number by which the rule set will be referenced. This is an arbitrarily chosen number. Range is 1 through 2147483647.
input-number	The input string of digits for which a pattern matching is performed.
input-numbering-type	(Optional) The choices for this field are **international**, **national**, **subscriber**, **abbreviated**, **unknown**, and **any**.

Defaults

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
12.0(7)XR1	This command was introduced for Voice over IP on the Cisco AS5300.
12.0(7)XK	This command was first supported for the following voice technologies on the following platforms: • Voice over IP (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over Frame Relay (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over ATM (Cisco 3600 series, Cisco MC3810 series)

Release	Modification
12.1(1)T	This command was first supported on the T train for the following voice technology on the following platforms: • Voice over IP (1750, Cisco 2600 series, Cisco 3600 series, Cisco AS5300, Cisco 7200 series, and Cisco 7500 series)
12.1(2)T	This command was first supported on the T train for the following voice technologies on the following platforms: • Voice over IP (Cisco MC3810 series) • Voice over Frame Relay (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over ATM (Cisco 3600 series, Cisco MC3810 series)

Examples

The following shows output for the **test translation-rule** command:

```
Router# translation-rule 21
 Rule 1 555.% 1408555 subscriber international
 Rule 2 8.% 1408555 abbreviated international

Router# test translation-rule 21 45678 abbreviated
Router#
*Jan 19 16:39:14.578:The replace number 45614085558
Router#
```

Related Commands

Command	Description
numbering-type	Specifies number type for the VoIP or POTS dial peer.
rule	Applies a translation rule to a calling party number or a called party number for both incoming and outgoing calls
show translation-rule	Displays the contents of all the rules that have been configured for a specific translation name.
translate	Applies a translation rule to a calling party number or a called party number for incoming calls
translate-outgoing	Applies a translation rule to a calling party number or a called party number for outgoing calls
translation-rule	Creates a translation name and enters translation-rule configuration mode.
voip-incoming translation-rule	Captures calls that originate from H.323-compatible clients.

translate

To apply a translation rule to an inbound POTS call leg, use the **translate** voice-port configuration command. To remove the translation rule to an inbound POTS call leg, use the **no** form of this command.

translate {**calling-number | called-number**} *name-tag*

no translate {**calling-number | called-number**} *name-tag*

Syntax Description

calling-number	Applies the translation rule to the inbound calling party number.
called-number	Applies the translation rule to the inbound called party number.
name-tag	The tag number by which the rule set will be referenced. This is an arbitrarily chosen number. Range is 1 through 2147483647.

Defaults

No default behavior or values.

Command Modes

Voice-port configuration.

Command History

Release	Modification
12.0(7)XR1	This command was introduced for Voice over IP on the Cisco AS5300.
12.0(7)XK	This command was first supported for the following voice technologies on the following platforms: • Voice over IP (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series)
12.1(1)T	This command was first supported on the T train for the following voice technology on the following platforms: • Voice over IP (1750, Cisco 2600 series, Cisco 3600 series, Cisco AS5300, Cisco 7200 series, and Cisco 7500 series)
12.1(2)T	This command was first supported on the T train for the following voice technologies on the following platforms: • Voice over IP (Cisco MC3810 series)

Examples

The following example applies translation rule 21 to the POTS inbound calling party number:

```
Router(config)# translation-rule 21
Router(config-translate)# rule 1 555.% 1408555 subscriber international
Router(config-translate)# rule 2 7.% 1408555 abbreviated international
Router(config)# voice-port 0:1
Router(config-voice-port)# translate calling-number 21
```

The following example applies translation rule 20 to the POTS inbound called party number:

```
Router(config)# translation-rule 20
Router(config-translate)# rule 1 .%555.% 7 any abbreviated
Router(config)# voice-port 0:1
Router(config-voice-port)# translate called-number 20
```

Related Commands

Command	Description
numbering-type	Specifies number type for the VoIP or POTS dial peer.
rule	Applies a translation rule to a calling party number or a called party number for both incoming and outgoing calls.
show translation-rule	Displays the contents of all the rules that have been configured for a specific translation name.
translate-outgoing	Applies a translation rule to a calling party number or a called party number for outgoing calls.
translation-rule	Creates a translation name and enters translation-rule configuration mode.
voip-incoming translation-rule	Captures calls that originate from H.323-compatible clients.

translate-outgoing

To apply a translation rule to an outbound POTS or VoIP call leg, use the **translate-outgoing** dial-peer configuration command. To remove the translation rule to an outbound POTS or VoIP call leg, use the **no** form of this command.

translate-outgoing {**calling-number** | **called-number**} *name-tag*

no translate-outgoing {**calling-number** | **called-number**} *name-tag*

Syntax Description

calling-number	Applies the translation rule to the outbound calling party number.
called-number	Applies the translation rule to the outbound called party number.
name-tag	The tag number by which the rule set will be referenced. This is an arbitrarily chosen number. Range is 1 through 2147483647.

Defaults

No default behavior or values.

Command Modes

Dial-peer configuration.

Command History

Release	Modification
12.0(7)XR1	This command was introduced for Voice over IP on the Cisco AS5300.
12.0(7)XK	This command was first supported for the following voice technologies on the following platforms: • Voice over IP (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series)
12.1(1)T	This command was first supported on the T train for the following voice technology on the following platforms: • Voice over IP (1750, Cisco 2600 series, Cisco 3600 series, Cisco AS5300, Cisco 7200 series, and Cisco 7500 series)
12.1(2)T	This command was first supported on the T train for the following voice technologies on the following platforms: • Voice over IP (Cisco MC3810 series)

Examples

The following example applies translation rule 21 to the VoIP outbound calling number:

```
Router(config)# translation-rule 21
Router(config-translate)# rule 1 555.% 1408555 subscriber international
Router(config-translate)# rule 2 7.% 1408555 abbreviated international
Router(config)# dial-peer voice 100 voip
Router(config-dial-peer)# translate-outgoing calling-number 21
```

The following example applies translation rule 20 to the VoIP called number:

```
Router(config)# translation-rule 20
Router(config-translate)# rule 1 .%555.% 7 any abbreviated
Router(config)# dial-peer voice 100 voip
Router(config-dial-peer)# translate-outgoing called-number 20
```

Related Commands

Command	Description
numbering-type	Specifies number type for the VoIP or POTS dial peer.
rule	Applies a translation rule to a calling party number or a called party number for both incoming and outgoing calls
show translation-rule	Displays the contents of all the rules that have been configured for a specific translation name.
translate	Applies a translation rule to a calling party number or a called party number for incoming calls
translation-rule	Creates a translation name and enters translation-rule configuration mode.
voip-incoming translation-rule	Captures calls that originate from H.323-compatible clients.

translation-rule

To create a translation name and enter translation-rule configuration mode to apply rules to the translation name, use the **translation-rule** global configuration command. To remove the translation rule, use the **no** form of this command.

translation-rule *name-tag*

no translation-rule *name-tag*

Syntax Description

name-tag	The tag number by which the rule set will be referenced. This is an arbitrarily chosen number. Range is 1 through 2147483647.

Defaults

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
12.0(7)XR1	This command was introduced for Voice over IP on the Cisco AS5300.
12.0(7)XK	This command was first supported for the following voice technologies on the following platforms: • Voice over IP (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over Frame Relay (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over ATM (Cisco 3600 series, Cisco MC3810 series)
12.1(1)T	This command was first supported on the T train for the following voice technology on the following platforms: • Voice over IP (1750, Cisco 2600 series, Cisco 3600 series, Cisco AS5300, Cisco 7200 series, and Cisco 7500 series)
12.1(2)T	This command was first supported on the T train for the following voice technologies on the following platforms: • Voice over IP (Cisco MC3810 series) • Voice over Frame Relay (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series) • Voice over ATM (Cisco 3600 series, Cisco MC3810 series)

Usage Guidelines

This command applies to all translation rules.

Examples

The following example creates translation-rule 21 and applies a rule to it.

```
Router(config)# translation-rule 21
Router(config-translate)# rule 1 555.% 1408555 subscriber international
```

Related Commands

Command	Description
numbering-type	Specifies number type for the VoIP or POTS dial peer.
rule	Applies a translation rule to a calling party number or a called party number for both incoming and outgoing calls.
test translation-rule	Tests the execution of the translation rules on a specific name-tag.
translate	Applies a translation rule to a calling party number or a called party number for incoming calls.
translate-outgoing	Applies a translation rule to a calling party number or a called party number for outgoing calls.
voip-incoming translation-rule	Captures calls that originate from H.323-compatible clients.

voip-incoming translation-rule

To set the incoming translation rule for calls that originate from H.323-compatible clients, use the **voip-incoming translation-rule** global configuration command. To disable the incoming translation rule, use the **no** form of this command.

voip-incoming translation-rule *name-tag* {**calling-number** | **called-number**}

no voip-incoming translation-rule *name-tag* {**calling-number** | **called-number**}

Syntax Description

name-tag	The tag number by which the rule set will be referenced. This is an arbitrarily chosen number. Range is 1 through 2147483647.
calling-number	The ANI number, or the number of the calling party.
called-number	The DNIS (Dial Number Information Service) number, or the number of the called party.

Defaults

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
12.0(7)XR1	This command was introduced for Voice over IP on the Cisco AS5300.
12.0(7)XK	This command was first supported for the following voice technology on the following platforms: • Voice over IP (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series)
12.1(1)T	This command was first supported on the T train for the following voice technology on the following platforms: • Voice over IP (1750, Cisco 2600 series, Cisco 3600 series, Cisco AS5300, Cisco 7200 series, and Cisco 7500 series)
12.1(2)T	This command was first supported on the T train for the following voice technology on the following platform: • Voice over IP (Cisco MC3810 series)

Usage Guidelines

With this command, all IP-based calls will be captured and handled, depending on either the calling or called number to the specified tag-name.

Examples

The following example identifies the rule set for calls that originate from H.323-compatible clients:

```
Router(config)# voip-incoming translation-rule 5 called
```

Related Commands

Command	Description
numbering-type	Specifies number type for the VoIP or POTS dial peer.
rule	Applies a translation rule to a calling party number or a called party number for both incoming and outgoing calls.
show translation-rule	Displays the contents of all the rules that have been configured for a specific translation name.
test translation-rule	Tests the execution of the translation rules on a specific name-tag.
translate	Applies a translation rule to a calling party number or a called party number for incoming calls.
translate-outgoing	Applies a translation rule to a calling party number or a called party number for outgoing calls.
translation-rule	Creates a translation name and enters translation-rule configuration mode.

Debug Command

This section provides information on new and modified debug commands.

All other debug commands used with Voice over Frame Relay are documented in the Cisco IOS Release 12.1 command references.

The following new and modified commands are described in this section:

- **debug translation**

debug translation

To debug number translation traces, use the **debug translation** privileged EXEC command. To disable the debug, use the **no** form of this command.

debug translation {**detail** | **min**}

no debug translation {**detail** | **min**}

Syntax Description

detail	Enables a detailed debugging trace.
min	Enables a minimum debugging trace.

Defaults

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.0(7)XR1	This command was introduced for Voice over IP on the Cisco AS5300.
12.0(7)XK	This command was first supported for the following voice technology on the following platforms: • Voice over IP (Cisco 2600 series, Cisco 3600 series, Cisco MC3810 series)
12.1(1)T	This command was first supported on the T train for the following voice technology on the following platforms: • Voice over IP (1750, Cisco 2600 series, Cisco 3600 series, Cisco AS5300, Cisco 7200 series, and Cisco 7500 series)
12.1(2)T	This command was first supported on the T train for the following voice technology on the following platform: • Voice over IP (Cisco MC3810 series)

.

Examples

The following example provides a sample debug trace for the **debug translation** command based on a short configuration below:

```
Router(config)# dial-peer voice 666 pots
Router(config-dial-peer)# destination-pattern 4085551504
Router(config-dial-peer)# translate-outgoing called-number 111 port 0:D

Router(config)# translation-rule 111
Router(config-translation)# rule 1 789 111


Router# debug translation detail

Called Number 4085551504

*Jan 9 22:48:23.948: xrule_checking
*Jan 9 22:48:23.948: xrule_checking peer_tag 666
*Jan 9 22:48:23.948: xrule_checking tag 111, callparty 2
*Jan 9 22:48:23.948: xrule_checking direction 2
*Jan 9 22:48:23.948: dpMatchString, target_number 4085551504
*Jan 9 22:48:23.948: dpMatchString match_tmp 555
*Jan 9 22:48:23.948: xrule_checking in_range
*Jan 9 22:48:23.948: replace_string
*Jan 9 22:48:23.948: replace_string match 555, replace 111
*Jan 9 22:48:23.948: replace_string match_tmp 555
*Jan 9 22:48:23.948: replace_string direction 2, callparty 0
*Jan 9 22:48:23.948: replace_string target
*Jan 9 22:48:23.948: replace_string direction 2, callparty 2, target 4085551504
*Jan 9 22:48:23.948: replace_string buffer 4085551504
*Jan 9 22:48:23.948: xrule_checking index 1,xrule_number 4085551504
*Jan 9 22:48:23.948: xrule_checking called Callparms Numpertype 0x0 match_type 0x0
*Jan 9 22:48:23.948: xrule_checking Xrule index 1, Numpertype 0x9
```

Related Commands

Command	Description
numbering-type	Specifies number type for the VoIP or POTS dial peer.
rule	Applies a translation rule to a calling party number or a called party number for both incoming and outgoing calls
show translation-rule	Displays the contents of all the rules that have been configured for a specific translation name.
test translation-rule	Tests the execution of the translation rules on a specific name-tag.
translate	Applies a translation rule to a calling party number or a called party number for incoming calls
translate-outgoing	Applies a translation rule to a calling party number or a called party number for outgoing calls
translation-rule	Creates a translation name and enters translation-rule configuration mode.

Glossary

AAA—Authentication, Authorization, and Accounting. AAA is a suite of network security services which provides the primary framework through which access control can be set up on your Cisco router or access server.

ANI—Automatic number identification.

ARQ—Admission request.

CAS—Channel associated signaling.

CCAPI—Call Control Application Programming Interface

CLI—Command Language Interpreter. The basic Cisco IOS configuration and management interface.

dial peer—An addressable call endpoint. In Voice over IP (VoIP), there are two types of dial peers: POTS and VoIP.

DNS—Domain name system used to address translation to convert H.323 IDs, URLs, or e-mail IDs to IP addresses. DNS is also used to assist in the location of remote gatekeepers and to reverse-map raw IP addresses to host names of administrative domains.

endpoint—An H.323 terminal or gateway. An endpoint can call and be called. It generates and/or terminates the information stream.

gatekeeper—A gatekeeper maintains a registry of devices in the multimedia network. The devices register with the gatekeeper at startup, and request admission to a call from the gatekeeper.

The gatekeeper is an H.323 entity on the LAN that provides address translation and controls access to the LAN for H.323 terminals and gateways. The gatekeeper may provide other services to the H.323 terminals and gateways, such as bandwidth management and locating gateways.

gateway—A gateway allows H.323 terminals to communicate with non-H.323 terminals by converting protocols. A gateway is the point at which a circuit-switched call is encoded and repackaged into IP packets.

A H.323 gateway is an endpoint on the LAN that provides real-time, two-way communications between H.323 terminals on the LAN and other ITU-T terminals in the WAN, or to another H.323 gateway.

H.323—An International Telecommunication Union (ITU-T) standard that describes packet-based video, audio, and data conferencing. H.323 is an umbrella standard that describes the architecture of the conferencing system, and refers to a set of other standards (H.245, H.225.0, and Q.931) to describe its actual protocol.

H.323 RAS—Registration, admission, and status. The RAS signaling function performs registration, admissions, bandwidth changes, status and disengage procedures between the VoIP gateway and the gatekeeper.

IVR—Integrated voice response. When someone dials in, it responds with a prompt to get a personal identification number (PIN), and so on.

multicast—A process of transmitting PDUs from one source to many destinations. The actual mechanism (that is, IP multicast, multi-unicast, and so forth) for this process might be different for LAN technologies.

multipoint-unicast—A process of transferring PDUs (Protocol Data Units) where an endpoint sends more than one copy of a media stream to different endpoints. This might be necessary in networks which do not support multicast.

node—An H.323 entity that uses RAS to communicate with the gatekeeper. For example, an endpoint such as a terminal, proxy, or gateway.

POTS—Plain old telephone service. Basic telephone service supplying standard single line telephones, telephone lines, and access to the PSTN.

PSTN—Public switched telephone network. PSTN refers to the local telephone company.

QoS—Quality of service, which refers to the measure of service quality provided to the user.

RAS—Registration, admission, and status protocol. This is the protocol that is used between endpoints and the gatekeeper to perform management functions.

TDM—Time-division multiplexing. Technique in which information from multiple channels can be allocated bandwidth on a single wire based on preassigned time slots. Bandwidth is allocated to each channel regardless of whether the station has data to transmit.

VoIP—Voice over IP. The ability to carry normal telephone-style voice over an IP-based internet with POTS-like functionality, reliability, and voice quality. VoIP is a blanket term which generally refers to Cisco's standards based (for example, H.323) approach to IP voice traffic.

VTSP—Voice telephony service provider.

zone—A collection of all terminals (tx), gateways (GW), and Multipoint Control Units (MCU) managed by a single gatekeeper (GK). A zone includes at least one terminal, and can include gateways or multipoint control units (MCUs). A zone has only one gatekeeper. A zone may be independent of LAN topology and can comprise multiple LAN segments which are connected using routes or other devices.