

– Configuring a Cisco IOS H.323 Gateway for Use with Cisco C

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Configuring a Cisco IOS H.323 Gateway for Use with Cisco CallManager

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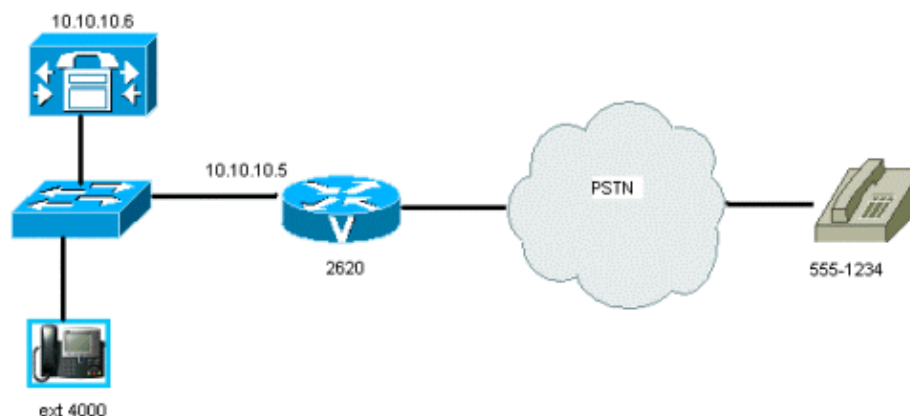
[Related Information](#)

Introduction

The purpose of this document is to assist with the initial configuration of a basic H.323 gateway between Cisco CallManager and an H.323 capable device such as a Cisco 2620 router. Both the configuration of the CallManager and the H323 gateway will be shown.

This document was written using Cisco CallManager 3.0(9) and a 26xx/36xx/VG200 at 12.x with a NM-HDV module serving as H.323 voice gateway for a Cisco CallManager.

For the sake of this document, the Cisco CallManager has an IP address of *10.10.10.6* and the ethernet address of the Cisco 2620 is *10.10.10.5*.



There are three parts to this document, the Cisco CallManager gateway configuration, the route pattern configuration and the configuration of the H.323 gateway: our Cisco 2620 router.

When you have completed the tasks in this document, you should have a fully functional H.323 gateway, allowing calls to be made to and from Cisco IP Phones.

Hardware and Software Versions

The information in this document is based on the software and hardware versions below.

- Cisco CallManager 3.x
- A Cisco IOS voice-enabled router/ gateway (175x, 2600, 3600, MC3810, AS53xx, AS54xx, AS58xx)

Cisco CallManager H.323 Gateway Configuration

This section will describe the necessary steps to create and configure an H.323 gateway.

1. From the **Device** Menu, select **Add New Device**.



2. From the Device Type dropdown, select **Gateway** and click **Next**.

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions

Add a New Device

Select the type of device you would like to create:

Device type* — Not Selected —

Status: Ready

* indicates required

CTI Route Point
Gatekeeper
Gateway
Phone
Cisco uOne Port

Next Cancel

3. From the **Add a New Gateway** window, select the type of Gateway you wish to create. For our example, we shall select **H.323 Gateway** from the Gateway type dropdown and **H.225** as the Device Protocol. Click **Next**.

Note: The Gateway Selections Cisco 26XX, Cisco 362X, Cisco 364X and Cisco 366X are for MGCP configuration, and will not be discussed in this document.

The Device Protocol Intercluster Trunk is for communication between Cisco CallManager clusters and should only be selected when configuring an H.323 gateway that points to another Cisco CallManager cluster.

The screenshot shows the Cisco CallManager Administration web interface. At the top is a navigation bar with links: System, Route Plan, Service, Feature, Device, User, Application, and Help. Below this is a header banner with the text "Cisco CallManager Administration" and "For Cisco IP Telephony Solutions" on the left, and the Cisco Systems logo on the right. The main content area has a yellow background and is titled "Add a New Gateway" in large red font. Below the title, it says "Select the type of gateway you would like to create:". There are two dropdown menus: "Gateway type*" with "H.323 Gateway" selected, and "Device Protocol*" with "H.225" selected. Below these is the text "Status: Ready" and a note "* indicates required item". At the bottom right of the form are two buttons: "Next" and "Cancel".

4. Enter the details of your gateway in the Gateway Configuration window. Once you have entered the required fields, click **Insert**.

There are five fields that are required, Identified by an asterisk (*)

- ◆ **Device Name:** The IP address of your routers ethernet interface.
- ◆ **Device Pool:** Specifies the collection of properties for this device including CallManager Group, Date/Time Group, Region, and Calling Search Space for auto-registration of devices.
- ◆ **Calling Party Selection:** This field determines which directory number is sent, usually Originator.
- ◆ **Presentation Bit:** Determines whether the central office transmits or blocks caller ID, usually Allowed.
- ◆ **Num Digits:** This field is used with the Sig Digits checkbox below it to specify how many of the incoming digits are collected.

Note: Information about the remaining fields can be obtained by clicking **Help**.

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions

CISCO SYSTEMS

Gateway Configuration [Back to Find/List Gateways](#)

No Port Information

Gateway: New
Device Protocol:

Status: Ready

Device Name*

Description

Device Pool*

Calling Search Space

Location

Caller ID DN

Calling Party Selection*

Presentation Bit*

Display IE Delivery ☒

Gatekeeper Name

Media Termination Point Required ☐

Num Digits*

Sig Digits ☒

Prefix DN

Run H225D On Every Node ☒

* indicates required item

[Back to Find/List Gateways](#)

Configuring a Route Pattern in Cisco CallManager to Use H.323 Gateway

Once the H.323 gateway has been created, the next step is configure Cisco CallManager to route calls towards it. This is done through the following steps.

1. From the **Route Plan** menu, select **Route Pattern**.



2. Specify the values used to route calls to the H.323 gateway in the **Route Pattern Configuration** window.

There are three required fields, Identified by an asterisk (*)

- ◆ **Route Pattern:** When the digits in this field are dialed, CM will route those digits to the gateway.
- ◆ **Numbering Plan:** North American Numbering Plan is the only option at this release.
- ◆ **Gateway/Route List:** You can specify a single gateway, or for more advanced call routing, route lists can be used.

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions

Route Pattern Configuration

Route Pattern: 9.0

Status: Update completed
Note: Any update to this route pattern automatically resets the associated gateway/route list

New Copy Update Delete Cancel

Pattern Definition

Route Pattern* 9.0

Partition < None >

Numbering Plan* North American Numbering Plan

Route Filter < None >

Gateway/Route List* 10.10.10.5 (Edit)

Route Option ☒ Route this pattern ☐ Block this pattern

☒ Provide Outside Dial Tone ☐ Urgent Priority

Calling Party Transformations

☐ Use Calling Party's External Phone Number Mask

Calling Party Transform Mask

Called Party Transformations

Discard Digits < None >

Called Party Transform Mask

Prefix Digits (Outgoing Calls)

* indicates required item.

In the example above, the Route Pattern uses the @ symbol, which is a macro for the more than 300 dialing patterns that make up the North American Numbering Plan. So calls beginning with a 9 will be sent to our gateway 10.10.10.5. Cisco CallManager will provide the outside dialtone, and we have used the Discard Digits instruction to send all digits to the gateway.

Note: Information about the remaining fields can be obtained by clicking **Help**.

Configuring a Cisco IOS Voice-enabled Router as a H.323 Gateway

In this example, the Cisco IOS router/ gateway uses a T1 ISDN PRI trunk to the PSTN.

Note: This example uses a Cisco 2620 with a High Density Voice Network Module (HDV-NM) and a T1 Multi-Flex Trunk Voice/WAN card (VWIC-1MFT-T1). These IOS configuration guidelines can also be used with other Cisco IOS router /gateways that support T1/E1 voice interfaces. For more information refer to: [Hardware Products used for VoIP, VoFR and VoATM](#)

1. As we are using a T1–PRI in this example, it is necessary to define the ISDN switch type in the global configuration.

```
IOS-GWY(config)#isdn switch-type ?
primary-4ess      ATT4ESS switch type for the U.S.
primary-5ess      ATT5ESS switch type for the U.S.
primary-dms100    Northern Telecom switch type for the U.S.
primary-net5      European switch type for NET5
primary-ni        National ISDN switch type
primary-ntt       Japan switch type
primary-ts014     Australia switch type
IOS-GWY(config)#isdn switch-type primary-ni
```

2. Configure the T1 controller for ISDN PRI signaling

```
IOS-GWY(config)#controller t1 1/0
!--First VWIC port on NM-HDV
IOS-GWY(config-controller)#framing esf
IOS-GWY(config-controller)#linecode b8zs
IOS-GWY(config-controller)#pri-group timeslots 1-24
!--Defines T1/PRI port for common channel signaling
```

After configuring the pri-group command, the D channel (interface serial 1/0:23) and the voice port (voice-port 1/0:23) are created automatically by the router.

3. Verify the ISDN D–Channel (interface serial 1/0:23) configuration

After completing step 2, the show running-configuration output should display the D–channel configuration as shown below.

```
interface Serial1/0:23
!--D channel for PRI
no ip address
no logging event link-status
isdn switch-type primary-ni
!--This switch-type takes precedence over the global
isdn incoming-voice voice
!--Defines incoming calls from PSTN as voice
no cdp enable
```

Note: The relevant command under the interface serial 1/0:23 configuration is: **isdn incoming-voice voice**

4. Configure dial-peer statements.

```
Router(config)#dial-peer voice 4000 voip
!--Dial-peer pointing to the CallManager
Router(config-dial-peer)#destination-pattern 4...
!--Route this pattern to the CallManager, the periods are wildcards, so 4000 - 4999
Router(config-dial-peer)#session target ipv4:10.10.10.6
!--CallManager's ip address
Router(config-dial-peer)#codec g711ulaw
!--Use this codec
Router(config)#dial-peer voice 1 pots
!--Dial-peer pointing to the PRI trunk to the PSTN
Router(config-dial-peer)#destination-pattern 9T
!--Route this pattern to the PSTN cloud through the T1/PRI, T is a wildcard for any
Router(config-dial-peer)#direct-inward-dial
!--DID, this will not generate a secondary dial-tone on incoming calls from PSTN
Router(config-dial-peer)#port 2/0:23
```

The configuration described above will route incoming calls from the PSTN to any IP phone in the

range 4000 – 4999, and all outbound calls to any number in the North American Numbering Plan. For more advanced call routing options and troubleshooting, see the issues in the table below.

Troubleshooting and Advanced Issues

| Troubleshooting Issues with H.323 Gateways |
|--|
| Troubleshooting One Way Voice Issues |
| Troubleshooting No Ringback Tone on ISDN–VoIP (H.323) Calls |
| Busy Signal after Last Digit Dialed on H323 Incoming Call to Cisco CallManager |
| Troubleshoot Debug VoIP Calls – the Basics |
| CCM and H.323 Gateway Interaction |
| Echo Analysis for Voice over IP |
| Advanced Issues |
| Configuring H323 Gateway Dial Peers for CallManager 3.0 Server Redundancy |
| Understanding Dial Peers and Call Legs on Cisco IOS Platforms |
| Understanding Inbound and Outbound Dial–Peers on Cisco IOS Platforms |
| Understanding How Inbound and Outbound Dial Peers are Matched on Cisco IOS Platforms |
| Understanding the Operational Status of Dial–Peers on Cisco IOS Platforms |
| Understanding Direct–Inward–Dial (DID) on Cisco IOS Digital (T1/E1) Interfaces |
| Supporting Variable Length Dial Plans for CallManager Route Patterns – an Exercise in Designing a Route Pattern that Covers a National Dial Plan |

Tools Information

For additional resources, refer to Cisco's [TAC Tools for Voice, Telephony and Messaging Technologies](#).

Related Information

- [Voice, Telephony and Messaging Technical Tips](#)
 - [Voice, Telephony and Messaging Technologies](#)
 - [Voice, Telephony and Messaging Products](#)
 - [Cisco Solutions Voice, Telephony and Messaging](#)
 - [Voice, Telephony and Messaging Top Issues](#)
 - [Voice, Telephony and Messaging TAC eLearning Solutions](#)
 - [Field Notices](#)
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