



# Configuring Fax Detection

This chapter explains how to configure the Fax Detection (Single-Number Voice and Fax) feature on an IP network.

## Feature History for Fax Detection (Single-Number Voice and Fax)

Release	Modification
12.1(5)XM	This feature was introduced on the Cisco AS5300.
12.2(2)XB	This feature was implemented on the Cisco AS5350 and Cisco AS5400.
12.2(8)T	This feature was integrated into this release and implemented on the Cisco 1751, Cisco 2600 series, Cisco 3600 series, Cisco 3725, and Cisco 3745.
12.2(11)T	This feature was implemented on the Cisco AS5300, Cisco AS5350, and Cisco AS5400.

## Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at <http://www.cisco.com/go/fn>. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.



### Note

For more information about this and related Cisco IOS voice features, see the following:

- [Chapter 1, “Fax Services over IP Overview”](#)
- Entire Cisco IOS Voice Configuration Library—including library preface and glossary, other feature documents, and troubleshooting documentation—at <http://www.cisco.com/univercd/cc/td/doc/product/software/ios123/123cgcr/vcl.htm>.

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## Prerequisites for Fax Detection

- Configure your IP network and ensure that it is operational.
- Install a voice server and ensure that it is working on the IP network; for example, install an H.323 voice-mail server on your network and configure the corresponding outgoing dial peer for VoIP.
- Install fax service and ensure that it is working on the IP network. The fax service can be T.38 fax relay, T.37 store-and-forward fax, or both. By making sure that the fax service is operational before beginning to configure the fax detection application, you can keep fax configuration issues separate and make troubleshooting easier. For information about T.38 fax relay, see [Chapter 4, “Configuring T.38 Fax Relay.”](#) For more information about T.37 store-and-forward fax, see [Chapter 5, “Configuring T.37 Store and Forward Fax”](#)

## Restrictions for Fax Detection

- On DSPM-549s, only high-complexity VCWare is supported.
- Cisco’s fax detection feature relies on the originating gateway’s ability to detect the fax identifying either the CNG tone from the called fax machine or a user-initiated action, such as the caller pressing a DTMF digit, to identify a fax call. The following are known issues with fax machines cannot support fax detection:
  - Certain fax machines, produced before 1995, do not produce the required tone.
  - Fax machines that allow callers to talk before sending a fax temporarily stop CNG detection when voice is heard.

If the tone is not played every 3.5 seconds, the fax detection script on the originating gateway might not be able to detect the fax and the call is not transferred to the terminating fax device.

- If a single number scrip is answer by a person instead of a fax machine
- Certain routing schemes, such as call forwarding might impact the success of fax detection
- We recommend using a separate DID for fax, which is independent from the DIDs assigned to voice calls.

## Information About Fax Detection

Fax detection supports the use of a single E.164 number for both voice mail and fax mail by providing the capability to detect automatically whether an incoming call is voice or fax. Fax detection can be configured to use the distinctive fax calling tones (CNG), a manually dialed digit, or both to distinguish fax calls from voice calls. Fax detection supports the following modes of operation:

- connect-first—The gateway immediately connects incoming calls to a voice-mail server, which plays a greeting, or audio prompt, based upon the number called. The gateway also listens for CNG throughout the duration of the call and connects the call to the configured fax application if CNG is detected.

- listen-first—The gateway listens for CNG for 9 seconds; an audio prompt can be played during this time. If CNG is detected, the call is connected to a fax application or server. If CNG is not detected, the call is connected to a voice application or server.
- default-voice—The gateway is configured to recognize a particular dual tone multifrequency (DTMF) tone to indicate voice calls and a different DTMF tone to indicate fax calls. If no DTMF tone is heard and no CNG tone is heard for 9 seconds, the call is treated as a voice call.
- default-fax—The gateway is configured to recognize a particular DTMF tone to indicate voice calls and a different DTMF tone to indicate fax calls. If no DTMF tone is heard and no CNG tone is heard for 9 seconds, the call is treated as a fax call.

Fax detection is one of the interactive voice response (IVR) applications and is implemented in a Tool Command Language (TCL) script that you download from Cisco.com.

**Note**

The fax detection application requires configuration of only on-ramp gateways, but the network must be configured to handle voice calls and fax calls, either with fax relay or store-and-forward fax.

The on-ramp gateway receives voice and fax calls at a single dialed E.164 number. The gateway identifies and routes voice calls to a voice-mail server using H.323-standard protocols for streaming voice. Fax calls are identified and routed to a fax server using T.38-standard protocols for fax relay or to a mail transfer agent (MTA) using T.37-standard protocols for store-and-forward fax.

## How to Download the Fax-Detection Application and Default Audio-Prompt Files

The steps in this section explain how to download the TCL script and default audio prompt files used with the fax detection application. You must download these files before you can configure the fax detection application. The script and the prompts are contained in a single zip file on Cisco.com.

Once you have downloaded the TCL script file to a location that the gateway can access, you load the application on the router by providing an application name of your choice and a link to the TCL script file name and location. Loading the script is described in the configuration tasks. The Cisco IOS File System (IFS) reads the files, so any IFS-supported URL can be used as a location for the files. URLs can include TFTP, FTP, or a pointer to a device on the router. For more information, see the “Using URLs in IVR Scripts” section in the “Using TCL IVR Scripts” chapter in the *TCL IVR API Version 2.0 Programmer’s Guide*.

### SUMMARY STEPS

1. Log in to the Cisco.com web site and go to <http://www.cisco.com/cgi-bin/tablebuild.pl/tclware>.
2. Select and download the zip file that contains the fax detection application.
3. Unzip the file.
4. Move the application script file (fax\_detect\_2.1.2.0.tcl) and audio prompt files (\*.au) to a location that can be accessed by your gateway using a URL address.
5. If you create your own audio files, ensure that they are in the proper format.

## DETAILED STEPS

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- Step 1** Log in to the Cisco website and go to <http://www.cisco.com/cgi-bin/tablebuild.pl/tclware>.  
When you are logged in to the Cisco website, you can navigate to the TCLWare page from the Cisco home page by following this path: Technical Support / Software Center / Access Software / TCLWare.
- Step 2** Select and download the following zip file which contains the fax detection application.
- app-fax-detect.2.1.2.1.zip (or later version)
- You are asked for the following information:
- Cisco Connection Online (CCO) server nearest your physical location
  - Where to save the files on your disk
- Step 3** Unzip the file.  
The zip file that you download includes the following files:
- Fax detection application TCL script file (fax\_detect\_2.1.2.0.tcl or a later version)
  - Default audio prompt files (see [Table 6-1](#) for filenames)
  - README file
- Step 4** Move the application script file (fax\_detect\_2.1.2.0.tcl) and audio prompt files (\*.au) to a location that can be accessed by your gateway using a URL address.  
The URL of a TCL script or audio prompt is a standard URL that points to the location of the script. Examples include the following:
- flash:myscript.tcl—The script called myscript.tcl is located in Flash memory on the router.
  - slot0:myscript.tcl—The script called myscript.tcl is located in a device in slot 0 on the router.
  - tftp://BigServer/myscripts/MouseTrap.tcl—The script called MouseTrap.tcl is located in a server called BigServer in a directory within the tftpboot directory called myscripts.
- Step 5** If you create your own audio files, ensure that they are in the proper format.  
The IVR prompts require an audio file format (.au) with 8-bit, u-law, and 8-kHz encoding. To encode the audio files, it is recommended that one of the following two audio tools (or a similar tool of comparable quality) be used:
- Cool Edit, manufactured by Syntrillium Software Corporation.
  - AudioTool, manufactured by Sun Microsystems.
- The default files supplied by Cisco are in the proper format.



### Note

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Flash memory is limited to 32 entries, which may prevent your loading all TCL and audio files there.

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[Table 6-1](#) presents the wording and filenames for the default audio prompts that you download from Cisco.com.

**Table 6-1 Fax Detection Default Prompts**

Mode	Default Prompt	Audio Filename
listen-first	To send a fax, press the <b>Start</b> key on your fax machine now. For voice calls, press any key or stay on the line.	<ul style="list-style-type: none"> <li>en_listen_first.au (English)</li> <li>en_Uone_listen-first.au (English; same voice as prompts for Cisco uOne voice messaging service)</li> <li>ch_listen_first.au (Mandarin)</li> <li>sp_listen_first.au (Spanish)</li> </ul>
default-voice	To send a fax, press <b>2</b> , then press the <b>Start</b> key on your fax machine. For voice calls, press <b>1</b> or stay on the line.	<ul style="list-style-type: none"> <li>en_default_voice.au (English)</li> <li>en_Uone_default-voice.au (English; same voice as prompts for Cisco uOne voice messaging service)</li> <li>ch_default_voice.au (Mandarin)</li> <li>sp_default_voice.au (Spanish)</li> </ul>
default-fax	For voice calls, press <b>1</b> . To send a fax, press the <b>Start</b> key on your fax machine now.	<ul style="list-style-type: none"> <li>en_default_fax.au (English)</li> <li>en_Uone_default-fax.au (English; same voice as prompts for Cisco uOne voice messaging service)</li> <li>ch_default_fax.au (Mandarin)</li> <li>sp_default_fax.au (Spanish)</li> </ul>

## How to Configure Fax Detection



### Note

The instructions in this chapter assume that your packet network includes separate routers for on-ramp and off-ramp functions. For smaller networks that use a single router for both on-ramp and off-ramp functionality, follow both the on-ramp and off-ramp instructions on the same router.

The following tasks configure the fax detection application on a network:

- [Prerequisites, page 6-6](#) (required)
- [Task 1: Loading the Fax Detection Application on the On-Ramp Gateway, page 6-6](#) (required)
- [Task 2: Configuring the Fax Detection Application on the On-Ramp Gateway, page 6-7](#) (optional)
- [Task 3: Configuring Dial Peers on the On-Ramp Gateway, page 6-12](#) (required)
- [Task 4: Configuring an Off-Ramp Gateway for the Fax Detection Application, page 6-17](#) (optional)
- [Task 5: Verifying the Fax Detection Application Configuration, page 6-17](#) (required)

## Prerequisites

- Download the fax detection application script named `fax_detect_2.1.2.0.tcl` to your TFTP server. For instructions on downloading the application script file, see the [“How to Download the Fax-Detection Application and Default Audio-Prompt Files”](#) section on page 6-3.



**Note** The `fax_detect_2.1.2.0.tcl` script is used to automatically route single-number fax calls to an MMoIP dial peer when configured in a T.37 fax store-and-forward environment. The script automatically appends a prefix to the dialed digits for the fax call, allowing the router to match the call to the appropriate user-defined dial peer based on its “new” destination pattern. This script is not intended to be used in a T.38 fax environment where VoIP dial peers can handle both voice and fax transmissions without the need for such dial peer manipulation.

- If you plan to use one of the modes of fax detection that plays an audio prompt for callers, ensure that you have the necessary audio files in the `.au` format on your TFTP server. For more information about audio files, see the [“How to Download the Fax-Detection Application and Default Audio-Prompt Files”](#) section on page 6-3.

## Task 1: Loading the Fax Detection Application on the On-Ramp Gateway

Fax detection is an IVR application that is written in a TCL script. The script must be downloaded from Cisco.com and installed on your network before the fax detection application can be loaded on the gateway (see the [“How to Download the Fax-Detection Application and Default Audio-Prompt Files”](#) section on page 6-3). Once you have installed the script at a location that is accessible by the gateway, you load it using a name of your choice. All later commands that refer to the fax detection application use the name that you select when you load the application on the gateway.

### SUMMARY STEPS

1. **call application voice** *application-name* *location*

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<p><b>call application voice</b> <i>application-name</i> <i>location</i></p> <p><b>Example:</b>  Router(config)# call application voice  detect-app  tftp://BigServer/myscripts/fax_detect_2.1.2  .0.tcl</p>	<p>Defines a global name for the application and indicates the location or URL of the TCL script to be used for the fax detection application. The arguments are as follows:</p> <ul style="list-style-type: none"> <li><i>application-name</i>—Name that you are defining for the fax detection application. This name is used in all subsequent commands that call the application or pass parameters to it.</li> <li><i>location</i>—Location of the TCL script file in URL format. Valid storage locations are TFTP, FTP, and Flash.</li> </ul>

## Task 2: Configuring the Fax Detection Application on the On-Ramp Gateway

Four modes of operation are available to customize the fax detection application:

- [Connect-First Mode](#)
- [Listen-First Mode](#)
- [Default-Voice Mode](#)
- [Default-Fax Mode](#)

All of the fax detection modes except connect-first require you to install audio prompt files, or greetings, to tell callers how to send voice or fax to the called number. Default audio prompt files are included in the same zip file on Cisco.com that contains the TCL script (see the [“How to Download the Fax-Detection Application and Default Audio-Prompt Files”](#) section on page 6-3). You may also create your own audio prompts to customize the greeting. In either case, the audio files must be installed in a location that is accessible by the gateway. The wording of the default gateway prompts is shown in [Table 6-1 on page 6-5](#).

The four fax detection modes are explained in the following sections.

### Connect-First Mode

(Default) When you configure connect-first mode on the gateway, incoming calls are connected immediately to the voice-mail server, which plays a greeting, or audio prompt, based upon the number called. Because this greeting is generated by the voice-mail application rather than by the gateway, each E.164 number can have its own custom prompt.

The gateway listens for distinctive CNG (fax) tones during the prompt and for the remainder of the call. If the gateway hears CNG at any time, the voice-mail application is disconnected and the call is passed on to the fax relay or store-and-forward fax application, depending on which was configured on the gateway. Note that non-CNG faxes are not supported in this mode.

If any dialed digits, or DTMF tones, are detected during the call, they are relayed to the voice-mail server using the DTMF signaling protocol configured on the dial peer. The gateway does not listen for DTMF and does not interpret DTMF.

The connect-first mode is useful when you expect that most incoming calls will be voice. The cost of this mode is the added load on the voice-mail application, which is now required to answer fax calls also.

This mode is the default if no mode is configured.

### Listen-First Mode

When listen-first mode is configured on the gateway and an incoming call is received, the gateway can play a configurable audio prompt to greet the caller or provide instructions.



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**Note** If an audio file for this prompt has not been specified during configuration, the caller hears 9 seconds of silence. We recommend configuring a prompt.

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The gateway listens for CNG for 9 seconds before passing the call to an application or server. If CNG is detected, the call is passed to the fax relay or store-and-forward fax application, whichever is configured on the gateway. If CNG is not heard during the first 9 seconds, the call is passed to the voice-mail server. Non-CNG faxes are not supported in this mode.

If any DTMF tones are detected, the call is connected to the voice server. Once a call is connected to the voice server, DTMF tones are relayed using the DTMF signaling protocol that has been configured on the dial peer.

In listen-first mode, CNG fax calls are never automatically connected to the voice-mail server, so this mode is useful when CNG fax calls constitute a significant proportion of the calls to this E.164 number.

### Default-Voice Mode

When default-voice mode is configured on the gateway and an incoming call is received, the gateway can play a configurable audio prompt to greet the caller or provide instructions.



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**Note** If the audio file for this prompt has not been specified during configuration, the caller hears 9 seconds of silence. We recommend configuring a prompt.

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In default-voice mode, during configuration you can specify a DTMF digit for incoming callers to press to manually select the voice-mail server and another digit that they can press to select the fax application. When the gateway detects either of these configured DTMF digits, the call is connected as requested.

The gateway listens for CNG for 9 seconds before passing the call to an application. If CNG is detected, the call is passed to the fax relay or store-and-forward fax application, whichever is configured on the gateway. If CNG is not heard during the first 9 seconds, the call is passed to the voice-mail server.

If any DTMF tones are detected, the gateway interprets the DTMF. If the tones match the DTMF digit configured for voice, the call is passed to the voice-mail server. If the tones match the DTMF digit configured for fax, the call is passed to the fax application. If the tones do not match either the voice or fax digit, the prompt is replayed. Once a call has been connected to the voice server, subsequent DTMF tones are relayed using the DTMF signaling protocol that has been configured on the dial peer.

Non-CNG-compliant faxes are supported in the default-voice mode when the caller manually selects the fax application by pressing the keypad key to send the DTMF digit designated for fax.

### Default-Fax Mode

When default-fax mode is configured on the gateway and an incoming call is received, the gateway can play a configurable audio prompt to greet the caller or provide instructions.



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**Note** If the audio file for this prompt has not been specified during configuration, the caller hears 9 seconds of silence. We recommend configuring a prompt.

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During configuration you can specify a DTMF digit that incoming callers can press to manually select the voice-mail server and another digit that they can press to select the fax application. When the gateway detects either of these configured DTMF digits, the call is immediately connected as requested.

The gateway listens for CNG for 9 seconds before passing the call to an application. If CNG is detected, the call is passed to the fax relay or store-and-forward fax application, whichever is configured on the gateway. If CNG is not heard during the first 9 seconds, the call is passed to the fax relay or store-and-forward fax application.

If any DTMF tones are detected, the gateway interprets the DTMF. If the tones match the DTMF digit configured for voice, the call is passed to the voice-mail server. If the tones match the DTMF digit configured for fax, the call is passed to the fax application. If the tones do not match either the voice digit or the fax digit, the prompt is replayed. Once a call has been connected to the voice server, subsequent DTMF tones are relayed using the DTMF signaling protocol that has been configured on the dial peer.

The default-fax mode is useful when fax calls constitute a significant proportion of the calls. In addition, this mode supports non-CNG-compliant faxes, without requiring the manual activation of a DTMF tone.

[Table 6-2](#) summarizes and compares the four different modes for fax detection.

Table 6-2 Fax Detection Mode Summary

Mode	Suggested Gateway Prompt	When to Use	Comments
<p>connect-first</p> <ul style="list-style-type: none"> <li>Connects to voice application and then listens for CNG.</li> <li>DTMF is forwarded.</li> </ul>	<p>None. (Prompt originates at voice server.)</p>	<p>When most calls are voice.</p>	<p><b>Advantages:</b></p> <ul style="list-style-type: none"> <li>Audio prompts are controlled from the voice server and may be customized for the specific DNIS (dialed number).</li> <li>CNG faxes are supported without manual intervention.</li> </ul> <p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>Fax calls create unnecessary traffic at the voice server.</li> <li>Non-CNG faxes are not supported.</li> </ul>
<p>connect-first</p> <ul style="list-style-type: none"> <li>Connects to voice application and then listens for CNG.</li> <li>DTMF is forwarded.</li> </ul>	<p>None. (Prompt originates at voice server.)</p>	<p>When most calls are voice.</p>	<p><b>Advantages:</b></p> <ul style="list-style-type: none"> <li>Fax calls create unnecessary traffic at the voice server.</li> <li>Non-CNG faxes are not supported.</li> </ul> <p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>Fax calls create unnecessary traffic at the voice server.</li> <li>Non-CNG faxes are not supported.</li> </ul>
<p>listen-first</p> <ul style="list-style-type: none"> <li>Listens for CNG; if not detected, connects to voice.</li> <li>Any DTMF takes call to voice server, and subsequent DTMF is forwarded.</li> </ul>	<p>“To send a fax, press the <b>Start</b> key on your fax machine now. For voice calls, press any key or stay on the line.”</p>	<p>When most calls are voice, but many are CNG fax.</p>	<p><b>Advantages:</b></p> <ul style="list-style-type: none"> <li>Voice server is connected if no CNG is detected.</li> <li>CNG faxes are supported without manual intervention.</li> <li>Any DTMF takes the call to voice server, without configuring DTMF keys.</li> </ul> <p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>Initial voice prompt from gateway is generic.</li> <li>Voice calls must wait 9 seconds for connection to voice server unless DTMF key is pressed.</li> <li>Non-CNG faxes are not supported.</li> </ul>
<p>default-voice</p> <ul style="list-style-type: none"> <li>Listens for CNG or DTMF and then connects; defaults to voice.</li> <li>DTMF is interpreted at the gateway, and subsequent DTMF is forwarded.</li> </ul>	<p>“To send a fax, press <b>2</b>; then press the <b>Start</b> key on your fax machine. For voice calls, press <b>1</b> or stay on the line.”</p>	<p>To support non-CNG faxes, when most calls are voice.</p>	<p><b>Advantages:</b></p> <ul style="list-style-type: none"> <li>CNG faxes are supported without manual intervention.</li> <li>Non-CNG faxes are supported with manual selection.</li> </ul> <p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>Initial voice prompt from gateway is generic.</li> <li>Voice calls must wait 9 seconds for connection to voice server unless the configured DTMF key is pressed.</li> </ul>

Table 6-2 Fax Detection Mode Summary (continued)

<p>default-fax</p> <ul style="list-style-type: none"> <li>Listens for CNG or DTMF and then connects; defaults to fax.</li> <li>DTMF is interpreted at the gateway, and subsequent DTMF is forwarded.</li> </ul>	<p>“For voice calls, press <b>1</b>. To send a fax, press the <b>Start</b> key on your fax machine now.”</p>	<p>To support non-CNG faxes, when most calls are fax.</p>	<p><b>Advantages:</b> Both CNG and non-CNG faxes are supported without manual intervention.</p> <p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>Initial voice prompt from gateway is generic.</li> <li>DTMF is required for voice. That is, callers must press a DTMF tone within 9 seconds for voice.</li> </ul>
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**Note**

The commands in this section configure an IVR application, and they are not supported by Cisco IOS help. If you type **call application voice *application-name* mode ?**, for example, the Cisco IOS help does not supply a list of entries that are valid in place of the question mark, because the IVR application commands pass parameters to the named TCL script, rather than to the Cisco IOS software.

**SUMMARY STEPS**

- call application voice *application-name* mode {connect-first | default-fax | default-voice | listen-first}**
- call application voice *application-name* prompt *prompt-url***
- call application voice *application-name* voice-dtmf {0|1|2|3|4|5|6|7|8|9|\*|#}**
- call application voice *application-name* fax-dtmf {0|1|2|3|4|5|6|7|8|9|\*|#}**
- call application voice *application-name* account-id-method {none | ani | dnis | gateway}**

## DETAILED STEPS

Command or Action	Purpose
<p><b>Step 1</b></p> <pre>call application voice <i>application-name</i> mode {connect-first   default-fax   default-voice   listen-first}</pre> <p><b>Example:</b> Router(config)# call application voice detect-app mode default-fax</p>	<p>(Optional) Sets the mode of the fax detection application to one of the four available modes. The argument and keywords are as follows:</p> <ul style="list-style-type: none"> <li>• <i>application-name</i>—Name that was defined for the fax detection application using the <b>call application voice</b> command.</li> <li>• <b>mode</b>—Manner in which fax detection is processed. The following modes are available: <ul style="list-style-type: none"> <li>– <b>connect-first</b>—Connects the call to the voice application and then listens for CNG.</li> <li>– <b>default-fax</b>—Listens for CNG or DTMF and then connects; defaults to voice if no CNG or DTMF is heard.</li> <li>– <b>default-voice</b>—Listens for CNG or DTMF and then connects; defaults to fax if no CNG or DTMF is heard.</li> <li>– <b>listen-first</b>—Listens for CNG; if not detected, connects to voice.</li> </ul> </li> </ul> <p>Default: <b>connect-first</b>.</p>
<p><b>Step 2</b></p> <pre>call application voice <i>application-name</i> prompt <i>prompt-url</i></pre> <p><b>Example:</b> Router(config)# call application voice detect-app prompt tftp://BigServer/myscripts/detect.au</p>	<p>(Optional) Specifies the audio file to use when the fax detection application is called. The arguments and keyword are as follows:</p> <ul style="list-style-type: none"> <li>• <i>application-name</i>—Name that was defined for the fax detection application using the <b>call application voice</b> command.</li> <li>• <b>prompt</b> <i>prompt-url</i>—URL or IFS on the TFTP server of the audio file containing the prompt.</li> </ul> <p><b>Note</b> The audio file is used only in listen-first, default-voice, and default-fax modes.</p>
<p><b>Step 3</b></p> <pre>call application voice <i>application-name</i> voice-dtmf {0 1 2 3 4 5 6 7 8 9 * #}</pre> <p><b>Example:</b> Router(config)# call application voice detect-app voice-dtmf 3</p>	<p>(Optional) Specifies the key that a calling party should press to indicate a voice call when the fax detection application is operating in default-voice or default-fax mode. The argument and keywords are as follows:</p> <ul style="list-style-type: none"> <li>• <i>application-name</i>—Name that was defined for the fax detection application using the <b>call application voice</b> command.</li> <li>• <b>voice-dtmf</b>—DTMF tone that follows indicates a voice call.</li> <li>• <b>0</b> through <b>9</b>, <b>*</b>, <b>#</b>—Key to dial for a voice call.</li> </ul> <p>Default: <b>1</b>.</p> <p><b>Note</b> This key must be different than the key configured for fax calls.</p>

Command or Action	Purpose
<p><b>Step 4</b></p> <pre>call application voice <i>application-name</i> fax-dtmf {0 1 2 3 4 5 6 7 8 9 * #}</pre> <p><b>Example:</b> Router(config)# call application voice application-name fax-dtmf 4</p>	<p>(Optional) Specifies the key that a calling party should press to indicate a fax call when the fax detection application is operating in default-voice or default-fax mode. The argument and keywords are as follows:</p> <ul style="list-style-type: none"> <li>• <i>application-name</i>—Name that was defined for the fax detection application using the <b>call application voice</b> command.</li> <li>• <b>fax-dtmf</b>—DTMF tone that follows indicates a fax call.</li> <li>• <b>0</b> through <b>9</b>, <b>*</b>, <b>#</b>—Key to dial for a fax call.</li> </ul> <p>Default: <b>2</b>.</p> <p><b>Note</b> This key must be different than the key configured for voice calls.</p>
<p><b>Step 5</b></p> <pre>call application voice <i>application-name</i> account-id-method {none   ani   dnis   gateway}</pre> <p><b>Example:</b> Router(config)# call application voice detect-app account-id-method ani</p>	<p>(Optional) Specifies the method to assign an account identifier for the fax detection application. The argument and keywords are as follows:</p> <ul style="list-style-type: none"> <li>• <i>application-name</i>—Name that was defined for the fax detection application using the <b>call application voice</b> command.</li> <li>• <b>account-id-method</b>—The method for assigning the account identifier follows. The following methods are available: <ul style="list-style-type: none"> <li>– <b>none</b>—No account identifier is assigned.</li> <li>– <b>ani</b>—Calling telephone number is the account identifier.</li> <li>– <b>dnis</b>—Called telephone number is the account identifier.</li> <li>– <b>gateway</b>—Gateway host and domain names form the account identifier.</li> </ul> </li> </ul> <p>Default: <b>none</b>.</p>

### Task 3: Configuring Dial Peers on the On-Ramp Gateway

On-ramp dial peers for the fax detection application include an inbound dial peer to receive calls from the PSTN and at least two outbound dial peers, one for voice calls and one for fax, as explained below.

The inbound dial peer describes the inbound call leg from the telephony connection to the gateway, and is called a plain old telephone service (POTS) dial peer. POTS dial peers define the characteristics of the telephony (PSTN) connection between the sending fax device or voice instrument and the gateway to the IP network. In general, the gateway uses the line characteristics defined by POTS dial peers to determine call type and call destination. The gateway then finds an outbound dial peer whose configured parameters match these attributes and routes the call to it. You can establish more than one POTS dial peer if you want different incoming calls to receive different handling. The fax detection application is enabled on the inbound dial peer.

One of the two types of outbound dial peers in the gateway router is the outbound Voice-over-IP (VoIP) dial peer, which describes the VoIP call leg from the router to the voice-mail server or voice path. You configure this dial peer exactly as you would configure an ordinary VoIP dial peer for voice calls.

The second type of outbound dial peer on the on-ramp gateway must be a fax dial peer. The fax dial peer can be either a Multimedia Mail over IP (MMoIP) dial peer, which describes an IP call leg for store-and-forward fax, or a VoIP dial peer configured for fax relay. The MMoIP dial peer is configured with the `fax_on_vfc_onramp_app` IVR application in the outbound mode, just the same as the standard configuration for store-and-forward fax. The VoIP dial peer for fax is configured exactly the same as the standard configuration for fax relay; no IVR application is required on this dial peer.

Configuration of dial peers for fax detection is described in the following sections:

- [Task 3A: Configuring One or More Inbound POTS Dial Peers](#) (required)
- [Task 3B: Configuring One or More Outbound VoIP Dial Peers for Voice](#) (required)
- [Task 3C: Configuring One or More Outbound VoIP Dial Peers for T.38 Fax Relay](#) (required)
- [Task 3D: Configuring One or More Outbound MMoIP Dial Peers for T.37 Store-and-Forward Fax](#) (optional)

## Task 3A: Configuring One or More Inbound POTS Dial Peers

The purpose of configuring inbound POTS dial peers on the on-ramp gateway is to associate a destination pattern and call type with each incoming call so that the call is properly routed to an outbound dial peer. The fax detection application is enabled on inbound POTS dial peers to assign call types by distinguishing between fax and voice calls.



### Note

When configuring store-and-forward fax on on-ramp gateways that have voice DSPs, do not configure the **information-type fax** command on the POTS dial peer. If this command is configured, fax calls fail.

## SUMMARY STEPS

1. `dial-peer voice tag pots`
2. `application application-name`
3. `direct-inward-dial`
4. `incoming called-number string`
5. `exit`

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<p><b>dial-peer voice</b> <i>tag pots</i></p> <p><b>Example:</b> Router(config)# dial-peer voice 77 pots</p>	<p>Enters dial-peer configuration mode and defines a local dial peer that directs traffic to or from a POTS interface. The argument and keyword are as follows:</p> <ul style="list-style-type: none"> <li><i>tag</i>—Dial-peer identifier that consists of one or more digits. Range: 1 to 2147483647.</li> <li><b>pots</b>—Specifies that this dial peer directs traffic to or from a POTS interface.</li> </ul>
Step 2	<p><b>application</b> <i>application-name</i></p> <p><b>Example:</b> Router(config-dial-peer)# application detect-app</p>	<p>Associates the fax detection application with the dial peer. The argument is as follows:</p> <ul style="list-style-type: none"> <li><i>application-name</i>—Name that was defined for the fax detection application using the <b>call application voice</b> command in <a href="#">Task 1: Loading the Fax Detection Application on the On-Ramp Gateway</a>.</li> </ul>
Step 3	<p><b>direct-inward-dial</b></p> <p><b>Example:</b> Router(config-dial-peer)# direct-inward-dial</p>	<p>Enables the Direct Inward Dialing (DID) call treatment for incoming called numbers, in which the entire incoming dial string is used to find a matching outbound dial peer. The gateway does not present a dial tone to the caller and does not collect digits; the setup message contains all the digits necessary to route the call.</p>
Step 4	<p><b>incoming called-number</b> <i>string</i></p> <p><b>Example:</b> Router(config-dial-peer)# incoming called-number 14085557896</p>	<p>Defines the called number (dialed number identification service or DNIS) string. The called number is used to match the incoming call leg to an inbound dial peer. The argument is as follows:</p> <ul style="list-style-type: none"> <li><i>string</i>—Incoming called telephone number. Valid entries are any series of digits that specify the E.164 telephone number.</li> </ul>
Step 5	<p><b>exit</b></p> <p><b>Example:</b> Router(config-dial-peer)# exit</p>	<p>Exits dial-peer configuration mode.</p>

## Task 3B: Configuring One or More Outbound VoIP Dial Peers for Voice

The purpose of configuring an outbound VoIP dial peer is to provide call handling for voice calls that enter the packet network. The outbound VoIP dial peer for voice defines the characteristics of the IP connection between the gateway and the voice messaging application or IP voice path.

**Note**

If you already configured an outgoing VoIP dial peer for voice calls with the appropriate destination pattern when you set up your VoIP network, you do not have to configure another dial peer for voice calls; there are no different parameters for the fax detection application.

## SUMMARY STEPS

1. `dial-peer voice tag voip`
2. `destination-pattern [+]string[T]`
3. `dtmf-relay h245-signal`
4. `fax rate disable`
5. `session target {ipv4:destination-address | dns:{$d$.| $e$. | $s$. | $u$.}host-name} | ras}`
6. `exit`

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<p><code>dial-peer voice tag voip</code></p> <p><b>Example:</b>  Router(config)# dial-peer voice 37 voip</p>	<p>Enters dial-peer configuration mode and defines a dial peer that directs traffic to or from a packet network. The argument and keyword are as follows:</p> <ul style="list-style-type: none"> <li>• <b>tag</b>—Dial-peer identifier that consists of one or more digits. Range: 1 to 2147483647.</li> <li>• <b>voip</b>—Calls from this dial peer use voice encapsulation on the packet network.</li> </ul>
Step 2	<p><code>destination-pattern [+]string[T]</code></p> <p>Router(config-dial-peer)#  destination-pattern 14085556688</p>	<p>Specifies a pattern that represents either the prefix or the full E.164 telephone number (depending on your dial plan) that identifies the destination telephone number. This pattern of numbers should fall within the pattern of numbers that was configured as the incoming called number on the inbound POTS dial peer. The keywords and arguments are as follows:</p> <ul style="list-style-type: none"> <li>• <b>+</b>—(Optional) Plus sign indicates that an E.164 standard number follows. The plus sign (+) is not supported on the Cisco MC3810.</li> <li>• <b>string</b>—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: <ul style="list-style-type: none"> <li>– Asterisk (*) and pound sign (#) that appear on standard touch-tone dial pads. These characters cannot be used as leading characters in a string (for example, *650).</li> <li>– Comma (,), which inserts a pause between digits.</li> <li>– Period (.), which matches any entered digit (this character is used as a wildcard). The period cannot be used as a leading character in a string (for example, .650).</li> </ul> </li> <li>• <b>T</b>—(Optional) Timer, or control, character indicates that the destination-pattern value is a variable-length dial string. Instructs the router to collect dialed digits until the interdigit timer expires (10 seconds, by default) or until a termination character (#, by default) is dialed. The timer character must be a capital T.</li> </ul>

	Command or Action	Purpose
Step 3	<b>dtmf-relay h245-signal</b>  <b>Example:</b> Router(config-dial-peer)# dtmf-relay h245-signal	Forwards dual tone multifrequency (DTMF) tones by using the H.245 “signal” User Input Indication method to compress the tones at one end of the call and decompress them at the other end. Supports tones 0 through 9, *, #, and A through D.
Step 4	<b>fax rate disable</b>  <b>Example:</b> Router(config-dial-peer)# fax rate disable	Disables fax relay transmission capability on this dial peer.
Step 5	<b>session target {ipv4:destination-address   dns:{\$d\$.   \$e\$.   \$\$\$.   \$u\$.}host-name}   ras}</b>  <b>Example:</b> Router(config-dial-peer)# session target dns: \$d\$.faxserver.abcinc.com	Designates a network-specific address to receive calls from this dial peer. The keywords and arguments are as follows: <ul style="list-style-type: none"> <li>• <b>ipv4:</b>—Argument that follows is an IP address.</li> <li>• <i>destination-address</i>—String that contains the IP address of the network-specific address to receive calls from this dial peer.</li> <li>• <b>dns:</b>—Argument that follows is a router host name to be resolved by the domain name server.</li> <li>• <b>\$d\$.</b>—Wildcard to be replaced by the destination (called) number, followed by a period (.).</li> <li>• <b>\$e\$.</b>—Wildcard to be replaced by the digits in the called number in reverse order with periods added between the digits, followed by a period (.).</li> <li>• <b>\$\$\$.</b>—Wildcard to be replaced by the source destination pattern, followed by a period (.).</li> <li>• <b>\$u\$.</b>—Wildcard to be replaced by the unmatched portion of the destination pattern (such as a defined extension number), followed by a period (.).</li> <li>• <i>host-name</i>—String that contains the host name of the network-specific address to receive calls from this dial peer.</li> <li>• <b>ras</b>—(H.323 only) Registration, Admission, and Status (RAS) signaling function protocol is being used, and a gatekeeper should be consulted to translate the E.164 address into an IP address.</li> </ul>
Step 6	<b>exit</b>  <b>Example:</b> Router(config-dial-peer)# exit	Exits dial-peer configuration mode.

### Task 3C: Configuring One or More Outbound VoIP Dial Peers for T.38 Fax Relay

The purpose of configuring an outbound VoIP dial peer for T.38 fax relay is to enable call handling from the on-ramp gateway to a destination in the packet network. For fax relay, this destination is typically an incoming dial peer on an off-ramp gateway. If you are configuring T.38 fax relay as the fax component of your fax detection application, follow the instructions in the “Task 1B: Configure one or more outbound VoIP dial peers” section in the “[Configuring T.38 Fax Relay](#)” chapter.

## Task 3D: Configuring One or More Outbound MMoIP Dial Peers for T.37 Store-and-Forward Fax

The purpose of configuring an outbound MMoIP dial peer for store-and-forward fax is to enable call handling from the on-ramp gateway to a destination in the packet network. For store-and-forward fax, this destination is typically an SMTP or ESMTP server. If you are configuring T.37 store-and-forward fax as the fax component of your fax detection application, follow the instructions in the “Task 3B: Configure one or more outbound MMoIP dial peers” section in [Chapter 5, “Configuring T.37 Store and Forward Fax.”](#)

**Note**

There are other on-ramp configuration tasks for store-and-forward fax calls in addition to configuring an MMoIP dial peer. See the “Configuring an On-Ramp Gateway for Store-and-Forward Fax” section in [Chapter 5, “Configuring T.37 Store and Forward Fax.”](#)

## Task 4: Configuring an Off-Ramp Gateway for the Fax Detection Application

The fax detection application requires that you configure an off-ramp gateway if you are handling calls that exit the packet network to the PSTN, as follows:

- Voice calls—If you have voice calls that are not terminated on the packet network, configure inbound dial VoIP dial peers and outbound POTS dial peers on a gateway using standard commands for voice networks.
- Fax relay calls—If you have fax relay calls that are exiting the packet network to the PSTN, follow the instructions for configuring a gateway in [Chapter 4, “Configuring T.38 Fax Relay.”](#)
- Store-and-forward fax calls—If you have store-and-forward fax calls that are exiting the packet network to the PSTN, follow the instructions for configuring an off-ramp gateway in [Chapter 5, “Configuring T.37 Store and Forward Fax”](#)

## Task 5: Verifying the Fax Detection Application Configuration

The commands in this section display information to help you verify your fax detection configuration.

### SUMMARY STEPS

1. `show running-config`
2. `show dial-peer voice [tag] [summary]`
3. `show call application voice summary`
4. `show call application voice application-name`

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>show running-config</b>  <b>Example:</b> Router# show running-config	Displays the gateway running configuration, including dial-peer configuration.
Step 2	<b>show dial-peer voice</b> [ <i>tag</i> ] [ <i>summary</i> ]  <b>Example:</b> Router# show dial-peer voice 24	Displays configuration information for MMoIP, VoIP, and POTS dial peers to help you verify that dial peers are properly configured for all legs of voice and fax calls. The argument and keyword are as follows: <ul style="list-style-type: none"> <li><i>tag</i>—Particular dial peer with an identifier that consists of one or more digits. Range: 1 to 2147483647.</li> <li><b>summary</b>—Brief form of the output.</li> </ul>
Step 3	<b>show call application voice summary</b>  <b>Example:</b> Router# show call application voice summary	Lists all voice applications that are loaded on the router to help you confirm that the scripts that you are interested in are loaded.
Step 4	<b>show call application voice</b> <i>application-name</i>  <b>Example:</b> Router# show call application voice detect-app	Displays the line-by-line contents of the TCL script associated with the specified application. The argument is as follows: <ul style="list-style-type: none"> <li><i>application-name</i>—Name that was defined for the fax detection application using the <b>call application voice</b> command.</li> </ul>

## Troubleshooting Tips

The following tips can help resolve problems that keep fax detection from working correctly.

- On the router that you are using for the fax detection application, make sure that you have installed at least the minimum version of Cisco IOS software that is listed in [Appendix A, “Platform Support for Fax Services.”](#)
- Before configuring fax detection, make sure that your voice application is functional by putting a series of calls through.
- Before configuring fax detection, make sure that your fax application is functional by sending a series of faxes.
- After configuring fax detection, issue the **debug voip ivr script** command to display debug information from the fax detection script. Then, put through a series of voice calls and fax calls to ensure correct operation. The debug output that is displayed when you put calls through is indispensable for diagnosing failing calls and finding the source of a problem. It is the only way to verify that parameters are set to the values that you want and that they are actually taking effect. Also note that mistakes such as typing errors in command-line interface (CLI) parameters (for example, typing “moode” for “mode”) are not recognized as errors by Cisco IOS software. They are accepted without complaint when typed, yet cannot have the desired effect during operation. It is only by watching the debug output during operation that you find these mistakes.

- Make sure that you have configured different DTMF digits for fax and for voice. If you configure both to be the same number, you are not notified immediately as with other Cisco IOS command errors. You find this error only if the **debug voip ivr script** command is enabled before a failing call comes in.

## Minimum Configuration Tasks for Fax Detection

The following steps are the minimum necessary to make the fax detection application operational on your network. By initially performing a minimum configuration, you can verify the correct operation of the application before you configure its optional parameters. Note that the minimum configuration for fax detection takes advantage of the default parameter values for the fax detection application; using the defaults makes initial troubleshooting easier.

To minimally configure fax detection on an on-ramp gateway, use the following commands, beginning in global configuration mode:

- Step 1** If store-and-forward fax is the application that you are using for fax, configure the domain and host name on the on-ramp gateway.

Example:

```
Router(config)# ip domain-name abcwrecking.com
Router(config)# hostname mail-server23
```

- Step 2** Load the fax detection application onto the on-ramp gateway from the TFTP server. In this example, the TFTP server's IP address is 172.16.1.1, the script is fax\_detect\_2.1.2.0.tcl, and the script is located in script-directory.

Example:

```
Router(config)# call application voice fax_detect
tftpboot://172.16.1.1/script-directory/fax_detect_2.1.2.0.tcl
```

- Step 3** Configure at least one inbound POTS dial peer on the on-ramp gateway. The incoming called-number string specifies a pattern that represents either the prefix or the full E.164 telephone number (depending on your dial plan) that identifies the destination voice-mail telephone number for this dial peer.

Example:

```
Router(config)# dial-peer voice 1 pots
Router(config-dial-peer)# application fax_detect
Router(config-dial-peer)# incoming called-number 75..
Router(config-dial-peer)# direct-inward-dial
Router(config-dial-peer)# exit
```

- Step 4** Configure at least one outbound VoIP dial peer on the on-ramp gateway for voice messaging. In the example below, the IP address of the voice-mail server is 172.16.2.2. If you have already configured an outgoing VoIP dial peer on this gateway with the appropriate destination pattern, you do not need to configure another one; there are no different dial-peer parameters for fax detection on the outbound VoIP dial peer for voice.

Example:

```
Router(config)# dial-peer voice 2 voip
Router(config-dial-peer)# destination-pattern 75..
Router(config-dial-peer)# session target ipv4:172.16.2.2
Router(config-dial-peer)# dtmf-relay h245-signal
Router(config-dial-peer)# fax rate disable
Router(config-dial-peer)# exit
```

**Step 5** Configure at least one outbound dial peer on the on-ramp gateway for fax.

If you are using fax relay, configure at least one outbound VoIP dial peer, as described in the “Configuring Fax Relay” chapter. In the following example, the address of the off-ramp gateway is 172.16.2.10.

Example:

```
Router(config)# dial-peer voice 5 voip
Router(config-dial-peer)# destination-pattern 75..
Router(config-dial-peer)# dtmf-relay h245-signal
Router(config-dial-peer)# fax protocol t38
Router(config-dial-peer)# session target ipv4:172.16.2.10
Router(config-dial-peer)# exit
```

If you are using store-and-forward fax, configure at least one outbound MMoIP dial peer, as described in the “Configuring Store-and-Forward Fax” chapter. In the following example, the **session target** command specifies an address to which faxes are e-mailed, where the **\$d\$** wildcard is replaced by the destination pattern.

Example:

```
Router(config)# dial-peer voice 7 mmoip
Router(config-dial-peer)# application fax_on_vfc_onramp_app out-bound
Router(config-dial-peer)# destination-pattern 75..
Router(config-dial-peer)# information-type fax
Router(config-dial-peer)# session target mailto:$d$@mail-server.com
Router(config-dial-peer)# exit
```

**Step 6** Verify the on-ramp gateway configuration. The following example shows a minimal configuration for an on-ramp gateway configured for fax detection using fax relay.

Example:

```
Router# show running-config
.
.
.
ip domain-name abcwrecking.com
hostname mail-server23

!
call application voice fax_detect
tftpboot://172.16.1.1/script-directory/fax_detect_2.1.2.0.tcl
!
dial-peer voice 1 pots
  application fax_detect
  incoming called-number 75..
  direct-inward-dial
!
dial-peer voice 2 voip
  destination-pattern 75..
  session target ipv4:172.16.2.2
  dtmf-relay h245-signal
  fax rate disable

dial-peer voice 5 voip
  destination-pattern 75..
  dtmf-relay h245-signal
  fax protocol t38
  session target ipv4:172.16.2.10
```

## Configuration Example for Fax Detection

This example uses both fax relay and store-and-forward fax on different dial peers. It is a basic configuration for T1 fax detection for incoming calls to any 4-digit DNIS with the leading digit 7. The mode is default-fax, an audio file that contains a voice prompt and DTMF digits to select voice and fax routing is specified, and the application is called fax\_detect on the gateway. The account identifier is the router-specific name derived from the host name and domain name. Two fax applications have been configured, and calls are routed to one or the other based on dialed number (DNIS). One fax application is fax relay, which is configured on an outbound VoIP dial peer; the other is store-and-forward fax, which has been configured on an outbound MMoIP dial peer.

A gateway with this configuration handles voice and fax calls as follows:

- Answers all calls to 7xxx (4-digit DNIS starting with 7) with the fax\_detect application.
- Routes voice calls with 4-digit DNIS of 7xxx to VoIP dial peer 2 (voice).
- Routes fax calls with 4-digit DNIS of 71xx to MMoIP dial peer 3 (store-and-forward).
- Routes fax calls with 4-digit DNIS of 72xx to VoIP dial peer 4 (fax relay).

This example includes configuration of a unified communications (UC) server and a gatekeeper, which is described in the *Cisco IOS H.323 Configuration Guide* in the *Cisco IOS Voice Configuration Library*, Release 12.3.

```

!
version 12.1
service timestamps debug datetime localtime
service timestamps log datetime localtime
no service password-encryption
!
hostname zebra
!
!
resource-pool disable
!
!
clock timezone AEST 10
ip subnet-zero
ip domain-name cisco.com
!
isdn switch-type primary-5ess
call rsvp-sync
!
! IVR script configuration for fax detection
call application voice fax_detect tftp://10.1.1.1/eng/tcl/fax_detect_2.1.2.0.tcl
call application voice fax_detect prompt tftp://10.1.1.1/eng/prompts/en_default_fax.au
call application voice fax_detect mode default-fax
call application voice fax_detect voice-dtmf 1
call application voice fax_detect fax-dtmf 2
call application voice fax_detect account-id-method gateway
cns event-service server
!
!
fax receive called-subscriber $d$
fax send transmitting-subscriber $$s$
fax send left-header $$s$
fax send center-header $t$
fax send right-header Page $p$
fax send coverpage enable
fax send coverpage email-controllable
fax send coverpage comment Cisco cover page comment
fax interface-type vfc

```

```

mta send server 172.16.1.25
mta send subject Test Message
mta send origin-prefix Cisco Fax
mta send postmaster postmaster@mail-server.unified-messages.com
mta send mail-from hostname zebra.unified-messages.com
mta send mail-from username $$
mta send return-receipt-to username $$
mta receive aliases sydney.com
mta receive maximum-recipients 120
mta receive generate-mdn
!
!
controller T1 0
  framing esf
  clock source line primary
  linecode b8zs
  pri-group timeslots 1-24
!
controller T1 1
  framing esf
  clock source line secondary 1
  linecode b8zs
  pri-group timeslots 1-24
!
controller T1 2
  framing esf
  clock source line secondary 2
  linecode b8zs
  pri-group timeslots 1-24
!
controller T1 3
  clock source line secondary 3
!
controller T1 4
  clock source line secondary 4
!
controller T1 5
  clock source line secondary 5
!
controller T1 6
  clock source line secondary 6
!
controller T1 7
  clock source line secondary 7
!
!
interface Ethernet0
  ip address 10.2.14.90 255.0.0.0
!
interface Serial0
  no ip address
  no ip mroute-cache
  shutdown
  no fair-queue
  clockrate 2015232
!
interface Serial1
  no ip address
  shutdown
  no fair-queue
  clockrate 2015232
!
interface Serial2
  no ip address

```

```
shutdown
no fair-queue
clockrate 2015232
!
interface Serial3
no ip address
shutdown
no fair-queue
clockrate 2015232
!
interface Serial10:23
no ip address
ip mroute-cache
isdn switch-type primary-5ess
isdn incoming-voice modem
isdn T203 10000
no cdp enable
!
interface Serial11:23
no ip address
isdn switch-type primary-5ess
isdn incoming-voice modem
no cdp enable
!
interface Serial12:23
no ip address
isdn switch-type primary-5ess
isdn incoming-voice modem
isdn guard-timer 3000
isdn T203 10000
no cdp enable
!
interface FastEthernet0
ip address 172.16.14.90 255.255.0.0
duplex auto
speed auto
h323-gateway voip interface
h323-gateway voip h323-id 5300-voip
h323-gateway voip tech-prefix 2#
!
ip classless
no ip http server
!
!
voice-port 0:D
!
voice-port 1:D
!
voice-port 2:D
!
! POTS dial-peer configuration for fax detection
dial-peer voice 1 pots
application fax_detect
incoming called-number 7...
direct-inward-dial
!
! Voice dial-peer configuration for fax detection
dial-peer voice 2 voip
destination-pattern 7...
session target ras
tech-prefix 5#
dtmf-relay h245-signal
codec g711ulaw
fax rate disable
```

```
no vad
!
! Store-and-forward fax dial-peer configuration for fax detection
dial-peer voice 3 mmoip
  application fax_on_vfc_onramp_app out-bound
  destination-pattern 71..
  information-type fax
  session target mailto:$d$@mail-server.unified-messages.com
!
! Fax relay dial-peer configuration for fax detection
dial-peer voice 4 voip
  destination-pattern 72..
  session target ras
  tech-prefix 3#
!
gateway
!
!
line con 0
  exec-timeout 0 0
  transport input none
line aux 0
line vty 0 4
  login
!
ntp clock-period 17180419
ntp source Ethernet0
ntp server 10.1.1.1
end
```