



# Configuring Fax Rollover

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This chapter describes configuration for fax rollover on an IP network. Fax rollover occurs when a T.38 fax is configured to roll over to a T.37 fax session when the far end is busy or unreachable.

## History for the Fax Rollover Feature

Release	Modification
12.0(7)T	This feature was implemented for VoIP on the Cisco AS5300 and Cisco AS5800.
12.2(4)T	Keywords were added for more disconnect cause codes.
12.3(14)T	A new command-line interface structure for configuring Tcl and IVR applications was introduced and affected the commands for configuring this feature.
12.4(4)T	This feature was integrated into Cisco IOS release 12.4(4)T.

## 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 [Cisco IOS Voice Configuration Library](#); including library preface and glossary, other feature documents, and troubleshooting documentation.

- [Finding Feature Information, page 2](#)
- [Prerequisites for Configuring Fax Rollover, page 2](#)



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- [Restrictions for Configuring Fax Rollover, page 2](#)
- [Information About Fax Rollover, page 2](#)
- [How to Download the Fax Rollover Application File, page 3](#)
- [How to Configure Fax Rollover, page 4](#)
- [Configuration Example for Fax Rollover, page 7](#)

## Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table at the end of this module.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

## Prerequisites for Configuring Fax Rollover

This section describes prerequisites for configuring fax rollover.

- Configure your IP network and ensure that it is operational.
- Text fax relay and ensure that it is operational on the IP network. By making sure that fax relay is operational before beginning to configure the fax rollover application, you can keep fax configuration issues separate and make troubleshooting easier.
- Test the store-and-forward fax application and ensure that it is operational on the IP network with a Simple Mail Transfer Protocol (SMTP) or an Extended Simple Mail Transfer Protocol (ESMTP) mail server.

## Restrictions for Configuring Fax Rollover

The following restriction applies to fax rollover:

- For TI-549 DSPs, only high-complexity VCWare is supported.

## Information About Fax Rollover

The on-ramp gateway receives fax calls at an E.164 number. The gateway attempts to route fax calls using fax relay. If the attempt fails, the call is forwarded to an SMTP server by a mail transfer agent (MTA) using T.37-standard protocols for store-and-forward fax.

Fax rollover is configured by installing the TCL IVR rollover application to the on-ramp gateway and adding the application to the POTS dial peer that answers T.38 calls.

The TCL IVR application has a procedure for setting up the call, waiting for success, and, upon receiving a busy or gateway-down message, setting up the same call again with new destination parameters. When the call is returned to the originating gateway, the gateway searches for a new VoIP dial peer with the same destination number, and a preference equal to or greater than the first dial peer that it found. If it finds one, it sets up the call again.

Dial peers for the fax rollover application include at least one inbound dial peer to receive calls from the PSTN and at least two outbound dial peers, one for fax relay and one for store-and-forward fax.

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 rollover application is enabled on the inbound dial peer.

One of the two types of outbound dial peers in the gateway router is the Voice-over-IP (VoIP) dial peer, which describes the fax relay call leg that is outbound from the router.

The second type of outbound dial peer on the on-ramp gateway is the Multimedia-Mail-over-IP (MMoIP) dial peer, which describes an IP call leg for store-and-forward fax. The MMoIP dial peer is configured with the `fax_on_vfc_onramp_app` IVR application in the outbound mode, which is the standard configuration for store-and-forward fax.

## How to Download the Fax Rollover Application File

This section describes how to download the TCL script and default audio prompt files used with the fax rollover application. You must download these files before you can configure the fax rollover application. The script is contained in a zip file on Cisco.com.

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 [TCL IVR API Version 2.0 Programmer's Guide](#).

### SUMMARY STEPS

1. Log in to the Cisco website and go to <http://www.cisco.com/cgi-bin/tablebuild.pl/tclware>.
2. Select and download this zip file: `TCLware.2.0.1.zip`.
3. Unzip the files.
4. Move the application script file to a location that can be accessed by your gateway using a URL address.

### 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 this zip file: `TCLware.2.0.1.zip`.  
When you are asked, provide the following information:
- Cisco Connection Online (CCO) server nearest your physical location
  - Where to save the files on your disk
- Step 3** Unzip the files.  
The zip file that you download includes these files:
- Fax rollover application TCL script file

- README file

**Step 4**

Move the application script file to a location that can be accessed by your gateway using a URL address. The URL of a TCL script 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.

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

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## How to Configure Fax Rollover

Use the following tasks to configure fax rollover on an on-ramp gateway:

**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 the off-ramp instructions on the same router.

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- [Loading the Fax Rollover Application on the Gateway, page 4](#)
- [Configuring Dial Peers, page 5](#)

## Loading the Fax Rollover Application on the Gateway

Fax rollover 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 rollover application can be loaded on the gateway. See the [How to Download the Fax Rollover Application File, page 3](#).

Install the script at a location that is accessible by the gateway and load it using a name of your choice. All later commands that refer to the fax rollover application use the name you selected when loading the the application on the gateway.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **application**
4. **service** *service-name location*

## DETAILED STEPS

Command or Action	Purpose
<p><b>Step 1</b> <code>enable</code></p> <p><b>Example:</b></p> <pre>Router&gt; enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> <li>Enter your password if prompted.</li> </ul>
<p><b>Step 2</b> <code>configure terminal</code></p> <p><b>Example:</b></p> <pre>Router# configure terminal</pre>	<p>Enters global configuration mode.</p>
<p><b>Step 3</b> <code>application</code></p> <p><b>Example:</b></p> <pre>Router(config)# application</pre>	<p>Enters application configuration mode to configure voice applications and services.</p>
<p><b>Step 4</b> <code>service service-name location</code></p> <p><b>Example:</b></p> <pre>Router(config-app)# service rollover-app tftp://BigServer/myscripts/ fax_roll_2.1.2.0.tcl</pre>	<p>Indicates the location or URL of the TCL script to be used for the fax rollover application.</p> <ul style="list-style-type: none"> <li><code>service-name location</code> --Directory and filename of the Tcl script or VoiceXML document in URL format. For example, Flash memory (<code>flash:filename</code>), a TFTP (<code>tftp://./filename</code>) or an HTTP server (<code>http://./filename</code>) are valid locations.</li> </ul>

## Configuring Dial Peers

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

- [Configuring Inbound POTS Dial Peers, page 5](#)
- [Configuring One or More Outbound VoIP Dial Peers for T.38 Fax Relay, page 7](#)
- [Configuring One or More Outbound MMoIP Dial Peers for T.37 Store-and-Forward Fax, page 7](#)
- [Troubleshooting Tips, page 7](#)

### Configuring Inbound POTS Dial Peers

The inbound POTS dial peers associates a destination pattern and call type with each incoming call so that the call is properly routed to an outbound dial peer. The fax rollover application is enabled on the inbound POTS dial peer.

**Note**

When configuring store-and-forward fax on on-ramp gateways with 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. **enable**
2. **configure terminal**
3. **dial-peer voice tag pots**
4. **application application-name**
5. **direct-inward-dial**
6. **incoming called-number string**

**DETAILED STEPS**

Command or Action	Purpose
<b>Step 1 enable</b>  <b>Example:</b> <pre>Router&gt; enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2 configure terminal</b>  <b>Example:</b> <pre>Router# configure terminal</pre>	Enters global configuration mode.
<b>Step 3 dial-peer voice tag pots</b>  <b>Example:</b> <pre>Router(config)# dial-peer voice 77 pots</pre>	Enters dial-peer configuration mode and defines a local dial peer that directs traffic to or from a POTS interface. <ul style="list-style-type: none"> <li>• <b>tag</b> --Dial-peer identifier that consists of one or more digits. Valid entries are from 1 to 2147483647.</li> <li>• <b>pots</b> --This dial peer directs traffic to or from a POTS interface.</li> </ul>
<b>Step 4 application application-name</b>  <b>Example:</b> <pre>Router(config-dial-peer)# application rollover-app</pre>	Associates the fax rollover application with the dial peer. <ul style="list-style-type: none"> <li>• <b>application-name</b> --Name that was defined for the fax rollover application in <a href="#">Loading the Fax Rollover Application on the Gateway, page 4</a>.</li> </ul>

Command or Action	Purpose
<b>Step 5</b> <code>direct-inward-dial</code>  <b>Example:</b>  <pre>Router(config-dial-peer)# direct- inward-dial</pre>	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.
<b>Step 6</b> <code>incoming called-number string</code>  <b>Example:</b>  <pre>Router(config-dial-peer)# incoming called-number 14085557896</pre>	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. <ul style="list-style-type: none"> <li><code>string</code> --Incoming called telephone number. Valid entries are any series of digits that specify the E.164 telephone number.</li> </ul>

## 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, see the "Configuring One or More Individual VoIP Dial Peers for T.38 Fax Relay" section on page 10 .

## 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, see ["Configuring One or More Outbound POTS Dial Peers" section on page 28.](#)

## Troubleshooting Tips

Use the following commands to troubleshoot fax rollover:

- show dial-peer voice** *[tag]* **[summary]**--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.
- 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.

## Configuration Example for Fax Rollover

- [T.38 Fax Rollover to T.37 Example, page 8](#)

## T.38 Fax Rollover to T.37 Example

The following example shows dial peers configured for T.38 fax rollover to T.37 fax.

```
.
.
voice hunt user-busy
!
! Inbound peer for T.38/T.37 on-ramp rollover operation.
! This peer includes the TCL application for rollover operation.
dial-peer voice 70 pots
  application app_lib_rollover
  incoming called-number 5.....
  port 1/1:0
!
! Outbound peer for T.38 ingress gateway.
! This peer requires a lower preference number than the next matching peer.
dial-peer voice 71 voip
  preference 1
  destination-pattern 5550119
  session target ipv4:10.14.120.109
  fax protocol t38 ls_redundancy 0 hs_redundancy 0
!
! Outbound peer for T.37 on-ramp operation.
dial-peer voice 72 mmoip
  preference 2
! The application name below must be exactly as shown!
  application fax_on_vfc_onramp_app out-bound
  destination-pattern 5550119
  session target mailto:$d$@mail-server.cisco.com
  information-type fax
```

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