

Fax Relay

This chapter describes how to enable Skinny Client Control Protocol (SCCP) Fax Relay for analog foreign exchange service (FXS) ports under the control of Cisco Unified CME.

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Prerequisites for Fax Relay

- Cisco Unified CME 4.0(3) or a later version.
- If your voice gateway is a separate router than the Cisco Unified CME router, an IP voice image of Cisco IOS Release 12.4(11)T or later is required.
- SCCP Telephony Control (STC) application is enabled.

Note

- For Cisco Unified CME versions before Cisco Unified CME 4.0(3), there are two manually-controlled options for setting up facsimiles:
  - Fax Gateway Protocol

    Configure the Cisco VG224, FXS port, or analog telephone adaptor (ATA) to use H.323 or Session Initiation Protocol (SIP) with a specific fax relay protocol. See Fax, Modem, and Text Support over IP Configuration Guide.
  - G.711 Fax Pass-Through with SCCP

    This is the default setup for facsimile on the Cisco VG224 and FXS ports before Cisco Unified CME 4.0(3). See Fax, Modem, and Text Support over IP Configuration Guide.

Restrictions for Fax Relay

- RFC2833 dual tone multifrequency (DTMF) digit relay under Cisco Unified CME for SCCP FXS ports is not supported.
- SCCP FXS ports under Cisco Unified CME control do not natively support RFC2833 DTMF-relay. However, Cisco Unified CME can support conversion of DTMF digits to and from RFC2833 DTMF-relay on its H323 and SIP interfaces when used with SCCP-controlled FXS ports.
- Cisco Fax Relay is only supported on those Cisco IOS gateways and network modules listed in Table 1: Supported Gateways, Modules, and VICs for Fax Relay , on page 3.

Information About Fax Relay

Fax Relay and Equipment

- The fax relay feature supports the use of existing customer premises equipment (CPE) in voice networks by allowing legacy analog phones attached to a Cisco IOS gateway to be controlled by Cisco Unified CME, and by providing feature interoperability between analog and IP endpoints.
- The voice gateway can be the same router that is being used for Cisco Unified CME or it may be a separate router (for example, the Cisco VG224).
- The fax relay feature facilitates replacement of the PSTN time-division multiplexing (TDM) infrastructure with VoIP.

Feature Design of Cisco Fax Relay

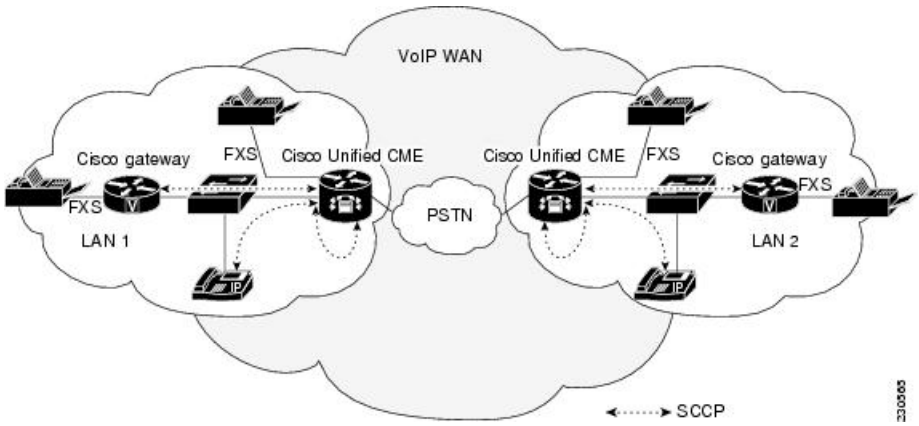
Cisco Fax Relay is a proprietary fax relay implementation that uses Real-time Transport Protocol (RTP) to transport fax data. It is the default fax relay type on Cisco voice gateways and the only supported fax option for Cisco Unified CME 4.0(3) and later versions. The fax relay feature provides enhanced supplementary feature capability on analog ports connected to a Cisco integrated services router (ISR) or Cisco VG224 analog gateway. Calls through the analog FXS ports are controlled by the Cisco Unified CME system.

Before the introduction of SCCP-enhanced features, SCCP gateways supported fax pass-through only. SCCP-enhanced features add support for Cisco Fax Relay and Super Group 3 (SG3) to G3 fax relay. This feature allows the fax stream between two SG3 fax machines to negotiate down to G3 speeds (less than 14.4 kbps) allowing SG3 fax machines to interoperate over fax relay with G3 fax machines.

The SCCP telephony control (STC) application on the Cisco voice gateway presents the locally attached analog telephones as individual endpoints to the call-control system, which allows the analog phones to be controlled in the same way as IP phones. With this capability, gateway-attached endpoints share the same telephony features that are available on IP phones directly connected to Cisco Unified CME. SCCP-enhanced features provide analog endpoint to analog endpoint interoperability within the IP telephony network.

Figure 1: Cisco Unified CME Fax Relay Deployment, on page 3 shows a multisite deployment of the fax relay feature in a Cisco Unified CME topology.

Figure 1: Cisco Unified CME Fax Relay Deployment



For information on configuring gateway-controlled fax relay features, see Configure Fax Relay, on page 4.

Supported Gateways, Modules, and Voice Interface Cards for Fax Relay

Table 1: Supported Gateways, Modules, and VICs for Fax Relay , on page 3 lists supported gateways, modules, and voice interface cards (VICs).

Table 1: Supported Gateways, Modules, and VICs for Fax Relay

Gateways	Extension Modules	Network Modules and Expansion Modules	VICs
• Cisco 2801 • Cisco 2811 • Cisco 2821 • Cisco 2851 • Cisco 3825 • Cisco 3845	—	• NM-HD-1V • NM-HD-2V • NM-HD-2VE	• VIC2-2FXS • VIC-4FXS/DID • VIC2-2BRI-NT/TE

Gateways	Extension Modules	Network Modules and Expansion Modules	VICs
• Cisco 2801 • Cisco 2821 • Cisco 2851 • Cisco 3825 • Cisco 3845	• EVM-HD	• EVM-HD-8FXS/DID • EM-3FXS/4FXO • EM-HDA-8FXS • EM-4BRI-NT/TE	—
• Cisco 2801 • Cisco 2811 • Cisco 2821 • Cisco 2851 • Cisco 3825 • Cisco 3845	—	• NM-HDV2 • NM-HDV2-1T1/E1 • NM-HDV2-2T1/E1	• VIC2-2FXS • VIC-4FXS/DID • VIC2-2BRI-NT/TE
• Cisco VG 224	—	—	—

Configure Fax Relay

Configure Fax Relay on SCCP Phones

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **voice service voip**
4. **fax protocol cisco**
5. **fax-relay sg3-to-g3**

6. **exit**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**voice service voip** **Example:** `Router(config)# voice service voip`	Enters voice service configuration mode and specifies VoIP encapsulation.
Step 4	**fax protocol cisco** **Example:** `Router(config-voi-serv)# fax protocol cisco`	Specifies the Cisco-proprietary fax protocol as the fax protocol for SCCP analog endpoints. • This command is enabled by default. • This is the only supported option for Cisco Unified CME 4.0(3) and later versions.
Step 5	**fax-relay sg3-to-g3** **Example:** `Router(config-voi-serv)# fax relay sg3-to-g3`	(Optional) Enables the fax stream between two SG3 fax machines to negotiate down to G3 speeds.
Step 6	**exit** **Example:** `Router(config-voi-serv)# exit`	Exits the current configuration mode.

Verify and Troubleshoot Fax Relay Configuration

To verify the Cisco Fax Relay configuration, use the **show-running config** command. Sample output is located in the Example for Configuring Fax Relay, on page 6.

Use the following commands to verify and troubleshoot SCCP gateway-controlled Fax Relay:

- **show voice call summary**—Displays fax relay voice port settings.
- **show voice dsp**—Displays fax relay digital signal processor (DSP) channel status.
- **debug voip application stcapp all**— Displays SCCP telephony control (STC) application fax relay information.

- **debug voip dsm all**—Displays fax relay DSP stream manager (DSM) messages.
- **debug voip dsmp all**—Displays fax relay distributed stream media processor (DSMP) messages.
- **debug voip hpi all**—Displays gateway DSP fax relay information on RTP packet events.
- **debug voip vtsp all**—Displays gateway voice telephony service provider (VTSP) debugging information for fax calls.

Note For more information on these and other commands, see Cisco IOS Voice Command Reference, Cisco Unified Communications Manager Express Command Reference, and Cisco IOS Configuration Fundamentals Command Reference.

Configuration Examples for Fax Relay

Example for Configuring Fax Relay

```
voice service voip
   fax-relay sg3-to-g3

  ephone-dn 44
   number 1234
   name fax machine

  ephone 33
   mac-address 1111.2222.3333
   button 1:44
   type anl
```

Feature Information for Fax Relay

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to https://cfnng.cisco.com/. An account on Cisco.com is not required.

Table 2: Feature Information for Cisco Fax Relay

Feature Name	Cisco Unified CME Version	Feature Information
Fax Relay	4.0(3)	Enables Fax Relay on analog FXS ports on Cisco IOS voice gateways under the control of Cisco Unified CME.