Commonly Supported Fax/Modem Call Flows

Contents

Introduction

This document lists the most commonly encountered fax/modem call flows for which Cisco customers open Technical Assistance Center (TAC) Service Requests (SRs), along with a baseline configuration that should be present on the gateways.

With the number of fax protocols supported by Cisco devices and service providers, it is easy to get confused with all the possibilities. The important point to note is that in a fax call flow, all the devices on VoIP need to utilize the same fax protocol for a fax call to be successful. Fax protocols, unlike audio calls, cannot be transcoded.

A fax call begins as an audio call and then switches over to a fax call. Two of the most common switchover mechanisms are Named Signalling Events (NSE) (Cisco propriety) and protocol-based (Standards) switchover. Just like the fax protocols, the switchover mechanism also needs to be the same in a fax call flow.

Acronym List

- ATA19X - Analog Telephone Adaptor 190/191/192
- CUBE - Cisco Unified Border Element
- CUCM - Cisco Unified Communications Manager
- FXS - Foreign Exchange Station
- GW - Gateway
- ITSP - Internet Telephony Service Provider
- MGCP - Media Gateway Control Protocol
- PRI - Primary Rate Interface
- SCCP - Skinny Client Control Protocol
- SIP - Session Initiation Protocol
- SIP/H323 - Session Initiation Protocol/Voice Class H323
- VG3X0 - Voice Gateway 310/320/350

- VG450 - Voice Gateway 450

Configure

In this section, you are presented with the information to configure the features described in this document.

Fax/Modem Protocol Support per VoIP Signaling

The table below describes the fax/modem protocols supported per signaling protocol.

VoIP Protocols	Passthrough (NSE)	T38 (NSE)	T38 Fax-Relay (Protocol-based)	Fax pass-through (protocol-based)
SCCP	Yes	Yes	No	No
MGCP	Yes	Yes	Yes	No
SIP	Yes	Yes	Yes	Yes
H323	Yes	Yes	Yes	Yes

> **Note**: NSE Based switchover mechanisms are Cisco propriety and 3rd Party VoIP devices do not support it.

Configurations

This document describes these configurations:

- Telco - PRI - GW - FXS - Fax/Modem
- Telco - PRI - GW - MGCP - CUCM - MGCP - VG3X0/VG450 - Fax/Modem
- Telco - FXO - GW - H323/SIP - CUCM - SCCP -VG3X0/VG450 - Fax/Modem
- Telco - PRI - GW - MGCP - CUCM - SCCP - ATA19X - Fax/Modem
- Telco - PRI - GW - SIP - CUCM - SIP - ATA19X - Fax/Modem
- Telco - PRI - GW - SIP/H323 - CUCM - SIP - Fax Server
- ITSP - SIP - CUBE - SIP/H323 - CUCM - SCCP - VG3X0/VG450 - Fax/Modem
- ATA19X - SIP - CUCM - SIP - ATA19X - Fax/Modem

Telco - PRI - GW - FXS - Fax/Modem

There is no Fax over IP (FoIP) protocols involved.

```
voice service pots fax rate disable
```

Telco - PRI - GW - MGCP - CUCM - MGCP - VG3X0 - Fax/Modem

This configuration performs both Passthrough (NSE) and T38 Fax-Relay (Protocol-based).

The configuration for both GW and VG3X0/VG450 that do Modem Passthrough (NSE) is:

```
no ccm-manager fax protocol cisco
mgcp modem passthrough voip mode nse
```

```
mgcp modem passthrough voip codec g711ulaw
```
The configuration for both GW and VG3X0/VG450 that do T38 Fax-Relay (Protocol-based) is:

```
no ccm-manager fax protocol cisco
no mgcp fax t38 inhibit
mgcp package-capability fxr-package
mgcp default-package fxr-package
no mgcp fax t38 ecm
mgcp fax t38 nsf 000000
```

Telco - FXO - GW - H323/SIP - CUCM - SCCP - VG3X0 - Fax/Modem

This configuration performs both Passthrough (NSE) and T38 (NSE). The protocol-based (Standards) switchovers are not supported with SCCP.

The configuration for a GW that does Modem Passthrough (NSE) is:

```
dial-peer voice <tag> voip
modem passthrough nse codec g711ulaw
```
Or, if there is no specific configuration on the dial-peer, then this information displays when you enter the **voice service voip** command.

```
modem passthrough nse codec g711ulaw
```
The configuration for the VG3X0/VG450 that does Modem Passthrough (NSE) is:

```
no ccm-manager fax protocol cisco
mgcp modem passthrough voip mode nse
mgcp modem passthrough voip codec g711ulaw
```
The configuration for a GW that does T38 (NSE) is:

```
dial-peer voice <tag> voip
fax protocol t38 nse ls-redundancy 0 hs-redundancy 0 fallback
pass-through <g711ulaw or g711alaw>
fax-relay ecm disable
fax-relay sg3-to-g3
```
Or, if there is no specific configuration on the dial-peer, then this information displays when you enter the **voice service voip** command.

```
fax protocol t38 nse ls-redundancy 0 hs-redundancy 0 fallback
pass-through <g711ulaw or g711alaw>
fax-relay ecm disable
fax-relay sg3-to-g3
```
The configuration for the VG3X0/VG450 that does T38 (NSE) is:

```
no ccm-manager fax protocol cisco
no mgcp fax t38 inhibit
mgcp fax-relay sg3-to-g3
no mgcp fax t38 ecm
mgcp fax t38 nsf 000000
```

Telco - PRI - GW - MGCP - CUCM - SIP - ATA19X - Fax/Modem

This configuration performs Passthrough (NSE) and T38 Fax-Relay (Protocol-based).

The configuration for a GW that does Modem Passthrough (NSE) is:

```
no ccm-manager fax protocol cisco
mgcp modem passthrough voip mode nse
mgcp modem passthrough voip codec g711ulaw
```

For an ATA19X that does Modem Passthrough (NSE), refer to Cisco ATA 190 Analog Telephone Adapter Administration Guide, Cisco ATA 191 Analog Telephone Adapter Administration Guide

The configuration for a GW that does T38 Fax-Relay (Protocol-based) is:

```
no ccm-manager fax protocol cisco
no mgcp fax t38 inhibit
mgcp package-capability fxr-package
mgcp default-package fxr-package
no mgcp fax t38 ecm
mgcp fax t38 nsf 000000
```

For an ATA19X that does T38 Fax-Relay (Protocol-based), refer to Cisco ATA 190 Analog Telephone Adapter Administration Guide, Cisco ATA 191 Analog Telephone Adapter Administration Guide

Telco - PRI - GW - SIP - CUCM - SIP - ATA19X - Fax/Modem

This configuration performs Passthrough (NSE) and both protocol-based (Standards) switchover

The configuration for a GW that does Modem Passthrough is:

```
dial-peer voice <tag> voip
modem passthrough nse codec g711ulaw
```

Or, if there is no specific configuration on the dial-peer, then this information should display when you enter the **voice service voip** command.

```
voice service voip
modem passthrough nse codec g711ulaw
```

For an ATA19X that does Modem Passthrough (NSE), refer to Cisco ATA 190 Analog Telephone Adapter Administration Guide, Cisco ATA 191 Analog Telephone Adapter Administration Guide

The configuration for a GW that does T38 Fax-Relay (Protocol-based) is:

```
dial-peer voice <tag> voip
fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback
pass-through <g711ulaw or g711alaw>
fax-relay ecm disable
fax-relay sg3-to-g3
```

Or, if there is no specific configuration on the dial-peer, then this information should display when you enter the **voice service voip** command.

```
voice service voip
```

```
fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback
pass-through <g711ulaw or g711alaw>
fax-relay ecm disable
fax-relay sg3-to-g3
```
For an ATA19X that does T.38 Fax-Relay(Protocol-based), refer to [Cisco ATA 190 Analog Telephone Adapter Administration Guide](#), [Cisco ATA 191 Analog Telephone Adapter Administration Guide](#)

The configuration for a GW that does Fax pass-through (protocol-based) is:

```
dial-peer voice <tag> voip
fax protocol pass-through <g711ulaw or g711alaw>
```
Or, if there is no specific configuration on the dial-peer, then this information should display when you enter the **voice service voip** command.

```
voice service voip
fax protocol pass-through <g711ulaw or g711alaw>
```
For an ATA19X that does Fax pass-through (protocol-based), refer to [Cisco ATA 190 Analog Telephone Adapter Administration Guide](#), [Cisco ATA 191 Analog Telephone Adapter Administration Guide](#)

Telco - PRI - GW - SIP/H323 - CUCM - SIP - Fax Server

This configuration mostly uses T38. This configuration can also use Fax pass-through (protocol based0. But, you need to confirm this on the fax server for the Fax Parameter.

The configuration for a GW that does T38 Fax-Relay(Protocol-based) is:

```
dial-peer voice <tag> voip
fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback
pass-through <g711ulaw or g711alaw>
fax-relay ecm disable
fax-relay sg3-to-g3
```
Or, if there is no specific configuration on the dial-peer, then this information should display when you enter the **voice service voip** command.

```
voice service voip
fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback
pass-through <g711ulaw or g711alaw>
fax-relay ecm disable
fax-relay sg3-to-g3
```
The configuration for a GW that does Fax pass-through (protocol-based) is:

```
dial-peer voice <tag> voip
fax protocol pass-through <g711ulaw or g711alaw>
```
Or, if there is no specific configuration on the dial-peer, then this information should display when you enter the **voice service voip** command.

```
voice service voip
fax protocol pass-through <g711ulaw or g711alaw>
```

ITSP - SIP - CUBE - SIP/H323 - CUCM - SCCP - VG3X0/VG450 - Fax/Modem

VG3X0/VG450 needs to be an MGCP GW or SIP GW for this setup to work. NSE switchover is only specific to Cisco devices and the 3rd Pary devices which providers use do not support NSE based switchovers. Hence, this call flow will not work.

Scenario 1, when VG3X0/VG450 must be converted to an MGCP GW for T38 faxing to work. After it is converted, the relevant faxing configuration will look as listed here.

The configuration for a CUBE that does T38 Fax-Relay(Protocol-based) is:

```
dial-peer voice <tag> voip
fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback
pass-through <g711ulaw or g711alaw>
fax-relay ecm disable
fax-relay sg3-to-g3
```

Or, if there is no specific configuration on the dial-peer, then this information displays when you enter the **voice service voip** command.

```
fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback
pass-through <g711ulaw or g711alaw>
fax-relay sg3-to-g3
```

The configuration for an MGCP VG3X0/VG450 that does T38 Fax-Relay(Protocol-based) is:

```
no ccm-manager fax protocol cisco
no mgcp fax t38 inhibit
mgcp package-capability fxr-package
mgcp default-package fxr-package
no mgcp fax t38 ecm
```

Scenario 2, VG3X0/VG450 is converted to SIP Gateway. After it is converted, the relevant faxing configuration will look as listed here.

The configuration for a CUBE that does T38 Fax-Relay(Protocol-based) is:

```
dial-peer voice <tag> voip
fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback
pass-through <g711ulaw or g711alaw>
fax-relay ecm disable
fax-relay sg3-to-g3
```

Or, if there is no specific configuration on the dial-peer, then this information displays when you enter the **voice service voip** command.

```
fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback
pass-through <g711ulaw or g711alaw>
fax-relay sg3-to-g3
```

The configuration for a SIP VG3X0/VG450 that does T38 Fax-Relay(Protocol-based) is:

```
dial-peer voice <tag> voip
fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback
pass-through <g711ulaw or g711alaw>
```

```
fax-relay ecm disable
fax-relay sg3-to-g3
```

Or, if there is no specific configuration on the dial-peer, then this information displays when you enter the **voice service voip** command.

```
fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback
pass-through <g711ulaw or g711alaw>
fax-relay sg3-to-g3
```

The configuration for a CUBE that does Fax pass-through (protocol-based) is:

```
dial-peer voice <tag> voip
fax protocol pass-through <g711ulaw or g711alaw>
```

Or, if there is no specific configuration on the dial-peer, then this information displays when you enter the **voice service voip** command.

```
fax protocol pass-through <g711ulaw or g711alaw>
```

The configuration for a SIP VG3X0/VG450 that does Fax pass-through (protocol-based) is:

```
dial-peer voice <tag> voip
fax protocol pass-through <g711ulaw or g711alaw>
```

Or, if there is no specific configuration on the dial-peer, then this information displays when you enter the **voice service voip** command.

```
fax protocol pass-through <g711ulaw or g711alaw>
```

Fax/Modem - ATA19X - SIP - CUCM - SIP - ATA19X - Fax/Modem

The Call flow will support Passthrough (NSE) and both protocol-based (Standards) switchover.

For an ATA19X that does Modem Passthrough (NSE) and both protocol-based (Standards), refer to Cisco ATA 190 Analog Telephone Adapter Administration Guide, Cisco ATA 191 Analog Telephone Adapter Administration Guide