



Cisco IOS Voice Features on IGX 8400 Series Universal Router Module

Feature History

Release	Modification
12.1(5)YA	Support for selected Cisco IOS voice features was introduced on the Cisco IGX 8400 Series Universal Router Module (URM).
12.2(2)XB	This feature was integrated into Cisco IOS Release 12.2(2)XB. However, no new features were introduced in this release on the Cisco IGX 8400 Series Universal Router Module.
12.2(8)T	This feature was integrated to the Cisco IOS release 12.2(8)T.

This document gives an overview the Cisco IGX 8400 Series Universal Router Module (URM) in Cisco IOS Release 12.2(8)T. Links to Cisco IOS Release 12.2 voice feature documentation and examples to configure Voice over IP (VoIP) and Voice over ATM (VoATM) are provided.

This document includes the following sections:

- [Feature Overview, page 2](#)
- [Supported Platforms, page 3](#)
- [Supported Standards, MIBs, and RFCs, page 3](#)
- [Prerequisites, page 3](#)
- [Configuration Tasks, page 4](#)
- [Configuration Examples, page 5](#)
- [Command Reference, page 12](#)

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Feature Overview

The URM is a Cisco IOS-based IP router blade that enables users to provision Voice over IP (VoIP) and Voice over ATM (VoATM) on a Cisco IGX 8400 series platform. The voice and routing capabilities of the URM have been derived from the Cisco 3660, while the ATM capabilities have been derived from the ATM OC/3 network module for the Cisco 2600 series and Cisco 3600 series routers. The embedded UXM-E processor supports one OC3 ATM port, and the embedded router supports one OC3 ATM port similar to the 1-port OC-3/STM-1 ATM Circuit Emulation Service network module for the Cisco 3600 series routers. These ATM ports are connected to each other internally.

In addition to VoIP and VoATM, IP routing and Cisco IOS command-line interface (CLI) commands, which enable configuration of the voice ports and dial peers, are now available on the Cisco IGX 8400 series platforms.

The URM interoperates with all Cisco IOS-based voice products and supports 30 voice channels with high-complexity codec types and 60 voice channels with medium-complexity codec types. Note that only digital voice ports are supported on the URM; analog ports are not supported.

Benefits

Cisco IOS voice software on the Cisco IGX 8400 Series Universal Router Module provides the following benefits:

- High-performance, high-density, scalable, digital voice traffic on the Cisco IGX 8400 series platforms.
- The Universal Router Module (URM) delivers high-density voice interfaces, Fast Ethernet connectivity, and ATM switching through a combination of either Cisco IOS Release 12.1(5)YA or later release and Switched Software (SWSW) Version 9.3 functionality.
- The URM lets you provision VoIP and VoATM using Cisco IGX 8400 series platforms. Basic routing and Cisco IOS command-line interface (CLI) commands, which allow configuration of the voice ports and dial peers, are now available on the Cisco IGX 8400 series platforms.
- The URM interoperates with all Cisco IOS-based voice products and supports 30 voice channels with high-complexity codec types and 60 voice channels with medium-complexity codec types.
- The URM supports the Cisco WAN Manager (CWM), CiscoWorks 2000, and Cisco Voice Manager (CVM)—all of which are management applications running on external stations.

Restrictions

The following restrictions apply when configuring Cisco IOS voice software features on Cisco IGX 8400 Series Universal Router Module:

- Only digital voice ports are supported on the URM. Analog ports are not supported.
- BRI interfaces are not supported.
- The slots to configure voice features are fixed. You can configure T1/E1 on slots 2/0 and 2/1, Fast Ethernet on slots 1/0 and 1/1, and ATM on slot 0/0.
- You cannot shut down the ATM port. The **shutdown** command is not supported.
- Voice over Frame Relay (VoFR) is not supported.

Related Documents

- *Cisco IGX 8400 Series Reference Guide*, Release 9.3.0
- *Cisco IOS Configuration Fundamentals Configuration Guide*, Release 12.2
- *Cisco IOS Configuration Fundamentals Command Reference*, Release 12.2
- *Cisco IOS Interface Configuration Guide*, Release 12.2
- *Cisco IOS Interface Command Reference*, Release 12.2
- *Cisco IOS Voice Features on IGX 8400 Series Universal Router Module*, Release 12.1(5)YA
- *Cisco IOS Voice, Video and Fax Command Reference*, Release 12.2
- *Cisco IOS Voice, Video, and Fax Configuration Guide*, Release 12.2
- *Cisco WAN Command Reference*, Release 9.3.20
- *Update to Cisco IGX 8400 Series Installation and Configuration and Reference*

Supported Platforms

- Cisco IGX 8400 series

Determining Platform Support Through Feature Navigator

Cisco IOS software is packaged in feature sets that support specific platforms. To get updated information regarding platform support for this feature, access Feature Navigator. Feature Navigator dynamically updates the list of supported platforms as new platform support is added for the feature.

Feature Navigator is a web-based tool that enables you to quickly determine which Cisco IOS software images support a specific set of features and which features are supported in a specific Cisco IOS image.

To access Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions at <http://www.cisco.com/register>.

Feature Navigator is updated regularly when major Cisco IOS software releases and technology releases occur. For the most current information, go to the Feature Navigator home page at the following URL:

<http://www.cisco.com/go/fn>

Supported Standards, MIBs, and RFCs

For more information, refer to the documentation listed in the “[Configuration Tasks](#)” section.

Prerequisites

- Cisco IOS Release 12.1(5)YA or later release

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Configuration Tasks

Because the voice implementation on the URM has been adapted from the Cisco 3600 series routers, the IOS features supported on the Cisco IGX 8400 URM are already supported on other Cisco router models. For configuration information, see the following two manuals:

- *Cisco IOS Voice, Video, and Fax Configuration Guide*, Release 12.2, located at http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122cgcr/fvvfax_c/index.htm
This guide provides configuration procedures for IOS voice software features. See [Table 1](#) for information regarding specific chapters to reference.
- *Cisco IOS Voice, Video, and Fax Command Reference*, Release 12.2, located at http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122cgcr/fvvfax_r/index.htm
This guide provides an alphabetical reference to voice commands used to configure voice software features.

**Note**

References to analog models in the Configuring Voice over IP documentation are not applicable to the Cisco IGX 8400 Series Universal Router Module.

Table 1 Chapters in *Cisco IOS Voice, Video and Fax Configuration Guide, Release 12.2*

Chapter Title	Location on Cisco.com
Configuring Voice over IP	http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122cgr/fvvfax_c/vvfoip.htm
Configuring Voice Ports for Voice over IP	http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122cgr/fvvfax_c/vvfport.htm
Configuring Gatekeepers (Multimedia Conference Manager)	http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122cgr/fvvfax_c/vvf323gk.htm
Configuring Interactive Voice Response	http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122cgr/fvvfax_c/vvfivr.htm
Configuring Debit Card for Packet Telephony	http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122cgr/fvvfax_c/vvfdebit.htm
Configuring Settlement for Packet Telephony	http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122cgr/fvvfax_c/vvfosp.htm

Configuration Examples

This section provides the following configuration examples:

- [Configuring CAS Calls over VoATM Example, page 5](#)
- [Configuring QSIG Calls over VoATM Example, page 6](#)
- [Configuring CAS Calls Using VoIP over ATM Example, page 7](#)
- [Configuring QSIG Calls Using VoIP over ATM Example, page 8](#)
- [Configuring CAS Calls over VoIP Example, page 9](#)
- [Configuring QSIG Calls over VoIP Example, page 10](#)

Configuring CAS Calls over VoATM Example

The following example shows how to configure voice over ATM channel associated signaling (CAS) calls on the Cisco IGX 8400 Series Universal Router Module. Voice over ATM enables a URM to carry voice traffic (for example, telephone calls and faxes) over an ATM network by using ATM encapsulation ATM adaptation layer (AAL) 5. AAL2 is not supported.

```
! Configurations on URM1
controller T1 2/0
  framing esf
  linecode b8zs
  ds0-group 0 timeslots 1-24 type e&m-wink-start
  no shutdown

interface ATM 0/0
  pvc 10/61
  vbr-rt 1536 768 192
  encapsulation aal5mux voice

dial-peer voice 100 pots
  destination-pattern 100527....
  port 2/0:0

dial-peer voice 120 voatm
  destination-pattern 120678....
  session target atm0/0 pvc 10/61
  codec g729r8

! Configurations on URM2

controller T1 2/0
  framing esf
  linecode b8zs
  ds0-group 0 timeslots 1-24 type e&m-wink-start
  no shutdown

interface ATM 0/0
  pvc 10/61
  vbr-rt 1536 768 192
  encapsulation aal5mux voice

dial-peer voice 120 pots
  destination-pattern 120678....
  port 2/0:0
```

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```
dial-peer voice 100 voatm
 destination-pattern 100527....
 session target atm0/0 pvc 10/61
 codec g729r8
```

Configuring QSIG Calls over VoATM Example

The following example shows how to configure VoATM QSIG calls on the Cisco IGX 8400 Series Universal Router Module:

```
! Configurations on URM1

isdn switch-type primary-qsig

controller T1 2/0
 framing esf
 linecode b8zs
 pri-group timeslots 1-24
 no shutdown

interface ATM 0/0
 pvc 10/61
 vbr-rt 1536 768 192
 encapsulation aal5mux voice

interface serial 2/0:23
 no ip address
 isdn switch-type primary-qsig
 isdn incoming-voice voice
 no cdp enable

dial-peer voice 100 pots
 destination-pattern 100527....
 port 2/0:0
 direct-inward-dial

dial-peer voice 120 voatm
 destination-pattern 120678....
 session target atm0/0 pvc 10/61
 codec g729r8

! Configurations on URM2

isdn switch-type primary-qsig

controller T1 2/0
 framing esf
 linecode b8zs
 pri-group timeslots 1-24
 no shutdown

interface ATM 0/0
 pvc 10/61
 vbr-rt 1536 768 192
 encapsulation aal5mux voice

interface serial 2/0:23
 no ip address
 isdn switch-type primary-qsig
 isdn incoming-voice voice
 no cdp enable
```

```
dial-peer voice 100 pots
  destination-pattern 100678....
  port 2/0:0
  direct-inward-dial

dial-peer voice 120 voatm
  destination-pattern 120527....
  session target atm0/0 pvc 10/61
  codec g729r8
```

Configuring CAS Calls Using VoIP over ATM Example

The following example shows how to configure CAS calls using VoIP over ATM on the Cisco IGX 8400 Series Universal Router Module:

```
! Configurations on URM1

ip routing

controller T1 2/0
  framing esf
  linecode b8zs
  ds0-group 0 timeslots 1-24 type fxs-loop-start
  no shutdown

interface ATM 0/0
  ip address 172.16.1.1 255.0.0.0
  pvc 10/60
    cbr 1536
    encapsulation aal5snap
    protocol ip 172.16.1.2

dial-peer voice 100 pots
  destination-pattern 100527....
  port 2/0:0

dial-peer voice 120 voip
  destination-pattern 120678....
  session target ipv4:172.16.1.2
  codec g729r8

! Configurations on URM2

ip routing

controller T1 2/0
  framing esf
  linecode b8zs
  ds0-group 0 timeslots 1-24 type fxs-loop-start
  no shutdown

interface ATM 0/0
  ip address 172.16.1.2 255.0.0.0
  pvc 10/60
    cbr 1536
    encapsulation aal5snap
    protocol ip 172.16.1.1

dial-peer voice 120 pots
  destination-pattern 120678....
```

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```

port 2/0:0

dial-peer voice 100 voip
 destination-pattern 100527....
 session target ipv4:172.16.1.1
 codec g729r8

```

Configuring QSIG Calls Using VoIP over ATM Example

The following example shows how to configure QSIG channel calls using VoIP over ATM on the Cisco IGX 8400 Series Universal Router Module:

```

! Configurations on URM1

ip routing

isdn switch-type primary-qsig

controller T1 2/0
 framing esf
 linecode b8zs
 pri-group timeslots 1-24
 no shutdown

interface ATM 0/0
 ip address 172.16.1.1 255.0.0.0
 pvc 10/60
  cbr 1536
  encapsulation aal5snap
  protocol ip 172.16.1.2

interface serial 2/0:23
 no ip address
 isdn switch-type primary-qsig
 isdn incoming-voice voice
 no cdp enable

dial-peer voice 100 pots
 destination-pattern 100527....
 port 2/0:0
 direct-inward-dial

dial-peer voice 120 voip
 destination-pattern 120678....
 session target ipv4:172.16.1.2
 codec g729r8

! Configurations on URM2

ip routing

isdn switch-type primary-qsig

controller T1 2/0
 framing esf
 linecode b8zs
 pri-group timeslots 1-24
 no shutdown

interface ATM 0/0
 ip address 172.16.1.2 255.0.0.0

```



```

pvc 10/60
  cbr 1536
  encapsulation aal5snap
  protocol ip 172.16.1.1

interface serial 2/0:23
  no ip address
  isdn switch-type primary-qsig
  isdn incoming-voice voice
  no cdp enable

dial-peer voice 120 pots
  destination-pattern 120678....
  port 2/0:0
  direct-inward-dial

dial-peer voice 100 voip
  destination-pattern 100527....
  session target ipv4:172.16.1.1
  codec g729r8

```

Configuring CAS Calls over VoIP Example

The following example shows how to configure VoIP CAS channel calls on the Cisco IGX 8400 Series Universal Router Module:

```

! Configurations on URM1

ip routing

controller T1 2/0
  framing esf
  linecode b8zs
  ds0-group 0 timeslots 1-24 type e&m-wink-start
  no shutdown

interface fastethernet 1/0
  ip address 23.0.0.1 255.0.0.0
  ip route-cache
  no shutdown

dial-peer voice 100 pots
  destination-pattern 100527....
  port 2/0:0

dial-peer voice 120 voip
  destination-pattern 120678....
  session target ipv4:23.0.0.2
  codec g729r8

! Configurations on URM2

ip routing

controller T1 2/0
  framing esf
  linecode b8zs
  ds0-group 0 timeslots 1-24 type e&m-wink-start
  no shutdown

interface fastethernet 1/0

```

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```

ip address 23.0.0.2 255.0.0.0
ip route-cache
no shutdown

dial-peer voice 120 pots
  destination-pattern 120678....
  port 2/0:0

dial-peer voice 100 voip
  destination-pattern 100527....
  session target ipv4:23.0.0.1
  codec g729r8

```

Configuring QSIG Calls over VoIP Example

The following example shows how to configure QSIG calls using VoIP:

```

! Configurations on URM1

ip routing

isdn switch-type primary-qsig

controller T1 2/0
  framing esf
  linecode b8zs
  pri-group timeslots 1-24
  no shutdown

interface fastethernet 1/0
  ip address 23.0.0.1 255.0.0.0
  ip route-cache
  no shutdown

interface serial 2/0:23
  no ip address
  isdn switch-type primary-qsig
  isdn incoming-voice voice
  no cdp enable

dial-peer voice 100 pots
  destination-pattern 100527....
  port 2/0:0
  direct-inward-dial

dial-peer voice 120 voip
  destination-pattern 120678....
  session target ipv4:23.0.0.2
  codec g729r8

! Configurations on URM2

ip routing

isdn switch-type primary-qsig

controller T1 2/0
  framing esf
  linecode b8zs
  pri-group timeslots 1-24
  no shutdown

```

```
interface fastethernet 1/0
  ip address 23.0.0.2 255.0.0.0
  ip route-cache
  no shutdown

interface serial 2/0:23
  no ip address
  isdn switch-type primary-qsig
  isdn incoming-voice voice
  no cdp enable

dial-peer voice 120 pots
  destination-pattern 120678....
  port 2/0:0
  direct-inward-dial

dial-peer voice 100 voip
  destination-pattern 100527....
  session target ipv4:23.0.0.1
  codec g729r8
```

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Command Reference

There are no new or modified commands. All Cisco IOS commands used in this feature module are documented in the Cisco IOS Release 12.2 command reference publications.