



# Ericsson MD110 MX-One TSW SP3 using Cisco IAD881 BRI to Tunnel QSIG over SIP

Initial Version, May 14, 2008

## Table of Contents

<a href="#">Introduction</a> .....	2
<a href="#">Network Topology</a> .....	3
<a href="#">Limitations</a> .....	3
<a href="#">System Components</a> .....	4
<a href="#">Hardware Components</a> .....	4
<a href="#">Software Requirements</a> .....	4
<a href="#">Features</a> .....	5
<a href="#">Features Supported</a> .....	5
<a href="#">Features Not Supported</a> .....	5
<a href="#">Configuration</a> .....	6
<a href="#">Configuring the Ericsson MD110 BC13 SP3 PBX</a> .....	6
<a href="#">Configuration Menus and Commands</a> .....	6
<a href="#">Configuring the Cisco IAD881 BRI Voice Gateways</a> .....	22
<a href="#">Acronyms</a> .....	33



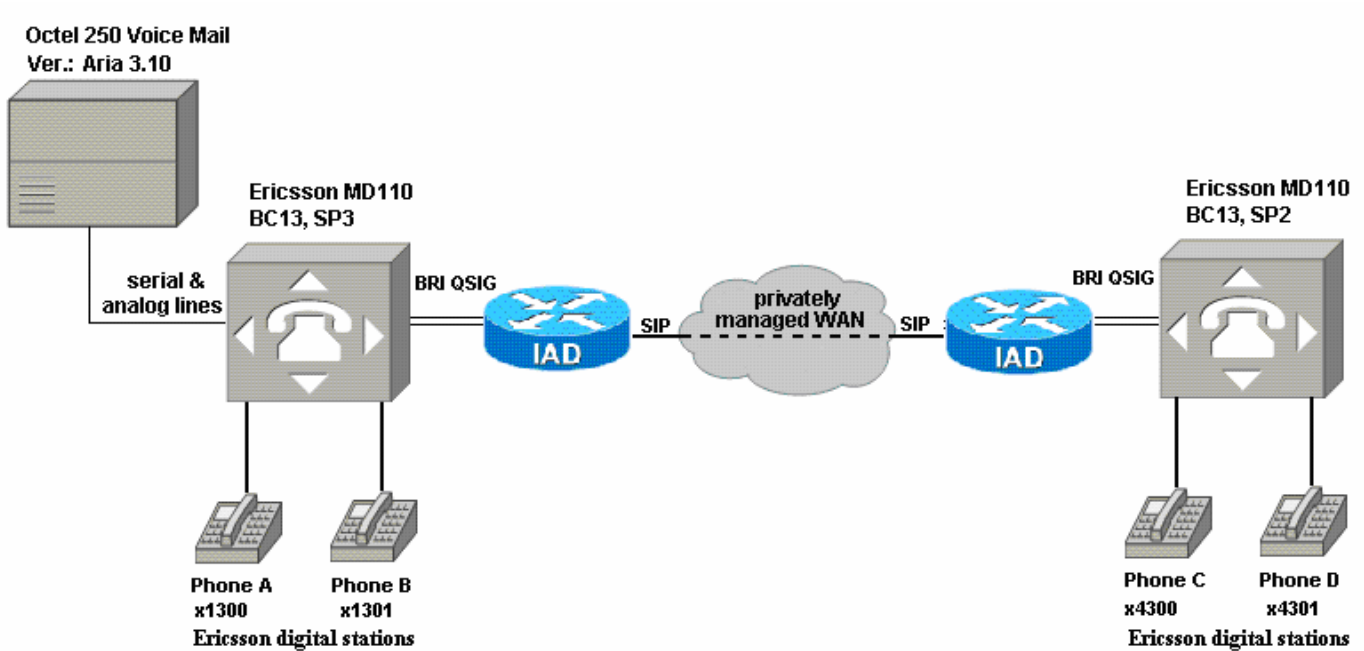
## Introduction

- This application note provides interoperability information and documented configurations for a toll bypass solution using Cisco IAD881 BRI Voice Gateways tunneling QSIG over SIP between two Ericsson MD110 PBXs. The integration consists of two Cisco IAD881 BRI Voice Gateways connecting to the Ericsson MD110 PBXs using BRI QSIG trunks. The IOS gateways establish the QSIG connection between the two PBXs via SIP. An end-to-end connection is thus established between Ericsson MD110 PBXs. This BRI QSIG connection uses Ericsson proprietary user-to-user information elements (UUIEs). The SIP protocol used between Cisco IOS Voice Gateways “tunnels” the QSIG with Ericsson proprietary UUIEs, resulting in a connection similar to connecting the PBXs directly. Figure 1 shows the integration topology. • •
- The following basic call and supplementary services features were verified: proper establishing and disconnecting of calls (see limitations section); calling name and number presentation and restriction; alerting name; call transfer (consultation and early-attended); call forwarding (all, busy, and no reply) with reroute; callback; path replacement on trombone call; and voicemail access with MWI activation and deactivation. Please note that this document does not address performance and scalability, which are part of a broader criteria for a deployment-ready solution.
- This application note uses the Cisco IAD881 BRI Voice Gateways. However, the implementation is not platform-dependent, so you may also choose other Cisco IOS Voice Gateways. Be careful when selecting a voice gateway platform and consider the capacity and capability required for the intended deployment.

[Cisco IAD880 Series Integrated Access Devices](#)

## Network Topology

Figure 1. Basic Call Setup



## Limitations

These are the known limitations, caveats, or integration issues.

- The Ericsson MD110 PBX proposes a path replacement on all trombone call scenarios (e.g., phone A calls phone C and phone C transfers to phone B). The path replacement feature cannot be disabled
- The Ericsson MD110 PBX proposes a reroute on all eligible call forward scenarios (e.g., phone A calls phone C and phone C forwards to phone B). QSIG-Reroute feature cannot be disabled.
- On a basic call (phone A calls phone C, phone C answers) the Ericsson MD110 PBX does not send a Q931 DISCONNECT message if phone C attempts to end the call, instead the MD110 PBX sends a NOTIFY message with notification indication value of 0x80 (call suspend) placing the call on hold. The call must be ended from the originating side in order to idle the BRI b-channel.



## **System Components**

### **Hardware Components**

The following hardware is required:

- Two Cisco IAD881BRI
- Two Ericsson MD110 PBXs and TLU79/1, BRI trunk interface cards
- Four Ericsson MD110 digital stations
- One Octel 250 voice-mail system (or compatible substitute)

### **Software Requirements**

The following software is required:

- PBX software release BC13, SP3
- Octel VM release: Aria 3.10
- Cisco IOS release 12.4(20)T or later



## Features

This section lists supported and unsupported features.

### Features Supported

- Basic Call (ENBLOC dialing)
- Calling Line (Number) Identification Presentation (CLIP)
- Calling Line (Number) Identification Restriction (CLIR)
- Calling Name Identification Presentation (CNIP)
- Calling Name Identification Restriction (CNIR)
- Connected Line (Number) Identification Presentation (COLP)
- Connected Line (Number) Identification Restriction (COLR)
- Connected Name Identification Presentation (CONP)
- Connected Name Identification Restriction (CONR)
- Alerting Name (See Limitations)
- Consultation Transfer – Local and Network/External
- Early-Attended Transfer – Local and Network/External
- Call Forward Unconditional – Local (See Limitations)
- Call Forward Busy – Local (See Limitations)
- Call Forward No Reply – Local (See Limitations)
- Call Forward Unconditional by Reroute – Network/External
- Call Forward Busy by Reroute – Network/External
- Call Forward No Reply by Reroute – Network/External
- Call Back/Call Completion – Busy and No Reply
- Path Replacement for trombone connection

### Features Not Supported

- Trombone connection by join
- Disconnect Supervision



## Configuration

This section contains configuration menus and commands, and describes configuration sequences and tasks.

### Configuring the Ericsson MD110 BC13 SP3 PBX

**Note:** The Ericsson MD 110 PBX user interface is precise. All parameters and options are mapped to position-dependent numeric fields within the various commands listed below. You must have the correct revision of the Ericsson MD 110 PBX administration manual to be able to decipher each field position and determine its meaning. It is therefore not advisable to make changes to an MD 110 PBX unless you know exactly what you are doing. A single number out of place in a command string can cause unusual behavior on the PBX.

Configure the Ericsson MD 110 PBX in the following sequence:

1. ROCAI Route Category Initiate
2. RODAI Route Data Initiate
3. ROEQI Route Equipment Initiate
4. RODDI Route External Destination

### Configuration Menus and Commands

Route Category Initiate

Setup internal characteristics for the route. For example, Traffic direction, services, Bearer capabilities.

**For Ericsson1 node (BC13, SP3) - using route 40 only.**

```
<•rocap:rou=40;
      ROUTE CATEGORY DATA
ROU SEL          TRM SERV          NODG DIST DISL TRAF          SIG          BCAP
40  7110000000000010 5    3110000011  0  30  128  03151515 111110000031 111111
END
```

**For Ericsson2 node (BC13, SP2) – using route 1 only.**

```
<└rocap:rou=1;
      ROUTE CATEGORY DATA
ROU SEL          TRM SERV          NODG DIST DISL TRAF          SIG          BCAP
1   7110000000000010 5    3110000000  0  30  128  03151515 111110000031 111111
END
```



Route Data Initiate

**For Ericsson1 node**

BRI QSIG Route Protocol Characteristics, protocol side "user"

**<Lrodap:rou=40;**

ROUTE DATA

ROU	TYPE	VARC	VARI	VARO	FILTER
40	SL60	H'00000A14	H'75440000	H'46400000	NO

END

**For Ericsson2 node**

BRI QSIG Route Protocol Characteristics, protocol side "User"

**<•rodap:rou=1;**

ROUTE DATA

ROU	TYPE	VARC	VARI	VARO	FILTER
1	SL60	H'00000A14	H'75440000	H'46400000	NO

END



Route Equipment Initiate

BRI QSIG trunk lines (B-channels)

**For Ericsson1 node**

**<•roedp:rou=40,tru=all;**

ROUTE EQUIPMENT DATA

ROU	TRU	EQU	IP ADDRESS	SQU	INDDAT	CNTRL
40	001-1	001-0-52-00			H'000000000000	
40	001-2	001-0-52-01			H'000000000000	

END

**For Ericsson2 node**

**<Lroedp:rou=1,tru=all;**

ROUTE EQUIPMENT DATA

ROU	TRU	EQU	IP ADDRESS	SQU	INDDAT	CNTRL
1	001-1	001-1-70-00			H'000000000000	
1	001-2	001-1-70-01			H'000000000000	

END



Route External Destination Data Initiate

**For Ericsson1 node**

Route and Access Code for the trunk Information.

**<•roddp:dest=43;**

EXTERNAL DESTINATION ROUTE DATA

DEST	DRN	ROU	CHO	CUST	ADC	TRC	SRT	NUMACK	PRE
43		40			15051000000002500050000010	0	1	0	

END

**For Ericsson2 node**

Route and Access Code for the trunk Information.

**<Lroddp:dest=13;**

EXTERNAL DESTINATION ROUTE DATA

DEST	DRN	ROU	CHO	CUST	ADC	TRC	SRT	NUMACK	PRE
13		1			15051000000002500050000010	0	1	0	

END



Exchange ID (System ID)

**For Ericsson1 node**

```
<SYIDP ;
```

```
PRIVATE NETWORK EXCHANGE IDENTITY IS
```

```
888
```

```
END
```

**For Ericsson2 node**

```
<SYIDP ;
```

```
PRIVATE NETWORK EXCHANGE IDENTITY IS
```

```
666
```

```
END
```

For Path Replacement in three-node scenarios, Exchange IDs must be unique.

Change System ID by using the following commands:

```
<•SYIDE ;
```

```
EXECUTED
```

```
<•SYIDI :EXGID=888 ;
```

```
EXECUTED
```



Number Analysis Summary

For Ericsson1 node

<Lnadap;

NUMBER ANALYSIS DATA

TYPE OF SERIES	NUMBER SERIES
EXTENSION NUMBER SERIES	1001 - 1199
	<b>1300 - 1310</b>
	4500 - 4508

EXTERNAL DESTINATION CODE	122	
	125	
	233	
	235	
	30 -	38
	40	
	42 -	<b>43</b>
	50	
	63	
	642	
	645	
	650	
	666	
	70	
	777	

ABBREVIATED COMMON NUMBER SERIES	1200
	2200

OWN EXCHANGE NUMBER SERIES	888
----------------------------	-----

TYPE OF SERVICE CODE	SERVICE CODE
----------------------	--------------

EXTERNAL NUMBER LENGTH DATA

EXTERNAL NUMBER	NUMBER LENGTH
11	4 - 4
122	4 - 4
125	4 - 4
233	7 - 7
235	3 - 7
30	4 - 4
35	4 - 4
40	4 - 4
<b>43</b>	<b>4 - 4</b>
50	2 - 4
63	4 - 4
642	5 - 5
645	5 - 5
650	4 - 4
666	7 - 7



70 4 - 4  
777 4 - 4

PROCEED TO SEND SIGNAL DATA

EXTERNAL NUMBER POS. TYPE

CALL DISCRIMINATION DATA

EXTERNAL/INTERNAL NUMBER CAT

END



**For Ericsson2 node**

**<Lnadap;**

NUMBER ANALYSIS DATA

TYPE OF SERIES	NUMBER SERIES
EXTENSION NUMBER SERIES	4200 - 4230 <b>4250 - 4310</b>
EXTERNAL DESTINATION CODE	106 11 - <b>13</b> 20 235 30 35 40 44 450 50 53 550 - 560 60 750 777 888 950
OPERATOR INDIV. NUMBER SERIES	100
OWN EXCHANGE NUMBER SERIES	666
TYPE OF SERVICE CODE	SERVICE CODE
EXTERNAL NUMBER LENGTH DATA	
EXTERNAL NUMBER	NUMBER LENGTH
10	4 - 4
12	4 - 4
<b>13</b>	<b>4 - 4</b>
20	4 - 4
235	7 - 7
30	4 - 4
40	4 - 4
42	4 - 4
44	5 - 5
450	5 - 5
50	4 - 4
53	4 - 4
550	3 - 7
551	3
750	5 - 5
777	3 - 7
888	7 - 7



950

7

PROCEED TO SEND SIGNAL DATA

EXTERNAL NUMBER

POS. TYPE

CALL DISCRIMINATION DATA

EXTERNAL/INTERNAL NUMBER

CAT

END



Overlap/Enbloc sending

First remove access code

<NANLR:EXL=43;

To do overlap sending

<NANLS:EXL=43,MIN=2,MAX=4;

To do Enbloc sending

<NANLS:EXL=43,MIN=4,MAX=4;

Key System Directory

For Ericsson1 node

<•ksddp:dir=1300&1301;

KEY SYSTEM DIRECTORY DATA

DIR	CUST	EQU	CAT	ADN	ODN	CALALT	TIMER
1300		001-0-20-03	-			1	0
1301		001-0-20-04	-			1	0

END

For Ericsson2 node

<Lksddp:dir=4300&4301;

KEY SYSTEM DIRECTORY DATA

DIR	CUST	EQU	CAT	ADN	ODN	CALALT	TIMER
4300		001-1-20-02	1			1	0
4301		001-1-20-03	1			1	0

END



Calling/Connected Name and Number Restrictions

For Ericsson1 node

<•kscap:dir=1300&1301;

KEY SYSTEM CATEGORY PRINT

DIR BSEC	TRAF	SERV	CDIV	ROC	ITYPE	TRM	ADC	LANG
1300 0	03151515	0211120700	011151111	720004	19	0	00100013010000	0
1301 0	03151515	0211120700	011151111	720004	20	0	00100013011000	0

END

For Ericsson2 node

<•kscap:dir=4300&4301;

KEY SYSTEM CATEGORY PRINT

DIR BSEC	TRAF	SERV	CDIV	ROC	ITYPE	TRM	ADC	LANG
4300 0	03151515	0211120700	011151111	720004	19	0	00100013011000	F
4301 0	03151515	0211120700	011151111	720004	20	0	00100013011000	F

END



To configure Calling/Connected Name and Number Restricted, use the following command:

```
<KSCAC:DIR=1300&&1301,ADC=00010013010000;
```

To configure Calling/Connected Name and Number Allowed, use the following command:

```
<KSCAC:DIR=1300&&1301,ADC=00100013010000;
```

To remove Name, use the following command:

```
<NIINE:DIR=1300;//REMOVE NAME
```

To add Name, use the following command:

```
<NIINI:DIR=1300,NAME1="Gaucho",NAME2="Avila",PRES=20; //ADD NAME
```

To print Station's Name, use the following command:

#### For Ericsson1 node

```
<•NIINP:dir=1300&1301;
```

EXTENSION NAMES

DIR	NAME1	NAME2	PRES	INFO
1300	Gaucho	Avila	20	
1301	Omar	Arellano	20	
END				

#### For Ericsson2 node

```
<•NIINP:dir=4300&4301;
```

EXTENSION NAMES

DIR	NAME1	NAME2	PRES	INFO
4300	Pato	Araujo	20	
4301	Tepa	Solis	20	
END				



## Path Replacement (Route Optimization)

To enable/disable Path Replacement, use the following command:

```
<ASPAC:PARNUM=66,PARVAL=1; //Route optimization allowed. --- FORWARD
```

```
<ASPAC:PARNUM=66,PARVAL=0; //Route optimization NOT allowed.
```

To print parameter's value, use the following command:

### For Ericsson1 node

```
<•ASAPAP:PARNUM=66;  
APPLICATION SYSTEM PARAMETERS  
PARNUM      PARVAL  
    66          1  
END
```

### For Ericsson2 node

```
<□ASAPAP:PARNUM=66;  
APPLICATION SYSTEM PARAMETERS  
PARNUM      PARVAL  
    66          1  
END
```



Call Diversion on Busy/No Reply

**For Ericsson1 node**

```
<•CDIDP:DIR=ALL;  
CALL DIVERSION INDIVIDUAL DATA  
  
DIR          DIV  
  
1300         1301 (showing A CFB/CFNA to B)  
  
END
```

**For Ericsson2 node**

```
<•CDIDP:DIR=ALL;  
CALL DIVERSION INDIVIDUAL DATA  
  
DIR          DIV  
  
430         1300  
  
END
```

To enable/disable Diversion on Busy/No Reply, use the following command:

```
<CDINI:DIR=1300,DIV=1301; // CALL DIVERSION INDIVIDUAL NUMBER INITIATE  
<CDINE:DIR=1300; // CALL DIVERSION INDIVIDUAL NUMBER END
```



## Diversion Counter

```
<ASUVP:PARNUM=121; // check current setting for maximum number of hop diversions  
<ASPAC:PARNUM=121,PARVAL= VALUE; // To set maximum number of hop diversions where VALUE  
range is 0-255
```

### For Ericsson1 node

```
<•ASUVP:PARNUM=121;  
APPLICATION SYSTEM PARAMETER VALUES FOR UNIT  
PARNUM CHA PARVAL MINVAL MAXVAL UNIT REMARK  
121 YES 12 0 255 RMP  
END
```

### For Ericsson2 node

```
<•ASUVP:PARNUM=121;  
APPLICATION SYSTEM PARAMETER VALUES FOR UNIT  
PARNUM CHA PARVAL MINVAL MAXVAL UNIT REMARK  
121 YES 12 0 255 RMP
```

## Network Services

```
<ASPAC:PARNUM=223,PARVAL=7; // Network Features: Standard SS-Call Forwarding,  
Standard SS-Call Transfer, Path Replacement for route optimization.
```

### For Ericsson1 node

```
<•ASPAP:PARNUM=223;  
APPLICATION SYSTEM PARAMETERS  
PARNUM PARVAL  
223 0  
END
```

### For Ericsson2 node

```
<□ASAPAP:PARNUM=223;  
APPLICATION SYSTEM PARAMETERS  
PARNUM PARVAL  
223 0  
END
```



Ericsson MD 110 Software Version

**For Ericsson1 node**

```
<•cadap;  
    CALENDAR DATA  
  
IDENTITY=ACM1  
VERSION=CXP1010101/4/TSWSP03/R4A  
  
15:35:01  
MON 24 NOV 2008  
END
```

**For Ericsson2 node**

```
<└ cadap;  
    CALENDAR DATA  
  
IDENTITY=2MAGS  
VERSION=CXP1010101/4/TSWSP02/R3A  
  
15:35:27  
MON 24 NOV 2008  
END
```



## Configuring the Cisco IAD881 BRI Voice Gateways

### For IOS Voice Gateway 1

**IAD881BRI\_1# sh ver**

Cisco IOS Software, C880 Software (C880VOICE-UNIVERSALK9-M), Version 12.4(20)T,  
RELEASE SOFTWARE (fc3)

Technical Support: <http://www.cisco.com/techsupport>

Copyright (c) 1986-2008 by Cisco Systems, Inc.

Compiled Fri 11-Jul-08 06:46 by prod\_rel\_team

ROM: System Bootstrap, Version 12.4(20071105:170421) [jerry-STEELERS\_20071105 1  
02], DEVELOPMENT SOFTWARE

IAD881BRI\_1 uptime is 3 days, 3 hours, 53 minutes

System returned to ROM by reload at 19:01:57 UTC Sat Nov 21 1908

System image file is "flash:c880voice-universalk9-mz.124-20.T.bin"

Last reload reason: Reload Command

This product contains cryptographic features and is subject to United States and local country laws governing import, export, transfer and use. Delivery of Cisco cryptographic products does not imply third-party authority to import, export, distribute or use encryption. Importers, exporters, distributors and users are responsible for compliance with U.S. and local country laws. By using this product you agree to comply with applicable laws and regulations. If you are unable to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:

<http://www.cisco.com/wwl/export/crypto/tool/stqrg.html>

If you require further assistance please contact us by sending email to [export@cisco.com](mailto:export@cisco.com).



Cisco IAD881B (MPC8300) processor (revision 0x100) with 498688K/25600K bytes of memory.

Processor board ID FHH1146002D

5 FastEthernet interfaces

2 ISDN Basic Rate interfaces

1 DSP, 16 Voice resources

256K bytes of non-volatile configuration memory.

253008K bytes of ATA CompactFlash (Read/Write)

License Information for 'c880-iad'

License Level: advsecurity Type: Default. No valid license found.

Next reboot license Level: advsecurity

Configuration register is 0x2102

**IAD881BRI\_1#sh run**

Building configuration...

Current configuration : 2445 bytes

!

version 12.4

no service pad

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

!

hostname IAD881BRI\_1

!

boot-start-marker

boot-end-marker



```
!  
logging message-counter syslog  
logging buffered 10000000  
no logging console  
enable password cisco  
!  
no aaa new-model  
network-clock-participate wic 0  
!  
!  
ip source-route  
!  
!  
ip cef  
no ip domain lookup  
!  
!  
!  
isdn switch-type basic-qsig  
isdn gateway-max-interworking  
!  
!  
voice service pots  
!  
voice service voip  
  signaling forward unconditional  
  sip  
    header-passing error-passthru  
!  
!  
voice-card 0  
!  
!  
archive  
  log config
```



```
hidekeys
!  
!  
interface BRI1  
no ip address  
shutdown  
!  
interface BRI21  
no ip address  
isdn switch-type basic-qsig2  
isdn timer T310 120000  
isdn overlap-receiving T302 16000  
isdn protocol-emulate network3  
isdn point-to-point-setup  
isdn layer1-emulate network  
isdn incoming-voice voice  
isdn global-disconnect4  
isdn skipsend-idverify  
!  
interface FastEthernet0  
!  
interface FastEthernet1  
!  
interface FastEthernet2  
!  
interface FastEthernet3  
!  
interface FastEthernet4  
ip address 172.20.110.80 255.255.255.0  
duplex auto  
speed auto
```

---

<sup>1</sup> This is the interface used during testing, all bold commands are required for correct interoperability

<sup>2</sup> This command sets the ISDN switch type to QSIG

<sup>3</sup> Testing was conducted with Ericsson BRI trunks acting as user side, this command sets the IAD BRI trunk to act as network side

<sup>4</sup> This command is required in order for ISDN cause codes to be transparently passed end-to-end. This is necessary for correct end-to-end interoperability.



```
!  
interface Vlan1  
no ip address  
!  
ip forward-protocol nd  
ip route 0.0.0.0 0.0.0.0 172.20.110.1  
no ip http server  
no ip http secure-server  
!  
!  
!  
!  
!  
!  
!  
control-plane  
!  
!  
voice-port 1  
!  
voice-port 2  
compand-type a-law5  
!  
!  
!  
!  
dial-peer voice 1100 pots  
destination-pattern 13..  
incoming called-number 42..  
direct-inward-dial  
port 2  
forward-digits all  
!  
!
```

---

<sup>5</sup> Ericsson is set for a-law companding therefore IAD must be set for the same.



```
dial-peer voice 4200 voip
description to Ericsson 42XX
destination-pattern 43..
signaling forward rawmsg6
session protocol sipv2
session target ipv4:172.20.8.40
!
!
sip-ua
!
!
line con 0
no modem enable
line aux 0
line vty 0 4
exec-timeout 0 0
password cisco
login
!
exception data-corruption buffer truncate
scheduler max-task-time 5000
end
```

---

<sup>6</sup> This command is required in order to tunnel QSIG messaging end-to-end



## For IOS Voice Gateway 2

### IAD881BRI\_2#sh ver

Cisco IOS Software, C880 Software (C880VOICE-UNIVERSALK9-M), Version 12.4(20)T,  
RELEASE SOFTWARE (fc3)

Technical Support: <http://www.cisco.com/techsupport>

Copyright (c) 1986-2008 by Cisco Systems, Inc.

Compiled Fri 11-Jul-08 06:46 by prod\_rel\_team

ROM: System Bootstrap, Version 12.4(15r)XZ2, RELEASE SOFTWARE (fc1)

IAD881BRI\_2 uptime is 3 weeks, 4 days, 4 hours, 31 minutes

System returned to ROM by power-on

System image file is "flash:c880voice-universalk9-mz.124-20.T"

This product contains cryptographic features and is subject to United States and local country laws governing import, export, transfer and use. Delivery of Cisco cryptographic products does not imply third-party authority to import, export, distribute or use encryption. Importers, exporters, distributors and users are responsible for compliance with U.S. and local country laws. By using this product you agree to comply with applicable laws and regulations. If you are unable to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:

<http://www.cisco.com/wwl/export/crypto/tool/stqrg.html>

If you require further assistance please contact us by sending email to [export@cisco.com](mailto:export@cisco.com).

Cisco IAD881B (MPC8300) processor (revision 0x100) with 249856K/12288K bytes of memory.

Processor board ID FHK123429DN



5 FastEthernet interfaces

2 ISDN Basic Rate interfaces

1 DSP, 16 Voice resources

256K bytes of non-volatile configuration memory.

253008K bytes of ATA CompactFlash (Read/Write)

License Information for 'c880-iad'

License Level: advsecurity Type: Permanent

Next reboot license Level: advsecurity

Configuration register is 0x2102

**IAD881BRI\_2#sh run**

Building configuration...

Current configuration : 2408 bytes

!

version 12.4

no service pad

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

!

hostname IAD881BRI\_2

!

boot-start-marker

boot-end-marker

!

logging message-counter syslog

logging buffered 10000000

no logging console

!

no aaa new-model



```
network-clock-participate wic 0
```

```
!
```

```
!
```

```
ip source-route
```

```
!
```

```
!
```

```
ip cef
```

```
no ip domain lookup
```

```
!
```

```
!
```

```
!
```

```
isdn switch-type basic-qsig
```

```
isdn gateway-max-interworking
```

```
!
```

```
!
```

```
voice service voip
```

```
  signaling forward unconditional
```

```
  sip
```

```
    header-passing error-passthru
```

```
!
```

```
!
```

```
!
```

```
voice-card 0
```

```
!
```

```
!
```

```
!
```

```
!
```

```
!
```

```
!
```

```
archive
```

```
  log config
```

```
    hidekeys
```

```
!
```

```
!
```

```
!
```



```
!  
!  
!  
interface BRI1  
no ip address  
shutdown  
!  
interface BRI2  
no ip address  
isdn switch-type basic-qsig  
isdn timer T310 120000  
isdn overlap-receiving  
isdn protocol-emulate network  
isdn point-to-point-setup  
isdn layer1-emulate network  
isdn incoming-voice voice  
isdn global-disconnect  
isdn skipsend-idverify  
!  
interface FastEthernet0  
!  
interface FastEthernet1  
!  
interface FastEthernet2  
!  
interface FastEthernet3  
!  
interface FastEthernet4  
ip address 172.20.8.40 255.255.255.0  
duplex auto  
speed auto  
!  
interface Vlan1  
no ip address  
!
```



```
ip forward-protocol nd
ip route 0.0.0.0 0.0.0.0 172.20.8.1
no ip http server
no ip http secure-server
!
!
!
!
!
!
!
control-plane
!
!
voice-port 1
!
voice-port 2
compand-type a-law
!
!
!
!
!
dial-peer voice 1100 voip
description to Ericsson 11XX
destination-pattern 13..
signaling forward rawmsg
session protocol sipv2
session target ipv4:172.20.110.80
!
dial-peer voice 4200 pots
destination-pattern 43..
incoming called-number 11..
direct-inward-dial
port 2
```



```
forward-digits all
!
!
sip-ua
!
!
line con 0
password cisco
login
no modem enable
line aux 0
line vty 0 4
exec-timeout 0 0
password cisco
login
!
exception data-corruption buffer truncate
scheduler max-task-time 5000
end

IAD881BRI_2#
```

## Acronyms

Acronym	Definitions
Cisco IOS	Cisco Internetwork Operating System
CCBS	Call Completion to Busy Subscriber
CCNR	Call Completion on No Reply
CFB	Call Forwarding on Busy
CFNR	Call Forwarding No Reply
CFU	Call Forwarding Unconditional
CLIP	Calling Line (Number) Identification Presentation
CLIR	Calling Line (Number) Identification Restriction
CNIP	Calling Name Identification Presentation
CNIR	Calling Name Identification Restriction
COLP	Connected Line (Number) Identification Presentation



Acronym	Definitions
CUBE	Cisco Unified Border Element (formerly Multi-Service IP-to-IP gateway, or Session Border Controller)
PBX	Private Branch Exchange
RTP	Real-Time Protocol
SIP	Session Initiation Protocol
UUIE	User-to-user information element



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