

Ericsson MD-110 Release BC11 using E1 QSIG to Cisco Unified CallManager 4.0

November 12, 2007 Revision 2

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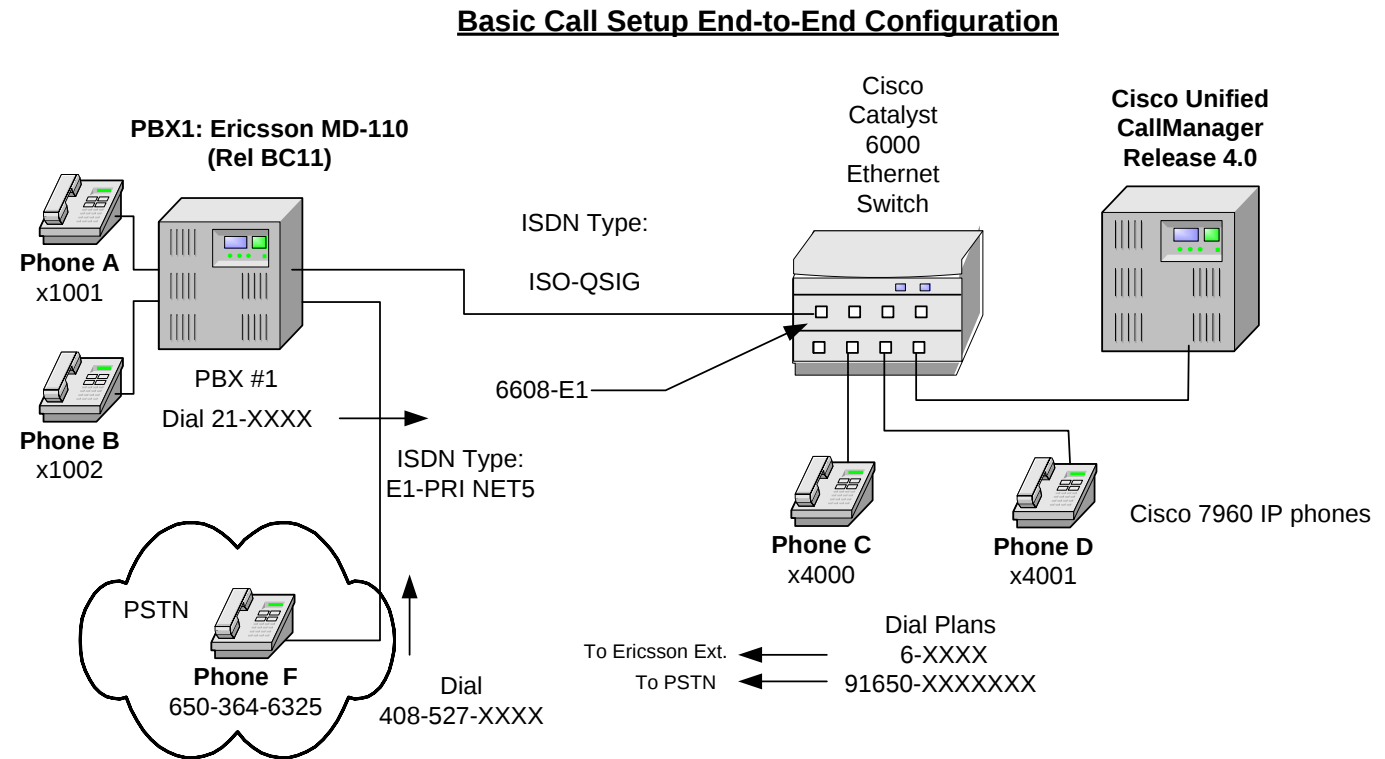
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Introduction

- This is an application note for connectivity of Ericsson MD-110 Release BC11 PBX with Cisco Unified CallManager (CUCM) Rel 4.0 using Cisco 6608-E1 QSIG as MGCP gateway.
- The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability with the Cisco Unified CallManager connected to the PBX via 6608-E1 QSIG link as MGCP gateway.
- Connectivity is achieved by using the PRI ISO QSIG E1 protocol type on the MGCP gateway and an ISO-QSIG switch type on the Ericsson PBX.
- Basic calls worked fine in both directions with Calling/Connected Name and Number features support.
- For Name display service, Calling/Connected Name features are correctly displayed on IP phones and Ericsson phones.

Network Topology

Figure 1. Network Topology



Limitations

Calling Name and Number Features

- The Ericsson PBX does not support updating Connected Name and Number on the originating side phone after transferring a call.
- CUCM Parche release does not support sending Alerting Name or Busy Name Identification information.

System Components

Hardware Requirements

- Cisco Hardware:
 - Cisco Catalyst 6000 switch with 6608-E1 gateway
 - Cisco CallManager 4.0
- Ericsson MD-110 PBX Hardware:
 - TLU76/1, E1 PRI/QSIG

Software Requirements

- PBX Software Release BC11
- Cisco Unified CallManager 4.0



- Cisco WS-X6608-E1 gateway Version 7.6(2)

Features

Features Supported

- Calling Name Identification
- Calling Number Identification
- Connected Name Identification
- Connected Number Identification

Features Not Supported

- Alerting Name Identification
- Busy Name Identification
- Updating Connected Name and Number for Call Transfers is not supported by Ericsson MD110 BC11 PBX.

Configuration

Configuring the Ericsson MD-110 PBX

Warning: The Ericsson MD-110 PBX user interface is very cryptic. All parameters and options are mapped to position-dependent numeric fields within the various commands listed below. The user 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. Ex. Traffic direction, services, Bearer capabilities.

```
< ROCAP:ROU=1;  
ROUTE CATEGORY DATA
```

ROU SEL	TRM SERV	NODG	DIST	DISL	TRAF	SIG	BCAP
1	411000000070001	4	3110000011	0	30	128	00151515 111110000031 001100

END

Route Data Initiate

E1-QSIG Route Protocol Characteristics, protocol side "User"

```
< RODAP:ROU=1;  
ROUTE DATA
```

ROU	TYPE	VARC	VARI	VARO	FILTER
1	SL60	H'00001310	H'15440000	H'06004010	NO

END

E1-QSIG Route Protocol Characteristics, protocol side "Network"

```
< RODAP:ROU=1;  
ROUTE DATA
```

ROU	TYPE	VARC	VARI	VARO	FILTER
1	SL60	H'00001310	H'15440000	H'06204010	NO

END

Route Equipment Initiate

E1-QSIG trunk lines (B-channels)

```
< ROEDP:ROU=1,TRU=ALL;  
ROUTE EQUIPMENT DATA
```

ROU CNTRL	TRU	EQU	SQU	INDDAT
1	001-1	001-0-30-01		H'000000000000
1	001-2	001-0-30-02		H'000000000000
1	001-3	001-0-30-03		H'000000000000
1	001-4	001-0-30-04		H'000000000000



1	001-5	001-0-30-05	H'000000000000
1	001-6	001-0-30-06	H'000000000000
1	001-7	001-0-30-07	H'000000000000
1	001-8	001-0-30-08	H'000000000000
1	001-9	001-0-30-09	H'000000000000
1	001-10	001-0-30-10	H'000000000000
1	001-11	001-0-30-11	H'000000000000
1	001-12	001-0-30-12	H'000000000000
1	001-13	001-0-30-13	H'000000000000
1	001-14	001-0-30-14	H'000000000000
1	001-15	001-0-30-15	H'000000000000
1	001-16	001-0-30-17	H'000000000000
1	001-17	001-0-30-18	H'000000000000
1	001-18	001-0-30-19	H'000000000000
1	001-19	001-0-30-20	H'000000000000
1	001-20	001-0-30-21	H'000000000000
1	001-21	001-0-30-22	H'000000000000
1	001-22	001-0-30-23	H'000000000000
1	001-23	001-0-30-24	H'000000000000
1	001-24	001-0-30-25	H'000000000000
1	001-25	001-0-30-26	H'000000000000
1	001-26	001-0-30-27	H'000000000000
1	001-27	001-0-30-28	H'000000000000
1	001-28	001-0-30-29	H'000000000000
1	001-29	001-0-30-30	H'000000000000
1	001-30	001-0-30-31	H'000000000000

END

Route External Destination Data Initiate

Route and Access Code for the trunk Information- Note QSIG uses Route 1

< **RODDP:DEST=ALL;**
EXTERNAL DESTINATION ROUTE DATA

DEST	DRN	ROU	CHO	CUST	ADC	TRC	SRT	NUMACK	PRE
21		1			12250000000002501020011	0	3	0	

END



Configuring the Cisco Unified CallManager

6608-E1 Gateway Configuration

[System](#) [Route Plan](#) [Service](#) [Feature](#) [Device](#) [User](#) [Application](#) [Help](#)

Cisco CallManager Administration
For Cisco IP Telephony Solutions

CISCO SYSTEMS

Gateway Configuration

[Back to Find/List Gateways](#)
[Dependency Records](#)

Product : Cisco Catalyst 6000 E1 VoIP Gateway
Gateway : S0/DS1-0@SDA0001C9D8633E
Device Protocol: Digital Access PRI
Registration: Registered with Cisco CallManager 172.20.32.254
IP Address: [172.20.32.103](#)

Status: Update completed.

Device Information

MAC Address*	0001C9D8633E
Description	SDA0001C9D8633E
Device Pool*	Default
Network Locale	United States
Media Resource Group List	< None >
Location	< None >
AAR Group	< None >
Load Information	

Multilevel Precedence and Preemption (MLPP) Information

MLPP Domain (e.g., "0000FF")	
MLPP Indication	Not available on this device
MLPP Preemption	Not available on this device

Interface Information

PRI Protocol Type*	PRI ISO QSIG E1
Protocol Side*	User
Channel Selection Order*	Top Down
Channel IE Type*	Timeslot Number

PCM Type*	A-law
Delay for first restart (1/8 sec ticks)	32
Delay between restarts (1/8 sec ticks)	4
☒ Inhibit restarts at PRI initialization ☐ Enable status poll	
Call Routing Information	
Inbound Calls	
Significant Digits*	All
Calling Search Space	Phones
AAR Calling Search Space	< None >
Prefix DN	
Outbound Calls	
Calling Line ID Presentation*	Default
Calling Party Selection*	Originator
Called party IE number type unknown*	Cisco CallManager
Calling party IE number type unknown*	Cisco CallManager
Called Numbering Plan*	Private
Calling Numbering Plan*	Cisco CallManager
Number of digits to strip*	0
Caller ID DN	
SMDI Base Port*	0
PRI Protocol Type Specific Information	
☒ Display IE Delivery ☒ Redirecting Number IE Delivery - Outbound ☒ Redirecting Number IE Delivery - Inbound ☒ Send Extra Leading Character In DisplayIE*** ☐ Setup non-ISDN Progress Indicator IE Enable****	

☐	MCDN Channel Number Extension Bit Set to Zero**
☐	Send Calling Name In Facility IE
☐	Interface Identifier Present**
Interface Identifier Value**	0
Connected Line ID Presentation (QSIG Inbound Call)*	Default
Connected PBX Model	None

Product Specific Configuration 	
Clock Reference*	Network
Framing*	CRC4
Audio Signal Adjustment into IP Network*	NoDbPadding
Audio Signal Adjustment from IP Network*	NoDbPadding
Zero Suppression*	HDB3
Digit On Duration(50-500ms)*	100
Interdigit Duration(50-500msec)*	100
SNMP Community String	public
Disable SNMP Set operations*	☐
Debug Port Enable*	☒
Hold Tone Silence Duration*	0
Port Used for Voice Calls*	☒
Port Used for Modem Calls*	☒
Port Used for Fax Calls*	☒

Fax and Modem Parameters	
Fax Relay Enable*	☒
Fax Error Correction Mode Override*	☒
Maximum Fax Rate*	14400bps
Fax Payload Size*	20
Non Standard Facilities Country Code*	65535

Non Standard Facilities Vendor Code*	65535
Fax/Modem Packet Redundancy*	☐
NSE Type*	Non-IOS Gateways

Playout Delay Parameters

Initial Playout Delay*	40
Minimum Playout Delay*	20
Maximum Playout Delay*	150

Echo Canceller Configuration

Echo TailLength (ms)*	32 ms
Minimum ERL (db)*	6 db

* indicates required item
** applicable to DMS-100 protocol only
*** applicable to DMS-100 protocol and DMS-250 protocol only
**** may be required to force ringback from some PBXs



Enbloc Route Pattern Configuration

Route Pattern/Hunt Pilot: 6.XXXX
Status: Update completed
Note: Any update to this Route Pattern or Hunt Pilot automatically resets the associated gateway or Route/Hunt List

CopyUpdateDelete

Pattern Definition

Route Pattern/Hunt Pilot*	6.XXXX
Partition	< None >
Description	
Numbering Plan*	North American Numbering Plan
Route Filter	< None >
MLPP Precedence	Default
Gateway or Route/Hunt List*	S0/DS1-0@SDA0001C9D8633E (Edit)
Route Option	☒ Route this pattern ☐ Block this pattern — Not Selected —
☒ Provide Outside Dial Tone ☐ Allow Overlap Sending ☐ Urgent Priority	

Calling Party Transformations

☐ Use Calling Party's External Phone Number Mask

Calling Party Transform Mask	
Prefix Digits (Outgoing Calls)	
Calling Line ID Presentation	Default
Calling Name Presentation	Default

Connected Party Transformations

Connected Line ID Presentation	Default
Connected Name Presentation	Default

Called Party Transformations

Discard Digits	PreDot
Called Party Transform Mask	
Prefix Digits (Outgoing Calls)	

ISDN Network-Specific Facilities Information Element

Carrier Identification Code	
Network Service Protocol	— Not Selected —
Network Service	— Not Selected —
Service Parameter Name	< Not Exist >
Service Parameter Value	



Overlap Sending Route Pattern Configuration

Route Pattern/Hunt Pilot: 9.X
Status: Ready
Note: Any update to this Route Pattern or Hunt Pilot automatically resets the associated gateway or Route/Hunt List

Copy Update Delete

Pattern Definition

Route Pattern/Hunt Pilot*	9.X	
Partition	< None >	
Description		
Numbering Plan*	North American Numbering Plan	
Route Filter	< None >	
MLPP Precedence	Default	
Gateway or Route/Hunt List*	S0/DS1-0@SDA0001C9D8633E (Edit)	
Route Option	☒ Route this pattern ☐ Block this pattern — Not Selected —	
☒ Provide Outside Dial Tone	☒ Allow Overlap Sending	☐ Urgent Priority

Calling Party Transformations

☐ Use Calling Party's External Phone Number Mask

Calling Party Transform Mask		
Prefix Digits (Outgoing Calls)		
Calling Line ID Presentation	Default	
Calling Name Presentation	Default	

Connected Party Transformations

Connected Line ID Presentation	Default	
Connected Name Presentation	Default	

Called Party Transformations

Discard Digits	PreDot	
Called Party Transform Mask		
Prefix Digits (Outgoing Calls)		

ISDN Network-Specific Facilities Information Element

Carrier Identification Code		
Network Service Protocol	— Not Selected —	
Network Service	Service Parameter Name	Service Parameter Value
— Not Selected —	< Not Exist >	



7960 IP phone Configuration

Phone Configuration

[Add a new phone](#)
[Add/Update Speed Dials](#)
[Subscribe/Unsubscribe Services](#)
[Dependency Records](#)
[Back to Find/List Phones](#)

Directory Numbers

Base Phone

Line 1 - 4001 in
Phones

Line 2 - Add new DN

Phone: SEP003094C39863 (Auto 4001)
Registration: Registered with Cisco CallManager 172.20.32.254
IP Address: **172.20.32.110**
Status: Ready

Phone Configuration (Model = Cisco 7960)

Device Information

MAC Address*	003094C39863
Description	Auto 4001
Owner User ID	(Select User ID)
Device Pool*	Default (View details)
Calling Search Space	< None >
AAR Calling Search Space	< None >
Media Resource Group List	< None >
User Hold Audio Source	< None >
Network Hold Audio Source	< None >
Location	< None >
User Locale	< None >
Network Locale	< None >
Device Security Mode	Use System Default
Built In Bridge	Default
Privacy	Default

Phone Button Template Information

Phone Button Template*	Standard 7960 (View button list)
------------------------	---

Softkey Template Information

Softkey Template	< None >
------------------	---

Expansion Module Information

Module 1	< None >
Module 2	< None >



Module 1 Load Name		(Module 1 selection required)
Module 2 Load Name		(Module 2 selection required)
Cisco IP Phone - External Data Locations (leave blank to use default)		
Information		
Directory		
Messages		
Services		
Authentication Server		
Proxy Server		
Idle		
Idle Timer (seconds)		
Extension Mobility (Device Profile) Information		
☐ Enable Extension Mobility Feature		
Log Out Profile	— Not Selected —	
Log In User ID	< None >	
Log In Time	< None >	
Log Out Time	< None >	
Multilevel Precedence and Preemption (MLPP) Information		
MLPP Domain	(e.g., "0000FF")	
MLPP Indication	Default	
MLPP Preemption	Default	
Product Specific Configuration 		
Disable Speakerphone	☐	
Disable Speakerphone and Headset	☐	
Forwarding Delay*	Disabled	
PC Port*	Enabled	
Settings Access*	Enabled	
Gratuitous ARP*	Enabled	
PC Voice VLAN Access*	Enabled	
Video Capabilities*	Disabled	
Auto Line Select*	Disabled	

Directory Number Configuration

[Configure Device \(SEP003094C39863\)](#)
[Dependency Records](#)

Associated With

 **SEP003094C39863**
 7960 (Line 1)

Directory Number: 4001 (Phones)

Status: Ready

Note: Any update to this Directory Number automatically resets the associated devices

[Update](#)

[Remove from Device](#)

[Reset Devices](#)

Directory Number

Directory Number*

Partition

Directory Number Settings

Voice Mail Profile
 (Choose <None> to use default)

Calling Search Space

AAR Group

User Hold Audio Source

Network Hold Audio Source

Auto Answer

Call Forward and Pickup Settings

Voice Mail Destination

Calling Search Space

Forward All ☐

Forward Busy ☐

Forward No Answer ☐

No Answer Ring Duration (seconds)

Call Pickup Group

MLPP Alternate Party Settings

Target (Destination)

Calling Search Space

No Answer Ring Duration (seconds)

Line Settings for this Device

Display (Internal Caller ID)

Line Text Label

External Phone Number Mask

Message Waiting Lamp Policy	Use System Policy
Ring Setting (Phone Idle)	Use System Default
Ring Setting (Phone Active)**	Use System Default
Multiple Call / Call Waiting Settings	
Maximum Number of Calls*	4 (1 - 200)
Busy Trigger*	2 (<= Max. Calls)
Forwarded Call Information Display	
☒ Caller Name	☒ Caller Number
☒ Redirected Number	☒ Dialed Number
* indicates required item; changes to Line or Directory Number settings require restart. ** Ring Setting (Phone Active) applies to this line when any line on the phone has a call in progress. Note: If you are using a language other than English for Display (Internal Caller ID) or Line Text Label text, make sure the correct character set (shown below) is selected. Text displays incorrectly if the wrong charset is selected. (English characters are included in all character sets.)	
Character Set	Western European (Latin 1)



Acronyms

Acronym	Definitions
CUCM	Cisco Unified CallManager
PSTN	Public Switched Telephone Network



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