



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

November 12, 2007 Revision 2

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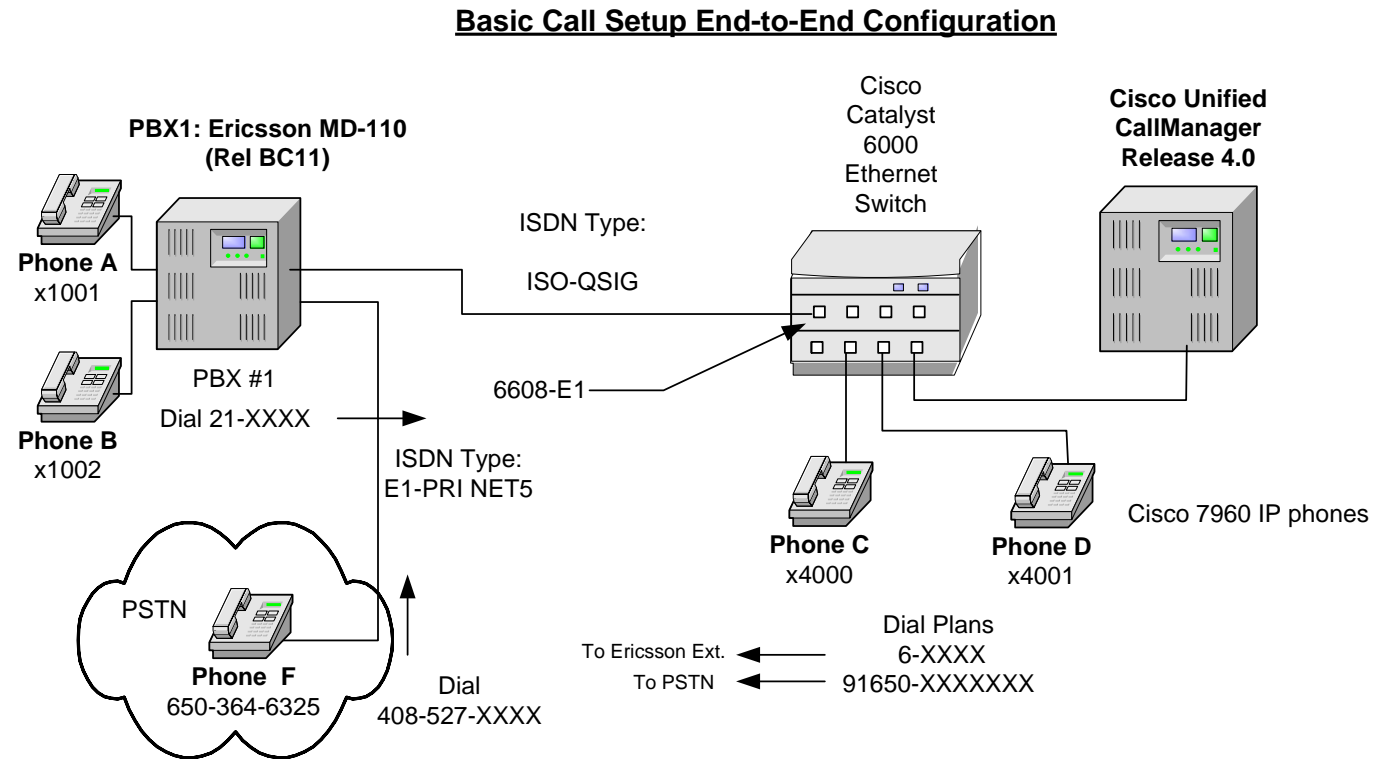
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Introduction

- 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*	<input type="text" value="0001C9D8633E"/>
Description	<input type="text" value="SDA0001C9D8633E"/>
Device Pool*	<input type="text" value="Default"/>
Network Locale	<input type="text" value="United States"/>
Media Resource Group List	<input type="text" value="< None >"/>
Location	<input type="text" value="< None >"/>
AAR Group	<input type="text" value="< None >"/>
Load Information	<input type="text"/>


Multilevel Precedence and Preemption (MLPP) Information

MLPP Domain (e.g., "0000FF")	<input type="text"/>
MLPP Indication	Not available on this device
MLPP Preemption	Not available on this device

Interface Information

PRI Protocol Type*	<input type="text" value="PRI ISO QSIG E1"/>
Protocol Side*	<input type="text" value="User"/>
Channel Selection Order*	<input type="text" value="Top Down"/>
Channel IE Type*	<input type="text" value="Timeslot Number"/>

PCM Type*	A-law
Delay for first restart (1/8 sec ticks)	32
Delay between restarts (1/8 sec ticks)	4
<input checked="" type="checkbox"/> Inhibit restarts at PRI initialization	
<input type="checkbox"/> 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	
<input checked="" type="checkbox"/> Display IE Delivery	
<input checked="" type="checkbox"/> Redirecting Number IE Delivery - Outbound	
<input checked="" type="checkbox"/> Redirecting Number IE Delivery - Inbound	
<input checked="" type="checkbox"/> Send Extra Leading Character In DisplayIE***	
<input type="checkbox"/> Setup non-ISDN Progress Indicator IE Enable****	

<input type="checkbox"/>	MCDN Channel Number Extension Bit Set to Zero**
<input type="checkbox"/>	Send Calling Name In Facility IE
<input type="checkbox"/>	Interface Identifier Present**
Interface Identifier Value**	<input type="text" value="0"/>
Connected Line ID Presentation (QSIG Inbound Call)*	<input type="text" value="Default"/>
Connected PBX Model	<input type="text" value="None"/>
Product Specific Configuration 	
Clock Reference*	<input type="text" value="Network"/>
Framing*	<input type="text" value="CRC4"/>
Audio Signal Adjustment into IP Network*	<input type="text" value="NoDbPadding"/>
Audio Signal Adjustment from IP Network*	<input type="text" value="NoDbPadding"/>
Zero Suppression*	<input type="text" value="HDB3"/>
Digit On Duration(50-500ms)*	<input type="text" value="100"/>
Interdigit Duration(50-500msec)*	<input type="text" value="100"/>
SNMP Community String	<input type="text" value="public"/>
Disable SNMP Set operations*	<input type="checkbox"/>
Debug Port Enable*	<input checked="" type="checkbox"/>
Hold Tone Silence Duration*	<input type="text" value="0"/>
Port Used for Voice Calls*	<input checked="" type="checkbox"/>
Port Used for Modem Calls*	<input checked="" type="checkbox"/>
Port Used for Fax Calls*	<input checked="" type="checkbox"/>
Fax and Modem Parameters	
Fax Relay Enable*	<input checked="" type="checkbox"/>
Fax Error Correction Mode Override*	<input checked="" type="checkbox"/>
Maximum Fax Rate*	<input type="text" value="14400bps"/>
Fax Payload Size*	<input type="text" value="20"/>
Non Standard Facilities Country Code*	<input type="text" value="65535"/>

Non Standard Facilities Vendor Code*	<input type="text" value="65535"/>
Fax/Modem Packet Redundancy*	<input type="checkbox"/>
NSE Type*	<input type="text" value="Non-IOS Gateways"/>
Playout Delay Parameters	
Initial Playout Delay*	<input type="text" value="40"/>
Minimum Playout Delay*	<input type="text" value="20"/>
Maximum Playout Delay*	<input type="text" value="150"/>
Echo Canceller Configuration	
Echo TailLength (ms)*	<input type="text" value="32 ms"/>
Minimum ERL (db)*	<input type="text" value="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

Pattern Definition

Route Pattern/Hunt Pilot*

Partition

Description

Numbering Plan*

Route Filter

MLPP Precedence

Gateway or Route/Hunt List* [\(Edit\)](#)

Route Option

Route this pattern

Block this pattern

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

Calling Name Presentation

Connected Party Transformations

Connected Line ID Presentation

Connected Name Presentation

Called Party Transformations

Discard Digits

Called Party Transform Mask

Prefix Digits (Outgoing Calls)

ISDN Network-Specific Facilities Information Element

Carrier Identification Code

Network Service Protocol

Network Service	Service Parameter Name	Service Parameter Value
<input type="text" value="— Not Selected —"/>	<input type="text" value="< Not Exist >"/>	<input type="text"/>



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

Pattern Definition

Route Pattern/Hunt Pilot*

Partition

Description

Numbering Plan*

Route Filter

MLPP Precedence

Gateway or Route/Hunt List* [\(Edit\)](#)

Route Option

Route this pattern

Block this pattern

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

Calling Name Presentation

Connected Party Transformations

Connected Line ID Presentation

Connected Name Presentation

Called Party Transformations

Discard Digits

Called Party Transform Mask

Prefix Digits (Outgoing Calls)

ISDN Network-Specific Facilities Information Element

Carrier Identification Code

Network Service Protocol

Network Service	Service Parameter Name	Service Parameter Value
<input type="text" value=" — Not Selected —"/>	<input type="text" value=" < Not Exist >"/>	<input type="text"/>



7960 IP phone Configuration

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

Phone Configuration

Directory Numbers
Base Phone

- 7910 Line 1 - 4001 in
- 7910 Phones
- 7910 Line 2 - Add new DN
- 7910

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

Phone Button Template Information

Phone Button Template*	<input type="text" value="Standard 7960"/> (View button list)
------------------------	---


Softkey Template Information

Softkey Template	<input type="text" value="< None >"/>
------------------	---

Expansion Module Information

Module 1	<input type="text" value="< None >"/>
Module 2	<input type="text" value="< None >"/>



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

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	<input type="checkbox"/> <input type="text"/>	<input type="text" value=" < None >"/>
Forward Busy	<input type="checkbox"/> <input type="text"/>	<input type="text" value=" < None >"/>
Forward No Answer	<input type="checkbox"/> <input type="text"/>	<input type="text" value=" < None >"/>
No Answer Ring Duration	<input type="text"/> (seconds)	
Call Pickup Group	<input type="text" value=" < None >"/>	

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	<input type="text" value="Use System Policy"/>
Ring Setting (Phone Idle)	<input type="text" value="Use System Default"/>
Ring Setting (Phone Active)**	<input type="text" value="Use System Default"/>
Multiple Call / Call Waiting Settings	
Maximum Number of Calls*	<input type="text" value="4"/> (1 - 200)
Busy Trigger*	<input type="text" value="2"/> (<= Max. Calls)
Forwarded Call Information Display	
<input checked="" type="checkbox"/> Caller Name	<input checked="" type="checkbox"/> Caller Number
<input checked="" type="checkbox"/> Redirected Number	<input checked="" type="checkbox"/> Dialed Number
<p>* 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.</p>	
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 character set is selected. (English characters are included in all character sets.)	
Character Set	<input type="text" value="Western European (Latin 1)"/>



Acronyms

Acronym	Definitions
CUCM	Cisco Unified CallManager
PSTN	Public Switched Telephone Network



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