

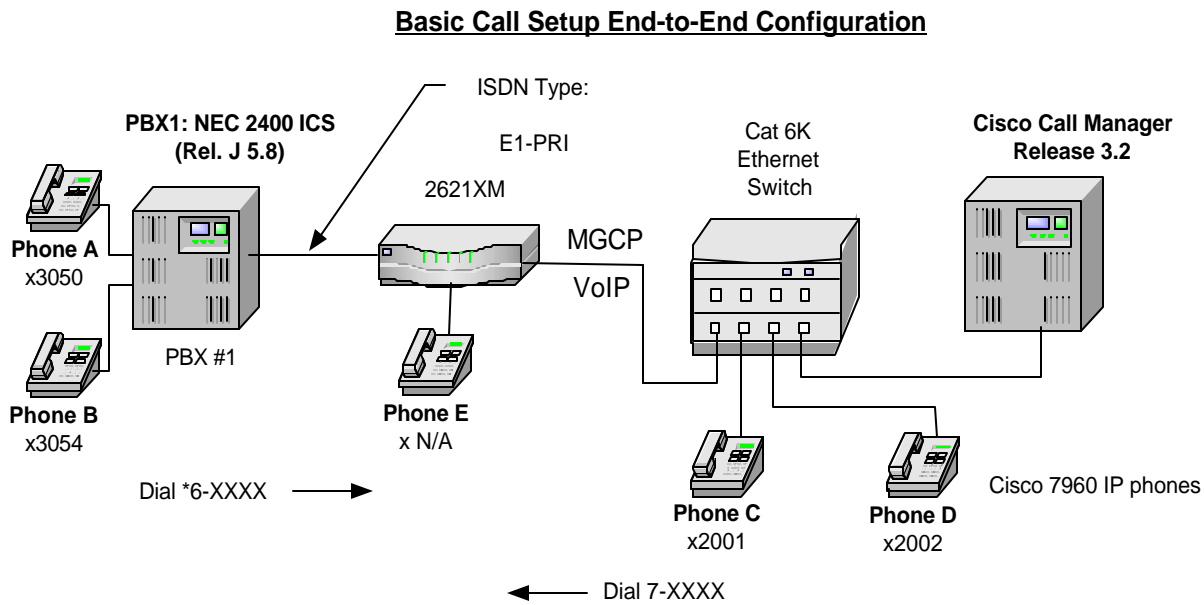
Cisco 2621 Gateway-PBX Interoperability: NEC 2400 ICS Release J.5.8 with CallManager Using 2621XM-E1 PRI as MGCP Gateway

Introduction

- This note describes the interoperability of the NEC 2400 ICS Release J.5.8 PBX and the Cisco 2621XM using-E1 PRI as MGCP Gateway.
- The Network Topology diagram shows the end-to-end interoperability.
- Connectivity is achieved by using the PRI EURO protocol type on the MGCP gateway and NEC/ETSI switch type on the NEC 2400 PBX.
- Features supported are as follows:
 - Calling Number Identification Presentation
 - Calling Number Identification Restriction

Network Topology

Figure 1. Network Topology





Limitations

- Calling name delivery and presentation feature is not supported by the NEC 2400 ICS PBX because the NEC 2400 PBX is using the ETSI standard and Cisco CallManager is using the ISO standard.
- Cisco CallManager does not send connected number information in the connect message back to the PBX.
- When calling from the Cisco 7960 IP phone to the NEC digital phone, both phones display the number after the call is answered.
- When calling from the NEC digital phone to the Cisco 7960 IP phone, the Cisco IP phone displays calling number when the call is answered. NEC phone does not get updated when the call is answered. It displays the numbers being dialed (for example. Access Code + extension number). It was verified using an ISDN protocol analyzer that the Cisco CallManager was not sending connected number information in the connect message back to PBX.
- Though the NEC 2400 PBX can be configured as either “network side” (master) or “user side” (slave), configuration as “network side” is not recommended. The NEC TAC center will not resolve a case presented with the NEC PBX configured as “network side”.

System Components

Hardware Requirements

- Cisco 2621XM with 2MFT-E1 port
- Cisco Catalyst 6000 switch
- Cisco CallManager 3.2
- NEC 2400 ICS PBX, PA-30PRTB

Software Requirements

- Cisco IOS Software Release 12.2(10.7)T2
- PBX Software Release J 5.8.
- Cisco CallManager Release 3.2

Configuration

Configuring the NEC 2400 ICS PBX

The NEC PBX requires a substantial amount of programming and circuit card switch settings to properly install E1 PRI. It is beyond the scope of this document to provide the entire configuration; therefore the NEC PBX information that follows is mostly helpful for NEC technicians. It is strongly recommended that you have a NEC ISDN certified technician set up the NEC portion. Refer to the NEC 2400 PBX documentation for complete configuration information

Install circuit card (PA-30PRTB) and set the switches.

Switch	Position	Description	Setting
SW00		Make Busy	Down
SW01	0	All Channel Make Busy	Off
	1	External Loop Back	Off
	2	Internal Loop Back	Off
	3	Dch Handler Make Busy	Off



Switch	Position	Description	Setting
SW02 (SENSE - Rotary)		1 = AT&T 2 = Australia 3 = NTT Japan 4 = NEC/ETSI 5 = AT&T 6 = INS A = Q.SIG	4
SW10	Jumper	Off = Coax On = Twisted Pair	On
SW11	Jumper	Off = Coax On = Twisted Pair	On
SW12	Jumper	Off = Coax On = Twisted Pair	On
SW13	1	On = PAD ROM Special Version Off = PAD ROM Standard Version	Off
	2	On = ISDN BUS Not Used Off = ISDN BUS Used	On
	3	Not Used	Off
	4	Not Used	Off
SW14	1	On = CCITT Signaling Off = CEPT Signaling	On
	2	On = Alarm Release: 2sec (Aus) Off = Alarm Release 15 Sec.	On
	3	PAD	On
	4	PAD	On
	5	PAD	On
	6	PAD	On
	7	PAD	On
	8	Fixed Off	Off
SW15	1	Loopback Pattern Off = Loopback inhibited	Off
	2	Loopback Pattern Off = Loopback inhibited	Off
	3	Loopback Pattern Off = Loopback inhibited	Off
	4	Loopback Pattern Off = Loopback inhibited	Off



Switch	Position	Description	Setting
	5	TS16 Control: On = Data Through (CCIS/ISDN) Off = Signaling	On
	6	On = No CRC4 Off = CRC4	Off
	7	Firmware (CCITT/China/Thailand/Aux)	On
	8	Firmware (CCITT/China/Thailand/Aux)	On
SW16	1	Fixed Off	Off
	2	Fixed Off	Off
	3	All "1" Supervision On = To be controlled Off = Not to be controlled	Off
	4	On = Dch User Side Off = Dch Network Side	On
	5	On = Dch NegativeLogic Off = Dch Positive Logic	Off
	6	On = Dch Packet Service On Off = Dch Packet Service Off	Off
	7	Fixed Off	Off
	8	Fixed Off	Off



Configure the route (ARTD). The following are the route settings found in ARTD. Route 12 is the B channel and route 13 is the D channel. Setting the NEC PBX to emulate the network side is not supported by NEC. However, you can have limited success emulating network side. CDN 64 must remain set to 0 or the calling number is not be passed.

[LRTD]

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* ROUTE CLASS DATA LIST *

CDN	FUNCTION	R O U T E N U M B E R				
		11	12	13	14	15
1	OSGS	7	0	0	0	0
2	ONSG	3	2	0	2	2
3	ISGS	7	0	0	0	0
4	INSG	3	2	0	2	2
5	TF	3	3	3	3	3
6	TCL	4	4	4	4	4
7	L/T	1	1	1	1	1
8	RLP	2	2	0	2	0
9	TQ	0	0	0	0	0
10	SMDR	0	1	1	1	1
11	TD	0	0	0	0	0
12	DR	0	0	0	0	0
13	AC	1	1	0	1	0
14	TNT	0	0	0	0	0
15	LSG	5	12	13	12	13
16	SMDR2	0	0	0	0	0
17	H/M	0	0	0	0	0
18	MC	0	0	0	0	0
19	ANI	0	1	1	1	0
20	D	0	0	0	0	0
21	MSB	0	0	0	0	0
22	MSW	0	0	0	0	0
23	TR	0	0	0	0	0
24	OC	0	0	0	0	0
25	R/L	0	0	0	0	0
26	RVSD	0	0	0	0	0
27	TL	0	0	0	0	0
28	ANS	0	1	1	1	1
29	TELP	0	0	0	0	0
30	PAD	0	4	7	4	7
31	OGRL	0	1	1	1	1
32	ICRL	0	1	1	1	1
33	HD	0	0	0	0	0
34	GUARD	0	1	1	1	1
35	WINK	0	0	0	0	0
36	VAD	0	0	0	0	0
37	CLD	0	0	0	0	0
38	FA	0	0	0	0	0



[LRTD]

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* ROUTE CLASS DATA LIST *

CDN FUNCTION	R O U T E				N U M B E R	
	11	12	13	14	15	
39 BC	0	0	0	0	0	
40 TCM	0	0	0	0	0	
41 TDMQ	0	0	0	0	0	
42 TRSC	0	0	0	0	0	
43 BT	0	1	0	1	1	
44 PRV	0	0	0	0	0	
45 A/D	0	1	1	1	1	
46 CW	0	0	0	0	0	
47 TPQ	0	0	0	0	0	
48 BL	0	0	0	0	0	
49 TRKS	0	1	1	0	0	
50 DPLY	0	1	1	1	1	
51 ACD	0	0	0	0	0	
52 2W/4W	1	0	0	0	0	
53 FAAT	0	0	0	0	0	
54 GW	0	0	0	0	0	
55 TCMA	0	0	0	0	0	
56 SMDR3	0	0	0	0	0	
57 HDT	0	0	0	0	0	
58 CD	0	0	0	0	0	
59 CCH	0	0	0	0	0	
60 TC/EC	0	0	0	0	0	
61 IRE	0	0	0	0	0	
62 SCR	0	0	0	0	0	
63 LYER1	0	1	1	1	1	
64 NET	0	1	0	0	0	
65 INT	0	4	4	4	4	
66 DC	0	4	4	4	4	
67 HKS	0	0	0	0	0	
68 SCF	0	0	0	0	0	
69 SMDR4	0	0	0	0	0	



Configuring Cisco CallManager

Configure the MGCP 2621XM-E1 gateway. Use the following screen as a reference.

Cisco CallManager Administration - MGCP Configuration - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Address -4454-B075-E45E2BACCD1 Go Links

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration

For Cisco IP Telephony Solutions

CISCO SYSTEMS

MGCP Configuration

[Back to Find/List Gateways](#)

Product: Cisco 26XX
MGCP : MGCP_2621XM

Status: Ready

Update Delete Reset Gateway Cancel Changes

MGCP Domain Name* MGCP_2621XM

Description 2621XM MGCP Gateway

Cisco CallManager Group* Default

Installed Voice Interface Cards		Endpoint Identifiers	
Module in Slot 1	NM-HDV		
Sub-Unit 0	VVIC-2MFT-E1	(1/0) ES PRI	(1/1)

Product Specific Configuration

Global ISDN Switch Type EURO

Switchback Timing* Graceful

Switchback uptime-delay (min) 10

Switchback schedule (hh:mm) 12:00

* indicates required item

[Back to Find/List Gateways](#)

Local intranet



Configure the ISDN PRI. Use the following screens as a reference.

The screenshot shows the Cisco CallManager Administration web interface in Microsoft Internet Explorer. The browser title is "Cisco CallManager 3.2 Administration - Gateway Configuration - Microsoft Internet Explorer". The address bar shows "http://10.1.1.220:8443/4454-B075-E45E2BACCD1". The page has a navigation menu with "System", "Route Plan", "Service", "Feature", "Device", "User", "Application", and "Help". The main content area is titled "Gateway Configuration" and includes a Cisco Systems logo. Below the title are two links: "Back to MGCP Configuration" and "Back to Find/List Gateways". The configuration details for a gateway are as follows:

- Product : Cisco 26XX
- Gateway : S1/DS1-0@MGCP_2621XM
- Device Protocol: Digital Access PRI
- Registration: Registered with Cisco CallManager 10.1.1.2
- IP Address: 10.1.1.220

The status is "Update completed.". Below this are four buttons: "Update", "Delete", "Reset Gateway", and "Cancel Changes". A table of configuration parameters is shown below:

End-Point Name*	S1/DS1-0@MGCP_2621XM
Description	S1/DS1-0@MGCP_2621XM
Device Pool*	Default
Media Resource Group List	< None >
Network Hold Audio Source	< None >
User Hold Audio Source	< None >
Calling Search Space	< None >
Location	< None >
Load Information	
Channel Selection Order*	Top Down
Protocol Side*	Network
Caller ID DN	
Calling Party Selection*	Originator
Channel IE Type*	Use Number when 1B

At the bottom of the browser window, a status bar shows "Reset succeeded." and "Local intranet".



Cisco CallManager 3.2 Administration - Gateway Configuration - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Address { -4454-B075-E45E2BACCD1 } Go Links >>

MCDN Channel Number Extension Bit Set to Zero**	<input type="checkbox"/>
Interface Identifier Present**	<input type="checkbox"/>
Interface Identifier Value**	<input type="text" value="0"/>
Display IE Delivery	<input checked="" type="checkbox"/>
Redirecting Number IE Delivery - Outbound	<input checked="" type="checkbox"/>
Redirecting Number IE Delivery - Inbound	<input type="checkbox"/>
Delay for first restart (1/8 sec ticks)	<input type="text" value="32"/>
Delay between restarts (1/8 sec ticks)	<input type="text" value="4"/>
Num Digits*	<input type="text" value="23"/>
Sig Digits	<input checked="" type="checkbox"/>
Prefix DN	<input type="text"/>
Presentation Bit*	<input type="text" value="Allowed"/>
Called party IE number type unknown*	<input type="text" value="Cisco CallManager"/>
Calling party IE number type unknown*	<input type="text" value="Cisco CallManager"/>
Called Numbering Plan*	<input type="text" value="Cisco CallManager"/>
Calling Numbering Plan*	<input type="text" value="Cisco CallManager"/>
PRI Protocol Type*	<input type="text" value="PRI EURO"/>
Inhibit restarts at PRI initialization	<input checked="" type="checkbox"/>
Enable status poll	<input type="checkbox"/>
Number of digits to strip*	<input type="text" value="0"/>
Network Locale	<input type="text" value=" < None >"/>
Setup non-ISDN Progress Indicator IE Enable****	<input type="checkbox"/>

Product Specific Configuration

Reset succeeded. Local intranet

Con



Cisco CallManager 3.2 Administration - Gateway Configuration - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Address -4454-B075-E45E2BACCD1 Go Links >>

Product Specific Configuration

Line Coding*	HDB3
Framing*	CRC4
Clock*	External

* 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

[Back to MGCP Configuration](#)
[Back to Find/List Gateways](#)

Reset succeeded. Local intranet



Configure the route pattern. Use the following screens as a reference.

Cisco CallManager Administration
For Cisco IP Telephony Solutions

Route Pattern Configuration

[Add a New Route Pattern](#)
[Back to Find/List Route Patterns](#)

Route Pattern: 7.XXXX
Status: Ready
Note: Any update to this route pattern automatically resets the associated gateway/route list

Copy Update Delete Cancel Changes

Pattern Definition

Route Pattern*	7.XXXX
Partition	< None >
Numbering Plan*	North American Numbering Plk
Route Filter	< None >
Gateway/Route List*	S1/DS1-0@MGCP_2621XM (Edit)
Route Option	<input checked="" type="radio"/> Route this pattern <input type="radio"/> Block this pattern
<input checked="" type="checkbox"/> Provide Outside Dial Tone	<input type="checkbox"/> Urgent Priority

Calling Party Transformations

Use Calling Party's External Phone Number Mask

Calling Party Transform Mask	
Prefix Digits (Outgoing Calls)	

Called Party Transformations

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

* indicates required item.



```
isdn protocol-emulate network
isdn incoming-voice voice
isdn bind-13 ccm-manager
no cdp enable
!
ip classless
no ip http server
ip pim bidir-enable
!
!
!
!
call rsvp-sync
!
voice-port 1/0:15
!
mgcp
mgcp call-agent 10.1.1.2 service-type mgcp version 0.1
mgcp dtmf-relay voip codec all mode out-of-band
mgcp modem passthrough voip mode nse
mgcp package-capability rtp-package
no mgcp timer receive-rtcp
mgcp sdp simple
!
mgcp profile default
!
dial-peer cor custom
!
!
!
dial-peer voice 1015 pots
  application mgcpapp
  port 1/0:15
!
!
line con 0
line aux 0
line vty 0 4
  login
line vty 5 15
  login
!
!
end

MGCP_2621XM#
```

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