Cisco Unified CallManager Release 4.01-PBX Interoperability: Octel Model 250 Serial MCI with NEC 2400 IPX Release 15 to a Cisco Catalyst 6500 using 6608 T1-CAS and Cisco VG248 with MGCP

Introduction

The network topology shows the Octel VoiceMail with two serial MCI connections and analog voice ports. One connection is to the NEC 2400 PBX and the second connection is through the VG248 to the Cisco Unified CallManager. The Cisco Unified CallManager is also connected with T1 CAS through a 6608 T1 blade in a Cisco 6500 Switch to the NEC 2400 IPX for normal voice calls.

In this topology all forwarding to voice mail and message lamp functions worked as expected to and from both systems.

Calls were made from the NEC digital phones, across the T1 CAS trunk, to the IP phones that were forwarded (RNA, BNA, ACF) to voice mail. Voice messages were left and it was confirmed that the IP phone message light turned on. Messages were retrieved from voice mail and it was confirmed that the message light on the IP phone turned off.

Calls were made from the IP phones, across the T1 CAS trunk, to the NEC digital phones that were forwarded (RNA, BNA, ACF) to voice mail. Voice messages were left and it was confirmed that the NEC digital phone message light turned on. Messages were retrieved from voice mail and it was confirmed that the message light on the NEC digital phone turned off.

Network Topology

Figure 1.   Test Setup
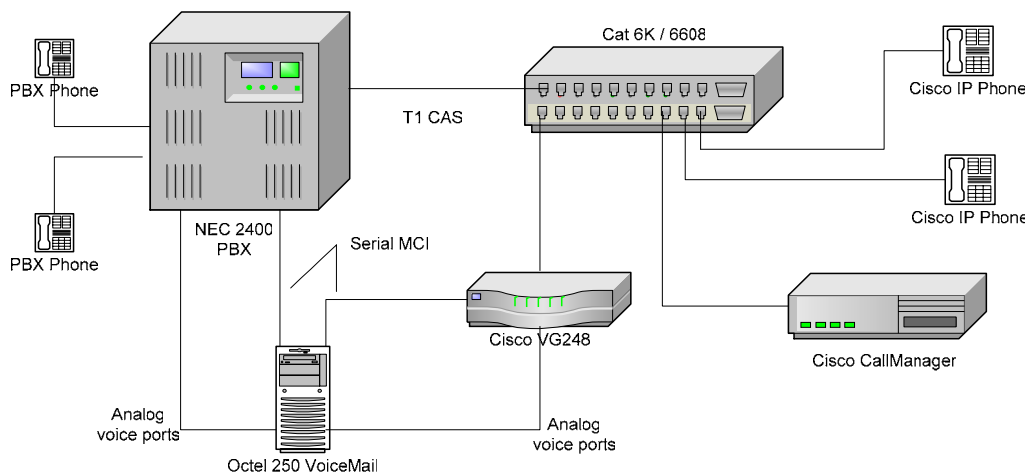
Limitations

It is important that a numbering plan is maintained and that there are **no** duplicate subscriber extensions appearing in both systems.

System Components

Software Requirements

Cisco Unified CallManager Release 4.01

PBX software release 15

Cisco VG248

– Loader version : 1.0(1)

– Software version : 1.2(1)

– DSP firmware version : 3.6(20x)

Configuration

NEC 2400 IPX Configuration

[IPX-R15_IP::LSHU]   PBX-LAB-IPX   April 19, 2005

* Station Hunting Group - UCD List *	
Starting	Ending
Tenant 1 Station 4005	Tenant 1 Station 4010

Tenant: 1   CNT : 4

Hunt Group Members (in hunt sequence)
4005	4006	4007	4008

[IPX-R15_IP::LUCD]   PBX-LAB-IPX   April 19, 2005

* UCD Control Data List *	
Starting	Ending

TN	STN	QTH ACT	QTH	CWT	MCI
1	4005	0	-	1	0

Type	Version	Issue
Main Memory	15	02.00
Boot ROM	H	02.00
IP	–	–
ACDP	–	–
MAT	15	02.00
TCP/IP	5	01.00
PHDP	2	02.00

AIOC(Assignment of IOC Port Data)

IOC	TERMINAL	SPEED	PARITY BIT	STOP BIT	CHARACTER BIT
2	1	6	1	3	1

IOC (IOC Port Number.) {0-7}

TERMINAL (Terminal Kind.) {0-10}
  0 : Not Assigned
  1 : PRINTER/MCI
  2 : MAT
  3 : CMAT
  4 : SMDR(FREE WHEELING)
  5 : SMDR(BSC)
  6 : ATM Module
  7 : PMS
  8 : H/M PRINTER
  9 : ATT0
 10 : ATT1
*7-10 is effective at H/M SYSTEM

SPEED {0-6}
  0 : Default(4800bps)
  1 : 300bps
  2 : 600bps
  3 : 1200bps
  4 : 2400bps
  5 : 4800bps
  6 : 9600bps

PARITY BIT {0-3}
  0 : Non Parity
  1 : Odd Parity
  2 : Even Parity
  3 : Non Parity

STOP BIT {0-3}
  0 : 2bits
  1 : 1bit
  2 : 1.5bits
  3 : 2bits

CHARACTER BIT {0-1}
  0 : 8bits
  1 : 7bits

Octel 250 Configuration

```
                   Welcome to the Octel voice/data network.

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network data or program is prohibited.

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                        Menu 1 - System Parameters              PBX LAB
                         - Installation Information -

Company Name   : XYZ                VPMOD ID: PBX LAB
Company Address: 123 West Anywhere Drive

Company Phone Number (include area code): 4085252000
VPMOD Phone Number (include area code): 4085252001     Extension:
Number of Rings for Local and Long Distance Calls (Used for Outcalls): 6
ACP Used for Integration: N
Type of PBX or Centrex VPMOD is on:  A - NEC 2400 MMG/MCI
   Number of Digits in Extension (Used for Outcalling and ECP): 4
   Number of Digits in Extension (Used for Message Waiting): 4
   Number of Rings for On-PBX Calls (Used for Outcalling): 3
   Number of Rings for On-PBX Calls (Used for ECP): 2
   Sender ID Used for Telephone Answering Messages: 1 - "Outside Caller"
Saved Messages - Keep Date/Time Stamp of When the Message was Received: N
Block Messages to Uninitialized Mailboxes (Y/N): N
ANI Used for Integration: N


                        Menu 4 - Port Assignments              PBX LAB

    1 - Ports 1A-3H

    2 - Ports 4A-6H

    3 - Ports 7A-9H

    4 - Ports 10A - 12H

    5 - Ports 13A - 15H

    6 - Ports 16A - 18H
```

```
                          Menu 4 - Port Assignments                PBX LAB

     Extension/                  Ln   Pt      Extension/                  Ln   Pt
Pt   Phone No.    I O T M N P F  Tp   D Gp   Pt  Phone No.    I O T M N P F  Tp   D Gp
--   ----------   - - - - - - -  ---  - --   --  ----------   - - - - - - -  ---  - --
1A   015091       Y N Y N N N N  39     1    2E
1B   024005       Y N Y N N N N  39     1    2F
1C                N N N N N N N  1    4 1    2G
1D                N N N N N N N  1    4 1    2H
1E                N N N N N N N  1    4 1    3A
1F                N N N N N N N  1    4 1    3B
1G                N N N N N N N  1    4 1    3C
1H                N N N N N N N  1    4 1    3D



             Menu 6 - Dialing and Serial Channel Parameters     PBX LAB


Link Number: 2


Link Name: NEC
Type of Switch to which the System is Integrated: A - NEC 2400 MMG/MCI

Baud Rate: 3 - 9600 Baud
Number of Data Bits: 0 - 7 Data Bits
Number of Stop Bits: 1 - 2 Stop Bits
Parity (None/Odd/Even): 1 - Odd Parity
XON/XOFF: 1 - Ignore XON/XOFF
Carrier Detect: 1 - Carrier Detect Not Used
Extension to Check SMDI Message Waiting:
Max. Msg. Waiting Operations per second: 1
Switch Number to which this Link is Associated: 1
SMDI link down alarm threshold counter: 1
```

Cisco Unified CallManager Configuration

Cisco CallManager Administration
For Cisco IP Telephony Solutions

CISCO SYSTEMS

Gateway Configuration

Back to Find/List Gateways

Product: Cisco VG248 Gateway
Gateway : VGCGW0AB73C0BC6

Status: Ready

| Update | Delete | Reset Gateway | Configure all ports like Port 1 | Cancel |

Mac Address (last 10 Characters)* `0AB73C0BC6`

Description `VGCGW0ab73c0bc6`

Load Information `[                    ]`

| **Installed Ports** | **Endpoint Identifiers** | | | |

`[48_PORTS ▼]`

(00) VGC

(01) VGC   (02) VGC   (03)   (04)
(05)   (06)   (07)   (08)
(09)   (10)   (11)   (12)
(13)   (14)   (15)   (16)
(17)   (18)   (19)   (20)
(21)   (22)   (23)   (24)
(25)   (26)   (27)   (28)
(29)   (30)   (31)   (32)
(33)   (34)   (35)   (36)
(37)   (38)   (39)   (40)
(41)   (42)   (43)   (44)
(45)   (46)   (47)   (48)

Phone Configuration

Directory Numbers

Base Phone

Line 1 - 5091 (no Partition)

Phone: VGC0AB73C0BC601 (VGC0AB73C0BC601)
Registration: Registered with Cisco CallManager 172.20.16.250
IP Address: 172.20.236.100

Status: Update completed

| Update | Delete | Reset Phone |

Phone Configuration (Model = Cisco VGC Phone)

Device Information

MAC Address*	0AB73C0BC601
Description	VGC0AB73C0BC601
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 >

Phone Button Template Information

| Phone Button Template* | Standard VGC Phone | (View button list) |

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

Product Specific Configuration

Call Control Mode*	Standard
Caller-ID*	Enabled
MWI*	Lamp
Disconnect Supervision*	Disabled
Input Gain*	0dB
Output Gain*	0dB
Fax Relay*	Enabled

Directory Number Configuration

Associated With

☎ **VGC0AB73C0BC601**
    (Line 1)

Directory Number: 5091

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

[Update] [Remove from Device] [Reset Devices]

Directory Number

Directory Number*	5091
Partition	< None > ▼

Directory Number Settings

Voice Mail Profile	< None > ▼ (Choose <None> to use default)
Calling Search Space	< None > ▼
AAR Group	< None > ▼
User Hold Audio Source	< None > ▼
Network Hold Audio Source	< None > ▼
Auto Answer	Not available on this device.

Call Forward and Pickup Settings

	Voice Mail	Destination	Calling Search Space
Forward All	☐		< None > ▼
Forward Busy	☐		< None > ▼
Forward No Answer	☐		< None > ▼
No Answer Ring Duration		(seconds)	
Call Pickup Group	< None > ▼		

MLPP Alternate Party Settings

Target (Destination)	
Calling Search Space	< None > ▼
No Answer Ring Duration	(seconds)

Line Settings for this Device

Display (Internal Caller ID)	
Line Text Label	Not available on this device.
External Phone Number Mask	
Message Waiting Lamp Policy	Not available on this device.
Ring Setting (Phone Idle)	Not available on this device.
Ring Setting (Phone Active)**	Not available on this device.

Multiple Call / Call Waiting Settings

Maximum Number of Calls*	2 (1 - 2)
Busy Trigger*	1 (<= 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.

Voice Mail Pilot Configuration

Voice Mail Pilot Number : 5091/E911CSS

Status: Ready

[Update] [Delete]

Voice Mail Pilot Number `5091`

Description `Default`

Calling Search Space `E911CSS ▼`

☑ Make this the default Voice Mail Pilot for the system

* indicates required item

Find and List Message Waiting Numbers

2 matching record(s) for Directory Number begins with ""

Find numbers where `Directory Number ▼` `begins with ▼` `_____` [Find]

and show `20 ▼` items per page, where Message Waiting Indicator is `Both ▼`

To list all items, click Find without entering any search text.

Matching record(s) 1 to 2 of 2

☐		Directory Number	Description	Partition	Calling Search Space	Copy
☐	📠	8001		E911Phones	E911CSS	📋
☐	📠	8002		E911Phones	E911CSS	📋

[Delete Selected] First Previous Next Last Page `1` of 1

Message Waiting Configuration

Message Waiting Number : 8001

Status: Ready

[Copy] [Update] [Delete]

Message Waiting Number* `8001`

Description `_____`

Message Waiting Indicator ⦿ On ○ Off

Partition `E911Phones ▼`

Calling Search Space `E911CSS ▼`

* indicates required item

Message Waiting Configuration

Message Waiting Number : 8002

Status: Ready

[Copy] [Update] [Delete]

Message Waiting Number*	8002
Description	
Message Waiting Indicator	○ On ◉ Off
Partition	E911Phones ▼
Calling Search Space	E911CSS ▼

* indicates required item

Voice Mail Profile Configuration

Voice Mail Profile: Default

Status: Ready

[Copy] [Update] [Delete]

Voice Mail Profile Name*	Default
Description	Default voice messaging profile
Voice Mail Pilot **	5091/E911CSS ▼
Voice Mail Box Mask	

☑ Make this the default Voice Mail Profile for the system

* indicates required item

** The Voice Mail Pilot is comprised of the Voice Mail Pilot Number and it's corresponding Calling Search Space Name
(<Voice Mail Pilot Number>/<Calling Search Space>).

Cisco 6608 Configuration

Cisco CallManager Administration
For Cisco IP Telephony Solutions

CISCO SYSTEMS

Gateway Configuration

Ports

<Add a New Port>

E&M	Port 1
E&M	Port 2
E&M	Port 3
E&M	Port 4
E&M	Port 5
E&M	Port 6
E&M	Port 7
E&M	Port 8
E&M	Port 9
E&M	Port 10
E&M	Port 11
E&M	Port 12
E&M	Port 13
E&M	Port 14
E&M	Port 15
E&M	Port 16
E&M	Port 17
E&M	Port 18
E&M	Port 19
E&M	Port 20
E&M	Port 21
E&M	Port 22
E&M	Port 23
E&M	Port 24

Product : Cisco Catalyst 6000 T1 VoIP Gateway
Gateway : S0/DS1-0@SDA0001C9D93A98
Device Protocol: Digital Access T1
Registration: Registered with Cisco CallManager 172.20.16.250
IP Address: 172.20.16.100

Status: Ready

[Update]   [Delete]   [Reset Gateway]

MAC Address*	0001C9D93A98
Description	SDA0001C9D93A98
Device Pool*	Default
Media Resource Group List	< None >
Calling Search Space	E911CSS
AAR Calling Search Space	E911CSS
Location	< None >
AAR Group	< None >
MLPP Domain (e.g., "0000FF")	
MLPP Indication*	Default
MLPP Preemption*	Default
Handle DTMF Precedence Signals	☐
Load Information	
Port Selection Order*	Top Down
PCM Type*	μ-law
Digit Sending*	DTMF
Network Locale	< None >
SMDI Base Port*	0

Product Specific Configuration   ℹ️

Clock Reference**	Network ▾
TX-Level CSU*	0dB ▾
FDL Channel*	ATT 54016 ▾
Framing*	ESF ▾
Yellow Alarm*	Bit2 ▾
Zero Suppression*	B8ZS ▾
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 ▾

S0/DS1-0@SDA0001C9D93A98

Cisco Catalyst 6000 T1 VoIP Gateway

Device Configuration

Device Protocol	Digital Access T1
Protocol Side	Network
D-Channel Enabled	No
Framing	ESF
CSU Gain	0dB
WAN Voice Encoding	u-law
WAN Bit Encoding	B8ZS
Yellow Alarm Encoding	Bit2
Facility Data Link	ATT 54016
Transmit Clock Source	Slaved to Span 1 Rx Clock
Localization	United_States
Load Information	D00404000009
Call Manager 1	172.20.16.250
Call Manager 2	
Call Manager 3	

Change Configuration

Port Configuration

Page Help

Cisco VG248 Configuration

Cisco VG248 (VGC0ab73c0bc6)

Version Information

Serial number	SAD0711009A
Software version	1.2(1)
DSP firmware version	3.6(20x)
Loader version	1.0(1)

Cisco VG248 (VGC0ab73c0bc6)

Telephony Configuration

CallManager TFTP server	172.20.16.250
CallManager device name	VGC0ab73c0bc6
Country	North America
Port enable policy	manual
Allow last good configuration	enabled
SRST policy	enabled: use default router
SRST provider	<unset>
Call preservation	enabled: no timeout
Media receive timeout	disabled
Busy out off hook ports	disabled
DTMF tone duration	default: 100ms
Echo cancelling policy	default: use SLIC
Passthrough signaling	IOS mode
Hook flash timer	<country default>
Hook flash reject period	none
Fax relay maximum speed	7200 bps
Fax relay playout delay	default: 300

Cisco VG248 (VGC0ab73c0bc6)

Network Configuration and System Status

Host name	VGC0ab73c0bc6	
MAC address	00-0a-b7-3c-0b-c6	
Ethernet	100 Mbps, full duplex	(auto negotiation)
IP address	172.20.236.100	(fixed)
Subnet mask	255.255.255.0	(fixed)
Default gateway	172.20.236.1	(fixed)
DNS server 1	171.69.2.133	(fixed)
DNS server 2	<unset>	(fixed)
Syslog server	<inactive>	(fixed)
Domain	cisco.com	(fixed)
CDP	enabled	

Up time	1 days 5 hours 39 minutes
Real time clock	23:51, 04/13/2005
Serial number	SAD0711009A

Serial console	link down
Telnet console 1	<inactive>
Telnet console 2	<inactive>
FTP connection	<inactive>

Cisco VG248 (VGC0ab73c0bc6)

Port Status

Port	Phone state	CM link state	Call state	Directory number	Calls Incoming	Calls Outgoing	Calls Connected
0	-	Up	-	3999	voicemail statistics		
1	On hook	Up	idle	5091	27	0	24
2	On hook	Up	idle	2005	2	0	0
3	On hook	Down	idle	-	0	0	0
4	On hook	Down	idle	-	0	0	0
5	On hook	Down	idle	-	0	0	0
6	On hook	Down	idle	-	0	0	0
7	On hook	Down	idle	-	0	0	0
8	On hook	Down	idle	-	0	0	0
9	On hook	Down	idle	-	0	0	0
10	On hook	Down	idle	-	0	0	0
11	On hook	Down	idle	-	0	0	0
12	On hook	Down	idle	-	0	0	0
13	On hook	Down	idle	-	0	0	0
14	On hook	Down	idle	-	0	0	0
15	On hook	Down	idle	-	0	0	0
16	On hook	Down	idle	-	0	0	0
17	On hook	Down	idle	-	0	0	0
18	On hook	Down	idle	-	0	0	0
19	On hook	Down	idle	-	0	0	0
20	On hook	Down	idle	-	0	0	0
21	On hook	Down	idle	-	0	0	0
22	On hook	Down	idle	-	0	0	0
23	On hook	Down	idle	-	0	0	0
24	On hook	Down	idle	-	0	0	0

```
 _____
|   _____   |
|                Cisco VG248 (VGC0ab73c0bc6)               |
 _____ _____ _____
           | Voice mail                         |
           |------------------------------------|
           | Voice mail protocol        (MCI)   |
           | Pilot directory number     (5100)  |
           | Number of voice mail ports (1)     |
           | First voice mail port number (1)   |
           | Number format              ()      |
           | Forward MWIs to CallManager (yes)  |
           | Forward MWIs to Async 2    (no)    |
           | CallManager MWI on DN      (8001)  |
           | CallManager MWI off DN     (8002)  |
           | SMDI settings                      |
           | MCI settings                       |
           | Ericsson settings                  |
           | Async port serial settings         |
            ------------------------------------
```

```
     _____
    |   _____  |
    |               Cisco VG248 (VGC0ab73c0bc6)              |
     _____ _____ _____
              | Voice mail                         |
              |------------------------------------|
              | Voice mail protocol        (MCI)   |
              | Pilot directory number     (5100)  |
              | Number of voice mail ports (1)     |
              | First voice mail port number (1)   |
              | Number format              ()      |
              | Forward ------------------- (yes)  |
              | Forward| MCI settings      |(no)    |
              | CallMan|-------------------|(8001)  |
              | CallMan| System address (0)|(8002)  |
              | SMDI se| Tenant number  (1) |       |
              | MCI set| Entry index    (J) |       |
              | Ericsso -------------------         |
              | Async port serial settings         |
               ------------------------------------
                        -------------------
```

```
 --------------------------------------------------------
|           Cisco VG248 (VGC0ab73c0bc6)                  |
 -----------------------------------------------  -------
           | Voice mail                                |
           |-------------------------------------------|
           | Voice mail protocol      (MCI)            |
           | Pilot directory number   (5100)           |
           | Number of voice mail ports  (1)           |
           | First voice mail port number (1)          |
           | Number format            ()               |
           | Fo ---------------------------------       |
           | Fo| Async port serial settings    |        |
           | Ca|-------------------------------|)       |
           | Ca| Async port speed  (9600 bps)  |)       |
           | SM| Async 1 data bits (7)         |        |
           | MC| Async 1 parity    (odd)       |        |
           | Er| Async 1 stop bits (2)         |  █     |
           | As| Async 2 data bits (8)         |        |
            ---| Async 2 parity    (none)      |--      |
               | Async 2 stop bits (1)         |
                -------------------------------
 --------------------------------------------------------
```

Acronyms

Acronym	Definitions
RNA	Ring No Answer
BNA	Busy No Answer
ACF	All Call Forward

Important Information

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