NEC IPX 2400 R15 using T1-QSIG to Cisco Unified Communications Manager Express Release 4.1

August 27, 2007 Revision 2

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**Introduction**

This is an application note for connectivity between a NEC IPX 2400 release 15 with Cisco Unified Communications Manager Express Release 4.1 using a Cisco 3745 and a Cisco 2801 voice gateway via QSIG protocol.

The network topology diagram (Figure 1) shows the test setup for an end-to-end interoperability with Cisco Unified Communications Manager Express Release 4.1 connected to the NEC PBX via 2801 T1 QSIG link. The Cisco 2801 Cisco IOS voice gateway was connected via H.323 to a Cisco 3745 Cisco IOS voice gateway. The two gateways were running Cisco Unified Communications Manager Express (CUCME) 4.1. Cisco Unified IP phones (models 7960 and 7940) were connected to the two Cisco Unified Communications Manager Express gateways via SIP and SCCP (refer to Figure 1). A VWIC2-2MFT-T1/E1 was used for the T1 QSIG interface. Connectivity is achieved by using the PRI QSIG T1 protocol type on the CUCME gateway and ISO QSIG switch type on the of NEC IPX 2400 PBX. There are two NEC digital phones (model Dterm Series III) connected to the NEC PBX. A PSTN trunk is connected to NEC PBX via T1-PRI 5ESS. Calls were made to test basic call, caller ID, transfer, call forward, PSTN calls, and reroute features.

This Application Note uses the Cisco 3745 and Cisco 2801 voice gateways. However, the use of other Cisco voice gateways is also an option since Cisco Unified Communications Manager Express does not depend on the platform. See list below for platforms supporting Cisco Unified Communications Manager Express applications.

The inclusion of Cisco IP SIP phones in this application note is for reference only. Cisco Unified Communications Manager Express 4.1 supports SIP end-points with limited number of features.

Cisco 2600XM Series Multiservice Platforms
Cisco 2800 Series Integrated Services Routers
Cisco 3800 Series Integrated Services Routers
Cisco 3700 Series Routers
Network Topology

Figure 1. Network Topology
Limitations

Basic Calls
NEC PBX does not support Basic call with Overlap sending/receiving
NEC PBX does not allow the restriction setting of the connected name and connected number for basic calls.
On a call originating from an NEC phone calling a Cisco IP SIP phone for connected name and number restriction, the connected
name and number will not be restricted on both the original side and the final destination. This is a SIP-ISDN interworking limitation.
Alerting name is not supported on calls between the NEC PBX and Cisco Unified IP Phone running on SIP.
Called/Connected Name is not supported on calls between the NEC PBX and Cisco Unified IP Phone running on SIP.

Call Forwards
For call forward CFU, CFB, and CFNR; the forwarding called name and number are not displayed on the final destination when the
final destination is an IP SIP phone. This is a CUCME to SIP phone limitation.
For call forwards, the connected name and number are not updated on the originating phone when the originating phone is a SIP
phone. On SCCP, phones only connected name is updated. This is a CUCME to PBX interworking limitation.
Forwarded calls originated from a PBX extension to a local Cisco Unified Communications Manager Express SIP extension, and
forward to back to another PBX extension (e.g. A calls C2, and C2 forwards to B), Cisco Unified Communications Manager Express
failed to perform a reroute, when reroute is enabled.

Call Transfers
Call Transfer attended; when a PBX phone calls a SCCP phone or a SIP phone and the call is transferred to another SIP phone the
original calling name and number are not updated. (eg Phone A to Phone C1 Xfr to Phone B).
SCCP phones do not support blind transfer; however they can perform early-attended transfer.
Call Transfer for early-attended or blind; when a IP SIP phone calls a IP SIP phone then blind transfer to a PBX phone, a URL format
(4062@172.20.0:00:54) displays on the originator after the destinater has answered the call. This is a limitation.
For all supervised and early-attended Network/External call transfers, the original calling name and number is not displayed on the
final destination. The limitation is due to the Cisco Unified Communications Manager Express (CUCME) not supporting the QSIG
operation “CallTransferComplete” carried in the Q931 FACILITY message for number/number update.
One way voice occurs when a SIP phone calls a SCCP phone and SCCP phone transfers (consultation) to a PBX phone. The SIP
phone can not hear the PBX phone. CUCME debugs show “rtu_udp_unreachable:Entered: ICMP unreachable for dest port 17059”.
Refer to CSCsk62258 for more detail.
A 503 Service Unavailable error occurs when a PBX phone calls a SIP phone, and SIP phone call transfers (consultation) to a SCCP
phone. This error is sent by the CUCME, and only occurs on local transfer. Please refer to CSCsk62352.
Disconnection after 16 seconds occur when a SCCP phone (eg phone C1) calls another SCCP phone (eg phone G1), and phone G1
transfers (early-attended) to a SIP phone. This only happens on early-attended transfers, and not consultative transfers. In addition,
this only occurs for transfer from a SCCP phone that is outside of network. When transfer happens on the same network, this do not
happen. Please refer to CSCsk62174.
**System Components**

**Hardware Requirements**
- Cisco 3745 Cisco IOS voice gateway
- VWIC2 – 2MFT – T1/E1
- VIC2 – 2FXS
- Cisco 2801 IOS voice gateway
- (4) Cisco Unified IP Phone (model 7960)
- (2) Cisco Unified IP Phone (model 7940)
- NEC IPX2400 PBX
- (2) NEC Phones (model Dterm Series III)

**Software Requirements**
- Cisco Unified Communications Manager Express Release 4.1
- Cisco IOS Software, 3745 Software (c3745-ipvoice_ivs-mz.124-11.XJ4)
- Cisco IOS Software, 2801 Software (c2801-ipvoice_ivs-mz.124-11.XJ3)

**G1, G2 – 7960 – SCCP**
- Cisco 7960 IP phone version 8.0 (6.0)
- Cisco 7960 App load P00308000600

**C1, D1 – 7940 - SCCP**
- Cisco 7960 IP phone version 8.0 (6.0)
- Cisco 7960 App load P00308000600

**C2, D2 – 7960 – SIP**
- App Load ID POS3-08-7-00
- App Load ID POS3-08-6-02
- NEC IPX2400 Release 15
Features

Feature Supported

- CLIP - Calling Line (Number) Identification Presentation (See Limitation for details.)
- CLIR - Calling Line (Number) Identification Restriction (See Limitation for details.)
- CNIP - Calling Name Identification Presentation
- CNIR - Calling Name Identification Restriction
- COLP - Connected Line (Number) Identification Presentation (See Limitation for details.)
- CONP - Connected Name Identification Presentation
- Basic Call – Local and Network/External.
- Calling Number and Calling Name Restrictions on Basic Calls.
- Connected Name and Connected Number Restrictions on Basic Calls.
- Alerting Name display on Basic Calls. (See Limitation for details.)
- Calls to and from the PSTN.
- Call Forward Unconditional, Busy, and No Reply on Local and Network/External – by join.
- Call Forward Unconditional, Busy, and No Reply on Local and Network/External – reroute.

Features Not Supported

- Basic calls with overlap sending and receiving calls.
- Name and Number updates on transferred calls.
- Connected Name and Number updates on forward calls.
- CLIP – Calling Line (Number) Identification Presentation on Forwarded Calls to a PBX station.
- CONP – Connected Name Identification Presentation (for calls between PBX and Cisco Unified IP Phones running SIP)
- Call Completion to Busy Subscriber (Callback when free)
- Call Completion on No Reply (Callback next used)
- Path Replacement on Call Transfers (Consultation local/network transfer via Xfr)
- Path Replacement on Call Transfers (Early-attended local/network transfer via Xfr)
- Path Replacement on Call Transfers (Blind local transfer via Xfr)
- Path Replacement on Call Transfer by join
- Path Replacement on Call Diversion by forward switch.
- Path Replacement on Trombone connection (accomplished by consultation transfer)
- Voicemail access with MWI de/activation on call forwards no reply.
Configuration

Configuring the NEC IPX 2400 PBX

Important Notice: It is important that the engineer/technician modifying the IPX 2400 configuration be well versed in the NEC MAT command line. The NEC MAT command line is very precise and should only be changed by a person who is certified by NEC and has the in-depth knowledge on how to troubleshoot the system in case erratic behavior results.

Physical Layer Set-up:

SW Mode ➔ SW1 ➔ SW2 ➔ SW4

Note: You must set the switches on the PA-24PRT appropriately for QSIG operation

Enable QSIG services:

ASYD ➔ ASFC

To build the QSIG route:

ARTD ➔ ARTI ➔ ATRK ➔ ARSC ➔ ARRC ➔ ADPC ➔ ACSC ➔ ACIC1 ➔ ACIC2 ➔ MBRT

To build the dial plan to access the QSIG route (Assumes dummy route has been built and ARRC is assigned properly):

ANPD ➔ ASPA ➔ AMND ➔ AFRS ➔ AOPR ➔ ARNP

Physical Layer Set-up:

**SW Mode**

Set to 10 (A in HEX)

**SW1**

Set switch 3 to ‘off’ (Sets 23B+D mode)

**SW2**

Set switch 4 ‘on’ and switch 5 ‘on’ (Sets ESF framing and B8ZS line code)

**SW4**

Set switch 2 to ‘off’ (This switch determines the ISDN protocol side emulation for the route Off=Network/On=User)

Note: To set other physical layer parameters such as LBO, alarm monitoring and Loss Pad settings please refer to the NEC USER GUIDE for the PA-24PRT. These parameters are not covered in this document. The value of these parameters will depend upon the installation of each individual Telephony network.

Enable QSIG services

**ASYD**

System 1, Index 186, bit 6 = 1 (ISDN service enabled)
System 1, Index 375, bit 0 = 1 (avoid Bch lockup)

**ASFC**

SFI 94 set to ‘0’ (ANI)
Build QSIG Route

**ARTD**

Note: You must build two ARTD forms, one for the b-channels and one for the d-channel

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Note 1: On the B-channel ARTD table, parameter IND must be set to ‘1’ for Name display, to disable Name display feature on the trunk change the value of IND to ‘0’.

Note 2: On the B-channel ARTD table, parameter DC must be set to equal the maximum number of digits in the PBX’s station numbers.
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<th>CDN</th>
<th>Data</th>
<th>CDN</th>
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Note: The following parameters determine the state of the following QSIG-SS features: CTCF-Call forward/Call transfer, RERT-CF Reroute, PR-Path Replacement. To set the feature enabled you must set it to ‘1’, if you want the feature disabled change the setting to ‘0’.

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### ARRC

*Alternative Route Restriction List*

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### ADPC

*Determinate Point Code Data List*

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Note: Because we are using circuit card PA-24PRT, you assign the same LENS number to each CSCG number. You must assign an even CSCG number for the b-channels and an odd CSCG number for the D-channel. If you are using circuit cards PA-2DCH + PA-24DTR the LENS assignment to the B-channels and D-channels differ, please contact NEC customer support for technical assistance.

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Note: Because we are using circuit card PA-24PRT, you assign the same LENS number to each CSCG number. You must assign an even CSCG number for the b-channels and an odd CSCG number for the D-channel. If you are using circuit cards PA-2DCH + PA-24DTR the LENS assignment to the B-channels and D-channels differ, please contact NEC customer support for technical assistance.
ACIC2

CIC 1

Terminate Point Code Identification Code LEN
6 1 002130
6 2 002131
6 3 002132
6 4 002133
6 5 002134
6 6 002135
6 7 002136
6 8 002137
6 9 002140
6 10 002141
6 11 002142
6 12 002143
6 13 002144
6 14 002145
6 15 002146
6 16 002147
6 17 002150
6 18 002151
6 19 002152
6 20 002153
6 21 002154
6 22 002155
6 23 002156

MBRT

MBRT (Make Busy of Route)

RT
4

MB
Make Idle
Make Busy

Set
Exit
Build the dial plan to access the QSIG route (Assumes dummy route has been built and ARRC is assigned properly)

**ANPD**

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**ASPA**

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**TN | ACC | CI | SRV**

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| 1 | 3 | Hooking | LCR | RT : 31 | 2ndDT : 1 | AH : 0 | SUB : 0 |
| 1 | 3 | Busy | LCR | RT : 31 | 2ndDT : 0 | AH : 0 | SUB : 0 |
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**Route** 4  **Access Code** 3

### Dterm Data (Digital Stations)

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<td>STN 4050</td>
<td>STN 4054</td>
</tr>
</tbody>
</table>

### Station Data List

<table>
<thead>
<tr>
<th>TN</th>
<th>STN</th>
<th>LENS</th>
<th>TEC</th>
<th>KSC</th>
<th>SC2</th>
<th>ETN</th>
<th>KD</th>
<th>CO</th>
<th>CE</th>
<th>HC</th>
<th>HP</th>
<th>HU</th>
<th>PH</th>
<th>HL</th>
<th>ND</th>
<th>NS</th>
<th>D1</th>
<th>D2</th>
<th>XCS</th>
<th>XSS</th>
<th>WS</th>
<th>IT</th>
<th>LNL</th>
<th>LNH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4050</td>
<td>000032</td>
<td>12</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>4054</td>
<td>000031</td>
<td>12</td>
<td>1</td>
<td>1</td>
<td></td>
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</tr>
</tbody>
</table>
## Name Display Data List

<table>
<thead>
<tr>
<th>Tenant</th>
<th>Station</th>
<th>Name Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4050</td>
<td>Pluto</td>
</tr>
<tr>
<td>1</td>
<td>4054</td>
<td>Donald Duck</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tenant</th>
<th>Station</th>
<th>Name Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4050</td>
<td>Pluto</td>
</tr>
<tr>
<td>1</td>
<td>4054</td>
<td>Donald Duck</td>
</tr>
</tbody>
</table>
ASFC SFI 94 (used to restrict Calling Number)

<table>
<thead>
<tr>
<th>Starting</th>
<th>Ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenant 1</td>
<td>Tenant 1</td>
</tr>
<tr>
<td>SFI 94</td>
<td>SFI 94</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tenant</th>
<th>Mode</th>
<th>SFI</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Day</td>
<td>94</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: To restrict ‘Calling Number’ you assign SFC =15 (or any SFC set to ‘1’), under ASDT command for the Dterm station you want to restrict.

Call Back

ASYD

ASYD - System Data 1, Index 139. No Answer Timer for CALL BACK. Assign 00H. (RAM Data is 3FH = 30 seconds.)
System Data 1, Index 68, Bit 0. 0/1: SHF and Access Code last digit of Telephone Number + Access Code.
System Data 2, Index 0, Bit 0. Is CALL BACK enabled on a per Tenant basis? 0/1: No/Yes.
System Data 2, Index 4, Bit 0. CALL BACK and OUTGOING TRUNK QUEUING [0-2]. Access Codes are same or separate? 0/1: Separate/Same.

ASFC

SFI 2 allows/restricts Callback feature.

<table>
<thead>
<tr>
<th>Starting</th>
<th>Ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenant 1</td>
<td>Tenant 1</td>
</tr>
<tr>
<td>SFI 2</td>
<td>SFI 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tenant</th>
<th>Mode</th>
<th>SFI</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Day</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: On each Dterm station Assign a SFC that has SFI=2 set to ‘1’, using a SFC with SFI=2 set to ‘0’ restricts Callback.
### ADSL (Assigning Callback feature on Dterm soft key)

**Dterm Soft Key on LCD Data in LDM List**

<table>
<thead>
<tr>
<th>Starting</th>
<th>Ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKP 1</td>
<td>SKP 1</td>
</tr>
<tr>
<td>SN 2</td>
<td>SN 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SKP</th>
<th>SN</th>
<th>SKN</th>
<th>FKY</th>
<th>DISP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>CB</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>7</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>8</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>9</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>10</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>11</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>12</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>13</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>14</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>15</td>
<td>0</td>
<td>00</td>
</tr>
</tbody>
</table>

| 1   | 3  | 0   | 5   | CB   |
| 1   | 3  | 1   | 0   | 00   |
| 1   | 3  | 2   | 0   | 00   |
| 1   | 3  | 3   | 0   | 00   |
| 1   | 3  | 4   | 0   | 00   |
| 1   | 3  | 5   | 0   | 00   |
| 1   | 3  | 6   | 0   | 00   |
| 1   | 3  | 7   | 0   | 00   |
| 1   | 3  | 8   | 0   | 00   |
| 1   | 3  | 9   | 0   | 00   |
| 1   | 3  | 10  | 0   | 00   |
| 1   | 3  | 11  | 0   | 00   |
| 1   | 3  | 12  | 0   | 00   |
| 1   | 3  | 13  | 0   | 00   |
| 1   | 3  | 14  | 0   | 00   |
| 1   | 3  | 15  | 0   | 00   |
ADKS (Assigns soft key pattern to Dterm station)

<table>
<thead>
<tr>
<th>Tenant</th>
<th>Station</th>
<th>Soft Key Pattern</th>
<th>Line Key Pattern</th>
<th>Page Scroll Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4050</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>4054</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Configuring Cisco IOS Software

Local Cisco Unified Communications Manager Express (Cisco 2801) Configuration

c2801-Local#sh run
Building configuration...

Current configuration : 3754 bytes

! Last configuration change at 22:34:13 UTC Tue Aug 21 2007
! NVRAM config last updated at 02:55:41 UTC Tue Aug 21 2007
! version 12.4
service timestamps debug datime msec
service timestamps log datime msec
no service password-encryption
!
hostname c2801-Local
!
boot-start-marker
boot-end-marker
!
card type t1 0 2
logging buffered 10000000
enable password cisco
!
nno aaa new-model
network-clock-participate wic 2
network-clock-select 1 T1 0/2/0
ip cef
!
!
no ip dhcp use vrf connected
ip dhcp excluded-address 172.20.174.1
ip dhcp excluded-address 172.20.174.20
ip dhcp excluded-address 172.20.174.255
!
ip dhcp pool Phone
    network 172.20.174.0 255.255.255.0
    default-router 172.20.174.1
    option 150 ip 172.20.174.20
!
!
no ip domain lookup
multilink bundle-name authenticated
!
isdn switch-type primary-qsig
!
voice-card 0
!

voice service pots
!
voice service voip
    qsig decode
    allow-connections h323 to h323
    allow-connections h323 to sip
    allow-connections sip to h323
    allow-connections sip to sip
    h323
    sip
    registrar server expires max 600 min 60
!

voice register global
    mode cme
    source-address 172.20.174.20 port 5060
    max-dn 100
    max-pool 24
    tftp-path flash:
    create profile sync 0202460255034445
!
voice register dn 1
    number 8001
    call-forward b2bua busy 8002
    name CME phone1
    huntstop
! voice register dn 2
  number 8002
  name CME phone2
  huntstop
! voice register pool 1
  id mac 0030.94C2.88E9
  type 7940
  number 1 dn 1
dtmf-relay rtp-nite
description Cisco7960
codec g711ulaw
!
voice register pool 2
  id mac 000A.8A48.F9C9
  type 7940
  number 1 dn 2
dtmf-relay rtp-nite
description Cisco7960
codec g711ulaw
!
!
!
!
!
controller T1 0/2/0
  framing esf
  linecode b8zs
  pri-group timeslots 1-24
!
controller T1 0/2/1
  framing esf
  linecode b8zs

!
!
!
interface FastEthernet0/0
  ip address 172.20.174.20 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet0/1
  no ip address
  shutdown
duplex auto
speed auto
!
interface Serial0/2/0:23
  no ip address
  encapsulation hdlc
  isdn switch-type primary-qsig
  isdn timer T310 120000
  isdn overlap-receiving
  isdn protocol-emulate network
  isdn incoming-voice voice
no cdp enable
!
ip route 0.0.0.0 0.0.0.0 172.20.174.1
!
ip http server
!
!
tftp-server flash:P00308000600.bin
tftp-server flash:P00308000600.loads
tftp-server flash:P00308000600.sb2
tftp-server flash:P00308000600.sbn
!
control-plane
!
!disable-cadi
!
voice-port 0/0/0
!
voice-port 0/0/1
!
voice-port 0/2/0:23
!
!
!
dial-peer voice 40 pots
destination-pattern 40..
direct-inward-dial
port 0/2/0:23
forward-digits 4
!
dial-peer voice 801 voip
destination-pattern 80..
session target ipv4:172.20.174.10
incoming called-number .T
codec g711ulaw
no vad
!
dial-peer voice 5000 pots
destination-pattern 5..
direct-inward-dial
port 0/2/0:23
forward-digits all
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!
!
max-conferences 4 gain -6
call-forward pattern T
time-webedit
transfer-system full-consult
transfer-pattern ....
create cnf-files version-stamp 7960 Aug 14 2007 04:15:52
!
ephone-dn 21 dual-line
number 8003
label 8003
description CME1 Phone21
name SCCP C1
huntstop channel
!
!
ephone-dn 22 dual-line
number 8004
label 8004
description CME1 Phone22
name SCCP D1
huntstop channel
!
!
ephone 21
mac-address 000D.284C.E0C7
type 7940
keep-conference
button 1:21
!
!
ephone 22
mac-address 000D.28BA.A097
type 7940
keep-conference
button 1:22
!
!
line con 0
exec-timeout 0 0
password cisco
logging synchronous
login
line aux 0
line vty 0 4
password cisco
login
!
scheduler allocate 20000 1000
end
Cisco Unified Communications Manager Express II (Cisco 3745) Configuration

```plaintext
3745-Remote#sh run
Building configuration...

Current configuration : 3203 bytes
!
version 12.4
service timestamps debug datatime msec
service timestamps log datatime msec
no service password-encryption
service internal
!
hostname 3745-Remote
!
boot-start-marker
boot system flash:c3745-ipvoice_ivs-mz.124-11.XJ4.bin
boot-end-marker
!
logging buffered 100000000
no logging monitor
!
no aaa new-model
clock timezone PST -8
no network-clock-participate slot 1
no network-clock-participate slot 2
voice-card 1
dspfarm
!
voice-card 2
no dspfarm
!
ip cef
!
!
no ip dhcp use vrf connected
ip dhcp excluded-address 172.20.174.1
ip dhcp excluded-address 172.20.174.10
ip dhcp excluded-address 172.20.174.255
!
ip dhcp pool Phone
   network 172.20.174.0 255.255.255.0
   default-router 172.20.174.1
   option 150 ip 172.20.174.10
!
!
no ip domain lookup
multilink bundle-name authenticated
isdn switch-type primary-ni
!
!
voice service voip
qsig decode
allow-connections h323 to h323
allow-connections h323 to sip
```
allow-connections sip to h323
allow-connections sip to sip
h323
sip
  registrar server expires max 600 min 60
!
!
!
!
!
!
!
!
!

voice
register global
mode cme
source-address 172.20.174.10 port 5060
max-dn 100
max-pool 168
tftp-path flash:
create profile sync 0330374215430651
!
!
!
!
!
controller E1 1/0
!
controller E1 1/1
vlan internal allocation policy ascending
!
!

interface FastEthernet0/0
  ip address 172.20.174.10 255.255.255.0
duplex auto
speed auto
no keepalive
!
interface FastEthernet0/1
  no ip address
  shutdown
duplex auto
speed auto
!
ip route 0.0.0.0 0.0.0.0 172.20.174.1
!
ip http server
!
!
tftp-server flash:PO53-07-4-00.sb2
tftp-server flash:PO03-07-4-00.bin
tftp-server flash:PO03-07-4-00.sbn
tftp-server flash:PO03-07-4-00.bin
tftp-server flash:PO03-07-4-00.loads
tftp-server flash:PO030702T023.sbn
tftp-server flash:PO030702T023.bin
tftp-server flash:PO030702T023.loads
tftp-server flash:PO0308000600.sbn
tftp-server flash:PO0308000600.sb2
tftp-server flash:PO0308000600.loads
tftp-server flash:PO0308000600.bin

! control-plane
  ! voice-port 2/0/0
  ! voice-port 2/0/1
  ! voice-port 2/0/2
  ! voice-port 2/0/3
  !

! dial-peer voice 40 voip
destination-pattern 40..
  session target ipv4:172.20.174.20
codec g711ulaw
  no vad
!
! dial-peer voice 800 voip
destination-pattern 80..
  session target ipv4:172.20.174.20
codec g711ulaw
  no vad
!
! dial-peer voice 5000 voip
destination-pattern 5000
  session target ipv4:172.20.174.20
codec g711ulaw
  no vad
!
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!
call-forward pattern .T
moh music_on_hold.wav
dn-webedit
time-webedit
transfer-system full-consult
transfer-pattern ....
secondary-dialtone 9
create cnf-files version-stamp 7960 Aug 09 2007 13:51:56
!
!
ephone-dn 1 dual-line
number 8011
label 8011
description CME Phone1
name SCCP G1
huntstop channel
!
!
ephone 1
mac-address 0030.94C2.6261
type 7940
keep-conference
button 1:1
!
!
!
line con 0
exec-timeout 0 0
password cisco
logging synchronous
line aux 0
line vty 0 4
password cisco
login
!
!
End
### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definitions</th>
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<tbody>
<tr>
<td>CUCM</td>
<td>Cisco Unified Communication Manager</td>
</tr>
<tr>
<td>CCBS</td>
<td>Call Completion to Busy Subscriber</td>
</tr>
<tr>
<td>CCNR</td>
<td>Call Completion on No Reply</td>
</tr>
<tr>
<td>CFB</td>
<td>Call Forwarding on Busy</td>
</tr>
<tr>
<td>CFNR</td>
<td>Call Forwarding No Reply</td>
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<tr>
<td>CFU</td>
<td>Call Forwarding Unconditional</td>
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<td>Calling Line (Number) Identification Presentation</td>
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<tr>
<td>CLIR</td>
<td>Calling Line (Number) Identification Restriction</td>
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<td>CNIP</td>
<td>Calling Name Identification Presentation</td>
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<tr>
<td>CNIR</td>
<td>Calling Name Identification Restriction</td>
</tr>
<tr>
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<td>Connected Line (Number) Identification Presentation</td>
</tr>
<tr>
<td>COLR</td>
<td>Connected Line (Number) Identification Restriction</td>
</tr>
<tr>
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<td>Connected Name Identification Presentation</td>
</tr>
<tr>
<td>CONR</td>
<td>Connected Name Identification Restriction</td>
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<td>MWI</td>
<td>Message Waiting Indicator</td>
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<td>PSTN</td>
<td>Public Switched Telephone Network</td>
</tr>
<tr>
<td>IOS</td>
<td>Internetworking Operating System</td>
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</tbody>
</table>
Important Information

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