Avaya S8500 CM 3.0 using E1 ISO-QSIG to Cisco Unified CallManager Express 4.0(2)

November 1, 2007 Version 2

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Introduction

This is an Application Note for connectivity between an Avaya S8500 Communications Manager Release 3.0 PBX and Cisco Unified CallManager Express Release 4.0(2) using a Cisco 3845 voice gateway with QSIG protocol.

Voice mail testing was performed with an Octel 200 (S.4.1) using QSIG integration (E1-DTIC).

The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability with Cisco Unified CallManager Express Release 4.0(2) connected to the PBX via the 3845 E1 QSIG link. The 3845 IOS voice gateway was connected via H.323 to a Cisco 2801 Cisco IOS voice gateway. The two gateways were running Cisco Unified CallManager Express 4.0(2). Cisco Unified IP phones (models 7960 and 7961G) were connected to the 2 Cisco Unified CallManager Express gateways via SIP and SCCP, as per the figure. A NM-HDV and VWIC-2MFT-E1 was used for the E1 QSIG interface. Calls were made to test basic call, caller ID, conference, transfer, forward, call back, reroute, and MWI features.

This Application Note uses the Cisco 3845 voice gateway. However, the use of other Cisco voice gateways is also an option since Cisco Unified Call Manager Express does not depend on platform. The listed gateway families, below, can run Cisco Unified CallManager Express, but each have different IP phone support capability. Please check the product specifications to ensure you are obtaining the proper device to support your IP phone deployment.

Cisco IAD 2430 Series Integrated Access Devices
Cisco 2801 Integrated Services Router, 1760-V and 1751-V Access Routers
Cisco 2811 Integrated Services Router, 261xXM and 262xXM Series Access Routers
Cisco 2821 Integrated Services Router, 265xXM Access Router
Cisco 2691 Multiservice Access Router
Cisco 2851 Integrated Services Router
Cisco 3725 Multiservice Access Router
The inclusion of Cisco SIP phones in this application note is for reference only. Cisco Unified Communications Manager Express 4.0(3) supports SIP end-points with limited number of features.

**Network Topology**

*Figure 1.* Network Topology or Test Setup – basic calls configuration.
Limitations

Basic Calls
Cisco Unified CallManager Express does not support overlap sending. It supports overlap receiving.

Connected Name and Alerting Name are not supported on calls between PBX and Cisco Unified IP Phone running SIP. This is a CME SIP limitation.

Calling Name Restriction is not supported for calls originated from Cisco Unified CallManager Express 4.0(2).

Connected Number/Name Restriction is not supported from Cisco Unified CallManager Express 4.0(2).

Call Transfers
A call-transfer (consult, early-attended or blind) originating from a call placed from a phone on the remote Cisco Unified CallManager Express (CME2) to a SIP phone on the local Cisco Unified CallManager Express (CME1), and then transferred to a PBX phone (e.g., G1 calls C2, and C2 transfers to A) does not complete. This is a CME SIP limitation.

For local consulted and early-attended call transfers between SCCP phones and SIP phones, call originates from an external PBX phone, the Calling name and number updates are not supported. This is CME SIP to SCCP interworking limitation.

For local consulted, early attended and blind call transfers connected name and number are not supported. CME does not support Facility IE for call update information.

For external consulted and early attended call transfers with call flow, (CME IP phone calls PBX phone, PBX phone transfers back to different IP phone on CME (trombone)) the called (connected) name and number are not updated on the original phone after the transfer is complete. (e.g. Phone C1 calls Phone A, Phone A transfers to Phone D1). CME does not support Facility IE for call update information.

Call Forwards
For local call forward calls involving SIP phones the forwarding name/number display is not supported. This is a CME SIP limitation.

For external Call forward calls the forwarding number is not supported on CME. CME does not support RedirectingName.

For external call forward calls, the called (connected) number is not updated on the original phone. This is a CME limitation.

Forwarded calls originated from a PBX extension to a remote Cisco Unified CallManager Express SCCP extension, and forwarded to a local Cisco Unified CallManager Express extension (e.g., A calls G1, and G1 forwards to C2), Cisco Unified CallManager Express performs a QSIG reroute, even though a QSIG reroute is not in order (i.e., there is no QSIG "hairpin" or "trombone"). This is a CME limitation.

Forwarded calls hairpinned at a SIP extension (PBX phone calls Cisco Unified CallManager Express 4.0(2) SIP phone that forwards back to another PBX phone), the call completes, but Cisco Unified CallManager Express 4.0(3) does not perform a reroute, even if reroute is enabled. CME SIP limitation.

Forwarded calls originated from a PBX extension to a local Cisco Unified CallManager Express SCCP extension, and forwarded to another local Cisco Unified CallManager Express extension (e.g., A calls C1, and C1 forwards to D1 or D2), Cisco Unified CallManager Express performs a reroute, and even though a reroute is not in order (i.e., there is no "hairpin" or "trombone").

For calls that are hairpinned at a SIP extension (PBX phone calls Cisco Unified CallManager Express 4.0(2) SIP phone that forwards unconditionally back to another PBX phone) when a CFNR number was set up resulted in a 3rd SETUP message from CME. The timeout is set under the CFNR command. If enough time passes before the final destination (B) answers, the CFNR is invoked, and the 3rd SETUP is sent from CME. A new (3rd) B-chan is set up. The 2nd one is then torn down.

Forwarded "trombone" (or "hairpin") calls originated from a PBX extension to a CME Unified CallManager Express 4.0(2) extension, and forwarded back to another PBX extension (e.g, A calls C1, C2, or G1, which forwards to B), "joined" calls (i.e., no Reroute or Path Replacement) could not be performed, because the PBX initiates Path Replacement after the call is joined. This feature can not be turned off. The only exception is when the forwarding is unconditional (CFU) and the forwarding phone is a SIP phone (e.g., C2). Then, there is not enough information in the 2nd SETUP message for the PBX to recognize it as a forwarded call, so there is no Path Replacement proposal, and the call is "joined". There are 2 B-channels in use. However, if CFNR is configured and enough time passes before the final destination answers for CFNR to be invoked, Cisco Unified CallManager Express 4.0(2) sends an additional (3rd)
SETUP message. A new (3rd) B-chan is set up, and the 2nd one is then torn down, following the scenario in the previous bullet. This 3rd SETUP message does have the call fwd diverting leg info. and Path Replacement does occur.

Forwarded calls that are initiated by overlap dialing from a PBX extension to a Cisco Unified CallManager Express 4.0(2) extension, the call completes, but Cisco Unified CallManager Express does not perform a reroute, even if reroute is enabled and the call is eligible for a reroute.

**MWI**

Cisco Unified Communications Manager Express 4.0(2) supports Cisco Unity integration with QSIG. However, in this instance, no testing was performed with Cisco Unified Communications Manager Express 4.0(3) as the message center PINX.

MWI was not tested for SIP extensions on Cisco Unified CallManager Express 4.0(3) with the PBX as the message center PINX. It was tested for SCCP extensions only.
System Components

Hardware Requirements

Cisco 3845 IOS voice gateway
  NM-HDV
  VWIC-2MFT-E1
Cisco 2801 IOS voice gateway
(4) Cisco Unified IP phone 7960s
(2) Cisco Unified IP phone 7961G
(1) Avaya S8500 PBX
  (2) Avaya 8410D digital station phones
  (1) TN464F E1 trunk card (for PSTN link)
  (1) TN464GP E1 trunk card (for QSIG trunk)
(1) Octel 200 voice mail system
  (2) E1-DTIC

Software Requirements

Cisco Unified CallManager Express Release 4.0(2)
Cisco IOS Software, 3800 Software (C3845-IPVOICE-M), Version 12.4(11)T
Cisco IOS Software, 2801 Software (C2801-IPVOICE-M), Version 12.4(11)T
Avaya Communications Manager Release 3.0
Octel S.4.1 voice mail

G1, G2 – 7960 – SCCP

Cisco7960 IP phone version 7.2(T0.23)
Cisco 7960 IP phone app load P00308000400
Cisco 7960 IP phone boot load PC0303010001

C2, D2 – 7960 – SIP

Cisco7960 DSP load ID 4.0(2.0)[A0]
Cisco 7960 IP phone app load P0S3-08-4-00
Cisco 7960 IP phone boot load PC030301

C1 – 7961G – SCCP

Cisco7961G IP phone load file: SCCP41.8-0-3S
Cisco 7961G IP phone app load ID: Jar41sccp.8-0-2-25.sbn
Cisco 7961G IP phone boot load ID: 7961G_64-020704128Amd64meg.bin
Cisco 7970 IP phone app load ID: jar70sccp.8-0-2.25.sbn
Cisco 7970 IP phone boot load ID: 7970_64060118.bin
Features

Features Supported

- Basic Call, ENBLOC
- Basic Call, Overlap (From PBX to Cisco Unified CallManager Express only)
- CLIP-Calling Line (Number) Identification Presentation on Basic Calls
- CLIR-Calling Line (Number) Identification Restriction on Basic Calls
- CNIP-Calling Name Identification Presentation on Basic Calls
- CNIR-Calling Name Identification Restriction on Basic Calls (From PBX to Cisco Unified CallManager Express only)
- COLP-Connected Line (Number) Identification Presentation on Basic Calls
- CONP-Connected Name Identification Presentation (for calls between PBX and Cisco Unified IP Phones running SCCP)
- Alerting Name (for calls between PBX and Cisco Unified IP Phones running SCCP)
- Tandem PSTN call
- Consultation Transfer – Local
- Consultation Transfer – Network/External (See Limitations Section)
- Early Attended Transfer – Local
- Early Attended Transfer – Network/External (See Limitations Section)
- Blind Transfer – Local (See Limitations Section)
- Blind Transfer – Network/External (See Limitations Section)
- Call Forward Unconditional by Join – Local (See Limitations Section)
- Call Forward Unconditional by Join – Network/External (See Limitations Section)
- Call Forward Busy by Join – Local (See Limitations Section)
- Call Forward Busy by Join – Network/External (See Limitations Section)
- Call Forward No Reply by Join – Local (See Limitations Section)
- Call Forward No Reply by Join – Network/External (See Limitations Section)
- Call Forward Unconditional by Reroute – Network/External (See Limitations Section)
- Call Forward Busy by Reroute – Network/External (See Limitations Section)
- Call Forward No Reply by Reroute – Network/External (See Limitations Section)
- MWI (See Limitations Section)
Features Not Supported

Overlap dialing from Cisco Unified CallManager Express 4.0(3) to PBX
CNIR-Calling Name Identification Restriction from Cisco Unified CallManager Express 4.0(3) to PBX
COLR- Connected Line (Number) Identification Restriction
CONR- Connected Name Identification Restriction
CONP-Connected Name Identification Presentation (for calls between PBX and Cisco Unified IP Phones running SIP)
Alerting Name (for calls between PBX and Cisco Unified IP Phones running SIP)
Blind Transfers initiated from PBX
H323/QSIG tandem transfers via SIP phone
CLIP-Calling Line (Number) Identification Presentation on Transferred Calls
CNIP-Calling Name Identification Presentation on Transferred Calls
COLP-Connected Line (Number) Identification Presentation on Transferred Calls
CONP-Connected Name Identification Presentation on Transferred Calls
CLIP-Calling Line (Number) Identification Presentation on Forwarded Calls to a PBX station.
COLP-Connected Line (Number) Identification Presentation on Forwarded Calls
CONP-Connected Name Identification Presentation on Forwarded Calls
Call Forward by Reroute for QSIG "trombone" from a Cisco Unified CallManager Express SIP extension
Call Forward by Reroute with overlap dialing
Cisco Unity integration with QSIG.
MWI with QSIG/SIP interworking
Call Completion to Busy Subscriber (Call Back when Free)
Call Completion on No Reply (Call Back Next Used)
Path Replacement for Call Transfer by Join
Path Replacement for Trombone Connection
Path Replacement for Call Diversion by Forward Switch
**Configuration**

Configuration sequence for the Avaya S8500 Communications Manager 3.0 PBX

1. Check the system-parameter customer-option screen to insure the proper QSIG optional features are installed
2. Configure DS1 circuit pack.
3. Configure Signaling Group
4. Configure Trunk Group
5. Configure Route Pattern
6. Configure ISDN Public-Unknown numbering screen
7. Configure Uniform-Dialplan screen
8. Configure AAR analysis screen

**Configuring the Avaya S8500 Communications Manager 3.0**

**GLOBAL PARAMETERS**

Figure 2. QSIG Options – 1 of 1.

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

**QSIG OPTIONAL FEATURES**

- Basic Call Setup? y
- Basic Supplementary Services? y
- Centralized Attendant? y
- Interworking with DCS? y
- Supplementary Services with Rerouting? y
- Transfer into QSIG Voice Mail? y
- Value-Added (VALU)? y

Figure 3. Software Version – 1 of 1.

**SOFTWARE VERSIONS**

- Memory Resident: R013x.00.0.340.3
- Disk Resident: R013x.00.0.340.3

**TRANSLATION DATE**

- Memory Resident: 10:00 pm SUN JAN 21, 2007
- Disk Resident: 10:00 pm SUN JAN 21, 2007
- Disk Second Copy: good
CONFIGURATION FOR TRUNKS

Figure 4. Circuit Pack for E1-QSIG trunk to Cisco Unified CallManager Express – 1 of 1.

DS1 CIRCUIT PACK

Location: 01A1h
Bit Rate: 2.048
Line Coding: hdb3

Signaling Mode: isdn-pri
Connect: pbx
TN-C7 Long Timers? n
Interworking Message: PROGress
Interface Companding: alaw
Idle Code: 11111111
Channel Numbering: sequential
DCP/Analog Bearer Capability: 3.1kHz
T303 Timer(sec): 4

Slip Detection? n
Near-end CSU Type: other

Echo Cancellation? n
Figure 5. Trunk Group for E1-QSIG trunk to Cisco Unified CallManager Express – 1 of 3.

<table>
<thead>
<tr>
<th>Group Number: 14</th>
<th>Group Name: Tony B. CME Testi</th>
<th>Group Type: isdn</th>
<th>CDR Reports: y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction: Two-way</td>
<td>Outgoing Display? y</td>
<td>Carrier Medium: PRI/BRI</td>
<td></td>
</tr>
<tr>
<td>Dial Access? y</td>
<td>Busy Threshold: 255</td>
<td>Night Service:</td>
<td></td>
</tr>
<tr>
<td>Queue Length: 0</td>
<td>Auth Code? n</td>
<td>TestCall ITC: rest</td>
<td></td>
</tr>
<tr>
<td>Service Type: tie</td>
<td>Far End Test Line No:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TestCall BCC: 4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TRUNK PARAMETERS**

- Codeset to Send Display: 8
- Codeset to Send National IEs: 6
- Max Message Size to Send: 260
- Charge Advice: none
- Supplementary Service Protocol: enbloc/enbloc
- Trunk Hunt: ascend
- QSIG Value-Added? n
- Digital Loss Group: 13
- Incoming Calling Number - Delete: insert
- Bit Rate: 1200
- Synchronization: async
- Duplex: Full
- Disconnect Supervision - In? y Out? y
- Answer Supervision Timeout: 0
Figure 6. Trunk Group for E1-QSIG trunk to Cisco Unified CallManager Express – 2 of 3.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGA Assignment?</td>
<td>n</td>
</tr>
<tr>
<td>Measured.</td>
<td>none</td>
</tr>
<tr>
<td>WideBand Support?</td>
<td>y</td>
</tr>
<tr>
<td>Internal Alert?</td>
<td>n</td>
</tr>
<tr>
<td>Maintenance Tests?</td>
<td>y</td>
</tr>
<tr>
<td>Data Restriction?</td>
<td>n</td>
</tr>
<tr>
<td>AGA-TSC Trunk Member?</td>
<td>i</td>
</tr>
<tr>
<td>Send Name?</td>
<td>y</td>
</tr>
<tr>
<td>Send Calling Number?</td>
<td>y</td>
</tr>
<tr>
<td>Used For DCS?</td>
<td>y</td>
</tr>
<tr>
<td>Hop Dgt.</td>
<td>n</td>
</tr>
<tr>
<td>Suppress # Outpulsing?</td>
<td>n</td>
</tr>
<tr>
<td>Format</td>
<td>unknown</td>
</tr>
<tr>
<td>Outgoing Channel ID Encoding</td>
<td>preferred</td>
</tr>
<tr>
<td>UUI IE Treatment</td>
<td>service-provider</td>
</tr>
<tr>
<td>Replace Restricted Numbers?</td>
<td>y</td>
</tr>
<tr>
<td>Replace Unavailable Numbers?</td>
<td>y</td>
</tr>
<tr>
<td>Send Connected Number?</td>
<td>y</td>
</tr>
<tr>
<td>Hold/Unhold Notifications?</td>
<td>y</td>
</tr>
<tr>
<td>Modify Temporally Calling Number?</td>
<td>n</td>
</tr>
<tr>
<td>Send UUI IE?</td>
<td>y</td>
</tr>
<tr>
<td>Send UCIID?</td>
<td>n</td>
</tr>
<tr>
<td>Send Codecset 6/7 LAI IE?</td>
<td>y</td>
</tr>
<tr>
<td>Ds1 Echo Cancellation?</td>
<td>n</td>
</tr>
<tr>
<td>Path Replacement with Retention?</td>
<td>n</td>
</tr>
<tr>
<td>Path Replacement Method:</td>
<td>better-route</td>
</tr>
<tr>
<td>SBS?</td>
<td>n</td>
</tr>
<tr>
<td>Network (Japan) Needs Connect Before Disconnect?</td>
<td>n</td>
</tr>
</tbody>
</table>

Figure 7. Trunk Group for E1-QSIG trunk to Cisco Unified CallManager Express – 3 of 3.

<table>
<thead>
<tr>
<th>Member Assignment</th>
<th>Port</th>
<th>Code</th>
<th>Sfx</th>
<th>Name</th>
<th>Might</th>
<th>Sig Grp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administered Members (min/max): 1/8</td>
<td>1: 01A1401 TNA04 G</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Administered Members: 8</td>
<td>2: 01A1402 TNA04 G</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3: 01A1403 TNA04 G</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4: 01A1404 TNA04 G</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5: 01A1411 TNA04 G</td>
<td>14</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>6: 01A1420 TNA04 G</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7: 01A1429 TNA04 G</td>
<td>14</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>8: 01A1428 TNA04 G</td>
<td>14</td>
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<td>9:</td>
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<td>10:</td>
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<td>15:</td>
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</tr>
</tbody>
</table>
Figure 8. Signalling Group for E1-QSIG trunk to Cisco Unified CallManager Express – 1 of 1.

SIGNALING GROUP

Group Number: 14  Group Type: isdn-pri
Associated Signaling? y  Max number of NCA TSC: 10
Primary D-Channel: 01A1416  Max number of CA TSC: 10
Trunk Group for Channel Selection: 14
Supplementary Service Protocol: b

Figure 9. Circuit Pack for E1-NET5 trunk to PSTN – 1 of 1.

DS1 CIRCUIT PACK

Location: 01A13  Name: 
Bit Rate: 2.048  Line Coding: hdb3

Signaling Mode: isdn-pri  Connect: pbx
TN-C7 Long Timers? Y  Interface: user
Interworking Message: PROGRESS  Country Protocol: 1
Interface Companding: alaw  Protocol Version: a
Idle Code: 11111111  CRC? Y

DCP/Analog Bearer Capability: 8.1kHz
T303 Timer(sec): 4

Slip Detection? Y  Near-end CSU Type: other
## Figure 10

Trunk Group for E1-ETS trunk to PSTN – 1 of 3

<table>
<thead>
<tr>
<th>Change trunk-group 13</th>
<th>Send (return)</th>
<th>Help (F5)</th>
<th>Cancel (Esc)</th>
<th>Enter (F3)</th>
<th>Schedule (F9)</th>
<th>Next (F7)</th>
<th>Previous (F8)</th>
<th>Next Form (F6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19</td>
<td></td>
<td></td>
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### TRUNK GROUP

<table>
<thead>
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<th>Group Number:</th>
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</thead>
<tbody>
<tr>
<td>Group Name:</td>
<td>E1-ISDN</td>
</tr>
<tr>
<td>Group Type:</td>
<td>ISDN</td>
</tr>
<tr>
<td>CDR Reports:</td>
<td>Y</td>
</tr>
<tr>
<td>COR:</td>
<td>1</td>
</tr>
<tr>
<td>TN:</td>
<td>1</td>
</tr>
<tr>
<td>TAC:</td>
<td>813</td>
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<tr>
<td>Direction:</td>
<td>Two-way</td>
</tr>
<tr>
<td>Outgoing Display:</td>
<td>N</td>
</tr>
<tr>
<td>Carrier Medium:</td>
<td>PRI/HRI</td>
</tr>
<tr>
<td>Dial Access?</td>
<td>Y</td>
</tr>
<tr>
<td>Busy Threshold:</td>
<td>255</td>
</tr>
<tr>
<td>Night Service:</td>
<td></td>
</tr>
<tr>
<td>Queue Length:</td>
<td></td>
</tr>
<tr>
<td>Service Type:</td>
<td>Tie</td>
</tr>
<tr>
<td>Auth Code?</td>
<td>N</td>
</tr>
<tr>
<td>TestCall ITL:</td>
<td></td>
</tr>
<tr>
<td>TestCall BCC:</td>
<td>Y</td>
</tr>
<tr>
<td>Far End Test Line No:</td>
<td></td>
</tr>
</tbody>
</table>

### TRUNK PARAMETERS

<table>
<thead>
<tr>
<th>Codeset to Send Display:</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Codeset to Send National IEs:</td>
<td>6</td>
</tr>
<tr>
<td>Max Message Size to Send:</td>
<td>260</td>
</tr>
<tr>
<td>Charge Advice:</td>
<td>none</td>
</tr>
<tr>
<td>Supplementary Service Protocol:</td>
<td>6</td>
</tr>
<tr>
<td>Digit Handling (in/out):</td>
<td>enbloc/enbloc</td>
</tr>
</tbody>
</table>

Trunk Hunt: ascend

<table>
<thead>
<tr>
<th>Digital Loss Group:</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incoming Calling Number - Delete:</td>
<td>Y</td>
</tr>
<tr>
<td>Insert:</td>
<td></td>
</tr>
<tr>
<td>Format:</td>
<td>unk-unk</td>
</tr>
<tr>
<td>Bit Rate:</td>
<td>1200</td>
</tr>
<tr>
<td>Synchronization:</td>
<td>async</td>
</tr>
<tr>
<td>Duplex:</td>
<td>Full</td>
</tr>
</tbody>
</table>

Disconnected Supervision - In? | Y |
| Out? | Y |

Answer Supervision Timeout: 0
Figure 11.  Trunk Group for E1-NETS trunk to PSTN – 2 of 3.

<table>
<thead>
<tr>
<th>TRUNK FEATURES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ACA Assignment?</td>
<td></td>
</tr>
<tr>
<td>Measured: none</td>
<td></td>
</tr>
<tr>
<td>Wideband Support?</td>
<td></td>
</tr>
<tr>
<td>Internal Alert?</td>
<td></td>
</tr>
<tr>
<td>Maintenance Tests?</td>
<td></td>
</tr>
<tr>
<td>Data Restriction?</td>
<td></td>
</tr>
<tr>
<td>NCA-TSC Trunk Member?</td>
<td>1</td>
</tr>
<tr>
<td>Send Name:</td>
<td></td>
</tr>
<tr>
<td>Send Calling Number:</td>
<td></td>
</tr>
<tr>
<td>Used For DCS?</td>
<td></td>
</tr>
<tr>
<td>Suppress # Outpulsing?</td>
<td></td>
</tr>
<tr>
<td>Format: unknown</td>
<td></td>
</tr>
<tr>
<td>Outgoing Channel ID Encoding: preferred</td>
<td></td>
</tr>
<tr>
<td>UUI IE Treatment:</td>
<td>service-provider</td>
</tr>
<tr>
<td>Replace Restricted Numbers?</td>
<td></td>
</tr>
<tr>
<td>Replace Unavailable Numbers?</td>
<td></td>
</tr>
<tr>
<td>Send Connected Number:</td>
<td></td>
</tr>
<tr>
<td>Hold/Unhold Notifications?</td>
<td></td>
</tr>
<tr>
<td>Modify Tandem Calling Number?</td>
<td></td>
</tr>
<tr>
<td>Send UUI IE?</td>
<td></td>
</tr>
<tr>
<td>Send UGID?</td>
<td></td>
</tr>
<tr>
<td>Send Codeset 6/7 LAI IE?</td>
<td></td>
</tr>
<tr>
<td>D51 Echo Cancellation?</td>
<td></td>
</tr>
<tr>
<td>SBS?</td>
<td></td>
</tr>
<tr>
<td>Network (Japan) Needs Connect Before Disconnect?</td>
<td></td>
</tr>
</tbody>
</table>
### Figure 12. Trunk Group for E1-NET5 trunk to PSTN – 3 of 3.

**GROUP MEMBER ASSIGNMENTS**

<table>
<thead>
<tr>
<th>Port</th>
<th>Code</th>
<th>Sfx</th>
<th>Name</th>
<th>Right</th>
<th>Sig Grp</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01A1301</td>
<td>TNA64 F</td>
<td></td>
<td></td>
<td>13</td>
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<tr>
<td>2</td>
<td>01A1302</td>
<td>TNA64 F</td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>01A1303</td>
<td>TNA64 F</td>
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<tr>
<td>4</td>
<td>01A1304</td>
<td>TNA64 F</td>
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<td>01A1305</td>
<td>TNA64 F</td>
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<td>01A1220</td>
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<td>01A1330</td>
<td>TNA64 F</td>
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<td>9</td>
<td>01A1331</td>
<td>TNA64 F</td>
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<td>10</td>
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<td></td>
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<td></td>
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<tr>
<td>13</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
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<tr>
<td>15</td>
<td></td>
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</tr>
</tbody>
</table>

### Figure 13. Signalling Group for E1-NET5 trunk to PSTN – 1 of 1.

**SIGNALING GROUP**

- **Group Number:** 13
- **Group Type:** isdn-pri
- **Associated Signalling:** 
- **Primary D-Channel:** 01A1316
- **Max number of NCA TSC:** 10
- **Trunk Group for Channel Selection:** 13
- **Supplementary Service Protocol:** 3
- **Trunk Group for NCA TSC:** 13
DIAL PLANS AND ROUTE PATTERNS

Figure 14. Uniform Dial Plan – 1 of 1.

<table>
<thead>
<tr>
<th>Matching Pattern</th>
<th>Insert Len</th>
<th>Del Digits</th>
<th>Net Conv</th>
<th>Num Mode</th>
<th>Matching Pattern</th>
<th>Insert Len</th>
<th>Del Digits</th>
<th>Net Conv</th>
<th>Num Mode</th>
<th>Percent Full: 0</th>
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</thead>
<tbody>
<tr>
<td>70</td>
<td>4</td>
<td>0</td>
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<td>n</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>72</td>
<td>4</td>
<td>0</td>
<td>21</td>
<td>aar</td>
<td>n</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>73</td>
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<td>0</td>
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</tbody>
</table>
## AAR Digit Analysis Table

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<th>Dialed String</th>
<th>Total Min</th>
<th>Total Max</th>
<th>Route Pattern</th>
<th>Call Type</th>
<th>Node Num</th>
<th>AMI Reqd</th>
</tr>
</thead>
<tbody>
<tr>
<td>217</td>
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<td>17</td>
<td>aar</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>221</td>
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<td>7</td>
<td>11</td>
<td>aar</td>
<td>4</td>
<td>n</td>
</tr>
<tr>
<td>222</td>
<td>7</td>
<td>7</td>
<td>21</td>
<td>aar</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>224</td>
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<td>7</td>
<td>99</td>
<td>aar</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>225</td>
<td>4</td>
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<td>13</td>
<td>aar</td>
<td>n</td>
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</tr>
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</tr>
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<td>999</td>
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<td>n</td>
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<td>4</td>
<td>4</td>
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<td>5554050</td>
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</tr>
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<td>6</td>
<td>7</td>
<td>7</td>
<td>999</td>
<td>aar</td>
<td>n</td>
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</tr>
<tr>
<td>7</td>
<td>7</td>
<td>7</td>
<td>999</td>
<td>aar</td>
<td>n</td>
<td></td>
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</table>

Percent Full: 2
**Figure 16.** Route Pattern for E1-QSIG trunk to Cisco Unified CallManager Express – 1 of 1.

<table>
<thead>
<tr>
<th>Pattern Number</th>
<th>Pattern Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SCCAM? n</td>
</tr>
<tr>
<td></td>
<td>Secure SIP? n</td>
</tr>
<tr>
<td>Grp</td>
<td>PXL</td>
</tr>
<tr>
<td>No</td>
<td>Mrk Lnt List Del Digits</td>
</tr>
<tr>
<td>1:</td>
<td>14</td>
</tr>
<tr>
<td>2:</td>
<td></td>
</tr>
<tr>
<td>3:</td>
<td></td>
</tr>
<tr>
<td>4:</td>
<td></td>
</tr>
<tr>
<td>5:</td>
<td></td>
</tr>
<tr>
<td>6:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BCC VALUE</th>
<th>TSC</th>
<th>CA-TSC</th>
<th>ITC BCIE Service/Feature BAN</th>
<th>No. Numbering LAR Digits Format Subaddress</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4 5</td>
<td>Request</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:</td>
<td>y y y y y n</td>
<td>y</td>
<td>as-needed</td>
<td>bologue</td>
</tr>
<tr>
<td>2:</td>
<td>y y y y y n</td>
<td>n</td>
<td></td>
<td>rest</td>
</tr>
<tr>
<td>3:</td>
<td>y y y y y n</td>
<td>n</td>
<td></td>
<td>rest</td>
</tr>
<tr>
<td>4:</td>
<td>y y y y y n</td>
<td>n</td>
<td></td>
<td>rest</td>
</tr>
<tr>
<td>5:</td>
<td>y y y y y n</td>
<td>n</td>
<td></td>
<td>rest</td>
</tr>
<tr>
<td>6:</td>
<td>y y y y y n</td>
<td>n</td>
<td></td>
<td>rest</td>
</tr>
</tbody>
</table>
Figure 17. Route Pattern for E1-NET5 trunk to PSTN – 1 of 1.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pattern Number:</strong></td>
<td>13</td>
<td><strong>Pattern Name:</strong></td>
<td>SCCAMP? n Secure SIP? n</td>
</tr>
<tr>
<td>Grp</td>
<td>FRL</td>
<td>NPA</td>
<td>PfX</td>
</tr>
<tr>
<td>No</td>
<td>Mrk</td>
<td>Lmt</td>
<td>List</td>
</tr>
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<td>1:</td>
<td>13</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2:</td>
<td>n</td>
<td>user</td>
<td></td>
</tr>
<tr>
<td>3:</td>
<td>n</td>
<td>user</td>
<td></td>
</tr>
<tr>
<td>4:</td>
<td>n</td>
<td>user</td>
<td></td>
</tr>
<tr>
<td>5:</td>
<td>n</td>
<td>user</td>
<td></td>
</tr>
<tr>
<td>6:</td>
<td>n</td>
<td>user</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DCC VALUE</th>
<th>TSC</th>
<th>CA-TSC</th>
<th>ITC DCIE Service/Feature DAND</th>
<th>No.</th>
<th>Numbering</th>
<th>LAR</th>
<th>Request</th>
<th>Dgts Format</th>
<th>Subaddress</th>
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<tbody>
<tr>
<td>0 1 2 3 n W</td>
<td>123</td>
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<td>none</td>
<td></td>
</tr>
<tr>
<td>1:</td>
<td>y y y y y n</td>
<td>y</td>
<td>as-needed</td>
<td>rest</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:</td>
<td>y y y y y n</td>
<td>n</td>
<td></td>
<td>rest</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:</td>
<td>y y y y y n</td>
<td>n</td>
<td></td>
<td>rest</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:</td>
<td>y y y y y n</td>
<td>n</td>
<td></td>
<td>rest</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:</td>
<td>y y y y y n</td>
<td>n</td>
<td></td>
<td>rest</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:</td>
<td>y y y y y n</td>
<td>n</td>
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<td>rest</td>
<td>none</td>
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<td></td>
<td></td>
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</tbody>
</table>

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## CONFIGURATIONS FOR PHONES

### Figure 18. Digital Station Configuration – 1 of 2.

<table>
<thead>
<tr>
<th>Extension: 4115</th>
<th>Type: 6406D+</th>
<th>Lock Messages? n</th>
<th>BCG: 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port: 01A0404</td>
<td>Security Code:</td>
<td>TH: 1</td>
<td></td>
</tr>
<tr>
<td>Name: phone A</td>
<td>Coverage Path 1:</td>
<td>CDR: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coverage Path 2:</td>
<td>COS: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hunt-to Station:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**STATION OPTIONS**

- Loss Group: 2
- Data Module? n
- Speakerphone: 2-way
- Display Language: english
- Personalized Ringing Pattern: 1
- Message Lamp Ext: 4115
- Mute Button Enabled? y
- Media Complex Ext: 
- IP SoftPhone? n
- Remote Office Phone? n
<table>
<thead>
<tr>
<th>Feature Options</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>LWC Reception: spe</td>
<td>Auto Select Any Idle Appearance? n</td>
</tr>
<tr>
<td>LWC Activation: y</td>
<td>Coverage Msg Retrieval? y</td>
</tr>
<tr>
<td>LWC Log External Calls? n</td>
<td>Auto Answer: none</td>
</tr>
<tr>
<td>CDR Privacy? n</td>
<td>Data Restriction? n</td>
</tr>
<tr>
<td>Redirect Notification? y</td>
<td>Idle Appearance Preference? n</td>
</tr>
<tr>
<td>Per Button Ring Control? n</td>
<td>Bridged Idle Line Preference? n</td>
</tr>
<tr>
<td>Bridged Call Alerting? n</td>
<td>Restrict Last Appearance? y</td>
</tr>
<tr>
<td>Active Station Ringing: single</td>
<td>Conf/Trans on Primary Appearance? n</td>
</tr>
<tr>
<td>H.320 Conversion? n</td>
<td>Per Station CPN – Send Calling Number?</td>
</tr>
<tr>
<td>Service Link Mode: as-needed</td>
<td>Audible Message Waiting? n</td>
</tr>
<tr>
<td>Multimedia Mode: basic</td>
<td>Display Client Redirection? n</td>
</tr>
<tr>
<td>MNI Served User Type:</td>
<td>Select Last Used Appearance? n</td>
</tr>
<tr>
<td>AUDIX Name:</td>
<td>Coverage After Forwarding? y</td>
</tr>
<tr>
<td>Emergency Location Ext: 4115</td>
<td>Multimedia Early Answer? n</td>
</tr>
<tr>
<td></td>
<td>Direct IP-IP Audio Connections? y</td>
</tr>
<tr>
<td></td>
<td>IP Audio Hairpinning? y</td>
</tr>
</tbody>
</table>
CLIR

For Calling Line ID Restriction (CLIR, CNIR) to be implemented, the associated trunk group must be modified.

On page 2 of the Trunk Group screen, “Send Name” field and “Send Calling Number” field must be changed to “r” for restricted.

Figure 20. Trunk Group for E1-QSIG trunk to Cisco Unified CallManager Express – modified for CLIR – 1 of 1.

<table>
<thead>
<tr>
<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>
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<th>13</th>
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<th>16</th>
<th>17</th>
<th>18</th>
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</thead>
<tbody>
<tr>
<td>TRUNK FEATURES</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACA Assignment? n</td>
<td>Measured: none</td>
<td>Wideband Support? n</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal Alert? n</td>
<td>Maintenance Tests? y</td>
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<td></td>
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<td></td>
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<tr>
<td>Data Restriction? n</td>
<td>NCA-TSC Trunk Number: 1</td>
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<tr>
<td>Send Name: r</td>
<td>Send Calling Number: r</td>
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<td>Used For DCS? n</td>
<td>Hop Dgt? n</td>
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<tr>
<td>Suppress # Outpulsing? n</td>
<td>Format: unknown</td>
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<tr>
<td>Outgoing Channel ID Encoding: preferred</td>
<td>UUI IE Treatment: service-provider</td>
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<tr>
<td>Replace Restricted Numbers? y</td>
<td>Replace Unavailable Numbers? y</td>
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<tr>
<td>Send Connected Number: y</td>
<td>Hold/Unhold Notifications? y</td>
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<tr>
<td>Send UUI IE? y</td>
<td>Modify Tandem Calling Number? n</td>
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<td>Send UCID? n</td>
<td>Ds1 Echo Cancellation? n</td>
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<tr>
<td>Path Replacement with Retention? n</td>
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<td>Path Replacement Method: better-route</td>
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<tr>
<td>SBS? n</td>
<td>Network (Japan) Needs Connect Before Disconnect? n</td>
<td></td>
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</tr>
</tbody>
</table>
CALL FORWARD BY JOIN

For diversion (CFU, CFB) to be accomplished by join instead of reroute, a coverage path must be assigned to the forwarding station.

On page 1 of the station form associated with the forwarding station, “Coverage Path 1” must be set to 1. See Figure 21.

On page 2 of the station form associated with the forwarding station, "Coverage after Forwarding” must be set to "y". See Figure 22.

Some system parameters also must be enabled:

On page 1 of the system parameters / coverage forwarding form, "QSIG VALU Coverage Overrides QSIG Diversion with Rerouting" must to be set to "y". See 0

On page 1 of the system parameters / coverage forwarding form, "Call Forward Override" must be set "y". See 0

On page 1 of the system parameters / coverage forwarding form, "Coverage After Forwarding" also must be set to "y". See 0

On page 2 of the system parameters / coverage forwarding form, "Coverage of Calls Redirected Off-net Enabled" needs to be set to "y". Figure 24.

Figure 21. Screen shot of station form for Call Forward by Join – 1 of 2.
### Feature Options
- **LWC Reception**: spe
- **LWC Activation**: y
- **LWC Log External Calls**: n
- **GDR Privacy**: n
- **Redirect Notification**: y
- **Per Button Ring Control**: n
- **Bridged Call Alerting**: n
- **Active Station Ringing**: single
- **H.320 Conversion**: n
- **Service Link Mode**: as-needed
- **Multimedia Mode**: Basic
- **MNI Served User Type**: 
- **AUDIN Name**: 
- **Emergency Location Ext**: 4115

### Auto Select Any Idle Appearance**: n
- **Coverage Msg Retrieval**: y
- **Auto Answer**: none
- **Data Restriction**: n
- **Idle Appearance Preference**: n
- **Bridged Idle Line Preference**: n
- **Restrict Last Appearance**: y
- **Conf/Trans on Primary Appearance**: n

### System Parameters / Coverage Forwarding

#### Call Coverage/Forwarding Parameters
- **Local Cug Subsequent Redirection/CFWD No Ans Interval (rings)**: 4
- **Off-Net Cug Subsequent Redirection/CFWD No Ans Interval (rings)**: 4
- **Coverage - Caller Response Interval (seconds)**: 4
- **Threshold for Blocking Off-Net Redirection of Incoming Trunk Calls**: 1

#### Coverage
- **Keep Held SBA at Coverage Point**: y
- **External Coverage Treatment For Transferred Incoming Trunk Calls**: n
- **Immediate Redirection on Receipt of PROGRESS Inband Information**: n
- **Maintain SBA At Principal**: y
- **QSIG VALU Coverage Overrides QSIG Diversion with Rerouting**: y
- **Station Hunt Before Coverage**: n

#### Forwarding
- **Call Forward Override**: y
- **Coverage After Forwarding**: y
**Figure 24.** Screen shot of system parameters / coverage forwarding form for Call Forward by Join – 2 of 2.

<table>
<thead>
<tr>
<th>Display System Parameters</th>
<th>Cov</th>
<th>Send</th>
<th>Return</th>
<th>Help</th>
<th>Cancel</th>
<th>Esc</th>
<th>Enter</th>
<th>Schedule</th>
<th>Next</th>
<th>Previous</th>
<th>Next Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
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</tbody>
</table>

**SYSTEM PARAMETERS CALL COVERAGE / CALL FORWARDING**

**COVERAGE OF CALLS REDIRECTED OFF-NET (CCRON)**

- Coverage Of Calls Redirected Off-Net Enabled? **y**
- Activate Answer Detection (Preserves SBA) On Final CCRON Cug Point? **y**
- Ignore Network Answer Supervision? **n**
- Disable call classifier for CCRON over ISDN trunks? **n**
- Disable call classifier for CCRON over SIP trunks? **n**
Configuring the Local Cisco Unified CallManager Express (Cisco 3845)

Building configuration...

Current configuration : 4460 bytes

! version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname c3845CME
!
boot-start-marker
boot system flash:c3845-ipvoice-mz.124-11.T.bin
boot-end-marker
!
logging buffered 10000000
no logging console
enable password cisco
!
no aaa new-model
network-clock-participate wic 0
network-clock-select 1 E1 0/0/1
ip cef
!
no ip dhcp use vrf connected
ip dhcp excluded-address 200.1.1.1
!
ip dhcp pool phone
    network 200.1.1.0 255.255.255.0
    option 150 ip 200.1.1.1
    default-router 200.1.1.1
!
!
no ip domain lookup
multilink bundle-name authenticated
!
isdn switch-type primary-qsig
voice-card 0
    no dspfarm
!
!
voice call send-alert
!
voice service pots
    supplementary-service qsig call-forward
!
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
bind control source-interface GigabitEthernet0/1
bind media source-interface GigabitEthernet0/1
rel1xx disable
min-se 100
ds0-num
header-passing
registrar server
!
!
!
!
!
!
!
!
!
!
!
!
voice register global
mode cme
source-address 200.1.1.1 port 5060
max-dn 100
max-pool 192
load 7960-7940 POS3-07-5-00
tftp-path flash:
create profile sync 0594123930921449
!
voice register dn 1
number 7000
name Zidane
huntstop
!
voice register dn 2
number 7001
call-forward b2bua noan 5050 timeout 5
name Platini
huntstop
!
voice register pool 1
id mac 000F.9054.2FC2
type 7960
number 1 dn 1
max registrations 240
dtmf-relay rtp-nte
description Zidane
!
voice register pool 2
id mac 0012.4362.BF71
type 7960
number 1 dn 2
max registrations 240
dtmf-relay rtp-nte
description Platini
!
controller E1 0/0/0
controller E1 0/0/1
clock source line primary
pri-group timeslots 1-31

interface GigabitEthernet0/0
ip address 172.20.8.26 255.255.255.0
duplex auto
speed auto
media-type rj45
no keepalive

interface GigabitEthernet0/1
ip address 200.1.1.1 255.255.255.0
duplex auto
speed auto
media-type rj45
no keepalive

interface Serial0/0/1:15
no ip address
encapsulation hdlc
isdn switch-type primary-qsig
isdn overlap-receiving
isdn incoming-voice voice
isdn bchan-number-order ascending
no cdp enable

ip default-gateway 172.20.8.1
ip route 0.0.0.0 0.0.0.0 172.20.8.1
ip route 201.2.2.0 255.255.255.0 172.20.8.27

ip http server
ip http authentication local
ip http path flash:

tftp-server flash:P003-07-5-00.bin
tftp-server flash:P003-07-5-00.sbn
tftp-server flash:P003-07-5-00.bin
tftp-server flash:P003-07-5-00.sbn2
tftp-server flash:P003-07-5-00.loads
tftp-server flash:TERM41.7-0-3-0S
tftp-server flash:P0030702T023

control-plane

voice-port 0/0/1:15
mwi
!  
!  
!  
!  
! dial-peer voice 6000 voip  
destination-pattern 700[89]  
session target ipv4:201.2.2.1  
novad  
!  
! dial-peer voice 95580000 pots  
destination-pattern 3...  
direct-inward-dial  
port 0/0/1:15  
forward-digits all  
!  
! dial-peer voice 2200 pots  
destination-pattern 41..  
incoming called-number ....  
direct-inward-dial  
port 0/0/1:15  
forward-digits all  
!  
! dial-peer voice 5050 pots  
destination-pattern 50..  
direct-inward-dial  
port 0/0/1:15  
forward-digits all  
!  
! gateway  
timer receive-rtp 1200  
!  
! sip-ua  
retry options 0  
mwi-server ipv4:200.1.1.1 expires 3600 port 5060 transport udp  
!  
! telephony-service  
load 7960-7940 P0030702T023  
load 7961 TERM41.7-0-3-0S  
max-ephones 96  
max-dn 192  
ip source-address 200.1.1.1 port 2000  
system message ABC Corp  
max-conferences 8 gain -6  
call-forward pattern .T  
moh music-on-hold.au  
dn-webedit  
time-webedit  
transfer-system full-blind  
transfer-pattern ....  
secondary-dialtone 9  
create cnf-files version-stamp Jan 01 2002 00:00:00  
!  
! ephone-dn 3 dual-line  
number 7002  
label 7002
description Pele
name Pele
call-forward noan 5050 timeout 5
huntstop channel
!
!
ephone-dn 4 dual-line
number 7003
label 7003
description Beckenbauer
name Beckenbauer
huntstop channel
!
!
ephone-dn 5 dual-line
call-waiting ring
number 7004
label 7004
description H. Sanchez
name Sanchez
huntstop channel
!
!
ephone 3
mac-address 0017.0EEE.2F5E
type 7961
keep-conference
button 1:3
!
!
ephone 4
mac-address 0015.2B8F.351B
type 7961
keep-conference
button 1:4
!
!
ephone 5
mac-address 0014.1C48.DE7A
type 7960
keep-conference
button 1:5
!
!
line con 0
password cisco
login
stopbits 1
line aux 0
stopbits 1
line vty 0 4
exec-timeout 0 0
password cisco
login
!
scheduler allocate 20000 1000
Configuring the Cisco Unified CallManager Express 2 (Cisco 2801)

c2801CME#sh run
Building configuration...

Current configuration : 3121 bytes

! version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
! hostname c2801CME
!
boot-start-marker
boot system flash:c2801-ipvoice-mz.124-11.T.bin
boot-end-marker
!
logging buffered 100000000
no logging console
enable password cisco
!
no aaa new-model
network-clock-participate wic 1
network-clock-select 1 E1 0/1/1
ip cef
!
no ip dhcp use vrf connected
ip dhcp excluded-address 201.2.2.1
!
ip dhcp pool phone
   network 201.2.2.0 255.255.255.0
   option 150 ip 201.2.2.1
default-router 201.2.2.1
!
!
no ip domain lookup
multilink bundle-name authenticated
!
isdn switch-type primary-qsig
!
voice-card 0
!
!
voice service pots
   supplementary-service qsig call-forward
!
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

controller E1 0/1/0
controller E1 0/1/1
   pri-group timeslots 1-31

interface FastEthernet0/0
   ip address 172.20.8.27 255.255.255.0
duplex auto
   speed auto

interface FastEthernet0/1
   ip address 201.2.2.1 255.255.255.0
duplex auto
   speed auto

interface Serial0/1/1:15
   no ip address
   encapsulation hdlc
   isdn switch-type primary-qsig
   isdn incoming-voice voice
   no cdp enable

   ip default-gateway 172.20.8.1
   ip route 0.0.0.0 0.0.0.0 172.20.8.1
   ip route 200.1.1.0 255.255.255.0 172.20.8.26

   ip http server
   ip http authentication local
   ip http path flash:
      disable-eadi

   tftp-server flash:P003-07-5-00.bin
tftp-server flash:P003-07-5-00.sbn
tftp-server flash:P0S3-07-5-00.bin
tftp-server flash:P0S3-07-5-00.sb2
tftp-server flash:PO1S3-07-5-00.loads
tftp-server flash:TERM41.7-0-3-0S
tftp-server flash:PO030702T023
!
control-plane
!
!
voice-port 0/1/1:15
!
!
!
dial-peer voice 4000 voip
destination-pattern 7..[01234]
session target ipv4:200.1.1.1
no vad
!
dial-peer voice 9 voip
destination-pattern 4...
session target ipv4:200.1.1.1
no vad
!
dial-peer voice 2200 voip
destination-pattern 2...
session target ipv4:200.1.1.1
dtmf-relay rtp-nge
no vad
!
dial-peer voice 5000 voip
destination-pattern 50..
session target ipv4:200.1.1.1
dtmf-relay rtp-nge
no vad
!
!
telephony-service
load 7960-7940 P0030702T023
load 7961 TERM41.7-0-3-0S
max-ephones 30
max-dn 150
ip source-address 201.2.2.1 port 2000
system message CBA Corp
max-conferences 8 gain -6
call-forward pattern .T
moh music-on-hold.au
dn-webedit
time-webedit
transfer-system full-blind
transfer-pattern ....
secondary-dialtone 9
create cnf-files version-stamp Jan 01 2002 00:00:00
!
!
ephone-dn 1 dual-line
number 7008
label 7008
description Ronaldinho
name Ronaldinho
call-forward noan 5050 timeout 5
huntstop channel
!
!
ephone-dn 4 dual-line
number 7009
label 7009
description Tevez
name Tevez
huntstop channel
!
!
ephone 1
mac-address 000F.9069.DB2C
type 7960
keep-conference
button 1:1
!
!
ephone 4
mac-address 0030.94C3.31AD
type 7960
keep-conference
button 1:4
!
!
!
line con 0
password cisco
login
line aux 0
line vty 0 4
exec-timeout 0 0
password cisco
login
!
scheduler allocate 20000 1000
end

c2801CME#
## Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRI</td>
<td>Basic Rate ISDN</td>
</tr>
<tr>
<td>CAMA</td>
<td>Centralized Automatic Message Accounting</td>
</tr>
<tr>
<td>CAS</td>
<td>Channel Associated Signaling</td>
</tr>
<tr>
<td>CFB</td>
<td>Call Forward when Busy</td>
</tr>
<tr>
<td>CFNR</td>
<td>Call Forward when No Reply</td>
</tr>
<tr>
<td>CFU</td>
<td>Call Forward Unconditional</td>
</tr>
<tr>
<td>CO</td>
<td>Central Office</td>
</tr>
<tr>
<td>FGD</td>
<td>Feature Group “D”</td>
</tr>
<tr>
<td>FXO</td>
<td>Foreign Exchange – Office</td>
</tr>
<tr>
<td>FXS</td>
<td>Foreign Exchange – Station</td>
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<tr>
<td>IOS</td>
<td>Internetworking Operating System</td>
</tr>
<tr>
<td>MCID</td>
<td>Malicious Caller ID</td>
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<tr>
<td>MGCP</td>
<td>Media Gateway Control Protocol</td>
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<tr>
<td>MoH</td>
<td>Music on Hold</td>
</tr>
<tr>
<td>MWI</td>
<td>Message Waiting Indication</td>
</tr>
<tr>
<td>PBX</td>
<td>Private Branch Exchange</td>
</tr>
<tr>
<td>PRI</td>
<td>Primary Rate ISDN</td>
</tr>
<tr>
<td>PSAP</td>
<td>Public Service Access Point</td>
</tr>
<tr>
<td>SIP</td>
<td>Session Initiation Protocol</td>
</tr>
<tr>
<td>ToH</td>
<td>Tone on Hold</td>
</tr>
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</table>
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<th>Americas Headquarters</th>
<th>Asia Pacific Headquarters</th>
</tr>
</thead>
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<td>170 West Tasman Drive</td>
<td>BV</td>
<td>170 West Tasman Drive</td>
<td>Capital Tower</td>
</tr>
<tr>
<td>San Jose, CA 95134-1706</td>
<td>Haarlerbergpark</td>
<td>San Jose, CA 95134-1706</td>
<td>168 Robinson Road</td>
</tr>
<tr>
<td>USA</td>
<td>Haarlerbergweg 13-19</td>
<td>USA</td>
<td>#22-01 to #29-01</td>
</tr>
<tr>
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<td>Singapore 068912</td>
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<tr>
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<td>The Netherlands</td>
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<td>www-europe.cisco.com</td>
<td>Fax: 408 527-0883</td>
<td>Tel: +65 317 7777</td>
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<tr>
<td>Fax: 408 526-4100</td>
<td>Tel: 31 0 20 357 1000</td>
<td>Fax: 31 0 20 357 1100</td>
<td>Fax: +65 317 7799</td>
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</tbody>
</table>

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Printed in the USA