Application Note

# Siemens HiPath 4000 Release 1.0 using E1 QSIG to Cisco Unified CallManager Express Release 4.0(3)

**November 1, 2007 Version 7**

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## Introduction

This is an Application Note for connectivity between a Siemens HiPath 4000 Release 1 PBX and Cisco Unified CallManager Express Release 4.0(3) using a Cisco 3845 voice gateway with QSIG protocol.

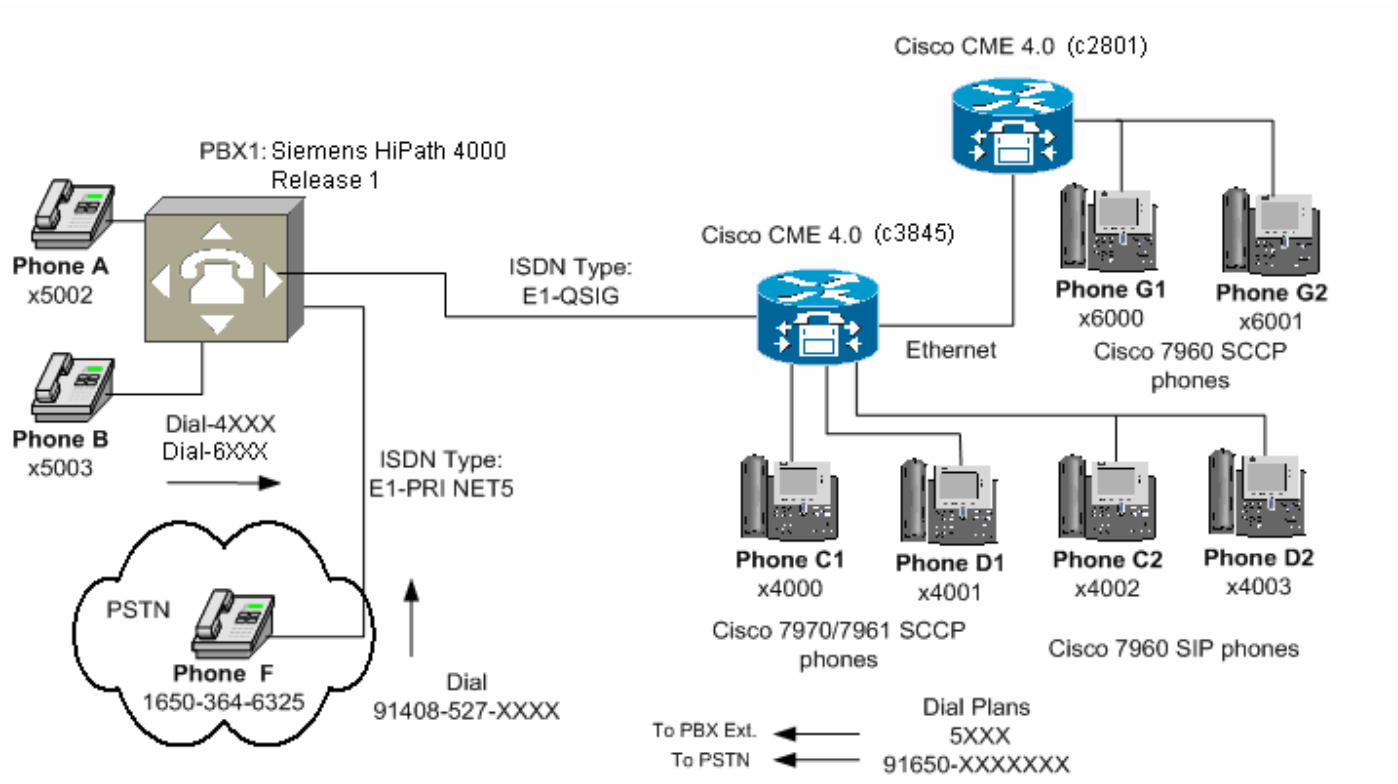
The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability with Cisco Unified CallManager Express Release 4.0(3) connected to the PBX via the 3845 E1 QSIG link. The 3845 IOS voice gateway was connected via H.323 to a Cisco 2801 IOS voice gateway. The two gateways were running Cisco Unified CallManager Express 4.0(3). Cisco Unified IP phones (models 7960, 7961G, and 7970) were connected to the 2 Cisco Unified CallManager Express gateways via SIP and SCCP, as per figure 1. A NM-HDV and VWIC-2MFT-E1 were used for the E1 QSIG interface. Calls were made to test basic call, caller ID, conference, transfer, Callforward, call back and reroute features.

This Application Note uses the 3845 voice gateway. However, the use of other Cisco voice gateways is also an option since Cisco Unified Call Manager Express QSIG implementation does not depend on the physical interface.

The inclusion of Cisco SIP phones in this application note is for reference only. CME 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 does support overlap receiving.

Calling Name Restriction is not supported for calls originating from from Cisco Unified CallManager Express end-points.

Alerting Name is not supported on calls between PBX and Cisco Unified IP Phone running SIP.

Called/Connected Name is not supported on calls between PBX and Cisco Unified IP Phone running SIP.

### Call Transfers

On a call originating from SCCP phone calling a SIP phone and the SIP phone, after answering the call, attempts to transfer the call to a PBX extension the call transfer fails. (e.g. Phone C1 calls Phone C2, C2 attempts to transfer to Phone A. See figure 1).

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. The same behavior is seen during an early attended transfer between a SCCP phone and a SIP phone, but the limitation is not seen during an early attended transfer between Phone a SIP phone to SIP phone. (e.g. Phone A calls Phone C1 or C2, xfer to Phone D2. See figure 1.)

Call Transfer attended, early attended or blind; When the PBX phone calls a SCCP phone or a SIP phone and the call is trasferred to a SSCP phone or SIP phone the connected number does not update on PBX phone, after the transfered call is answered.

For all supervised and early-attended Network/External call transfers, the original calling name and number are not displayed on the final destination. The limitation is due to the CME not supporting the QSIG operation”CallTransferComplete” carried in the Q931 FACILITY message for name/number updating

### 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 a SIP phone. This is a CME 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 CME to PBX interworking 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, even if a reroute is disabled, and even though a reroute is not in order (i.e., there is no ”hairpin” or ”trombone”).

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

Calls initiated from the PBX side using overlap-dialing and destined to a Cisco Unified CallManager Express SIP or SCCP phone that is Callforwarded back to another PBX phone will not perform a qsig reroute, even if reroute is enabled and the call is eligible for a reroute.

### MWI

Cisco Unified Communications Manager Express 4.0(3) 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.

There was no PBX voice mail system present at the time of testing. Therefore, no testing was performed with the PBX as the message center PINX.

## 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) Siemens HiPath 40000

DIU-N2

### Software Requirements

Cisco Unified CallManager Express Release 4.0(3)

Cisco IOS Software, 3800 Software (C3845-IPVOICE-M), Version 12.4(4)XC4

Cisco IOS Software, 2801 Software (C2801-IPVOICE-M), Version 12.4(4)XC4

**G1, G2 – 7960 – SCCP**

Cisco7960 IP phone version 7.2(T0.23)

Cisco 7960 IP phone app load P0030702T023

Cisco 7960 IP phone boot load PC0303010200

**C2, D2 – 7960 - SIP**

Cisco7960 DSP load ID PS03AT46

Cisco 7960 IP phone app load P0S3-07-5-00

Cisco 7960 IP phone boot load PC030301

**C1 – 7961G – SCCP**

Cisco7961G IP phone load file: TERM41.7-0-3-0S.loads

Cisco 7961G IP phone app load ID:  Jar41.2-9-1-45.sbn

Cisco 7961G IP phone boot load ID: 7961G_64-020704128Amd64meg.bin

## Features

### Features Supported

Basic Call, ENBLOC and Overlap sending (From PBX to Cisco Unified CallManager Express only. See Limitations section for details.)

CLIP-Calling Line (Number) Identification Presentation and CNIP-Calling Name Identification Presentation on Basic Calls

CLIR-Calling Line (Number) Identification Restriction and CNIR-Calling Name Identification Restriction on Basic Calls (From PBX to Cisco Unified CallManager Express only. See Limitations section for details.)

COLP-Connected Line (Number) Identification Presentation and CONP-Connected Name Identification Presentation on Basic Calls (SCCP phones only. See Limitations section for details.)

Alerting Name on Basic Calls (SCCP phones only. See Limitations section for details.)

Tandem PSTN call

Consultation Transfer – Local and Network/External (See Limitations section for details.)

Early Attended Transfer – Local and Network/External (See Limitations section for details.)

Blind Transfer – Local and Network/External (From Cisco Unified CallManager Express only. See Limitations section for details)

Call Forward by forward unconditional, busy and No Reply by Join (forward switch) – Local and Network/External (See Limitations section for details.)

Call Forward unconditional, busy and no reply by Reroute – Network/External (See Limitations section for details.)

### Features Not Supported

Basic Call, Overlap sending originating from Cisco Unified CallManager Express IP phone to PBX

CNIR-Calling Name Identification Restriction from Cisco Unified CallManager Express 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)

H323/QSIG tandem transfers via SIP phone

Name and Number updates on transferred calls

CLIP-Calling Line (Number) Identification Presentation on Forwarded Calls to a PBX station.

Connected Name and Number updates on forwarded calls

Call Forward by Reroute for QSIG ”trombone” from a Cisco Unified CallManager Express SIP extension

Call Forward by Reroute during a call originated by overlap sending/receiving

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 (accomplished by consultation transfer)

Path Replacement for Call Diversion by Forward Switch

## Configuration

### Configuring the Siemens HiPath 4000 PBX

1. Add the new access code to Dialing Plans using WABE + LDPLN.
2. Add the new trunk board using BCSU.
3. Configure Class of Trunk using COT.
4. Configure Class of Parameter for device handler using COP.
5. Configure Class of Service using COSSU.
6. Add the new trunk group access code using BUEND.
7. Configure trunk using TDCSU.
8. Configure Reference Clock using REFTA.
9. Configure trunk Least Cost Routing using LDAT + RICHT.
10. Configure LCR Out-dial Rules using LODR.
11. Enable In-Band DTMF signaling for the Digital Stations using SBCSU.
12. Configure Digital Station for MWI application.
13. Configure Message Center's Service Access Number for MWI application.

### DPLN

```
  <dis-wabe:gen;
DIS-WABE:GEN;
H500:  AMO WABE  STARTED
  ------------------------------------------------------------------------------
  | DIGIT INTERPRETATION                  VALID FOR ALL DIAL PLANS             |
  ------------------------------------------------------------------------------
  |                 |    CALL PROGRESS STATE     |  DIGIT   | RESERVED/CONVERT |
  |      CODE       |            1 11111 11112 22| ANALYSIS | DNI/ADD-INFO     |
  |                 |0 12345 67890 12345 67890 12|  RESULT  | *=OWN NODE       |
  ------------------------------------------------------------------------------
  | 0               |. .**** ..*** **... ..... .*| CO       | R                |
  | 001    - 009    |* ..... ..... ..... ..... ..| NETRTE   |                  |
  | 111             |. .**** ***** **... ..... .*| TIE      |                  |
  | 12              |. .**** ***** **... ..... .*| TIE      | R                |
  | 13     - 14     |. .**** ***** **... ..... .*| TIE      |                  |
  | 21              |. ..... ..... ..... ....* ..| KNOVRKY  |                  |
  | 22              |. ..... ..... ..... ....* ..| DNDKY    |                  |
  | 222             |. .**** ***** **... ..... .*| TIE      |                  |
  | 23              |. ..... ..... ..... ....* ..| FWDKY    |                  |
  | 24              |. ..... ..... ..... ....* ..| MBKY     |                  |
  | 25              |. ..... ..... ..... ....* ..| MSGRKY   |                  |
  | 26              |. ..... ..... ..... ....* ..| DAKY     |                  |
  | 27              |. ..... ..... ..... ....* ..| DSSKY    |                  |
  | 28              |. ..... ..... ..... ....* ..| VCRKY    |                  |
  | 29              |. ..... ..... ..... ....* ..| VCKY     |                  |
  | 30              |. ..... ..... ..... ....* ..| CONFKY   |                  |
  ------------------------------------------------------------------------------
  | DIGIT INTERPRETATION                  VALID FOR ALL DIAL PLANS             |
  ------------------------------------------------------------------------------
  |                 |    CALL PROGRESS STATE     |  DIGIT   | RESERVED/CONVERT |
  |      CODE       |            1 11111 11112 22| ANALYSIS | DNI/ADD-INFO     |
  |                 |0 12345 67890 12345 67890 12|  RESULT  | *=OWN NODE       |
  ------------------------------------------------------------------------------
```

| 3000 - 3010 | . .**** ***** **... ..... .* | STN | |
|---|---|---|---|
| | | | DESTNO 30 |
| | | | DNNO 0- 0-222 |
| 3011 - 3020 | . .**** ***** **... ..... .* | STN | |
| | | | DESTNO 31 |
| | | | DNNO 0- 0- 31 |
| 3021 - 3030 | . .**** ***** **... ..... .* | STN | |
| | | | DESTNO 32 |
| | | | DNNO 0- 0- 32 |
| 3031 - 3040 | . .**** ***** **... ..... .* | STN | |
| | | | DESTNO 33 |
| | | | DNNO 0- 0- 33 |
| 3041 - 3050 | . .**** ***** **... ..... .* | STN | |
| | | | DESTNO 35 |
| | | | DNNO 0- 0- 35 |
| 31 | . ..... ..... ..... ....* .. | NAMEKY | |
| 32 | . ..... ..... ..... ....* .. | PARKKY | |

| DIGIT INTERPRETATION | VALID FOR ALL DIAL PLANS | | |
|---|---|---|---|
| CODE | CALL PROGRESS STATE<br>1 11111 11112 22<br>0 12345 67890 12345 67890 12 | DIGIT ANALYSIS RESULT | RESERVED/CONVERT DNI/ADD-INFO<br>*=OWN NODE |
| 33 | . ..... ..... ..... ....* .. | CCKY | |
| 34 | . ..... ..... ..... ....* .. | HTKY | |
| 35 | . ..... ..... ..... ....* .. | STKY | |
| 36 | . ..... ..... ..... ....* .. | REMKY | |
| 36 - 37 | . .**** ..*** **... ..... .* | CO | |
| 38 | . ..... ..... ..... ....* .. | TIMEKY | |
| 39 | . .**** ***** **... ..... .* | TIE | |
| 4000 - 4050 | . .**** ***** **... ..... .* | STN | |
| | | | DESTNO 111 |
| | | | DNNO 0- 0-111 |
| 4051 - 4566 | . .**** ***** **... ..... .* | STN | |
| | | | DESTNO 222 |
| | | | DNNO 0- 0-222 |
| 4567 | . .**** ***** **... ..... .* | STN | |
| | | | DESTNO 34 |
| | | | DNNO 0- 0-200 |

| DIGIT INTERPRETATION | VALID FOR ALL DIAL PLANS | | |
|---|---|---|---|
| CODE | CALL PROGRESS STATE<br>1 11111 11112 22<br>0 12345 67890 12345 67890 12 | DIGIT ANALYSIS RESULT | RESERVED/CONVERT DNI/ADD-INFO<br>*=OWN NODE |
| 4568 - 4999 | . .**** ***** **... ..... .* | STN | |
| | | | DESTNO 222 |
| | | | DNNO 0- 0-222 |
| 5000 - 5040 | . .**** ***** **... ..... .* | STN | |
| | | | DESTNO 0 |
| | | | DNNO 0- 0-555* |
| 5500 - 5501 | . .**** ***** **... ..... .* | STN | |
| | | | DESTNO 56 |
| | | | DNNO 0- 0-560 |
| 555 | . .**** ***** **... ..... .* | OWNNODE | |
| 560 | . .**** ***** **... ..... .* | TIE | |
| 59 | . .**** ***** **... ..... .* | TIE | |
| 6000 - 6009 | . .**** ***** **... ..... .* | STN | R |
| | | | DESTNO 0 |
| | | | DNNO 0- 0-555* |

| DIGIT INTERPRETATION | VALID FOR ALL DIAL PLANS | | |
|---|---|---|---|
| CODE | CALL PROGRESS STATE<br>1 11111 11112 22 | DIGIT ANALYSIS | RESERVED/CONVERT DNI/ADD-INFO |

```
|                 |0 12345 67890 12345 67890 12|  RESULT   | *=OWN NODE       |
-------------------------------------------------------------------------------
| 7000   - 7002   |. .**** ***** **... ..... .*| STN       |                  |
|                 |                            |           |DESTNO  56        |
|                 |                            |           |DNNO    0-  0-560 |
| 8000   - 8050   |. .**** ***** **... ..... .*| STN       |                  |
|                 |                            |           |DESTNO 222        |
|                 |                            |           |DNNO    0-  0-222 |
| 8060            |. .**** ***** **... ..... .*| TIE       |                  |
| 8070            |. .**** ***** **... ..... .*| TIE       |                  |
| 83              |. .**** ..*** **... ..... .*| SPDC1     |                  |
| 84              |. .**** ..*** **... ..... .*| SPDC2     |                  |
| 88              |. ..... ..*.. ..... ..... .*| SCONSI    | R                |
| 89              |. ..... ...*. ..... ..... ..| SCONSCO   | R                |
| 9               |. .**** ***** **... ..... .*| TIE       |                  |
| *13             |. ....* ..... ..... ..... ..| AHTVCE    |                  |
| *15             |. *.... ..**. ..... ..... .*| SPLIT     |                  |
| *16             |. ....* ..... ....* ..... ..| AREM      |                  |
| *17             |. *.... ..**. ..... ..... ..| TRACE     |                  |
-------------------------------------------------------------------------------
| DIGIT INTERPRETATION                    VALID FOR ALL DIAL PLANS             |
-------------------------------------------------------------------------------
|                 |    CALL PROGRESS STATE     |  DIGIT    | RESERVED/CONVERT |
|      CODE       |            1 11111 11112 22| ANALYSIS  | DNI/ADD-INFO     |
|                 |0 12345 67890 12345 67890 12|  RESULT   | *=OWN NODE       |
-------------------------------------------------------------------------------
| *18             |. ....* ..... ..... ..... ..| ACOSX     |                  |
| *19             |. *.... ..... ..... ..... ..| KNOVR     |                  |
| *20             |. ....* ..... ..... ..... ..| ADND      |                  |
| *25             |. ....* ..... ..... ..... ..| FWDTERM   |                  |
| *29             |. ....* ..... ....* ..... ..| AFFWDVCE  |                  |
-------------------------------------------------------------------------------

AMO-WABE -111       DIALLING PLANS, FEATURE ACCESS CODES
DISPLAY COMPLETED;
```

### Enbloc Sending Dial Plan, DPLN

```
<DISPLAY-LDPLN:TYPE=LDP,LDPNO=4;
DISPLAY-LDPLN:TYPE=LDP,LDPNO=4;
H500:  AMO LDPLN STARTED
   +--------------+-------------------------------------------------+
   |              |                                                 |
   | LDPNO :    4 | LDP : 111-X                                     |
   |              | SPC : 22                                        |
   |              | FDSFIELD : 0   SDSFIELD : 0   PINDP : N         |
   +------+-------+-------------------------------------------------+
   | DPLN | LROUTE| LAUTH                                           |
   |------+-------+-------------------------------------------------+
   |   0  |     1 | 1                                               |
   |   1  |     1 | 1                                               |
   |   2  |     1 | 1                                               |
   |   3  |     1 | 1                                               |
   |   4  |     1 | 1                                               |
   |   5  |     1 | 1                                               |
   |   6  |     1 | 1                                               |
   |   7  |     1 | 1                                               |
   |   8  |     1 | 1                                               |
   |   9  |     1 | 1                                               |
   |  10  |     1 | 1                                               |
   |  11  |     1 | 1                                               |
   |  12  |     1 | 1                                               |
   |  13  |     1 | 1                                               |
   |  14  |     1 | 1                                               |
```

```
   |  15  |     1 | 1                                                |
   +------+-------+--------------------------------------------------+

AMO-LDPLN-111       ADMINISTRATION LCR DIALPLAN
DISPLAY COMPLETED;
```

### Access code for Overlap Sending Dial Plan, DPLN

```
<DISPLAY-LDPLN:TYPE=LDP,LDPNO=12;
DISPLAY-LDPLN:TYPE=LDP,LDPNO=12;
H500:  AMO LDPLN STARTED
   +--------------+-------------------------------------------------+
   |              |                                                 |
   | LDPNO :   12 | LDP : 59-X                                      |
   |              | SPC : 22                                        |
   |              | FDSFIELD : 0   SDSFIELD : 0   PINDP : N         |
   +------+-------+-------------------------------------------------+
   | DPLN | LROUTE| LAUTH                                           |
   |------+-------+-------------------------------------------------+
   |   0  |    27 | 1                                               |
   |   1  |    27 | 1                                               |
   |   2  |    27 | 1                                               |
   |   3  |    27 | 1                                               |
   |   4  |    27 | 1                                               |
   |   5  |    27 | 1                                               |
   |   6  |    27 | 1                                               |
   |   7  |    27 | 1                                               |
   |   8  |    27 | 1                                               |
   |   9  |    27 | 1                                               |
   |  10  |    27 | 1                                               |
   |  11  |    27 | 1                                               |
   |  12  |    27 | 1                                               |
   |  13  |    27 | 1                                               |
   |  14  |    27 | 1                                               |
   |  15  |    27 | 1                                               |
   +------+-------+-------------------------------------------------+

AMO-LDPLN-111       ADMINISTRATION LCR DIALPLAN
DISPLAY COMPLETED;
```

### PSTN Dial Plan, DPLN

```
<DISPLAY-LDPLN:TYPE=LDP,LDPNO=5;
DISPLAY-LDPLN:TYPE=LDP,LDPNO=5;
H500:  AMO LDPLN STARTED
   +--------------+-------------------------------------------------+
   |              |                                                 |
   | LDPNO :    5 | LDP : 9-1650-XXXXXXX                            |
   |              | SPC : 22                                        |
   |              | FDSFIELD : 0   SDSFIELD : 0   PINDP : N         |
   +------+-------+-------------------------------------------------+
   | DPLN | LROUTE| LAUTH                                           |
   |------+-------+-------------------------------------------------+
   |   0  |   165 | 1                                               |
   |   1  |   165 | 1                                               |
   |   2  |   165 | 1                                               |
   |   3  |   165 | 1                                               |
   |   4  |   165 | 1                                               |
   |   5  |   165 | 1                                               |
   |   6  |   165 | 1                                               |
   |   7  |   165 | 1                                               |
   |   8  |   165 | 1                                               |
   |   9  |   165 | 1                                               |
   |  10  |   165 | 1                                               |
   |  11  |   165 | 1                                               |
   |  12  |   165 | 1                                               |
   |  13  |   165 | 1                                               |
   |  14  |   165 | 1                                               |
   |  15  |   165 | 1                                               |
   +------+-------+-------------------------------------------------+
```

```
AMO-LDPLN-111       ADMINISTRATION LCR DIALPLAN
DISPLAY COMPLETED;
```

## BCSU

**PRI Board**

```
<DISPLAY-BCSU:TYPE=TBL,LTG=1,LTU=3,SLOT=25;
DISPLAY-BCSU:TYPE=TBL,LTG=1,LTU=3,SLOT=25;
H500:  AMO BCSU  STARTED

 ADDRESS :  LTG  1   LTU 3    SOURCE GROUP 1
-----+-----------+---------+---+---+-+------------+-----+--------+------------+
     | ASSIGNED  | MODULE  |FCT|HWY| | INSERTED   |     |        | MODULE     |
 PEN | MODULE    | TYPE    |ID |BDL| | MODULE     |STATE| HW-INFO| STATUS     |
-----+-----------+---------+---+---+-+------------+-----+--------+------------+
  25 | Q2196-X     DIU-N2     1  A | | Q2196-X    |  1  | -06 -  | READY      |

AMO-BCSU -111       BOARD CONFIGURATION, SWITCHING UNIT
DISPLAY COMPLETED;
  <
```

**PSTN board**

```
<DISPLAY-BCSU:TYPE=TBL,LTG=1,LTU=2,SLOT=79;
DISPLAY-BCSU:TYPE=TBL,LTG=1,LTU=2,SLOT=79;
H500:  AMO BCSU  STARTED

 ADDRESS :  LTG  1   LTU 2    SOURCE GROUP 1
-----+-----------+---------+---+---+-+------------+-----+--------+------------+
     | ASSIGNED  | MODULE  |FCT|HWY| | INSERTED   |     |        | MODULE     |
 PEN | MODULE    | TYPE    |ID |BDL| | MODULE     |STATE| HW-INFO| STATUS     |
-----+-----------+---------+---+---+-+------------+-----+--------+------------+
  79 | Q2196-X     DIU-N2     1  A | | Q2196-X    |  1  | -06 -  | READY      |

AMO-BCSU -111       BOARD CONFIGURATION, SWITCHING UNIT
DISPLAY COMPLETED;
```

## Class of Trunk, COT

```
<dis-cot:22;
DIS-COT:22;
H500:  AMO COT   STARTED

   COT:  22  INFO:
   DEVICE: INDEP        SOURCE: DB
   PARAMETER:
        PRIORITY FOR AC WILL BE DETERMINED FROM MESSAGE              PRI
        RECALL IF USER HANGS UP IN CONSULTATION CALL                 RCL
        TRUNK CALL TRANSFER                                          XFER
        TRUNK SIGNALING ANSWER                                       ANS
        CHANGEOVER FROM HOLD TO RING TONE                            CHRT
        KNOCKING OVERRIDE POSSIBLE                                   KNOR
        CALL EXTEND FOR BUSY, RING OR CALL STATE                     CEBC
        NETWORKWIDE AUTOMATIC CALLBACK ON BUSY                       CBBN
        NETWORKWIDE AUTOMATIC CALLBACK ON FREE                       CBFN
        DON'T RELEASE CALL TO BUSY HUNT GROUP                        BSHT
        CONNECTION TO ROUTE OPTIMIZATION NODE                        ROPT
        TSC-SIGNALING FOR NETWORKWIDE FEATURES (MANDATORY)           TSCS
        INCOMING CDR BY ZONE OR FROM LINE                            ICZL
        AOC PER CALL (AUTOMATICAL OR ON REQUEST), MAND. CORNET-NQ    AOCC
        LINE WITH IMPLICIT NUMBERS                                   LINO
        NO TONE                                                      NTON
```

```
AMO-COT  -111       CLASS OF TRUNK FOR CALL PROCESSING
DISPLAY COMPLETED;
```

**For Call Forwarding by Reroute need to add FNAN and FWDN to COT22**
**For Path Replacement need to add ROPT to COT 22 on the Hipath 4000.**

```
<CHANGE-COT:COTNO=22,COTTYPE=COTADD,PAR=FNAN&FWDN;
CHANGE-COT:COTNO=22,COTTYPE=COTADD,PAR=FNAN&FWDN&ROPT;
H500:  AMO COT   STARTED
H07: CHANGED COT STILL LINKED WITH FOLLOWING TRUNKS:
   COT   TRUNK         BCGR  DEVICE
   ---------------------------------
    22   1- 3- 55-  0   1    CDGCONN
         1- 3- 55-  1   1    CDGCONN
         1- 3- 25-  0   1    S2CONN
         1- 3- 25-  1   1    S2CONN
   ---------------------------------
H06: COT 22 CHANGED

AMO-COT  -111       CLASS OF TRUNK FOR CALL PROCESSING
CHANGE COMPLETED;

<DISPLAY-COT:COTNO=22;
DISPLAY-COT:COTNO=22;
H500:  AMO COT   STARTED

   COT:  22  INFO:
   DEVICE: INDEP        SOURCE: DB
   PARAMETER:
        PRIORITY FOR AC WILL BE DETERMINED FROM MESSAGE              PRI
        RECALL IF USER HANGS UP IN CONSULTATION CALL                 RCL
        TRUNK CALL TRANSFER                                          XFER
        TRUNK SIGNALING ANSWER                                       ANS
        CHANGEOVER FROM HOLD TO RING TONE                            CHRT
        KNOCKING OVERRIDE POSSIBLE                                   KNOR
        CALL EXTEND FOR BUSY, RING OR CALL STATE                     CEBC
        NETWORKWIDE AUTOMATIC CALLBACK ON BUSY                       CBBN
        NETWORKWIDE AUTOMATIC CALLBACK ON FREE                       CBFN
        NETWORKWIDE CALL FORWARDING PERMITTED                        FWDN
        NETWORKWIDE FORWARDING NO-ANSWER                             FNAN
        DON'T RELEASE CALL TO BUSY HUNT GROUP                        BSHT
        CONNECTION TO ROUTE OPTIMIZATION NODE                        ROPT
        TSC-SIGNALING FOR NETWORKWIDE FEATURES (MANDATORY)           TSCS
        INCOMING CDR BY ZONE OR FROM LINE                            ICZL
        AOC PER CALL (AUTOMATICAL OR ON REQUEST), MAND. CORNET-NQ    AOCC
        LINE WITH IMPLICIT NUMBERS                                   LINO
        NO TONE                                                      NTON

AMO-COT  -111       CLASS OF TRUNK FOR CALL PROCESSING
DISPLAY COMPLETED;
```

## Class of Parameter for Device Handler, COP

```
<DISPLAY-COP:COPNO=21;
DISPLAY-COP:COPNO=21;
H500:  AMO COP   STARTED

   COP:  21  INFO:
   DEVICE: INDEP        SOURCE: DB
   PARAMETER:
        LINE WITH END-OF-DIAL                                        EOD
        SPECIAL MODE                                                 SFRM
        CODE CALLING RELEASE AFTER EVERY TASK                        CCR
        REGISTRATION OF LAYER 3 ADVISORIES                           L3AR
```

```
   CO TRUNK ACCESS:
        TRUNK ACCESS                                                    TA

   TOLL ACCESS:
        TRUNK ACCESS                                                    TA

AMO-COP  -111       CLASS OF PARAMETER FOR DEVICE HANDLER
DISPLAY COMPLETED;
```

### Class of Service, COSSU

```
<DISPLAY-COSSU:TYPE=COS,COS=32;
DISPLAY-COSSU:TYPE=COS,COS=32;
H500:  AMO COSSU STARTED
   +------+-----------------+---------------+-----------------+
   | COS  |      VOICE      |      FAX      |       DTE       |
   +------+-----------------+---------------+-----------------+
   |   32 |>                                                  |
   |      |         TA      |      NOCO     |         TA      |
   |      |     TNOTCR      |     NOTIE     |     TNOTCR      |
   |      |                 |               |      BASIC      |
   |      |                 |               |        MSN      |
   |      |                 |               |     CDRINT      |
   |      |                 |               |     MULTRA      |
   |      |                 |               |                 |
   +------+-----------------+---------------+-----------------+
AMO-COSSU-111       CLASSES OF SERVICE
DISPLAY COMPLETED;
  <DISPLAY-COSSU:TYPE=LCOSV,LCOSV=1;
DISPLAY-COSSU:TYPE=LCOSV,LCOSV=1;
H500:  AMO COSSU STARTED
   +----+-------------------------------------------------------------------+-----+
   |LCOS|                            LAUTH                                  |     |
   |  V |         1         2         3         4         5         6    |     |
   |    |12345678901234567890123456789012345678901234567890123456789012345678901234|COPIN|
   |    |>SERVICE INFORMATION                                               | NUM |
   +----+----+----|----+----|----+----|----+----|----+----|----+----|----+-----+
   |   1|X.....................................................................|  0  |
   |    |>LCR ATTENDANT FOR VOICE                                           |
   +----+-------------------------------------------------------------------+-----+

AMO-COSSU-111       CLASSES OF SERVICE
DISPLAY COMPLETED;
```

## Trunk Group Access Code, BUEND

```
<DISPLAY-BUEND:TGRP=26,FORMAT=L;
DISPLAY-BUEND:TGRP=26,FORMAT=L;
H500:  AMO BUEND STARTED

+------------------------------ FORMAT = L -----------------------------------+
|  TGRP NUMBER :    26   TGRP NAME    : PRI ECMA 3         MAXIMUM NO.    :   30 |
|                        CHARCON     : NEUTRAL                                 |
|  SUBGROUP NO.:     9   DEVICE TYPE : S2CONN             TRACENO        :    0 |
|  RESERVED    :     N   SEARCH MODE : CIRCULAR           ACD THRESHOLD  :    * |
|  NUMBER OF ASSOCIATED ROUTES       : 6                  PRIORITY       :    2 |
|  TDDRFLAG    :    ON  TDDRTHRESHOLD: 3                 SOURCEGROUPIDX :    1 |
|  GDTRRULE    :     0      ACDPMGRP : 0                                       |
|  THE FOLLOWING TRUNKS (LTG-LTU-SLOT-CCT) HAVE BEEN ALLOCATED:                 |
+-------------------------------------------------------------------------------+
|   1- 3- 25-0           1 |  1- 3- 25-0           2 |  1- 3- 25-0           3 |
|   1- 3- 25-0           4 |  1- 3- 25-0           5 |  1- 3- 25-0           6 |
|   1- 3- 25-0           7 |  1- 3- 25-0           8 |  1- 3- 25-0           9 |
|   1- 3- 25-0          10 |  1- 3- 25-0          11 |  1- 3- 25-0          12 |
|   1- 3- 25-0          13 |  1- 3- 25-0          14 |  1- 3- 25-0          15 |
|   1- 3- 25-0          16 |  1- 3- 25-0          17 |  1- 3- 25-0          18 |
|   1- 3- 25-0          19 |  1- 3- 25-0          20 |  1- 3- 25-0          21 |
|   1- 3- 25-0          22 |  1- 3- 25-0          23 |  1- 3- 25-0          24 |
|   1- 3- 25-0          25 |  1- 3- 25-0          26 |  1- 3- 25-0          27 |
|   1- 3- 25-0          28 |  1- 3- 25-0          29 |  1- 3- 25-0          30 |
+-------------------------------------------------------------------------------+

AMO-BUEND-111       TRUNK GROUP
DISPLAY COMPLETED;



<DISPLAY-BUEND:TGRP=27,FORMAT=L;
DISPLAY-BUEND:TGRP=27,FORMAT=L;
H500:  AMO BUEND STARTED

+------------------------------ FORMAT = L -----------------------------------+
|  TGRP NUMBER :    27   TGRP NAME    : PRI ECMA 4         MAXIMUM NO.    :   30 |
|                        CHARCON     : NEUTRAL                                 |
|  SUBGROUP NO.:    10   DEVICE TYPE : S2CONN             TRACENO        :    0 |
|  RESERVED    :     N   SEARCH MODE : CIRCULAR           ACD THRESHOLD  :    * |
|  NUMBER OF ASSOCIATED ROUTES       : 4                  PRIORITY       :    2 |
|  TDDRFLAG    :    ON  TDDRTHRESHOLD: 3                 SOURCEGROUPIDX :    1 |
|  GDTRRULE    :     0      ACDPMGRP : 0                                       |
|  THE FOLLOWING TRUNKS (LTG-LTU-SLOT-CCT) HAVE BEEN ALLOCATED:                 |
+-------------------------------------------------------------------------------+
|   1- 3- 25-1           1 |  1- 3- 25-1           2 |  1- 3- 25-1           3 |
|   1- 3- 25-1           4 |  1- 3- 25-1           5 |  1- 3- 25-1           6 |
|   1- 3- 25-1           7 |  1- 3- 25-1           8 |  1- 3- 25-1           9 |
|   1- 3- 25-1          10 |  1- 3- 25-1          11 |  1- 3- 25-1          12 |
|   1- 3- 25-1          13 |  1- 3- 25-1          14 |  1- 3- 25-1          15 |
|   1- 3- 25-1          16 |  1- 3- 25-1          17 |  1- 3- 25-1          18 |
|   1- 3- 25-1          19 |  1- 3- 25-1          20 |  1- 3- 25-1          21 |
|   1- 3- 25-1          22 |  1- 3- 25-1          23 |  1- 3- 25-1          24 |
|   1- 3- 25-1          25 |  1- 3- 25-1          26 |  1- 3- 25-1          27 |
|   1- 3- 25-1          28 |  1- 3- 25-1          29 |  1- 3- 25-1          30 |
+-------------------------------------------------------------------------------+

AMO-BUEND-111       TRUNK GROUP
DISPLAY COMPLETED;
```

## Trunk Configuration, TDCSU

### For Master-side Configuration

```
<dis-tdcsu:1-3-25-1;
DIS-TDCSU:1-3-25-1;
H500:  AMO TDCSU STARTED
  +------------------------ DIGITAL TRUNK (FORMAT=L) -------------------------+
  | DEV      = S2CONN        PEN      =  1-03-025-1   TGRP     = 27           |
  |-------------------------------------------------------------------------|
  | PROTVAR  = PSS1V2        INS      = Y             SRCHMODE = CIR          |
  | COTNO    = 22            COPNO    = 21            DPLN     = 0            |
  | ITR      = 1             COS      = 32            LCOSV    = 1            |
  | LCOSD    = 1             CCT      = PRI ECMA 4    DESTNO   = 111          |
  | SEGMENT  = 1             DEDSCC   =               DEDSVC   = NONE         |
  | FACILITY =               DITIDX   =               SRTIDX   =              |
  | TRTBL    = GDTR          SIDANI   = N             ATNTYP   = TIE          |
  | CBMATTR  = NONE          NWMUXTIM = 10            TCHARG   = N            |
  | SUPPRESS = 0             DGTPR    =               CHIMAP   = N            |
  | ISDNIP   =               ISDNNP   =                                       |
  | PNPL2P   =               PNPL1P   =               PNPAC    =              |
  | TRACOUNT = 31            SATCOUNT = MANY          NNO      = 111          |
  | ALARMNO  = 0             FIDX     = 1             CARRIER  = 1            |
  | ZONE     = EMPTY         COTX     = 22            FWDX     = 5            |
  | DOMTYPE  =               DOMAINNO =               TPROFNO  =              |
  | INIGHT   =                                        CCHDL    =              |
  | UUSCCX   = 16            UUSCCY   = 8             FNIDX    = 1            |
  | CLASSMRK = EC     & G711   & G729OPT              SRCGRP   =              |
  | TCCID    =                                                                |
  |-------------------------------------------------------------------------|
  | BCNEG    = N             BCGR     = 1             LWPAR    = 1            |
  | LWPP     = 0             LWLT     = 0             LWPS     = 0            |
  | LWR1     = 0             LWR2     = 0                                     |
  | SVCDOM   =                                                               |
  | BCHAN    =  1 && 30                                                      |
  |                                                                          |
  +-------------------------------------------------------------------------+
  AMOUNT OF B-CHANNELS IN THIS DISPLAY-OUTPUT: 30

AMO-TDCSU-111       DIGITAL TRUNKS
DISPLAY COMPLETED;


  <DISPLAY-LWPAR:FORMAT=L,BLNO=1,TYPE=DIUS2;
DISPLAY-LWPAR:FORMAT=L,BLNO=1,TYPE=DIUS2;
H500:  AMO LWPAR STARTED

   +-------------------------------------------------------------------------+
   | LOADWARE PARAMETERS     CIRCUIT TYPE: DIUS2  SOURCE:DB    BLOCK:    1 |
   +-------------------------------------------------------------------------+
   | LNTYPE   = COPPER         VERSION  = S2           QUAL     =  ON       |
   | MASTER   = Y              DCHAN1   = 16           DCHAN2   = 0         |
   | PATTERN  = D5H            QUAL1    = 10  SEC.     QUAL2    = 10  MIN.  |
   | SMD      = Y              PERMACT  = Y            FCBAB    = DFH       |
   | CDG      = N              FIXEDTEI = 0            CNTRNR   = 255       |
   | TEIVERIF = N              CRC4REP  = N                                  |
   | DEV      = INDEP                                                        |
   | INFO     =                                                              |
   +-------------------------------------------------------------------------+

AMO-LWPAR-111       LOADWARE PARAMETERS FOR NETWORKING MODULES
DISPLAY COMPLETED;
```

### For Slave-side Configuration

```
  <dis-tdcsu:1-3-25-1;
DIS-TDCSU:1-3-25-1;
H500:  AMO TDCSU STARTED
  +------------------------ DIGITAL TRUNK (FORMAT=L) -------------------------+
  | DEV      = S2CONN        PEN      =  1-03-025-1   TGRP     = 27           |
  |-----------------------------------------------------------------------------|
  | PROTVAR  = PSS1V2        INS      = Y             SRCHMODE = CIR          |
  | COTNO    = 22            COPNO    = 21            DPLN     = 0            |
  | ITR      = 1             COS      = 32            LCOSV    = 1            |
  | LCOSD    = 1             CCT      = PRI ECMA 4    DESTNO   = 111          |
  | SEGMENT  = 1             DEDSCC   =               DEDSVC   = NONE         |
  | FACILITY =               DITIDX   =               SRTIDX   =              |
  | TRTBL    = GDTR          SIDANI   = N             ATNTYP   = TIE          |
  | CBMATTR  = NONE          NWMUXTIM = 10            TCHARG   = N            |
  | SUPPRESS = 0             DGTPR    =               CHIMAP   = N            |
  | ISDNIP   =               ISDNNP   =                                       |
  | PNPL2P   =               PNPL1P   =               PNPAC    =              |
  | TRACOUNT = 31            SATCOUNT = MANY          NNO      = 111          |
  | ALARMNO  = 0             FIDX     = 1             CARRIER  = 1            |
  | ZONE     = EMPTY         COTX     = 22            FWDX     = 5            |
  | DOMTYPE  =               DOMAINNO =               TPROFNO  =              |
  | INIGHT   =                                        CCHDL    =              |
  | UUSCCX   = 16            UUSCCY   = 8             FNIDX    = 1            |
  | CLASSMRK = EC     & G711   & G729OPT              SRCGRP   =              |
  | TCCID    =                                                                |
  |-----------------------------------------------------------------------------|
  | BCNEG    = N             BCGR     = 1             LWPAR    = 0            |
  | LWPP     = 0             LWLT     = 0             LWPS     = 0            |
  | LWR1     = 0             LWR2     = 0                                     |
  | SVCDOM   =                                                                |
  | BCHAN    =  1 && 30                                                       |
  |                                                                           |
  +---------------------------------------------------------------------------+
  AMOUNT OF B-CHANNELS IN THIS DISPLAY-OUTPUT: 30

AMO-TDCSU-111       DIGITAL TRUNKS
DISPLAY COMPLETED;


  <DISPLAY-LWPAR:FORMAT=L,BLNO=0,TYPE=DIUS2;
DISPLAY-LWPAR:FORMAT=L,BLNO=0,TYPE=DIUS2;
H500:  AMO LWPAR STARTED

   +---------------------------------------------------------------------+
   | LOADWARE PARAMETERS     CIRCUIT TYPE: DIUS2  SOURCE:DB    BLOCK:    0 |
   +---------------------------------------------------------------------+
   | LNTYPE   = COPPER         VERSION  = S2           QUAL     =  ON      |
   | MASTER   = N              DCHAN1   = 16           DCHAN2   = 0        |
   | PATTERN  = D5H            QUAL1    = 10  SEC.     QUAL2    = 10  MIN. |
   | SMD      = N              PERMACT  = Y            FCBAB    = DFH      |
   | CDG      = N              FIXEDTEI = 0            CNTRNR   = 255      |
   | TEIVERIF = N              CRC4REP  = N                                |
   | DEV      = INDEP                                                      |
   | INFO     =                                                            |
   +---------------------------------------------------------------------+

AMO-LWPAR-111       LOADWARE PARAMETERS FOR NETWORKING MODULES
DISPLAY COMPLETED;
```

### PSTN Trunk Configuration, TDCSU

```
  <dis-tdcsu:1-2-79-1;
DIS-TDCSU:1-2-79-1;
H500:  AMO TDCSU STARTED
  +----------------------- DIGITAL TRUNK (FORMAT=L) -------------------------+
  | DEV      = S2CONN        PEN      =  1-02-079-1   TGRP     = 23          |
  |-----------------------------------------------------------------------------|
  | PROTVAR  = ETSI          INS      = Y             SRCHMODE = CIR         |
  | COTNO    = 21            COPNO    = 21            DPLN     = 0           |
  | ITR      = 1             COS      = 10            LCOSV    = 32          |
  | LCOSD    = 32            CCT      = PRI ECMA 2    DESTNO   = 100         |
  | SEGMENT  = 8             DEDSCC   =               DEDSVC   = NONE        |
  | FACILITY =               DITIDX   =               SRTIDX   =             |
  | TRTBL    = GDTR          SIDANI   = N             ATNTYP   = TIE         |
  | CBMATTR  = NONE          NWMUXTIM = 10            TCHARG   = N           |
  | SUPPRESS = 0             DGTPR    =               CHIMAP   = N           |
  | ISDNIP   =               ISDNNP   =                                      |
  | PNPL2P   =               PNPL1P   =               PNPAC    =             |
  | TRACOUNT = 31            SATCOUNT = MANY          NNO      = 1           |
  | ALARMNO  = 0             FIDX     = 1             CARRIER  = 1           |
  | ZONE     = EMPTY         COTX     = 21            FWDX     = 10          |
  | DOMTYPE  =               DOMAINNO =               TPROFNO  =             |
  | INIGHT   =                                        CCHDL    =             |
  | UUSCCX   = 16            UUSCCY   = 8             FNIDX    = 1           |
  | CLASSMRK = EC     & G711   & G729OPT              SRCGRP   =             |
  | TCCID    =                                                              |
  |-----------------------------------------------------------------------------|
  | BCNEG    = N             BCGR     = 1             LWPAR    = 1           |
  | LWPP     = 0             LWLT     = 0             LWPS     = 0           |
  | LWR1     = 0             LWR2     = 0                                    |
  | SVCDOM   =                                                                |
  | BCHAN    =  1 && 30                                                       |
  |                                                                           |
  +---------------------------------------------------------------------------+
  AMOUNT OF B-CHANNELS IN THIS DISPLAY-OUTPUT: 30

AMO-TDCSU-111       DIGITAL TRUNKS
DISPLAY COMPLETED;
```

**Configuring the Local Cisco Unified CallManager Express (Cisco 3845)**

```
c3845CME#sh run
Building configuration...

Current configuration : 3838 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.124-4.XC4.bin
boot-end-marker
!
logging buffered 10000000 debugging
no logging console
enable password cisco
!
no aaa new-model
!
resource policy
!
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
!
isdn switch-type primary-qsig
voice-card 0
 no dspfarm
!
!
!
!
voice service pots
  <supplementary-service qsig call-forward>[1]
!
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
< no supplementary-service h450.2> [2]
 <no supplementary-service h450.3 > [2]
 h323
 sip
  registrar server expires max 600 min 60
!
!
!
!
!
voice register global
```

[1] Omit to force QSIG call forward by join (no reroute).
[2] Insert to force IP call forward by join (no reroute).

```
 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 000524734349230A
!
voice register dn  1
 number 4000
 name Zidane
 huntstop
!
voice register dn  2
 number 4001
 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
 negotiation auto
!
interface GigabitEthernet0/1
 ip address 200.1.1.1 255.255.255.0
 duplex auto
 speed auto
 media-type rj45
 negotiation auto
!
interface Serial0/0/1:15
 no ip address
 encapsulation hdlc
 isdn switch-type primary-qsig
 isdn overlap-receiving
 isdn incoming-voice voice
 isdn contiguous-bchan
 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:P0S3-07-5-00.bin
tftp-server flash:P0S3-07-5-00.sb2
tftp-server flash:P0S3-07-5-00.loads
!
control-plane
!
!
!
voice-port 0/0/1:15
!
!
!
!
!
dial-peer voice 6000 voip
 destination-pattern 4..[89]
 session target ipv4:201.2.2.1
 no vad
!
dial-peer voice 5000 pots
 destination-pattern 500[23]
```

**< supplementary-service qsig call-forward >** [3]

```
 direct-inward-dial
 port 0/0/1:15
 forward-digits all
!
dial-peer voice 95558000 pots
 destination-pattern 95553...
 no digit-strip
 port 0/0/1:15
 forward-digits 4
!
!
!
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-consult
 transfer-pattern ....
 secondary-dialtone 9
 create cnf-files version-stamp 7960 Oct 10 2006 15:14:21
!
!
ephone-dn  3  dual-line
 number 4002
 label 4002
```

[3] Omitted to force QSIG call forward by join (no reroute).

```
 description Pele
 name Pele
 call-forward busy 4009
 call-forward noan 4009 timeout 10
 huntstop channel
!
!
ephone-dn  4  dual-line
 number 4003
 label 4003
 description Beckenbauer
 name Beckenbauer
 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
!
!
!
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
!
end

c3845CME#
```

```
c2801CME#sh run
Building configuration...

Current configuration : 2802 bytes
!
! Last configuration change at 17:42:21 UTC Mon Oct 30 2006
! NVRAM config last updated at 17:42:24 UTC Mon Oct 30 2006
!
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.124-4.XC4.bin
boot-end-marker
!
logging buffered 100000000 debugging
no logging console
enable password cisco
!
no aaa new-model
!
resource policy
!
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
!
!
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
 no supplementary-service h450.2
 no supplementary-service h450.3
 h323
 sip
  registrar server expires max 600 min 60
!
!
!
!
!
!
!
!
!
!
```

```
!
!
!
!
!
!
!
!
!
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
!
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:
!
!
!
tftp-server flash:P0030702T023.bin
tftp-server flash:P0030702T023.loads
tftp-server flash:P0030702T023.sb2
tftp-server flash:P0030702T023.sbn
```

```
!
control-plane
!
!
!
!
!
!
!
dial-peer voice 4000 voip
 destination-pattern 4..[0123]
 session target ipv4:200.1.1.1
 no vad
!
dial-peer voice 5000 voip
 destination-pattern 5...
 session target ipv4:200.1.1.1
 no vad
!
dial-peer voice 9 voip
 destination-pattern 9.......
 session target ipv4:200.1.1.1
 no vad
!
!
!
telephony-service
load 7960-7940 P0030702T023
 load 7941 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-consult
 transfer-pattern ....
 secondary-dialtone 9
 create cnf-files version-stamp 7960 Oct 12 2006 11:41:08
!
!
ephone-dn  1  dual-line
 number 4008
 label 4008
 description Ronaldinho
 name Ronaldinho
 huntstop channel
!
!
ephone-dn  4  dual-line
 number 4009
 label 4009
 description Tevez
 name Tevez
 call-forward noan 5002 timeout 10
 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

| Acronym | Definitions |
|---|---|
| CFB | Call Forward when Busy |
| CFNR | Call Forward when No Reply |
| CFU | Call Forward Unconditional |
| IOS | Internetworking Operating System |
| PBX | Private Branch Exchange |
| PRI | Primary Rate ISDN |
| SIP | Session Initiation Protocol |

## Important Information

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