Application Note

Siemens Hicom 300 E CS Release 6.6 using T1 QSIG to Cisco Unified CallManager Express Release 4.0(3)

November 1, 2007 Revision 5

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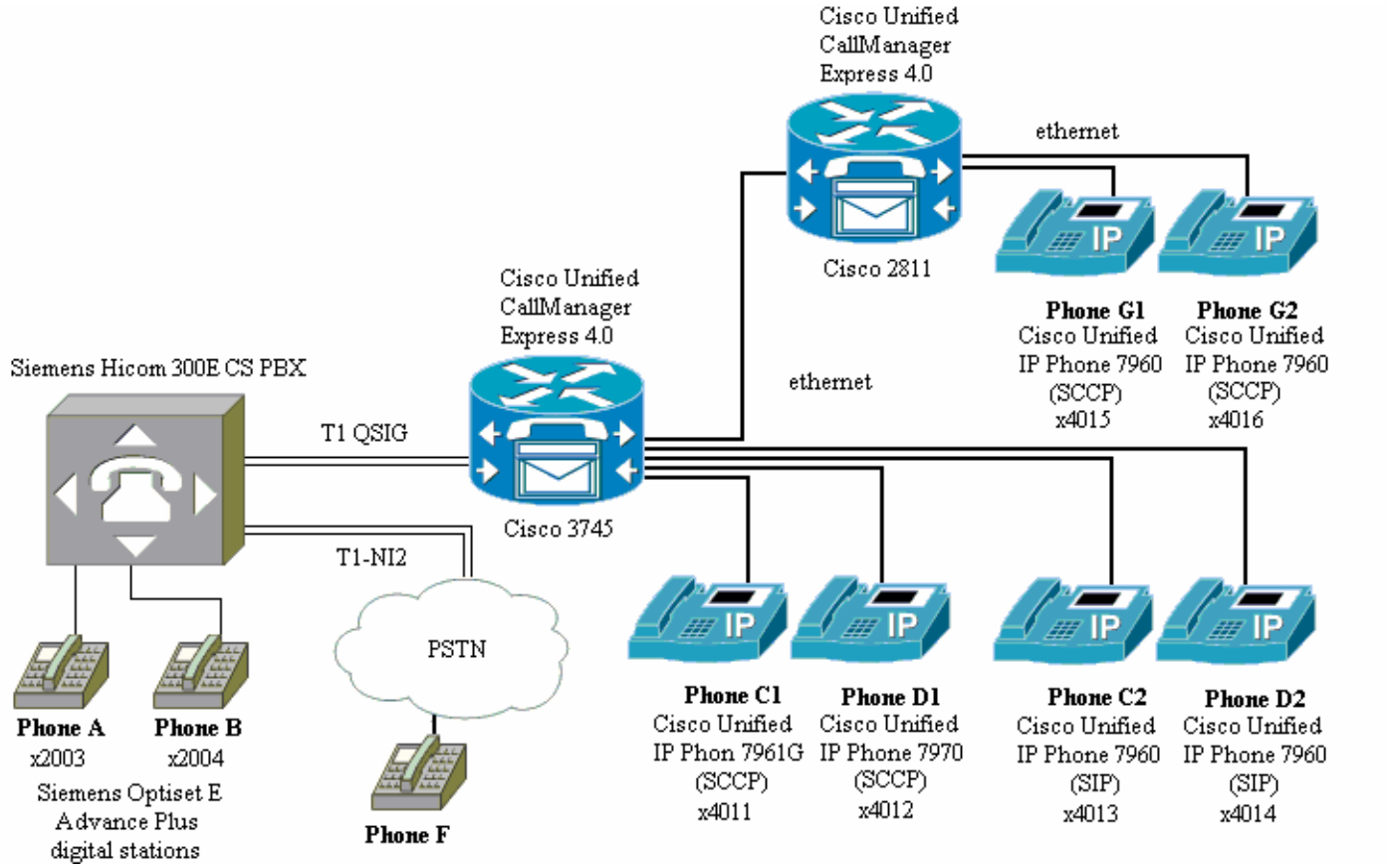
Introduction

- This is an Application Note for connectivity between a Siemens Hicom 300 E CS Release 6.6 PBX and Cisco Unified CallManager Express Release 4.0(3) using a Cisco 3745 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 3745 T1 QSIG link. The 3745 IOS voice gateway was connected via H.323 to a Cisco 2811 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 the figure. A NM-HDV and VWIC-1MFT-T1 were used for the T1 QSIG interface. Calls were made to test basic call, caller ID, conference, transfer, forward, and reroute features.
- This Application Note uses the 3745 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. Cisco Unified Communications Manager Express 4.0(3) supports SIP end-points with limited number of features.

Network Topology

Figure 1. Test Network Topology.



Limitations

Basic Calls

- Overlap dialing is not supported in either direction.
- Connected Name is not supported on calls between PBX and Cisco Unified IP Phone running SIP.
- Alerting Name is not supported on calls between PBX and Cisco Unified IP Phone running SIP.
- Calling Line (Number) Identification Restriction (CLIR) is not supported by the Siemens PBX for outgoing calls. The PBX does honor CLIR on incoming calls, however.
- Calling Name Identification Restriction (CNIR) and Connected Number/Name Restriction are not supported.

Call Transfers

- The Siemens PBX will not perform a true blind transfer. It can perform a consultation transfer or early attended transfer.
- A blind local transfer originated from a call placed from a PBX station to a SCCP phone on the local Cisco Unified CallManager Express, and then transferred to a SIP phone on the same Cisco Unified CallManager Express (e.g., A calls C1, and C1 transfers to D2) does not complete. The call drops as soon as the number is dialed.
- A consultation or early-attened transfer originated from a call placed from a phone on the remote Cisco Unified CallManager Express to a SIP phone on the local Cisco Unified CallManager Express, and then transferred to a PBX phone (e.g., G1 calls C2, and C2 transfers to A) does not complete.
- For all consultation and early attended network/external transfers, and all consultation and early attended local transfers that involve a transfer from a SCCP phone to a SIP phone, the original calling name and number are not displayed on the final destination. The remaining local transfers and all blind transfers result in the original calling name and number information displaying properly.
- For many call transfers, the called (connected) name and number are not updated on the original phone after the transfer.

Call Forwards

- For ”trombone” or ”haripin” calls from the Cisco Unified CallManager Express to PBX to Cisco Unified CallManager Express, the Siemens PBX will not allow a ”trombone” or ”hairpin” on call forward busy. It invokes a reroute.
- For ”trombone” or ”haripin” calls from the PBX to the Cisco Unified CallManager Express to the PBX, call reroute does not occur. Even if Cisco Unified CallManager Express proposes reroute (SCCP phone only), the PBX ignores it.
- For many call forwards, the forwarding called name and number are not displayed on the final destination.
- For many call forwards, the called (connected) name and number are not updated on the original phone.
- 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”).
- 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 by call forward no reply (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”).

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 3745 IOS voice gateway
  - NM-HDV
  - VWIC-2MFT-T1
- Cisco 2811 IOS voice gateway
- (4) Cisco Unified IP phone 7960s
- (1) Cisco Unified IP phone 7961G
- (1) Cisco Unified IP phone 7970
- (1) Siemens 300 E CS PBX
  - (2) Siemens Optiset E Advance Plus digital station phones
  - (2) TMDN64P T1 trunk cards (for QSIG & PSTN links)

Software Requirements

- Cisco Unified CallManager Express Release 4.0(3)
- Cisco IOS Software, 3700 Software (C3745-IPVOICE-M), Version 12.4(11)T
- Cisco IOS Software, 2800 Software (C2800NM-IPVOICE-M), Version 12.4(11)T
- Siemens 300 E CS Release 6.6

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: TERM61.DEFAULT
- Cisco 7961G IP phone app load ID: Jar41.2-9-1-45.sbn
- Cisco 7961G IP phone boot load ID: 7961G_64-020704128Amd64meg.bin

D1 – 7970 – SCCP

- Cisco7970 IP phone load file: SCCP70.8-0-3S
- 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 Dialing only
- CLIP-Calling Line (Number) Identification Presentation on Basic and Forwarded Calls
- CLIR-Calling Line (Number) Identification Restriction on Basic Calls (See Limitations section.)
- CNIP-Calling Name Identification Presentation on Basic and Forwarded Calls
- COLP-Connected Line (Number) Identification Presentation on Basic Calls (See Limitations section.)
- CONP-Connected Name Identification Presentation on Basic Calls (See Limitations section.)
- Alerting Name (See Limitations section.)
- Tandem PSTN call
- Consultation Transfer – Local (See Limitations Section)
- Consultation Transfer – Network/External (See Limitations Section)
- Early Attended Transfer – Local (See Limitations Section)
- 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)

Features Not Supported

- Overlap Dialing
- CNIR-Calling Name Identification Restriction
- COLR- Connected Line (Number) Identification Restriction
- CONR- Connected Name Identification Restriction
- Blind Transfers initiated from PBX
- 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
- COLP-Connected Line (Number) Identification Presentation on Forwarded Calls
- CONP-Connected Name Identification Presentation on Forwarded Calls
- 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

Configuring the Siemens 300 E CS Release 6.6

Below is the dialplan configuration:

```
DIS-DPLN:DGTS,;
H500:  AMO DPLN  STARTED
   ------------------------------------------------------------------------
   | DIGIT INTERPRETATION                    VALID FOR DIAL PLAN 0         |
   ------------------------------------------------------------------------
   |                 |  CALL PROGRESS STATE    | DIGIT ANALYSIS|     |       |
   | DIRECTORY NUMBER|          1 11111 1111222|    RESULT     |RSVD | ROUTE|
   |                 |12345 67890 12345 6789012|  (SKIP DIGIT) |     |       |
   ------------------------------------------------------------------------
   | 0               |....* *.*** **... ......*| ANS           |     |       |
   | 1               |.*.** *.*** **... ......*| CO            |     |       |
   | 2000   - 2023   |.**** ***** ***.* ......*| STN           |     |       |
   | 2024   - 2026   |.**** ***** ***.* ......*| STN           |  R  |       |
   | 2222            |.**** *.*** **... ......*| ATNDIND       |     |       |
   | 3000   - 3023   |.**** ***** ***.* ......*| STN           |     |       |
   | 3024   - 3099   |.**** ***** ***.* ......*| STN           |  R  |       |
   | 36              |....* ..... ..... .......| GENANS        |     |       |
   | 37     - 41     |.*.** *.*** **... ......*| CO            |     |       |
   | 43     - 48     |.**** ***** **... ......*| TIE           |     |       |
   | 49     - 59     |.*.** *.*** **... ......*| CO            |     |       |
   | 71000           |.**** ***** ***.* ......*| STN           |     |    1  |
   ------------------------------------------------------------------------
   | DIGIT INTERPRETATION                    VALID FOR DIAL PLAN 0         |
   ------------------------------------------------------------------------
   |                 |  CALL PROGRESS STATE    | DIGIT ANALYSIS|     |       |
   | DIRECTORY NUMBER|          1 11111 1111222|    RESULT     |RSVD | ROUTE|
   |                 |12345 67890 12345 6789012|  (SKIP DIGIT) |     |       |
   ------------------------------------------------------------------------
   | 71001  - 79999  |.**** ***** ***.* ......*| STN           |  R  |       |
   | 8000   - 8001   |.**** ***** ***.* ......*| STN           |     |   41  |
   | 9               |.**** ***** **... ......*| TIE           |     |       |
   | *0              |*...* ..**. ..... ......*| ACDWORK       |     |       |

   | *2              |*...* ..**. ..... ......*| ACCTCODE      |     |       |
   | *3              |....* ..**. ..... ......*| PUDIR         |     |       |
```

*4	*...* ..**. ....*	CONFRNC		
*52	....*	MWCAN		
*530	....* ....*	PMCANCEL		
*532	....* ....*	PMCALLBK		
*563	*.... ..**.	BADLINE		
*564	*...* ..**. ....*	ACDLOGON		

DIGIT INTERPRETATION		VALID FOR DIAL PLAN 0		
DIRECTORY NUMBER	CALL PROGRESS STATE 1 11111 1111222 12345 67890 12345 6789012	DIGIT ANALYSIS RESULT (SKIP DIGIT)	RSVD	ROUTE
*565	*...* ..**. ....*	ACDLOGOF		
*570	*...* ..**.	ACDPQ		
*571	*...* ..**.	ACDPS		
*572	....*	RING		
*580	*...* ..**.	ACDSQ		
*581	*...* ..**.	ACDSS		
*6	*****..**.	ROLMPARK		
*7	*...* ..**.	CONSULT		
*80 - *89	.**** ..**.	PARK		
*9	....* ..**.	HOLD		
**0	.***.	BVSL		
**1	*.... ..**. ....*	TOGGLE		

DIGIT INTERPRETATION		VALID FOR DIAL PLAN 0		
DIRECTORY NUMBER	CALL PROGRESS STATE 1 11111 1111222 12345 67890 12345 6789012	DIGIT ANALYSIS RESULT (SKIP DIGIT)	RSVD	ROUTE
**3	....* ..**. ....*	PU		
**41 - **48	....*.. ....*	CONFRMV		
**50	*...* ..**.	CAFGRAVL		
**51	*...* ..**.	CAFGRUNA		
**6	....* ..**.	INTERCOM		
**8	....*	MWANS		
***4	....*	CONFRMVL		
***5	....*	MONSLNT		
**#65	*...* ..**.	CAFGROFF		
*#01	....*	RCHNL		

| *#02 |....* ....| RTERM | | |
| *#03 |....* ....| LTERM | | |

| DIGIT INTERPRETATION VALID FOR DIAL PLAN 0 | | | |

	CALL PROGRESS STATE	DIGIT ANALYSIS		
DIRECTORY NUMBER	1 11111 1111222	RESULT	RSVD	ROUTE
	12345 67890 12345 6789012	(SKIP DIGIT)		

*#04	..... *.... *....	PRITEST		
*#274	*...*	WS		
*#50	*...* ..**.	CAFAVLB		
*#51	*...* ..**.	CAFUNAV		
*#53	***** *.*** **... .....**	CIDBLK		
*#54	***** *.*** **... .....**	CIDUBLK		
*#55	*...* ..**.	CAFFWD		
*#56	*...* ..**.	CAFFWDC		
*#57	....* ..**. ..... .*.....	PIDON		
*#58	....* ..**. ..... .*.....	PIDOFF		
*#590	....*	DCOSX		
*#591	....*	ACOSX		

| DIGIT INTERPRETATION VALID FOR DIAL PLAN 0 | | | |

	CALL PROGRESS STATE	DIGIT ANALYSIS		
DIRECTORY NUMBER	1 11111 1111222	RESULT	RSVD	ROUTE
	12345 67890 12345 6789012	(SKIP DIGIT)		

*#63	***** ***** ***** *******	CLEAR		
*#65	*...* ..**.	CAFLOGOF		
*#735	....*	RELOCATE		
*#738	....*	SET		
*#97	..*.. *....	COXFER		
#0	*...* ..**. ....*	ACDUNAV		
#1	*.... ..*.. ....*	ACBK		
#2	*...* ..**.	PRION		
#3	.**.* ..**. ....*	SPDI		
#4	***.* ..**. ....* ......*	SNR		
#5	....*	ADND		
#61	.**** ..*** **... ......*	SPDC1		

| DIGIT INTERPRETATION VALID FOR DIAL PLAN 0 |

	CALL PROGRESS STATE	DIGIT ANALYSIS		
DIRECTORY NUMBER	1 11111 1111222 12345 67890 12345 6789012	RESULT (SKIP DIGIT)	RSVD	ROUTE
#62	.**** ..*** **... ......*	SPDC2		
#80	*...* ..**.	BROADCST		
#81	*...* ..**.	SPKRCALL		
#8378	....*	HWTEST		
#91	....* ....*	CFWVABTH		
#92	....* ....*	CFWVAEXT		
#93	....* ....*	CFWVAINT		
#94	....* ....*	CFWVB		
#95	....* ....*	CFWVBNA		
#96	....* ....*	CFWVNA		
#*056	....* ..... *....	DATA56		
#*1	***** ..**.	MWACT		

DIGIT INTERPRETATION — VALID FOR DIAL PLAN 0

	CALL PROGRESS STATE	DIGIT ANALYSIS		
DIRECTORY NUMBER	1 11111 1111222 12345 67890 12345 6789012	RESULT (SKIP DIGIT)	RSVD	ROUTE
#*2	*...* ..**.	BUZZ		
#*329	.**.* *.*** **...	FAX	R	
#*4	*...* ..**.	VCECALL		
#*75	....*	DIGIDAT		
#*76	....* *.**. ..*.*	SWITCH		
#*77	....* *.*** ***.*	DTE		
#*78	....* ..**. ....*	CODE		
#*79	....* ..**. ....*	SPEED		
#*8	***** ****. ..*** .****..	MWCANORI		
#*90	....* ....*	HUNTPROG		
#*92	....*	AHTVCE		
#*93	....*	DHTVCE		

DIGIT INTERPRETATION — VALID FOR DIAL PLAN 0

	CALL PROGRESS STATE	DIGIT ANALYSIS		
DIRECTORY NUMBER	1 11111 1111222 12345 67890 12345 6789012	RESULT (SKIP DIGIT)	RSVD	ROUTE

```
-------------------------------------------------------------------------
| #*94            |....* ..... ..... .......| AHTDTE        |     |       |
| #*95            |....* ..... ..... .......| DHTDTE        |     |       |
| #*96            |....* ..... ..... .......| AHTFAX        |     |       |
| #*97            |....* ..... ..... .......| DHTFAX        |     |       |
| #*99            |....* ..... ....* .......| HUNTCLR       |     |       |
| ##0             |*...* ..**. ..... ......*| ACDAVLB       |     |       |
| ##1             |....* ..... ..... .......| DCBK          |     |       |
| ##2             |*...* ..**. ..... .......| PRIOFF        |     |       |
| ##3             |....* ..... ....* .......| SPDIPROG      |     |       |
| ##4             |*...* ..**. ..... ......*| LNR           |     |       |
| ##5             |....* ..... ..... .......| DDND          |     |       |
| ##7             |*.... ..... ..... .....*.| KNOVR         |     |       |
-------------------------------------------------------------------------
| DIGIT INTERPRETATION                    VALID FOR DIAL PLAN 0         |
-------------------------------------------------------------------------
|                 |  CALL PROGRESS STATE    | DIGIT ANALYSIS|     |       |
| DIRECTORY NUMBER|          1 11111 1111222|    RESULT     |RSVD | ROUTE|
|                 |12345 67890 12345 6789012|  (SKIP DIGIT) |     |       |
-------------------------------------------------------------------------
| ##8             |***** ..**. ..... .......| DTA           |     |       |
| ##91            |....* ..... ....* .......| CFWVAOFF      |     |       |
| ##*78           |....* ..**. ....* .......| RESET         |     |       |
| ###1            |*.... ..**. ..... .......| TRACE         |     |       |
| ###20           |..... **..* **... .......| MILLWAT       |     |       |
| ###21           |..... **..* **... .......| LOOPBACK      |     |       |
| ###22           |..... **..* **... .......| SILENCE       |     |       |
| ###23           |..... **..* **... .......| COMBO         |     |       |
| ###4            |*.... ..... ..... .......| THRCONF       |     |       |
| ###6            |....* ..... ..... .......| MONTONE       |     |       |
-------------------------------------------------------------------------
```

```
AMO-DPLN -10        DIALING  PLANS, FEATURE ACCESS CODES

DISPLAY COMPLETED;
```

Below is the configuration of the trunk board. This is the configuration of the board supporting the QSIG trunk.

```
DIS-BCSU:TMD,1,2,25;
H500:  AMO BCSU  STARTED
----------------------------------------------------------------
| DETAILS OF TMD BOARD AT ADDRESS (LTG.LTU.SLOT) = 1. 2. 25    |
|                                                              |
|    CABTYP =    1      TIMTYP = SYST       SIGTYP = MOS       |
|     FRAME =  ESF        TABS =   NO       FCTID  =   2       |
|    BI8SUB =  YES      BIVDET =   NO                          |
|--------------------------------------------------------------|
|   RDRATIO =     6       RDTH =  2500      RDQUAL = 15000     |
|    YLSEND =  5000       YLTH =   400      YLQUAL =   100     |
|       LOS =   150        AOS =  4000                         |
|  SESDISTH =    10   SESREQTH =    10                         |
|  OESDISTH =    30   OESDISIN = 24-00-00                      |
|  OESREQTH =  4000   OESREQIN = 04-00-00                      |
|--------------------------------------------------------------|
|    NETUSR = NETWK     ACKTIM = 1000       DLVTIM =  5000     |
|    OCTMAX =  260      RETMAX =    3       WINDOW =     7     |
|    CRIDC  =           TTSC   =            NSFIV  =           |
|    NSFTSC =           PFDGT  =                               |
|--------------------------------------------------------------|
|       IGN = 0          IID = 0                               |
----------------------------------------------------------------

AMO-BCSU -10        BOARD CONFIGURATION, SWITCHING UNIT
```

Below is the configuration of the Class of Trunk (COT) table as configured on the PBX:

```
DIS-COT:;
H500:  AMO COT   STARTED
       |D|A|D|D|D|M|S|V|E|E|A|R|
       |I|N|S|S|I|D|A|L|S|S|N|F|
       |T|S|A|A|S|R|T|S|P|P|I|L|
       | |R| |S| | | |A|A|D|D|A|
       | | | | | | | |T|N|N|N|S|
       | | | | | | | | |I|I|I|H|
   COT | | | | | | | | | |S|S| |
   ----+-+-+-+-+-+-+-+-+-+-+-+-+
     0 | | | | | | | | | | | |
     1 | |X| | | | | | | | | |
     2 | |X| | |X| | | | | | |
     3 |X| | | | | | | | | | |
     4 | |X| | |X| | | | | | |
     5 | |X| | |X| | | | | | |
     6 | |X| | | | | | | | | |
    14 |X| | | |X| | | | | | |
   ----+-+-+-+-+-+-+-+-+-+-+-+-+
AMO-COT  -10        CLASS OF TRUNK FOR CALL PROCESSING
```

Below is a the configuration of the Class of Parameter (COP) table as configured on the PBX:

```
DIS-COP:;
H500:  AMO COP   STARTED
|   |                    |  |  |    |
|   | S           E A    |  |  |    |
|   | T         E S N    |  |  |    |
|   | A   S   V S P I D  |DD| S|    |
|   | D   Z   L P D D T  |TT| U|  P |
|   | I A A S S A N N O  |MM| P|  D |
|COP| A N C A A N I I N  |FF| V|  P |
|IDX| L S K T T I S S E  | L|12|1234|
+---+--------------------+--+--+----+
|  0|                    |  |  |    |
|  1|   X                |  |  |    |
|  2| X X                |X |X |X   |
|  4|   X                |X |  |X   |
|  5| X X X              |X |X |X   |
|  6| X X              X |  |  |X   |
| 50| X                  |X |X |X   |
+---+--------------------+--+--+----+
AMO-COP  -10        CLASS OF PARAMETER
```

Below is the configuration of the trunk group associated with the QSIG trunk:

```
TGRP = 41;

DIS-TGACC:41;
H500:  AMO TGACC STARTED
+-------------------------------------------------------------------------------+
| TGRP NUMBER    :    41   TGRP NAME  : QSIG            /N    MAXIMUM NO:   23 |
| SUBGROUP NUMBER:     5   DEVICE TYPE: CORNET B             DIR TYPE  : BOTH |
| ACD THRESHOLD  :     *   TRACENO    :          0           USAGE TYPE: TERR |
| ALLOCATED TO AT LEAST ONE ROUTE                           GDTR RULE :    0 |
| SELECTION      :  LOW    CFBLOCK    : DISABLED                              |
| THE FOLLOWING PORTS (LTG-LTU-SLOT-CIRCUIT) ARE ALLOCATED:                    |
+-------------------------------------------------------------------------------+
|  1- 2- 25- 1| 1- 2- 25- 2| 1- 2- 25- 3| 1- 2- 25- 4| 1- 2- 25- 5| 1- 2- 25- 6|
+-------------------------------------------------------------------------------+
|  1- 2- 25- 7| 1- 2- 25- 8| 1- 2- 25- 9| 1- 2- 25-10| 1- 2- 25-11| 1- 2- 25-12|
+-------------------------------------------------------------------------------+
|  1- 2- 25-13| 1- 2- 25-14| 1- 2- 25-15| 1- 2- 25-16| 1- 2- 25-17| 1- 2- 25-18|
+-------------------------------------------------------------------------------+
|  1- 2- 25-19| 1- 2- 25-20| 1- 2- 25-21| 1- 2- 25-22| 1- 2- 25-23|  -  -   -  |
+-------------------------------------------------------------------------------+

AMO-TGACC-10        TRUNK GROUP ACCESS CODE
```

Below is the configuration of one of the B-channels of the QSIG trunk:

```
DIS-TCSU:1-2-25-1;
H500:  AMO TCSU  STARTED
 +------------------------------------------------------------------------+
 | PEN:  1- 2- 25- 1  INS: Y   BOARD: TMDN64P    DEV: S1B       TGRP: 41  |
 +------------------------------------------------------------------------+
 | TRKID  : 0002          TCCID    :                                      |
 | CCT    : QSIG    /0002                                                 |
 |                                                                        |
 | ACDATA : 0             COTNO    : 6           LCRCOSD  : 5            |
 | ATNTYP : TIE           DITIDX   : 0           LCRCOSV  : 5            |
 | BNEGOT : N             DPLN     : 0           LOCANA   :              |
 | COPNO  : 6             ITR      : 0           REMANA   :              |
 | COSNO  : 75                                                            |
 +------------------------------------------------------------------------+


AMO-TCSU -10        TRUNK CONFIGURATION, SWITCHING UNIT
```

Below is the configuration of the D-channel of the QSIG trunk:

```
DIS-TCSU:1-2-25-24;
H500:  AMO TCSU  STARTED
 +------------------------------------------------------------------------+
 | PEN:  1- 2- 25-24  INS: Y   BOARD: TMDN64P     DEV: S1D                |
 +------------------------------------------------------------------------+
 | TCCID  :                                                               |
 | CCT    : QSIG                                                          |
 |                                                                        |
 | ACDATA : 0             COTNO    : 6           DPLN     : 0            |
 | COPNO  : 6             DITIDX   :             ITR      : 0            |
 | CONVER : N             PROTOCOL : NQISO                               |
 | BEARER:  ONE                                                           |
 | TMR:                                                                   |
 |   302:    15  303:     6  304:    20  305:    30  306:    30           |
 |   308:     6  309:    90  310:   110  313:     4  314:     6           |
 |   316:   120  322:     4  384:    30  385:    30  386:    30           |
 +------------------------------------------------------------------------+

AMO-TCSU -10        TRUNK CONFIGURATION, SWITCHING UNIT
```

Below is the configuration of the LCR Route that the QSIG trunk is assigned to:

```
DIS-LROUT:41;
H500:  AMO LROUT STARTED
                    LCR ROUTE DEFINITION TABLE
                    --------------------------

-------------------------------------------------------------------------
|ROUTENUM = 41          SCHED A = X  AORT   =       INFORMATION         |
|ROUTEELE = 1                B =    AUTH   = 1     TRANS CAP = S3V     |
|BEARER   = ONE              C =    ONHKQ  = Y     TRKSIG = COR        |
|BANDWTH  = 1                D =    OFFHKQ = Y     SCCID  =            |
|TRUNKGRP = 41               E =    ODRNUM = 1     SVCVCE = NON        |
|MASTGRP  = 3                F =    APLTYP = VFD   SVCN-V = NON        |
|ROUTSERV = N                G =                   FACNUM =            |
|                            H =                                       |
-------------------------------------------------------------------------

-------------------------------------------------------------------------
|ROUTENUM = 41          SCHED A = X  AORT   =       INFORMATION         |
|ROUTEELE = 2                B =    AUTH   = 1     TRANS CAP = S3V     |
|BEARER   = ONE              C =    ONHKQ  = Y     TRKSIG = COR        |
|BANDWTH  = 1                D =    OFFHKQ = Y     SCCID  =            |
|TRUNKGRP = 41               E =    ODRNUM = 1     SVCVCE = NON        |
|MASTGRP  = 3                F =    APLTYP = VD    SVCN-V = NON        |
|ROUTSERV = N                G =                   FACNUM =            |
|                            H =                                       |
-------------------------------------------------------------------------

END OF LCR ROUTE DEFINITION TABLE DISPLAY
AMO-LROUT-10        ROUTE DEFINITION DETERMINATION PACKAGE
```

Below is the configuration of the LCR Outdial Rule assigned to the ISDN PRI trunks in the PBX:

```
DIS-LODR:;
H500:  AMO LODR  STARTED
             << DISPLAY LCR OUTDIAL RULE >>

            ODR NO    COMMAND   BRANCH VALUE
            ------    -------   ------------
               1      ECHOALL
                      END

            -------- END OF DISPLAY --------

AMO-LODR -10        AMO LCR ODR FOR SWITCHING UNIT
DISPLAY COMPLETED;
```

Below is the configuration of one of the B-channels of the PSTN trunk:

```
DISP-TCSU:1-2-103-1,,,,;
H500:  AMO TCSU  STARTED
 +-------------------------------------------------------------------------+
 | PEN:  1- 2-103- 1  INS: Y   BOARD: TMDN64P    DEV: PRIB      TGRP: 40  |
 +-------------------------------------------------------------------------+
 | TRKID  : 0040          TCCID    :                                       |
 | CCT    : T1PRI   /0040                                                  |
 |                                                                         |
 | ACDATA : 0             DITIDX   : 0           LOCANA   :               |
 | ATNTYP : ISDN          DPLN     : 0           REMANA   :               |
 | COPNO  : 0             ITR      : 0           SIDANI   : N             |
 | COSNO  : 75            LCRCOSD  : 5           SRTIDX   : 3             |
 | COTNO  : 0             LCRCOSV  : 5           TRTBL    : DIDCR         |
 | DEDSVC : NONE          FACILITY : *                                     |
 +-------------------------------------------------------------------------+

AMO-TCSU -120       TRUNK CONFIGURATION, SWITCHING UNIT


DISPLAY COMPLETED;
```

Below is the configuration of the D-channel assigned to the PSTN trunk

```
DISP-TCSU:1-2-103-24,;
H500:  AMO TCSU  STARTED
 +-------------------------------------------------------------------------+
 | PEN:  1- 2-103-24  INS: Y   BOARD: TMDN64P     DEV: PRID                |
 +-------------------------------------------------------------------------+
 | TCCID  :                                                                |
 | CCT    : T1PRI                                                          |
 |                                                                         |
 | ACDATA : 0             DEDSCC   :             INTERFID : 0              |
 | COPNO  : 5             DITIDX   :             ITR      : 0              |
 | COTNO  : 6             DPLN     : 0           PROTOCOL : NI2            |
 |                                                                         |
 | TMR301 :   300 SEC.    TMR308   :     4 SEC.  TMR313   :     4 SEC.    |
 | TMR303 :     4 SEC.    TMR309   :    90 SEC.  TMR316   :    30 SEC.    |
 | TMR305 :    30 SEC.    TMR310   :    30 SEC.  TMR322   :     4 SEC.    |
 | TDELAY :  3000 MSEC.   BEARER:  ONE                                     |
 | NCT    : N          TNCT     :                                          |
 +-------------------------------------------------------------------------+

AMO-TCSU -185       TRUNK CONFIGURATION, SWITCHING UNIT
DISPLAY COMPLETED;
```

Below is the configuration of the LCR Route assigned to the PSTN trunk:

```
DISP-LROUT:40;
H500:  AMO LROUT STARTED
                   LCR ROUTE DEFINITION TABLE
-------------------------------------------------------------------------
|ROUTENUM = 40          SCHED A = X  AORT   =       INFORMATION         |
|ROUTEELE = 1                B =    AUTH   = 1     TRANS CAP = SU3V    |
|BEARER   = ONE              C =    ONHKQ  = Y     TRKSIG = PRI        |
|BANDWTH  = 1                D =    OFFHKQ = Y     SCCID  =            |
|TRUNKGRP = 40               E =    ODRNUM = 1     SVCVCE = NON        |
|MASTGRP  = 1                F =    APLTYP = VFD   SVCN-V = NON        |
|ROUTSERV = N                G =                   FACNUM =            |
|                            H =                                       |
-------------------------------------------------------------------------
END OF LCR ROUTE DEFINITION TABLE DISPLAY
AMO-LROUT-185       ROUTE DEFINITION DETERMINATION PACKAGE
DISPLAY COMPLETED;
```

Below is the configuration of the T1 trunk board assigned to the PSTN trunk:

```
DISP-BCSU:TMD,1,2,103;
H500:  AMO BCSU  STARTED
------------------------------------------------------------
| DETAILS OF TMD BOARD AT ADDRESS (LTG.LTU.SLOT) = 1. 2.103  |
|                                                            |
|    CABTYP =    1      TIMTYP = SYST       SIGTYP = MOS     |
|     FRAME =  ESF        TABS =   NO       FCTID  =   2     |
|    BI8SUB =  YES      BIVDET =   NO                        |
|------------------------------------------------------------|
|   RDRATIO =     6       RDTH =  2500      RDQUAL = 15000   |
|    YLSEND =  5000       YLTH =   400      YLQUAL =   100   |
|       LOS =   150        AOS =  4000                       |
|  SESDISTH =    10   SESREQTH =    10                       |
|  OESDISTH =    30   OESDISIN = 24-00-00                    |
|  OESREQTH =     4   OESREQIN = 04-00-00                    |
|------------------------------------------------------------|
|    NETUSR =  USER     ACKTIM = 1000       DLVTIM = 30000   |
|    OCTMAX =  260      RETMAX =    3       WINDOW =     1   |
|    CRIDC  =           TTSC   =            NSFIV  =         |
|    NSFTSC =           PFDGT  =                             |
|------------------------------------------------------------|
|       IGN = 0          IID = 1                             |
------------------------------------------------------------

AMO-BCSU -120       BOARD CONFIGURATION, SWITCHING UNIT


DISPLAY COMPLETED;
```

Below is the configuration of the trunk group assigned to the PSTN trunk:

```
DISP-TGACC:40;
H500:  AMO TGACC STARTED
+-------------------------------------------------------------------------------+
| TGRP NUMBER    :    40   TGRP NAME  : T1PRI           /N    MAXIMUM NO:   23 |
| SUBGROUP NUMBER:     4   DEVICE TYPE: PRI B                 DIR TYPE  : BOTH |
| ACD THRESHOLD  :     *   TRACENO    :          0           USAGE TYPE: TERR |
| ALLOCATED TO AT LEAST ONE ROUTE                            GDTR RULE :    0 |
| SELECTION      :  LOW    CFBLOCK    : ENABLED                                |
| THE FOLLOWING PORTS (LTG-LTU-SLOT-CIRCUIT) ARE ALLOCATED:                     |
+-------------------------------------------------------------------------------+
|  1- 2-103- 1| 1- 2-103- 2| 1- 2-103- 3| 1- 2-103- 4| 1- 2-103- 5| 1- 2-103- 6|
+-------------------------------------------------------------------------------+
|  1- 2-103- 7| 1- 2-103- 8| 1- 2-103- 9| 1- 2-103-10| 1- 2-103-11| 1- 2-103-12|
+-------------------------------------------------------------------------------+
|  1- 2-103-13| 1- 2-103-14| 1- 2-103-15| 1- 2-103-16| 1- 2-103-17| 1- 2-103-18|
+-------------------------------------------------------------------------------+
|  1- 2-103-19| 1- 2-103-20| 1- 2-103-21| 1- 2-103-22| 1- 2-103-23|  -  -   -  |
+-------------------------------------------------------------------------------+

AMO-TGACC-120       TRUNK GROUP ACCESS CODE

DISPLAY COMPLETED;
```

Below is the configuration of one of your test stations:

```
DISP-SCSU:2004,ALL;
H500:  AMO SCSU  STARTED
STNO    2004   NAME    DONALD DUCK                          ACT DEV
COS1      60   COSX      1   DIAL       -   DLIDX      -   DEVFUNC  OPTI
COS2      60   SPDC1     1   DPLN       0   TA         N   PEN     1-2-37-4
LCRCOSV1  12   SPDC2     2   HTLNIDX    -   TADLIDX    -   PUBSCR   2004
LCRCOSV2  12   SPDI     30   ITR        0   TAINS      -   ACTCDE   000000000000
LCRCOSD1  12   HANDSFR   Y   SPECL      -   ACCLASS    -   NTYPE    NAT
LCRCOSD2  12   INS       Y   PUGRP      -   QPRIOR     -   RPTYPE
DSSALERT   N   DTS       N   STD        1   FAXSERV  N/A   HDSTYPE  NONE
NWBALNO    -   CDIDX     -   WINKOFF    -   SEIZE      -   DTE DL VER
CFWDV      N   CFWDD     N   DND        N   CALLWAIT   N   VCE DL VER   0
VCP      OFF   MSGWLMP   -   PHONMAIL   N   COMGRP     0   DNIDSP       Y
MAINO      -   CUI       Y   KEYM       0   TSI        1   LOCODE    -
DCFWBUSY   N   API       N   EVMS       N   EVMSIDX    0   OPTITYPE  OEADVPL
TATYPE     -                TATYPE2    -                  FLASH      -
PATTERN      -   TFAGROUP  - ATMADDR    -                  SPKALERT  Y
RELTEST    -
FIXED CFW1  -           FIXED CFW2  -          VAR CFW  -
STATION-HUNT  N
UCD-HUNT      N
PILOT-HUNT    N
NIGHTVARIANT  N
------------------------------------------------------------------------------
AMO-SCSU -185       SUBSCRIBER CONFIGURATION IN THE SWU
DISPLAY COMPLETED;
```

Configuring the Local Cisco Unified CallManager Express (Cisco 3745)

LOCAL-3745#sho ver

Cisco IOS Software, 3700 Software (C3745-IPVOICE-M), Version 12.4(4)XC4, RELEAS)

Synched to technology version 12.4(5.13)T

Technical Support: http://www.cisco.com/techsupport

Copyright (c) 1986-2006 by Cisco Systems, Inc.

Compiled Mon 24-Jul-06 19:48 by ealyon

ROM: System Bootstrap, Version 12.2(8r)T2, RELEASE SOFTWARE (fc1)

ROM: Cisco IOS Software, 3700 Software (C3745-IPVOICE-M), Version 12.4(4)XC4, R)

LOCAL-3745 uptime is 18 hours, 58 minutes

System returned to ROM by bus error at PC 0x6101C330, address 0xD0D0D0D

System image file is "flash:c3745-ipvoice-mz.124-4.XC4.bin"

Cisco 3745 (R7000) processor (revision 2.0) with 241664K/20480K bytes of memory.

Processor board ID JMX0813L0Z3

R7000 CPU at 350MHz, Implementation 39, Rev 3.3, 256KB L2, 2048KB L3 Cache

2 FastEthernet interfaces

48 Serial interfaces

2 Channelized T1/PRI ports

2 Voice FXS interfaces

2 Voice DID interfaces

DRAM configuration is 64 bits wide with parity enabled.

151K bytes of NVRAM.

62720K bytes of ATA System CompactFlash (Read/Write)

Configuration register is 0x0

LOCAL-3745#wr t

Building configuration...

Current configuration : 5012 bytes

!

version 12.4

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

!

hostname LOCAL-3745

!

boot-start-marker

boot system flash:c3745-ipvoice-mz.124-4.XC4.bin

boot-end-marker

!

logging buffered 99999999 debugging

no logging console

enable password cisco

!

no aaa new-model

!

resource policy

!

no network-clock-participate slot 1

no network-clock-participate slot 3

voice-card 1

no dspfarm

```
!
voice-card 3
 dspfarm
!
ip cef
!
!
no ip dhcp use vrf connected
!
ip dhcp pool ephone3
   host 172.20.15.203 255.255.255.0
   client-identifier 0100.170e.c858.d4
   default-router 172.20.15.1
   option 150 ip 172.20.15.196
!
ip dhcp pool ephone4
   host 172.20.15.204 255.255.255.0
   client-identifier 0100.15f9.c856.1a
   default-router 172.20.15.1
   option 150 ip 172.20.15.196
!
ip dhcp pool ephone1
   host 172.20.15.201 255.255.255.0
   client-identifier 0100.15fa.0cb1.dc
   default-router 172.20.15.1
   option 150 ip 172.20.15.196
!
ip dhcp pool ephone2
   host 172.20.15.202 255.255.255.0
```

```
  client-identifier 0100.15fa.0cb5.d9
  default-router 172.20.15.1
  option 150 ip 172.20.15.196
!
ip dhcp pool ephone7
  host 172.20.15.207 255.255.255.0
  client-identifier 0100.15c6.96dd.6b
  default-router 172.20.15.1
  option 150 ip 172.20.15.196
!
!
no ip domain lookup
ip dhcp-server query lease retries 5
ip dhcp-server 172.20.15.196
isdn switch-type primary-qsig
!
!
voice call carrier capacity active
!
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
```

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

< **no supplementary-service h450.2**> [2]

<**no supplementary-service h450.3** > [2]

supplementary-service h450.12

h323

sip

registrar server expires max 600 min 60

!

!

!

voice register global

mode cme

source-address 172.20.15.196 port 5060

max-dn 100

load 7960-7940 P0S3-07-5-00

tftp-path flash:

create profile sync 0841241944151508

!

voice register dn 1

number 4011

< call-forward b2bua busy 2118>[3]

<call-forward b2bua noan 2118 timeout 7>[4]

name Local IP1

huntstop

!

voice register dn 2

number 4012

name Local IP2

---

[2] Inserted to force IP call forward by join (no reroute).
[3] Inserted for call forward busy from SIP extension.
[4] Inserted for call forward no reply from SIP extension.

```
 huntstop
!
voice register dn  3
 call-forward b2bua busy 3015
!
voice register pool  1
 id mac 0015.FA0C.B1DC
 type 7960
 number 1 dn 1
 max registrations 42
 dtmf-relay rtp-nte
 description Cisco7960
 codec g711ulaw
!
voice register pool  2
 id mac 0015.FA0C.B5D9
 type 7960
 number 1 dn 2
 max registrations 42
 dtmf-relay rtp-nte
 description Cisco7960
 codec g711ulaw
!
!
!
controller T1 3/0
 framing esf
 linecode b8zs
 pri-group timeslots 1-24
```

```
!
controller T1 3/1
 framing esf
 linecode b8zs
 pri-group timeslots 1-24
!
!
!
!
interface FastEthernet0/0
 ip address 172.20.15.196 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface Serial3/0:23
 no ip address
 encapsulation hdlc
 isdn switch-type primary-qsig
 isdn overlap-receiving
 isdn incoming-voice voice
 no cdp enable
!
interface Serial3/1:23
```

```
 no ip address
  encapsulation hdlc
 isdn switch-type primary-qsig
 isdn overlap-receiving
 isdn protocol-emulate network
 isdn incoming-voice voice
 isdn T310 120000
 no cdp enable
!
ip route 0.0.0.0 0.0.0.0 172.20.15.1
!
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
< tftp-server flash: any load file that is not on the phone and is needed >
< tftp-server slot0: any load file that is not on the phone and is needed>
!
control-plane
!
!
!
```

```
voice-port 1/0/0
 timing digit 75
 timing inter-digit 65
!
voice-port 1/0/1
!
voice-port 1/1/0
!
voice-port 1/1/1
!
voice-port 3/0:23
!
voice-port 3/1:23
!
!
dial-peer voice 3023 pots
 destination-pattern 2...
 incoming called-number ....
<clid restrict> [5]
< supplementary-service qsig call-forward > [6]
 direct-inward-dial
 port 3/0:23
 forward-digits all
!
dial-peer voice 1 voip
 preference 1
 destination-pattern 4...
```

[5] Inserted for CLID restrict cases only.
[6] Omitted to force QSIG call forward by join (no reroute).

```
 session target ipv4:172.20.15.159
 dtmf-relay h245-alphanumeric
 codec g711ulaw
 no vad
!
dial-peer voice 5050 pots
 destination-pattern 5050
 direct-inward-dial
 port 3/0:23
 forward-digits all
!
dial-peer voice 5 pots
 destination-pattern 5...
 direct-inward-dial
 port 3/0:23
 forward-digits all
!
dial-peer voice 3700 pots
 destination-pattern 37..
 direct-inward-dial
 port 3/0:23
 forward-digits all
!
!
sip-ua
!
!
telephony-service
 load 7960-7940 P003-07-5-00
```

max-ephones 25

max-dn 50

ip source-address 172.20.15.196 port 2000

max-conferences 8 gain -6

call-forward pattern .T

transfer-system full-consult

transfer-pattern .... <**blind**> [7]

create cnf-files version-stamp 7960 Sep 11 2006 16:53:04

!

!

ephone-dn 3 dual-line

number 4013

name Local IP3

< call-forward busy 2118> [8]

<call-forward noan 2118 timeout 7>[9]

huntstop channel

!

!

ephone-dn 4 dual-line

number 4014

name Local IP4

huntstop channel

!

!

ephone 3

mac-address 0017.0EC8.58D4

type 7961

---

[7] Inserted to enable blind transfers, as opposed to early attended transfers.
[8] Inserted for call forward busy from SCCP extension.
[9] Inserted for call forward no reply from SCCP extension.

```
 keep-conference
 button  1:3
!
!
!
ephone  4
 mac-address 0015.F9C8.561A
 type 7970
 keep-conference
 button  1:4
!
!
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 exec-timeout 0 0
 password cisco
 login
 transport input telnet
!
!
end


LOCAL-3745#
```

REMOTE-2811#sho ver

Cisco IOS Software, 2800 Software (C2800NM-IPVOICE-M), Version 12.4(4)XC4, RELE)

Synched to technology version 12.4(5.13)T

Technical Support: http://www.cisco.com/techsupport

Compiled Mon 24-Jul-06 18:33 by ealyon

ROM: System Bootstrap, Version 12.4(1r) [hqluong 1r], RELEASE SOFTWARE (fc1)

ROM: Cisco IOS Software, 2800 Software (C2800NM-IPVOICE-M), Version 12.4(4)XC4,)

REMOTE-2811 uptime is 10 weeks, 22 hours, 30 minutes

System returned to ROM by power-on

System restarted at 16:23:28 UTC Thu Sep 7 2006

System image file is "flash:c2800nm-ipvoice-mz.124-4.XC4.bin"

Cisco 2811 (revision 53.51) with 251904K/10240K bytes of memory.

Processor board ID FHK0946F0MZ

2 FastEthernet interfaces

2 Voice FXS interfaces

DRAM configuration is 64 bits wide with parity enabled.

239K bytes of non-volatile configuration memory.

62592K bytes of ATA CompactFlash (Read/Write)

Configuration register is 0x2

REMOTE-2811#

REMOTE-2811#

REMOTE-2811#wr t

Building configuration...

Current configuration : 3553 bytes

!

! Last configuration change at 19:10:31 UTC Thu Nov 16 2006

! NVRAM config last updated at 19:10:33 UTC Thu Nov 16 2006

!

version 12.4

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

!

hostname REMOTE-2811

!

boot-start-marker

boot system flash:c2800nm-ipvoice-mz.124-4.XC4.bin

boot-end-marker

!

enable password cisco

!

no aaa new-model

!

resource policy

!

!

!

ip cef

```
no ip dhcp use vrf connected
!
ip dhcp pool ephone5
   host 172.20.15.205 255.255.255.0
   client-identifier 0100.15fa.0cb7.46
   default-router 172.20.15.1
   option 150 ip 172.20.15.159
!
ip dhcp pool ephone6
   host 172.20.15.206 255.255.255.0
   client-identifier 0100.15fa.63bf.84
   default-router 172.20.15.1
   option 150 ip 172.20.15.159
!
!
no ip domain lookup
ip dhcp-server query lease retries 5
ip dhcp-server 172.20.15.159
!
!
voice-card 0
 no dspfarm
!
!
!
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

supplementary-service h450.12

< **no supplementary-service h450.2** inserted here to force call by join>[10]

<**no supplementary-service h450.3** inserted here to force call by join> [10]

h323

sip

!

!

interface FastEthernet0/0

ip address 172.20.15.159 255.255.255.0

duplex auto

speed auto

!

interface FastEthernet0/1

no ip address

shutdown

duplex auto

speed auto

!

ip route 0.0.0.0 0.0.0.0 172.20.15.1

!

ip http server

!

!

!

tftp-server flash:P0030702T023.bin

[10] Inserted to force IP call forward by join (no reroute).

tftp-server flash:P0030702T023.loads

tftp-server flash:P0030702T023.sb2

tftp-server flash:P0030702T023.sbn

< tftp-server flash: any load file that is not on the phone and is needed >

< tftp-server slot0: any load file that is not on the phone and is needed>

!

control-plane

!

!

!

voice-port 0/1/0

!

voice-port 0/1/1

!

!

!

!

!

dial-peer voice 1 voip

 destination-pattern 2...

 session target ipv4:172.20.15.196

 dtmf-relay h245-alphanumeric

 codec g711ulaw

!

dial-peer voice 3011 voip

 destination-pattern 3011

 session target ipv4:172.20.15.196

 dtmf-relay h245-alphanumeric

```
 codec g711ulaw
!
dial-peer voice 3014 voip
 destination-pattern 3014
 session target ipv4:172.20.15.196
 dtmf-relay h245-alphanumeric
 codec g711ulaw
!
dial-peer voice 3012 voip
 destination-pattern 3012
 session target ipv4:172.20.15.196
 dtmf-relay h245-alphanumeric
 codec g711ulaw
!
dial-peer voice 3013 voip
 destination-pattern 3013
 session target ipv4:172.20.15.196
 dtmf-relay h245-alphanumeric
 codec g711ulaw
!
dial-peer voice 4300 voip
 destination-pattern 43..
 session target ipv4:172.20.15.196
 dtmf-relay h245-alphanumeric
 codec g711ulaw
!
dial-peer voice 5214 voip
 destination-pattern 5...
 session target ipv4:172.20.15.196
```

```
 dtmf-relay h245-alphanumeric
 codec g711ulaw
!
dial-peer voice 2 voip
 destination-pattern 4...
 session target ipv4:172.20.15.196
 dtmf-relay h245-alphanumeric
 codec g711ulaw
!
dial-peer voice 5 voip
 destination-pattern 5...
 session target ipv4:172.20.15.196
!
dial-peer voice 3700 voip
 destination-pattern 37..
 session target ipv4:172.20.15.196
 dtmf-relay h245-alphanumeric
 codec g711ulaw
!
!
sip-ua
!
!
telephony-service
 load 7960-7940 P0030702T023
 max-ephones 25
 max-dn 50
 ip source-address 172.20.15.159 port 2000
 max-conferences 8 gain -6
```

call-forward pattern .T

transfer-system full-consult

transfer-pattern .... <**blind**> [11]

create cnf-files version-stamp Jan 01 2002 00:00:00

!

!

ephone-dn 5 dual-line

number 4015

name Remote IP5

<call-forward busy 3603>[12]

< call-forward noan 3603 timeout 7>[13]

!

!

ephone-dn 6 dual-line

number 4016

name Remote IP6

!

!

ephone 5

mac-address 0015.FA0C.B746

type 7960

keep-conference

button 1:5

!

!

!

[11] Inserted to enable blind transfers, as opposed to early attended transfers.
[12] Inserted for call forward busy from SCCP extension.
[13] Inserted for call forward no reply from SCCP extension.

```
ephone  6
 mac-address 0015.FA63.BF84
 type 7960
 keep-conference
 button  1:6
!
!
!
line con 0
line aux 0
line vty 0 4
 password cisco
 login
!
scheduler allocate 20000 1000
!
end

REMOTE-2811#
```

Acronyms

Acronym	Definitions
BRI	Basic Rate ISDN
CAMA	Centralized Automatic Message Accounting
CAS	Channel Associated Signaling
CFB	Call Forward when Busy
CFNR	Call Forward when No Reply
CFU	Call Forward Unconditional
CO	Central Office
FGD	Feature Group “D”
FXO	Foreign Exchange – Office
FXS	Foreign Exchange – Station
IOS	Internetworking Operating System
MCID	Malicious Caller ID
MGCP	Media Gateway Control Protocol
MoH	Music on Hold
MWI	Message Waiting Indication
PBX	Private Branch Exchange
PRI	Primary Rate ISDN
PSAP	Public Service Access Point
SIP	Session Initiation Protocol
ToH	Tone on Hold

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