Cisco 3640 Series Gateway-PBX Interoperability: Siemens Hicom 330E with E1 QSIG Signaling

This document describes the interoperability and configuration of a Cisco 3640 voice gateway with a Siemens Hicom 330E PBX using E1 QSIG signaling. It includes the following sections:

- System Components
- Configuration Tasks
- Caveats

System Components

PBX Model	Siemens Hicom 330E
PBX Release	Version 3.1
Telephony Signaling	E1 QSIG
Voice Gateway	Cisco 3640
Gateway Release	IOS™ 12.2(1)T
VoX Protocol	H.323

Configuration Tasks

See the following sections for configuration tasks for this feature:

- Set Up
- Siemens Hicom PBX Configuration
- Cisco 3640 Gateway Configuration

Set Up

This section includes the following information:

- Connectivity Diagrams
- Set Up Notes

Connectivity Diagrams
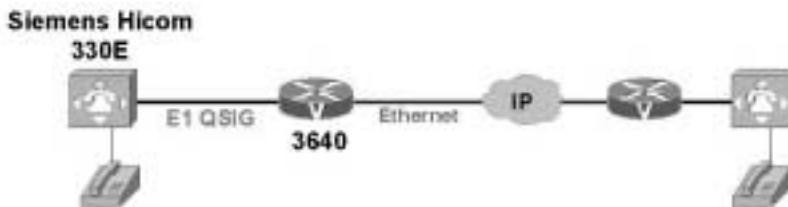
Figure 1: *Test Configuration*

Figure 1 represents the configuration used for testing. A Siemens Hicom PBX connected to a Cisco 3640 voice gateway via an E1 QSIG connection.

Set Up Notes

- A Siemens Hicom 330E Switch-type/ Protocol side setting of "ECMA1 QSIG (ETSI 300172 2nd with Supplementary Services) / Master" was used for Network side, and "ECMA1 QSIG (ETSI 300172 2nd with Supplementary Services) / Salve" was used for User side.

- The Cisco 3640 router with ISDN switch type setting of **primary-qsig** supports both protocol sides by using the "isdn protocol-emulate network/user" command.

- When calling from the Siemens Hicom 330E side to the far side PBX, the far side PBX may send back a Progress Indicator message indicating inband information may be available. If so, the "progress_ind setup enable 1" command is necessary under all voip dial-peers associated with the PBXs to open the voicepath to ensure the caller hears a ringback tone.

- Configuring the Siemens PBX Layer 1 operation to be Master (or Network) side sets the Layers 2 & 3 protocol side setting to master as well. Therefore, the Cisco 3640 gateway should be set to Slave protocol side by issuing the command: **isdn protocol-emulate user**

- Similarly, if the Siemens PBX Layer 1 operation is set for Slave (or user) side, layers 2 & 3 protocol side are set for slave side. The Cisco 3640 gateway is set to Master protocol side by issuing the command: **isdn protocol-emulate network**

- The layer 1 configuration in the Siemens Hicom 330E PBX is assigned to the device type S2CONN via parameter "LWPAR" (Loadware Parameters). For Master side operation, the Hicom 330E was configured so that the LWPAR field under the <cha-tdcsu> command is:

  LWPAR = 4
  The applicable fields under LWPAR = 4 <cha-lwpar> are as follows:
  MASTER = Y
  SMD = Y

  For slave side operation:
  LWPAR = 1
  The applicable fields under LWPAR = 1 <cha-lwpar> are as follows:
  MASTER = N

SMD = N

Siemens Hicom PBX Configuration

TRUNK CONFIGURATION:

MASTER SIDE CONFIGURATION

```
<dis-tdcsu

PEN1 = 1-1-73-0;
DIS-TDCSU:1-1-73-0;
H500:  AMO TDCSU STARTED


   +----------------------- DIGITAL TRUNK (FORMAT=L) -----------------------+
   |          DEV = S2CONN                  PEN =  1-01-073-0               |
   |-----------------------------------------------------------------------|
   | COTNO    = 4           COPNO   = 4           DPLN      = 0            |
   | ITR      = 0           COS     = 32          LCOSV     = 31           |
   | LCOSD    = 31          CCT     = qsig        DESTNO    = 99           |
   | PROTVAR  = ECMA1       SEGMENT = 1           TCHARG    = N            |
   | SUPPRESS = 0           DGTPR   =             CHIMAP    = N            |
   | ISDNCC   =             ISDNAC  =             ISDNLC    =              |
   | ISDNIP   =             ISDNNP  =                                      |
   | PNPL2C   =             PNPL1C  =             PNPLC     =              |
   | PNPL2P   =             PNPL1P  =             PNPAC     =              |
   | TRACOUNT = 31          SATCOUNT = MANY       NNO       = 1  -1  -999  |
   | ALARMNO  = 2           FIDX    = 1           CARRIER   = 1            |
   | ZONE     = EMPTY       COTX    = 4           FWDX      = 10           |
   | DOMTYPE  =             DOMAINNO =            TPROFNO   =              |
   | INIGHT   =                                                            |
   | CCHDL    =             UUSCCX  = 16          UUSCCY    = 8            |
   |-----------------------------------------------------------------------|
   | TGRP     = 37          SRCHMODE = CIR        BCNEG     = N            |
   | BCGR     = 1           INS     = Y           LWPAR     = 4            |
   | LWPP     = 0           LWLT    = 0           LWPS      = 0            |
   | LWR1     = 0           LWR2    = 0                                    |
   | BCHAN    1 && 30                                                      |
   |                                                                       |
   +-----------------------------------------------------------------------+


   AMOUNT OF B-CHANNELS IN THIS DISPLAY-OUTPUT: 30


AMO-TDCSU-82        DIGITAL TRUNKS

DISPLAY COMPLETED;
```

SLAVE SIDE CONFIGURATION

```
<dis-tdcsu

PEN1 = 1-1-73-0;
DIS-TDCSU:1-1-73-0;
H500:  AMO TDCSU STARTED

   +----------------------- DIGITAL TRUNK (FORMAT=L) -----------------------+
```

```
|          DEV = S2CONN                PEN =  1-01-073-0          |
|----------------------------------------------------------------|
| COTNO    = 4          COPNO    = 4          DPLN     = 0        |
| ITR      = 0          COS      = 32         LCOSV    = 31       |
| LCOSD    = 31         CCT      = qsig       DESTNO   = 99       |
| PROTVAR  = ECMA1      SEGMENT  = 1          TCHARG   = N        |
| SUPPRESS = 0          DGTPR    =            CHIMAP   = N        |
| ISDNCC   =            ISDNAC   =            ISDNLC   =          |
| ISDNIP   =            ISDNNP   =                                |
| PNPL2C   =            PNPL1C   =            PNPLC    =          |
| PNPL2P   =            PNPL1P   =            PNPAC    =          |
| TRACOUNT = 31         SATCOUNT = MANY       NNO      = 1  -1  -999 |
| ALARMNO  = 2          FIDX     = 1          CARRIER  = 1        |
| ZONE     = EMPTY      COTX     = 4          FWDX     = 10       |
| DOMTYPE  =            DOMAINNO =            TPROFNO  =          |
| INIGHT   =                                                     |
| CCHDL    =            UUSCCX   = 16         UUSCCY   = 8        |
|----------------------------------------------------------------|
| TGRP     = 37         SRCHMODE = CIR        BCNEG    = N        |
| BCGR     = 1          INS      = Y          LWPAR    = 1        |
| LWPP     = 0          LWLT     = 0          LWPS     = 0        |
| LWR1     = 0          LWR2     = 0                             |
| BCHAN    1 && 30                                               |
|                                                                |
+----------------------------------------------------------------+


   AMOUNT OF B-CHANNELS IN THIS DISPLAY-OUTPUT: 30


AMO-TDCSU-82        DIGITAL TRUNKS

DISPLAY COMPLETED;


<dis-lwpar;


DIS-LWPAR;
H500:  AMO LWPAR STARTED


   +--------------------------------------------------------------+
   | LOADWARE PARAMETERS    CIRCUIT TYPE: DIUS2  SOURCE:DB  BLOCK:   1 |
   +--------------------------------------------------------------+
   | 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     = 1:COPPER-DERIVE CLOCK FROM LINE(I421)             |
   +--------------------------------------------------------------+


   +--------------------------------------------------------------+
   | LOADWARE PARAMETERS    CIRCUIT TYPE: DIUS2  SOURCE:DB  BLOCK:   4 |
   +--------------------------------------------------------------+
   | 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      = Y            FIXEDTEI = 0         CNTRNR  = 255    |
   | TEIVERIF = N            CRC4REP  = N                          |
   | DEV      = INDEP                                              |
   | INFO     = 4:COPPER-MASTER CLOCK(DPNSS A-END)               |
```

```
        +----------------------------------------------------------------------+
```

```
<dis-buend


TGRP = 37
FORMAT = l;
DIS-BUEND:37,L;
H500:  AMO BUEND STARTED




+------------------------------- FORMAT = L ----------------------------------+
|  TGRP NUMBER :    37   TGRP NAME  : qsig          MAXIMUM NO.  :    30 |
|  SUBGROUP NO.:    10   DEVICE TYPE : S2CONN        TRACENO      :     0 |
|  RESERVED    :    N    SEARCH MODE : CIRCULAR      ACD THRESHOLD :     * |
|  NUMBER OF ASSOCIATED ROUTES       :   1          PRIORITY     :     1 |
|  THE FOLLOWING TRUNKS (LTG-LTU-SLOT-CCT) HAVE BEEN ALLOCATED:           |
+------------------------------------------------------------------------------+
|  1- 1- 73-0   B-CHL:  1 |  1- 1- 73-0   B-CHL:  2 |  1- 1- 73-0   B-CHL:  3 |
|  1- 1- 73-0   B-CHL:  4 |  1- 1- 73-0   B-CHL:  5 |  1- 1- 73-0   B-CHL:  6 |
|  1- 1- 73-0   B-CHL:  7 |  1- 1- 73-0   B-CHL:  8 |  1- 1- 73-0   B-CHL:  9 |
|  1- 1- 73-0   B-CHL: 10 |  1- 1- 73-0   B-CHL: 11 |  1- 1- 73-0   B-CHL: 12 |
|  1- 1- 73-0   B-CHL: 13 |  1- 1- 73-0   B-CHL: 14 |  1- 1- 73-0   B-CHL: 15 |
|  1- 1- 73-0   B-CHL: 16 |  1- 1- 73-0   B-CHL: 17 |  1- 1- 73-0   B-CHL: 18 |
|  1- 1- 73-0   B-CHL: 19 |  1- 1- 73-0   B-CHL: 20 |  1- 1- 73-0   B-CHL: 21 |
|  1- 1- 73-0   B-CHL: 22 |  1- 1- 73-0   B-CHL: 23 |  1- 1- 73-0   B-CHL: 24 |
|  1- 1- 73-0   B-CHL: 25 |  1- 1- 73-0   B-CHL: 26 |  1- 1- 73-0   B-CHL: 27 |
|  1- 1- 73-0   B-CHL: 28 |  1- 1- 73-0   B-CHL: 29 |  1- 1- 73-0   B-CHL: 30 |
+------------------------------------------------------------------------------+


AMO-BUEND-82          TRUNK GROUP

DISPLAY COMPLETED;


<dis-refta

TYPE = circuit
PEN = 1-1-73-0;
DIS-REFTA:CIRCUIT,1-1-73-0;
H500:  AMO REFTA STARTED


   +----------------------------------------------------------------------+
   |          R E F E R E N C E   C L O C K   C I R C U I T S             |
   +--------------+--------+---------+------+--------+------+--------+-----+
   | PEN          | MODULE | DEVICE  | PRI  | ERROR  |BLOCK | SUPP.  |READY|
   |              |        |         |      |        |      |        |BUT  |
   |              |        |         |      |        |      |        |ASYN.|
   +--------------+--------+---------+------+--------+------+--------+-----+
   | 1- 1- 73- 0  | DIU-N2 | S2CONN  |  11  | 11023  |  N   |    X   | N   |
   +--------------+--------+---------+------+--------+------+--------+-----+


AMO-REFTA-82          REFERENCE CLOCK TABLE

DISPLAY COMPLETED;
```

ROUTE CONFIGURATION

```
<dis-richt

MODE = all
DIS-RICHT:ALL;
H500:  AMO RICHT STARTED

+--
+---------------------------------------------------------------+
| LRTE = 37     NAME =  TEST                   SRVC = ALL        |
| DNNO = 1 -1  -999                                             |
| ROUTOPT = NO     REROUT = YES   PLB = NO     FWDBL = NO       |
| MFV: CNV=FIX     DSP=WITHOUT TEXT=               PULS=PP300   |
| ROUTENO =    4 BUGS = LIN                 MAINGROUP =    4    |
| INFO =                                                        |
+---------------------------------------------------------------+
| TGRP =  37   LDAT       PRI               SUBGROUP =   10     |
| TGRP =  38   LDAT       QSIG              SUBGROUP =    9     |
+---------------------------------------------------------------+
| LRTE = 39     NAME = BRISLAVE                SRVC = ALL        |
| DNNO = 1 -1  -1                                               |
| ROUTOPT = NO     REROUT = YES   PLB = NO     FWDBL = NO       |
| MFV: CNV=WITHOUT DSP=WITHOUT TEXT=               PULS=        |
| ROUTENO =    7 BUGS = LIN                 MAINGROUP =    7    |
| INFO =                                                        |
+---------------------------------------------------------------+
| TGRP =  39              BRI               SUBGROUP =    8     |
+---------------------------------------------------------------+
| LRTE = 40     NAME = BRI TRUNK               SRVC = ALL        |
| DNNO = 1 -1  -999  DESTNO =   99                              |
| ROUTOPT = NO     REROUT = YES   PLB = NO     FWDBL = NO       |
| MFV: CNV=FIX     DSP=WITHOUT TEXT=               PULS=PP300   |
| ROUTENO =    3 BUGS = LIN                 MAINGROUP =    3    |
| INFO =                                                        |
+---------------------------------------------------------------+
| TGRP =  40   LDAT       BRI MASTER        SUBGROUP =   13     |
+---------------------------------------------------------------+
+-------+----------------------+-------------------------------+


AMO-RICHT-82       TRUNK ROUTING

DISPLAY COMPLETED;
```

BOARD CONFIGURATION

```
<dis-bcsu


TYPE = tbl
LTG = 1
LTU = 1
SLOT = 73
DIS-BCSU:TBL,1,1,73;

H500:  AMO BCSU  STARTED



 ADDRESS : LTG  1  LTU 1

-----+----------+---------+---+---+-+-----------+-----+--------+------------+
     | ASSIGNED  | MODULE  |FCT|HWY| | INSERTED  |     |        | MODULE     |
 PEN | MODULE    | TYPE    |ID |BDL| | MODULE    |STATE| HW-INFO| STATUS     |
-----+----------+---------+---+---+-+-----------+-----+--------+------------+
  73 | Q2196-X   DIU-N2     1  A | | Q2196-X   |  1  | -04 -  | READY      |

AMO-BCSU -82      BOARD CONFIGURATION, SWITCHING UNIT

DISPLAY COMPLETED
```

STATION PHONE CONFIGURATION

```
  <dis-sbcsu

STNO = 5000

TYPE = all

DIS-SBCSU:5000,TERMDATA;

H500:  AMO SBCSU STARTED


  ------------------------------ USER DATA ----------------------------------
  STNO   =5000   OPT    =OPTI   COS1   =7      DPLN   =0      SPDI   =Y
  MAINO  =5000   CONN   =DIR    COS2   =7      ITR    =0      SPDC1  =0
  PEN    = 1- 1- 79-  1         LCOSV1 =31     COSX   =0      SPDC2  =1
  INS    =Y      STD    =3      LCOSV2 =31     SERVID =0      CBKBMAX=5
                 SECR   =N      LCOSD1 =31     DSSTNA =N      RCBKB  =N
  SSTNO  =N      DIGNODIS=N     LCOSD2 =31     DSSTNB =Y      RCBKNA =N
  TRACE  =N      HFREE  =       ASYNCT =500    PERMACT=       CBKNAMB=Y
  ALARMNO =0     HMUSIC =0      API    =N      TEXTSEL=ENGLISH
  EXTBUS =       REP    =0      OPTICOM=N      OPTISPA:0      DLAUT  =
  CALLOG =NONE   IDCR   =N      OPTICA =0      OPTIS0A:0      DLMAN  =
                 HEADSET =N     OPTIDA =0      OPTIABA:0      PRIO   =
                 HSKEY  =NORMAL ATMADDR=                      VPI    =
                 DFSVCANA=      TFAGRP =       PATTERN=       VCI    =
  DVCFIG =OPTISET TSI    =1     SOPTIDX=       SPROT  =
                                DOPTIDX=       DPROT  =
                                FOPTIDX=       FPROT  =
                                TOPTIDX=       TPROT  =
                                VOPTIDX=       VPROT  =
  ------------------ ACTIVATION IDENTIFIERS FOR FEATURES ---------------------
  FWDS   :N      FWDT   :N      FWDV   :N      FWDF   :N      FWDD   :N
  HTOS   :N      HTOT   :N      HTOV   :N      HTOF   :N      HTOD   :N
  DND    :N      VCP    :Y      CWT    :N                     TCLOGIN:N
  -------------------- FEATURES AND GROUP MEMBERSHIPS -----------------------
  ESSTN   :
  PUGR    :      HUNTING GROUP  : N
  KEYSYS  :N     NIGHT OPTION   : N      ASSOCIATED  STN         : N
  -------------------- SUBSCRIBER ATTRIBUTES (AMO SDAT) ---------------------
  NONE
  --------------------------------------------------------------------------
AMO-SBCSU-95       STATION AND S0-BUS CONFIGURATION OF SWITCHING UNIT

DISPLAY COMPLETED
```

LEAST COST ROUTING CONFIGURATION

```
<dis-ldat
 TYPE = ?
 TYPE             : DISPLAY TYPE CHARACTERISTIC  : OPTIONAL
POSSIBLE VALUES : LCR        ONLY LROUTES FOR LCR                   NWLCR      ONLY LROUTES WITH
CLOSED NUMBERING BY LCR                    ALL        ALL TYPE = lcr
 LROUTE = ;
 DIS-LDAT:LCR,; H500:  AMO LDAT  STARTED
+-------------------------------------------------------------------------------+
| LROUTE = 1      LDPLN      NAME = CENTRAL OFFICE            SERVICE =  ALL |
| TYPE = LCR                                     DNNO OF ROUTE = 1 -1  -999 |
| SERVICE INFO =                                                            |
+-------+-------+-------+-----+-----+----------+------------+----+---------+
|       |       |       |     |     | SCHEDULE | CARRIER    |BAND|         |
| LRTEL | LVAL  | TGRP  | ODR |LAUTH| ABCDEFGH |       ZONE |WDTH|  LATTR  |
+-------+-------+-------+-----+-----+----------+------------+----+---------+
|     1 |     1 |    30 |   1 |   1 | ******** | 1    EMPTY  | 1 |    NONE |
+-------------------------------------------------------------------------------+
| LROUTE = 31     LDPLN      NAME = E&M                      SERVICE =  VCE |
| TYPE = LCR                                     DNNO OF ROUTE = 1 -1  -999 |
| SERVICE INFO =                                                            |
+-------+-------+-------+-----+-----+----------+------------+----+---------+
|       |       |       |     |     | SCHEDULE | CARRIER    |BAND|         |
| LRTEL | LVAL  | TGRP  | ODR |LAUTH| ABCDEFGH |       ZONE |WDTH|  LATTR  |
+-------+-------+-------+-----+-----+----------+------------+----+---------+
|     1 |     1 |    31 |   1 |   1 | ******** | 1    EMPTY  | 1 |    NONE |
+-------------------------------------------------------------------------------+
| LROUTE = 37     LDPLN      NAME = PRI TEST                 SERVICE =  ALL |
| TYPE = LCR                                     DNNO OF ROUTE = 1 -1  -999 |
| SERVICE INFO =                                                            |
+-------+-------+-------+-----+-----+----------+------------+----+---------+
|       |       |       |     |     | SCHEDULE | CARRIER    |BAND|         |
| LRTEL | LVAL  | TGRP  | ODR |LAUTH| ABCDEFGH |       ZONE |WDTH|  LATTR  |
+-------+-------+-------+-----+-----+----------+------------+----+---------+
|     1 |     1 |    37 |   1 |   1 | ******** | 1    EMPTY  | 1 |    NONE |
|     2 |     1 |    38 |   1 |   1 | ******** | 1    EMPTY  | 1 |    NONE |
+-------------------------------------------------------------------------------+
| LROUTE = 40     LDPLN      NAME = BRI TRUNK                SERVICE =  ALL |
| TYPE = LCR                DNNO OF ROUTE  = 1 -1  -999                     |
| SERVICE INFO =                                                            |
+-------+-------+-------+-----+-----+----------+------------+----+---------+
|       |       |       |     |     | SCHEDULE | CARRIER    |BAND|         |
| LRTEL | LVAL  | TGRP  | ODR |LAUTH| ABCDEFGH |       ZONE |WDTH|  LATTR  |
+-------+-------+-------+-----+-----+----------+------------+----+---------+
|     1 |     1 |    40 |   1 |   1 | ******** | 1    EMPTY  | 1 |    NONE |
+-------+-------+-------+-----+-----+----------+------------+----+---------+
AMO-LDAT -187      LCR-DIRECTIONS
DISPLAY COMPLETED;
```

CLASS OF SERVICE

```
<dis-cot


COTNO = 4;


DIS-COT:4;

H500:  AMO COT   STARTED



   COT:   4  INFO: 4:Q931 EXTERNAL

   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
        SEND NO NODE NUMBER TO PARTNER                            LWNC
        INCOMING CIRCUIT FROM SYSTEM WITHOUT LCR                  NLCR
        TSC-SIGNALING FOR NETWORKWIDE FEATURES (MANDATORY)        TSCS
        INCOMING CDR BY ZONE OR FROM LINE                         ICZL
        INCOMING CIRCUIT FROM SYSTEM WITHOUT LCR (DATA)           NLRD
        AOC PER CALL (AUTOMATICAL OR ON REQUEST), MAND. CORNET-NQ AOCC
        CONTROLLED TRUNK AND LINE SELECTION                       CTLS
        NO TONE                                                   NTON


AMO-COT  -95        CLASS OF TRUNK FOR CALL PROCESSING

DISPLAY COMPLETED;

  <dis-cop


COPNO = 4;


DIS-COP:4;

H500:  AMO COP   STARTED



   COP:   4  INFO: 4:Q931
   DEVICE: INDEP       SOURCE: DB
   PARAMETER:
        SPECIAL MODE                                              SFRM
        REGISTRATION OF LAYER 3 ADVISORIES                        L3AR


AMO-COP  -95        CLASS OF PARAMETER FOR DEVICE HANDLER
```

```
DISPLAY COMPLETED;

<dis-cossu

TYPE = cos
COS = 32;
DIS-COSSU:COS,32;
H500:  AMO COSSU STARTED


    +------+----------+---------+---------+---------+----------+
    | COS  | VOICE    | FAX     | TTX     | VTX     | DTE      |
    +------+----------+---------+---------+---------+----------+
    |   32 |>32:TRUNKS                                        |
    |      |       TA | NOCO    | NOCO    | NOCO    |       TA |
    |      | TNOTCR   | NOTIE   | NOTIE   | NOTIE   | TNOTCR   |
    |      |          |         |         |         | BASIC    |
    |      |          |         |         |         | MSN      |
    |      |          |         |         |         | CDRINT   |
    |      |          |         |         |         | MULTRA   |
    |      |          |         |         |         |          |
    +------+----------+---------+---------+---------+----------+

AMO-COSSU-82       CLASSES OF SERVICE, SWITCHING UNIT

DISPLAY COMPLETED;

  <dis-cossu

TYPE = lcos
LCOS = 31;
DIS-COSSU:LCOS,31;
H500:  AMO COSSU STARTED

  THE LCR CLASSMARKS ARE CONTAINED IN THE FOLLOWING LCOS:

    +----+----------------------------------------------------------------+
    |LCOS|             LCOSV              |             LCOSD              |
    |    |123456789012345678901234567890123456789012345678901234567890123456789012|
    |    |>SERVICE INFORMATION                                            |
    +----+----+----|----+----|----+----|--+----+----|----+----|----+----|--+
    | 31|                              XX|                              XX|
    +----+----------------------------------------------------------------+


AMO-COSSU-82       CLASSES OF SERVICE, SWITCHING UNIT

DISPLAY COMPLETED
```

SYSTEM INFORMATION

```
<dis-dbc
 VERBOSE = ?
 VERBOSE          : LIST OF ACTIVE DB SUBSYSTEMS CHARACTERISTIC  : OPTIONAL
POSSIBLE VALUES : Y          YES                   N          NO VERBOSE = y
 DIS-DBC:Y; H500:  AMO DBC   STARTED
+-------------------------------------------------------------------------+
| SYSTEM CLASSIFICATION  : SYSTEM 80         (H80   )                      |
| HARDWARE ASSEMBLY      : EXTENDED COMPACT CXE (CXE    )                  |
| DEVELOPMENT LINE       : EUROPE DEVELOPMENT  (H300)                      |
| OPERATING MODE         : SIMPLEX                                         |
| RESTART TYPE           : SYM                                             |
| HW-ARCHITECTURE        : 330E                                            |
| HW-ARCHITECTURE TYPE   : 4                                               |
|                                                                         |
| 'NO OF' HW VALUES                                                        |
|   LTG'S    :    1 LTU'S       :   4  LOG.LINES :  8000  MTS BD /GSN:   1 |
|   SIUP'S/LTU:   4 TMD24'S PER LTU:  4  PHYS.PORTS: 2688 HWY /MTS BD:  64 |
|   HDLC /DCL :   5 PBC /DCL  :  1 PBC'S     :    17                       |
| LOG. SIU LINES         :   26                                            |
| LOG. CONF LINES        :   35                                            |
| LOG. DCL LINES         :   36                                            |
| DB DIMENSIONING-NAME   : 350EMSTD        CONF-TABLE VERSION:    1        |
| DB SUSY'S:                                                              |
| SWITCH NUMBER : L31900Q2999A00001                                       |
| DB                                                                      |
| SYSTEM_ID        : PKP091000                                            |
+-------------------------------------------------------------------------+
```

Cisco 3640 Gateway Configuration

The following is the configuration of the Cisco 3640 gateway connected to the Siemens Hicom PBX E1 QSIG interface.

Cisco 3640 Voice Gateway Version Information

```
3640_A#sh ver
Cisco Internetwork Operating System Software
IOS (tm) 3600 Software (C3640-JS-M), Version 12.2(0.5g), BETA TEST SOFTWARE
Copyright (c) 1986-2001 by cisco Systems, Inc.
Compiled Mon 09-Apr-01 22:29 by pwade
Image text-base: 0x60008950, data-base: 0x61492000

ROM: System Bootstrap, Version 11.1(7)AX [kuong (7)AX], EARLY DEPLOYMENT RELEASE
 SOFTWARE (fc2)

3640_A uptime is 2 days, 22 hours, 56 minutes
System returned to ROM by power-on
System image file is "slot0:c3640-js-mz.122-0.5g"

cisco 3640 (R4700) processor (revision 0x00) with 59392K/6144K bytes of memory.
Processor board ID 05247801
R4700 CPU at 100Mhz, Implementation 33, Rev 1.0
Channelized E1, Version 1.0.
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
TN3270 Emulation software.
Primary Rate ISDN software, Version 1.1.
```

```
2 Ethernet/IEEE 802.3 interface(s)
31 Serial network interface(s)
2 Channelized E1/PRI port(s)
2 Voice FXS interface(s)
DRAM configuration is 64 bits wide with parity disabled.
125K bytes of non-volatile configuration memory.
16384K bytes of processor board System flash (Read/Write)
16384K bytes of processor board PCMCIA Slot0 flash (Device not programmable)

Configuration register is 0x0
```

Cisco 3640 Voice Gateway Sample Configuration

```
3640_A#sh conf
Using 2080 out of 129016 bytes
!
version 12.2
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
no service dhcp
!
hostname 3640_A
!
boot system flash
logging rate-limit console 10 except errors
!
voice-card 1
!
ip subnet-zero
!
!
no ip finger
no ip domain-lookup
ip host danube 171.69.17.14
ip host dirt 171.69.1.129
ip host whiz 171.69.1.162
!
no ip dhcp-client network-discovery
isdn switch-type primary-qsig
call rsvp-sync
cns event-service server
!
!
!
!
!
!
!
controller E1 1/0
 shutdown
 framing NO-CRC4
 ds0-group 1 timeslots 1 type r2-analog r2-compelled
 cas-custom 1
!
controller E1 1/1
 pri-group timeslots 1-31
!
!
interface Tunnel1
 no ip address
!
interface Ethernet0/0
 ip address 100.100.100.1 255.255.255.0
 no ip mroute-cache
 half-duplex
 no cdp enable
!
interface Ethernet0/1
```

```
 ip address 192.168.71.6 255.255.255.0
 no ip mroute-cache
 half-duplex
 no cdp enable
!
interface Serial1/1:15
 no ip address
 no logging event link-status
 isdn switch-type primary-qsig
 isdn protocol-emulate network
 isdn incoming-voice voice
 no isdn T309-enable
 isdn T310 60000
 isdn bchan-number-order ascending
 no cdp enable
!
ip kerberos source-interface any
ip classless
ip route 10.1.1.0 255.255.255.0 100.100.100.2
ip route 10.1.1.0 255.255.255.0 10.1.1.7
no ip http server
!
no cdp run
!
!
voice-port 1/0:1
!
voice-port 1/1:15
!
voice-port 2/0/0
!
voice-port 2/0/1
!
dial-peer cor custom
!
!
!
dial-peer voice 1 pots
 destination-pattern 6000
 port 2/0/0
!
dial-peer voice 5 pots
 destination-pattern 3...
 direct-inward-dial
 port 1/0:1
 prefix 3
!
dial-peer voice 3 voip
 destination-pattern 2...
 progress_ind setup enable 1
 session target ipv4:100.100.100.2
!
dial-peer voice 10 pots
 destination-pattern 7...
 direct-inward-dial
!
dial-peer voice 11 pots
 destination-pattern 5005
!
dial-peer voice 12 pots
 destination-pattern 4085275000
!
dial-peer voice 15 voip
 destination-pattern 9...
 session target ipv4:100.100.100.2
!
dial-peer voice 16 pots
 destination-pattern 5...
 direct-inward-dial
 port 1/1:15
 prefix 5
```

```
!
!
line con 0
 transport input none
line aux 0
line vty 0 4
 no login
!
end

3640_A#
```

Caveats

- The method for calling name delivery and presentation depends on the supplementary services standard being used by the PBXs. The Siemens Hicom QSIG interface is currently set to support the ECMA (European Computer Manufacturer's Association) QSIG supplementary services standard. In order for the calling name delivery and presentation feature to be supported, the Siemens and the far-end PBX, must be configured to support the same standard.