



# Siemens HiPath 4000 Release 1 and Siemens Hicom 330E Release 3.1 to Cisco IOS Voice Gateway using E1 QSIG with H.323

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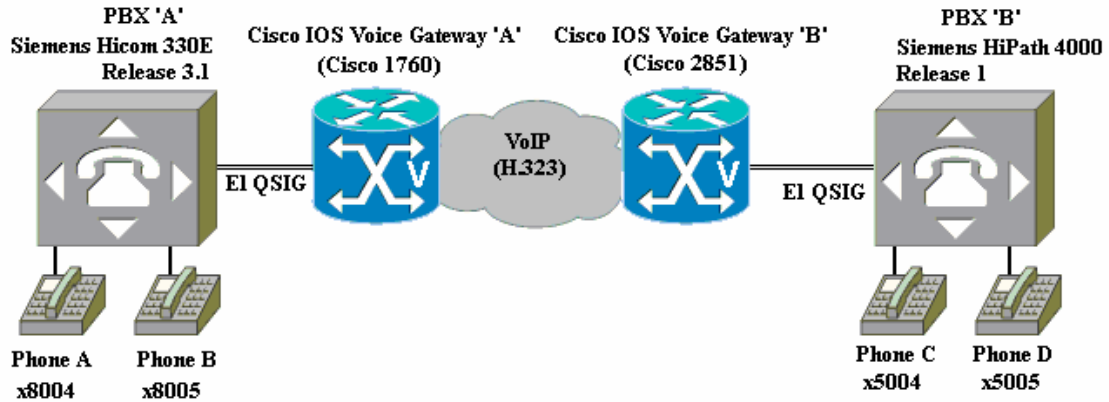
## Introduction

- Although specific gateway router models were used to validate its content, this application note also applies to all Cisco 1700/2600/3600/3700/2800/3800 series Cisco IOS voice gateways.
- This application note provides configuration guidelines for a toll-bypass network using Cisco IOS voice gateways to connect Siemens HiPath 4000 Release 1 and Siemens Hicom 330E Release 3.1 PBXs. The PBXs are connected to the Cisco IOS voice gateways by E1 QSIG trunk circuits. The Cisco IOS voice gateways “extend” the E1 QSIG trunk circuits with VoIP, using the H.323 protocol.
- A Siemens HiPath 4000 Release 1 PBX and a Siemens Hicom 330E Release 3.1 PBX were each connected via E1 QSIG trunk circuits a Cisco IOS voice gateway. The two voice gateways were connected via IP over Ethernet, and configured for VoIP using H.323. End-to-end calls were placed between the PBXs to exercise and test basic calls as well as QSIG supplementary services such as call transfer, call conference, and call forward.
- Using the Siemens PBX configurations and Cisco IOS voice gateway configurations in this application note, successful toll bypass integration was achieved. This includes basic call, call transfer, call conference, and call forward, with some limitations on Caller ID features during transfer scenarios. These limitations are detailed in the following sections and all were found to be inherent to the Siemens PBXs. Thus, H.323 toll bypass introduced no new restrictions to the available features or performance.



## Network Topology

Figure 1. Network Topology or Test Setup



## System Components

### Hardware Requirements

- (2) Cisco IOS voice gateways with E1 VWICs (voice/WAN interface cards)
- (1) Siemens HiPath 4000 PBX
- (1) Siemens Hicom 330E PBX
- (2) Siemens HiPath digital station telephones
- (2) Siemens Hicom digital station telephones

### Software Requirements

- Siemens HiPath PBX: V1.0 SA12 Patch0.
- Siemens Hicom PBX: Release 3.1 SA5 Rev14
- Cisco IOS voice gateways: Cisco IOS Release Version 12.4(1.8)T or later.



## Features

### Features Supported

- Basic Call (ENBLOC and Overlap)
- Call Transfer: Supervised Local Transfer
- Call Transfer: Supervised Network/External Transfer
- Call Conference: Local
- Call Conference: Network/External
- Call Forward: Local
- Call Forward: Network/External

### Features Not Supported

- Call Hold
- MWI

## Limitations

- On basic calls, Connected Number was supported in lieu of Called (Alerting) Number. This is inherent to the PBXs and also occurs with the PBXs connected directly via an E1 QSIG trunk.
- On Supervised Transfers, the original Calling Name and Number were displayed on the final destination phone only after the destination answered and the transfer was completed. This is inherent to the PBXs and also occurs with the PBXs connected directly via an E1 QSIG trunk.
- On Supervised Transfers, the Called Name/Number were displayed on the originating phone only after the destination answered and the transfer was completed. This is inherent to the PBXs and also occurs with the PBXs connected directly via an E1 QSIG trunk.
- Call Hold was not tested as a separate feature. The call is held automatically during Transfers or Conferences, and the call hold is facilitated in NOTIFY message from Siemens HiPath/Hicom PBX. Aside from Transfers or Conferences, it is not possible to put a call on hold from one of the Siemens HiPath/Hicom digital station phones. This is inherent to the PBXs and also occurs with the PBXs connected directly via an E1 QSIG trunk.
- MWI was not tested, as a local voice mail system was not available on the PBXs at the time of testing.



## Configuration

### Configuring the Siemens HiPath 4000

#### DPLN

```
<dis-wabe:gen;
DIS-WABE:GEN;
H500: AMO WABE STARTED
```

DIGIT INTERPRETATION		VALID FOR ALL DIAL PLANS						
CODE		CALL PROGRESS STATE				DIGIT ANALYSIS RESULT	RESERVED/CONVERT DNI/ADD-INFO	
		1	11111	11112	22			
		0	12345	67890	12345	67890	12	*=OWN NODE
0		. .	****	. .	***	. .	. .	* CO
001	- 009	*	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	R NETRTE
111		. .	****	****	***	. .	. .	TIE
12	- 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						
CODE		CALL PROGRESS STATE				DIGIT ANALYSIS RESULT	RESERVED/CONVERT DNI/ADD-INFO	
		1	11111	11112	22			
		0	12345	67890	12345	67890	12	*=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				DIGIT ANALYSIS RESULT	RESERVED/CONVERT DNI/ADD-INFO	
		1	11111	11112	22			
		0	12345	67890	12345	67890	12	*=OWN NODE
33		. .	. . . . .	. . . . .	. . . . .	. . . . .	* . .	CCKY
34		. .	. . . . .	. . . . .	. . . . .	. . . . .	* . .	HTKY
35		. .	. . . . .	. . . . .	. . . . .	. . . . .	* . .	STKY



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 1 1111 1112 22	DIGIT ANALYSIS RESULT	RESERVED/CONVERT DNI/ADD-INFO *=OWN NODE
0	12345 67890 12345 67890 12		

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 1 1111 1112 22	DIGIT ANALYSIS RESULT	RESERVED/CONVERT DNI/ADD-INFO *=OWN NODE
0	12345 67890 12345 67890 12		

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

CODE	CALL PROGRESS STATE 1 1111 1112 22	DIGIT ANALYSIS RESULT	RESERVED/CONVERT DNI/ADD-INFO *=OWN NODE
0	12345 67890 12345 67890 12		

*18	. . . . . * . . . . . *	ACOSX	
*19	. . . . . * . . . . . *	KNOVR	



*20	. . . . *	. . . . .	. . . . .	. . . . .	. . . . .	ADND
*25	. . . . *	. . . . .	. . . . .	. . . . .	. . . . .	FWDTERM
*29	. . . . *	. . . . .	. . . . *	. . . . .	. . . . .	AFFWDVCE
*91	. . . . *	. . . . *	. . . . .	. . . . .	. . . . .	MBOFF
#91	. . . . *	. . . . *	. . . . .	. . . . .	. . . . .	MBON
##27	. . . . *	. . . . *	. . . . .	. . . . .	. . . . .	MWACT
##28	. . . . *	. . . . .	. . . . .	. . . . .	. . . . .	MWANS
##29	. . . . *	. . . . .	. . . . .	. . . . .	. . . . .	MWCAN
##30	. . . . *	. . . . *	. . . . *	. . . . *	. . . . *	MWCANORI

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



### Overlap Sending Dial Plan

```
<DISPLAY-LDPLN:TYPE=LDP,LDP="8060"- "X" ;  
DISPLAY-LDPLN:TYPE=LDP,LDP="8060"- "X" ;  
H500: AMO LDPLN STARTED
```

LDPNO : 16	LDP : 8060-X	
	SPC : 22	
	FDSFIELD : 0	SDSFIELD : 0 PINDP : N
DPLN	LROUTE	LAUTH
0	806	1
1	806	1
2	806	1
3	806	1
4	806	1
5	806	1
6	806	1
7	806	1
8	806	1
9	806	1
10	806	1
11	806	1
12	806	1
13	806	1
14	806	1
15	806	1

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

### ENBLOC Sending Dial Plan

```
<DISPLAY-LDPLN:TYPE=LDP,LDP="8060"- "XXXX" ;  
DISPLAY-LDPLN:TYPE=LDP,LDP="8060"- "XXXX" ;  
H500: AMO LDPLN STARTED
```

LDPNO : 16	LDP : 8060-XXXX	
	SPC : 22	
	FDSFIELD : 0	SDSFIELD : 0 PINDP : N
DPLN	LROUTE	LAUTH
0	806	1
1	806	1
2	806	1
3	806	1
4	806	1
5	806	1
6	806	1
7	806	1
8	806	1
9	806	1
10	806	1
11	806	1
12	806	1
13	806	1
14	806	1
15	806	1



AMO-LDPLN-111 ADMINISTRATION LCR DIALPLAN  
 DISPLAY COMPLETED;

**BCSU**

<DISPLAY-BCSU:TYPE=TBL,LTG=1,LTU=2,SLOT=49;  
 DISPLAY-BCSU:TYPE=TBL,LTG=1,LTU=2,SLOT=49;  
 H500: AMO BCSU STARTED

ADDRESS : LTG 1 LTU 2 SOURCE GROUP 1

PEN	ASSIGNED MODULE	MODULE TYPE	FCT ID	HWY BDL	INSERTED MODULE	STATE	HW-INFO	MODULE STATUS
49	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:21  
 FORMAT = ;  
 DIS-COT:21,;  
 H500: AMO COT STARTED

COT: 21 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;

**Class of Parameters for Device Handlers, 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 Services, COSSU**

```
<DISPLAY-COSSU:TYPE=COS,COS=10;
DISPLAY-COSSU:TYPE=COS,COS=10;
H500: AMO COSSU STARTED
```

COS	VOICE	FAX	DTE
10	> TA TSUID TNOTCR RKOABS CDRINT CDRS CDRC COSXCD VCE FWDNWK MSN FWDECA CFB CFNR FWDEXT	NOCO NOTIE	NOCO NOTIE

```
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																								COPIN	
V	1				2				3				4				5				6				NUM	
>	1234567890123456789012345678901234567890123456789012345678901234																									
>SERVICE INFORMATION																										
1	X																									0
>LCR ATTENDANT FOR VOICE																										

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



## Trunk Group, BUEND

```
<DISPLAY-BUEND:TGRP=20;
DISPLAY-BUEND:TGRP=20;
H500: AMO BUEND STARTED
```

```
----- FORMAT = L -----
+-----+
| TGRP NUMBER :    20  TGRP NAME   : PRI PSSV1      MAXIMUM NO.   :    70 |
|                   :                   CHARCON    : NEUTRAL      |
| SUBGROUP NO. :    3  DEVICE TYPE : S2CONN      TRACENO       :    0 |
| RESERVED    :    N  SEARCH MODE : ASCENDING    ACD THRESHOLD :    * |
| NUMBER OF ASSOCIATED ROUTES : 2                PRIORITY     :    2 |
| TDDRFLAG    :    ON TDDRTHRESHOLD: 3            SOURCEGROUPIDX :    1 |
| GDTRRULE    :    0  ACDPMGRP   : 0                |
| THE FOLLOWING TRUNKS (LTG-LTU-SLOT-CCT) HAVE BEEN ALLOCATED: |
+-----+
| 1- 2- 49-0      1 | 1- 2- 49-0      2 | 1- 2- 49-0      3 |
| 1- 2- 49-0      4 | 1- 2- 49-0      5 | 1- 2- 49-0      6 |
| 1- 2- 49-0      7 | 1- 2- 49-0      8 | 1- 2- 49-0      9 |
| 1- 2- 49-0     10 | 1- 2- 49-0     11 | 1- 2- 49-0     12 |
| 1- 2- 49-0     13 | 1- 2- 49-0     14 | 1- 2- 49-0     15 |
| 1- 2- 49-0     16 | 1- 2- 49-0     17 | 1- 2- 49-0     18 |
| 1- 2- 49-0     19 | 1- 2- 49-0     20 | 1- 2- 49-0     21 |
| 1- 2- 49-0     22 | 1- 2- 49-0     23 | 1- 2- 49-0     24 |
| 1- 2- 49-0     25 | 1- 2- 49-0     26 | 1- 2- 49-0     27 |
| 1- 2- 49-0     28 | 1- 2- 49-0     29 | 1- 2- 49-0     30 |
+-----+
```

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

## Trunk Configuration, TDCSU

```
<DISPLAY-TDCSU:PEN1=1-2-49-0;
DISPLAY-TDCSU:PEN1=1-2-49-0;
H500: AMO TDCSU STARTED
```

```
----- DIGITAL TRUNK (FORMAT=L) -----
+-----+
| DEV      = S2CONN      PEN      = 1-02-049-0      TGRP      = 20 |
+-----+
| PROTVAR  = PSS1V2      INS       = N              SRCHMODE  = ASC |
| COTNO    = 21          COPNO    = 21             DPLN      = 0 |
| ITR      = 1           COS       = 10             LCOSV     = 1 |
| LCOSD    = 1           CCT       = HICOM S2       DESTNO    = 1 |
| SEGMENT  = 1           DEDSCC   =                DEDSVC    = NONE |
| FACILITY =             DITIDX   =                SRTIDX    = |
| TRTBLE  = GDTR        SIDANI   = N              ATNTYP    = TIE |
| CBMATTR  = NONE       NWMUXTIM = 10             TCHARG    = N |
| SUPPRESS = 0          DGTPR    =                CHIMAP    = N |
| ISDNIP   =            ISDNPNP  = |
| PNPL2P   =            PNPL1P   =                PNPAC     = |
| TRACOUNT = 31         SATCOUNT = MANY           NNO       = 1  -1  -300 |
| ALARMNO  = 0          FIDX      = 1              CARRIER  = 1 |
| ZONE     = EMPTY     COTX      = 21             FWDX     = 5 |
| DOMTYPE  =            DOMAINNO =                TPROFNO  = |
| INIGHT   = |
| UUSCCX   = 16         UUSCCY   = 8              FNIDX    = 1 |
| CLASSMRK = EC        & G711    & G729OPT       SRCGRP    = |
| TCCID    = |
+-----+
| BCNEG    = N          BCGR      = 1              LWPARG    = 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:DEV=INDEP,TYPE=DIUS2,BLNO=0;
DISPLAY-LWPAR:DEV=INDEP,TYPE=DIUS2,BLNO=0;
H500: AMO LWPAR STARTED

Table with columns: LOADWARE PARAMETERS, CIRCUIT TYPE: DIUS2, SOURCE:DB, BLOCK: 1. Rows include parameters like LNTYPE, MASTER, PATTERN, SMD, CDG, TEIVERIF, DEV, INFO.

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

For Slave Side Configuration

<DISPLAY-TDCSU:PEN1=1-2-49-0;
DISPLAY-TDCSU:PEN1=1-2-49-0;
H500: AMO TDCSU STARTED

Table with columns: DEV, PEN, TGRP, and various parameters like PROTVAR, COTNO, ITR, LCOSD, SEGMENT, FACILITY, TRTBL, CBMATTR, SUPPRESS, ISDNIP, PNPL2P, TRACOUNT, ALARMNO, ZONE, DOMTYPE, INIGHT, UUSCCX, CLASSMRK, TCCID, BCNEG, LWPP, LWR1, SVCDOM, BCHAN.

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

AMO-TDCSU-111 DIGITAL TRUNKS
DISPLAY COMPLETED;
<DISPLAY-LWPAR:DEV=INDEP,TYPE=DIUS2,BLNO=0;
DISPLAY-LWPAR:DEV=INDEP,TYPE=DIUS2,BLNO=0;
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;

### Reference Clock Configuration, REFTA

For Master-side configuration

```

<DISPLAY-REFTA:TYPE=CIRCUIT,PEN=1-2-49-0;
DISPLAY-REFTA:TYPE=CIRCUIT,PEN=1-2-49-0;
H500: AMO REFTA STARTED

```

```

+-----+
| REFERENCE CLOCK CIRCUITS |
+-----+
| PEN      MODULE  DEVICE  | PRI | ERROR | BLOCK | SUPP. | READY | SRCGRP | | |
|          |          |          |     |       |       |       | BUT   |        |
|          |          |          |     |       |       |       | ASYN. |        |
+-----+
| 1- 2- 49- 0 | DIU-N2 | S2CONN | 1 | 0 | N |     | N | 1 |
+-----+

```

AMO-REFTA-111 REFERENCE CLOCK TABLE  
 DISPLAY COMPLETED;

For Slave-side configuration

```

<DISPLAY-REFTA:TYPE=CIRCUIT,PEN=1-2-49-0;
DISPLAY-REFTA:TYPE=CIRCUIT,PEN=1-2-49-0;
H500: AMO REFTA STARTED

```

```

+-----+
| REFERENCE CLOCK CIRCUITS |
+-----+
| PEN      MODULE  DEVICE  | PRI | ERROR | BLOCK | SUPP. | READY | SRCGRP | | |
|          |          |          |     |       |       |       | BUT   |        |
|          |          |          |     |       |       |       | ASYN. |        |
+-----+
| 1- 2- 49- 0 | DIU-N2 | S2CONN | 0 | 0 | N |     | N | 1 |
+-----+

```

AMO-REFTA-111 REFERENCE CLOCK TABLE  
 DISPLAY COMPLETED;

### Trunk Least Cost Routing Configuration

```

<DISPLAY-LDAT:TYPE=LCR;
DISPLAY-LDAT:TYPE=LCR;
H500: AMO LDAT STARTED

```

```

+-----+
| LROUTE = 806  LDPLN      NAME = OPEN NUMBER          SERVICE = ALL |
| TYPE = LCR                                DNNO OF ROUTE = 99 |
| SERVICE INFO =                                                                 |
+-----+
| LRTEL | LVAL | TGRP | ODR | LAUTH | SCHEDULE | CARRIER | LATTR | LDSRT |
|       |      |      |     |      | ABCDEFGH |         |      |      |
+-----+

```



```
|      1 |      1 | 20 | 15 | 1 | ***** | 1  EMPTY |  NONE |      |  
|      | DNNO = 99  
+-----+
```



**RICHT**

```
<DISPLAY-RICHT:MODE=LRTE;
DISPLAY-RICHT:MODE=LRTE;
H500: AMO RICHT STARTED
```

```
-----+-----
| LRTE = 806   NAME = OPEN NUMBER   (NEUTRAL)  LSVC = ALL
| DNNO =      99 PDNNO =      0   DESTNO = 99
| ROUTOPT = YES  REROUT = YES  PLB = NO   FWDBL = NO
| DTMFCNV = WITHOUT DTMFDSP = WITHOUT DTMFTEXT =
| DTMFPULS =      BUGS = LIN  ROUTATT = NO   MAINGRP = 32
| EMCYRRT = NO   CONFONE = NO  RERINGRP = NO  RTENO = 32
| INFO =
| NOPRCFWD = NO
-----+-----
| TGRP = 20  LDAT  PRI PSSV1           (NEUTRAL)  SUBGROUP = 3
-----+-----
```

```
AMO-RICHT-111      TRUNK ROUTING
DISPLAY COMPLETED;
```

**Out-going Dialing Rule, LODR**

```
<dis-lodr
ODR = ;
DIS-LODR;;
H500: AMO LODR STARTED
```

```
-----+-----+-----+-----+-----+
| ODR   POSITION  CMD      PARAMETER
-----+-----+-----+-----+-----+
| 15   |      1   | ECHO   | 2
|      |      2   | END    |
-----+-----+-----+-----+-----+
```

```
AMO-LODR -111      ADMINISTRATION OF LCR OUTDIAL RULES
DISPLAY COMPLETED;
```

**Digital Station Configuration**

```
<DISPLAY-SBCSU:STNO=5004;
DISPLAY-SBCSU:STNO=5004;
H500: AMO SBCSU STARTED
```

```
-----+-----+-----+-----+-----+-----+-----+
| USER DATA
-----+-----+-----+-----+-----+-----+-----+
| STNO   =5004   OPT   =OPTI   COS1   =2       DPLN   =1
| MAINO  =5004   CONN  =DIR    COS2   =2       ITR    =1
| PEN    = 1- 3- 31- 4   LCOSV1 =6       COSX   =0
| INS    =Y      ASYNCT =500   LCOSV2 =6
|          PERMACT =        LCOSD1 =6
| SSTNO  =N      EXTBUS =        LCOSD2 =6       CBKBMX =5
| TRACE  =N
| ALARMNO=0     DFSVCANA=        SPDI   =0       RCBKB  =N
| HMUSIC =0     FLASH  =        SPDC1  =        RCBKNA =N
| PMIDX  =1     SPDC2  =        CBKNAMB =Y
|
| SECR   =N     DIGNODIS=N   DSSTNA  =N
| STD    =55    CALLOG  =NONE   DSSTNB  =Y       TEXTSEL =ENGLISH
|
| REP    =0     OPTICOM =N     OPTIUSB :       VPI    =
| IDCR   =N     OPTICA  =1     OPTIS0A :0     VCI    =
|          OPTIDA  =1     OPTISPA :0     PATTERN =
|          OPTIABA :0
|
| DCFWBUSY=N    HEADSET =N     APICLASS=
| DNIDSP  =N    HSKEY   =NORMAL  ACFAPPL =
| DTMFBLK =N
| DTMFCTRD=Y    BASICSVL=
|
| IPPASSW =
```



DVCFIG =OPTISET TSI =1 SPROT = SOPTIDX =  
DPROT = DOPTIDX =  
FPROT = FOPTIDX =

----- ACTIVATION IDENTIFIERS FOR FEATURES -----

FWDS :N HTOS :N DND :N  
FWDD :N HTOD :N VCP :Y TWLOGIN :N  
FWDF :N HTOF :N CWT :N

----- FEATURES AND GROUP MEMBERSHIPS -----

PUGR : ESSTN :  
KEYSYS :N NOPTNO :  
HUNT CD :N

----- SUBSCRIBER ATTRIBUTES (AMO SDAT) -----

NONE

-----  
AMO-SBCSU-111 STATION AND S0-BUS CONFIGURATION OF SWITCHING UNIT  
DISPLAY COMPLETED;  
<





## Configuring the Siemens Hicom 330E

### DPLN

```
<dis-wabe;
TYPE = gen;
DIS-WABE:GEN;
H500: AMO WABE STARTED
```

DIGIT INTERPRETATION		VALID FOR ALL DIAL PLANS			
CODE	CALL PROGRESS STATE	DIGIT ANALYSIS RESULT	RESERVED/CONVERT DNI/ADD-INFO		
	1 11111 11112 22		*=OWN NODE		
	0 12345 67890 12345 67890 12				
001 - 010	* . . . . .	NETRTE		DESTNO 25	
1000	. ***** ** . . . . .	STN		DNNO 0- 0- 25	
11	. . . . . * . . . . .	MBKY			
111	. ***** ** . . . . .	TIE			
222	. ***** ** . . . . .	OWNNODE			
3000 - 3010	. ***** ** . . . . .	STN		DESTNO 33	
				DNNO 0- 0-333	
3011 - 3020	. ***** ** . . . . .	STN		DESTNO 43	
				DNNO 0- 0-444	
3021 - 3030	. ***** ** . . . . .	STN		DESTNO 53	
				DNNO 0- 0-445	
DIGIT INTERPRETATION		VALID FOR ALL DIAL PLANS			
CODE	CALL PROGRESS STATE	DIGIT ANALYSIS RESULT	RESERVED/CONVERT DNI/ADD-INFO		
	1 11111 11112 22		*=OWN NODE		
	0 12345 67890 12345 67890 12				
3031 - 3040	. ***** ** . . . . .	STN		DESTNO 63	
				DNNO 0- 0-446	
3041 - 3050	. ***** ** . . . . .	STN		DESTNO 73	
				DNNO 0- 0-447	
3051 - 3060	. ***** ** . . . . .	STN		DESTNO 83	
				DNNO 0- 0-448	
32	. ***** ** . . . . .	TIE			
34 - 36	. ***** ** . . . . .	TIE			
39	. ***** ** . . . . .	TIE			
4000 - 4050	. ***** ** . . . . .	STN		DESTNO 111	
				DNNO 0- 0-111	
DIGIT INTERPRETATION		VALID FOR ALL DIAL PLANS			
CODE	CALL PROGRESS STATE	DIGIT ANALYSIS RESULT	RESERVED/CONVERT DNI/ADD-INFO		
	1 11111 11112 22		*=OWN NODE		
	0 12345 67890 12345 67890 12				
4051 - 4599	. ***** ** . . . . .	STN		R	
				DESTNO 0	



4700 - 4999	. ***** ** . . . . .	STN	DNNO 0- 0-222*
			R
			DESTNO 0
5000 - 5009	. ***** ** . . . . .	STN	DNNO 0- 0-222*
			DESTNO 55
5010	. ***** * . ***** ** . . . . .	ATNDIND	DNNO 0- 0- 55
5011 - 5020	. ***** ** . . . . .	STN	R
			DESTNO 55
5021 - 5050	. ***** ** . . . . .	STN	DNNO 0- 0- 55
			DESTNO 111
5051	. ***** * . ***** ** . . . . .	ATNDIND	DNNO 0- 0-111

DIGIT INTERPRETATION VALID FOR ALL DIAL PLANS

CODE	CALL PROGRESS STATE 1 1111 11112 22 0 12345 67890 12345 67890 12	DIGIT ANALYSIS RESULT	RESERVED/CONVERT
			DNI/ADD-INFO *=OWN NODE
5500 - 5501	. ***** ** . . . . .	STN	DESTNO 56 DNNO 0- 0-560
555	. ***** ** . . . . .	TIE	
560	. ***** ** . . . . .	TIE	
6000	. ***** ** . . . . .	STN	DESTNO 33 DNNO 0- 0-333
7000 - 7002	. ***** ** . . . . .	STN	DESTNO 56 DNNO 0- 0-560
79	. ***** ** . . . . .	TIE	
8000 - 8019	. ***** ** . . . . .	STN	DESTNO 0 DNNO 0- 0-222*

DIGIT INTERPRETATION VALID FOR ALL DIAL PLANS

CODE	CALL PROGRESS STATE 1 1111 11112 22 0 12345 67890 12345 67890 12	DIGIT ANALYSIS RESULT	RESERVED/CONVERT
			DNI/ADD-INFO *=OWN NODE
8020	. ***** ** . . . . .	STN	R DESTNO 0 DNNO 0- 0-222*
854	. ***** ** . . . . .	NETW	R DESTNO 2 DNNO 0- 0- 0
9	. ***** ** . . . . .	TIE	
*66	. . . . * . . . . .	SIGNON	
*91	. . . . * . . . . .	MBOFF	
#66	. . . . * . . . . .	SIGNOFF	
#91	. . . . * . . . . .	MBON	
##22	. . . . . . . . . . *	DAKY	
##24	. . . . . . . . . . *	DSSKY	
##25	. . . . . . . . . . *	FWDKY	
##26	. . . . . . . . . . *	HTKY	
##27	. . . . . . . . . . *	KNOVRKY	
##28	. . . . . . . . . . *	MBKY	

DIGIT INTERPRETATION VALID FOR ALL DIAL PLANS

CODE	CALL PROGRESS STATE 1 1111 11112 22 0 12345 67890 12345 67890 12	DIGIT ANALYSIS RESULT	RESERVED/CONVERT
			DNI/ADD-INFO *=OWN NODE



```

---
##29      | . . . . . * .. | MSGRKY
##35      | . . . . . * .. | TIMEKY
##36      | . . . . . * .. | VCKY
##37      | . . . . . * .. | VCRKY
##38      | . . . . . * .. | CCKY
##39      | . . . . . * .. | CONFKY
##41      | . . . . . * .. | NAMEKY
##42      | . . . . . * .. | PARKKY
##43      | . . . . . * .. | REMKY
##44      | . . . . . * .. | STKY
##45      | . . . . . * .. | CBKKY
##46      | . . . . . * .. | CONSKY
##47      | . . . . . * .. | DNDKY
##48      | . . . . . * .. | EXHOLDKY
##49      | . . . . . * .. | HOLDKY
##50      | . . . . . * .. | IUSEKY
##51      | . . . . . * .. | LNRKY

```

| DIGIT INTERPRETATION VALID FOR ALL DIAL PLANS |

CODE	CALL PROGRESS STATE						DIGIT ANALYSIS RESULT	RESERVED/CONVERT DNI/ADD-INFO * = OWN NODE
	1	11	111	1111	11112	22		
0	12345	67890	12345	67890	12			

```

---
##52      | . . . . . * .. | PRIVKY
##53      | . . . . . * .. | RLSKY
##54      | . . . . . * .. | SNRKY
##55      | . . . . . * .. | TRNSKY
##56      | . . . . . * .. | RCTOFFKY
##57      | . . . . . * .. | TOGGLEKY

```

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

### Overlap Sending Dial Plan

<DISPLAY-LDPLN:TYPE=LDP,LDPNO=35;  
 DISPLAY-LDPLN:TYPE=LDP,LDPNO=35;  
 H500: AMO LDPLN STARTED

```

+-----+
| LDPNO : 35 | LDP : 79-X |
|             | SPC : 22   |
+-----+
|           | DPLN | LRTE | LAUTH | DPLN | LRTE | LAUTH |
+-----+-----+-----+-----+-----+-----+
|           | 0    | 79  | 1     | 8    | 79  | 1     |
|           | 1    | 79  | 1     | 9    | 79  | 1     |
|           | 2    | 79  | 1     | 10   | 79  | 1     |
|           | 3    | 79  | 1     | 11   | 79  | 1     |
|           | 4    | 79  | 1     | 12   | 79  | 1     |
|           | 5    | 79  | 1     | 13   | 79  | 1     |
|           | 6    | 79  | 1     | 14   | 79  | 1     |
|           | 7    | 79  | 1     | 15   | 79  | 1     |
+-----+-----+-----+-----+-----+-----+

```

AMO-LDPLN-111 ADMINISTRATION LCR DIALPLAN  
 DISPLAY COMPLETED;

### Enbloc Sending Dial Plan

<DISPLAY-LDPLN:TYPE=LDP,LDPNO=35;  
 DISPLAY-LDPLN:TYPE=LDP,LDPNO=35;



H500: AMO LDPLN STARTED

```

+-----+
| LDPNO : 35 | LDP : 79-XXXX |
|            | SPC : 22       |
+-----+
| DPLN | LRTE | LAUTH | DPLN | LRTE | LAUTH |
+-----+
| 0    | 79   | 1     | 8    | 79   | 1     |
| 1    | 79   | 1     | 9    | 79   | 1     |
| 2    | 79   | 1     | 10   | 79   | 1     |
| 3    | 79   | 1     | 11   | 79   | 1     |
| 4    | 79   | 1     | 12   | 79   | 1     |
| 5    | 79   | 1     | 13   | 79   | 1     |
| 6    | 79   | 1     | 14   | 79   | 1     |
| 7    | 79   | 1     | 15   | 79   | 1     |
+-----+

```

AMO-LDPLN-111 ADMINISTRATION LCR DIALPLAN

**BCSU**

DISPLAY COMPLETED;

<DISPLAY-BCSU:TYPE=TBL,LTG=1,LTU=1,SLOT=79;

DISPLAY-BCSU:TYPE=TBL,LTG=1,LTU=1,SLOT=79;

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 |
+-----+
| 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**

<DISPLAY-COT:COTNO=5;

DISPLAY-COT:COTNO=5;

H500: AMO COT STARTED

COT: 5 INFO: 5:ECMA1 V2.0

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 AOC
LINE WITH IMPLICIT NUMBERS                               LINO
NO TONE                                                  NTON

```

AMO-COT -111 CLASS OF TRUNK FOR CALL PROCESSING

DISPLAY COMPLETED;



## Class of Parameters for Device Handlers, COP

```
<DISPLAY-COP:COPNO=4;
DISPLAY-COP:COPNO=4;
H500: AMO COP   STARTED

COP:   4   INFO: 4:Q931
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

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



**Class of Services, COSSU**

```
<DISPLAY-COSSU:TYPE=COS,COS=32;
DISPLAY-COSSU:TYPE=COS,COS=32;
H500: AMO COSSU STARTED
```

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

```
AMO-COSSU-111 CLASSES OF SERVICE, SWITCHING UNIT
DISPLAY COMPLETED;
```

```
<DISPLAY-COSSU:TYPE=LCOSV,LCOSV=32;
DISPLAY-COSSU:TYPE=LCOSV,LCOSV=32;
H500: AMO COSSU STARTED
```

LCOS	LAUTH						LCR
V	1	2	3	4	5	6	OPTS=
	1234567890123456789012345678901234567890123456789012345678901234						LCRET
	>SERVICE INFORMATION						LCR
32	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX						.
	>32:TRUNKS						

```
AMO-COSSU-111 CLASSES OF SERVICE, SWITCHING UNIT
DISPLAY COMPLETED;
```

**Trunk Group, BUEND**

```
<DISPLAY-BUEND:TGRP=70;
DISPLAY-BUEND:TGRP=70;
H500: AMO BUEND STARTED
```

```
----- FORMAT = L -----
```

TGRP NUMBER :	70	TGRP NAME :	OPEN NUMBER E1	MAXIMUM NO. :	30
SUBGROUP NO.:	18	CHARCON :	NEUTRAL	TRACENO :	0
RESERVED :	N	DEVICE TYPE :	S2CONN	ACD THRESHOLD :	*
NUMBER OF ASSOCIATED ROUTES :	2	SEARCH MODE :	ASCENDING	PRIORITY :	2
THE FOLLOWING TRUNKS (LTG-LTU-SLOT-CCT) HAVE BEEN ALLOCATED:					
1- 1- 79-0	B-CHL: 1	1- 1- 79-0	B-CHL: 2	1- 1- 79-0	B-CHL: 3
1- 1- 79-0	B-CHL: 4	1- 1- 79-0	B-CHL: 5	1- 1- 79-0	B-CHL: 6
1- 1- 79-0	B-CHL: 7	1- 1- 79-0	B-CHL: 8	1- 1- 79-0	B-CHL: 9
1- 1- 79-0	B-CHL: 10	1- 1- 79-0	B-CHL: 11	1- 1- 79-0	B-CHL: 12
1- 1- 79-0	B-CHL: 13	1- 1- 79-0	B-CHL: 14	1- 1- 79-0	B-CHL: 15
1- 1- 79-0	B-CHL: 16	1- 1- 79-0	B-CHL: 17	1- 1- 79-0	B-CHL: 18
1- 1- 79-0	B-CHL: 19	1- 1- 79-0	B-CHL: 20	1- 1- 79-0	B-CHL: 21
1- 1- 79-0	B-CHL: 22	1- 1- 79-0	B-CHL: 23	1- 1- 79-0	B-CHL: 24
1- 1- 79-0	B-CHL: 25	1- 1- 79-0	B-CHL: 26	1- 1- 79-0	B-CHL: 27
1- 1- 79-0	B-CHL: 28	1- 1- 79-0	B-CHL: 29	1- 1- 79-0	B-CHL: 30

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



**Trunk Configuration, TDCSU**

```
<DISPLAY-TDCSU:PEN1=1-1-79-0;
DISPLAY-TDCSU:PEN1=1-1-79-0;
H500: AMO TDCSU STARTED
```

```

+----- DIGITAL TRUNK (FORMAT=L) -----+
|          DEV = S2CONN          PEN = 1-01-079-0          |
+-----+-----+-----+
| COTNO   = 5          COPNO   = 4          DPLN     = 0          |
| ITR     = 0          COS     = 32         LCOSV    = 32         |
| LCOSD   = 32         CCT     =           DESTNO   = 55         |
| PROTVAR = PSS1V2    SEGMENT = 1          TCHARG   = N          |
| SUPPRESS = 0        DGTPR   =           CHIMAP   = N          |
| ISDNCC  =           ISDNAC  =           ISDNLC   =           |
| ISDNIP  =           ISDNNP  =           PNPLC    =           |
| PNPL2C  =           PNPL1C  =           PNPAC    =           |
| PNPL2P  =           PNPL1P  =           NNO      = 55         |
| TRACOUNT = 31       SATCOUNT = MANY    CARRIER = 1          |
| ALARMNO  = 0        FIDX    = 1          FWDX     = 10         |
| ZONE     = EMPTY   COTX    = 4          TPROFNO  =           |
| DOMTYPE  =         DOMAINNO =           UUSCCX   = 16         |
| INIGHT   =         UUSCCY   = 8          |
+-----+-----+-----+
| TGRP    = 70        SRCHMODE = ASC      BCNEG    = N          |
| BCGR    = 1         INS      = N        LWPAR    = 2          |
| LWPP    = 0        LWLT    = 0        LWPS     = 0          |
| LWR1    = 0        LWR2    = 0          |
| BCHAN   1 && 30    |
+-----+-----+-----+

```

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

```
AMO-TDCSU-111          DIGITAL TRUNKS
DISPLAY COMPLETED;
<DISPLAY-LWPAR:INFOPAT="2";
DISPLAY-LWPAR:INFOPAT="2";
H500: AMO LWPAR STARTED
```

```

+-----+-----+-----+-----+
| LOADWARE PARAMETERS          CIRCUIT TYPE: DIUS2  SOURCE:DB  BLOCK: 2 |
+-----+-----+-----+-----+
| 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   = 2:COPPER-MASTER CLOCK.(CORNET) |
+-----+-----+-----+-----+

```

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



## For Slave Side Configuration

<DISPLAY-TDCSU:PEN1=1-1-79-0;

DISPLAY-TDCSU:PEN1=1-1-79-0;

H500: AMO TDCSU STARTED

```
+----- DIGITAL TRUNK (FORMAT=L) -----+
|          DEV = S2CONN          PEN = 1-01-079-0          |
+-----+-----+-----+
| COTNO   = 5          COPNO   = 4          DPLN     = 0          |
| ITR     = 0          COS     = 32         LCOSV    = 32         |
| LCOSD   = 32         CCT     =           DESTNO   = 55         |
| PROTVAR = PSS1V2    SEGMENT = 1          TCHARG   = N          |
| SUPPRESS = 0        DGTPR   =           CHIMAP   = N          |
| ISDNCC  =           ISDNAC  =           ISDNLC   =           |
| ISDNIP  =           ISDNNP  =           PNPLC    =           |
| PNPL2C  =           PNPL1C  =           PNPAC    =           |
| PNPL2P  =           PNPL1P  =           NNO      = 55         |
| TRACOUNT = 31       SATCOUNT = MANY     CARRIER = 1          |
| ALARMNO  = 0        FIDX    = 1          FWDX     = 10         |
| ZONE     = EMPTY   COTX    = 4          TPROFNO  =           |
| DOMTYPE  =         DOMAINNO =           UUSCCX   = 16         |
| INIGHT   =         UUSCCY   = 8          |
+-----+-----+-----+
| TGRP    = 70        SRCHMODE = ASC       BCNEG    = N          |
| BCGR    = 1         INS      = N         LWPAR    = 3          |
| LWPP    = 0         LWLT    = 0         LWPS     = 0          |
| LWR1    = 0         LWR2    = 0          |
| BCHAN   1 && 30     |
+-----+-----+-----+
```

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

AMO-TDCSU-111 DIGITAL TRUNKS

DISPLAY COMPLETED;

<DISPLAY-LWPAR:TYPE=DIUS2,BLNO=3;

DISPLAY-LWPAR:TYPE=DIUS2,BLNO=3;

H500: AMO LWPAR STARTED

```
+-----+-----+-----+-----+
| LOADWARE PARAMETERS   CIRCUIT TYPE: DIUS2  SOURCE:DB  BLOCK: 3 |
+-----+-----+-----+-----+
| 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    = 3:COPPER-DERIVE CLOCK(CORNET) |
+-----+-----+-----+-----+
```

AMO-LWPAR-111 LOADWARE PARAMETERS FOR NETWORKING MODULES

DISPLAY COMPLETED;





**Reference Clock Configuration, REFTA**

**For Master-side configuration**

```
<DISPLAY-REFTA:TYPE=CIRCUIT,PEN=1-1-79-0;
DISPLAY-REFTA:TYPE=CIRCUIT,PEN=1-1-79-0;
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- 79- 0 | DIU-N2 | S2CONN | 0   | 35    | N     |       | N     |
+-----+-----+-----+-----+-----+-----+-----+

```

```
AMO-REFTA-111      REFERENCE CLOCK TABLE
DISPLAY COMPLETED;
```

**For Slave-side configuration**

```
<DISPLAY-REFTA:TYPE=CIRCUIT,PEN=1-1-79-0;
DISPLAY-REFTA:TYPE=CIRCUIT,PEN=1-1-79-0;
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- 79- 0 | DIU-N2 | S2CONN | 11  | 535   | N     |       | N     |
+-----+-----+-----+-----+-----+-----+-----+

```

```
AMO-REFTA-111      REFERENCE CLOCK TABLE
DISPLAY COMPLETED;
```

<

**Trunk Least Cost Routing Configuration**

```
<DISPLAY-LDAT:TYPE=LCR,LROUTE=79;
DISPLAY-LDAT:TYPE=LCR,LROUTE=79;
H500: AMO LDAT STARTED
```

```

+-----+
| LROUTE = 79   LDPLN      NAME = OPEN NUMBER E1          SERVICE = ALL |
| TYPE = LCR                                DNNO OF ROUTE = 999 |
| SERVICE INFO = |
+-----+-----+-----+-----+-----+-----+-----+
| LRTEL | LVAL | TGRP | ODR | LAUTH | SCHEDULE | CARRIER | BAND |
|        |      |      |     |       | ABCDEFGH |         | ZONE | WPTH | LATTR |
+-----+-----+-----+-----+-----+-----+-----+
| 1     | 1    | 70   | 1   | 1    | ***** | 1     | EMPTY | 1    | NONE |
|        | DNNO = 999 |
+-----+-----+-----+-----+-----+-----+-----+

```

```
AMO-LDAT -111      LCR-DIRECTIONS
DISPLAY COMPLETED;
```





```
HTOS      :N      HTOT      :N      HTOV      :N      HTOF      :N      HTOD      :N
DND       :N      VCP       :Y      CWT       :N      TCLOGIN   :N
-----
ESSTN     :
PUGR      :      HUNTING GROUP : N
KEYSYS    :N      NIGHT OPTION  : N      ASSOCIATED STN : N
-----
SUBSCRIBER ATTRIBUTES (AMO SDAT) -----
NONE
-----
```

```
AMO-SBCSU-111      STATION AND S0-BUS CONFIGURATION OF SWITCHING UNIT
DISPLAY COMPLETED;
<
<
```



## Configuring the Cisco 1760

1760-West#sho ver

Cisco IOS Software, C1700 Software (C1700-IPVOICE-M), Version 12.4(1.8)T, INTERI  
M SOFTWARE

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

Copyright (c) 1986-2005 by Cisco Systems, Inc.

Compiled Fri 06-May-05 02:25 by kellmill

ROM: System Bootstrap, Version 12.2(7r)XM2, RELEASE SOFTWARE (fc1)

1760-West uptime is 5 days, 6 hours, 50 minutes

System returned to ROM by reload

System image file is "flash:c1700-ipvoice-mz.124-1.8.T"

Cisco 1760 (MPC860P) processor (revision 0x600) with 116089K/14983K bytes of mem  
ory.

Processor board ID FOC09150JHR (2412779291), with hardware revision 0000

MPC860P processor: part number 5, mask 2

1 FastEthernet interface

31 Serial interfaces

1 Channelized E1/PRI port

32K bytes of NVRAM.

32768K bytes of processor board System flash (Read/Write)

Configuration register is 0x2102



1760-West#sho run

Building configuration...

Current configuration : 1509 bytes

!

version 12.4

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

!

hostname 1760-West

!

boot-start-marker

boot-end-marker

!

!

no aaa new-model

!

resource policy

!

tdm clock E1 0/0 both export line

mmi polling-interval 60

no mmi auto-configure

no mmi pvc

mmi snmp-timeout 180

voice-card 0

!

ip subnet-zero



```
ip cef
!
!
no ip dhcp use vrf connected
!
!
isdn switch-type primary-qsig
!
!
voice service voip
  signaling forward unconditional
  sip
!
!
controller E1 0/0
  pri-group timeslots 1-31
  description ECN-2
!
!
interface FastEthernet0/0
  ip address 172.20.4.105 255.255.255.0
  speed auto
!
interface Serial0/0:15
  description D-channel for ECN-2
  no ip address
  no logging event link-status
  isdn switch-type primary-qsig
  isdn overlap-receiving
```



```
isdn incoming-voice voice
isdn bchan-number-order ascending
no cdp enable
!
ip classless
ip route 0.0.0.0 0.0.0.0 FastEthernet0/0
!
no ip http server
!
!
control-plane
!
!
voice-port 0/0:15
!
!
dial-peer voice 323 voip
destination-pattern 5...
session target ipv4:172.20.4.107
codec g711alaw
ip qos dscp cs5 media
!
dial-peer voice 15 pots
description voice port for ECN-2
destination-pattern 8...
direct-inward-dial
port 0/0:15
forward-digits all
!
```



```
dial-peer voice 519 voip
shutdown
destination-pattern 5...
session protocol sipv2
session target ipv4:172.20.4.107
supplementary-service pass-through
!
!
line con 0
line aux 0
line vty 0 4
login
!
end
```

1760-West#





## Configuring the Cisco 2851

2851\_West#sho ver

Cisco IOS Software, 2800 Software (C2800NM-IPVOICE-M), Version 12.4(1.8)T, INTER

IM SOFTWARE

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

Copyright (c) 1986-2005 by Cisco Systems, Inc.

Compiled Fri 06-May-05 00:27 by kellmill

ROM: System Bootstrap, Version 12.3(8r)T7, RELEASE SOFTWARE (fc1)

2851\_West uptime is 5 days, 6 hours, 46 minutes

System returned to ROM by reload at 18:21:06 UTC Thu Jun 9 2005

System image file is "flash:c2800nm-ipvoice-mz.124-1.8.T"

Cisco 2851 (revision 53.51) with 249856K/12288K bytes of memory.

Processor board ID FHK0847F03W

2 Gigabit Ethernet interfaces

31 Serial interfaces

2 Channelized E1/PRI ports

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 0x2102



```
2851_West# sho run
```

```
Building configuration...
```

```
Current configuration : 2653 bytes
```

```
!
```

```
version 12.4
```

```
service timestamps debug datetime msec
```

```
service timestamps log datetime msec
```

```
no service password-encryption
```

```
!
```

```
hostname 2851_West
```

```
!
```

```
boot-start-marker
```

```
boot system flash
```

```
boot-end-marker
```

```
!
```

```
logging buffered 51200 warnings
```

```
enable secret 5 $1$9Oh6$eYY8Wqr/FOH5/vTlmtf.x/
```

```
!
```

```
no aaa new-model
```

```
!
```

```
resource policy
```

```
!
```

```
no network-clock-participate slot 1
```

```
ip subnet-zero
```

```
!
```

```
!
```

```
ip cef
```

```
no ip dhcp use vrf connected
```



```
!  
!  
ip domain name yourdomain.com  
isdn switch-type primary-qsig  
!  
voice-card 0  
no dspfarm  
!  
voice-card 1  
no dspfarm  
!  
!  
voice service voip  
signaling forward unconditional  
sip  
!  
!  
username deepa  
!  
!  
controller E1 1/0/0  
pri-group timeslots 1-31  
description ECN-8  
!  
controller E1 1/0/1  
!  
!  
interface GigabitEthernet0/0  
description $ETH-LAN$ETH-SW-LAUNCH$INTF-INFO-GE 0/0$
```



```
ip address 172.20.4.107 255.255.255.0
```

```
duplex auto
```

```
speed auto
```

```
!
```

```
interface GigabitEthernet0/1
```

```
no ip address
```

```
shutdown
```

```
duplex auto
```

```
speed auto
```

```
!
```

```
interface Serial1/0/0:15
```

```
description D-channel for ECN-8
```

```
no ip address
```

```
no logging event link-status
```

```
isdn switch-type primary-qsig
```

```
isdn overlap-receiving
```

```
isdn protocol-emulate network
```

```
isdn incoming-voice voice
```

```
isdn T310 120000
```

```
no cdp enable
```

```
!
```

```
ip classless
```

```
!
```

```
ip http server
```

```
ip http authentication local
```

```
!
```

```
!
```

```
control-plane
```

```
!
```



```
!  
!  
voice-port 1/0/0:15  
description voice port for ECN-8  
!  
!  
dial-peer voice 10015 pots  
destination-pattern 5...  
direct-inward-dial  
port 1/0/0:15  
forward-digits all  
!  
dial-peer voice 323 voip  
destination-pattern 8...  
session target ipv4:172.20.4.105  
codec g711alaw  
ip qos dscp cs5 media  
!  
dial-peer voice 519 voip  
shutdown  
destination-pattern 8...  
session protocol sipv2  
session target ipv4:172.20.4.105  
supplementary-service pass-through  
!  
banner login ^C
```

-----  
Cisco Router and Security Device Manager (SDM) is installed on this device. This feature requires the one time use, initial credentials, of username "cisco"



with password "cisco".

Please change these publicly known initial credentials through SDM or IOS CLI.

Here's the Cisco IOS command:

```
no username cisco
```

NOTE: Please add a new username to be able to launch SDM for router management.

For more information about SDM please follow the instructions in the QUICK  
START GUIDE for your router or at

<http://www.cisco.com/go/sdm>

```
-----  
^C  
!  
line con 0  
line aux 0  
line vty 0 4  
privilege level 15  
login local  
transport input telnet  
line vty 5 15  
privilege level 15  
login local  
transport input telnet  
!  
scheduler allocate 20000 1000  
!  
end
```





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