



Siemens Hicom 330 E Rel 3.1 PBX with CallManager using 3640-E1 MGCP Gateway

This application note illustrates for connectivity of the Siemens Hicom 330 E Rel 3.1 PBX with Cisco CallManager the 3640-E1 PRI as the MGCP Gateway.

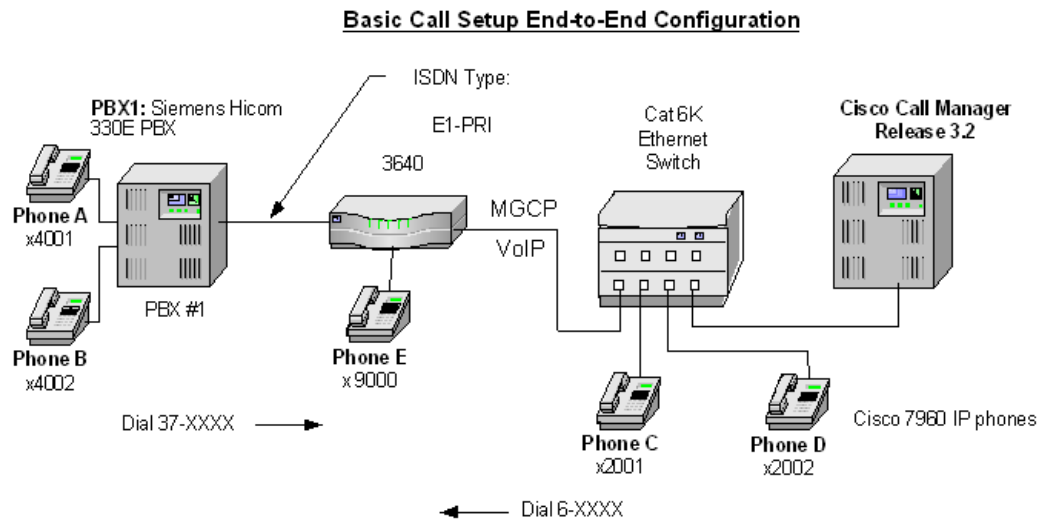
Introduction

- The Network Topology diagram shows the test set-up for end-to-end interoperability between the Cisco CallManager connected to the PBX via 3640-E1 link as MGCP Gateway.
- Calling Name delivery and presentation features are not supported by the Siemens Hicom 330 E PBX.
- CallManager fails to return the “Connected Number” in the Connect message.
- Connectivity is achieved by using the industry standard ETSI protocol. The Siemens Hicom 330 E can be configured as either NETWORK (Master) or USER (Slave) side.



Network Topology

Figure 1 Basic Setup



Cisco Systems Hardware and Software Requirements

- Cisco 3640 Gateway with 2MFT E1 Port
- Cisco Cat6K switch
- Cisco CallManager 3.2
- IOS software releases "c3640-js-mz.122-2.XN"

PBX Hardware and Software Requirements

- Hardware: DIU-N2
- Software: Version 3.1

Features Supported

Key Features Supported

Calling/Called Number

Key Features Not Supported

Connected Number



Limitations

Calling Name and Number feature.

- Calling Name deliver and presentation features are not supported by the Siemens Hicom 330 E PBX.
- When calling from Cisco 7960 IP phone to Siemens digital phone, both phones display Calling Number after the call is answered as expected.
- When calling from Siemens digital phone to Cisco 7960 IP phone, the Cisco IP phone displays Connected Number after the call is answered. When calling from the Siemens phone, the Connected Number is not displayed on the Siemens phone. It displays the numbers being dialed instead (i.e. Access Code + extension number). It was verified using the an ISDN protocol analyzer that the CallManager was not sending "Connected Number" information in the connect message back to PBX.

Configuring the Siemens Hicom 330 E PBX

Use the following steps to configure the Siemens Hicom 330 E PBX.

- Step 1. Add the new access code to Dialing Plans using WABE + LDPLN.
- Step 2. Add the new trunk board using BCSU.
- Step 3. Configure Class of Trunk using COT.
- Step 4. Configure Class of Parameter for device handler using COP.
- Step 5. Configure Class of Service using COSSU.
- Step 6. Add the new trunk group access code using BUEND.
- Step 7. Configure trunk using TDCSU.
- Step 8. Configure Reference Clock using REFTA.
- Step 9. Configure trunk Least Cost Routing using LDAT + RICHT.
- Step 10. Configure LCR Out-dial Rules using LODR.



Siemens Hicom 330 E PBX Configuration Menus and Commands

Step 1. Add the new access code to Dialing Plans using WABE + LDPLN.

<dis-wabe

TYPE = gen

CD =

DPLN = 0;

DIS-WABE:GEN,,0;

H500: AMO WABE STARTED

DIGIT INTERPRETATION		VALID FOR ALL DIAL PLANS			
CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT		
	1 11111 11112 22	ANALYSIS	DNI/ADD-INFO		
	0 12345 67890 12345 67890 12	RESULT	*=OWN NODE		
001 - 002	*	NETRTE			
11	. . . . . *	MBKY		
3001	. ***** **	STN	R		
			DESTNO 0		
			DNNO 1-	1-150*	
3007	. . . . . *	MBKY		
3007	. ***** **	STN			
			DESTNO 0		
			DNNO 1-	1-150*	
4100 - 4500	. ***** **	STN			
			DESTNO 72		
			DNNO 1-	1-702	

DIGIT INTERPRETATION		VALID FOR ALL DIAL PLANS			
CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT		
	1 11111 11112 22	ANALYSIS	DNI/ADD-INFO		
	0 12345 67890 12345 67890 12	RESULT	*=OWN NODE		
5000 - 5007	. ***** **	STN			
			DESTNO 0		
			DNNO 1-	1-150*	
5008 - 5009	. ***** **	STN			
			DESTNO 99		
			DNNO 1-	1- 99	
5010	. ***** *	ATNDIND			
800	. . . . . * . . . . .	ATNDDID		
854	. ***** **	NETW			
			R		
			DESTNO 2		
			DNNO 0-	0- 0	
*66	. . . . . * . . . . .	SIGNON		

DIGIT INTERPRETATION		VALID FOR ALL DIAL PLANS			
CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT		



CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT
	1 11111 11112 22	ANALYSIS	DNI/ADD-INFO
	0 12345 67890 12345 67890 12	RESULT	*=OWN NODE
*91	. . . . *	MBOFF	
#66	. . . . *	SIGNOFF	
#91	. . . . *	MBON	
##22	. . . . *	DAKY	
##24	. . . . *	DSSKY	
##25	. . . . *	FWDKY	
##26	. . . . *	HTKY	
##27	. . . . *	KNOVRKY	
##28	. . . . *	MBKY	
##29	. . . . *	MSGRKY	
##35	. . . . *	TIMEKY	
##36	. . . . *	VCKY	

DIGIT INTERPRETATION VALID FOR ALL DIAL PLANS

CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT
	1 11111 11112 22	ANALYSIS	DNI/ADD-INFO
	0 12345 67890 12345 67890 12	RESULT	*=OWN NODE
##37	. . . . *	VCRKY	
##38	. . . . *	CKKY	
##39	. . . . *	CONFKY	
##41	. . . . *	NAMEKY	
##42	. . . . *	PARKKY	
##43	. . . . *	REMKY	
##44	. . . . *	STKY	
##45	. . . . *	CBKKY	
##46	. . . . *	CONSKY	
##47	. . . . *	DNDKY	
##48	. . . . *	EXHOLDKY	
##49	. . . . *	HOLDKY	

DIGIT INTERPRETATION VALID FOR ALL DIAL PLANS

CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT
	1 11111 11112 22	ANALYSIS	DNI/ADD-INFO
	0 12345 67890 12345 67890 12	RESULT	*=OWN NODE
##50	. . . . *	IUSEKY	
##51	. . . . *	LNRKY	
##52	. . . . *	PRIVKY	
##53	. . . . *	RLSKY	
##54	. . . . *	SNRKY	
##55	. . . . *	TRNSKY	
##56	. . . . *	RCTOFFKY	
##57	. . . . *	TOGGLEKY	

DIGIT INTERPRETATION DPLN 0

CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT
	1 11111 11112 22	ANALYSIS	DNI/ADD-INFO
	0 12345 67890 12345 67890 12	RESULT	*=OWN NODE



0	. . . . . *	. . . . .	. . . . .	. . . . .	ATNDDID	
0	. . . . . *	. . . . . *	. . . . . *	. . . . . *	ATND	
150	. . . . . *	. . . . . *	. . . . . *	. . . . . *	OWNNODE	
31	. . . . . *	. . . . . *	. . . . . *	. . . . . *	TIE	
37	- 38	. . . . . *	. . . . . *	. . . . . *	TIE	
40	. . . . . *	. . . . . *	. . . . . *	. . . . . *	TIE	
702	. . . . . *	. . . . . *	. . . . . *	. . . . . *	TIE	
9	. . . . . *	. . . . . *	. . . . . *	. . . . . *	CO	
*0	. * *	. * *	. * *	. * *	ACBK	
*10	. . . . . *	. . . . . *	. . . . . *	. . . . . *	CCMANS	R
*11	. . . . . *	. . . . . *	. . . . . *	. . . . . *	AFWDVCE	
*12	. . . . . *	. . . . . *	. . . . . *	. . . . . *	AFWDDTE	

DIGIT INTERPRETATION DPLN 0

CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT
	1 11111 11112 22	ANALYSIS	DNI/ADD-INFO
0 12345 67890 12345 67890 12		RESULT	*=OWN NODE

*13	. . . . . *	. . . . .	. . . . .	. . . . .	AFWDDWD	
*14	. . . . . *	. . . . . *	. . . . . *	. . . . . *	AFWDREM	CFREMVAR CFU CFREMSE VOICE
*15	. * . . . . *	. . . . .	. . . . .	. . . . .	APRIV	
*16	. . . . . *	. . . . .	. . . . .	. . . . .	PUGDIS	
*17	. * . . . . *	. . . . .	. . . . .	. . . . . *	SPLIT	
*18	. * . . . . *	. . . . .	. . . . .	. . . . .	TRACE	
*19	. . . . . *	. . . . .	. . . . . *	. . . . .	AREM	
*20	. . . . . **	. . . . .	. . . . .	. . . . .	NOPT	
*21	. . . . . *	. . . . .	. . . . . *	. . . . .	AFWDDVCE	
*22	. . . . . *	. . . . .	. . . . . *	. . . . .	AFWDDTE	

DIGIT INTERPRETATION DPLN 0

CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT
	1 11111 11112 22	ANALYSIS	DNI/ADD-INFO
0 12345 67890 12345 67890 12		RESULT	*=OWN NODE

*23	. * . . . . *	. . . . .	. . . . .	. . . . .	CALLPARK	
*24	. . . . . *	. . . . .	. . . . .	. . . . .	DISUON	
*3	. . . . . *	. . . . .	. . . . .	. . . . .	PUDIR	
*40	. . . . . *	. . . . . *	. . . . . *	. . . . . *	CCANS	R
*41	. . . . . *	. . . . .	. . . . . *	. . . . .	CCDIS	
*43	. . . . . *	. . . . . *	. . . . . *	. . . . .	DTE	
*44	. . . . . *	. . . . . *	. . . . . *	. . . . .	FWDREM	CFREMVAR CFU CFREMSE VOICE
*45	. . . . . *	. . . . .	. . . . . *	. . . . .	CCMEETME	
*46	. . . . . *	. . . . . *	. . . . . *	. . . . .	CCSCD	R
*47	. . . . . *	. . . . .	. . . . . *	. . . . .	CCSURG	

DIGIT INTERPRETATION DPLN 0

CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT
	1 11111 11112 22	ANALYSIS	DNI/ADD-INFO
0 12345 67890 12345 67890 12		RESULT	*=OWN NODE



*48	. . . . . * . . . . .	CCVCE	
*49	. . . . . * . . . . .	ACOSX	
*50	. . . . . * . . . . .	FWDIGNOR	
*51	. . . . . * . . . . .	ADND	
*52	. . . . . * . . . . .	AHTVCE	
*53	. * *	CCMSURG	R
*54	. . . . . * . . . . .	SPD	
*55	. * *	BABYLSNG	
*56	. * *	CCMS	R
*57	. . . . . * . . . . .	CCS	
*58	. * *	CCSN	R
*59	. . . . . * . . . . .	CCSTN	

DIGIT INTERPRETATION DPLN 0

CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT
	1 11111 11112 22	ANALYSIS	DNI/ADD-INFO
0 12345 67890 12345 67890 12		RESULT	*=OWN NODE

*60	. *	KNOVR	
*61	. * *	SPDC1	
*62	. * *	SPDC2	
*63	. * *	SPDI	
*64	. . . . . * . . . . . *	SPDIPROG	
*69	. * *	EOVR	
*7	. * * *	LNR	
*81	. . . . . * . . . . . *	APIN1	
*82	. . . . . * . . . . . *	APIN2	
*83	. . . . . * . . . . . *	APIN3	
*84	. . . . . * . . . . . *	APIN4	
*85	. . . . . * . . . . . *	APIN5	

DIGIT INTERPRETATION DPLN 0

CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT
	1 11111 11112 22	ANALYSIS	DNI/ADD-INFO
0 12345 67890 12345 67890 12		RESULT	*=OWN NODE

*88	. . . . . * . . . . . *	CTLS	
*89	. . . . . * . . . . . *	TESTLN	
*9	. *	CONF3	
**	. . . . . * . . . . .	PU	
*#50	. * * *	ACDLOGON	
*#51	. * * *	ACDAV	
*#52	. * * *	ACDWORK	
*#53	. * * *	ACC	
*#54	. . . . . * . . . . .	MONSLNT	
*#55	. . . . . * . . . . .	MONTONE	
*#60	. * *	ACDPGS	
*#61	. * *	ACDPQS	

DIGIT INTERPRETATION DPLN 0

CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT
	1 11111 11112 22	ANALYSIS	DNI/ADD-INFO
0 12345 67890 12345 67890 12		RESULT	*=OWN NODE



*#62	. . . . *	ACDEMMSG
*#63	. . . . *	ACDSHMSG
*#71	. * . . . *	CAFAV
*#72	. * . . . *	CAFGRAV
*#74	. * . . . *	CAFAFWD
#0	. . . . *	DCBK
#11	. . . . *	DFWDVCE
#12	. . . . *	DFWDDTE
#14	. * . . . *	DFWDREM
		CFREMVAR CFU
		CFREMSE VOICE
#15	. * . . . *	DPRIV

DIGIT INTERPRETATION DPLN 0

CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT
	1 11111 11112 22	ANALYSIS	DNI/ADD-INFO
0 12345 67890 12345 67890 12		RESULT	*=OWN NODE

#19	. . . . *	DREM
#21	. . . . *	DFWWDVCE
#22	. . . . *	DFWDDTE
#24	. . . . *	DISUOFF
#49	. . . . *	DCOSX
#51	. . . . *	DDND
#52	. . . . *	DHTVCE
#74	. . . . *	DIGIDAT
#8	. . . . *	DPIN
#92	. . . . *	MBOFF
*#50	. * . . . *	ACDLOGOF
*#51	. * . . . *	ACDNAV

DIGIT INTERPRETATION DPLN 0

CODE	CALL PROGRESS STATE	DIGIT	RESERVED/CONVERT
	1 11111 11112 22	ANALYSIS	DNI/ADD-INFO
0 12345 67890 12345 67890 12		RESULT	*=OWN NODE

*#60	. * . . . *	ACDSGS
*#61	. * . . . *	ACDSQS
*#70	. * . . . *	CAFLOGOF
*#71	. * . . . *	CAFNAV
*#72	. * . . . *	CAFGRNAV
*#73	. * . . . *	CAFGRGROFF
*#74	. * . . . *	CAFDFWD
##1	. . . . *	KYPROG
##40	. . . . *	NAKYLO
##7	. . . . *	MBOFF
##8	. . . . *	MBOFF

AMO-WABE -107 DIALLING PLANS, FEATURE ACCESS CODES

DISPLAY COMPLETED;

<dis-ldpln



TYPE = ldp

M40: APPLICABLE GROUP CONDITION: MAXIMUM OF 1 OUT OF 2 PARAMETERS

LDPNO = 47;

DIS-LDPLN:LDP,47;

H500: AMO LDPLN STARTED

LDPNO : 47		LDP : 37-XXXX		SPC : 22	
DPLN	LRTE	LAUTH	DPLN	LRTE	LAUTH
0	37	1	8		
1			9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		

AMO-LDPLN-107 ADMINISTRATION LCR DIALPLAN

DISPLAY COMPLETED;

Overlap Sending Dial Plan (DPLN)

<dis-ldpln

TYPE = ldp

M40: APPLICABLE GROUP CONDITION: MAXIMUM OF 1 OUT OF 2 PARAMETERS

LDPNO = 47;

DIS-LDPLN:LDP,47;

H500: AMO LDPLN STARTED

LDPNO : 47		LDP : 37-X		SPC : 6	
DPLN	LRTE	LAUTH	DPLN	LRTE	LAUTH
0	37	1	8		
1			9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		



```

+-----+-----+-----+-----+-----+-----+
AMO-LDPLN-196      ADMINISTRATION LCR DIALPLAN
DISPLAY COMPLETED;

```

Step 2. Add the new trunk board using BCSU.

```
<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
```

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

```
AMO-BCSU -107      BOARD CONFIGURATION, SWITCHING UNIT
```

```
DISPLAY COMPLETED;
```



Step 3. Configure Class of Trunk using COT.

```
<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
    INTERWORKING CALLBACK - NO ANSWER AND MAILBOX CALLBACK IWCB
    AOC PER CALL (AUTOMATICAL OR ON REQUEST), MAND. CORNET-NQ AOC
    CONTROLLED TRUNK AND LINE SELECTION                     CTLS
    NO TONE                                                  NTON

AMO-COT -107          CLASS OF TRUNK FOR CALL PROCESSING
DISPLAY COMPLETED;
```

Step 4. Configure Class of Parameter for device handler using COP.

```
<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 -107          CLASS OF PARAMETER FOR DEVICE HANDLER
DISPLAY COMPLETED;
```



Step 5. Configure Class of Service using COSSU.

<dis-cossu

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

Table with 6 columns: COS, VOICE, FAX, TTX, VTX, DTE. Row 1: 32, >32:TRUNKS, TA, NOCO, NOCO, NOCO. Row 2: TNOTCR, NOTIE, NOTIE, NOTIE, TA, TNOTCR. Row 3: 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:

Table with 3 columns: LCOS, LCOSV, LCOSD. Row 1: 31, XX, XX.

AMO-COSSU-82 CLASSES OF SERVICE, SWITCHING UNIT

DISPLAY COMPLETED



Step 6. Add the new trunk group access code using BUEND.

<dis-buend

TGRP = 37

FORMAT = ;

DIS-BUEND:37,;

H500: AMO BUEND STARTED

```
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| TGRP NUMBER :    37  TGRP NAME   : PRI           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-107 TRUNK GROUP

DISPLAY COMPLETED;



Step 7. Configure trunk using TDCSU.

(NETWORK/Master Side)

<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     = PRI        DESTNO   = 99         |
| PROTVAR = ETSI     SEGMENT = 1          TCHARG   = N          |
| SUPPRESS = 0       DGTPR   =           CHIMAP   = N          |
| ISDNCC  =          ISDNAC  =           ISDNLC   =           |
| ISDNIP  =          ISDNNP  =           PNPLC    =           |
| PNPL2C  =          PNPLIC  =           PNPAC    =           |
| PNPL2P  =          PNPL1P  =           NNO      = 1  -1  -999  |
| TRACOUNT = 31      SATCOUNT = MANY     CARRIER = 1          |
| ALARMNO = 2        FIDX    = 1          FWDX     = 10         |
| ZONE    = EMPTY   COTX    = 4          TPROFNO =           |
| DOMTYPE =          DOMAINNO =          UUSCCX  = 16         |
| CCHDL   =          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-107 DIGITAL TRUNKS

DISPLAY COMPLETED;

<dis-lwpar

INFOPAT = 4

FORMAT = 1

DEV = ;

DIS-LWPAR:4,L,;

H500: AMO LWPAR STARTED

```

+-----+-----+-----+-----+
| 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)
+-----+

```

AMO-LWPAR-70 LOADWARE PARAMETERS FOR NETWORKING MODULES

DISPLAY COMPLETED;
(USER/Slave Side)
<dis-tdcsu

PEN1 = 1-1-73-0;

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

```

+-----+-----+-----+-----+
|          DEV = S2CONN          PEN = 1-01-073-0
+-----+-----+-----+-----+
| COTNO = 4           COPNO = 4           DPLN = 0
| ITR = 0             COS = 32           LCOSV = 31
| LCOSD = 31         CCT = PRI           DESTNO = 99
| PROTVAR = ETSI     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-107 DIGITAL TRUNKS

DISPLAY COMPLETED;

DIS-LWPAR:1,L,;
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) |
+-----+-----+-----+
```

AMO-LWPAR-104 LOADWARE PARAMETERS FOR NETWORKING MODULES

DISPLAY COMPLETED;



Step 8. Configure Reference Clock using REFTA.

(NETWORK/Master Side)

<dis-refta

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

H500: AMO REFTA STARTED

Table with 9 columns: PEN, MODULE, DEVICE, PRI, ERROR, BLOCK, SUPP., READY, BUT ASYN. Row 1: 1- 1- 73- 0 | DIU-N2 | S2CONN | 0 | 15485 | N | X | N |

AMO-REFTA-89 REFERENCE CLOCK TABLE
DISPLAY COMPLETED;

(USER/Slave Side)

<dis-refta

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

H500: AMO REFTA STARTED

Table with 9 columns: PEN, MODULE, DEVICE, PRI, ERROR, BLOCK, SUPP., READY, BUT ASYN. Row 1: 1- 1- 73- 0 | DIU-N2 | S2CONN | 11 | 15485 | N | X | N |

AMO-REFTA-89 REFERENCE CLOCK TABLE
DISPLAY COMPLETED;



Step 9. Configure trunk Least Cost Routing using LDAT + RICHT.

LDAT

<dis-ldat

TYPE = lcr

LROUTE = 37;

DIS-LDAT:LCR,37;

H500: AMO LDAT STARTED

```

+-----+
| 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 | WPTH | LATTR |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | 1 | 37 | 1 | 1 | ***** | 1 | EMPTY | 1 | NONE |
+-----+-----+-----+-----+-----+-----+-----+-----+

```

AMO-LDAT -107 LCR-DIRECTIONS

DISPLAY COMPLETED;

RICHT

<dis-richt

MODE = lrte

LRTE = 37;

DIS-RICHT:LRTE,37;

H500: AMO RICHT STARTED

```

+-----+
| LRTE = 37   NAME = PRI 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 |
+-----+-----+-----+-----+-----+-----+

```

AMO-RICHT-107 TRUNK ROUTING

DISPLAY COMPLETED;



Step 10. Configure LCR Out-dial Rules using LODR

```
<dis-lodr
ODR = 1
INFOPAT = ;
DIS-LODR:1,;
H500: AMO LODR STARTED
+-----+
| ODR      POSITION  CMD      PARAMETER      |
+-----+-----+-----+-----+
|    1      |    1    ECHO      2      |
|           |    2    END      |
+-----+-----+-----+-----+
|INFO:PSTN  |
+-----+-----+-----+-----+
H03: THE NEXT FREE ODR IS 3
AMO-LODR -107      ADMINISTRATION OF LCR OUTDIAL RULES
DISPLAY COMPLETED;
<
```



Configuring the Cisco CallManager

Figure 1
Configuring the MGCP (Cisco 3640) Gateway

The screenshot shows the Cisco CallManager 3.2 Administration Gateway Configuration page in a Microsoft Internet Explorer browser. The page title is "Gateway Configuration" and it includes navigation links for "Back to MGCP Configuration" and "Back to End/List Gateways".

Product : Cisco 364X
Gateway : S1/DST-0@MGCP_3640
Device Protocol: DigRpt Access PRI
Registration: Registered with Cisco CallManager 10.1.1.2
IP Address: 10.1.1.200

Status: Ready

Buttons: [Update](#) | [Delete](#) | [Reset Gateway](#) | [Cancel Changes](#)

End-Point Name*	S1/DST-0@MGCP_3640
Description	S1/DST-0@MGCP_3640
Device Pool*	Default
Media Resource Group List	< None >
Network Hold Audio Source	< None >
User Hold Audio Source	< None >
Calling Search Space	< None >
Location	< None >
Load Information	
Channel Selection Order*	Bottom Up
Protocol Side*	User
Caller ID DN	
Calling Party Selection*	Originator
Channel IE Type*	Use Number when IB
MCDN Channel Number Extension Bit Set to Zero**	<input type="checkbox"/>
Interface Identifier Present**	<input type="checkbox"/>
Interface Identifier Value**	



Figure 2
Configuring ISDN PRI, continued

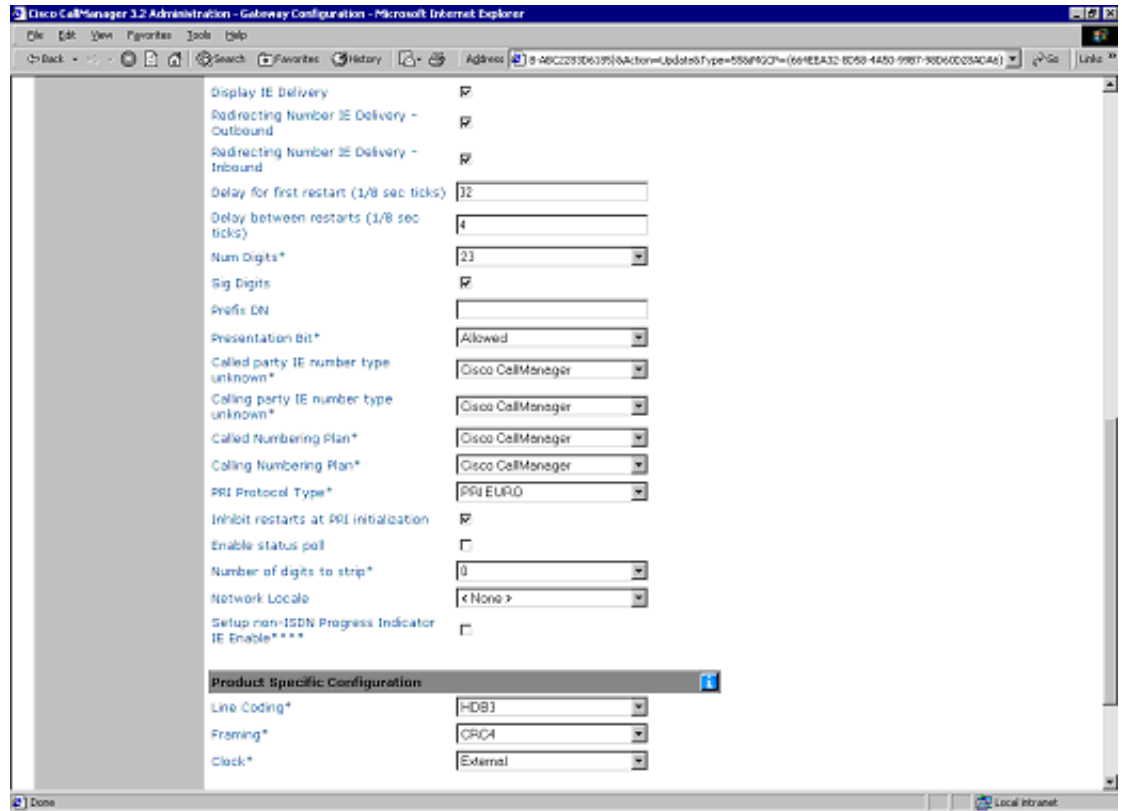
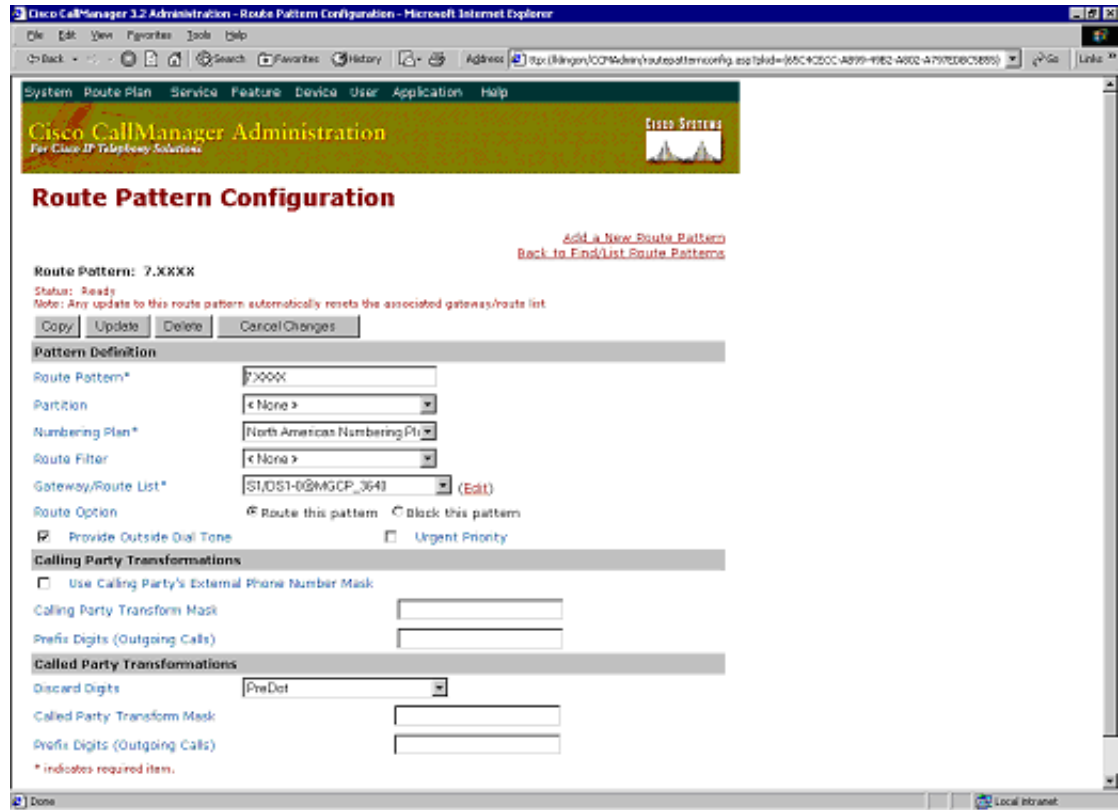


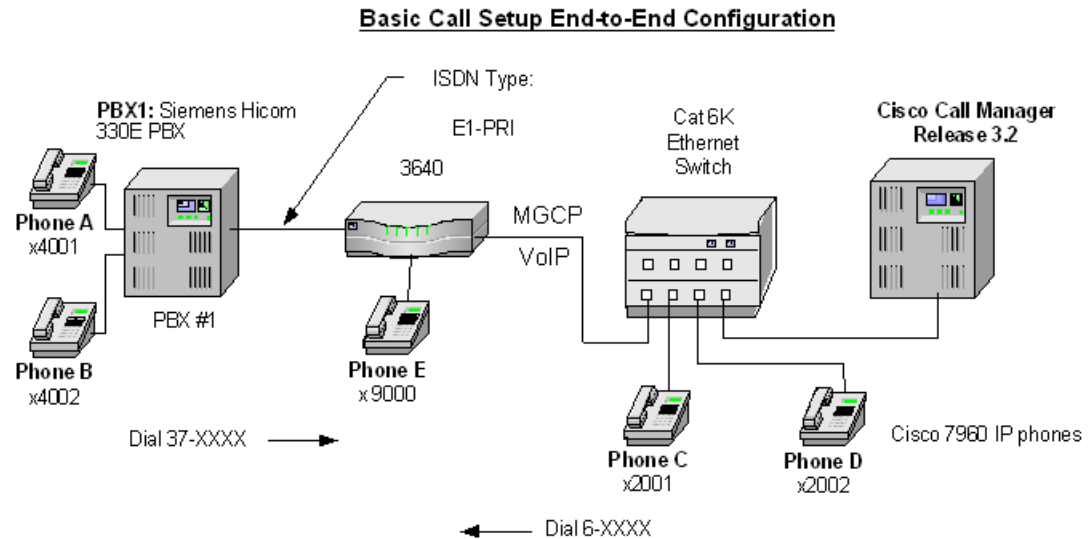


Figure 3
Route Pattern Configuration



Test Results

As shown in the diagram below, a Siemens Hicom 330 E was connected via an ISDN E1 PRI link to a Cisco 3640 Gateway, which in turn, was connected to an Ethernet switch. The interoperability testing involved Layers 1, 2 and 3 on the ISDN PRI link between a Cisco 3640 and the PBX.



Layers 2 & 3 (Q.921 and Q.931)

Layer 2 and 3 packet exchanges were monitored using an Acacia Clarinet protocol analyzer, bridged across the PRI link in high impedance mode.

Layer 2 Q.921 packets were monitored to ensure that each PBX/VG200 software configuration properly exchanged SABME/UA packets to initialize the ISDN link, and then RR packets were exchanged every 30 seconds.

Layer 3 Q.931 packets were monitored to ensure that the appropriate call setup/teardown packets were exchanged for each configuration, and that the SETUP packets contained the mandatory Information Elements (IEs) with the necessary details, as well as optional IEs such as Calling Name and Number.

Telephone calls were made end-to-end in both directions through the Cisco VG200 Gateway, and a check was made to ensure that there was an audio path in both directions for each call.

User/Network Settings

The Cisco VG200 Gateway with ISDN protocol type setting of PRI ISO QSIG E1 supports both protocol sides by selecting "Network/User" in the Protocol Side field when configuring the Gateway via CCM.

The "Network/user" or Master/Slave choice for the Siemens Hicom 330 E PBX is made by deactivating the B channels/D-channel (<dea-dssu). A change command is then issued to the Reference clock (<cha-refta) to get to the Master/Slave selection (Pri=0 for Master, 11 for slave). Now the trunk is changed (<cha-tdcu) to get to Device type prompt (Dev=s2conn), (Bcgrp=1), and loadware parameters (Lwpar=1 for User, 4 for Network). The D-channel, and B-channels are then reactivated (<act-dssu), after the settings are changed.



Table 1 PBX 1 - ETSI (Network) Cisco 3640 Gateway - primary-net5 (User)

Siemens Hicom 330 E Switch-type/ Protocol side setting	Cisco VG200 ISDN protocol-type/Protocol side setting
ETSI/ Master	Isdn switch-type primary-net5 Isdn protocol-emulate user

Table 2 Basic Calls: (Enbloc Sending)

Calls Made	Call Comp?	" Calling Number" Displayed on Final Destination?	" Calling Name" Displayed on Final Destination?	" Called Number" Passed to Orig. Side?	" Called Name" Passed to Orig. Side?	Notes
Phone A to Phone C	Yes	Yes	No	No	No	1
Phone C to Phone A	Yes	Yes	No	No	No	

1. CallManager is not sending "Connected Number" information in the connect message back to PBX.

Table 3 Call Transfers: (Supervised Local Transfers)

Calls Made	Call Comp?	Orig. " Calling Number" displayed on Final Dest. phone?	Orig. " Calling Name" displayed on Final Dest. phone?	" Called Number" display on Orig. phone updated after transfer?	" Called Name" display on Orig. phone updated after transfer?	Notes
Phone C to Phone A Xfr to Phone B	Yes	Yes	No	No	No	
Phone A to Phone C Xfr to Phone D	Yes	Yes	No	No	No	



Table 4 Call Conferencing (Local)

Calls Made	Call Comp?	" Calling Number" Passed to remaining conferee when the conferencing phone drops out?	" Calling Name" displayed on remaining conferee when the conferencing phone drops out?	" Connected Number" updated on Orig. Caller phone display when a conferee drops out?	" Connected Name" updated on Orig. Caller phone display when a conferee drops out?	Notes
Phone C to Phone A, Phone A conf Phone B	Yes	(A Drops out) Yes	(A Drops out) No	(A Drops out) No	(A Drops out) No	
Phone C to Phone A, Phone C conf Phone D	Yes	(C Drops out) No	(C Drops out) No	(D Drops out) No	(D Drops out) No	
Phone A to Phone C, Phone C conf Phone D	Yes	(C Drops out) No	(C Drops out) No	(C Drops out) No	(C Drops out) No	
Phone A to Phone C, Phone A conf Phone B	Yes	(A Drops out) No	(A Drops out) No	(B Drops out) No	(B Drops out) No	

Table 5 Call Forward (Local)

Calls Made	Call Comp?	Original " Calling Number" Passed to Final Dest.?	Original " Calling Name" Passed to Final Dest.?	Forwarding " Called Number" Pased to Final Dest.?	Forwarding " Called Name" Displayed on Final Dest.?	Final dest. " Connec ted Number" updated at orig. side?	Final dest. " Connec tedName" updated at orig. side?	Notes
Phone C to Phone A fwd to Phone B	Yes	Yes	No	No	No	No	No	
Phone A to Phone C fwd to Phone D	Yes	Yes	No	No	No	No	No	

Test Setup 2

Setup was as follows:

- PBX1 configured as ETSI, emulates User
- Cisco 3646 Gateway configured as primary-net5, emulates Network



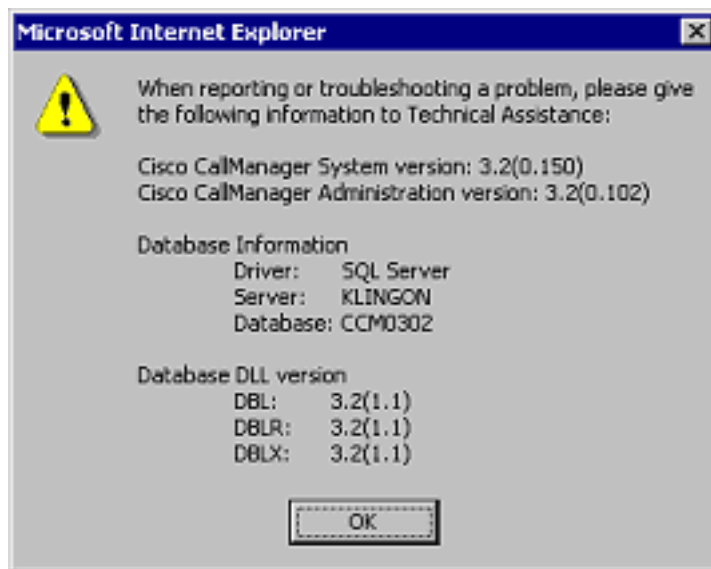
Table 6 Switch and Gateway Settings

Siemens Hicom 330 E Switch-type/ Protocol side setting	Cisco 3640 ISDN protocol-type/Protocol side setting
ETSO/Slave	isdn switch-type—primary-net5 isdn protocol—emulate network

The test results are the same as in previous section . Refer to Tables 1 through 6 for details.

Appendix A

Call Manager Software Release:





Call Manager Components Release

The screenshot shows the Cisco CallManager Administration web interface. The main heading is "Cisco CallManager Administration" with the tagline "For Class-IP Telephony Solutions". Below this, the page title is "Cisco CallManager Component Versions". A table lists the component versions for server 10.1.1.2. The table has columns for Component, Version, and Installation ID. The components listed include ace.dll, aced.dll, astisapi.dll, aupair.exe, aupairps.dll, avvidcustomerdirectoryconfigurationplugin.exe, bootp.exe, ccm.exe, ccmperfmon.dll, cctest.exe, cdpiintf.dll, Cisco CallManager Administration, Cisco CallManager Serviceability, Cisco CallManager Trace Filter Extension, ciscojtapiclient.exe, ciscomessaginginterface.exe, ciscosysfilemgr.exe, and cisotracerviewer.exe.

Component	Version	Installation ID
ace.dll	5.1.12.0	3.2(0.150)
aced.dll	5.1.12.0	3.2(0.150)
astisapi.dll	3.2.0.5	3.2(0.150)
aupair.exe	3.2.1.2	3.2(0.150)
aupairps.dll	3.2.1.85	3.2(0.150)
avvidcustomerdirectoryconfigurationplugin.exe	2.11.15.0	3.2(0.150)
bootp.exe	2.0.2.2	3.2(0.150)
ccm.exe	3.2.1.0	3.2(0.150)
ccmperfmon.dll	3.2.1.0	3.2(0.150)
cctest.exe	3.2.1.0	3.2(0.150)
cdpiintf.dll	3.2.0.0	3.2(0.150)
Cisco CallManager Administration	3.1(0.5)	CCM3.2(0.150)
Cisco CallManager Serviceability	3.1(0.2)	CCM3.2(0.150)
Cisco CallManager Trace Filter Extension	3.1(0.1)	CCM3.2(0.150)
ciscojtapiclient.exe	2.1.12.0	3.2(0.150)
ciscomessaginginterface.exe	3.1.0.6	3.2(0.150)
ciscosysfilemgr.exe	1.0.0.1	3.2(0.150)
cisotracerviewer.exe	1.0.0.1	3.2(0.150)

Siemens Hicom 330 E Software release

Software Release

```
-----
TERMINAL 1                                L O G O N                                01-10-15    11:36:52
-----
<dis-dbc
```

```
VERBOSE =
DIS-DBC:;
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
|
-----
```

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```
| 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 |
| LOCATION : CUSTOMER |
| BAPPL : 6ECXM48 |
| DBAPPL : 6ECXM48 |
| SYSTEM_ID : PKP091000 |
+-----+
AMO-DBC -89 DATABASE CONFIGURATION
DISPLAY COMPLETED;
```

```
DIS-VEGAS;
H500: AMO VEGAS STARTED
SYSTEM NO. AMO APS NO. START USER STATUS
SWU: L31900Q2999A00001 REGEN P30252B4200B00103 14.11.00 14:33 DAVE A FINISHED
ADS: L31900Q2999A00001 REGEN P30252B4200A00103 14.11.00 14:35 DAVE A FINISHED
AMO-VEGAS-107 ADMIN. OF DATABASE GENERATION RUNS ON SUPPORT SYSTEM
DISPLAY COMPLETED;
<
```



Cisco 3640 Router Configuration

MGCP_3640#sh ver

```
Cisco Internetwork Operating System Software
IOS (tm) 3600 Software (C3640-JS-M), Experimental Version 12.2(20020124:013600)
[accheung-vl22_xn_throttle.build 101]
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Wed 23-Jan-02 17:57 by accheung
Image text-base: 0x60008948, data-base: 0x61608000
```

ROM: System Bootstrap, Version 11.1(19)AA, EARLY DEPLOYMENT RELEASE SOFTWARE (fc1)

```
MGCP_3640 uptime is 1 hour, 40 minutes
System returned to ROM by power-on
System image file is "flash:c3640-js-mz"
```

```
cisco 3640 (R4700) processor (revision 0x00) with 58368K/7168K bytes of memory.
Processor board ID 10620494
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)
55 Serial network interface(s)
2 Channelized E1/PRI port(s)
2 Channelized T1/PRI port(s)
2 Voice FXO interface(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 (Read/Write)
```

Configuration register is 0x2102

MGCP_3640#sh diag

```
Slot 0:
Combo 2E, 2W Port adapter, 4 ports
Port adapter is analyzed
Port adapter insertion time unknown
EEPROM contents at hardware discovery:
Hardware revision 1.2          Board revision B0
Serial number      7687836     Part number      800-01171-04
Test history      0x0          RMA number       00-00-00
EEPROM format version 1
EEPROM contents (hex):
 0x20: 01 1E 01 02 00 75 4E 9C 50 04 93 04 00 00 00 00
 0x30: 58 00 00 00 98 02 28 17 FF FF FF FF FF FF FF FF
```

Slot 1:



High Density Voice Port adapter
Port adapter is analyzed
Port adapter insertion time unknown
EEPROM contents at hardware discovery:
Hardware Revision : 1.1
Top Assy. Part Number : 800-03567-01
Board Revision : F1
Deviation Number : 0-0
Fab Version : 02
PCB Serial Number : JAB05080M1S
RMA Test History : 00
RMA Number : 0-0-0-0
RMA History : 00

EEPROM format version 4
EEPROM contents (hex):
0x00: 04 FF 40 00 CC 41 01 01 C0 46 03 20 00 0D EF 01
0x10: 42 46 31 80 00 00 00 02 02 C1 8B 4A 41 42 30
0x20: 35 30 38 30 4D 31 53 03 00 81 00 00 00 04 00
0x30: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x40: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

WIC Slot 0:
E1 (2 Port) Multi-Flex Trunk WAN Daughter Card
Hardware revision 1.0 Board revision B0
Serial number 18779824 Part number 800-04479-01
Test history 0x0 RMA number 00-00-00
Connector type PCI
EEPROM format version 1
EEPROM contents (hex):
0x20: 01 23 01 00 01 1E 8E B0 50 11 7F 01 00 00 00 00
0x30: 58 00 00 00 00 02 25 00 FF FF FF FF FF FF FF FF

HDV firmware: Compiled Fri 23-Mar-01 00:20 by miriyala
HDV memory size 524280 heap free 175065

Slot 2:
4 PORT Voice PM for MARS Port adapter
Port adapter is analyzed
Port adapter insertion time unknown
EEPROM contents at hardware discovery:
Hardware revision 1.1 Board revision C0
Serial number 10689987 Part number 800-02491-02
Test history 0x0 RMA number 00-00-00
EEPROM format version 1
EEPROM contents (hex):
0x20: 01 65 01 01 00 A3 1D C3 50 09 BB 02 00 00 00 00
0x30: 60 00 00 00 98 11 22 17 FF FF FF FF FF FF FF FF

WIC Slot 0:
FXS Voice daughter card (2 port)
Hardware revision 1.1 Board revision C0
Serial number 11291019 Part number 800-02493-01
Test history 0x0 RMA number 00-00-00
Connector type Wan Module



```
EEPROM format version 1
EEPROM contents (hex):
  0x20: 01 0E 01 01 00 AC 49 8B 50 09 BD 01 00 00 00 00
  0x30: 60 00 00 00 99 01 05 01 FF FF FF FF FF FF FF FF
```

```
WIC Slot 1:
FXO Voice daughter card (2 port)
Hardware revision 1.1          Board revision C0
Serial number      8421533     Part number      800-02495-01
Test history       0x0         RMA number       00-00-00
Connector type     Wan Module
EEPROM format version 1
EEPROM contents (hex):
  0x20: 01 0D 01 01 00 80 80 9D 50 09 BF 01 00 00 00 00
  0x30: 60 00 00 00 98 06 02 01 FF FF FF FF FF FF FF FF
```

```
Slot 3:
High Density Voice Port adapter
Port adapter is analyzed
Port adapter insertion time unknown
EEPROM contents at hardware discovery:
  Hardware Revision           : 1.0
  Top Assy. Part Number      : 800-03567-01
  Board Revision             : A0
  Deviation Number           : 0-0
  Fab Version                 : 02
  PCB Serial Number          : JAB03350B9K
  RMA Test History           : 00
  RMA Number                  : 0-0-0-0
  RMA History                 : 00
EEPROM format version 4
EEPROM contents (hex):
  0x00: 04 FF 40 00 CC 41 01 00 C0 46 03 20 00 0D EF 01
  0x10: 42 41 30 80 00 00 00 02 02 C1 8B 4A 41 42 30
  0x20: 33 33 35 30 42 39 4B 03 00 81 00 00 00 04 00
  0x30: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
  0x40: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
  0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
  0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
  0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

```
WIC Slot 0:
T1 (2 Port) Multi-Flex Trunk (Drop&Insert) WAN Daughter Card
Hardware revision 1.0          Board revision A0
Serial number      19621702    Part number      800-04614-02
Test history       0x0         RMA number       00-00-00
Connector type     PCI
EEPROM format version 1
EEPROM contents (hex):
  0x20: 01 24 01 00 01 2B 67 46 50 12 06 02 00 00 00
  0x30: 50 00 00 00 00 05 20 00 FF FF FF FF FF FF FF FF
```

```
HDV firmware: Compiled Fri 23-Mar-01 00:20 by miriyala
HDV memory size 524280 heap free 175065
```

```
MGCP_3640#sh controller e1
E1 1/0 is up.
```



```
Applique type is Channelized E1 - balanced
No alarms detected.
alarm-trigger is not set
Version info Firmware: 20010315, FPGA: 15
Framing is CRC4, Line Code is HDB3, Clock Source is Line.
Data in current interval (11 seconds elapsed):
    0 Line Code Violations, 0 Path Code Violations
    0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
    0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 0 Unavail Secs
E1 1/1 is down.
Applique type is Channelized E1 - balanced
Far End Block Errors Detected
Receiver has loss of signal.
alarm-trigger is not set
Version info Firmware: 20010315, FPGA: 15
Framing is CRC4, Line Code is HDB3, Clock Source is Line.
Data in current interval (12 seconds elapsed):
    0 Line Code Violations, 0 Path Code Violations
    0 Slip Secs, 12 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
    0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 12 Unavail Secs
```

```
MGCP_3640# sh conf
Using 2266 out of 129016 bytes
!
version 12.2
no parser cache
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
no service dhcp
!
hostname MGCP_3640
!
logging rate-limit console 10 except errors
!
!
!
voice-card 1
!
voice-card 3
!
ip subnet-zero
!
!
!
no ip dhcp-client network-discovery
mgcp
mgcp call-agent 10.1.1.2 2427 service-type mgcp version 0.1
mgcp dtmf-relay voip codec all mode out-of-band
mgcp rtp unreachable timeout 1000 action notify
mgcp modem passthrough voip mode cisco
mgcp sdp simple
mgcp package-capability rtp-package
mgcp package-capability sst-package
no mgcp timer receive-rtcp
```




```
no mgcp explicit hookstate
isdn switch-type primary-ni
call rsvp-sync
!
!
!
!
!
ccm-manager mgcp
ccm-manager music-on-hold
ccm-manager config server 10.1.1.2
ccm-manager config
!
!
controller E1 1/0
  pri-group timeslots 1-31 service mgcp
!
controller E1 1/1
!
controller T1 3/0
  framing esf
  linecode b8zs
  pri-group timeslots 1-24 service mgcp
!
controller T1 3/1
  framing sf
  linecode ami
!
!
!
interface Ethernet0/0
  ip address 10.1.1.200 255.255.255.0
  no ip mroute-cache
  half-duplex
!
interface Ethernet0/1
  ip address 171.69.231.23 255.255.255.0
  no ip mroute-cache
  half-duplex
!
interface Serial1/0:15
  no ip address
  no logging event link-status
  isdn switch-type primary-net5
  isdn incoming-voice voice
  isdn T310 4000
  isdn bind-13 ccm-manager
  no cdp enable
!
interface Serial3/0:23
  no ip address
  no logging event link-status
  isdn switch-type primary-ni
  isdn protocol-emulate network
  isdn incoming-voice voice
  isdn T306 30000
  isdn T310 40000
```



```
isdn bind-13 ccm-manager
no cdp enable
!
ip classless
no ip http server
!
!
!
snmp-server manager
!
voice-port 1/0:15
!
voice-port 2/0/0
!
voice-port 2/0/1
!
voice-port 2/1/0
!
voice-port 2/1/1
!
voice-port 3/0:23
!
dial-peer cor custom
!
!
!
dial-peer voice 1 pots
  application mgcp
!
dial-peer voice 3 pots
  application mgcpapp
  port 2/0/1
!
dial-peer voice 2 pots
  application mgcpapp
  port 2/0/0
!
dial-peer voice 999200 pots
  application mgcpapp
  port 2/0/0
!
dial-peer voice 9991015 pots
  application mgcpapp
  port 1/0:15
!
dial-peer voice 9993023 pots
  application mgcpapp
  port 3/0:23
!
!
line con 0
line aux 0
line vty 0 4
  login
!
!
```



```
end

MGCP_3640#sh run
Building configuration...

Current configuration : 2266 bytes
!
version 12.2
no parser cache
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
no service dhcp
!
hostname MGCP_3640
!
logging rate-limit console 10 except errors
!
!
!
voice-card 1
!
voice-card 3
!
ip subnet-zero
!
!
!
no ip dhcp-client network-discovery
mgcp
mgcp call-agent 10.1.1.2 2427 service-type mgcp version 0.1
mgcp dtmf-relay voip codec all mode out-of-band
mgcp rtp unreachable timeout 1000 action notify
mgcp modem passthrough voip mode cisco
mgcp sdp simple
mgcp package-capability rtp-package
mgcp package-capability sst-package
no mgcp timer receive-rtcp
no mgcp explicit hookstate
isdn switch-type primary-ni
call rsvp-sync
!
!
!
!
!
ccm-manager mgcp
ccm-manager music-on-hold
ccm-manager config server 10.1.1.2
ccm-manager config
!
!
controller E1 1/0
  pri-group timeslots 1-31 service mgcp
!
controller E1 1/1
```



```
!  
controller T1 3/0  
  framing esf  
  linecode b8zs  
  pri-group timeslots 1-24 service mgcp  
!  
controller T1 3/1  
  framing sf  
  linecode ami  
!  
!  
!  
interface Ethernet0/0  
  ip address 10.1.1.200 255.255.255.0  
  no ip mroute-cache  
  half-duplex  
!  
interface Ethernet0/1  
  ip address 171.69.231.23 255.255.255.0  
  no ip mroute-cache  
  half-duplex  
!  
interface Serial1/0:15  
  no ip address  
  no logging event link-status  
  isdn switch-type primary-net5  
  isdn incoming-voice voice  
  isdn T310 4000  
  isdn bind-13 ccm-manager  
  no cdp enable  
!  
interface Serial3/0:23  
  no ip address  
  no logging event link-status  
  isdn switch-type primary-ni  
  isdn protocol-emulate network  
  isdn incoming-voice voice  
  isdn T306 30000  
  isdn T310 40000  
  isdn bind-13 ccm-manager  
  no cdp enable  
!  
ip classless  
no ip http server  
!  
!  
!  
!  
snmp-server manager  
!  
voice-port 1/0:15  
!  
voice-port 2/0/0  
!  
voice-port 2/0/1  
!  
voice-port 2/1/0
```



```
!  
voice-port 2/1/1  
!  
voice-port 3/0:23  
!  
dial-peer cor custom  
!  
!  
!  
dial-peer voice 1 pots  
  application mgcp  
!  
dial-peer voice 3 pots  
  application mgcpapp  
  port 2/0/1  
!  
dial-peer voice 2 pots  
  application mgcpapp  
  port 2/0/0  
!  
dial-peer voice 999200 pots  
  application mgcpapp  
  port 2/0/0  
!  
dial-peer voice 9991015 pots  
  application mgcpapp  
  port 1/0:15  
!  
  dial-peer voice 9993023 pots  
  application mgcpapp  
  port 3/0:23  
!  
!  
line con 0  
line aux 0  
line vty 0 4  
  login  
!  
!  
end  
  
MGCP_3640#
```