

Siemens Hicom 330 E Rel 3.1 PBX with CallManager using 6608-E1 PRI EURO Gateway

This application note illustrates for connectivity of the Siemens Hicom 330 E Rel 3.1 PBX with Cisco CallManager using Cisco 6608-E1 PRI Euro Gateway.

Integration Description

Connectivity is achieved by using the industry standard PRI NI-2 protocol. The Siemens Hicom 300 E CS can be configured as either NETWORK or USER side.

Cisco Systems Hardware and Software Requirements

- Hardware (Gateway): 6608 T1 Port
- Software: CallManager Release 3.1

PBX Hardware and Software Requirements

- Hardware: TMDN or TMDN 64
- Software: Version 6.5

Features Supported

Key Features Supported

Calling/Called Number

Key Features Not Supported

Calling/Called Name

Limitations

Calling Name and Number feature

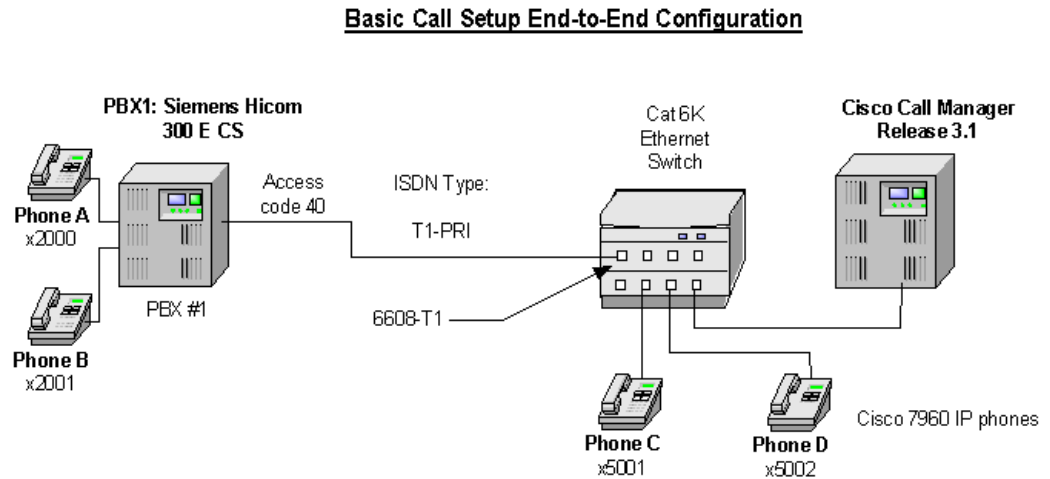
- Calling Name delivery and presentation features are not supported by the Siemens Hicom 330 E CS PBX.

- When calling from Cisco 7960 IP phone to Siemens digital phone, Calling/Called Number is displayed on both phones after the call is answered.
- When calling from Siemens digital phone to Cisco 7960 IP phone, IP phone displays Connected Number after the call is answered. Siemens phone however does NOT get updated when the call is answered. It displays the dialed numbers instead. (i.e. Access Code + extension number). It was verified using ISDN protocol analyzer that the CallManager was not sending "Connected Number" information in the connect message back to PBX.
- When a call is answered, the display on the Siemens phone is only active (Calling Number displayed) for approximately 4 seconds. Thereafter, the screen goes blank. This could be caused by a timer feature that is expiring for the display.



Network Topology

Figure 1 Basic Setup



Configuration

Configuring the Siemens Hicom 300 E CS PBX

Use the following steps to configure the Siemens Hicom 300 E CS PBX:

- Step 1. Add the new access code to DPLN
- Step 2. Add the new trunk board using BCSU
- Step 3. Configure COT
- Step 4. Configure COP
- Step 5. Add the new trunk group access code using TGACC
- Step 6. Add the channels using TCSU
- Step 7. Configure LROUT
- Step 8. Configure LODR



Siemens Hicom 330 E CS PBX Configuration Menus and Commands

Step 1. Add the new access code to DPLN.

```
<dis-dpln
```

```
TYPE = dgts
```

```
DGTS = ;
```

```
DIS-DPLN:DGTS,;
```

```
H500: AMO DPLN STARTED
```

DIGIT INTERPRETATION		VALID FOR DIAL PLAN 0		
DIRECTORY NUMBER	CALL PROGRESS STATE	DIGIT ANALYSIS RESULT	RSVD	ROUTE
	1 11111 1111222	(SKIP DIGIT)		
0	....*	GENANS		
1	*. ** *.*** **..*	CO		
2000 - 2002	.****.*****.***.*	STN		
2003 - 2024	.****.*****.***.*	STN	R	
2025 - 2026	.****.*****.***.*	STN		
2027 - 2099	.****.*****.***.*	STN	R	
37 - 41	*. ** *.*** **..*	CO		
43 - 48	.****.*****.***.*	TIE		
49 - 50	*. ** *.*** **..*	CO		
70000 - 70999	.****.*****.***.*	STN	R	
71000	.****.*****.***.*	STN		1
71001 - 79998	.****.*****.***.*	STN	R	
DIGIT INTERPRETATION		VALID FOR DIAL PLAN 0		
DIRECTORY NUMBER	CALL PROGRESS STATE	DIGIT ANALYSIS RESULT	RSVD	ROUTE
	1 11111 1111222	(SKIP DIGIT)		
79999	.****.*****.***.*	STN		
9	*. ** *.*** **..*	CO		
*0	*...*	ACDWORK		
*2	*...*	ACCTCODE		
*3	*...*	PUDIR		
*4	*...*	CONFRNC		
*52	*...*	MWCAN		
*530	*...*	PMCANCEL		
*532	*...*	PMCALLBK		
*563	*...*	BADLINE		
*564	*...*	ACDLOGON		
*565	*...*	ACDLOGOF		
DIGIT INTERPRETATION		VALID FOR DIAL PLAN 0		



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

DIGIT INTERPRETATION VALID FOR DIAL PLAN 0

DIRECTORY NUMBER	CALL PROGRESS STATE	DIGIT ANALYSIS	RSVD	ROUTE
	1 11111 1111222	RESULT		
	12345 67890 12345 6789012	(SKIP DIGIT)		
**41 - **48	.....*	CONFRMV		
**50	*...*	CAFGRAVL		
**51	*...*	CAFGRUNA		
**6	....*	INTERCOM		
**8	....*	MWANS		
***4	.....*	CONFRMVL		
***5	....*	MONSLNT		
**#65	*...*	CAFGRUFF		
#01	....*	RCHNL		
#02	....*	RTERM		
#03	....*	LTERM		
#04	.....*	PRITEST		

DIGIT INTERPRETATION VALID FOR DIAL PLAN 0

DIRECTORY NUMBER	CALL PROGRESS STATE	DIGIT ANALYSIS	RSVD	ROUTE
	1 11111 1111222	RESULT		
	12345 67890 12345 6789012	(SKIP DIGIT)		
*#274	*...*	WS		
*#50	*...*	CAFAVLB		
*#51	*...*	CAFUNAV		
*#55	*...*	CAFFWD		
*#56	*...*	CAFFWDC		
#57	....*	PIDON		
#58	....*	PIDOFF		
#590	....*	DCOSX		
#591	....*	ACOSX		
*#63	*****	CLEAR		
*#65	*...*	CAFLOGOF		
#735	....*	RELOCATE		

DIGIT INTERPRETATION VALID FOR DIAL PLAN 0



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

#738	....*	SET		
#97	..*..*	COXFER		
#0	*...*	ACDUNAV		
#1	*...*	ACBK		
#2	*...*	PRION		
#3	.****	SPDI		
#4	***.*	SNR		
#5	....*	ADND		
#61	.****	SPDC1		
#62	.****	SPDC2		
#80	*...*	BROADCST		
#81	*...*	SPKRCALL		

DIGIT INTERPRETATION VALID FOR DIAL PLAN 0

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

#8378	.....*	HWTEST		
#91	....*	CFWVABTH		
#92	....*	CFWVAEXT		
#93	....*	CFWVAINT		
#94	....*	CFWVB		
#95	....*	CFWVBNA		
#96	....*	CFWVNA		
#*056	....*	DATA56		
#*1	*****	MWACT		
#*2	*...*	BUZZ		
#*329	.****	FAX	R	
#*4	*...*	VCECALL		

DIGIT INTERPRETATION VALID FOR DIAL PLAN 0

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

#*75	....*	DIGIDAT		
#*76	....*	SWITCH		
#*77	....*	DTE		
#*78	....*	CODE		
#*79	....*	SPEED		
#*8	*****	MWCANORI		
#*90	....*	HUNTPROG		
#*92	....*	AHTVCE		
#*93	....*	DHTVCE		
#*94	....*	AHTDTE		
#*95	....*	DHTDTE		
#*96	....*	AHTFAX		

DIGIT INTERPRETATION VALID FOR DIAL PLAN 0



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

AMO-DPLN -135 DIALING PLANS, FEATURE ACCESS CODES

DISPLAY COMPLETED;



Step 2. Add the new trunk board using BCSU.

```
<dis-bcsu

TYPE = tmd;

DIS-BCSU:TMD;
H500: AMO BCSU STARTED

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

AMO-BCSU -135          BOARD CONFIGURATION, SWITCHING UNIT
DISPLAY COMPLETED;
```

Step 3. Configure COT.

```
<dis-cot

COTNO = 0;

DIS-COT:0;
H500: AMO COT STARTED

|D|A|D|D|M|S|V|E|E|A|R| |
|I|N|S|S|I|D|A|L|S|N|F|
|T|S|A|A|S|R|T|S|P|P|I|L|
| |R| |S| | | |A|A|D|D|A|
| | | | | | | |T|N|N|N|S|
| | | | | | | |I|I|I|H|
COT | | | | | | | |S|S| |
-----+-----+-----+-----+-----+-----+-----+
0 | | | | | | | | | | | | |
-----+-----+-----+-----+-----+-----+

AMO-COT -135          CLASS OF TRUNK FOR CALL PROCESSING
DISPLAY COMPLETED;
```



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

```

<dis-cop

COPNO = 0;

DIS-COP:0;
H500: AMO COP STARTED
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|   | S   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|   | T   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|   | A S | V S P I D | DD | S |   |   |   |   |   |   |   |   |
|   | D Z | L P D D T | TT | U | P |   |   |   |   |   |   |   |   |
|   | I A A S S A N N O | MM | P | D |   |   |   |   |   |   |   |   |
| COP | A N C A A N I I N | FF | V | P |   |   |   |   |   |   |   |   |
| IDX | L S K T T I S S E | L | 12 | 1234 |   |   |   |   |   |   |
+---+-----+-----+-----+-----+
| 0 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
+---+-----+-----+-----+
AMO-COP -135          CLASS OF PARAMETER
DISPLAY COMPLETED;

```

Step 5. Add the new trunk group access code using TGACC.

```

<dis-tgacc

TGRP = 40;

DIS-TGACC:40;
H500: AMO TGACC STARTED
+-----+
| TGRP NUMBER      : 40   TGRP NAME  : T1PRI           /N   MAXIMUM NO: 23 |
| SUBGROUP NUMBER: 11   DEVICE TYPE: PRI B           DIR TYPE  : BOTH |
| ACD THRESHOLD   : *   TRACENO    : 0               USAGE TYPE: TERR |
| ALLOCATED TO AT LEAST ONE ROUTE                                GDTR RULE : 0 |
| SELECTION       : LOW   CFBLOCK   : DISABLED        |
| THE FOLLOWING PORTS (LTG-LTU-SLOT-CIRCUIT) ARE ALLOCATED: |
+-----+
| 1- 2-103- 1| 1- 2-103- 2| 1- 2-103- 3| 1- 2-103- 4| 1- 2-103- 5| 1- 2-103- 6|
+-----+
| 1- 2-103- 7| 1- 2-103- 8| 1- 2-103- 9| 1- 2-103-10| 1- 2-103-11| 1- 2-103-12|
+-----+
| 1- 2-103-13| 1- 2-103-14| 1- 2-103-15| 1- 2-103-16| 1- 2-103-17| 1- 2-103-18|
+-----+
| 1- 2-103-19| 1- 2-103-20| 1- 2-103-21| 1- 2-103-22| 1- 2-103-23| - - - |
+-----+
AMO-TGACC-135          TRUNK GROUP ACCESS CODE
DISPLAY COMPLETED;

```




Step 6. Add the channels using TCSU.

TCSU - B Channel

<dis-tcsu

PEN1 = 1-2-103-1;

DIS-TCSU:1-2-103-1;

H500: AMO TCSU STARTED

```
+-----+
| PEN: 1- 2-103- 1  INS: Y   BOARD: TMDN64P   DEV: PRIB   TGRP: 40   |
+-----+
| TRKID  : 0040           TCCID   :           |
| CCT    :                /0040             |
| ACDATA : 0             DITIDX  : 0           LOCANA   :           |
| ATNTYP : ISDN          DPLN    : 0           REMANA   :           |
| COPNO  : 0             ITR     : 0           SIDANI   : N           |
| COSNO  : 75           LRCOSD  : 5           SRTIDX  : 3           |
| COTNO  : 0             LRCOSV  : 5           TRTBL   : DIDCR        |
| DEDSVC : NONE         FACILITY : *           |
+-----+
```

AMO-TCSU -135 TRUNK CONFIGURATION, SWITCHING UNIT
DISPLAY COMPLETED;

TCSU - D Channel

<dis-tcsu

PEN1 = 1-2-103-24;

DIS-TCSU:1-2-103-24;

H500: AMO TCSU STARTED

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

AMO-TCSU -135 TRUNK CONFIGURATION, SWITCHING UNIT
DISPLAY COMPLETED;



Step 7. Configure LROUT.

<dis-lROUT

ROUTE = 40;

DIS-LROUT:40;

H500: AMO LROUT STARTED

LCR ROUTE DEFINITION TABLE

```

-----
|ROUTENUM = 40          SCHED A = X  AORT   =          INFORMATION
|ROUTEELE = 1          B =        AUTH   = 1        TRANS CAP = S3V
|BEARER   = ONE       C =        ONHKQ  = Y        TRKSIG = PRI
|BANDWTH  = 1          D =        OFFHKQ = Y        SCCID  =
|TRUNKGRP = 40         E =        ODRNUM = 1        SVCVCE = NON
|MASTGRP  = 8          F =        APLTYP = VD       SVCN-V = NON
|ROUTSERV = N          G =
|                                     H =
-----

```

END OF LCR ROUTE DEFINITION TABLE DISPLAY

AMO-LROUT-135 ROUTE DEFINITION DETERMINATION PACKAGE

DISPLAY COMPLETED;

Step 8. Configure LODR.

<dis-lodr

RANGE =

DIS-LODR;

H500: AMO LODR STARTED

<< DISPLAY LCR OUTDIAL RULE >>

```

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

```

----- END OF DISPLAY

-----AMO-LODR -135 AMO LCR ODR FOR SWITCHING UNIT

DISPLAY COMPLETED;

<



Configuring the Cisco CallManager

Figure 1
Configuring the 6608-E1 Gateway

The screenshot shows the Cisco CallManager Administration web interface. At the top, there is a navigation menu with links for System, Route Plan, Service, Feature, Device, User, Application, and Help. The main header displays the Cisco CallManager Administration logo and the Cisco Systems logo. The page title is "Gateway Configuration" with a link to "Back to Find/List Gateways".

The configuration details for the gateway are as follows:

- Product : Cisco Catalyst 6000 T1 VoIP Gateway
- Gateway : SD/DS1-0@SDA0001C9D93A99
- Device Protocol: Digital Access PRI
- Registration: Registered with Cisco CallManager KLINGON
- IP Address: **10.1.1.108**

The status is "Ready". Below this, there are four buttons: Update, Delete, Reset Gateway, and Cancel Changes.

Configuration fields include:

- MAC Address*: 0001C9D93A99
- Description: SDA0001C9D93A99
- Device Pool*: Default
- Media Resource Group List: < None >

The bottom of the page shows a "Local intranet" icon.



Network Hold Audio Source	< None >
User Hold Audio Source	< None >
Calling Search Space	< None >
Location	< None >
Load Information	
Channel Selection Order*	Top Down
PCM Type*	µ-law
Protocol Side*	User
Caller ID DN	
Calling Party Selection*	Originator
Channel IE Type*	Use Number when 1B
Interface Identifier Present**	<input type="checkbox"/>
Interface Identifier Value**	0
Display IE Delivery	<input type="checkbox"/>
Redirecting Number IE Delivery	<input checked="" type="checkbox"/>
Delay for first restart (1/8 sec ticks)	32

Restart succeeded. Local intranet

Delay between restarts (1/8 sec ticks)	4
Num Digits*	23
Sig Digits	<input checked="" type="checkbox"/>
Prefix DN	
Presentation Bit*	Allowed
Called party IE number type unknown*	Cisco CallManager
Calling party IE number type unknown*	Cisco CallManager
Called Numbering Plan*	Cisco CallManager
Calling Numbering Plan*	Cisco CallManager
PRI Protocol Type*	PRI NI2
Inhibit restarts at PRI initialization	<input checked="" type="checkbox"/>
Enable status poll	<input type="checkbox"/>
Number of digits to strip*	0
Country Code*	North America
Setup non-ISDN Progress Indicator IE Enable****	<input type="checkbox"/>

Local intranet



Product Specific Configuration

Clock Reference*	Network
TX-Level CSU*	0dB
FDL Channel*	ATT 54016
Framing*	ESF
Audio Signal Adjustment into IP Network*	NoDbPadding
Audio Signal Adjustment from IP Network*	NoDbPadding
Yellow Alarm*	Bit2
Zero Suppression*	B02S

* indicates required item
** applicable to DMS-100 protocol only
*** may be required to force ringback from some PBXs

[Back to Find/List Gateways](#)

Route Pattern Configuration

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions

Route Pattern Configuration

[Add a New Route Pattern](#)
[Back to Find/List Route Patterns](#)

Route Pattern: 6.XXXX
Status: Ready
Note: Any update to this route pattern automatically resets the associated gateway/route list

Pattern Definition

Route Pattern*	6XXXX
Partition	< None >
Numbering Plan*	North American Numbering Plan
Route Filter	< None >
Gateway/Route List*	S0/DS1-0@SDA0001C9D93A99 (Edit)
Route Option	<input checked="" type="radio"/> Route this pattern <input type="radio"/> Block this pattern

Local intranet



Route Pattern*	6XXXX
Partition	< None >
Numbering Plan*	North American Numbering Pl
Route Filter	< None >
Gateway/Route List*	S0/DG1-0@SDA0001C9D93A99 (Edit)
Route Option	<input checked="" type="radio"/> Route this pattern <input type="radio"/> Block this pattern
<input checked="" type="checkbox"/> Provide Outside Dial Tone	<input type="checkbox"/> Urgent Priority
Calling Party Transformations	
<input type="checkbox"/> Use Calling Party's External Phone Number Mask	
Calling Party Transform Mask	
Prefix Digits (Outgoing Calls)	
Called Party Transformations	
Discard Digits	PreDot
Called Party Transform Mask	
Prefix Digits (Outgoing Calls)	

* indicates required item.

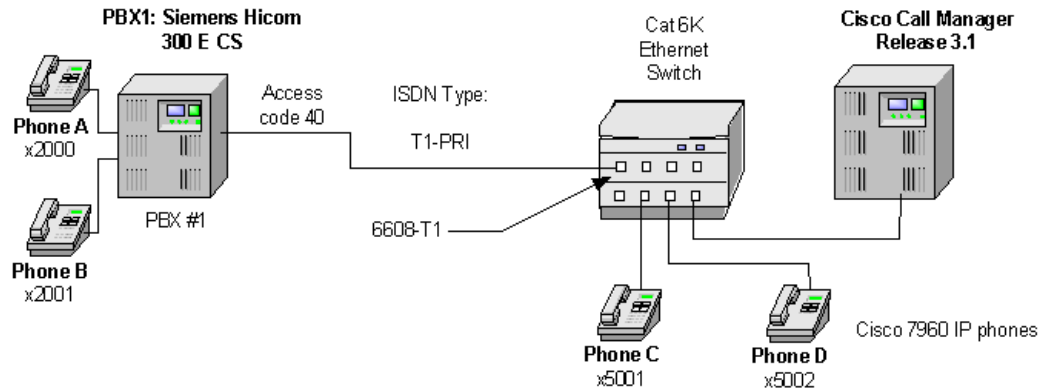
Test Results

As shown in the diagram below, a Siemens Hicom 300 E CS PBX was connected via an ISDN T1 PRI link to a Cisco 6608-T1 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 6608-T1 and the PBX.



Test Configuration

Basic Call Setup End-to-End Configuration



Layer 1 (Physical Layer)

The Siemens configuration screen for the DS1 trunk interface is reached with the command:
<cha-bssu

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/6608-T1 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 6608-T1 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 6608-T1 Gateway with ISDN protocol type setting of PRI-NI2 supports both protocol sides by selecting “Network/User” in the protocol side field when configuring the Gateway via CallManager.

The “Network/user” choice for the Siemens Hicom 300 E PBX is made by deactivating the B channels/D-channel (<dea-dssu) and the DS1 board (<dea-bssu) consecutively. A change command is then issued to the Board Configuration Switching Unit (BCSU) to get to the “network/user” prompt (<cha-bcsu). The DS1 board by (<act-bssu), the D-channel, and B-channels are then reactivated (<act-dssu), after the settings are changed.



Table 1 PBX 1 - ETSI (Network) Cisco 6608-E1 Gateway - PRI EURO (User)

Siemens Hicom 330 E CS Switch-type/ Protocol side setting	Cisco 6608-E1 ISDN protocol-type/Protocol side setting
NI2 / Master	PRI NI2 / User

Table 2 Basic Calls: (Enbloc Sending)

Calls Made	Call Comp?	" Calling Number" Passed to Final Destination?	" Calling Name" Passed to Final Destination?	" Called Number" Passed to Orig. Side?	" Called Name" Passed to Orig. Side?	Notes
Phone A to Phone C	Yes	Yes	No	No ¹	No	²
Phone C to Phone A	Yes	Yes	No	Yes	No	³

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

2. The Siemens PRI interface with ETSI setting does not support "Calling Name" presentation Feature.

3. The display on the Siemens phone is only active (Calling Number is displayed) for approximately 4 seconds, thereafter the displays goes blank. This could be caused by a display timer feature that expires.

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 NI2, emulates User
- Cisco 6608-T1 Gateway configured as PRI NI2, emulates Network



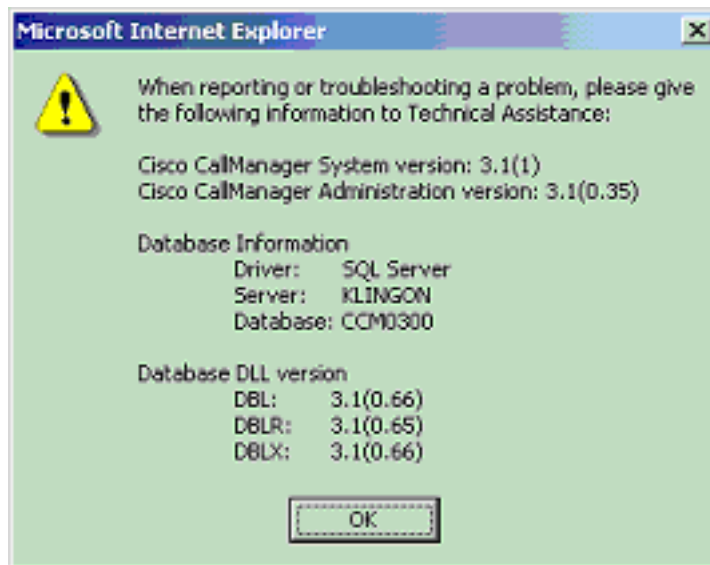
Table 6 Switch and Gateway Settings

Siemens Hicom 330 E CS	
Switch-type/ Protocol side setting	Cisco 6608-T1 ISDN protocol-type/ Protocol side setting
NI2/User	PRI NI2 / Network

The test results are the same as in previous section . Refer to Tables 2 through 5 for details.

Appendix A

Call Manager Software Release:





Siemens Hicom 330 E CS Software release

```
-----  
TERMINAL 1                      L O G O N                      01-09-18    11:40:46  
-----
```

<dis-ansu

DIS-ANSU;

H500: AMO ANSU STARTED

APS TYPE	NAME	SP REFERENCE NO.	
SWU RES-CODE	S0-ET0SC	P30252B6500S00101	
SWU AMO-CODE	B0-ET0BC	P30252B6500B00101	SWU RES-TEXT | S0-TTDS |

P30252B650DS00101

SYSTEM NUMBER	DB SUBSYSTEM NAME
00000000000095393	DB_SUSY_ZDBCCDSF
00000000000095393	DB_SUSY_ZDBCCDS0
00000000000095393	DB_SUSY_ZDBCCDS1
00000000000095393	DB_SUSY_ZDBCCDS2
00000000000095393	DB_SUSY_ZDBCCDSB
00000000000095393	DB_SUSY_ZDBCCDSC

AMO-ANSU -135 ENTERING THE SYSTEM NUMBERS INTO THE SWU DATABASE

DISPLAY COMPLETED;

<



Catalyst 6000 Switch Configuration

```
Console> (enable) sh version
WS-C6006 Software, Version NmpSW: 5.5(6a)
Copyright (c) 1995-2001 by Cisco Systems
NMP S/W compiled on Feb 23 2001, 10:23:18
```

```
System Bootstrap Version: 5.3(1)
```

```
Hardware Version: 2.0 Model: WS-C6006 Serial #: TBA04511172
```

```
Mod Port Model Serial # Versions
-----
1 2 WS-X6K-SUP1A-2GE SAD05010NBK Hw : 7.0
Fw : 5.3(1)
Fw1: 5.4(2)
Sw : 5.5(6a)
Sw1: 5.5(6a)
3 48 WS-F6K-PFC SAD05020221 Hw : 1.1
WS-X6348-RJ-45 SAD04420N7B Hw : 1.4
Fw : 5.4(2)
Sw : 5.5(6a)
4 24 WS-F6K-VPWR Hw : 1.0
WS-X6624-FXS SAD050203M8 Hw : 3.0
Fw : 5.4(2)
Sw : 5.5(6a)
HP : A00203010010; DSP : A003E031 (3.3.
32)
5 8 WS-X6608-T1 SAD04400EM0 Hw : 1.1
Fw : 5.4(2)
Sw : 5.5(6a)
HP1: D00403010017; DSP1: D005E031 (3.3.
32)
HP2: D00403010017; DSP2: D005E031 (3.3.
32)
HP3: D00403010017; DSP3: D005E031 (3.3.
32)
HP4: D00403010017; DSP4: D005E031 (3.3.
32)
HP5: D00403010017; DSP5: D005E031 (3.3.
32)
HP6: D00403010017; DSP6: D005E031 (3.3.
32)
HP7: D00403010017; DSP7: D005E031 (3.3.
32)
HP8: D00403010017; DSP8: D005E031 (3.3.
32)
6 8 WS-X6608-E1 SAD04380DW1 Hw : 1.1
Fw : 5.4(2)
Sw : 5.5(6a)
HP1: D00403010017; DSP1: D005E031 (3.3.
32)
HP2: D00403010017; DSP2: D005E031 (3.3.
32)
HP3: D00403010017; DSP3: D005E031 (3.3.
```



```

32) HP4: D00403010017; DSP4: D005E031 (3.3.
32) HP5: D00403010017; DSP5: D005E031 (3.3.
32) HP6: D00403010017; DSP6: D005E031 (3.3.
32) HP7: D00403010017; DSP7: D005E031 (3.3.
32) HP8: D00403010017; DSP8: D005E031 (3.3.

```

Module	DRAM			FLASH			NVRAM		
	Total	Used	Free	Total	Used	Free	Total	Used	Free
1	65408K	37863K	27545K	16384K	11546K	4838K	512K	198K	314K

```

Uptime is 83 days, 2 hours, 34 minutes
Console> (enable)

```

```

Console> (enable) sh module

```

Mod	Slot	Ports	Module-Type	Model	Sub	Status
1	1	2	1000BaseX Supervisor	WS-X6K-SUP1A-2GE	yes	ok
3	3	48	10/100BaseTX Ethernet	WS-X6348-RJ-45	yes	ok
4	4	24	FXS	WS-X6624-FXS	no	ok
5	5	8	T1	WS-X6608-T1	no	ok
6	6	8	E1	WS-X6608-E1	no	ok

Mod	Module-Name	Serial-Num
1		SAD05010NBK
3		SAD04420N7B
4		SAD050203M8
5		SAD04400EM0
6		SAD04380DW1

Mod	MAC-Address(es)	Hw	Fw	Sw
1	00-04-c0-f8-42-02 to 00-04-c0-f8-42-03 00-04-c0-f8-42-00 to 00-04-c0-f8-42-01 00-04-9b-f0-78-00 to 00-04-9b-f0-7b-ff	7.0	5.3(1)	5.5(6a)
3	00-02-fc-20-5e-50 to 00-02-fc-20-5e-7f	1.4	5.4(2)	5.5(6a)
4	00-03-32-ba-2e-35	3.0	5.4(2)	5.5(6a)
5	00-01-c9-d9-3a-98 to 00-01-c9-d9-3a-9f	1.1	5.4(2)	5.5(6a)
6	00-01-c9-d8-63-3e to 00-01-c9-d8-63-45	1.1	5.4(2)	5.5(6a)

Mod	Sub-Type	Sub-Model	Sub-Serial	Sub-Hw
1	L3 Switching Engine	WS-F6K-PFC	SAD05020221	1.1
3	Inline Power Module	WS-F6K-VPWR		1.0

```

Console> (enable)

```

```

Console> (enable) sh port 5

```



Port	Name	Status	Vlan	Duplex	Speed	Type
5/1		notconnect	1	full	1.544	T1
5/2		connected	1	full	1.544	T1
5/3		notconnect	1	full	1.544	T1
5/4		notconnect	1	full	1.544	T1
5/5		notconnect	1	full	1.544	T1
5/6		notconnect	1	full	1.544	T1
5/7		notconnect	1	full	1.544	T1
5/8		notconnect	1	full	1.544	T1

Port	DHCP	MAC-Address	IP-Address	Subnet-Mask
5/1	enable	00-01-c9-d9-3a-98	10.1.1.107	255.255.255.0
5/2	enable	00-01-c9-d9-3a-99	10.1.1.108	255.255.255.0
5/3	enable	00-01-c9-d9-3a-9a	10.1.1.109	255.255.255.0
5/4	enable	00-01-c9-d9-3a-9b	10.1.1.110	255.255.255.0
5/5	enable	00-01-c9-d9-3a-9c	10.1.1.111	255.255.255.0
5/6	enable	00-01-c9-d9-3a-9d	10.1.1.112	255.255.255.0
5/7	enable	00-01-c9-d9-3a-9e	10.1.1.113	255.255.255.0
5/8	enable	00-01-c9-d9-3a-9f	10.1.1.114	255.255.255.0

Port	Call-Manager(s)	DHCP-Server	TFTP-Server	Gateway
5/1	10.1.1.2	10.1.1.2	10.1.1.2	10.1.1.7
5/2	10.1.1.2	10.1.1.2	10.1.1.2	10.1.1.7
5/3	10.1.1.2	10.1.1.2	10.1.1.2	10.1.1.7
5/4	10.1.1.2	10.1.1.2	10.1.1.2	10.1.1.7
5/5	10.1.1.2	10.1.1.2	10.1.1.2	10.1.1.7
5/6	10.1.1.2	10.1.1.2	10.1.1.2	10.1.1.7
5/7	10.1.1.2	10.1.1.2	10.1.1.2	10.1.1.7
5/8	10.1.1.2	10.1.1.2	10.1.1.2	10.1.1.7

Port	DNS-Server(s)	Domain
5/1	-	-
5/2	-	-
5/3	-	-
5/4	-	-
5/5	-	-
5/6	-	-
5/7	-	-
5/8	-	-

Port	CallManagerState	DSP-Type
5/1	registered	C549
5/2	registered	C549
5/3	registered	C549
5/4	registered	C549
5/5	registered	C549
5/6	registered	C549
5/7	registered	C549
5/8	registered	C549

Port	NoiseRegen	NonLinearProcessing
------	------------	---------------------



```
5/1  enabled  enabled
5/2  enabled  enabled
5/3  enabled  enabled
5/4  enabled  enabled
5/5  enabled  enabled
5/6  enabled  enabled
5/7  enabled  enabled
5/8  enabled  enabled
Console> (enable)
```























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