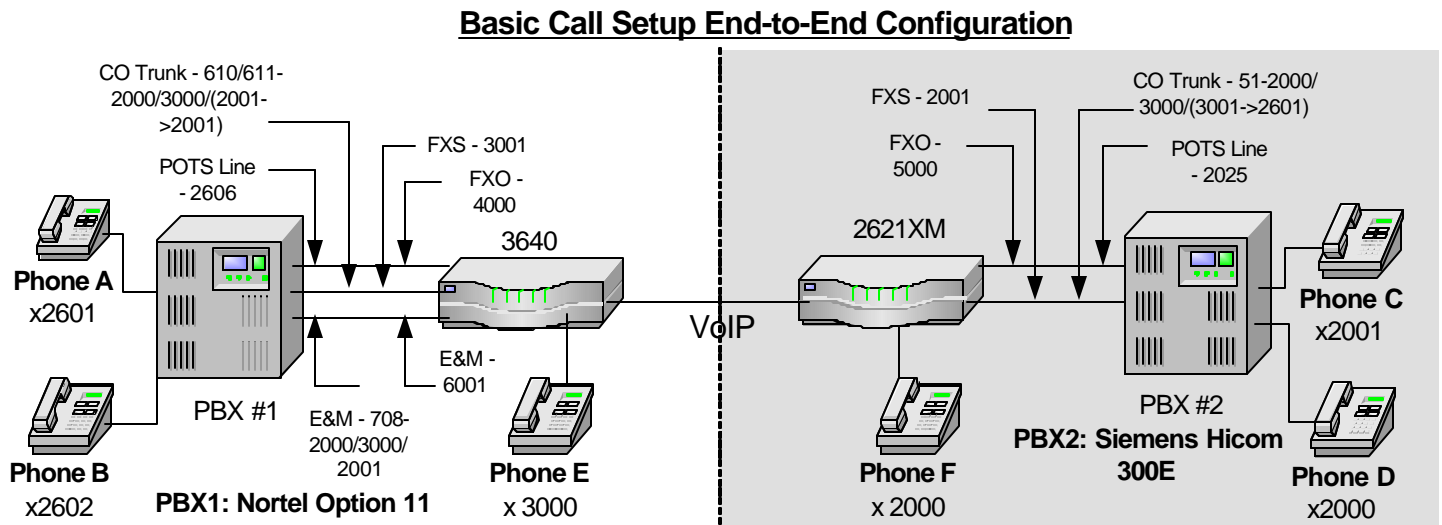


Cisco 2621XM Gateway - PBX Interoperability: Siemens Hicom 300E PBX using Analog FXS/FXO/E&M Interfaces to an MGCP Gateway

Introduction

- This application note describes the interoperability of the Cisco 2621XM router connected to a Siemens Hicom 300E PBX via analog FXS/FXO interface ports.
- The network topology diagram shows the end-to-end interoperability.

Network Topology





Limitations

The FXO voice port goes off-hook on the first ring of an incoming seizure before the targeted phone has answered. The PBX analog extension does not support disconnect supervision, which causes trunk hang issues and long ring-no answer times.

For more information about disconnect supervision, refer to *FXO Answer and Disconnect Supervision* at the following URL:
http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122newft/122t/122t2/ft_ansds.htm

System Components

Hardware Requirements

- Cisco 2621XM gateway with analog VIC 2FXO and VIC 2FXS interface cards
- Siemens Hicom 300E PBX

Software Requirements

- Cisco IOS Software Release c2600-is-mz.122-10.7.T6
- Siemens PBX Software Release 6.6

Configuration

Configuring the Siemens Hicom 300E PBX

CO Trunk Configuration

```
DIS-BCSU:TBL,1,2,31;
```

```
H500: AMO BCSU STARTED
```

ADDRESS	NOM.	BOARD	TYPE	V/R	ACTUAL BOARD	LWV	FID	FIRMWARE	BD STATUS	CCN
1. 2. 31		Q2485-X	TMC16P		Q2485-X	1	0	D429-B	READY	16

```
AMO-BCSU -226 BOARD CONFIGURATION, SWITCHING UNIT
```



DIS-TCSU:1-2-31-0,1-2-31-3;

H500: AMO TCSU STARTED

+-----+-----+-----+-----+-----+-----+-----+							
PEN:	1- 2- 31- 0	INS:	Y	BOARD:	TMC16P	DEV: LPSTR	TGRP: 3
+-----+-----+-----+-----+-----+-----+-----+							
TRKID :	0004	TCCID :					
CCT :	LOOP STA/0004						
ACDATA :	0	COTNO :	3	LCRCOSD :	5		
ATNTYP :	CO	DITIDX :	1	LCRCOSV :	5		
COFIDX :	3	DPLN :	0	LOCANA :			
COPNO :	50	ITR :	1	REMANA :			
COSNO :	75	CIDDGTS :	NONE				
CIRCIDX:	0	NWBNO :	*	PTTBLIDX :	*		
* = NOT APPLICABLE FOR THIS BOARD TYPE							
+-----+-----+-----+-----+-----+-----+-----+							

+-----+-----+-----+-----+-----+-----+-----+							
PEN:	1- 2- 31- 1	INS:	Y	BOARD:	TMC16P	DEV: LPSTR	TGRP: 3
+-----+-----+-----+-----+-----+-----+-----+							
TRKID :	0005	TCCID :					
CCT :	LOOP STA/0005						
ACDATA :	0	COTNO :	3	LCRCOSD :	5		
ATNTYP :	CO	DITIDX :	1	LCRCOSV :	5		
COFIDX :	3	DPLN :	0	LOCANA :			
COPNO :	50	ITR :	1	REMANA :			
COSNO :	75	CIDDGTS :	NONE				
CIRCIDX:	0	NWBNO :	*	PTTBLIDX :	*		
* = NOT APPLICABLE FOR THIS BOARD TYPE							
+-----+-----+-----+-----+-----+-----+-----+							

AMO-TCSU -226 TRUNK CONFIGURATION, SWITCHING UNIT

DIS-COP;

H500: AMO COP STARTED

	S	E	A				
	T	E	S	N			
	A	S	V	S	P	I	D
	D	Z	L	P	D	D	T
	I	A	A	S	A	N	N
	O	M	M	P	D		
COP	A	N	C	A	A	N	I
IDX	L	S	K	T	T	I	S
	S	E	L	12	1234		
+-----+-----+-----+-----+-----+-----+-----+							
0							
1	X						
6	X	X		X			X
50	X			X	X	X	
+-----+-----+-----+-----+-----+-----+-----+							

AMO-COP -226 CLASS OF PARAMETER



DIS-COT;

H500: AMO COT STARTED

COT	D	A	D	D	M	S	V	E	E	A	R
	I	N	S	S	I	D	A	L	S	S	N
	T	S	A	A	S	R	T	S	P	P	I
		R	S					A	A	D	D
								T	N	N	N
								I	I	I	H
								S	S		

0											
1		X									
3	X										
6		X									
14	X			X							

AMO-COT -226 CLASS OF TRUNK FOR CALL PROCESSING

DIS-TGACC:3;

H500: AMO TGACC STARTED

TGRP NUMBER	:	3	TGRP NAME	:	LOOP START CO'S /N	MAXIMUM NO:	2
SUBGROUP NUMBER	:	2	DEVICE TYPE	:	LOOP START	DIR TYPE	: BOTH
ACD THRESHOLD	:	*	TRACENO	:	0	USAGE TYPE	: TERR
ALLOCATED TO AT LEAST ONE ROUTE						GDTR RULE	: 0
SELECTION	:	ROUND	CFBLOCK	:	DISABLED		
THE FOLLOWING PORTS (LTG-LTU-SLOT-CIRCUIT) ARE ALLOCATED:							
1-	2-	31-	0	1-	2-	31-	1
-	-	-	-	-	-	-	-

AMO-TGACC-226 TRUNK GROUP ACCESS CODE

DIS-COS: COS,75;

H500: AMO COS STARTED

COS	VOICE	DTE	FAX
75	CFWCO MDR PRISTN SPKRCALL TTT VC	URTA	

AMO-COS -226 CLASSES OF SERVICE, SWITCHING UNIT



Analog Station Configuration

DIS-SCSU:2025,ALL;

H500: AMO SCSU STARTED

STNO	2025	NAME	ANALOG TEST				ACT DEV			
COS1	60	COSX	0	DIAL	DTMF	DLIDX	-	DEVFUNC	ANATE	
COS2	60	SPDC1	-	DPLN	0	TA	N	PEN	1-2-79-1	
LCRCOSV1	12	SPDC2	-	HTLNIDX	-	TADLIDX	-	PUBSCR	2025	
LCRCOSV2	12	SPDI	10	ITR	0	TAINS	-	ACTCDE	000000000000	
LCRCOSD1	-	HANDSFR	-	SPECL	-	ACCLASS	-	NTYPE	-	
LCRCOSD2	-	INS	Y	PUGRP	-	QPRIOR	-	RPTYPE		
DSSALERT	-	DTS	N	STD	-	FAXSERV	N	HDSTYPE		
NWBALNO	-	CDIDX	-	WINKOFF	N	SEIZE	-	DTE DL VER		
CFWDV	N	CFWDD	N	DND	N	CALLWAIT	N	VCE DL VER	0	
VCP	-	MSGWLMF	-	PHONMAIL	N	COMGRP	-	DNIDSP	-	
MAINO	-	CUI	-	KEYM	-	TSI	-	LOCODE	-	
DCFWBUSY	N	API	-	EVMS	N	EVMSIDX	0	OPTITYPE	-	
TATYPE	-			TATYPE2	-			FLASH	N	
PATTERN	-	TFAGROUP	-	ATMADDR	-			SPKALERT	-	
RELTEST	N									
FIXED CFW1	-		FIXED CFW2	-		VAR CFW	-			
STATION-HUNT	N									
UCD-HUNT	N									
PILOT-HUNT	N									
NIGHTVARIANT	N									

AMO-SCSU -226 SUBSCRIBER CONFIGURATION IN THE SWU

Digital Station Configuration

DIS-ITRHO:HOTDEST;

H500: AMO ITRHO STARTED

```

+-----+
| HTLNIDX HOTDEST |
| 1          2001  |
+-----+

```

AMO-ITRHO-226 INT. TRAFFIC RELATIONS GROUPS AND HOTLINE/OFFHOOK INTERCEPT

DIS-ITRHO:HOTDEST;

H500: AMO ITRHO STARTED

```

+-----+
| HTLNIDX HOTDEST |
| 1          2001  |
+-----+

```

AMO-ITRHO-226 INT. TRAFFIC RELATIONS GROUPS AND HOTLINE/OFFHOOK INTERCEPT



DIS-SCSU:2001,ALL;

H500: AMO SCSU STARTED

STNO	2001	NAME	PBXGOD				ACT DEV
COS1	60	COSX	0	DIAL	-	DLIDX	- DEVFUNC OPTI
COS2	60	SPDC1	-	DPLN	0	TA	N PEN 1-2-37-1
LCRCOSV1	5	SPDC2	-	HTLNIDX	-	TADLIDX	- PUBSCR 4085272001
LCRCOSV2	5	SPDI	10	ITR	0	TAINS	- ACTCDE 000000000000
LCRCOSD1	5	HANDSFR	Y	SPECL	-	ACCLASS	- NTYPE UNK
LCRCOSD2	5	INS	Y	PUGRP	-	QPRIOR	- RPTYPE
DSSALERT	N	DTS	Y	STD	1	FAXSERV	N/A HDSTYPE NONE
NWBALNO	-	CDIDX	-	WINKOFF	-	SEIZE	- DTE DL VER
CFWDV	N	CFWDD	N	DND	N	CALLWAIT	N VCE DL VER 0
VCP	OFF	MSGWLMP	-	PHONMAIL	N	COMGRP	0 DNIDSP Y
MAINO	-	CUI	N	KEYM	0	TSI	1 LOCODE -
DCFWBUSY	N	API	N	EVMS	N	EVMSIDX	0 OPTITYPE OEADPLC
TATYPE	-			TATYPE2	-		FLASH -
PATTERN	-	TFAGROUP	-	ATMADDR	-		SPKALERT Y
RELTEST	-						
FIXED CFW1	-		FIXED CFW2	-		VAR CFW	-
STATION-HUNT	N						
UCD-HUNT	N						
PILOT-HUNT	N						
NIGHTVARIANT	N						

AMO-SCSU -226 SUBSCRIBER CONFIGURATION IN THE SWU

Configuring the Cisco 2621XM Router

Loop-Start Configuration

Router# **show running-config**

Building configuration...

Current configuration : 1912 bytes

```

!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname c2621XM_Analog
!
no logging console
enable password cisco
!
ip subnet-zero
!
no ip domain lookup
!
voice call carrier capacity active
!
voice class dualtone-detect-params 1
  cadence-variation 25
!
voice class custom-cptone us-custom
  dualtone busy

```



```
frequency 480 620
cadence 500 500
dualtone disconnect
frequency 435
cadence 600 400
!
fax interface-type fax-mail
mta receive maximum-recipients 0
!
interface FastEthernet0/0
no ip address
shutdown
duplex auto
speed auto
!
interface FastEthernet0/1
ip address 1.1.1.2 255.255.255.0
duplex auto
speed auto
!
ip classless
ip http server
ip pim bidir-enable
!
dialer-list 1 protocol ip permit
!
call rsvp-sync
!
voice-port 1/0/0
!
voice-port 1/0/1
!
voice-port 1/1/0
timeouts call-disconnect 1
timeouts ringing 18
timeouts wait-release 3
supervisory disconnect dualtone mid-call
supervisory custom-cptone us-custom
supervisory dualtone-detect-params 1
!
voice-port 1/1/1
!
no mgcp timer receive-rtcp
!
mgcp profile default
!
dial-peer cor custom
!
dial-peer voice 1 pots
destination-pattern 2000
port 1/0/0
!
dial-peer voice 2 pots
destination-pattern 2001
port 1/0/1
!
dial-peer voice 3 pots
destination-pattern 5000
port 1/1/0
!
dial-peer voice 4 pots
destination-pattern 5001
```



```
port 1/1/1
!
dial-peer voice 5 voip
 destination-pattern 3...
 session target ipv4:1.1.1.1
!
dial-peer voice 6 voip
 destination-pattern 2...
 session target ipv4:1.1.1.1
!
dial-peer voice 7 voip
 destination-pattern 4...
 session target ipv4:1.1.1.1
!
dial-peer voice 8 voip
 destination-pattern 6...
 session target ipv4:1.1.1.1
 dtmf-relay h245-alphanumeric
!
line con 0
 exec-timeout 0 0
line aux 0
 exec-timeout 0 0
line vty 0 4
 exec-timeout 0 0
 password c
 login
line vty 5 15
 login
!
end
```

Ground-Start Configuration

```
Router# show running-config
Building configuration...
```

```
Current configuration : 1912 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname c2621XM_Analog
!
no logging console
enable password cisco
!
ip subnet-zero
!
no ip domain lookup
!
voice call carrier capacity active
!
voice class dualtone-detect-params 1
 cadence-variation 25
!
voice class custom-cptone us-custom
 dualtone busy
 frequency 480 620
```



```
cadence 500 500
dualtone disconnect
frequency 435
cadence 600 400
!
fax interface-type fax-mail
mta receive maximum-recipients 0
!
interface FastEthernet0/0
no ip address
shutdown
duplex auto
speed auto
!
interface FastEthernet0/1
ip address 1.1.1.2 255.255.255.0
duplex auto
speed auto
!
ip classless
ip http server
ip pim bidir-enable
!
dialer-list 1 protocol ip permit
!
call rsvp-sync
!
voice-port 1/0/0
!
voice-port 1/0/1
!
voice-port 1/1/0
timeouts call-disconnect 1
timeouts ringing 18
timeouts wait-release 3
supervisory disconnect dualtone mid-call
supervisory custom-cptone us-custom
supervisory dualtone-detect-params 1
!
voice-port 1/1/1
!
no mgcp timer receive-rtcp
!
mgcp profile default
!
dial-peer cor custom
!
dial-peer voice 1 pots
destination-pattern 2000
port 1/0/0
!
dial-peer voice 2 pots
destination-pattern 2001
port 1/0/1
!
dial-peer voice 3 pots
destination-pattern 5000
port 1/1/0
!
dial-peer voice 4 pots
destination-pattern 5001
port 1/1/1
```



```
!  
dial-peer voice 5 voip  
  destination-pattern 3...  
  session target ipv4:1.1.1.1  
!  
dial-peer voice 6 voip  
  destination-pattern 2...  
  session target ipv4:1.1.1.1  
!  
dial-peer voice 7 voip  
  destination-pattern 4...  
  session target ipv4:1.1.1.1  
!  
dial-peer voice 8 voip  
  destination-pattern 6...  
  session target ipv4:1.1.1.1  
  dtmf-relay h245-alphanumeric  
!  
line con 0  
  exec-timeout 0 0  
line aux 0  
  exec-timeout 0 0  
line vty 0 4  
  exec-timeout 0 0  
  password c  
  login  
line vty 5 15  
  login  
!  
end
```

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