Cisco IOS Voice Gateway – PBX Interoperability: Avaya 8500 Communications Manager 2.1 to T1 QSIG with H.323

Table of Contents

ntroduction	1
Network Topology	2
Limitations	2
Hardware Requirements	3
Software Requirements	3
Features	3
Configuration	4
Avaya 8500 Communications Manager 2.1: Switch 1	4
Avaya 8500 Communications Manager 2.1: Switch 2	16
Cisco 1760 Configuration	28
Cisco 2611XM Configuration	34

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 Avaya 8500 Communications Manager 2.1 PBXs. The PBXs are connected to the Cisco IOS voice gateways by T1 QSIG trunk circuits. The Cisco IOS voice gateways "extend" the T1 QSIG trunk circuits with VoIP, using the H.323 protocol.

Two Avaya 8500 Communications Manager 2.1 PBXs were connected via T1 QSIG trunk to two Cisco IOS voice gateways. The 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 MWI, call hold, call transfer, call conference, and call forward.

Using the Avaya 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, forward, and conference scenarios. These limitations are detailed in the following sections and all were found to be inherent to the Avaya PBXs. Thus, H.323 toll bypass introduced no new restrictions to the available features or performance.



Network Topology

Figure 1. Network Topology



Limitations

On basic calls, the CONNECTED NUMBER, not the CALLED NUMBER, is displayed on the originating extension. The CONNECTED NUMBER is carried in the ISDN CONNECT message, not the ALERTING message, and is sent when the called extension answers. This is inherent to the PBXs and also occurs with the PBXs connected directly via a T1 QSIG trunk.

On Supervised Transfers, the Calling Name/Number displayed on the final destination digital extension was updated to the original calling extention name/number information only after the transfer was complete. This is inherent to the PBXs and also occurs with the PBXs connected directly via a T1 QSIG trunk.

On Supervised Transfers, the Called Name/Number displayed on the originating digital extension was updated to the final destination extension name/number information only after the transfer was complete. This is inherent to the PBXs and also occurs with the PBXs connected directly via a T1 QSIG trunk.

On Local Conference Calls originating from an external call (e.g., originate call from 'C' to 'A', and conference from 'A' to 'B'), the Connected Name/Number are not updated on the original digital extension when the conferencing extension drops out. The original call is still displayed (e.g., 'A' Name/Number displayed on 'C'). This is inherent to the PBXs and also occurs with the PBXs connected directly via a T1 QSIG trunk.

On External Conference Calls originating from a local call (e.g., originate call from 'A' to 'B', and conference from 'B' to 'C'), the Calling Name/Number are not passed to the remaining conferee ('C') when the conferencing extension ('B') drops out. The conferencing extension's information is still displayed (e.g., 'B' Name/Number displayed on 'C'). This is inherent to the PBXs and also occurs with the PBXs connected directly via a T1 QSIG trunk.

On Network/External Conference Calls originating from an external call (e.g., originate from 'C' to 'A', and conference from 'A' to 'D' or originate from 'C' to 'A', and conference from 'C' to 'B'), the Calling Name/Number are not passed to the remaining conferee when the conferencing extension drops out. The conferencing extension's Name/Number are displayed. This is inherent to the PBXs and also occurs with the PBXs connected directly via a T1 QSIG trunk.



On Network/External Conference Calls originating from an external call (e.g., originate from 'C' to 'A', and conference from 'A' to 'D' or originate from 'C' to 'A', and conference from 'C' to 'B'), the Connected Name/Number are not updated on the original calling extension when a confere drops out. In cases where the conferencing extension drops, the conferencing extension's Name/Number are displayed on the originating extension. In cases where the originating extension is the conferencing extension, and another extension drops, there is no Connected Name/Number on the original/conferencing extension. However, the Connected Name/Number of the conferenced extension does appear briefly on the conferencing extension display before the conference is completed. This is inherent to the PBXs and also occurs with the PBXs connected directly via a T1 QSIG trunk.

On Forwarded Calls, the original Calling Number is not passed to the final destination extension. This is inherent to the PBXs and also occurs with the PBXs connected directly via a T1 QSIG trunk.

On Forwarded Calls, the forwarding Called Number is not passed to the final destination extension. This is inherent to the PBXs and also occurs with the PBXs connected directly via a T1 QSIG trunk.

On Forwarded Calls, the final destination Connected Number is not updated at the originating extension. This is inherent to the PBXs and also occurs with the PBXs connected directly via a T1 QSIG trunk.

On Forwarded Calls involving an external call followed by an external forward (e.g., originate from 'C' to 'A' and forward from 'A' to 'D'), the forwarding Called Name is not passed to the final destination extension. However, this feature worked properly in release 12.4 (3.9) T1.

Hardware Requirements

(2) Cisco IOS voice gateways with T1 VWICs (voice/WAN interface cards)

- (2) Avaya 8500s
- (4) Avaya digital station telephones

Software Requirements

Avaya PBXs: Communications Manager Release 2.1

Cisco IOS voice gateways: Cisco IOS Release Version 12.3(13) or later.

Features

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



Configuration

Avaya 8500 Communications Manager 2.1: Switch 1

Figure 2. Uniform Dial Plan (1 of 2)

Procomm Plus Telnet : 6 ile Edit View Options E Bapid Connect-Telnet: 8500S1	350051 Data Toc STARTU	ols Windo <u>S</u> cript File IP	ow Help : 			<u>+</u>	 .	2 00 2				 ?
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Matching			Insert			Node	Matching		Inse	rt		Node
Pattern	Len	Del	Digits	Net	Conv	Num	Pattern	Len D	el Digi	ts Net	Conv	Num
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2	4	0	222	aar	n						n	
4	4	0	224	aar	n						n	
5	4	0	225	aar	n						n	
5050	4	0	226	aar	n						n	
6600	4	0	225	aar	n						n	
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Figure 3. Uniform Dial Plan (2 of 2)

Procomm Plus Telnet : 850051 File Edit View Options Data Tools Window Help						<u>-0×</u>
Bapid Connect-Telnet: Script File:					= 	?
						-
display uniform-dialplan 0	AT. DT.AN T	ARTE		Page	2 of	2
	AT LIVU I			Percent	Full:	0
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Figure 4. AAR Analysis (1 of 2)

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224	7	7	99	aar		n		
225	7	7	4	aar		n		
226	7	7	13	aar		n		
3	7	7	999	aar		n		
4	4	4	39	aar		n		
5	7	7	999	aar		n		
6	7	7	999	aar		n		
[1] $[7]$	7	7	999	aar		n		
8	7	7	999	aar		n		
9	7	7	999	aar		n		
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Alt: Host Chat LogonWi	iz WinL	ink			Cmd Mode	Send Fax E:	kplorer DOS F	Prmpt
ATT 4410 1K-Xmodem direct connect-Telnet			rd 🔘 sd 🔘 cd 🥥 cts	0	1:51PM	Row 2 Col 54		3
Port opened - Telnet							Connected	00:11:15
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Figure 5. AAR Analysis (2 of 2)

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CISPIN an analysis 0	AAR DI	GIT ANALYS	SIS TABI	LE	rage 2 OI	2
					Percent Full:	1
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Figure 6. Designated Route Pattern (21) (1 of 3)

Procomm Plus Telnet : 850051 ile Edit View Options Data Tools Window Help Bapid Connect-Telnet: Script File: 1850051 STARTUP STARTUP	380	×□_ ?
display route-pattern 21 Page Pattern Number: 21 Pattern Name: ISDN TIE	1 of	3
Secure SIP? n		
Grp FRL NPA Pfx Hop Toll No. Inserted	DCS/	IXC
No Mrk Lmt List Del Digits	QSIG	
Dgts	Intw	
1:6 0 3	n	user
2:	n	user
3:	n	user
4 :	n	user
5:	n	user
6:	n	user
BCC VALUE TSC CA-TSC ITC BCIE Service/Feature BAND No. Number 0 1 2 3 4 W Request Dgts Forma Subaddress	ering at	LAR
1: yyyyn y as-needed bothept unk-u	ink	none
2: yyyyn n rest		none
3:yyyyn n rest		none
4: yyyyn n rest		none
5: yyyyn n rest		none
6: yyyyn n rest		none
CANCEL REFRESH HELP GO TO NEXT PAGE PAGE	PR PA	(EV GE
Alt: Host Chat LogonWiz WinLink Cmd Mode Send Fax E	xplorer	DOS Prmpt
ATT 4410 1K-Xmodem direct connect-Telnet 1 rd 🖉 sd 🖉 cd 🕘 cts 🧶 2:04PM Row 2 Col 1		
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Figure 7. Designated Route Pattern (21) (2 of 3)

spia Connect Field. Schipt File. 50051 STARTUP Startup	E 🔄 🔁 📥 💽 😂 🕎	
display route-pattern 21		Page 2 of 3
	Pattern Number: 21	
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	Dgts	Intw
7:		n user
8:		n user
9:		n user
0:		n user
1:		n user
2:		n user
0 1 2 3 4 W Reque	st	Dgts Format Subaddress
7: уууууп п	rest	none
8: уууууп п	rest	none
9: уууууп п	rest	none
U: YYYYn n	rest	none
1: YYYYY n n	rest	none
2: уууууп п	rest	none
	HELP	GO TO NEXT PREV
CANCEL REFRESH		PAGE PAGE PAGE
CANCEL REFRESH Host Chat LogonWiz	WinLink Cr	PAGE PAGE PAGE



Figure 8. Designated Route Pattern (21) (3 of 3)

Procomm Plus Telnet : 850051 Edit View Options Data Tools Window Help Bapid Connect-Telnet: Script File: \$STARTUP Image: Startup \$STARTUP Image: Startup	
display route-pattern 21 Page	e 3 of 3
Pattern Number: 21	
Grp FRL NPA Pfx Hop Toll No. Inserted No Mrk Lmt List Del Digits	DCS/ IXC QSIG
Dgts	Intw
	n user
14:	n user n user
16:	n user
BCC VALUETSC CA-TSCITC BCIE Service/Feature BANDNo. Num0 1 2 3 4 WRequestDgts For Subaddress13: y y y y n nrest14: y y y y n nrest15: y y y y n nrest16: y y y y n nrest	nbering LAR rmat none none none none
CANCEL REFRESH HELP GO TO NEXT PAGE PAGE Host Chat LogonWiz WinLink Crnd Mode Send Fax	F PREV E PAGE
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ort opened - Telnet	Connected 00:28:1
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Figure 9. Route Patterns (1 of 1)

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	13	1	4	0		user	Y	ХJ	r y	Y	n	У	as-needed	both			
	21	1 TSDN	13 TTE	0	5	user	У	ХJ	r y	Y	n	n	none	rest			
		1	6	0		user	v	v v	/ v	v	n	v	as-needed	both			
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Port	t opened - Telne	t														Connected	00:08:06
d s	itart 👌 🕑		9	🍋 com_1	l - HyperT	erminal	1 📴 T	FTP S	erver			🔄 🔮 Pro	comm Plus Telnet	🦉 sta_tru_	6_1_of_1.bmp	« 🝠 🕵	1:48 PM



Figure 10.Signaling Group (6) (1 of 1)

Procomm Plus Telnet : 850051	<u>- 0 ×</u>
Bapid Connect-Telnet: Script File:	
	- A
status signaling-group 6	
STATUS SIGNALING GROUP	
Group ID: 6 Active NCA-TSC Count: 0 Group Type: isdn-pri Active CA-TSC Count: 0 Signaling Type: facility associated signaling	
Group State: in-service	
Primary D-Channel	
Port: 01A1424 Level 3 State: in-service	
Secondary D-Channel	
Port: Level 3 State: no-link	
Command:	
CANCEL HELP	
	-
Alt: Host Lhat LogonWiz WinLink LogonWiz WinLink Lind Mode Send Fax Explorer DOS ATT 4410 1K-Xmodem direct connect-Telnet I d a sd a cd cts a 1;49PM Row 24 Col 13	Prmpt
Port opened - Telnet	00:08:50
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Figure 11. DS1 Board (1 of 2)

Procomm Plus Telnet : 850051				<u>-0×</u>
Bapid Connect-Telnet: Script File: Start UP	- 🕺 🗊 🏧 📥 🚽			
display ds1 1a14			Page 1 of	2
	DS1 CI	RCUIT PACK		
Taration	01314	News	OGICUTIE	
Bit Bata	1 544	Name: Line Coding:	USIG_TIE b8ze	
Line Compensation:	1	Framing Mode:	poza	
Signaling Mode:	isdn-pri			
Connect:	xdq	Interface:	peer-slave	
TN-C7 Long Timers?	n	Peer Protocol:	Q-SIG	
Interworking Message:	PROGress	Side:	b	
Interface Companding:	mulaw	CRC?	n	
Idle Code:	1111111			
	DCP/Anal	og Bearer Capability:	3.1kHz	
		T303 Timer(sec):	4	
Slip Detection?	n	Near-end CSU Type: 0	other	
Echo Cancellation?	n			
CANCEL REFRESH		HELP GO TO	NEXT PREV	
		PAGE	PAGE PAGE	
Alt_ Host Chat Logo	nWiz WinLink	Cmd Mode	Send Fax Explorer DC	IS Prmpt
ATT 4410 1K-Xmodem direct connect-Telnet	rd Ø s	d 🔘 cd 🥝 cts 🥥 👘 1:43PM	Row 2 Col 49	
Port opened - Telnet			Connected	00:02:28
🏄 Start 👌 🕝 🏠 🥭 📀 🛛 🦓 com_1 - H	yperTerminal 🛛 🛃 TFTP Server	🝟 Procomm Plus Telnet	« 🛃 🔀	1:43 PM



Figure 12. DS1 Board (2 of 2)





Figure 13. Trunks Status (1 of 1)





Avaya 8500 Communications Manager 2.1: Switch 2

Figure 14. Uniform Dial Plan (1 of 2)

t Node s Net Conv Num	Insert Digits N		Matching							
s Net Conv Num	Digits N			Node			Insert			Matching
		Len Del	Pattern	Num	Conv	Net	Didits	Del	Ten	Pattern
	and the state of the				n	aar	2.2.2	0	4	26
n					'n	aar	223	0	4	3
n					n	aar	223	0	4	4
ñ					n	aar	222	0	4	45
n					n	aar	223	0	4	5050
'n					n					
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Figure 16. AAR Analysis (1 of 2)

Procomm Plus Telnet : 8500s2 File Edit View Options Data Tools Window He Bapid Connect-Telnet: Script File: \$8500s2 STARTUP	Þ • 🌋 💷 😇 🖻			- <mark>%</mark> = = ; *	
display aar analysis 3	21 AAR DI	GIT ANALYSIS	TABLE	Page 1 of Percent Full:	2
Dialed String	Total Min Max	Route C Pattern T	all Node ype Num	ANI Reqd	
223		21 a 999 a	ar 1 ar 1	n n	
4 5 6	7 7 7 7 7 7	999 a 999 a 999 a	ar ar ar	n n	
7 8 9	7 7 7 7 7 7	999 a 999 a 999 a	ar ar ar	n n n	
				n n n	
				n n n	
CANCEL REFRESH		HELP	GO TO PAGE	NEXT PREV PAGE PAGE	7 G
Alt: Host Chat Logor ATT 4410 1K.Xmodem direct connect-Telnet	iWiz WinLink	rd 🔘 sd 🔘 cd 😐 cts 🎱 🗍	Cmd Mode 3:34PM	Send Fax Explorer	DOS Prmpt
Port opened - Telhet	rTerminal 🛛 📳 TFTP Serv	er 🦉 Proco	nm Plus Telnet 🦉 un	titled - Paint K	3:34 PM



Figure 17. AAR Analysis (2 of 2)

Procomm Plus Telnet : 8500s2		<u>-0×</u>
Rapid Connect-Telnet: Script File:	/	
display aar analysis 21		Page 2 of 2
	AAR DIGIT ANALYSIS TABLE	Percent Full: 1
Dialed String	Total Route Call Node Min Max Pattern Type Num	ANI Reqd n n n n n n n n n n n n n n n n n n n
CANCEL REFRESH	HELP GO P2	TO NEXT PREV AGE PAGE PAGE
Alt_ Host Chat LogonWiz ATT 4410 1K-Xmodem direct connect-Telnet Image: Connect-Telnet	WinLink Crid O sd O cd O cts O 3:36PM	Send Fax Explorer DOS Prmpt Bow 2 Col 54
Port opened - Telnet		Connected 01:25:04
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Figure 18.Designated Route Pattern (21) (1 of 3)

Procomm Plus Telnet : 8500s2 File Edit View Options Data Tools Window Help Bapid Connect-Telnet: Script File: \$8500s2 STARTUP		
display route-pattern 21 Page	1 of 3	É
Pattern Number: 21 Pattern Name: ISDN NODE 1		
Secure SIP? n		
Grp FRL NPA Pfx Hop Toll No. Inserted	DCS/ IXC	
No Mrk Lmt List Del Digits	QSIG	
Dgts	Intw	
	n user	
	n user	
	n user	N.R.
	n user	
	n user	
	n user	
BCC VALUE TSC CA-TSC ITC BCIE Service/Feature BAND No. Numbe O 1 2 3 4 W Request Dgts Forma Subaddress	ering LAR at	North Control of Contr
1: y y y y n y as-needed bothept unk-u	unk none	
2: yyyyn n rest	none	
3: yyyyn n rest	none	
4: yyyyn n rest	none	
5: yyyyn n rest	none	
6: yyyyn n rest	none	
CANCEL REFRESH HELP GO TO NEXT PAGE PAGE	PREV PAGE	
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Figure 19.Designated Route Pattern (21) (2 of 3)

rocomm Plus Telnet : 8500s2 Edit View Options Data Tools Window Help tapid Connect-Telnet: Script File: 8500s2 STARTUP		
display route-pattern 2	1 Pattern Number: 21	Page 2 of 3
Grp FRL NPA Pfx Hop No Mrk Lmt 7:	Toll No. Inserted List Del Digits Dgts	DCS/ IXC QSIG Intw n user
8: 9: 10: 11: 12:		n user n user n user n user n user
BCC VALUE TSC CA- 0 1 2 3 4 W Req	ISC ITC BCIE Service/Feature lest	BAND No. Numbering LAR Dgts Format Subaddress
7: yyyyyn n 8: yyyyyn n 9: yyyyyn n 10: yyyyyn n 11: yyyyyn n 12: yyyyyn n	rest rest rest rest rest rest	none none none none none none
CANCEL REFRESH	HELP	GO TO NEXT PREV PAGE PAGE PAGE
Host Chat LogonWiz T 4410 1K-Xmodem direct connect-Telnet opened - Telnet	WinLink Cmd	Mode Send Fax Explorer DOS Prm M Row 2 Col 1 Connected 01:3



Figure 20.Designated Route Pattern (21) (3 of 3)

pid Connect-Telnet <u>S</u> cript File: 500s2 💽 STARTUP 🕞 🌋 💷 🕎 📤 📩 💽 🛃 🧟 💭 🖏 🖾 👉 🕻		i	
isplay route-pattern 21	Page	3 of	3
Pattern Number: 21			
Grp FRL NPA Pfx Hop Toll No. Inserted No Mrk Lmt List Del Digits		DCS/ I QSIG	xc
Dgts		Intw	
3: 4 -		n u	ser
ें 5 :		n u	ser
6:		n u	ser
BCC VALUE TSC CA-TSC ITC BCIE Service/Feature BAND No 0 1 2 3 4 W Request Dgt). Number: s Format	ing LA	R
BCC VALUE TSC CA-TSC ITC BCIE Service/Feature BAND No 0 1 2 3 4 W Request Dgt Subadd 3: y y y y n n rest 4: y y y y n n rest). Number: S Format Tess	ing LA no no	.R ne ne
BCC VALUE TSC CA-TSC ITC BCIE Service/Feature BAND No 0 1 2 3 4 W Request Dgt Subadd 3: y y y y y n n rest 4: y y y y y n n rest 5: y y y y y n n rest). Number: S Format Iress	ing LA no no no	R ne ne
BCC VALUE TSC CA-TSC ITC BCIE Service/Feature BAND No 0 1 2 3 4 W Request Dgt Subadd 3: y y y y y n n rest 4: y y y y y n n rest 5: y y y y y n n rest 6: y y y y y n n rest	9. Number: S Format Iress	ing LA no no no no	R ne ne ne
BCC VALUE TSC CA-TSC ITC BCIE Service/Feature BAND No 0 1 2 3 4 W Request Dgt Subadd 3: y y y y y n n rest 5: y y y y y n n rest 6: y y y y y n n rest CANCEL REFRESH HELP GO TO PAGE	Number: s Format ress NEXT PAGE	ing LA no no no PREV PAGE	R ne ne ne
BCC VALUE TSC CA-TSC ITC BCIE Service/Feature BAND No 0 1 2 3 4 W Request Dgt 3: y y y y n n rest Subadd 4: y y y y n n rest Subadd 5: y y y y y n n rest Feature BAND No 6: y y y y n n rest Feature BAND No CANCEL REFRESH HELP GO TO Host Chat LogonWiz WinLink Cmd Mode Sendifiered	NEXT PAGE	ing LA no no no PREV PAGE	R ne ne ne



Figure 21. Route Patterns (1 of 1)





Figure 22.Signaling Group (6) (1 of 1)

Procomm Plus Telnet : 8500s2 File Edit View Options Data Tools Window Help	<u>-0×</u>
Bapid Connect-Telnet: Script File: 18500s2 STARTUP	
status signaling-group 6 STATUS SIGNALING GROUP	
Group ID: 6 Active NCA-TSC Count: 0 Group Type: isdn-pri Active CA-TSC Count: 0	
Signaling Type: facility associated signaling	
Group State: in-service	
Primary D-Channel	
Port: 01A1424 Level 3 State: in-service	
Secondary D-Channel	
Port: Level 3 State: no-link	
Command:	
CANCEL	
N Alt <u>H</u> ost Chat LogonWiz WinLink Cmd Mode Send Fax Explorer DC	JS Prmpt
ATT 4410 1K-Xmodem direct connect-Telnet / rd @ sd @ cd @ cts @ 3:28PM Row 24 Col 10	
Port opened - Telnet	01:17:09
🗾 Start 🕐 🕼 🕼 🖉 V 🦉 xyz - Hyper lerminal 🛛 🚰 IF IP Server 🔄 🗳 Procomm Plus Leinet 🍟 Untitled - Paint 🔍 🐇 🔆	5:28 PM



Figure 23. DS1 Board (1 of 2)

Procomm Plus Telnet : 8500s2				_ 🗆 ×
Bapid Connect-Telnet: Script File: 8500s2 STARTUP		a 🛃 🍂 👤 😂 🚍 👉	- X = = = 3	
display dsl 1a14			Page 1 of	2
	DS1 CIRC	UIT PACK		
Location: Bit Rate: Line Compensation: Signaling Mode: Connect: TN-C7 Long Timers? Interworking Message: Interface Companding:	01A14 1.544 1 isdn-pri pbx n PROGress mulaw	Name: C Line Coding: b Framing Mode: e Interface: p Peer Protocol: C Side: a CRC? n	SIG_TIE 8ZS Sf eer-master -SIG	
Idle Code:	DCP/Apelog	Bearer Canability, 3	1bH7	
	DCF/ANALOG	Bearer Capability. S	. 18112	
		T303 Timer(sec): 4		
Slip Detection?	n	Near-end CSU Type: ot	her	
Echo Cancellation?	n			
CANCEL REFRESH		HELP GO TO PAGE	NEXT PREV PAGE PAGE	
Alt_ Host Chat Log	onWiz WinLink	Cmd Mode S	Send Fax Explorer DO	S Prmpt
ATT 4410 1K-Xmodem direct connect-Telnet	rd 🔘 sd 🔘	cd 🧶 cts 🧶 🕴 2:12PM 🛛 Ro	w 2 Col 49	00.01.07
Portopenea - Tellet	IvnerTerminal	Procomo Plus Telnet		2:12 PM
			··· 32 🗙	



Figure 24. DS1 Board (2 of 2)





Figure 25.Trunks Status (1 of 1)





Cisco 1760 Configuration

1760_A# show version Cisco Internetwork Operating System Software IOS (tm) C1700 Software (C1700-IPVOICE-M), Version 12.3(13), RELEASE SOFTWARE (fc2) Technical Support: http://www.cisco.com/techsupport Copyright (c) 1986-2005 by cisco Systems, Inc. Compiled Thu 10-Feb-05 08:03 by ssearch Image text-base: 0x8000816C, data-base: 0x81428708 ROM: System Bootstrap, Version 12.2(4r)XL, RELEASE SOFTWARE (fc1) ROM: C1700 Software (C1700-IPVOICE-M), Version 12.3(13), RELEASE SOFTWARE (fc2) 1760_A uptime is 6 days, 23 hours, 29 minutes System returned to ROM by power-on System image file is "flash:c1700-ipvoice-mz.123-13.bin" cisco 1760 (MPC860P) processor (revision 0x200) with 49152K/16384K bytes of memory. Processor board ID VEN0530003X (355247610), with hardware revision 0000 MPC860P processor: part number 5, mask 2 Bridging software. X.25 software, Version 3.0.0. Primary Rate ISDN software, Version 1.1. 1 FastEthernet/IEEE 802.3 interface(s) 24 Serial network interface(s) 2 Channelized T1/PRI port(s) 2 Voice FXS interface(s) 32K bytes of non-volatile configuration memory. 16384K bytes of processor board System flash (Read/Write) Configuration register is 0x2101



$1760_A\#$ show running-config

Building configuration...

Current configuration : 2133 bytes

!

version 12.3

service timestamps debug datetime msec

service timestamps log uptime

no service password-encryption

!

hostname 1760_A

!

boot-start-marker

boot-end-marker

!

logging buffered 999999 debugging

enable password cisco

!

memory-size iomem 25

tdm clock T1 1/0 both export line

mmi polling-interval 60

no mmi auto-configure

no mmi pvc

mmi snmp-timeout 180

voice-card 0

!

voice-card 1

!

no aaa new-model



```
ip subnet-zero
ip cef
!
!
no ip domain lookup
no ftp-server write-enable
isdn switch-type primary-qsig
!
!
voice call send-alert
voice rtp send-recv
!
voice service voip
h323
!
!
voice class h323 1
!
!
controller T1 1/0
framing esf
linecode b8zs
pri-group timeslots 1-24
!
controller T1 1/1
framing esf
linecode b8zs
!
!
```



```
!
```

interface FastEthernet0/0

ip address 172.20.26.252 255.255.255.0

no ip mroute-cache

speed auto

!

interface Serial1/0:23

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 negotiate-bchan

no cdp enable

!

ip classless

ip route 0.0.0.0 0.0.0.0 FastEthernet0/0

no ip http server

!

tftp-server flash:c1700-sv8y7-mz.bcp050303

!

voice-port 0/0

!

voice-port 0/1

!

voice-port 1/0:23

!

dial-peer cor custom



! ! dial-peer voice 51000 voip incoming called-number . shutdown destination-pattern 4085251... session target ipv4:172.20.26.253 dtmf-relay h245-signal codec g711alaw ip qos dscp cs5 media ! dial-peer voice 1 pots incoming called-number. shutdown destination-pattern 4085252... direct-inward-dial forward-digits all ! dial-peer voice 1023 pots destination-pattern 41.. direct-inward-dial port 1/0:23 forward-digits all ! dial-peer voice 323 voip destination-pattern 21.. session target ipv4:172.20.26.253 ! dial-peer voice 4100 pots



!

!

!

!

destination-pattern 4100

port 0/1 dial-peer voice 5100 pots destination-pattern 2100 port 0/0 dial-peer voice 5050 pots destination-pattern 5050 direct-inward-dial port 1/0:23 forward-digits all gateway line con 0 exec-timeout 0 0 line aux 0 line vty 0 4

password cisco

login

!

end

1760_A#



Cisco 2611XM Configuration

26xm# show version Cisco Internetwork Operating System Software IOS (tm) C2600 Software (C2600-IPVOICE-M), Version 12.3(13), RELEASE SOFTWARE (fc2) Technical Support: http://www.cisco.com/techsupport Copyright (c) 1986-2005 by cisco Systems, Inc. Compiled Thu 10-Feb-05 02:11 by ssearch Image text-base: 0x80008098, data-base: 0x81833D30 ROM: System Bootstrap, Version 12.2(7r) [cmong 7r], RELEASE SOFTWARE (fc1) ROM: C2600 Software (C2600-IPVOICE-M), Version 12.3(13), RELEASE SOFTWARE (fc2) 26xm uptime is 6 days, 4 hours, 0 minutes System returned to ROM by power-on System image file is "flash:c2600-ipvoice-mz.123-13.bin" cisco 2611XM (MPC860P) processor (revision 0x100) with 92160K/6144K bytes of memory. Processor board ID JAD07060ATN (1435121423) M860 processor: part number 5, mask 2 Bridging software. X.25 software, Version 3.0.0. Primary Rate ISDN software, Version 1.1. 2 FastEthernet/IEEE 802.3 interface(s) 24 Serial network interface(s) 2 Channelized T1/PRI port(s) 32K bytes of non-volatile configuration memory. 49152K bytes of processor board System flash (Read/Write) Configuration register is 0x2102



26xm# show running-config

Building configuration...

Current configuration : 2076 bytes

!

version 12.3

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

!

hostname 26xm

!

boot-start-marker

boot-end-marker

!

logging buffered 1000000 debugging

!

no network-clock-participate slot 1

no network-clock-participate wic 0

voice-card 1

!

no aaa new-model

ip subnet-zero

ip cef

!

!

no ip domain lookup

ip host r2 2065 1.1.1.1

no ftp-server write-enable



isdn switch-type primary-qsig ! voice call send-alert voice rtp send-recv ! voice service voip h323 ! ! voice class h323 1 ! ! controller T1 1/0 framing esf linecode b8zs pri-group timeslots 1-24 ! controller T1 1/1 framing sf linecode ami ! ! interface Loopback1 ip address 1.1.1.1 255.255.255.255 ! interface FastEthernet0/0 ip address 172.20.26.253 255.255.255.0 duplex auto speed auto



```
!
interface FastEthernet0/1
no ip address
shutdown
duplex auto
speed auto
!
interface Serial1/0:23
no ip address
no logging event link-status
isdn switch-type primary-qsig
isdn overlap-receiving
isdn incoming-voice voice
isdn negotiate-bchan
isdn bchan-number-order ascending
no cdp enable
!
ip classless
ip route 0.0.0.0 0.0.0.0 FastEthernet0/0
ip http server
!
!
voice-port 1/0:23
!
!
dial-peer cor custom
!
!
dial-peer voice 52001 voip
```



description Send VoIP to 1760 incoming called-number. shutdown destination-pattern 4085252... session target ipv4:172.20.26.252 dtmf-relay h245-signal codec g711alaw ip qos dscp cs5 media ! dial-peer voice 1 pots incoming called-number. shutdown destination-pattern 4085251... direct-inward-dial forward-digits all ! dial-peer voice 1023 pots destination-pattern 21.. direct-inward-dial port 1/0:23 forward-digits all ! dial-peer voice 323 voip destination-pattern 41.. session target ipv4:172.20.26.252 ! dial-peer voice 5100 voip destination-pattern 51.. session target ipv4:172.20.26.252



!
dial-peer voice 5050 voip
destination-pattern 5050
session target ipv4:172.20.26.252
!
!
line con 0
line aux 0
transport input all
line vty 0 4
login
!
!
end

26xm#



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