

Avaya S8500 Communications Manager 2.1 to Cisco IOS Voice Gateway using E1 NET5 with H.323

October 30, 2007 Revision 4

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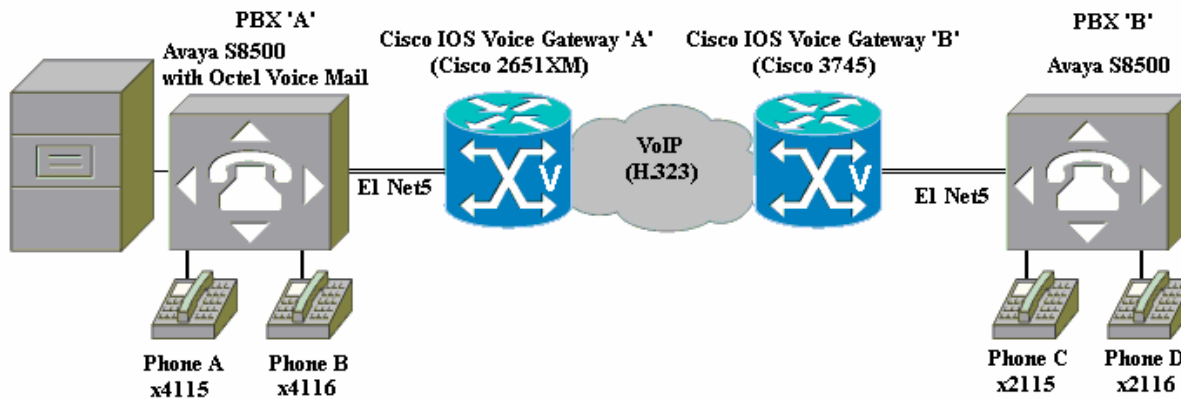
Introduction

- Although specific gateway router models were used to validate its content, this application note also applies to all Cisco 1700/2600/3600/3700/2800/3800 series Cisco IOS voice gateways.
- This application note provides configuration guidelines for a toll-bypass network using Cisco IOS voice gateways to connect Avaya S8500 Communications Manager 2.1 PBXs. The PBXs are connected to the Cisco IOS voice gateways by E1 NET5 trunk circuits. The Cisco IOS voice gateways “extend” the E1 NET5 trunk circuits with VoIP, using the H.323 protocol.
- Two Avaya S8500 Communications Manager 2.1 PBXs were connected via E1 NET5 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 NET5 supplementary services such as 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, and call hold, 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 or Test Setup



System Components

Hardware Requirements

- (2) Cisco IOS voice gateways with E1 VWICs (voice/WAN interface cards)
- (2) Avaya S8500s
- (4) Avaya digital station telephones

Software Requirements

- Avaya PBXs: Communications Manager Release 2.1
- Cisco IOS voice gateways: Cisco IOS Release Version 12.3(7)T or later.



Features

Features Supported

- Basic Call (ENBLOC and Overlap)
- Calling Name and Number ¹
- Connected Name and Number ¹
- 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
- Call Hold

Features Not Supported

- MWI

¹ Caller ID Name information is supported via a Display IE.



Limitations

- CONNECTED NAME and CONNECTED NUMBER are supported in lieu of CALLED (ALERTING) NAME and CALLED NUMBER. This is inherent to the PBXs and also occurs with the PBXs connected directly via an E1 NET5 trunk.
- On Local Supervised Transfers, the original CALLING NAME and CALLING NUMBER are displayed on the final destination only after the transfer is complete. This is inherent to the PBXs and also occurs with the PBXs connected directly via a E1 NET5 trunk.
- On Network/External Supervised Transfers, the original CALLING NAME and CALLING NUMBER are not displayed on the final destination after the transfer is complete. Rather, the name and number of the transferring phone is still displayed. This is inherent to the PBXs and also occurs with the PBXs connected directly via a E1 NET5 trunk.
- On Supervised Transfers originated from an external call (e.g., Phone A calls Phone C, and Phone C transfers to Phone B), the CALLED (CONNECTED) NAME and NUMBER displays are not updated on the originating phone after the transfer is complete. Rather, the name and number of the transferring phone is still displayed. On Supervised Transfers originated from a local call (e.g., Phone A calls Phone B, and Phone B transfers to Phone C), however, the CONNECTED NAME and NUMBER displays are updated properly. This is inherent to the PBXs and also occurs with the PBXs connected directly via a E1 NET5 trunk.
- On Conference Calls accomplished by an external conference (e.g., originate from 'C' to 'A', and conference from 'A' to 'D'), the CALLING NAME and CALLING NUMBER are not passed to the remaining conferee when the conferencing extension drops out. The conferencing extension's Name/Number are displayed, or no name/number are displayed. This is inherent to the PBXs and also occurs with the PBXs connected directly via a E1 NET5 trunk.
- On Conference Calls accomplished by an external call followed by a local conference (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 if the conferencing extension drops out. Rather, the conferencing extension's name/number are 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 E1 NET5 trunk.
- On Conference Calls originating from an external call followed by an external conference (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 and CALLING NUMBER are not passed to the remaining conferee when the conferencing extension drops out. The conferencing extension's information is still displayed, or no name and number are displayed. This is inherent to the PBXs and also occurs with the PBXs connected directly via a E1 NET5 trunk.
- On Conference Calls originating from an external call followed by an external conference (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 and NUMBER are not updated on the original calling extension when a conferee 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. Rather, the trunk number as defined in the originating phone's PBX is displayed. This is inherent to the PBXs and also occurs with the PBXs connected directly via a E1 NET5 trunk.
- On Conference Calls originating from a local call followed by an external conference (e.g., originate call from 'A' to 'B', and conference from 'B' to 'C'), the CALLING NAME and CALLING 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 E1 NET5 trunk.
- On Forwarded Calls involving an external call followed by a local forward (e.g., originate from 'C' to 'B' and forward from 'B' to 'A'), 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 an E1 NET5 trunk.
- On all Forwarded Calls, the forwarding CALLED NUMBER is not passed to the final destination. This is inherent to the PBXs and also occurs with the PBXs connected directly via an E1 NET5 trunk.
- On Forwarded Calls involving an external forward (e.g., originate from 'C' to 'B' and forward from 'B' to 'D'), the forwarding CALLED NAME is not passed to the final destination extension. This is inherent to the PBXs and also occurs with the PBXs connected directly via an E1 NET5 trunk.
- On Forwarded Calls involving a local call followed by an external forward (e.g., originate from 'A' to 'B' and forward from 'B' to 'C'), the final destination CONNECTED NUMBER is not passed to the originating extension. This is inherent to the PBXs and also occurs with the PBXs connected directly via an E1 NET5 trunk.



- MWI is not supported over Net5.

Configuration

Configuring the Avaya S8500 Communications Manager 2.1: Switch 1

Figure 2. Uniform Dial Plan screenshot

display uniform-dialplan 0

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UNIFORM DIAL PLAN TABLE

Percent Full: 0

Matching			Insert		Node	Matching			Insert		Node	
Pattern	Len	Del	Digits	Net	Conv	Pattern	Len	Del	Digits	Net	Conv	Num
1	4	0	222	aar	n						n	
20	4	0	224	aar	n						n	
211	4	0	227	aar	n						n	
215	4	0	224	aar	n						n	
40	4	0	224	aar	n						n	
5	4	0	225	aar	n						n	
5050	4	0	226	aar	n						n	
60	4	0	224	aar	n						n	
6600	4	0	225	aar	n						n	
					n						n	
					n						n	
					n						n	
					n						n	
					n						n	
					n						n	
					n						n	
					n						n	
					n						n	

CANCEL

REFRESH

HELP

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Figure 3. AAR Analysis screenshot

display aar analysis 0

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AAR DIGIT ANALYSIS TABLE

Percent Full: 1

	Dialed String	Total		Route Pattern	Call Type	Node Num	ANI
		Min	Max				Reqd
2		7	7	999	aar		n
222		7	7	21	aar		n
224		7	7	99	aar		n
225		7	7	4	aar		n
226		7	7	13	aar		n
227		7	7	21	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
7		7	7	999	aar		n
8		7	7	999	aar		n
9		7	7	999	aar		n
							n
							n

CANCEL

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Figure 4. Designated Route Pattern (21) screenshot

display route-pattern 21															Page 1 of 3		
Pattern Number: 21															Pattern Name: ISDN TIE		
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.	Numbering	LAR	
0	1	2	3	4	W	Request								Dgts	Format		
												Subaddress					
1:	Y	Y	Y	Y	Y	n	Y	as-needed		both		ept		unk-unk		none	
2:	Y	Y	Y	Y	Y	n	n			rest						none	
3:	Y	Y	Y	Y	Y	n	n			rest						none	
4:	Y	Y	Y	Y	Y	n	n			rest						none	
5:	Y	Y	Y	Y	Y	n	n			rest						none	
6:	Y	Y	Y	Y	Y	n	n			rest						none	



Figure 5. Route Patterns screenshot

list route-pattern											
ROUTE PATTERNS											
Route	Name/Trk	FRL	Hop	IXC	BCC					TSC	CA-TSC
Pat	Pref Grp		Lmt		0	1	2	3	4	W	Request
4	1 4	0		user	Y	Y	Y	Y	Y	n	Y as-needed both
13	1 13	0	5	user	Y	Y	Y	Y	Y	n	n none rest
21	ISDN TIE										
	1 6	0		user	Y	Y	Y	Y	Y	n	Y as-needed both
99	CCS Server A										
	1 1	0		user	Y	Y	Y	Y	Y	n	Y as-needed both
Command successfully completed											
Command:											
CANCEL										HELP	



Figure 6. Signaling Group (6) screenshot

status signaling-group 6

STATUS SIGNALING GROUP

Group ID: 6

Group Type: isdn-pri

Signaling Type: facility associated signaling

Group State: in-service

Active NCA-TSC Count: 0

Active CA-TSC Count: 0

Primary D-Channel

Port: 01A1416

Level 3 State: in-service

Secondary D-Channel

Port:

Level 3 State: no-link

Command:

CANCEL

HELP



Figure 7. DS1 Board screenshot

```
display dsl 1a14
```

DS1 CIRCUIT PACK

Location: 01A14	Name: E1 QSIG
Bit Rate: 2.048	Line Coding: hdb3
Signaling Mode: isdn-pri	
Connect: line-side	
TN-C7 Long Timers? n	Country Protocol: etsi
Interworking Message: PROGRESS	Protocol Version: a
Interface Companding: alaw	CRC? n
Idle Code: 11111111	DCP/Analog Bearer Capability: 3.1kHz
T303 Timer(sec): 4	
Slip Detection? n	Near-end CSU Type: other
Alarm When PRI Endpoint Detached? y	
Echo Cancellation? n	

Command:

CANCEL HELP



Figure 8. Trunks Status screenshot

status trunk 6			
TRUNK GROUP STATUS			
Member	Port	Service State	Mtce Connected Ports Busy
0006/001	01A1401	in-service/idle	no
0006/002	01A1402	in-service/idle	no
0006/003	01A1403	in-service/idle	no
0006/004	01A1404	in-service/idle	no
0006/005	01A1405	in-service/idle	no
0006/006	01A1406	in-service/idle	no
0006/007	01A1407	in-service/idle	no
0006/008	01A1408	in-service/idle	no
0006/009	01A1409	in-service/idle	no
0006/010	01A1410	in-service/idle	no
Command successfully completed			
Command:			
CANCEL			HELP



Configuring the Avaya S8500 Communications Manager 2.1: Switch 2

Figure 9. Uniform Dial Plan screenshot

display uniform-dialplan 0

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UNIFORM DIAL PLAN TABLE

Percent Full: 0

Matching			Insert			Node	Matching			Insert			Node
Pattern	Len	Del	Digits	Net	Conv	Num	Pattern	Len	Del	Digits	Net	Conv	Num
2	4	0	222	aar	n							n	
26	4	0	222	aar	n							n	
3	4	0	222	aar	n							n	
40	4	0	226	aar	n							n	
411	4	0	227	aar	n							n	
415	4	0	226	aar	n							n	
42	4	0	226	aar	n							n	
43	4	0	214	aar	n							n	
45	4	0	223	aar	n							n	
5003	4	0	213	aar	n							n	
5004	4	0	213	aar	n							n	
5008	4	0	223	aar	n							n	
5050	4	0	225	aar	n							n	
60	4	0	226	aar	n							n	
					n							n	
					n							n	

CANCEL

REFRESH

HELP

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Figure 10. AAR Analysis screenshot

display aar analysis 0

Page 1 of 2

AAR DIGIT ANALYSIS TABLE

Percent Full: 1

Dialed String	Total Min	Total Max	Route Pattern	Call Type	Node Num	ANI Req'd
2	7	7	999	aar		n
213	7	7	99	aar		n
214	7	7	14	aar		n
222	7	7	99	aar		n
223	7	7	14	aar		n
225	7	7	21	aar		n
226	7	7	26	aar		n
227	7	7	21	aar		n
3	7	7	999	aar		n
4	7	7	999	aar		n
5	7	7	999	aar		n
6	7	7	999	aar		n
7	7	7	999	aar		n
8	7	7	999	aar		n
9	7	7	999	aar		n

CANCEL

REFRESH

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Figure 11. Designated Route Pattern (21) screenshot

display route-pattern 21															Page 1 of 3		
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					
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.	Numbering	LAR					
0	1	2	3	4	W			Request		Dgts	Format						
										Subaddress							
1:	Y	Y	Y	Y	Y	n	Y	as-needed	both	ept	unk-unk	none					
2:	Y	Y	Y	Y	Y	n	n		rest			none					
3:	Y	Y	Y	Y	Y	n	n		rest			none					
4:	Y	Y	Y	Y	Y	n	n		rest			none					
5:	Y	Y	Y	Y	Y	n	n		rest			none					
6:	Y	Y	Y	Y	Y	n	n		rest			none					



Figure 12. Route Patterns screenshot

list route-pattern											
ROUTE PATTERNS											
Route Pat	Name/Trk Pref	FRL Grp	Hop Lmt	IXC	BCC					TSC	CA-TSC
					0	1	2	3	4	W	Request
13	1	1	0	user	Y	Y	Y	Y	Y	n	Y as-needed rest
14	1	14	0	user	Y	Y	Y	Y	Y	n	Y as-needed both
21	ISDN	NODE	1								
	1	6	0	user	Y	Y	Y	Y	Y	n	Y as-needed both
26	TLS										
	1	1	0	user	Y	Y	Y	Y	Y	n	Y as-needed both
99	CCS	Sever	2								
	1	15	0	user	Y	Y	Y	Y	Y	n	Y as-needed both
213											
	1	1	0	user	Y	Y	Y	Y	Y	n	Y none rest
Command successfully completed											
Command:											
CANCEL										HELP	



Figure 13. Signaling Group (6) screenshot

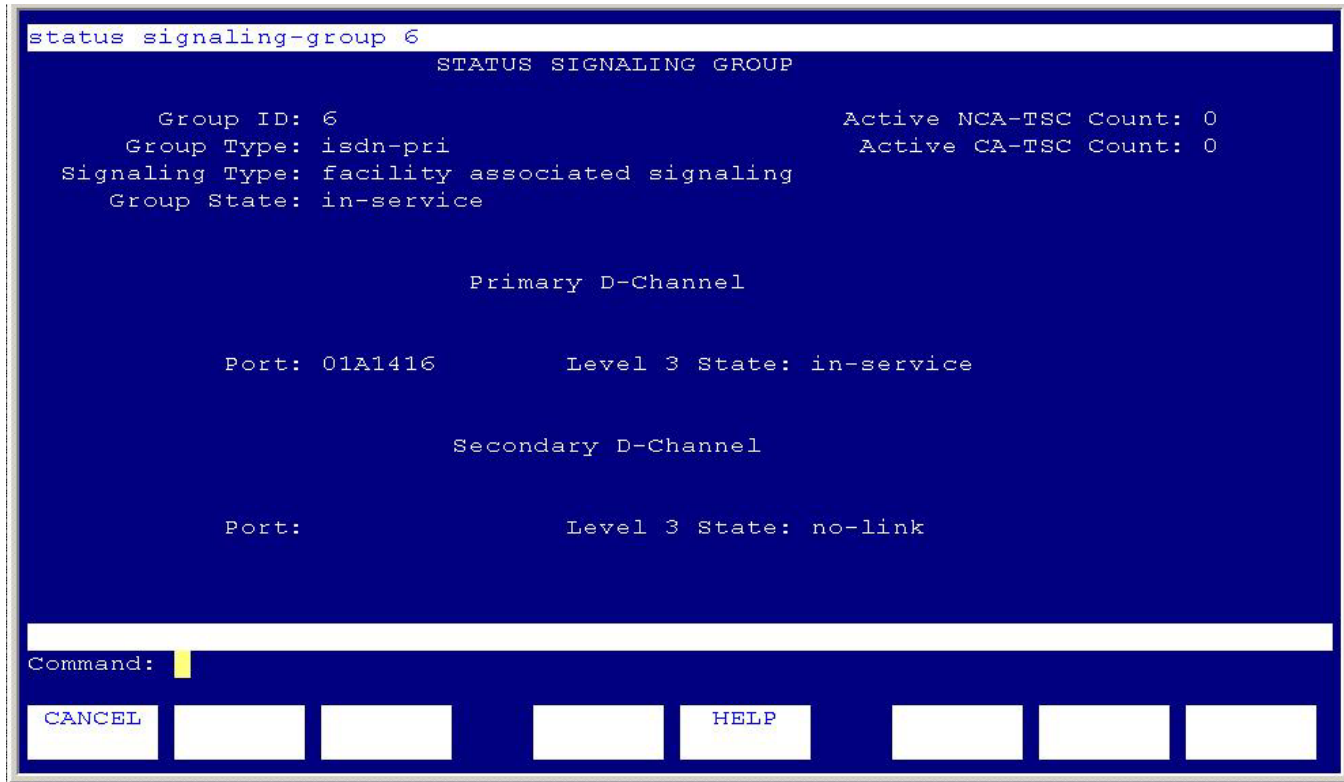




Figure 14. DS1 Board screenshot

```
display dsl 1a14
```

DS1 CIRCUIT PACK

Location: 01A14	Name: E1QSIG
Bit Rate: 2.048	Line Coding: hdb3
Signaling Mode: isdn-pri	
Connect: network	
TN-C7 Long Timers? n	Country Protocol: etsi
Interworking Message: PROGRESS	Protocol Version: a
Interface Companding: alaw	CRC? n
Idle Code: 11111111	DCP/Analog Bearer Capability: 3.1kHz
T303 Timer(sec): 4	
Slip Detection? n	Near-end CSU Type: other
Echo Cancellation? n	

Command:



Figure 15. Trunks Status screenshot

status trunk 6				
TRUNK GROUP STATUS				
Member	Port	Service State	Mtce Connected Ports	Busy
0006/001	01A1401	in-service/idle	no	
0006/002	01A1402	in-service/idle	no	
0006/003	01A1403	in-service/idle	no	
0006/004	01A1404	in-service/idle	no	
0006/005	01A1405	in-service/idle	no	
0006/006	01A1406	in-service/idle	no	
0006/007	01A1407	in-service/idle	no	
0006/008	01A1408	in-service/idle	no	
0006/009	01A1409	in-service/idle	no	
0006/010	01A1410	in-service/idle	no	
Command successfully completed				
Command:				
CANCEL				HELP



Configuring the Cisco IOS Voice Gateway 'A' (Cisco 2651XM)

2651XM_West#sho ver

Cisco IOS Software, C2600 Software (C2600-ADVENTERPRISEK9-M), Version 12.3(7)T,

RELEASE SOFTWARE (fc1)

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

Copyright (c) 1986-2004 by Cisco Systems, Inc.

Compiled Sat 21-Feb-04 14:41 by eaarmas

ROM: System Bootstrap, Version 12.2(8r) [cmong 8r], RELEASE SOFTWARE (fc1)

2651XM_West uptime is 3 hours, 6 minutes

System returned to ROM by reload

System image file is "flash:c2600-adventerprisek9-mz.123-7.T.bin"

Cisco 2651XM (MPC860P) processor (revision 0x300) with 124928K/6144K bytes of memory.

Processor board ID JAE0817EK5Z (1672255744)

M860 processor: part number 5, mask 2

2 FastEthernet interfaces

31 Serial interfaces

2 Channelized E1/PRI ports

32K bytes of NVRAM.

49152K bytes of processor board System flash (Read/Write)

Configuration register is 0x2102



```
2651XM_West#sho running-config
```

```
Building configuration...
```

```
Current configuration : 1976 bytes
```

```
!
```

```
version 12.3
```

```
service timestamps debug datetime msec
```

```
service timestamps log datetime msec
```

```
no service password-encryption
```

```
!
```

```
hostname 2651XM_West
```

```
!
```

```
boot-start-marker
```

```
boot system flash
```

```
boot-end-marker
```

```
!
```

```
!
```

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

```
no network-clock-participate wic 0
```

```
voice-card 1
```

```
!
```

```
ip subnet-zero
```

```
!
```

```
!
```

```
ip cef
```

```
no ip domain lookup
```

```
ip audit po max-events 100
```

```
no aaa new-model
```



```
no ftp-server write-enable

isdn switch-type primary-net5

!

!

!

voice service voip

h323

!

!

voice class codec 1

codec preference 1 g729r8

codec preference 2 g711ulaw

codec preference 3 g711alaw

!

!

controller E1 1/0

framing NO-CRC4

pri-group timeslots 1-31

description ECN-4

!

controller E1 1/1

!

no crypto isakmp enable

!

!

interface FastEthernet0/0

ip address 172.20.4.7 255.255.255.0

duplex auto

speed auto
```



```
!  
interface FastEthernet0/1  
  
no ip address  
  
shutdown  
  
duplex auto  
  
speed auto  
  
!  
  
interface Serial1/0:15  
  
description D-channel for ECN-4  
  
no ip address  
  
no logging event link-status  
  
isdn switch-type primary-net5  
  
isdn overlap-receiving  
  
isdn incoming-voice voice  
  
isdn send-alerting  
  
isdn bchan-number-order ascending  
  
isdn sending-complete  
  
isdn outgoing display-ie  
  
no cdp enable  
  
!  
  
ip classless  
  
ip route 0.0.0.0 0.0.0.0 FastEthernet0/0  
  
!  
  
ip http server  
  
no ip http secure-server  
  
!  
  
!  
  
control-plane  
  
!
```



```
!  
!  
voice-port 1/0:15  
description voice port for ECN-4  
!  
!  
dial-peer voice 323 voip  
destination-pattern 2...  
session target ipv4:172.20.4.9  
!  
dial-peer voice 1015 pots  
destination-pattern 4...  
direct-inward-dial  
port 1/0:15  
forward-digits all  
!  
dial-peer voice 519 voip  
shutdown  
destination-pattern 6...  
session protocol sipv2  
session target ipv4:172.20.4.9  
supplementary-service pass-through  
!  
dial-peer voice 5050 pots  
destination-pattern 5050  
direct-inward-dial  
port 1/0:15  
forward-digits all  
!
```




```
!  
!  
line con 0  
line aux 0  
line vty 0 4  
exec-timeout 0 0  
password cisco  
login  
transport input telnet  
!  
!  
!  
end
```

2651XM_West#sho isdn stat

Global ISDN Switchtype = primary-net5

ISDN Serial1/0:15 interface

 dsl 0, interface ISDN Switchtype = primary-net5

Layer 1 Status:

 ACTIVE

Layer 2 Status:

 TEI = 0, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED

Layer 3 Status:

 0 Active Layer 3 Call(s)

Active dsl 0 CCBs = 0

The Free Channel Mask: 0xFFFF7FFF

Number of L2 Discards = 0, L2 Session ID = 1

Total Allocated ISDN CCBs = 0

2651XM_West#



Configuring the Cisco IOS Voice Gateway 'B' (Cisco 3745)

#3745_West#sho ver

Cisco IOS Software, 3700 Software (C3745-ADVENTERPRISEK9-M), Version 12.3(7)T, R

RELEASE SOFTWARE (fc1)

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

Copyright (c) 1986-2004 by Cisco Systems, Inc.

Compiled Sat 21-Feb-04 05:53 by eaarmas

ROM: System Bootstrap, Version 12.2(8r)T2, RELEASE SOFTWARE (fc1)

3745_West uptime is 3 hours, 9 minutes

System returned to ROM by reload

System image file is "flash:c3745-adventerprisek9-mz.123-7.T.bin"

Cisco 3745 (R7000) processor (revision 2.0) with 116736K/14336K bytes of memory.

Processor board ID JMX0813L0Z3

R7000 CPU at 350MHz, Implementation 39, Rev 3.3, 256KB L2, 2048KB L3 Cache

2 FastEthernet interfaces

31 Serial interfaces

4 Channelized E1/PRI ports

2 Voice FXS interfaces

DRAM configuration is 64 bits wide with parity disabled.

151K bytes of NVRAM.

31168K bytes of ATA System CompactFlash (Read/Write)

Configuration register is 0x2102



```
3745_West#sho run
```

```
3745_West#sho running-config
```

```
Building configuration...
```

```
Current configuration : 2404 bytes
```

```
!
```

```
version 12.3
```

```
service timestamps debug datetime msec
```

```
service timestamps log datetime msec
```

```
no service password-encryption
```

```
!
```

```
hostname 3745_West
```

```
!
```

```
boot-start-marker
```

```
boot system flash
```

```
boot-end-marker
```

```
!
```

```
card type e1 1 1
```

```
logging buffered 5000000 debugging
```

```
!
```

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

```
no network-clock-participate slot 2
```

```
no network-clock-participate slot 3
```

```
no network-clock-participate slot 4
```

```
no network-clock-participate wic 0
```

```
no network-clock-participate wic 1
```

```
no network-clock-participate wic 2
```

```
no network-clock-participate aim 0
```



```
no network-clock-participate aim 1
```

```
no aaa new-model
```

```
ip subnet-zero
```

```
ip cef
```

```
!
```

```
!
```

```
no ip domain lookup
```

```
ip audit po max-events 100
```

```
no ftp-server write-enable
```

```
isdn switch-type primary-net5
```

```
voice-card 1
```

```
  dspfarm
```

```
!
```

```
!
```

```
voice call carrier capacity active
```

```
!
```

```
voice service voip
```

```
  h323
```

```
!
```

```
!
```

```
voice class codec 1
```

```
  codec preference 2 g711ulaw
```

```
  codec preference 3 g711alaw
```

```
!
```

```
!
```

```
controller E1 1/0
```

```
  framing NO-CRC4
```

```
  pri-group timeslots 1-31
```

```
  description ECN10
```



```
!  
controller E1 1/1  
  
!  
controller E1 1/2  
  
!  
controller E1 1/3  
  
!  
no crypto isakmp enable  
  
!  
!  
interface FastEthernet0/0  
ip address 172.20.4.9 255.255.255.0  
duplex auto  
speed auto  
  
!  
interface FastEthernet0/1  
no ip address  
shutdown  
duplex auto  
speed auto  
  
!  
interface Serial1/0:15  
description D-channel for ECN10  
no ip address  
no logging event link-status  
isdn switch-type primary-net5  
isdn overlap-receiving  
isdn protocol-emulate network  
isdn incoming-voice voice
```



```
isdn send-alerting
isdn sending-complete

no cdp enable

!

router eigrp 10
network 172.20.0.0
no auto-summary
!

ip classless
ip route 0.0.0.0 0.0.0.0 FastEthernet0/0
!

ip http server
no ip http secure-server
!
!

control-plane
!
!
!

voice-port 1/0:15
description voice port for ECN10
!

voice-port 3/0/0
!

voice-port 3/0/1
!
!

dial-peer cor custom
!
```



```
!  
!  
dial-peer voice 323 voip  
destination-pattern 4...  
session target ipv4:172.20.4.7  
!  
dial-peer voice 1015 pots  
destination-pattern 2...  
direct-inward-dial  
port 1/0:15  
forward-digits all  
!  
dial-peer voice 519 voip  
shutdown  
destination-pattern 3...  
session protocol sipv2  
session target ipv4:172.20.4.7  
supplementary-service pass-through  
!  
dial-peer voice 5050 voip  
destination-pattern 5050  
session target ipv4:172.20.4.7  
!  
!  
!  
line con 0  
line aux 0  
line vty 0 4  
exec-timeout 0 0
```



```
password cisco
```

```
login
```

```
transport input telnet
```

```
!
```

```
!
```

```
end
```

```
3745_West#sho isdn stat
```

```
Global ISDN Switchtype = primary-net5
```

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

```
***** Network side configuration *****
```

```
dsl 0, interface ISDN Switchtype = primary-net5
```

```
Layer 1 Status:
```

```
ACTIVE
```

```
Layer 2 Status:
```

```
TEI = 0, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
```

```
Layer 3 Status:
```

```
0 Active Layer 3 Call(s)
```

```
Active dsl 0 CCBs = 0
```

```
The Free Channel Mask: 0xFFFF7FFF
```

```
Number of L2 Discards = 0, L2 Session ID = 1
```

```
Total Allocated ISDN CCBs = 0
```

```
3745_West#
```




Acronyms

Acronym	Definitions



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