



Avaya Definity CM 2.0 to a Cisco IAD243X using T1-Q.SIG with SIP

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Introduction

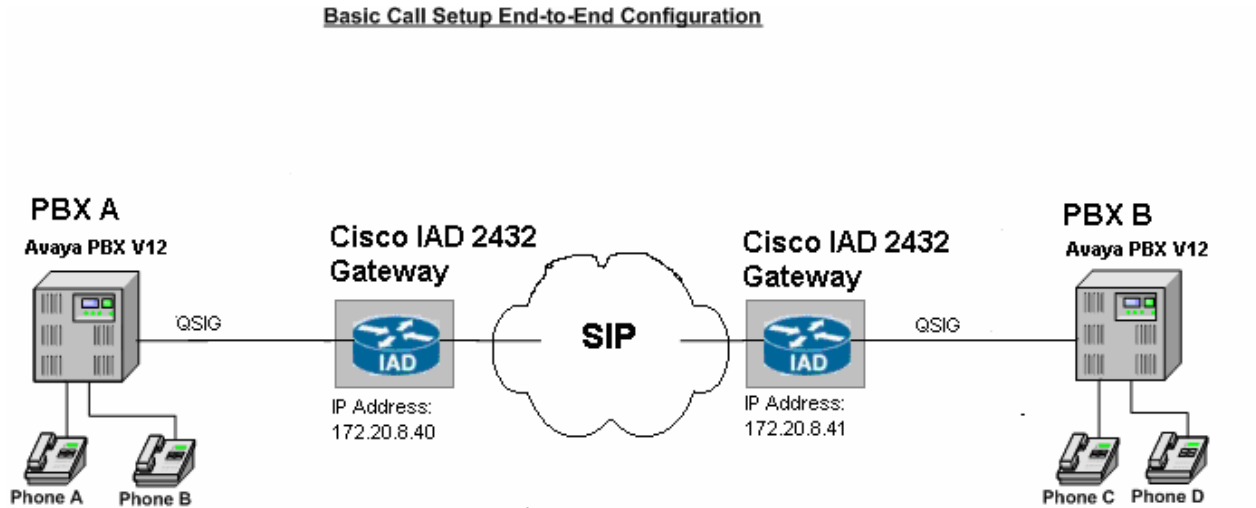
This is an application note for connectivity to Avaya Definity G3 Communications Manager 2.0 with Cisco IAD243X Gateway via QSIG-to-SIP communication (10/100baseT).

The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability with the Cisco IAD243X Gateway connected to the PBX via QSIG (T1 PRI). IP trunk connectivity between the IAD243X's is achieved by using SIP protocol.



Network Topology

Figure 1. Basic Call Setup



Limitations

Calling Name (CNIP) feature does not interoperate. The limitation is due to the IAD2432 encoding the Calling Name using QSIG profile 'Rose' and gives an operation value of LocalValue=0, these parameters are unrecognized by the Avaya PBX and Calling Name presentation fails.

Connected Name (CONP) feature does not interoperate. The limitation is due to the IAD2432 not supporting this feature.

Connected Number does not follow the CallForward feature (e.g. If Phone A calls Phone C, and Phone C is forwarded to Phone D, the connected number displayed on Phone A will be Phone C's number, not Phone D's). The limitation is due to the IAD2432.

Connected number restriction is not honored. The limitation is due to the IAD2432.

Alerting name presentation feature does not interoperate. The limitation is due to the IAD2432 not supporting this feature

When Call Transfer or Call forward features are invoked the name and number updates have limited functionality. The limitation is due to the IAD2432 not supporting the Q931 FACILITY message.

IAD2432 PRI does not perform Overlap-Sending

When a call conference is initiated by the external calling phone to conference a local phone (i.e. Phone A calls Phone C, Phone A conferences Phone D), in order for the call not to drop between the local phones at the instance that the conferencing phone leaves (i.e. Phone A hangs-up), the Avaya trunk configuration must be set for "Disconnect Supervision – In? yes Out? yes. This is detailed in the Configuration section.



Hardware Requirements

- 2 Cisco IAD2432 24FXS
- 2 Avaya Definity G3 w/ TN464F circuit pack
- 4 Avaya Digital stations 8410D
- 1 Cisco Catalyst switch (CAT6500)

Software Requirements

- Avaya PBX: G3 Version 12 Communications Manager 2.0
- Cisco IOS Release: c2430-ik9o3s-mz-124-9.T1

Features

Features Supported

- Basic end-to-end calls with CLIP (Calling Number) and COLP (Connected Number)
- Calling Number Restricted (CLIR calling number only)
- Overlap Receiving – IAD2432 can perform Overlap-Receiving, but outgoing call will be ENBLOC
- Call Transfer – Local and Network/External
- Call Waiting
- Call on-hold
- Call Forward (Unconditional, Busy and No answer) – local and Network/External
- 3-way Conference
- DTMF end-to-end

Features Not Supported

- Calling Name and Connected Name presentation
- Alerting Name presentation
- Call Transfer Name/Number Facility updates
- Call Forward Name/Number Facility updates
- Overlap-Sending (Dialing out-from IAD)
- QSIG-MWI

Configuration

Configuration Sequence and Tasks for the Avaya System

1. DS1 Configuration
2. Trunk group
3. Signaling Group
4. Assign trunk members
5. Uniform-dialing
6. ARR



- 7. Route Pattern
- 8. Digital station config

Avaya PBX Configuration

```
1 2 |
                                     DS1 CIRCUIT PACK
                                     Location: 01A12                      Name: Tony B.IAD test
                                     Bit Rate: 1.544                      Line Coding: b8zs
Line Compensation: 1                  Framing Mode: esf
   Signaling Mode: isdn-pri
   Connect: pbx                        Interface: peer-master
TN-C7 Long Timers? n                 Peer Protocol: Q-SIG
Interworking Message: PROGRESS        Side: a
Interface Companding: mulaw           CRC? n
   Idle Code: 11111111
                                     DCP/Analog Bearer Capability: 3.1kHz

Slip Detection? n                     Near-end CSU Type: other
```



```
 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
TRUNK GROUP

Group Number: 12                Group Type: isdn                CDR Reports: y
Group Name: Tony B. IAD testing  COR: 1                TN: 1                TAC: 612
Direction: two-way            Outgoing Display? n        Carrier Medium: PRI/BRI
Dial Access? y                Busy Threshold: 99        Night Service:
Queue Length: 0
Service Type: tie                Auth Code? n                TestCall ITC: rest
Far End Test Line No:

TestCall BCC: 4
TRUNK PARAMETERS
  Codeset to Send Display: 0    Codeset to Send National IEs: 6
  Max Message Size to Send: 260 Charge Advice: none
  Supplementary Service Protocol: b Digit Handling (in/out): enbloc/enbloc

Trunk Hunt: descend                QSIG Value-Added? y
Digital Loss Group: 13
Calling Number - Delete:          Insert:                Numbering Format: unk-unk
  Bit Rate: 1200                Synchronization: async Duplex: full
Disconnect Supervision - In? y Out? y
Answer Supervision Timeout: 0
```

```
 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
TRUNK FEATURES

ACA Assignment? n                Measured: none                Wideband Support? n
Internal Alert? n                Maintenance Tests? y
Data Restriction? n            NCA-TSC Trunk Member: 1
Send Name: y                    Send Calling Number: y
Used for DCS? n                Hop Dgt? n
Suppress # Outpulsing? n        Numbering Format: public
Outgoing Channel ID Encoding: preferred UII IE Treatment: service-provider

Replace Restricted Numbers? y
Replace Unavailable Numbers? y
Send Called/Busy/Connected Number: y

Send UII IE? n
Send UCID? n
Send Codeset 6/7 LAI IE? n        Ds1 Echo Cancellation? n

Path Replacement with Retention? n
Path Replacement Method: better-route
SBS? n Network (Japan) Needs Connect Before Disconnect? n
```



SIGNALING GROUP ○

Group Number: 12 Group Type: isdn-pri

 Associated Signaling? y Max number of NCA TSC: 12

 Primary D-Channel: 01A1224 Max number of CA TSC: 12

 Trunk Group for NCA TSC: 12

Trunk Group for Channel Selection: 12 X-Mobility/Wireless Type: NONE

Supplementary Service Protocol: b

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

TRUNK GROUP

Administered Members (min/max): 1/4

Total Administered Members: 4

GROUP MEMBER ASSIGNMENTS

	Port	Code	Sfx	Name	Night	Sig Grp
1:	01A1201	TN464	F			12
2:	01A1202	TN464	F			12
3:	01A1203	TN464	F			12
4:	01A1204	TN464	F			12
5:						
6:						
7:						
8:						
9:						
10:						
11:						
12:						
13:						
14:						
15:						

Note: When adding members to the trunk group you will need to add all available ports to the trunk group. For T1 you will configure all 23 available timeslots (e.g. 01A1201 thru 01A1223) and for E1 all 30 available timeslots. Do so in a sequential manner.

1	2
---	---

UNIFORM DIAL PLAN TABLE

Percent Full

Matching	Insert	Node	Matching	Insert	
Pattern	Len Del	Digits Net Conv	Pattern	Len Del	Digits Net Conv
4001	4 0	612 aar n			n
4002	4 0	612 aar n			n



1	2						
AAR DIGIT ANALYSIS TABLE							Percent Full: 9
612	Dialed String	Total Min Max	Route Pattern	Call Type	Node Num	ANI Reqd	
		7 7	12	aar		n	

Pattern Number: 12 Pattern Name:

Grp No	FRL	NPA	Pfx Mrk	Hop Lmt	Toll List	No. Del	Inserted Digits	DCS/ QSIG Intw	IXC
1:	12	0					3	n user	
2:								n user	
3:								n user	
4:								n user	
5:								n user	
6:								n user	

	BCC VALUE					TSC	CA-TSC Request	ITC	BCIE	Service/Feature	BAND	No. Dgts	Numbering Format	LAR Subaddress
	0	1	2	3	4 W									
1:	y	y	y	y	y	n	y	none		rest				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



```
1 | 2 | 3 | 4 |
STATION
Extension: 2004          Lock Messages? n          BCC: 0
Type: 8410D            Security Code:           TN: 1
Port: 01A0604         Coverage Path 1: 103    COR: 1
Name: PBX-Ken1        Coverage Path 2:       COS: 1
                        Hunt-to Station:
STATION OPTIONS
    Loss Group: 2          Personalized Ringing Pattern: 1
    Data Module? n        Message Lamp Ext: 2004
    Speakerphone: 2-way   Mute Button Enabled? y
    Display Language: english
                                Media Complex Ext:
                                IP SoftPhone? n
```

```
1 | 2 | 3 | 4 |
STATION
FEATURE OPTIONS
    LWC Reception: spe    Auto Select Any Idle Appearance? n
    LWC Activation? y     Coverage Msg Retrieval? y
    LWC Log External Calls? n    Auto Answer: none
    CDR Privacy? n        Data Restriction? n
    Redirect Notification? y     Idle Appearance Preference? n
    Per Button Ring Control? n   Restrict Last Appearance? n
    Bridged Call Alerting? n
    Active Station Ringing: single
                                H.320 Conversion? n    Per Station CPN - Send Calling Number?
    Service Link Mode: as-needed
    Multimedia Mode: basic
    MWI Served User Type:
                                Audible Message Waiting? y
                                Display Client Redirection? y
                                Select Last Used Appearance? n
                                Coverage After Forwarding? s
                                Multimedia Early Answer? n
                                Direct IP-IP Audio Connections? y
                                IP Audio Hairpinning? y
Emergency Location Ext: 2004
```




```
1 | 2 | 3 | 4 |
STATION

SITE DATA
Room: Headset? n
Jack: Speaker? n
Cable: Mounting: d
Floor: Cord Length: 0
Building: Set Color:

ABBREVIATED DIALING
List1: List2: List3:

BUTTON ASSIGNMENTS
1: call-appr 6:
2: call-appr 7:
3: cfwd-bsyda Ext: 8:
4: 9:
5: 10: last-numb
```

```
1 | 2 | 3 | 4 |
STATION

SOFTKEY BUTTON ASSIGNMENTS

1: lwc-store
2: lwc-cancel
3: auto-cback
4: timer
5: call-fwd Ext:
6: call-park
7: date-time
8: priority
9: abr-prog
10: abr-spchar Char: ~p
11: abr-spchar Char: ~m
12: abr-spchar Char: ~w
```




```
ip default-gateway 172.20.8.1
ip http server
no ip http secure-server
!
ip route 0.0.0.0 0.0.0.0 172.20.8.1
!
!
!
!
!
control-plane
!
!
!
voice-port 1/0:23
!
voice-port 2/0
!
voice-port 2/1
!
voice-port 2/2
!
voice-port 2/3
!
voice-port 2/4
!
voice-port 2/5
!
voice-port 2/6
!
voice-port 2/7
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voice-port 2/8
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voice-port 2/9
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voice-port 2/10
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voice-port 2/11
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voice-port 2/12
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voice-port 2/13
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voice-port 2/14
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voice-port 2/15
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voice-port 2/16
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voice-port 2/17
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voice-port 2/18
!
voice-port 2/19
!
voice-port 2/20
!
voice-port 2/21
!
voice-port 2/22
!
voice-port 2/23
!
!
!
```



```
!  
dial-peer voice 2000 voip  
destination-pattern 2...  
supplementary-service pass-through  
session protocol sipv2  
session target ipv4:172.20.8.40  
!  
dial-peer voice 4000 pots  
destination-pattern 4...  
supplementary-service pass-through  
direct-inward-dial  
port 1/0:23  
forward-digits all  
!  
!  
!  
!  
line con 0  
password cisco  
login  
line aux 0  
line vty 0 4  
password cisco  
login  
!  
end  
  
IAD_V6#
```



Acronyms

Acronym	Definitions
IAD	Integrated Access Device
SIP	Session Initiation Protocol



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