



# Avaya Definity CM 2.0 to a Cisco IAD243X using E1-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).

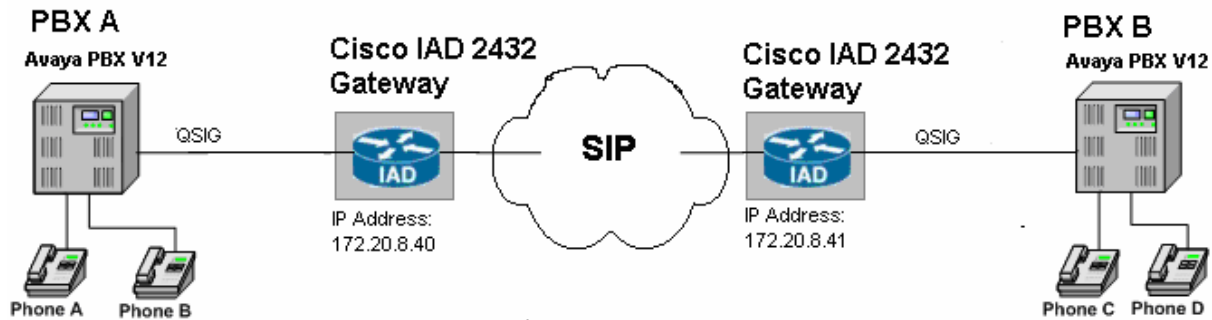
The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability with the Cisco IAD243X Gateway connected to the PBX via QSIG (T1 PRI). IP trunk connectivity between the IAD243X's is achieved by using SIP protocol.



## Network Topology

Figure 1. Network Topology

### Basic Call Setup End-to-End Configuration



## 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**

```
                                DS1 CIRCUIT PACK

Location: 01A12                      Name: Tony IAD test
Bit Rate: 2.048                      Line Coding: hdb3

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: alaw            CRC? y
Idle Code: 11111111                  Channel Numbering: timeslot
                                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
```





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    Audible Message Waiting? y
    MWI Served User Type:    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 1/0:15  
!  
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  
!  
voice-port 2/8  
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voice-port 2/9  
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voice-port 2/10  
!  
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  
!  
voice-port 2/17  
!  
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 1/0:15  
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



## Important Information

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