



# Avaya Definity CM 2.0 to a Cisco IAD243X using T1-CAS E&M with SIP

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## Introduction

This is an application note for connectivity to the Avaya Definity G3 Communications Manager 2.0 with Cisco IAD243X Gateway via T1 CAS E&M-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 T1-CAS E&M signaling. IP trunk connectivity between the IAD243X's is achieved by using SIP protocol.

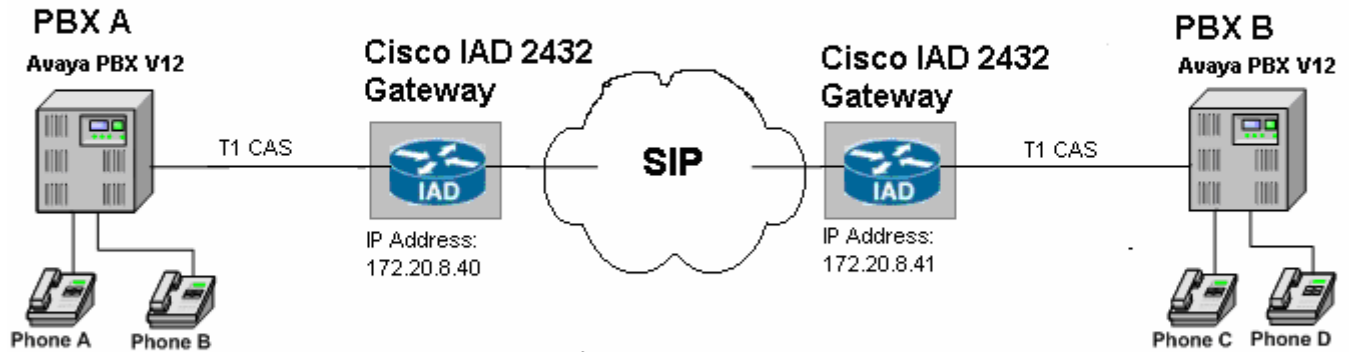
Test Results obtained are based on e&m immediate, wink and delay start. Features tested yielded the same results for all three CAS signaling types, this Application Note covers all three CAS signaling types.



## Network Topology

Figure 1. Network Topology

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



## Limitations

ANI (Automatic Number Identification) is not supported with the detailed Avaya configuration.

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
- 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

#### **Features Not Supported**

- ANI

### **Configuration**

#### **Configuration Sequence and Tasks for the Avaya System**

1. DS1 Configuration
2. Trunk group
3. Assign trunk members
4. Uniform-dialing
5. ARR
6. Route Pattern
7. 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: robbed-bit

Interface Companding: mulaw
Idle Code: 11111111

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



Immediate-start

```
 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
                                     TRUNK GROUP
Group Number: 12                      Group Type: tie                      CDR Reports: y
Group Name: Tony B. IAD testing        COR: 1                          TN: 1          TAC: 612
Direction: two-way                    Outgoing Display? n             Trunk Signaling Type:
Dial Access? y                        Busy Threshold: 99              Night Service:
Queue Length: 0                        Incoming Destination:
Comm Type: voice                       Auth Code? n
                                       Trunk Flash? n

TRUNK PARAMETERS
Trunk Type (in/out): immed/immed      Incoming Rotary Timeout(sec):
Outgoing Dial Type: tone              Incoming Dial Type: tone
                                       Disconnect Timing(msec):
Digit Treatment:                      Digits:
                                       Sig Bit Inversion: none
Analog Loss Group: 9                  Digital Loss Group: 13
Incoming Dial Tone? y

Disconnect Supervision - In? y  Out? y
Answer Supervision Timeout: 0        Receive Answer Supervision? y
```



Delay Start

```
 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
                                     TRUNK GROUP
Group Number: 12                      Group Type: tie                      CDR Reports: y
Group Name: Tony B. IAD testing        COR: 1                          TN: 1          TAC: 612
Direction: two-way                    Outgoing Display? n Trunk Signaling Type:
Dial Access? y                        Busy Threshold: 99              Night Service:
Queue Length: 0                       Incoming Destination:
Comm Type: voice                      Auth Code? n
                                     Trunk Flash? n

TRUNK PARAMETERS
Trunk Type (in/out): delay/delay      Incoming Rotary Timeout(sec):
Outgoing Dial Type: tone              Incoming Dial Type: tone
Wink Timer(msec): 500                Disconnect Timing(msec):
Digit Treatment:                     Digits:
                                     Sig Bit Inversion: none
Analog Loss Group: 9                 Digital Loss Group: 13
Incoming Dial Tone? y

Disconnect Supervision - In? y Out? y
Answer Supervision Timeout: 0         Receive Answer Supervision? y
```



Wink Start

```
 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
TRUNK GROUP
Group Number: 12          Group Type: tie          CDR Reports: y
Group Name: Tony B. IAD testing  COR: 1          TN: 1          TAC: 612
Direction: two-way      Outgoing Display? n Trunk Signaling Type:
Dial Access? y          Busy Threshold: 99      Night Service:
Queue Length: 0          Incoming Destination:
Comm Type: voice        Auth Code? n
                        Trunk Flash? n

TRUNK PARAMETERS
Trunk Type (in/out): wink/wink      Incoming Rotary Timeout(sec):
Outgoing Dial Type: tone            Incoming Dial Type: tone
Wink Timer(msec): 500              Disconnect Timing(msec):
Digit Treatment:                    Digits:
                                     Sig Bit Inversion: none
Analog Loss Group: 9               Digital Loss Group: 13
Incoming Dial Tone? y

Disconnect Supervision - In? y  Out? y
Answer Supervision Timeout: 0    Receive Answer Supervision? y
```



```
1  2  3  4  5  6  7  8  9 10 11 |
TRUNK FEATURES
      ACA Assignment? n           Measured: none
                                Internal Alert? n       Maintenance Tests? y
                                Data Restriction? n
                                Used for DCS? n
      Suppress # Outpulsing? n
                                Seize When Maintenance Busy: neither-end

Incoming Tone (DTMF) ANI: no      Per Call CPN Blocking Code:
      Connected to CO? n           Per Call CPN Unblocking Code:

                                Ds1 Echo Cancellation? n
```





```
1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
ADMINISTRABLE TIMERS

  Incoming Disconnect(msec): 500           Outgoing Disconnect(msec): 500
  Incoming Dial Guard(msec): 70            Outgoing Dial Guard(msec): 1600
  Incoming Glare Guard(msec): 1500        Outgoing Glare Guard(msec): 1500

                                           Outgoing Seizure Response(sec): 5
  Programmed Dial Pause(msec): 1500       Disconnect Signal Error(sec): 240
  Flash Length(msec): 540                 Incoming Incomplete Dial Alarm(sec): 255

END TO END SIGNALING
  Tone(msec): 300           Pause(msec): 150

OUTPUTSING INFORMATION
  PPS: 10   Make(msec): 40   Break(msec): 60
```

```
1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
ATMS THRESHOLDS

  TTL Type: 105-w-r1           Far End Test No:
  TTL Vendor:                  TTL Contact:
  Trunk Vendor:                Trunk Contact:
  Trunk Length:

                                MARGINAL          UNACCEPTABLE
                                Min   Max         Min   Max
  1004 Hz Loss: -2    21         -2    21

                                -Dev   +Dev       -Dev   +Dev
  404 Hz Loss: 9      9          9      9
  2804 Hz Loss: 9      9          9      9

  Maximum C Message Noise:      55          55
  Maximum C Notched Noise:      74          74
  Minimum SRL-HI:                0            0
  Minimum SRL-LO:                0            0
  Minimum ERL:                   0            0

  Allow ATMS Busyout, Error Logging and Alarming? n
```



1	2	3	4	5	6	7	8	9	10	11
---	---	---	---	---	---	---	---	---	----	----

```

TRUNK GROUP
Administered Members (min/max): 1/4
Total Administered Members: 4

GROUP MEMBER ASSIGNMENTS

Port      Code Sfx Name      Night      Mode      Type      Ans Delay
1: 01A1201 TN464 F
2: 01A1202 TN464 F
3: 01A1203 TN464 F
4: 01A1204 TN464 F
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 24 available timeslots (e.g. 01A1201 thru 01A1224). 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 Num      Pattern Len Del Digits Net Conv
4001      4 0 612 aar n
4002      4 0 612 aar n

```

1	2
---	---

```

AAR DIGIT ANALYSIS TABLE
Percent Full: 9

Dialed      Total      Route      Call      Node      ANI
String      Min Max      Pattern      Type      Num      Reqd
612      7 7      12      aar      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
```

### Cisco IAD2432 24FXS Configuration

```
IAD_SIP1_V7#sh run
Building configuration...

Current configuration : 1647 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname IAD_SIP1_V7
!
boot-start-marker
boot-end-marker
!
card type t1 1
enable password cisco
!
no aaa new-model
!
resource policy
!
network-clock-participate T1 1/0
network-clock-participate T1 1/1
ip subnet-zero
!
!
!
```





```
!  
voice-port 2/6  
!  
voice-port 2/7  
!  
voice-port 2/8  
!  
voice-port 2/9  
!  
voice-port 2/10  
!  
voice-port 2/11  
!  
voice-port 2/12  
!  
voice-port 2/13  
!  
voice-port 2/14  
!  
voice-port 2/15  
!  
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 4000 voip  
destination-pattern 4...  
session protocol sipv2  
session target ipv4:172.20.110.254  
supplementary-service pass-through  
!  
dial-peer voice 2000 pots  
destination-pattern 2...  
supplementary-service pass-through  
port 1/1:0  
forward-digits all  
!  
!  
line con 0  
password cisco  
line aux 0  
line vty 0 4  
password cisco  
login  
!  
end
```

IAD\_SIP1\_V7#





## Acronyms

Acronym	Definitions
IAD	Integrated Access Device
SIP	Session Initiation Protocol





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