Avaya Definity CM 2.0 to a Cisco IAD243X using PRI T1 5ESS ISDN with SIP

January 5, 2007 Initial Version

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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 PRI 5ESS-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 PRI 5ESS ISDN (T1). IP trunk connectivity between the IAD243X's is achieved by using SIP protocol.

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Network Topology

Figure 1. Network Topology
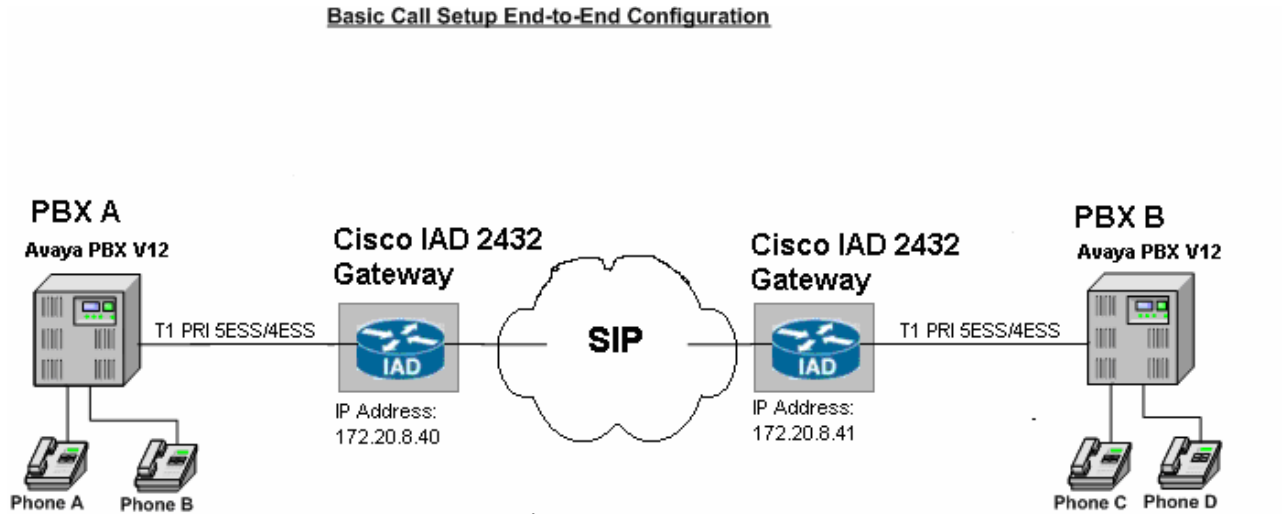
Limitations

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

Overlap sending/receiving is not supported in IOS when configured for ISDN "switch-type primary-dms100."

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.

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)

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

Connected Name presentation

Overlap sending/receiving

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: network
    TN-C7 Long Timers? n            Country Protocol: 1
Interworking Message: PROGress       Protocol Version: a
Interface Companding: mulaw                      CRC? n
           Idle Code: 11111111
                        DCP/Analog Bearer Capability: 3.1kHz




        Slip Detection? n              Near-end CSU Type: other


                      Block Progress Indicator? n
```

```
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: a    Digit Handling (in/out): enbloc/enbloc


            Trunk Hunt: descend                    QSIG Value-Added? n
                                               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
     Suppress # Outpulsing? n       Numbering Format: public
   Outgoing Channel ID Encoding: preferred      UUI IE Treatment: service-provider

                                                   Replace Restricted Numbers? y
                                                   Replace Unavailable Numbers? y
                                                        Send Connected Number: y


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




              SBS? n   Network (Japan) Needs Connect Before Disconnect? n
```

```
| 1 | 2 | 3 | 4 | 5 |

                              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: a
```

```
| 1 | 2 | 3 | [4] | 5 | 6 | 7 | 8 | 9 | 10 |
```

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


              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). Do so in a sequential manner.

```
| [1] | 2 |
```

UNIFORM DIAL PLAN TABLE

Percent Full

Matching Pattern	Len	Del	Insert Digits	Net	Conv	Node Num	Matching Pattern	Len	Del	Insert 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

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

```
                    Pattern Number: 12   Pattern Name:

   Grp FRL NPA Pfx Hop Toll No.   Inserted                        DCS/ IXC
   No          Mrk Lmt List Del   Digits                          QSIG
                        Dgts                                       Intw
 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    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   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
```
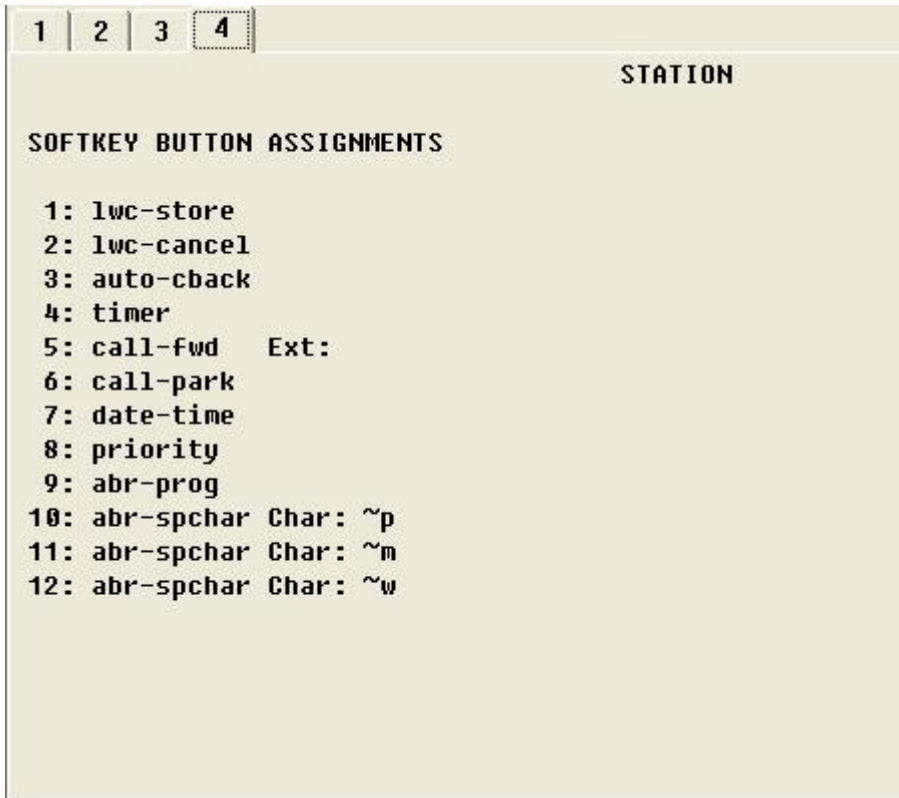
```
  1 │ 2 │ 3 │ 4 │
                                      STATION
FEATURE OPTIONS
              LWC Reception: spe           Auto Select Any Idle Appearance? n
             LWC Activation? y                   Coverage Msg Retrieval? y
   LWC Log External Calls? n                              Auto Answer: none
                CDR Privacy? n                        Data Restriction? n
     Redirect Notification? y            Idle Appearance Preference? n
   Per Button Ring Control? n
      Bridged Call Alerting? n                   Restrict Last Appearance? 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
     Emergency Location Ext: 2004                  IP Audio Hairpinning? y
```

```
  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_V7#sh run
Building configuration...

Current configuration : 2033 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname IAD_V7
!
boot-start-marker
boot system flash:c2430-ik9o3s-mz-124-9.T1.bin
boot-end-marker
!
card type t1 1
enable secret 5 1WJPz$ZoIKHvDdxxTEDUc2AwOoM0
!
no aaa new-model
!
resource policy
!
network-clock-participate T1 1/0
network-clock-participate T1 1/1
network-clock-select 1 T1 1/0
!
!
no ip domain lookup

```
!
!
!
isdn switch-type primary-ni
isdn gateway-max-interworking
!
voice-card 0
!
!
!
!
!
controller T1 1/0
 framing esf
 linecode b8zs
 pri-group timeslots 1-2,24
!
controller T1 1/1
 framing esf
 linecode b8zs
!
!
!
!
!
!
interface FastEthernet0/0
 ip address 172.20.8.40 255.255.255.0
 ip broadcast-address 0.0.0.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 no ip address
 ip broadcast-address 0.0.0.0
 shutdown
 duplex auto
 speed auto
!
interface Serial1/0:23
 no ip address
 encapsulation hdlc
 isdn switch-type primary-5ess
 isdn incoming-voice voice
 isdn supp-service name calling ie 40 cs 0
 no cdp enable
!
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
!
voice-port 2/8
!
voice-port 2/9
!
voice-port 2/10
!
voice-port 2/11
!
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 4000 voip
 destination-pattern 4...
 supplementary-service pass-through
 session protocol sipv2
 session target ipv4:172.20.8.41
!
dial-peer voice 2000 pots
 destination-pattern 2...
 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_V7#
```

Acronyms

Acronym	Definitions
IAD	Integrated Access Device
SIP	Session Initiation Protocol

Important Information

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE

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