Avaya Definity CM 2.0 to a Cisco IAD243X using PRI E1 NET5 ISDN 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 E1 PRI NET5-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 NET5 ISDN (E1). 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
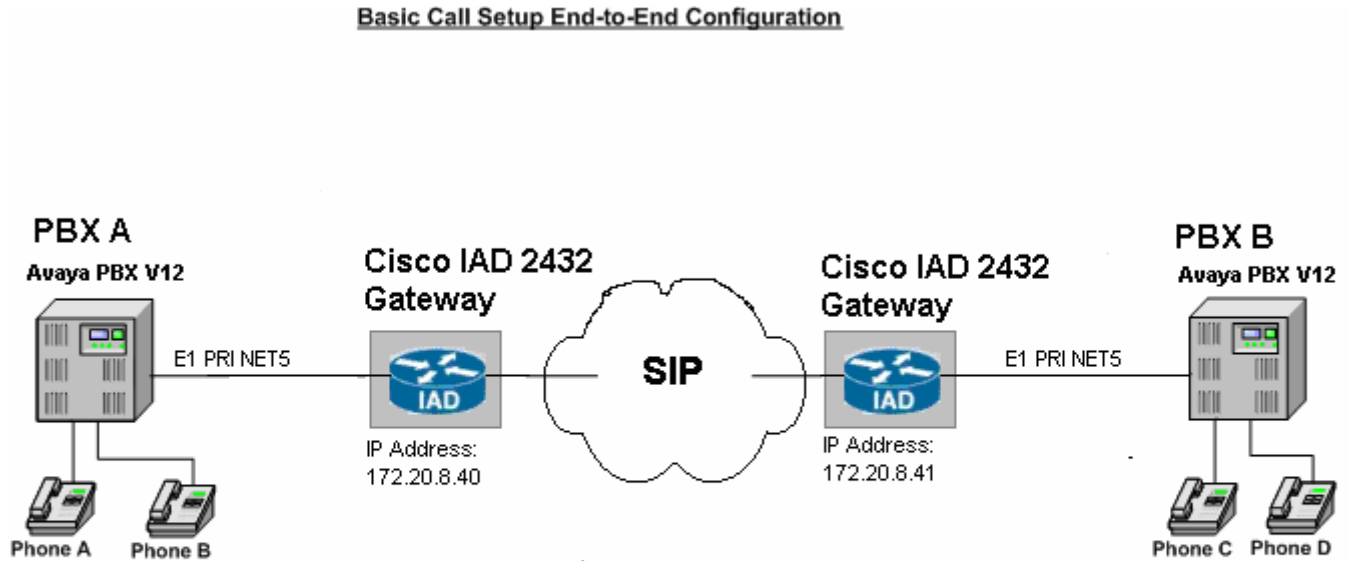
Limitations

Connected Number (COLP) does not interoperate. This is an IAD2432 limitation.

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

Overlap-receiving

Features Not Supported

Connected Name presentation (CONP)

Connected Number (COLP)

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: network
     TN-C7 Long Timers? n           Country Protocol: etsi
 Interworking Message: PROGress       Protocol Version: a
 Interface Companding: alaw                        CRC? y
             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: c    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: 01A1216    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 E1 you will configure all 30 available timeslots (e.g. 01A1201 thru 01A1215 and 01A1217 thru 01A1231). 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                                      n
    4002       4   0   612    aar  n                                      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
```

```
                    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_cs101#sh run
Building configuration...

Current configuration : 2346 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname IAD_cs101
!
boot-start-marker
boot system flash:c2430-ik9o3s-mz-124-9.T1.bin
boot-end-marker
!
card type e1 1
logging buffered 10000000 debugging
no logging console
enable secret 5 $1$WJPz$ZoIKHvDdxxTEDUc2AwOoM0
!
no aaa new-model
!
resource policy
!
```

```
network-clock-participate E1 1/0
network-clock-participate E1 1/1
network-clock-select 1 E1 1/0
!
!
no ip domain lookup
!
!
!
isdn switch-type primary-net5
isdn gateway-max-interworking
!
voice-card 0
!
!
!
!
!
voice service voip
 notify redirect ip2pots
!
!
!
!
!
!
!
!
!
!
!
!
!
!
controller E1 1/0
 pri-group timeslots 1-4,16
!
controller E1 1/1
!
!
!
!
!
!
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 Serial1/0:15 ===➔ For overlap receiving enable the command "isdn overlap-receiving"
 no ip address
```

```
 encapsulation hdlc
 isdn switch-type primary-net5
  isdn incoming-voice voice
 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 1/0:15
!
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
!
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 2330 pots
 destination-pattern 2...
 supplementary-service pass-through
 direct-inward-dial
 port 1/0:15
 forward-digits all
!
dial-peer voice 5330 voip
 destination-pattern 5...
 session protocol sipv2
 session target ipv4:172.20.8.41
 dtmf-relay rtp-nte
 supplementary-service pass-through
!
dial-peer voice 4000 voip
 destination-pattern 4...
 session protocol sipv2
 session target ipv4:172.20.8.41
 dtmf-relay rtp-nte
 supplementary-service pass-through
!
!
!
!
line con 0
 password cisco
 login
line aux 0
line vty 0 4
 exec-timeout 0 0
 password cisco
 login
!
end
```

Acronyms

Acronym	Definitions
IAD	Integrated Access Device
SIP	Session Initiation Protocol

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