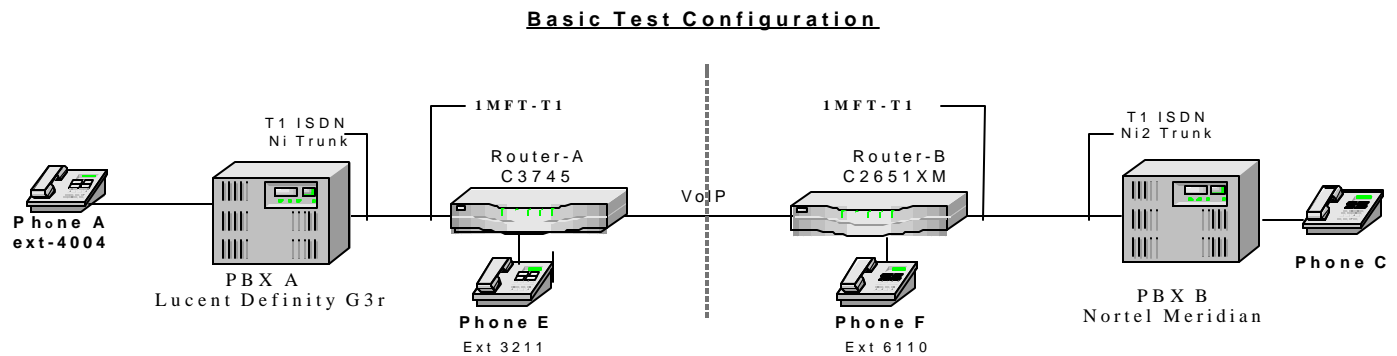


# Cisco 3745 Gateway - PBX Interoperability: Avaya Definity G3 PBX using Q.931 PRI Network Side Interfaces to an H.323 Gateway

## Introduction

- This Application Note describes the interoperability of a Cisco 3745 and an Avaya Definity G3 PBX with Q.931 PRI network-side interfaces.
- The network topology diagram shows the end-to-end interoperability when configured for back-to-back VoIP operation.

## Network Topology



## System Components

### Hardware Requirements

- Cisco 3745 modular access router with 1MFT-T1 interface card
- Avaya Definity G3r PBX

### Software Requirements

- Cisco IOS Software Release 12.2(15)ZJ
- Lucent G3siV7, Software Version G3V7i.01.0.343.7



## Configuration

### Configuring the Avaya Definity G3r

Configure the PBX in the following sequence:

- Trunk
- Trunk Group
- Signaling Group
- Dial Plan Record
- Optional Features

### Configuring the Trunk (1 of 2)

The screenshot shows the 'Avaya Site Administration' window for 'lucent\_V7 GEDI'. The main configuration area is titled 'DS1 CIRCUIT PACK' and contains the following fields:

|                       |          |                               |          |
|-----------------------|----------|-------------------------------|----------|
| Location:             | 01A12    | Name:                         | T1 to U6 |
| Bit Rate:             | 1.544    | Line Coding:                  | b8zs     |
| Line Compensation:    | 1        | Framing Mode:                 | esf      |
| Signaling Mode:       | isdn-pri | Country Protocol:             | 1        |
| Connect:              | network  | Protocol Version:             | b        |
| Interface Companding: | mulaw    | CRC?                          | n        |
| Idle Code:            | 11111111 | DCP/Analog Bearer Capability: | 3.1kHz   |
| Slip Detection?       | n        | Near-end CSU Type:            | other    |

At the bottom of the window, there is a status bar that reads 'Right-click in a field to see a list of valid entries or help text' and 'Ready'.



## Configuring the Trunk (2 of 2)

The screenshot shows the Avaya Site Administration interface for configuring a DS1 circuit pack. The window title is "Avaya Site Administration - [lucent\_V7 GEDI]". The menu bar includes File, Edit, View, System, Action, Tools, Window, and Help. The toolbar contains various icons for file operations and navigation. The main display area shows the following configuration options:

```
change ds1 a12 | send (return) | help (f5) | cancel (esc) | enter (f3) | schedule (f9) | next (f7) | previous (f8)
```

1 2

**DS1 CIRCUIT PACK**

**ESF DATA LINK OPTIONS**

Network Management Protocol: **tabs**

Send ANSI-T1.403 One-Second Performance Reports? **n**

Far-end CSU Address: **b**

Right-click in a field to see a list of valid entries or help text

Ready



### Configuring the Trunk Group (1 of 3)

Avaya Site Administration - [lucent\_V7 GED1]

File Edit View System Action Tools Window Help

lucent\_V7

change trunk-group 12 send (return) help (F5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

1 2 3 4 5 6 7 8 9 10

**TRUNK GROUP**

Group Number: 12 Group Type: isdn CDR Reports: y  
Group Name: U7 to PSTN on U6 COR: 1 TN: 1 TAC: 612  
Direction: two-way Outgoing Display? y  
Dial Access? y Busy Threshold: 99 Night Service:   
Queue Length: 0  
Service Type: tandem TestCall ITC: unre  
Far End Test Line No:   
TestCall BCC: 4

**TRUNK PARAMETERS**

Codeset to Send Display: 0 Codeset to Send TCM,Lookahead: 6  
Max Message Size to Send: 260 Charge Advice: none  
Supplementary Service Protocol: a Digit Handling (in/out): enbloc/enbloc

Trunk Hunt: ascend  
Connected to Toll? n STT Loss: normal DTT to DCO Loss: normal  
Calling Number - Delete:  Insert:  Numbering Format:   
Bit Rate: 1200 Synchronization: async Duplex: full  
Disconnect Supervision - In? y Out? n  
Answer Supervision Timeout: 0

Right-click in a field to see a list of valid entries or help text

Ready



### Configuring the Trunk Group (2 of 3)

Avaya Site Administration - [lucent\_V7 GEDI]

File Edit View System Action Tools Window Help

lucent\_V7

change trunk-group 12 send (return) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

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

**TRUNK FEATURES**

ACA Assignment?  Measured:  Wideband Support?  Maintenance Tests?

Data Restriction?  NCA-TSC Trunk Member:

Send Name:  Send Calling Number:

Used for DCS?  Hop Dgt?

Suppress # Outpulsing?  Numbering Format:

Outgoing Channel ID Encoding:  UUI IE Treatment:

Send Connected Number:

Send UCID?

Send Codeset 6/7 LAI IE?

Right-click in a field to see a list of valid entries or help text

Ready



### Configuring the Trunk Group (3 of 3)

Avaya Site Administration - [lucent\_V7 GEDI]

File Edit View System Action Tools Window Help

lucent\_V7

change trunk-group 12 send (return) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

1 2 3 4 5 6 7 8 9 10

**TRUNK GROUP**

Administered Members (min/max): 1/5  
Total Administered Members: 5

**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:  | 01A1205 | TN464 | F   |      |       | 12      |
| 6:  |         |       |     |      |       |         |
| 7:  |         |       |     |      |       |         |
| 8:  |         |       |     |      |       |         |
| 9:  |         |       |     |      |       |         |
| 10: |         |       |     |      |       |         |
| 11: |         |       |     |      |       |         |
| 12: |         |       |     |      |       |         |
| 13: |         |       |     |      |       |         |
| 14: |         |       |     |      |       |         |
| 15: |         |       |     |      |       |         |

Right-click in a field to see a list of valid entries or help text

Ready



## Configuring the Signaling Group

Avaya Site Administration - [lucent\_V7 GEDI]

File Edit View System Action Tools Window Help

lucent\_V7

change signaling-group 12 send (return) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

1 2 3 4 5

**SIGNALING GROUP**

**Group Number:** 12

**Associated Signaling?**  **Max number of NCA TSC:**

**Primary D-Channel:**  **Max number of CA TSC:**

**Trunk Group for Channel Selection:**  **Trunk Group for NCA TSC:**

**Supplementary Service Protocol:**

Right-click in a field to see a list of valid entries or help text

Ready



## Configuring the Dial Plan Record (1 of 2)

The screenshot shows the Avaya Site Administration interface for a Lucent V7 GEDI system. The window title is "Avaya Site Administration - [lucent\_V7 GEDI]". The menu bar includes File, Edit, View, System, Action, Tools, Window, and Help. The toolbar contains various icons for file operations and navigation. The main display area shows the "DIAL PLAN RECORD" configuration for Local Node Number 1. The configuration includes a 4-digit Uniform Dialing Plan (UDP) with a search order of "udp-table-first". Below this is a "FIRST DIGIT TABLE" with columns for "First Digit" (1-6) and "Length". The table entries are: 1: extension, 2: extension, 3: extension, 4: extension, 5: extension, 6: dac, 7: pextension, 8: fac, 9: fac, 0: attd, \*: fac, #: . The status bar at the bottom left shows "Ready".

```
DIAL PLAN RECORD

Local Node Number: 1
ETA Node Number:
ETA Routing Pattern:

Uniform Dialing Plan: 4-digit
UDP Extension Search Order: udp-table-first
FIRST DIGIT TABLE
First Digit - 1 - - 2 - - 3 - - 4 - - 5 - - 6 -
1: extension
2: extension
3: extension
4: extension
5: extension
6: dac
7: pextension
8: fac
9: fac
0: attd
*: fac
#: .
```





### Configuring the Dial Plan Record (2 of 2)

Avaya Site Administration - [lucent\_V7 GEDI]

File Edit View System Action Tools Window Help

lucent\_V7

display route-pattern 12 send (return) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

**Pattern Number: 12**

| Grp. No. | FRL | NPA | Pfx Mrk | Hop Lmt | Toll List | No. Digits | Del Digits | Inserted Digits | IXC  |
|----------|-----|-----|---------|---------|-----------|------------|------------|-----------------|------|
| 1: 12    | 0   | 408 |         |         |           | 3          |            |                 | user |
| 2:       |     |     |         |         |           |            |            |                 | user |
| 3:       |     |     |         |         |           |            |            |                 | user |
| 4:       |     |     |         |         |           |            |            |                 | user |
| 5:       |     |     |         |         |           |            |            |                 | user |
| 6:       |     |     |         |         |           |            |            |                 | user |

|    | BCC | VALUE | TSC | CA-TSC | ITC | BCIE | Service/Feature | Numbering Format | LAR      |      |
|----|-----|-------|-----|--------|-----|------|-----------------|------------------|----------|------|
|    | 0   | 1     | 2   | 3      | 4   | W    | Request         |                  |          |      |
| 1: | y   | y     | y   | y      | y   | n    | y               | rest             | nat1-pub | 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 |

Ready



## Configuring Optional Features (1 of 2)

Avaya Site Administration - [lucent\_V7 GEDI]

File Edit View System Action Tools Window Help

lucent\_V7

display system-parameters custo send (return) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

1 2 3 4

**OPTIONAL FEATURES**

**G3 Version: U7** **Maximum Ports: 200**  
**Location: 1**

|  |                                    |
|--|------------------------------------|
| Abbreviated Dialing Enhanced List? y     | CAS Main? n                        |
| Access Security Gateway (ASG)? n         | Cvg Of Calls Redirected Off-net? n |
| Analog Trunk Incoming Call ID? y         | DCS (Basic)? n                     |
| A/D Grp/Sys List Dialing Start at 01? y  | DCS Call Coverage? n               |
| Answer Supervision by Call Classifier? y | DCS with Rerouting? n              |
| ARS? y                                   | DEFINITY Network Admin? n          |
| ARS/AAR Partitioning? y                  | DS1 MSP? n                         |
| ARS/AAR Shortcut Dialing? y              | Emergency Access to Attendant? y   |
| ASAI Interface? n                        | Extended Cvg/Fwd Admin? n          |
| ASAI Proprietary Adjunct Links? n        | External Device Alarm Admin? y     |
|  | Flexible Billing? n                |
| Async. Transfer Mode (ATM) Trunking? n   | Forced Entry of Account Codes? y   |
| ATMS? y                                  | Global Call Classification? y      |
| Audible Message Waiting? y               | Hospitality (Basic)? y             |
| Authorization Codes? y                   | Hospitality (G3U3 Enhancements)? y |
| CAS Branch? n                            |                                    |

(NOTE: You must logoff & login to effect the permission changes.)

Ready



## Configuring Optional Features (2 of 2)

Avaya Site Administration - [lucent\_V7 GEDI]

File Edit View System Action Tools Window Help

lucent\_V7

display system-parameters custo send (return) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

1 2 3 4

**OPTIONAL FEATURES**

ISDN Feature Plus? n Restrict Call Forward Off Net? y  
ISDN-BRI Trunks? y Secondary Data Module? y  
ISDN-PRI? y Station and Trunk MSP? n

Malicious Call Trace? y Survivable Remote Processor? n  
Mode Code Interface? y Tenant Partitioning? n  
Multifrequency Signaling? y Terminal Trans. Init. (TTI)? y  
Multimedia Appl. Server Interface (MASI)? n Time of Day Routing? y  
Multimedia Call Handling (Basic)? n Uniform Dialing Plan? y  
Multimedia Call Handling (Enhanced)? n Usage Allocation Enhancements? y

Personal Station Access (PSA)? n Wideband Switching? n  
Wireless? n

Processor and System MSP? n  
Private Networking? y

(NOTE: You must logoff & login to effect the permission changes.)

Ready

## Configuring the Cisco 3745

```
c3745# show running-config
```

```
Building configuration...
```

```
Current configuration : 1986 bytes
```

```
!  
version 12.2  
service timestamps debug uptime  
service timestamps log uptime  
no service password-encryption  
!  
hostname c3745  
!  
boot system flash:c3745-jsx-mz-v122_15_zj_throttle.0.5.0  
logging queue-limit 100  
logging buffered 1000000 debugging  
!  
ip subnet-zero  
!  
no ip domain lookup  
!  
mpls ldp logging neighbor-changes
```



```
isdn switch-type primary-ni
!
voice-card 2
  no dspfarm
!
voice-card 3
  no dspfarm
!
voice-card 4
  no dspfarm
!
!
no voice hpi capture buffer
no voice hpi capture destination
!
mta receive maximum-recipients 0
!
controller T1 2/0
  framing esf
  linecode b8zs
  pri-group timeslots 1-5,24
!
controller T1 2/1
  framing esf
  linecode b8zs
  pri-group timeslots 1-5,24
!
interface FastEthernet0/0
  ip address 172.16.1.1 255.255.255.0
  duplex auto
  speed auto
!
interface FastEthernet0/1
  ip address 172.20.8.20 255.255.255.0
  duplex auto
  speed auto
!
interface Serial2/0:23
  no ip address
  no logging event link-status
  isdn switch-type primary-ni
  isdn incoming-voice voice
  isdn bchan-number-order ascending
  no cdp enable
!
interface Serial2/1:23
  no ip address
  no logging event link-status
  isdn switch-type primary-ni
  isdn protocol-emulate network
  isdn incoming-voice voice
  isdn bchan-number-order ascending
  no cdp enable
!
ip default-gateway 10.1.1.2
ip http server
ip classless
ip route 0.0.0.0 0.0.0.0 FastEthernet0/1
!
call rsvp-sync
!
voice-port 2/0:23
```



```
!  
voice-port 2/1/0  
!  
voice-port 2/1/1  
!  
voice-port 2/1:23  
!  
voice-port 4/1/0  
  no battery-reversal  
!  
voice-port 4/1/1  
!  
mgcp profile default  
!  
dial-peer cor custom  
!  
dial-peer voice 1 pots  
  destination-pattern 20..  
  direct-inward-dial  
  port 2/1:23  
  prefix 20  
!  
dial-peer voice 3 voip  
  destination-pattern 26..  
  session target ipv4:172.16.1.2  
!  
dial-peer voice 4 voip  
  destination-pattern 4000  
  session target ipv4:172.16.1.2  
!  
dial-peer voice 2 pots  
  destination-pattern 3000  
  port 2/1/1  
!  
line con 0  
line aux 0  
line vty 0 4  
  login  
!  
end
```

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