![Cisco Systems]

Cisco VG200 - PBX Interoperability: Lucent/Avaya Definity G3si V9 PBX with Cisco CallManager using T1 CAS as an MGCP Gateway

Introduction

This is an application note for connectivity of the Lucent/Avaya Definity G3si Version 9 PBX with Cisco CallManager using Cisco VG200-T1-CAS as an MGCP Gateway.

Network Topology

Basic Call Setup End-to-End Configuration
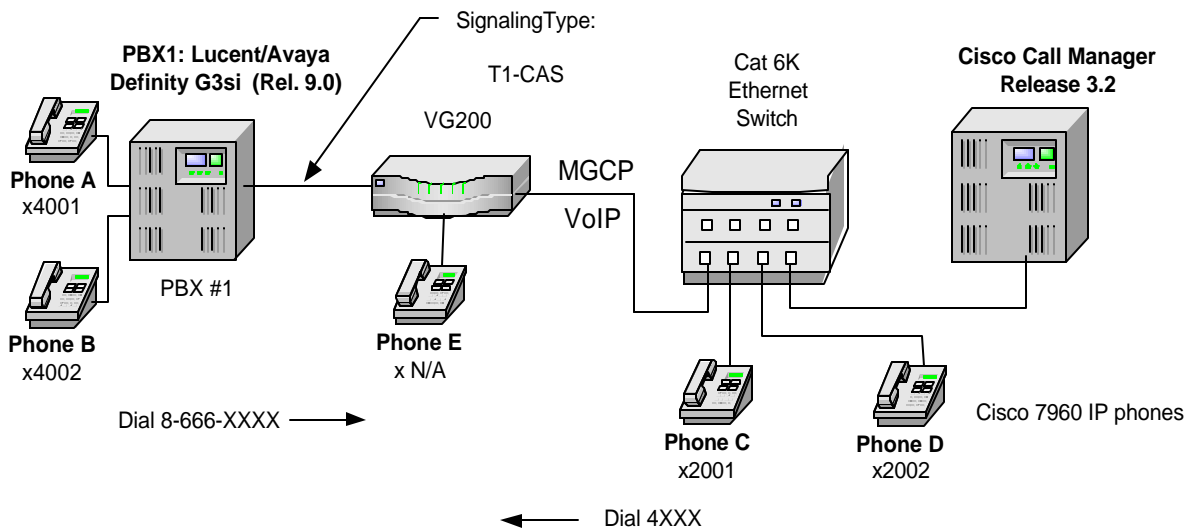
As shown in the diagram above, a Lucent/Avaya Definity G3si PBX was connected via a T1-CAS link to a Cisco VG200 Gateway, which in turn, was connected to an Ethernet switch. The interoperability testing involved basic call setup functionality between the Cisco CallManager and the Lucent/Avaya PBX.

EDCS# 210175

Limitations

E&M-Delay-Dial signaling is not functional when the default timer setting (300msec) for the Delay-Start parameter is used on the Gateway. Since this timer parameter cannot be changed by the Cisco CallManager Gateway configuration GUI, the Wink Timer trunk parameter on the Lucent/Avaya PBX needs to be changed from the default of 300 msec. to 400 msec. in order for the Delay-Dial signaling type to work properly. Note that the Delay-Dial signaling type is a delayed version of a Wink-Start Signaling, therefore the Wink Timer on the PBX needs to be set to a greater value than the Delay-Start timer on the Gateway.

System Components

Hardware Requirements

- Cisco VG200 Gateway with 2MFT T1 Port
- Cisco Catalyst 6000 switch
- Lucent/Avaya Definity G3si Version 9 PBX, TN464F, DS1 INTFC 24/32

Software Requirements

- Cisco IOS Software Release 12.2(2)XN
- PBX Software Release 9
- Cisco CallManager Release 3.2

Configuration

Configuring the Lucent/Avaya Definity G3si PBX

Configure in the following sequence:

- Add the new circuit pack..
- Add the new trunk group.
- Configure the dialing plan.

Adding the New DS1 Circuit Pack

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DEFINITY® Site Administration - [AvayaV9 GEDI]                          _ □ X
File  Edit  View  System  Action  Tools  Window  Help                    _ 日 X

  [toolbar icons]          [] AvayaV9              ▼

change ds1 a14        ▼   send (return)  help (f5)  cancel (esc)  enter (f3)  schedule (f9)  next (f7)  previous (f8)  next f

  1  │  2

                          DS1 CIRCUIT PACK

              Location: 01A14                      Name: T1 CAS
              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




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Ready                                                        NUM
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File  Edit  View  System  Action  Tools  Window  Help

change ds1 a14          send (return)    help (f5)   cancel (esc)   enter (f3)   schedule (f9)   next (f7)   previous (f8)   next

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
```

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Configuring Trunk Group (Wink-Start Signaling)

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File   Edit   View   System   Action   Tools   Window   Help

AvayaV9

change trunk-group 14 | send (return) | help (f5) | cancel (esc) | enter (f3) | schedule (f9) | next (f7) | previous (f8) | next f

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

```
                              TRUNK GROUP

     Group Number: 14              Group Type: tandem        CDR Reports: y
       Group Name: T1-CAS              COR: 1      TN: 1        TAC: 669
        Direction: two-way     Outgoing Display? y Trunk Signaling Type:
      Dial Access? y            Busy Threshold: 99         Night Service:
     Queue Length: 0                           Incoming Destination:
        Comm Type: voice


  TRUNK PARAMETERS
     Trunk Type (in/out): wink/wink     Incoming Rotary Timeout(sec):
       Outgoing Dial Type: tone              Incoming Dial Type: tone
         Wink Timer(msec): 400         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? n
  Answer Supervision Timeout: 0        Receive Answer Supervision? y
```

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

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DEFINITY® Site Administration - [AvayaV9 GEDI]

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AvayaV9

change trunk-group 14 | send (return) | help (f5) | cancel (esc) | enter (f3) | schedule (f9) | next (f7) | previous (f8) | next

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

```
TRUNK FEATURES
             ACA Assignment? n              Measured: none
                                                         Maintenance Tests? y
                             Data Restriction? n
                             Glare Handling: none
              Used for DCS? n                Hop Dgt? n
      Suppress # Outpulsing? n
                    Seize When Maintenance Busy: neither-end



  Incoming Tone (DTMF) ANI: no              Per Call CPN Blocking Code:
                                           Per Call CPN Unblocking Code:

                                           Ds1 Echo Cancellation? n
```

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  [toolbar icons]   [ ] AvayaV9         ▼

change trunk-group 14    ▼  send (return) │ help (f5) │ cancel (esc) │ enter (f3) │ schedule (f9) │ next (f7) │ previous (f8) │ next f

  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
                                    Incoming Incomplete Dial Alarm(sec): 255




  END TO END SIGNALING
     Tone(msec): 350     Pause(msec): 150

  OUTPULSING INFORMATION
     PPS: 10    Make(msec): 40   Break(msec): 60




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DEFINITY® Site Administration - [AvayaV9 GEDI]

File  Edit  View  System  Action  Tools  Window  Help

change trunk-group 14    send (return)   help (f5)   cancel (esc)   enter (f3)   schedule (f9)   next (f7)   previous (f8)   next

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

                            ATMS THRESHOLDS
          TTL Type: 105-w-rl          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

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AvayaV9

change trunk-group 14 | send (return) | help (f5) | cancel (esc) | enter (f3) | schedule (f9) | next (f7) | previous (f8) | next

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

TRUNK GROUP

Administered Members (min/max):   1/24

GROUP MEMBER ASSIGNMENTS   Total Administered Members: 24

	Port	Code	Sfx	Name	Night	Mode	Type	Ans Delay
1:	01A1401	TN464	F			e&m	t1-stan	
2:	01A1402	TN464	F			e&m	t1-stan	
3:	01A1403	TN464	F			e&m	t1-stan	
4:	01A1404	TN464	F			e&m	t1-stan	
5:	01A1405	TN464	F			e&m	t1-stan	
6:	01A1406	TN464	F			e&m	t1-stan	
7:	01A1407	TN464	F			e&m	t1-stan	
8:	01A1408	TN464	F			e&m	t1-stan	
9:	01A1409	TN464	F			e&m	t1-stan	
10:	01A1410	TN464	F			e&m	t1-stan	
11:	01A1411	TN464	F			e&m	t1-stan	
12:	01A1412	TN464	F			e&m	t1-stan	
13:	01A1413	TN464	F			e&m	t1-stan	
14:	01A1414	TN464	F			e&m	t1-stan	
15:	01A1415	TN464	F			e&m	t1-stan	

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

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DEFINITY® Site Administration - [AvayaV9 GEDI]

File Edit View System Action Tools Window Help

AvayaV9

change trunk-group 14 | send (return) | help (f5) | cancel (esc) | enter (f3) | schedule (f9) | next (f7) | previous (f8) | next

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

```
                              TRUNK GROUP
                              Administered Members (min/max):   1/24
GROUP MEMBER ASSIGNMENTS                Total Administered Members:   24


        Port    Code Sfx Name        Night       Mode    Type    Ans Delay
16:  01A1416    TN464  F                           e&m     t1-stan
17:  01A1417    TN464  F                           e&m     t1-stan
18:  01A1418    TN464  F                           e&m     t1-stan
19:  01A1419    TN464  F                           e&m     t1-stan
20:  01A1420    TN464  F                           e&m     t1-stan
21:  01A1421    TN464  F                           e&m     t1-stan
22:  01A1422    TN464  F                           e&m     t1-stan
23:  01A1423    TN464  F                           e&m     t1-stan
24:  01A1424    TN464  F                           e&m     t1-stan
25:
26:
27:
28:
29:
30:
```

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

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Trunk Group for Delay-Dial Signaling

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File Edit View System Action Tools Window Help

AvayaV9

change trunk-group 14 | send (return) | help (f5) | cancel (esc) | enter (f3) | schedule (f9) | next (f7) | previous (f8) | next f

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

```
                              TRUNK GROUP


   Group Number: 14              Group Type: tandem      CDR Reports: y
     Group Name: T1-CAS          COR: 1        TN: 1      TAC: 669
      Direction: two-way    Outgoing Display? y Trunk Signaling Type:
    Dial Access? y          Busy Threshold: 99        Night Service:
   Queue Length: 0                           Incoming Destination:
      Comm Type: voice



  TRUNK PARAMETERS
    Trunk Type (in/out): delay/delay   Incoming Rotary Timeout(sec):
     Outgoing Dial Type: tone           Incoming Dial Type: tone
       Wink Timer(msec): 400         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? n
  Answer Supervision Timeout: 0        Receive Answer Supervision? y
```

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

Configuring the Dialing Plan

DEFINITY® Site Administration - [AvayaV9 GEDI]

File Edit View System Action Tools Window Help

change dialplan | send (return) | help (f5) | cancel (esc) | enter (f3) | schedule (f9) | next (f7) | previous (f8) | next f

1

DIAL PLAN RECORD

Local Node Number: 1
ETA Node Number:
Uniform Dialing Plan: 4-digit   ETA Routing Pattern:
UDP Extension Search Order: udp-table-first
FIRST DIGIT TABLE

First Digit	- 1 -	- 2 -	- 3 -	Length - 4 -	- 5 -	- 6 -
1:						
2:				extension		
3:				extension		
4:				extension		
5:				extension		
6:			dac			
7:						
8:	fac					
9:	fac					
0:	attd					
*:			fac			
#:						

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

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DEFINITY® Site Administration - [AvayaV9 GEDI]                    _ □ ×
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 [icons]                              AvayaV9        ▼

 change route-pattern 2      ▼   send (return)   help (f5)   cancel (esc)   enter (f3)   schedule (f9)   next (f7)   previous (f8)   next f

 ┌─┐
 │1│
 └─┴──────────────────────────────────────────────────────────────────────
                         Pattern Number: 2

      Grp.   FRL NPA Pfx Hop Toll No. Del Inserted                    IXC
      No.            Mrk Lmt List Digits  Digits
   1: 14      0   401  1           3                                   user
   2:                                                                  user
   3:                                                                  user
   4:                                                                  user
   5:                                                                  user
   6:                                                                  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  n           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



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

Configuring Cisco CallManager

Vg200-MGCP Gateway Configuration

Digital Access T1-CAS Configuration

Cisco CallManager 3.2 Administration - Gateway Configuration - Microsoft Internet Explorer

File   Edit   View   Favorites   Tools   Help

Back ⇐ → ⊗ ↻ ⌂ | Search Favorites History | | Address -4FCC-9C88-72254C1BF9CB} | Go | Links »

E&M
E&M   Port 21
E&M   Port 22
E&M   Port 23
E&M   Port 24

Product Specific Configuration   ℹ️

Line Coding*   B8ZS

framing*   ESF

Clock*   External

* indicates required item

Back to MGCP Configuration
Back to Find/List Gateways

Local intranet

T1-CAS Port Configuration

Cisco CallManager 3.2 Administration - Port Configuration - Microsoft Internet Explo...

Port Configuration

S1/DS1-0@VG200_MGCP   Port Type: E&M   Port Number: 1

Status: Ready

| New | Update | Update and Close | Delete | Cancel Changes |

Port Details

Port Direction*	Bothways
Calling Party Selection*	Originator
Caller ID Type*	ANI
Caller ID DN	
Prefix DN	
Num Digits*	4
Expected Digits*	4

Product Specific Configuration

Signaling Type*	Wink Start

* indicates required item

Done   Local intranet

Route Pattern Configuration

Cisco CallManager 3.2 Administration - Route Pattern Configuration - Microsoft Internet Explorer

File   Edit   View   Favorites   Tools   Help

⇐ Back ▾ ⇒ ▾ ⊗ ⭯ ⌂ | ⍰ Search ⭐ Favorites ⏱ History | ⊡ ▾ ⊜ | Address ⬢ -4D13-8C1E-ABC72E186041} ▾ ⌀ Go | Links »

System   Route Plan   Service   Feature   Device   User   Application   Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions

CISCO SYSTEMS

Route Pattern Configuration

Add a New Route Pattern
Back to Find/List Route Patterns

Route Pattern: 4XXX

Status: Ready
Note: Any update to this route pattern automatically resets the associated gateway/route list

[Copy] [Update] [Delete] [Cancel Changes]

Pattern Definition

Route Pattern*	4XXX
Partition	< None > ▾
Numbering Plan*	North American Numbering Pl ▾
Route Filter	< None > ▾
Gateway/Route List*	S1/DS1-0@VG200_MGCP ▾ (Edit)
Route Option	⦿ Route this pattern ○ Block this pattern
☑ Provide Outside Dial Tone	☐ Urgent Priority

Calling Party Transformations

☐ Use Calling Party's External Phone Number Mask

Calling Party Transform Mask   [   ]

Prefix Digits (Outgoing Calls)   [   ]

Called Party Transformations

Discard Digits   < None > ▾

Called Party Transform Mask   [   ]

Prefix Digits (Outgoing Calls)   [   ]

* indicates required item.

⬢ Done   ⬚ Local intranet

Configuring the Cisco VG200

```
VG200_MGCP# show running config

Building configuration...


Current configuration : 1301 bytes
!
version 12.2
no parser cache
no service single-slot-reload-enable
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname VG200_MGCP
!
logging rate-limit console 10 except errors
!
voice-card 1
!
ip subnet-zero
!
no ip dhcp-client network-discovery
mgcp
mgcp call-agent 10.1.1.2 2427 service-type mgcp version 0.1
mgcp dtmf-relay voip codec all mode out-of-band
mgcp rtp unreachable timeout 1000 action notify
mgcp modem passthrough voip mode cisco
mgcp sdp simple
```

```
mgcp package-capability rtp-package

mgcp package-capability sst-package

no mgcp timer receive-rtcp

no mgcp explicit hookstate

call rsvp-sync

!

!

!

!

!

ccm-manager mgcp

ccm-manager music-on-hold

ccm-manager config server 10.1.1.2

ccm-manager config

!

controller T1 1/0

 framing esf

 linecode b8zs

 ds0-group 1 timeslots 1-24 type e&m-wink-start

!

controller T1 1/1

 framing esf

 linecode b8zs

!

!

interface FastEthernet0/0

 ip address 10.1.1.210 255.255.255.0

 duplex auto

 speed auto

!

ip classless
```

```
no ip http server
!
!
voice-port 1/0:1
!
dial-peer voice 100 pots
 application mgcpapp
!
dial-peer voice 200 pots
 application mgcpapp
!
dial-peer voice 999101 pots
 application mgcpapp
 port 1/0:1
!
!
line con 0
line aux 0
line vty 0 4
 login
line vty 5 15
 login
!
end


VG200_MGCP#
```

Important Information

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