CISCO SYSTEMS

Cisco 3640-PBX Interoperability: Lucent Definity G3r with E1 ISDN PRI Signaling
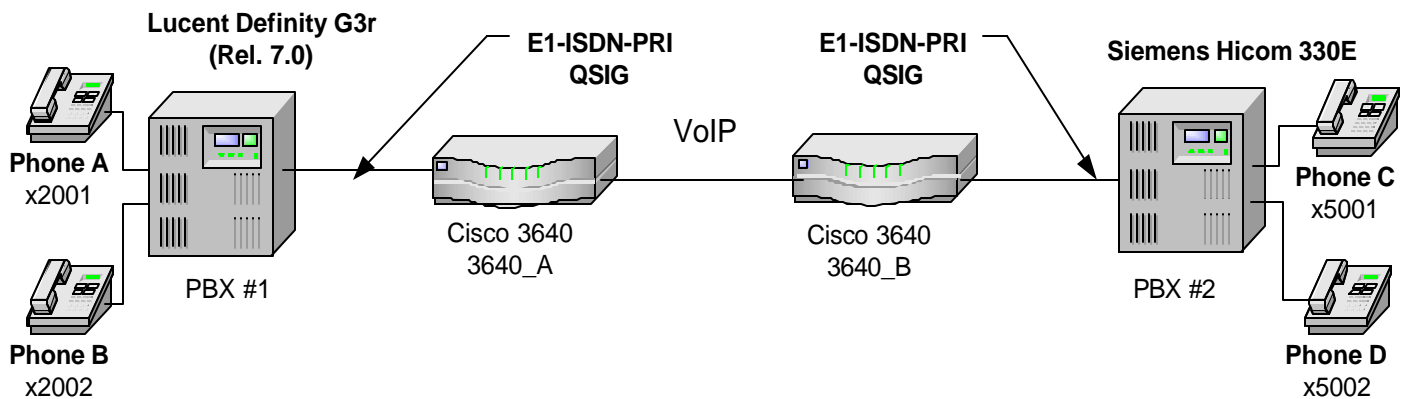
Introduction

This document describes the interoperability and configuration of a Cisco 3640 voice gateway with a Lucent Definity G3r using E1 ISDN PRI signaling.

Network Topology

This diagram represents the various configurations used for testing.

Basic Call Setup
End-to-End Configuration

Limitations

- The Lucent Definity G3r supports both "USER" and "NETWORK" protocol sides.
- The Cisco 3640 router ISDN switch-type setting primary-qsig supports both protocol sides by using the "isdn protocol-emulate network/user" command.
- Lucent Definity G3 has no provision for the E1 interface to "line clock" – it **always** wants to provide clock on the interface, so the Cisco 3640 2MFT E1 interface must be set to "line clock" to work with it.
- Lucent Definity G3 uses the same TN464F "DS1 INTFC 24/32" card for both T1 and E1 trunking – To select E1 functionality, some database entries are made in the Lucent trunk configuration screen (see Lucent configuration appendix for details) and there are two DIP switches on the card itself:
    - 24CH/30CH – Set to 24CH for T1, 30CH for E1

– 120Ω/75Ω -- Set to 120Ω to use with a twisted pair E1 circuit; if set to 75Ω to use with a coaxial wire E1 circuit, must use an external adapter provided by Lucent. Not applicable for the T1 setting – leave at 120Ω.

- The Lucent PBX sends back a Progress Indicator message indicating inband information may be available. The "progress_ind setup enable 1" command is necessary under the voip dial-peer to open the voicepath to ensure the caller hears a ringback tone.
- To assure that Calling Name is delivered and presented on both sides, both PBXs must be configured for the same type of QSIG Supplementary Services.

System Components

Hardware Requirements

- Cisco hardware—Cisco 3640 with 2MFT-E1
- PBX hardware—G3siV7

Software Requirements

- Cisco software release— IOS™ Version 12.2
- PBX software release—version G3V7i.01.0.343.7

Configuration

Configuring the Lucent Definity G3r

```
DEFINITY Site Administration - [Lucent Test PBX GEDI]                    _ □ ×
 File  Edit  View  Tools  Window  Help                                      _ 🗗 ×
 display system-parameters custo ▼   send (rtn)   help (f5)   cancel (esc)  enter (f3)  schedule (f9)  next (f7)  previous (f8)

  1   2   3   4
                              OPTIONAL FEATURES


          G3 Version: V7                          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 (G3V3 Enhancements)? y
                       CAS Branch? n
     (NOTE: You must logoff & login to effect the permission changes.)




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

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│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.)


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DEFINITY Site Administration - [Lucent Test PBX GEDI]

File Edit View Tools Window Help

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

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

Length

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

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DEFINITY Site Administration - [Lucent Test PBX GEDI]                    _ □ ✕
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change signaling-group 3      ▼   send (rtn)   help (f5)   cancel (esc)   enter (f3)   schedule (f9)   next (f7)   previous (f8)

  1  |

                              SIGNALING GROUP

    Group Number: 3
                        Associated Signaling? y        Max number of NCA TSC: 0
                          Primary D-Channel: 01A1224    Max number of CA TSC: 5
                                                       Trunk Group for NCA TSC: [ ]
            Trunk Group for Channel Selection: 7
               Supplementary Service Protocol: b


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DEFINITY Site Administration - [Lucent Direct-Com1 GEDI]                      _ □ ×
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change trunk-group 7        ▼   send (rtn) | 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: 7                 Group Type: isdn          CDR Reports: y
        Group Name: ISDN-NFAS              COR: 1      TN: 1        TAC: 668
         Direction: two-way    Outgoing Display? y
      Dial Access? y           Busy Threshold: 99       Night Service:
      Queue Length: 0
      Service Type: tandem                          TestCall ITC: rest
                   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: b  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? y
      Answer Supervision Timeout: 0


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Lucent Direct-Com1

change trunk-group 7 | send (rtn) | 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? n         Measured: none      Wideband Support? n
                                                          Maintenance Tests? y
                                Data Restriction? n   NCA-TSC Trunk Member:
                                      Send Name: y    Send Calling Number: y
              Used for DCS? n               Hop Dgt? y
        Suppress # Outpulsing? n   Numbering Format: public
  Outgoing Channel ID Encoding: preferred    UUI IE Treatment: service-provider


                                            Send Connected Number: y



              Send UCID? y
        Send Codeset 6/7 LAI IE? y
```

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

Ready

DEFINITY Site Administration - [Lucent Direct-Com1 GEDI]

File   Edit   View   Tools   Window   Help

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

Lucent Direct-Com1

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

TRUNK GROUP

Administered Members (min/max):   1/30

GROUP MEMBER ASSIGNMENTS   Total Administered Members: 30

	Port	Code	Sfx	Name	Night	Sig Grp
1:	01A1201	TN464	F			3
2:	01A1202	TN464	F			3
3:	01A1203	TN464	F			3
4:	01A1204	TN464	F			3
5:	01A1205	TN464	F			3
6:	01A1206	TN464	F			3
7:	01A1207	TN464	F			3
8:	01A1208	TN464	F			3
9:	01A1209	TN464	F			3
10:	01A1210	TN464	F			3
11:	01A1211	TN464	F			3
12:	01A1212	TN464	F			3
13:	01A1213	TN464	F			3
14:	01A1214	TN464	F			3
15:	01A1215	TN464	F			3

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

Ready   NUM

DEFINITY Site Administration - [Lucent Direct-Com1 GEDI]

File Edit View Tools Window Help

change trunk-group 14 | send (rtn) | 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):   1/30
     GROUP MEMBER ASSIGNMENTS       Total Administered Members:   30


         Port    Code Sfx Name        Night          Sig Grp
   16:  01A1217 TN464  F                              3
   17:  01A1218 TN464  F                              3
   18:  01A1219 TN464  F                              3
   19:  01A1220 TN464  F                              3
   20:  01A1221 TN464  F                              3
   21:  01A1222 TN464  F                              3
   22:  01A1223 TN464  F                              3
   23:  01A1224 TN464  F                              3
   24:  01A1225 TN464  F                              3
   25:  01A1226 TN464  F                              3
   26:  01A1227 TN464  F                              3
   27:  01A1228 TN464  F                              3
   28:  01A1229 TN464  F                              3
   29:  01A1230 TN464  F                              3
   30:  01A1231 TN464  F                              3
```

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

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Configuring the Cisco 3640

```
3640_A#show running-configuration
Using 1433 out of 129016 bytes
!
version 12.2
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname 3640_A
!
logging rate-limit console 10 except errors
!
voice-card 1
!
ip subnet-zero
!
```

```
!
no ip finger
!
no ip dhcp-client network-discovery
isdn switch-type primary-qsig
call rsvp-sync
!
!
!
!
!
!
!
controller E1 1/0
!
controller E1 1/1
 pri-group timeslots 1-31
!
!
interface Ethernet0/0
 ip address 100.100.100.2 255.255.255.0
 no ip mroute-cache
 half-duplex
!
interface Ethernet0/1
 no ip address
 no ip mroute-cache
 half-duplex
!
interface Serial1/1:15
 no ip address
 no logging event link-status
 isdn switch-type primary-qsig
 isdn overlap-receiving T302 2000
 isdn incoming-voice voice
 isdn T203 30000
 isdn T310 60000
 isdn bchan-number-order ascending
 no cdp enable
!
ip kerberos source-interface any
ip classless
no ip http server
!
!
!
voice-port 1/1:15
!
voice-port 2/0/0
!
```

```
voice-port 2/0/1
!
voice-port 2/1/0
!
voice-port 2/1/1
!
dial-peer cor custom
!
!
!
dial-peer voice 1 pots
 destination-pattern 2...
 direct-inward-dial
 port 1/1:15
 prefix 2
!
dial-peer voice 2 pots
 destination-pattern 9000
 port 2/0/0
!
dial-peer voice 3 voip
 destination-pattern 5...
 session target ipv4:100.100.100.1
!
dial-peer voice 6 voip
 destination-pattern 6000
 session target ipv4:100.100.100.1
!
!
line con 0
 transport input none
line aux 0
line vty 0 4
 login
!
end
```

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CISCO SYSTEMS

Corporate Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
      800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems, Inc.
Capital Tower
168 Robinson Road
#22-01 to #29-01
Singapore 068912
www.cisco.com
Tel: +65 317 7777
Fax: +65 317 7799

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