

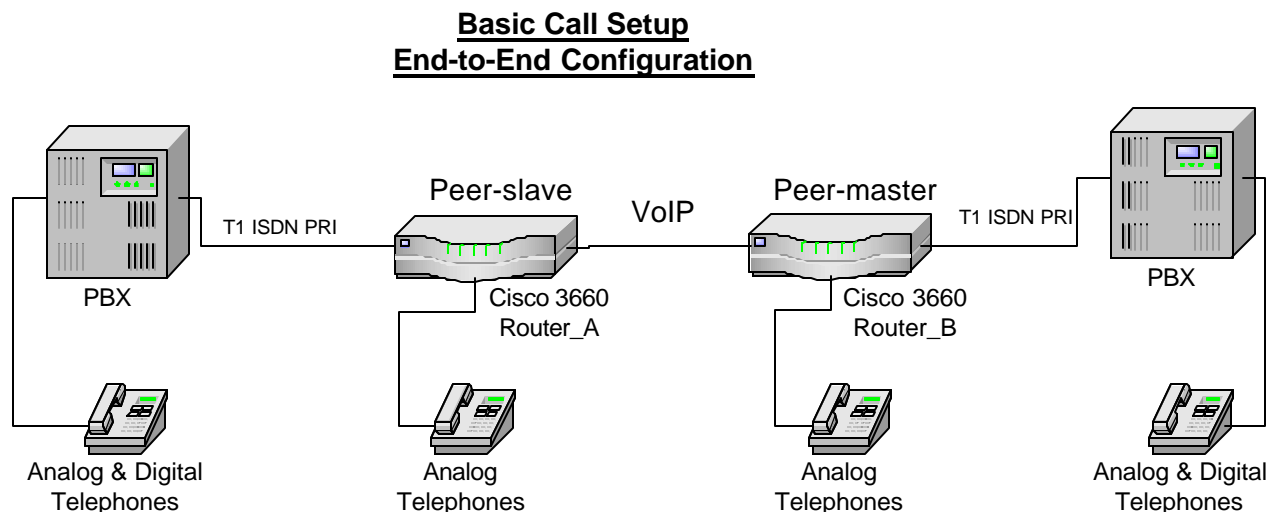
Cisco 3600 Router-PBX Interoperability: Lucent Definity G3 and a Cisco 3600 with 2MFT T1 Card using ISDN PRI Signaling

Introduction

- This document contains results of PBX interoperability testing between a Lucent Definity G3 and the Cisco 3600 with 2MFT T1 card using ISDN PRI protocols.
- The Network Topology diagram shows the end-to-end interoperability.

Network Topology

Figure 1. Network Topology



Limitations

- When configured for isdn switch-type primary -5ess the Cisco 3600 does not pass the optional IE calling name, although it does pass the calling number.
- The Cisco 3600 can only be set to isdn protocol-emulate network on primary -ntt and primary -ni switch types.
- While the Cisco 3600 can be set to isdn overlap-receiving on NET3, NET5 and QSIG protocols, functionality was **not** verified for this report.
- If only one side of a 3600 pair has the VoIP dial peer set for codec g711ulaw the call behavior is erratic causing calls from one ISDN PBX to the other to drop without warning.
- Lucent Definity G3 has no provision for the T1 interface to line clock, therefore the Cisco 3600 2MFT T1 interface must be set to line clock.
- Lucent Definity G3 uses the same TN464F DS1 INTFC 24/32 card for both T1 and E1 trunking. To select T1 functionality, some database entries are made in the Lucent trunk configuration screen (see Lucent configuration 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.



System Components

Hardware Requirements

- Cisco 3600 router with 2MFT-E1 port
- Lucent G3siV7 PBX

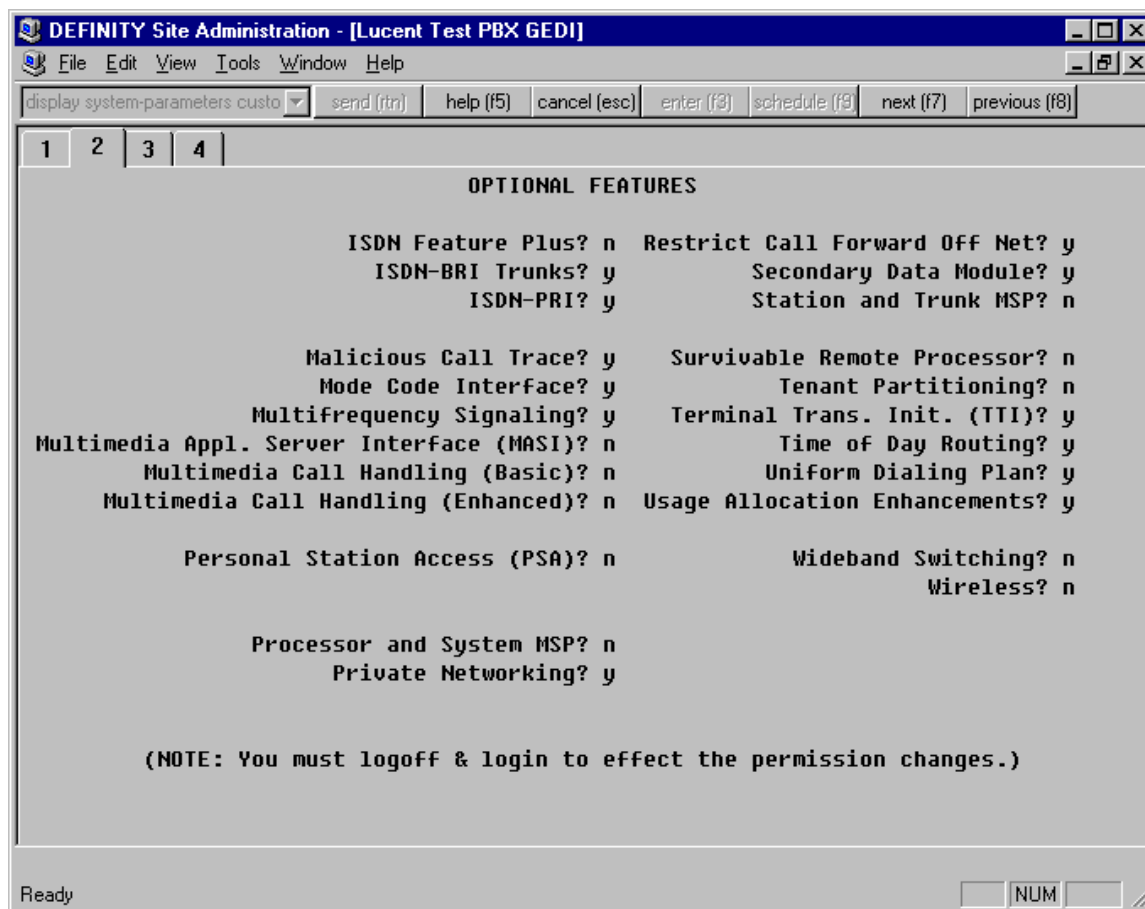
Software Requirements

- Cisco IOS Software Release C3640-JS_M Experimental Version 12.2(20010328:140530)
- PBX Software Release G3V7i01.0.343.7

Configuration

Configuring the Lucent G3siV7 PBX

The only setup screens given are those containing features specifically needed to bring up an ISDN PRI T1 trunk.





DEFINITY Site Administration - [Lucent Test PBX GEDI]

File Edit View Tools Window Help

Lucent Test PBX

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

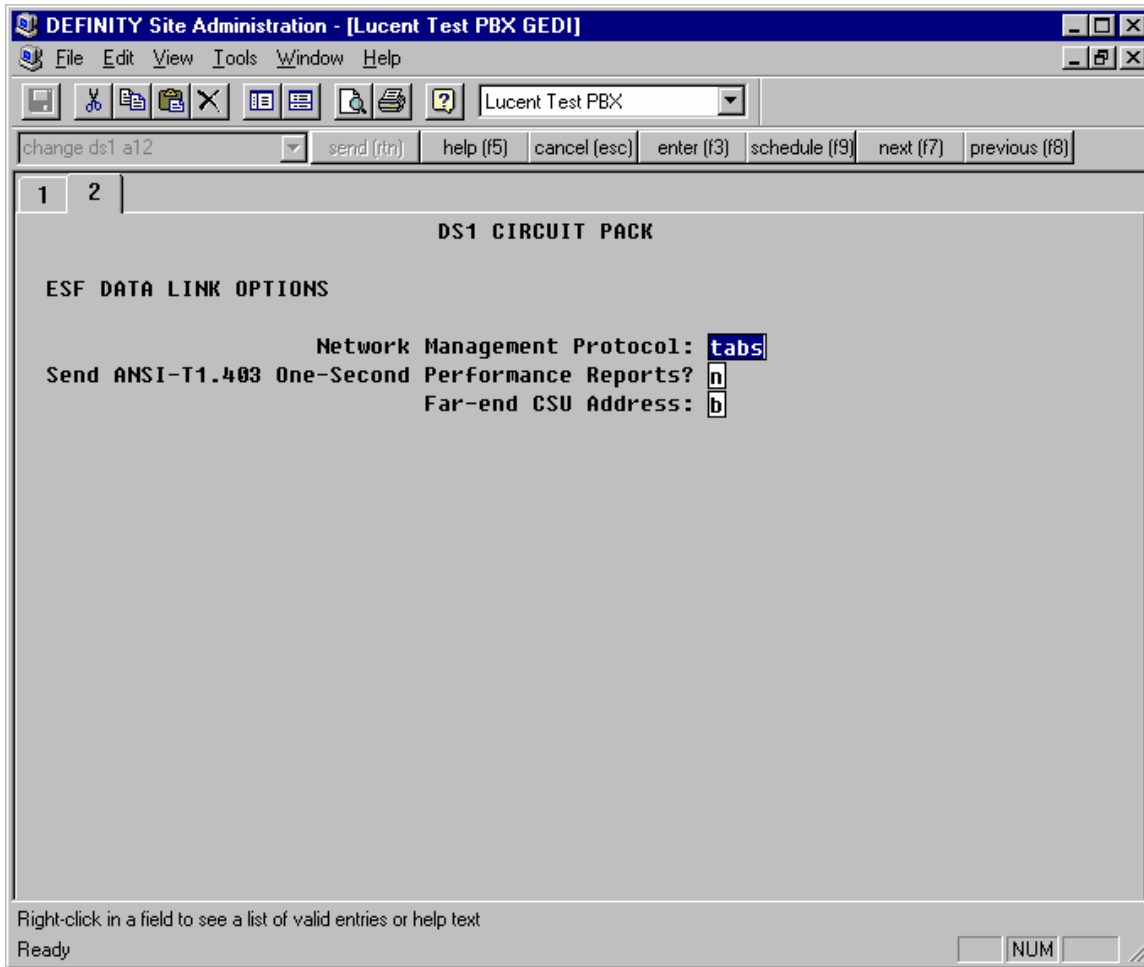
1 2

DS1 CIRCUIT PACK

| | | | |
|-----------------------|-----------|-----------------------------------|------------|
| Location: | 01A12 | Name: | U7-SLOT-12 |
| Bit Rate: | 1.544 | Line Coding: | b8zs |
| Line Compensation: | 1 | Framing Mode: | esf |
| Signaling Mode: | isdn-pri | Country Protocol: | 1 |
| Connect: | line-side | Protocol Version: | c |
| Interface Companding: | mulaw | CRC? | n |
| Idle Code: | 11111111 | DCP/Analog Bearer Capability: | 3.1kHz |
| Slip Detection? | n | Near-end CSU Type: | other |
| | | Alarm When PRI Endpoint Detached? | y |

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

Ready NUM





DEFINITY Site Administration - [Lucent Test PBX GEDI]

File Edit View Tools Window Help

Lucent Test PBX

change isdn public-unknown-nu send (ftrj) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

1 2 3 4 5 6 7 8

ISDN NUMBERING - PUBLIC/UNKNOWN FORMAT

| Ext Len | Ext Code | CPN Prefix | Total CPN Length | Ext Len | Ext Code | CPN Prefix | Total CPN Length |
|---------|----------|------------|------------------|---------|----------|------------|------------------|
| 4 | 2 | | 4 | | | | |
| 4 | 4 | | 4 | | | | |
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Right-click in a field to see a list of valid entries or help text

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DEFINITY Site Administration - [Lucent Test PBX GEDI]

File Edit View Tools Window Help

Lucent Test PBX

change trunk-group 7 send (ftr) 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: Port 01A12 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: 6 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: cyclical
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

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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

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DEFINITY Site Administration - [Lucent Test PBX GEDI]

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change trunk-group 7 send (ftrj) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

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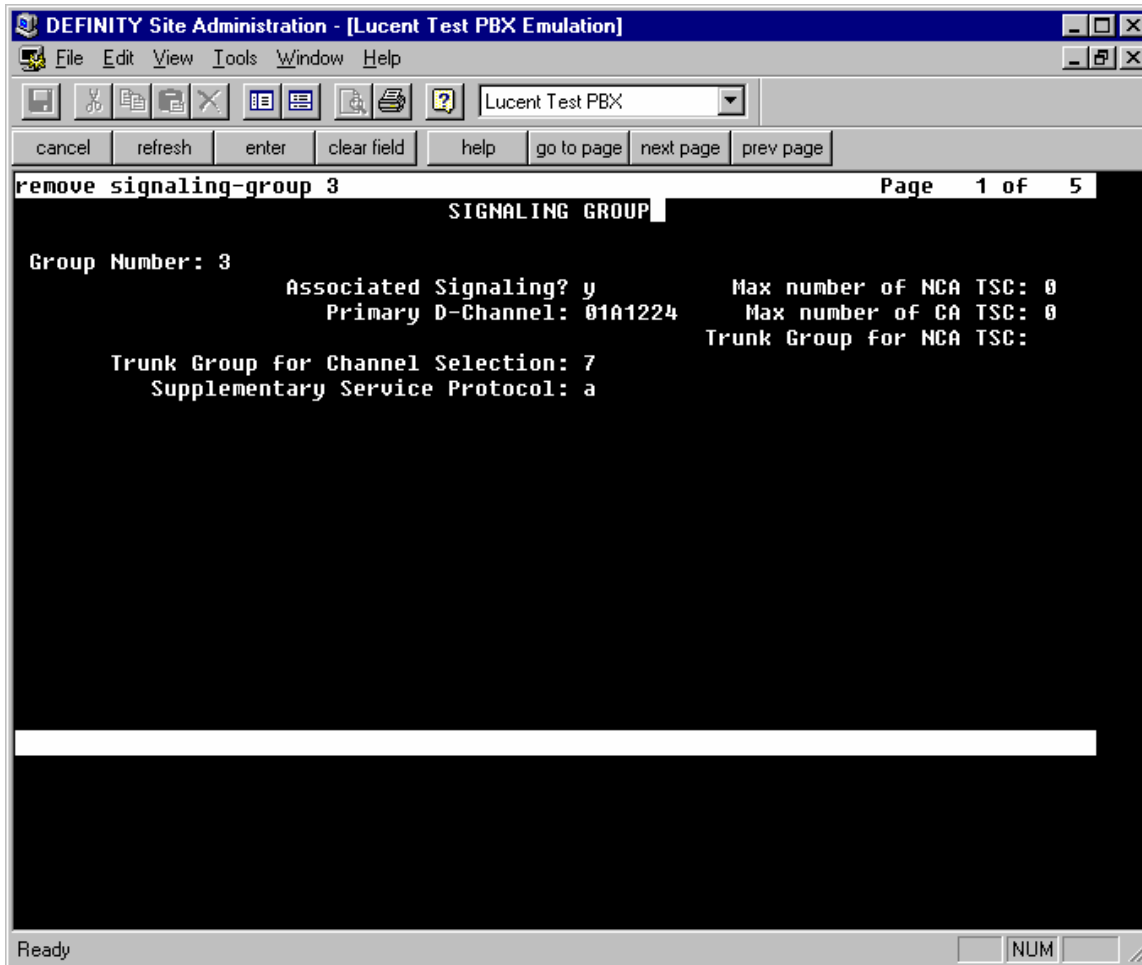
TRUNK GROUP
Administered Members (min/max): 1/5
Total Administered Members: 5

GROUP MEMBER ASSIGNMENTS

| | Port | Code | Sfx | Name | Night | Sig Grp |
|-----|---------|-------|-----|------|-------|---------|
| 1: | 01A1201 | TN464 | F | | | 3 |
| 2: | 01A1202 | TN464 | F | | | 3 |
| 3: | 01A1203 | TN464 | F | | | 3 |
| 4: | 01A1204 | TN464 | F | | | 3 |
| 5: | 01A1205 | TN464 | F | | | 3 |
| 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 NUM



Configuring the Cisco 3600 Router

- The following sample output shows the router configuration for interoperability with the PBX.

```
Router_E#sh run
Building configuration...

Current configuration : 1322 bytes
!
version 12.2
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname router_E
!
logging rate-limit console 10 except errors
!
!
!
voice-card 1
!
ip subnet-zero
!
```



```
!  
!  
no ip dhcp-client network-discovery  
isdn switch-type primary-qsig  
isdn voice-call-failure 0  
call rsvp-sync  
!  
!  
!  
!  
!  
!  
controller T1 1/0  
  framing esf  
  linecode b8zs  
  cablelength short 133  
  pri-group timeslots 1-24  
!  
controller T1 1/1  
  framing sf  
  linecode ami  
!  
!  
!  
interface Ethernet0/0  
  ip address 100.100.100.2 255.255.255.0  
  no ip mroute-cache  
  full-duplex  
!  
interface Ethernet0/1  
  ip address 10.1.1.1 255.255.255.0  
  no ip mroute-cache  
  half-duplex  
  no cdp enable  
!  
interface Serial1/0:23  
  no ip address  
  no logging event link-status  
  isdn switch-type primary-ni  
  isdn protocol-emulate network  
  isdn incoming-voice voice  
  no cdp enable  
!  
ip default-gateway 171.71.8.6  
ip classless  
no ip http server  
!  
!  
!  
snmp-server manager  
!  
voice-port 1/0:23  
!  
dial-peer cor custom  
!  
!  
!  
dial-peer voice 15 pots  
  destination-pattern 9000  
!  
dial-peer voice 1 pots  
  destination-pattern 777222....  
  direct-inward-dial  
  port 1/0:23  
!  
!
```



```
dial-peer voice 2 voip
 destination-pattern 777444...
 session target ipv4:100.100.100.1
!
!
line con 0
line aux 0
line vty 0 4
 login
!
!
end
```

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