



Cisco 7206 Series Router-PBX Interoperability: Lucent Definity G3r PBX and PA-VXC-2TE1+ Card with E1 ISDN PRI QSIG

This document describes the interoperability and configuration of a Cisco 7200 series router with a Lucent Definity G3r PBX using E1 ISDN PRI QSIG. It includes the following sections:

- System Components
- Configuration Tasks
- Caveats

System Components

PBX Model	Lucent Definity G3r
PBX Release	G3V7i.01.0.343.7
Telephony Signaling	E1 ISDN PRI
Voice Gateway	Cisco 7206 Series Routers
Gateway Release	Cisco IOS™ (C7200-JS-M), Version 12.2(1)
VoX Protocol	H.323

Configuration Tasks

See the following sections for configuration tasks for this feature:

- Set Up
- Lucent Definity G3r PBX Configuration
- Cisco 7206 Series Router Configuration

Set Up

This section includes the following information:

- Connectivity Diagrams
- Set Up Notes

Connectivity Diagrams

Figure 1: Test Configuration

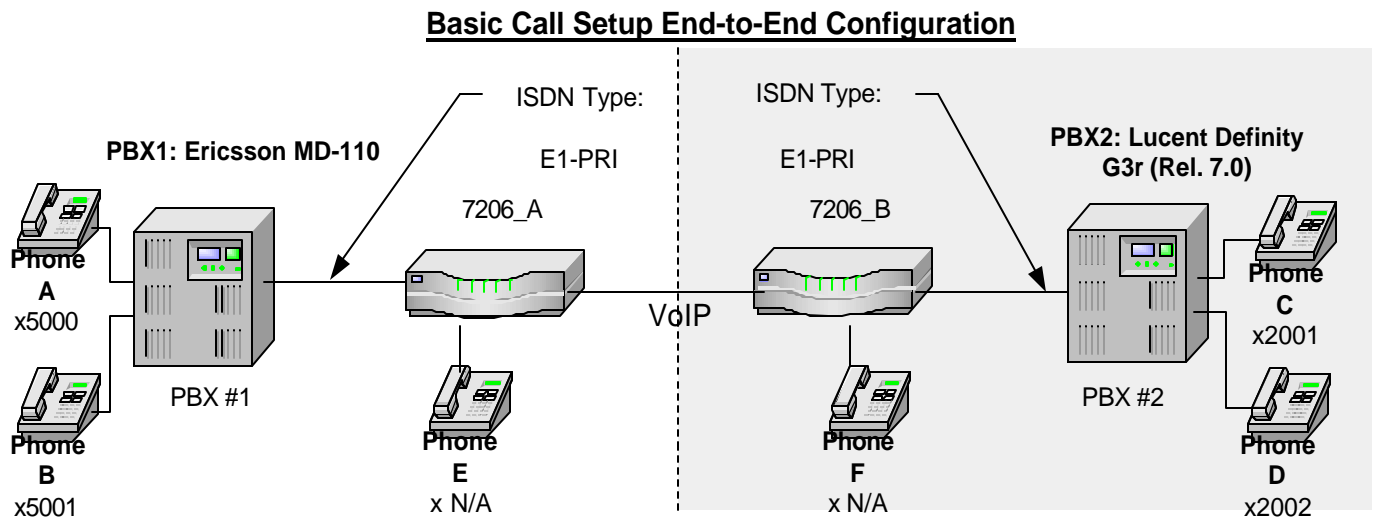


Figure 1 represents the configuration used for testing: a Cisco 7206 series router was connected to a Lucent Definity G3r PBX via ISDN E1 link.

Set Up Notes

- The Cisco 7206 series router with ISDN switch type setting of **primary-net5** supports both protocol sides by using the “`isdn protocol-emulate network/user`” command.
- The Lucent Definity G3r supports both “USER” (peer-slave) and “NETWORK” (peer-master) protocol sides by using **change ds1 a12** command.
- The Lucent Definity G3r PBX configuration screen for the E1 trunk interface is reached using **change ds1 a12** command, setting the E1 physical layer parameters.

QSIG Channel ID Coding/Mapping

The Cisco 7206 series router uses the ECMA QSIG standard. ECMA QSIG uses channel numbers 1-15 and 17-31 as B-channels, while channel 16 is allocated for the D-channel. Since both PBXs are using the ECMA standard, logical channels 16-30 are mapped correctly to the Cisco 7206 series routers channel 17-31 timeslots. Therefore, ISDN command **isdn contiguous-bchan** is not needed on the Cisco 7206 series router. It may be necessary in the Cisco 7206 to use this command to allow the Cisco 7206 series router to support ETSI QSIG channel mapping standard, depending on the configuration of the PBX side.

Lucent Definity G3r PBX Configuration

Lucent Definity G3r PBX Version Information

- Software: Version G3V7i.01.0.343.7
- Hardware: G3siV7.

Lucent Definity G3r PBX Sample Configuration

The following screens display a sample configuration of the Lucent Definity G3r PBX. Use these screens to configure the Lucent Definity G3r PBX.

- Figure 2: Dial Plan Record
- Figure 3: Pattern Number
- Figure 4: DS1 Circuit Pack
- Figure 5: Signaling Group
- Figure 6: Trunk Group
- Figure 7: Trunk Features
- Figure 8: Group Member Assignments Tab 4
- Figure 9: Group Member Assignments Tab 5
- Figure 10: Optional Features Tab 1
- Figure 11: Optional Features Tab 2

Figure 2: Dial Plan Record

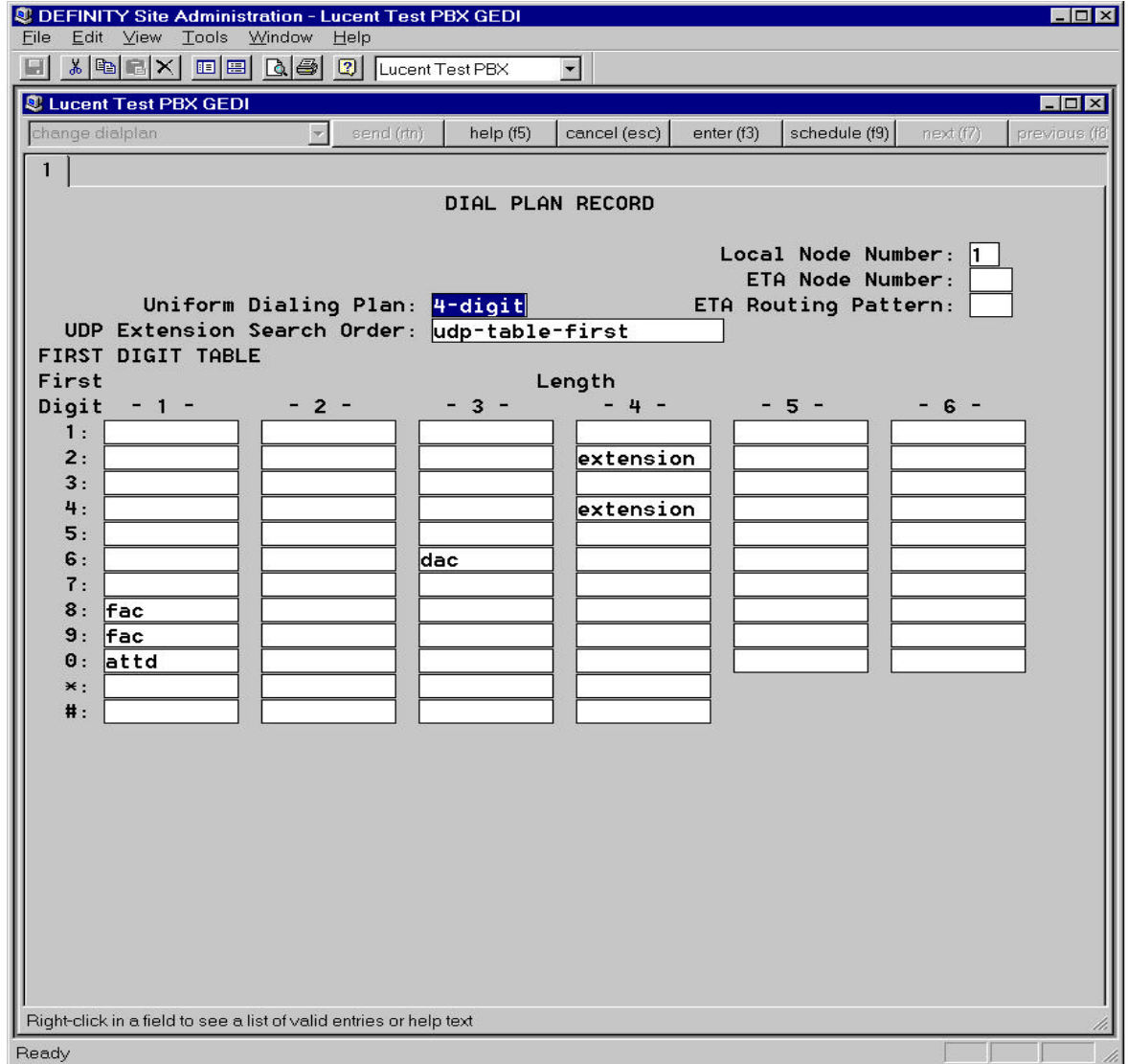


Figure 3: Pattern Number

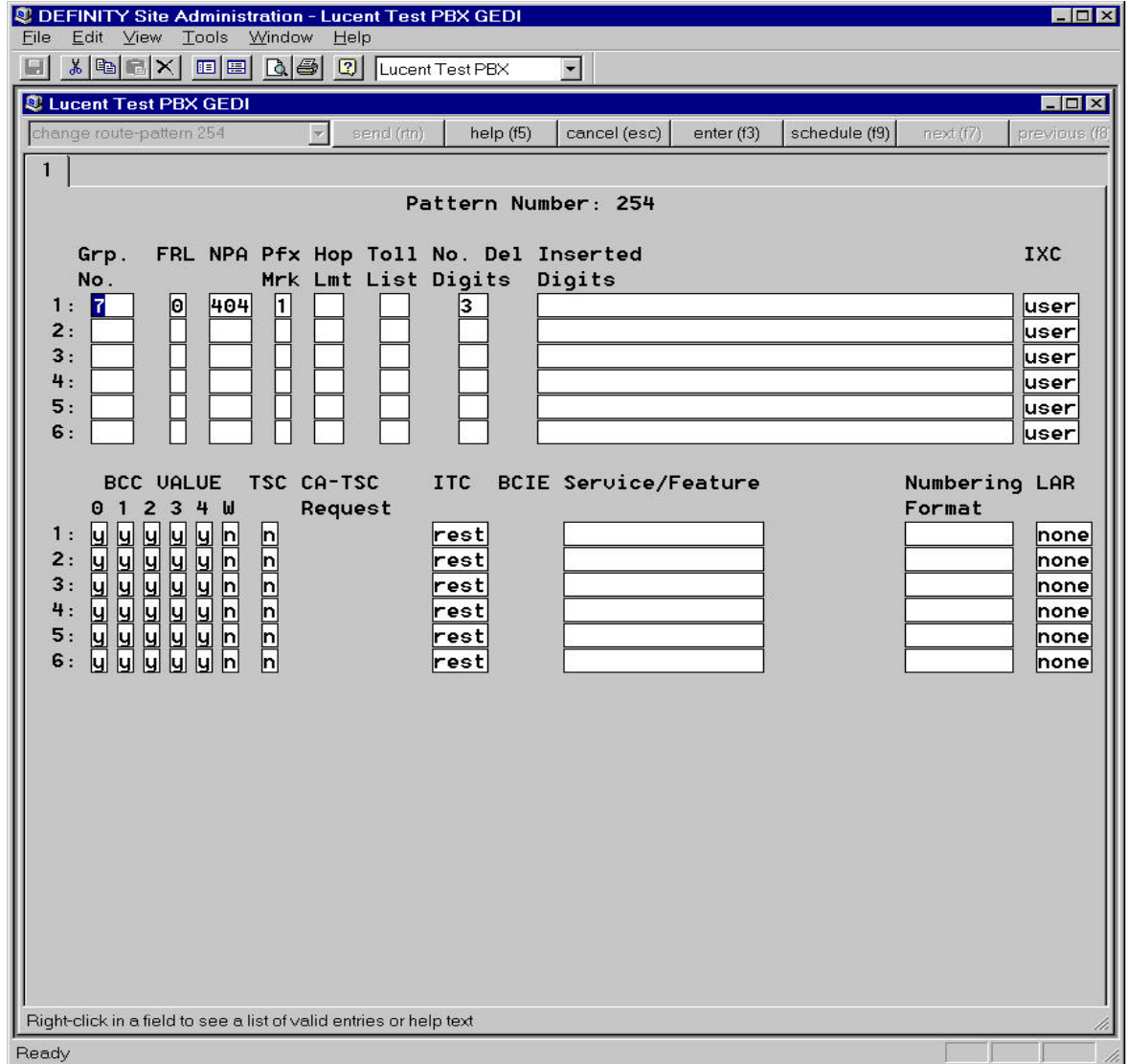


Figure 4: DS1 Circuit Pack

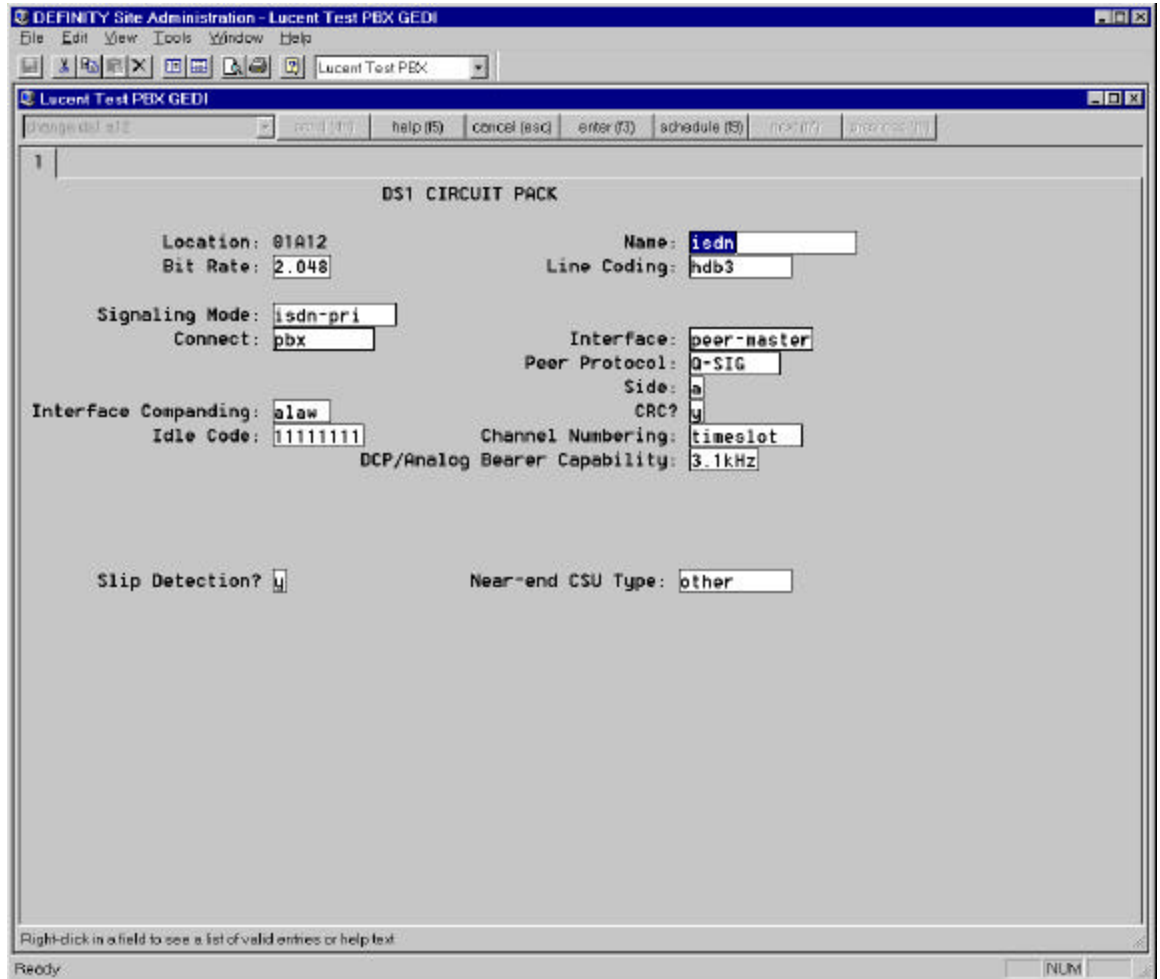


Figure 5: Signaling Group

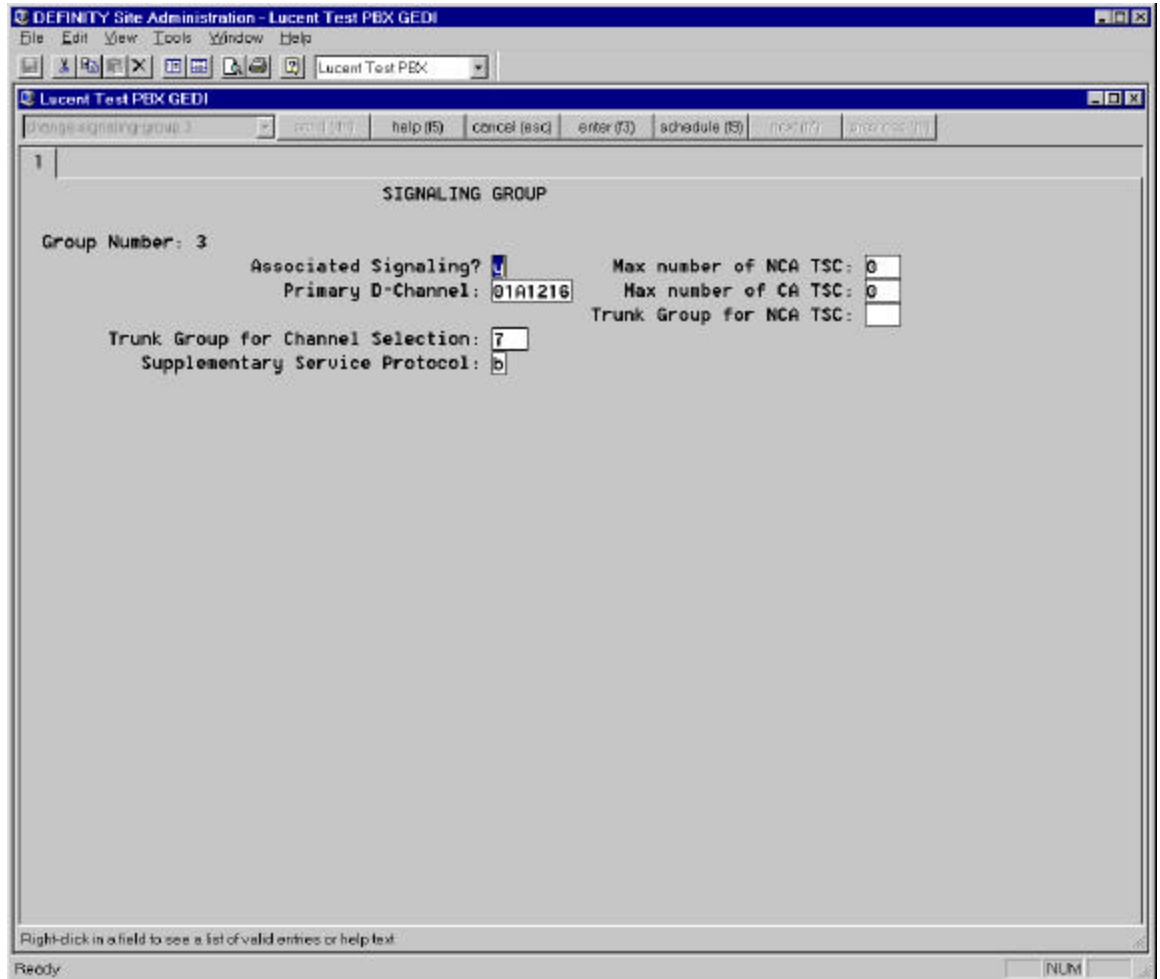


Figure 6: Trunk Group

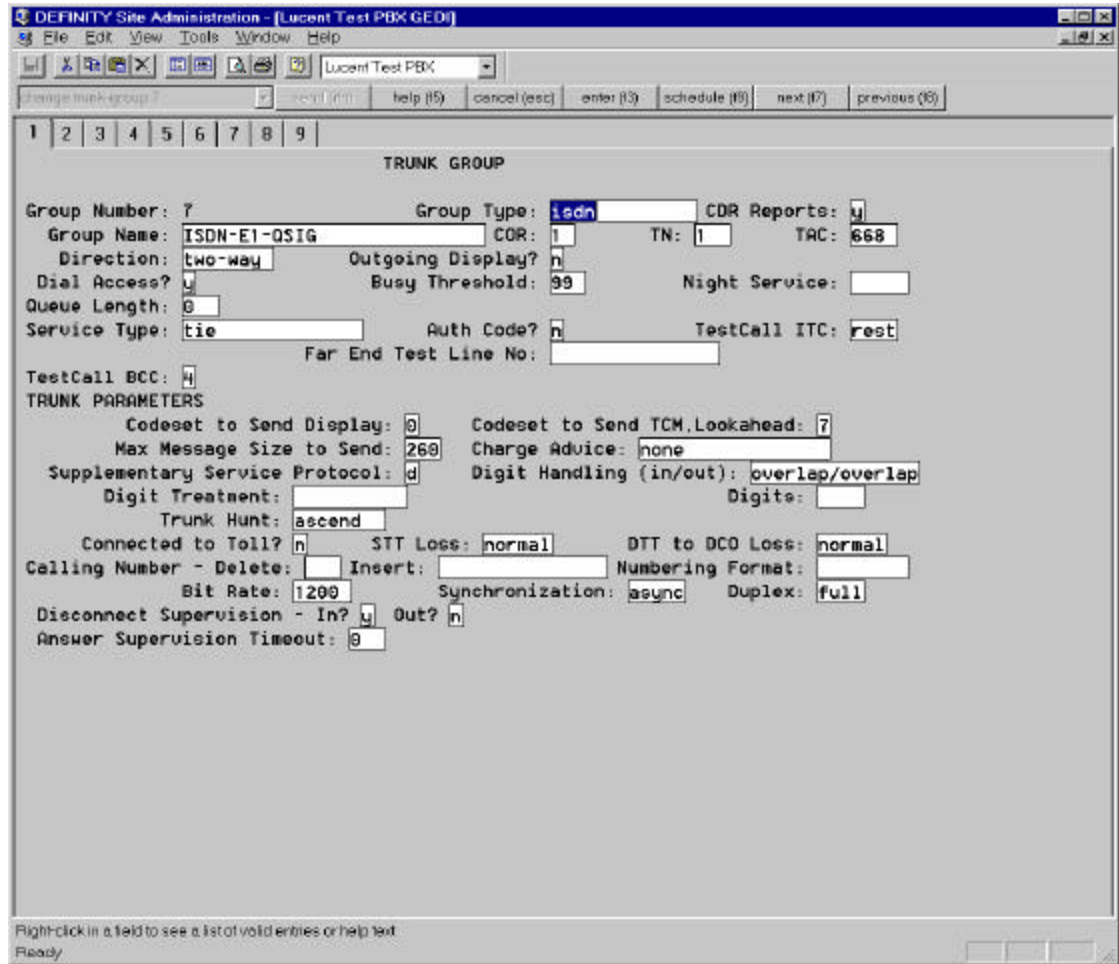


Figure 7: Trunk Features

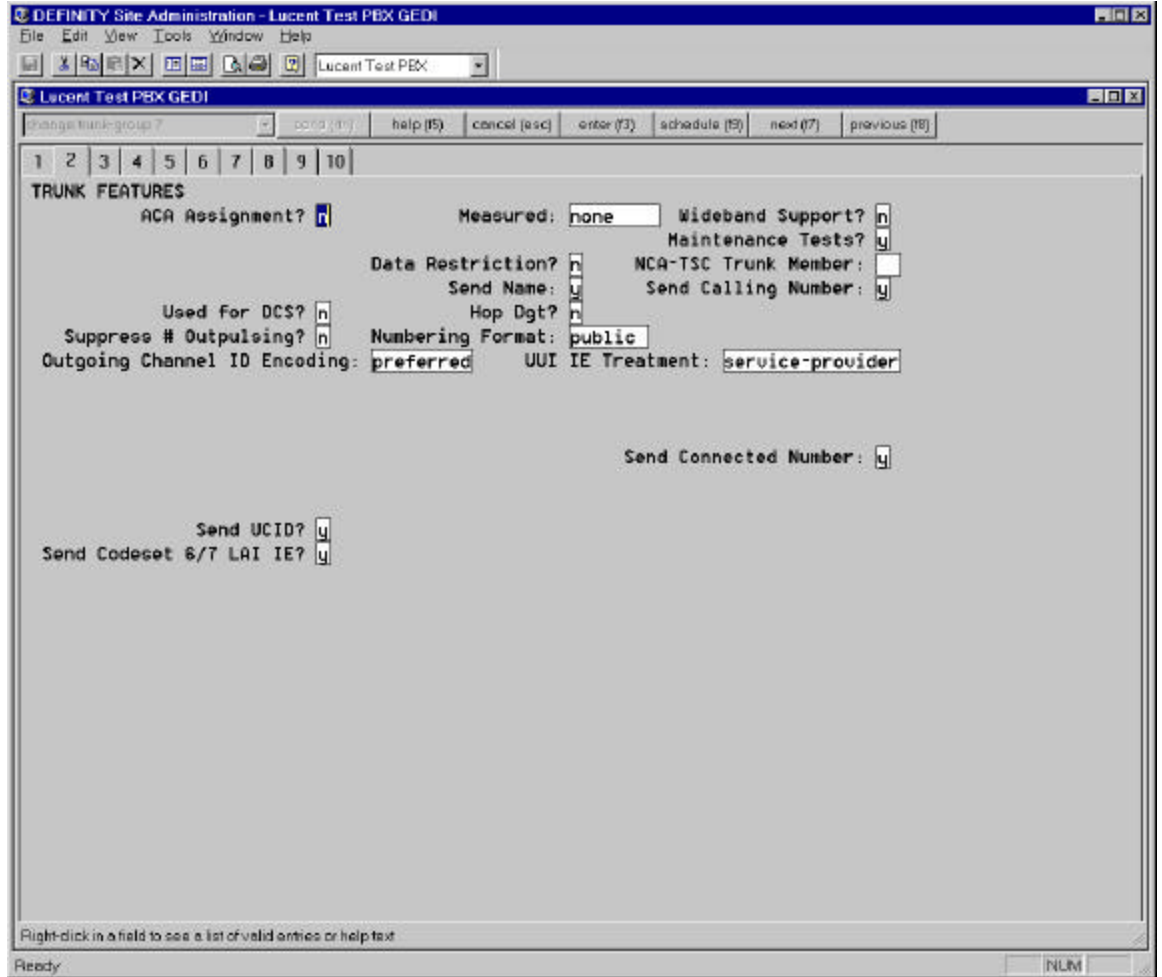


Figure 8: Group Member Assignments Tab 4

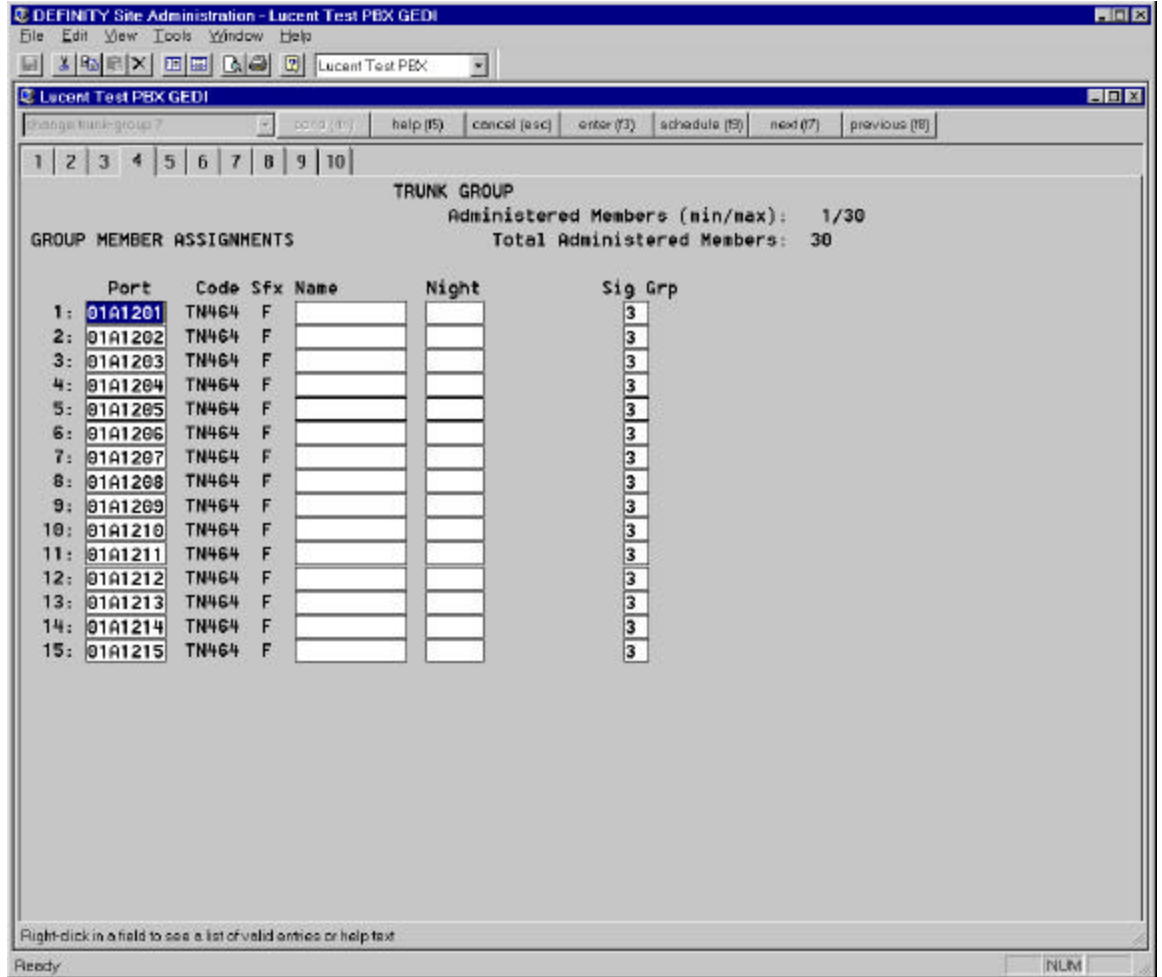


Figure 9: Group Member Assignments Tab 5

DEFINTY Site Administration - Lucent Test PBX GEDI

File Edit View Tools Window Help

Lucent Test PBX

Lucent Test PBX GEDI

Change trunk group: 7

help (H) cancel (esc) enter (F3) schedule (F5) next (F7) previous (F8)

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

TRUNK GROUP

Administered Members (min/max): 1/30

Total Administered Members: 30

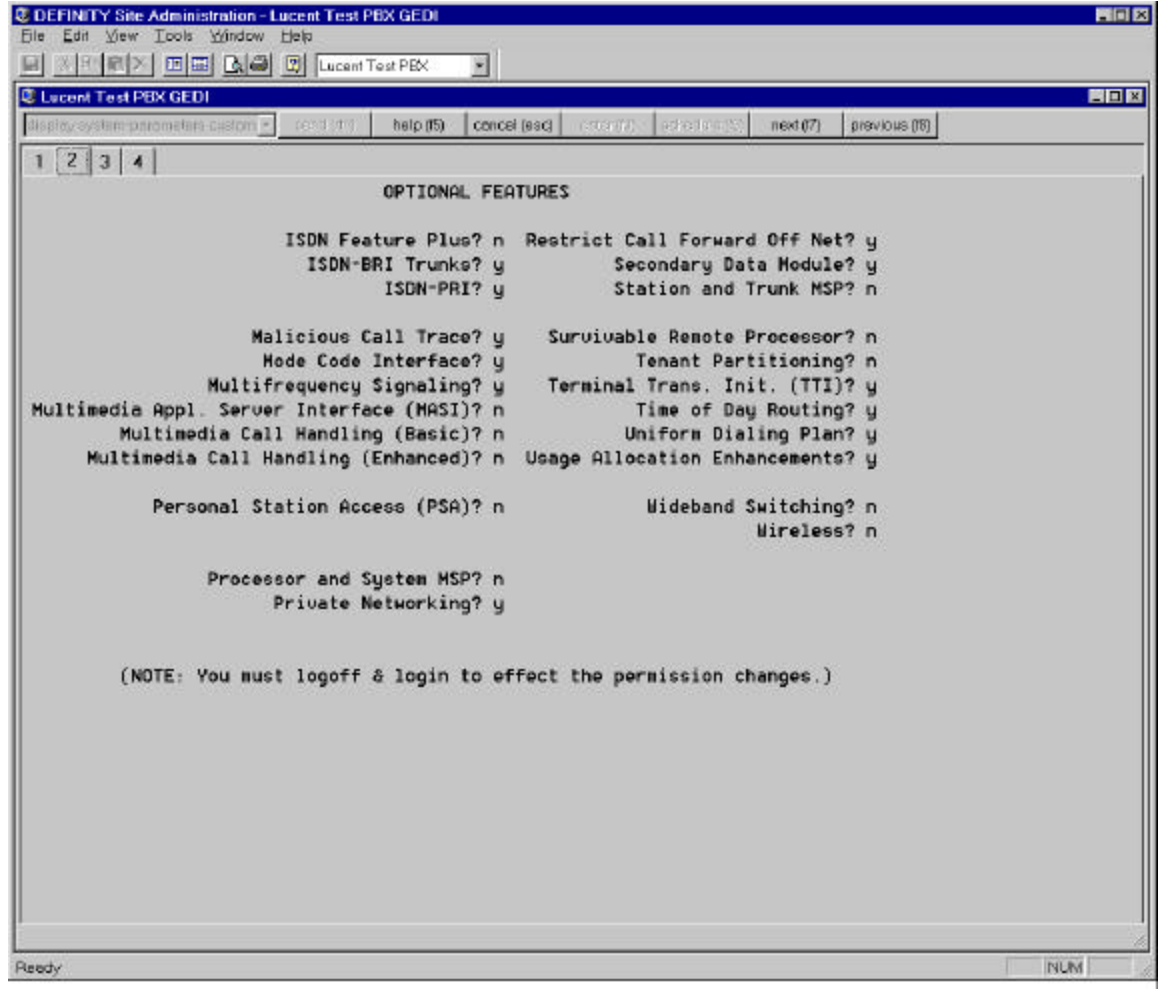
GROUP MEMBER ASSIGNMENTS

	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

Ready NUM

Figure 11: Optional Features Tab 2



Cisco 7206 Series Router Configuration

The following is the configuration of the Cisco 7206 series router connected to the Lucent Definity G3r PBX E1 ISDN PRI interface.

Cisco 7206 Series Router Version Information

- Cisco IOS™ (C7200-JS-M), Version 12.2(1).
- Cisco 7206VXR (NPE400) processor (revision D) with 114688K/16384K bytes of memory.

```
7206VXR#show version
Cisco Internetwork Operating System Software
IOS (tm) 7200 Software (C7200-JS-M), Version 12.2(1), RELEASE SOFTWARE (fc2)
Copyright (c) 1986-2001 by cisco Systems, Inc.
Compiled Thu 26-Apr-01 22:10 by cmong
Image text-base: 0x60008960, data-base: 0x616B0000

ROM: System Bootstrap, Version 12.1(20000710:044039) [nlaw-121E_npeb 117], DEVEL
OPMENT SOFTWARE
BOOTFLASH: 7200 Software (C7200-KBOOT-M), Version 12.1(3a)E5, EARLY DEPLOYMENT RELEASE
SOFTWARE (fc1)

7206VXR uptime is 1 day, 2 hours, 23 minutes
System returned to ROM by reload at 15:02:56 UTC Mon May 21 2001
System image file is "disk0:c7200-js-mz.122-1"

cisco 7206VXR (NPE400) processor (revision A) with 114688K/16384K bytes of memor
Y.
Processor board ID 23656935
R7000 CPU at 350Mhz, Implementation 39, Rev 3.2, 256KB L2, 4096KB L3 Cache
6 slot VXR midplane, Version 2.1

Last reset from power-on
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
TN3270 Emulation software.
Primary Rate ISDN software, Version 1.1.
Channelized E1, Version 1.0.
2 FastEthernet/IEEE 802.3 interface(s)
31 Serial network interface(s)
2 Channelized E1/PRI port(s)
1 Voice resource(s)
125K bytes of non-volatile configuration memory.

46976K bytes of ATA PCMCIA card at slot 0 (Sector size 512 bytes).
8192K bytes of Flash internal SIMM (Sector size 256K).
Configuration register is 0x102
```

Cisco 7206 Series Router Sample Configuration

The following is a sample configuration of the Cisco 7206 series router directly connected to Lucent Definity G3r PBX ISDN PRI interface.

```
7206VXR#show diag
Slot 0:
  Dual FastEthernet (RJ-45) I/O Card Port adapter, 2 ports
  Port adapter is analyzed
  Port adapter insertion time 1d02h ago
  EEPROM contents at hardware discovery:
  Hardware Revision      : 1.2
  Top Assy. Part Number   : 800-07114-04
  Part Number             : 73-5003-04
  Board Revision         : A0
```

```

PCB Serial Number      : 23998864
RMA History            : 00
Fab Version           : 02
Fab Part Number       : 28-3455-02
Product Number        : C7200-I/O-2FE/E
Board Revision        :
EEPROM format version 4
EEPROM contents (hex):
 0x00: 04 FF 40 02 15 41 01 02 C0 46 03 20 00 1B CA 04
 0x10: 82 49 13 8B 04 42 41 30 C1 8B 32 33 39 39 38 38
 0x20: 36 34 00 00 00 04 00 02 02 85 1C 0D 7F 02 CB 8F
 0x30: 43 37 32 30 30 2D 49 2F 4F 2D 32 46 45 2F 45 42
 0x40: 00 00 0C 02 FF FF FF FF FF FF FF FF FF FF FF FF
 0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    
```

```

Slot 1:
VXC-2TE1+ Port adapter, 2 ports
Port adapter is analyzed
Port adapter insertion time 1d02h ago
EEPROM contents at hardware discovery:
Hardware Revision      : 0.2
PCB Serial Number     : MIC05012P3T
Part Number           : 73-5340-03
Board Revision        : A0
RMA Test History      : 00
RMA Number            : 0-0-0-0
RMA History           : 00
Deviation Number      : 0-0
Product Number        : PA-VXC-2T1E1+
Top Assy. Part Number : 8034-08469-01
EEPROM format version 4
EEPROM contents (hex):
 0x00: 04 FF 40 02 11 41 00 02 C1 8B 4D 49 43 30 35 30
 0x10: 31 32 50 33 54 82 49 14 DC 03 42 41 30 03 00 81
 0x20: 00 00 00 00 04 00 80 00 00 00 00 CB 94 50 41 2D
 0x30: 56 58 43 2D 32 54 31 45 31 2B 20 20 20 20 20 20
 0x40: 20 C0 46 1F 62 00 21 15 01 FF FF FF FF FF FF FF
 0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    
```

```

7206VXR# sho contr e1 1/0
E1 1/0 is up.
  Applique type is Channelized E1 - balanced
  No alarms detected.
  alarm-trigger is not set
  Framing is CRC4, Line Code is HDB3, Clock Source is Line.
  International Bit: 1, National Bits: 11111
  Active xconns: 0
  Data in current interval (533 seconds elapsed):
    0 Line Code Violations, 0 Path Code Violations
    0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
    0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 0 Unavail Secs
  Data in Interval 1:
    0 Line Code Violations, 0 Path Code Violations
    0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
    0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 0 Unavail Secs
  Data in Interval 2:
    0 Line Code Violations, 0 Path Code Violations
    0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
    0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 0 Unavail Secs
  Data in Interval 3:
    0 Line Code Violations, 0 Path Code Violations
    0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
    0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 0 Unavail Secs
    
```

```

7206VXR#show runn
Building configuration...

Current configuration : 1554 bytes
    
```



```
!  
voice-port 1/0:15  
!  
dial-peer voice 1 pots  
  destination-pattern 2...  
  direct-inward-dial  
  port 1/0:15  
  prefix 2  
!  
dial-peer voice 2 voip  
  destination-pattern 5...  
  progress_ind setup enable 1  
  session target ipv4:1.1.1.2  
!  
!  
gatekeeper  
  shutdown  
!  
!  
line con 0  
  transport input none  
line aux 0  
line vty 0 3  
  exec-timeout 0 0  
  password cisco  
  login  
line vty 4  
  no exec  
  exec-timeout 0 0  
  login  
line vty 5 15  
  login  
!  
end  
  
7206VXR#
```

Caveats

- The router must be rebooted whenever the ISDN switch-type is changed. Failure to reboot results in either no change in protocol or erratic behavior.
- The ISDN command “isdn contiguous-bchan” may be necessary in the Cisco 7206 to support ETSI QSIG channel mapping standard. This is needed if the B-channels don’t match up end-to-end above channel 16. (Channel 16 is used for the D-channel, and there will be no trouble below 16.)