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

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

- System Components
- Configuration Tasks
- Caveats

System Components

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

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.
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 the 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

![Pattern Number Table]

Press F8 to change route pattern 254. Press F9 to change pattern 254.

Pattern Number: 254

<table>
<thead>
<tr>
<th>Grp. No.</th>
<th>FRL NPA Pfx Hop Toll No. Del Inserted</th>
<th>IXC</th>
<th>BCC VALUE</th>
<th>TSC CA-TSC ITC BCIE Service/Feature</th>
<th>Numbering LAR Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0 404</td>
<td></td>
<td>rest</td>
<td>rest</td>
<td>none</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
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<td>rest</td>
<td>none</td>
</tr>
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<td>3</td>
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<td>rest</td>
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<tr>
<td>4</td>
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<td>6</td>
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<td></td>
<td>rest</td>
<td>rest</td>
<td>none</td>
</tr>
</tbody>
</table>

Right-click in a field to see a list of valid entries or help text.
Figure 4: DS1 Circuit Pack

![DS1 Circuit Pack](image)

- **Location:** 01A12
- **Bit Rate:** 2.048
- **Line Coding:** hdb3
- **Signaling Mode:** isdn-pri
- **Connect:** network
- **Country Protocol:** eoi
- **Protocol Version:** D
- **CRC?**
- **Interface Companding:** alaw
- **Idle Code:** 11111111
- **DCP/Analog Bearer Capability:** 3.1kHz
- **Slip Detection?**
- **Near-end CSU Type:** other
## Figure 5: Signaling Group

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**SIGNALING GROUP**

**Group Number:** 3

**Associated Signaling:** Y

**Primary D-Channel:** 31216

**Max number of NCA TSC:** 0

**Max number of CA TSC:** 0

**Trunk Group for Channel Selection:** 7

**Trunk Group for NCA TSC:**

**Supplementary Service Protocol:** 3

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

Ready

**Note:**
- The image displays a software interface for configuring a signaling group, with various fields and options for input.
- The configuration includes options for associated signaling, primary D-channel, NCA TSC, CA TSC, and supplementary service protocol.
- Each field has a corresponding value or setting, indicated by the text within the fields.
- The interface also includes instructions for right-clicking to access help or valid entries for each field.
Figure 6: Trunk Group

![Trunk Group Configuration](image)

- **Group Name:** ISDN-E1-PRI
- **Direction:** Two-way
- **Dial Access:** 1
- **Busy Threshold:** 99
- **TestCall ITC:** Fost
- **TestCall BCC:** 4
- **Codec to Send Display:** 0
- **Codec to Send TCM, Lookahead:** 7
- **Max Message Size to Send:** 250
- **Digit Handling (in/out):** Enblc/Enblc
- **Trunk Hunt:** Ascend
- **STT Loss:** Normal
- **DTT to DCC Loss:** Normal
- **Bit Rate:** 1200
- **Numbering Format:**
- **Synchronization:** Async
- **Duplex:** Full

**Answer Supervision Timeout:** 9

*Right-click in a field to see a list of valid entries or help text.*
Figure 7: Trunk Features

[Image of software interface showing trunk features]

- ACA Assignment?
- Measured:
- Wideband Support?
- Maintenance Tests?
- Data Restriction?
- NCA-TSC Trunk Number:
- Send Name:
- Send Calling Number:
- Used for DIS?
- Hop Dgt?
- Suppress # Outpulsing?
- Numbering Format:
- Outgoing Channel ID Encoding:
  - preferred
  - UUI
- IE Treatment:
  - service-provider
- Send Connected Number:
- Send UCID?
- Send Codeset 6/7 LAI IE?
Figure 8: Group Member Assignments Tab 4

![Group Member Assignments Tab 4](image)

<table>
<thead>
<tr>
<th>Port</th>
<th>Code</th>
<th>Sfx</th>
<th>Name</th>
<th>Night</th>
<th>Sig Grp</th>
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<tbody>
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</table>

Right-click is a field to see a list of valid entries or help text.
Figure 9: Group Member Assignments Tab 5

<table>
<thead>
<tr>
<th>Port</th>
<th>Code</th>
<th>Sfx</th>
<th>Name</th>
<th>Night</th>
<th>Sig Grp</th>
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<td></td>
<td>TN64 F</td>
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<td>3</td>
</tr>
</tbody>
</table>

Administered Members (min/max): 1/30
Total Administered Members: 30
Figure 10: Optional Features Tab 1

```
OPTIONAL FEATURES

G3 Version: U7
Location: 1
Abbreviated Dialing Enhanced List? y
Access Security Gateway (ASG)? n
Analog Trunk Incoming Call ID? y
A/D Erp/Sys List Dialing Start at 0? y
Answer Supervision by Call Classifier? y
Answer Supervision by Call Classifier? y
ANS Main? n
ANS/ANS Partitioning? n
ARS/ANS Shortcut Dialing? y
ASAI Interface? n
ASAI Proprietary Adjunct Links? n
Async. Transfer Mode (ATM) Trunking? n
AVMS? y
Audible Message Waiting? y
Authentication Codes? y
C&S Branch? n
C&S Main? n
Cug Of Calls Redirected Off-net? n
DCS (Basic)? n
DCS Call Coverage? n
DCS with Recouting? n
DEFINITV Network Admin? n
DS1 MSP? n
Emergency Access to Attendant? y
Extended Cug/Fwd Admin? n
External Device Alarm Admin? y
Flexible Billing? n
Forced Entry of Account Code? y
Global Call Classification? y
Hospitality (Basic)? y
Hospitality (G3U3 Enhancements)? y
Lanasy? y
Login (U8)? n
Maximum Ports: 206
```
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 (NPE300) processor (revision D) with 122880K/40960K bytes of memory.
Cisco 7206 Series Router Sample Configuration

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

```
7206VXR#sh ver
Cisco Internetwork Operating System Software
IOS (tm) 7200 Software (C7200-JS-M), Version 12.2(1), RELEASE SOFTWARE
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 12.0(19990210:195103) [12.0XE 105], DEVELOPMENT SOFTWARE

7206VXR uptime is 5 hours, 4 minutes
System returned to ROM by power-on
System image file is "slot0:c7200-js-mz.122-1"

Cisco 7206VXR (NPE300) processor (revision D) with 122880K/40960K bytes of memory.
Processor board ID 18282879
R7000 CPU at 262Mhz, Implementation 39, Rev 1.0, 256KB L2, 2048KB L3 Cache
6 slot VXR midplane, Version 2.0

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.
1 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.
16384K bytes of Flash internal SIMM (Sector size 128K).
4096K bytes of Flash internal SIMM (Sector size 256K).
Configuration register is 0x0

7206VXR#
```

```
7206VXR#sh diag
Slot 0:
Fast-ethernet on C7200 I/O card with MII or RJ45 Port adapter, 1 port
Port adapter is analyzed
Port adapter insertion time 05:04:06 ago
EEPROM contents at hardware discovery:
Hardware revision 2.1 Board revision B0
Serial number 18517759 Part number 73-4092-03
Test history 0x0 RMA number 00-00-00
EEPROM format version 1
EEPROM contents (hex):
0x20: 01 83 02 01 01 1A 8E FF 49 0F FC 03 00 00 00 00
0x30: 58 00 00 00 04 16 00 00 00 FF FF FF FF FF FF

Slot 1:
VXC-2TE1+ Port adapter, 2 ports
Port adapter is analyzed
Port adapter insertion time 05:04:05 ago
EEPROM contents at hardware discovery:
Hardware Revision : 0.2
PCB Serial Number : MIC05022QA2
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-2TE1+
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: 32 32 51 41 32 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
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 FF
0x60: FF 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 FF

7206VXR#

7206VXR#sh controllers 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: 1111
Active xconns: 0
Data in current interval (32 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

7206VXR#

7206VXR#sh conf
Using 1266 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 7206VXR
!
card type e1 1
logging rate-limit console 10 except errors
!
frame-clock-select 1 E1 1/0
dspint DSPfarm1/0
!
ip subnet-zero
!
no ip finger
!
no ip dhcp-client network-discovery
isdn switch-type primary-net5
call rsvp-sync
!
!
controller E1 1/0
  pri-group timeslots 1-31
!
controller E1 1/1
  shutdown
!
interface FastEthernet0/0
  ip address 18.0.0.2 255.255.255.0
  no ip mroute-cache
duplex full
fair-queue
!
interface Serial1/0:15
  no ip address
  no logging event link-status
  isdn switch-type primary-net5
  isdn overlap-receiving
  isdn protocol-emulate network
  isdn incoming-voice modem
  isdn guard-timer 3000
  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 1/0:15
  !
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...
  session target ipv4:18.0.0.1
  !
gatekeeper
  shutdown
  !
line con 0
  transport input none
line aux 0
line vty 0 4
login
line vty 5 15
login
!
end

7206VXR#

Caveats

- None.