

Cisco 7200 Series Gateway-PBX Interoperability: PA-VXC-2T1E1+ Card with E1 ISDN PRI to Alcatel 4400 PBX

This document describes interoperability and configuration of a Cisco 7206VXR with PA-VXC-2T1E1+ with an Alcatel 4400 PBX through an ISDN E1-PRI link. It includes the following sections:

- System Components
- Configuration Tasks
- Caveats

System Components

PBX Model	Alcatel 4400
PBX Release	R3.2
Telephony Signaling	E1 PRI
Voice Gateway	Cisco 7206VXR
Gateway Release	Cisco IOS Release 12.2(1a)
VoX Protocol	H.323

Configuration Tasks

See the following sections for configuration tasks for this feature:

- Set Up
- Alcatel PBX Configuration
- Cisco 7206VXR Gateway Configuration

Set Up

This section includes the following information:

- Connectivity Diagrams
- Set Up Notes

Connectivity Diagrams

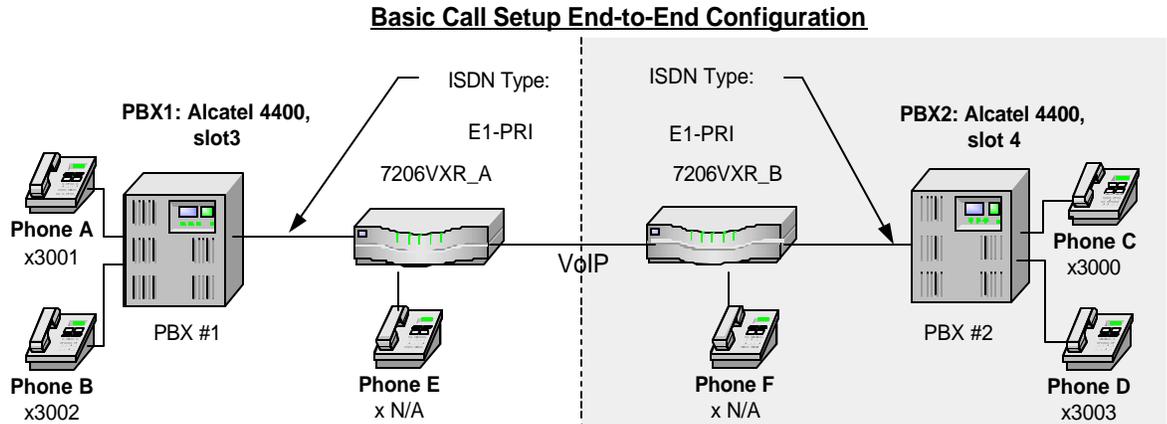


Figure 1: Test Configuration

Figure 1 represents the configuration used for testing: an Alcatel 4400PBX connected to a Cisco Catalyst 7206VXR voice gateway through an E1 PRI connection.

Set Up Notes

The above diagram is representative of the various configurations used for testing. PBX Trunk (Slot 3) with access code 70 is connected to Cisco 7206VXR_A.

As shown in the diagram above, an Alcatel 4400 PBX is connected via slot 3, an ISDN E1-PRI link to a Cisco 7206, which in turn, is connected to another Cisco 7206VXR by an Ethernet connection. The second Cisco 7206VXR is connected to the same Alcatel 4400 PBX via slot 4, another ISDN E1-PRI link.

Alcatel PBX Configuration

Alcatel PBX Version Information

- Software: Version R3.2
- Hardware: PRA2, 3BA23076.

Alcatel PBX Sample Configuration

See the following sections for sample configuration information:

- Alcatel 4400 PBX Configuration
- Version Information

Alcatel 4400 PBX Configuration

Version Information

\compidea\node

```
Node Number (reserved) 1
Software Version        R3.2
Version name           c1.712
Patch No.              5
Notes
Object Identity
Node Number (reserved) 1
Ethernet Notes
  Netmask
  Local CPU
    Name                x000000_tun
    IP Address          172.30.253.253
  Twin Cpu
    Name
    IP Address
  Main Cpu
    Name                xm000000
    IP Address          10.253.253.3
  StandBy Cpu
    Name
    IP Address
SL Notes
IP/X25 Tunnel Notes
  Netmask              255.255.0.0
  Local Node
    Name                x000000_tun
    IP Address          172.30.253.253
```

Call Manager Configuration

Call Manager Version Information

See the following sections for sample configuration information:

- Trunk Cards Are Configured The Same
- Digital Access Options
- Trunk Group
- Trunk Detail

Trunk Cards Are Configured The Same

Interface type must be set to **PRA2**.

```

\compidea\Shelf::0\Board::3
Board Address                               3
Interface Type                             PRA2
Usage State                                 Busy
Operational State                           Enabled
Main/Standby State                          Main (Master)
Number Of Sets Being Connect.               1
CRC4                                         YES
Country Protocol Type                       USA
Incidents Teleservice                       YES
ISDN Board Layer 2 Parameters
Retransmission Timer                        100
TEI Identity Check Timer                    100
Polling Timer                               1000
Nb_Of_Retransmission                        3
Max Frame Size (Bytes)                      260
Window Size In Frames SAPI S T0            1
Window Size In Frames SAPI P T0            3
Window Size In Frames SAPI S T2            7
Window Size In Frames SAPI P T2            7
Passive board                               NO
SS7 signalling                              NO

```

Digital Access Options

Network mode must be set to **Yes** for (Master/Network) or **No** - (Slave/User).
Access Type must be set to **T2**.

```

\compidea\Shelf::0\Board::3\Digital Access::0
T0/T2 Access No.                            0
Access Type                                  T2
Synchronisation Priority                     255
Network Mode                                 YES
Max Nb Of Used B Channels                    30
Max_Nb_Of_Compressed_B_Channels              0
TieLine Mode                                 NO
With Alarm                                   NO
Reserved1                                    YES
Reserved2                                    YES
Network Date Time Update                     NO
CRC4                                         YES

```

Trunk Group

Q931 signal variant is used to set the protocol type to **ISDN all countries**.

```
\compidea\Trunk Groups::0
    Trunk Group Id                0
    Trunk Group Type              T2
    Trunk Group Name              PRA2_EURO
    Node number                   1
    Transcom Trunk Group          False
    Auto.reserv.by Attendant      False
    Overflow trunk group No.      -1
    Tone on seizure               True
    Private Trunk Group           False
    Q931 signal variant          ISDN all countries
    Number Compatible With        -1
    Number Of Digits To Send      4
    Channel selection type        Quantum
    Remote Network                15
    Shared Trunk Group            False
    auto.DTMF dialing on outgoing call NO
    T2 Specificity                None
    Public Network Category       0
    DDI transcoding               False
    Special Services              Nothing
    Can support UUS in SETUP      True
```

Trunk Detail

\compidea\Trunk Groups::0\Trunk Group::1

Instance (reserved)	1
Trunk Group Type	T2
Public Network Ref.	
Dialling end to end	NO
DTMF end to end signal.	NO
Trunk group used in DISA	NO
DISA Secret Code	
VG for non-existent No.	YES
Routing To Executive	NO
Trunk Category Id	19
Nb of digits unused (ISDN)	0
B Channel Choice	YES
Channels Reserved By Attend.	0
Dissuasion For ACD	NO
DTO joining	NO
Enquiry Call On B Channel	NO
Automated Attendant	NO
Calling party Rights category	0
Entity Number	0
TS Overflow	YES
Number To Be Added	
Supervised by Routing	NO
VPN Cost Limit for Incom.Calls	0
Immediat Trk Listening For VPNCall	YES
VPN TS %	50
Csta Monitored	NO
Max.% of trunks out CCD	0
Charge Calling And ADN Creation	NO
Ratio analog.to ISDN tax	
LogicalChannel	1__15 & 17__31
TS Distribution on Accesses	YES
Use Split Acces	NO
Heterogeneous Remote Network	NO
Barring mode	Not barred
ARS class of service	31
Quality profile for voice on IP	Profile #1
IP compression type	Default
Use of volume in system	YES

Cisco 7206VXR Gateway Configuration

The following is the configuration of the Cisco Catalyst 7206VXR voice gateway connected to the Alcatel 4400 PBX E1 PRI interface.

Cisco 7206VXR _A Router Configuration

The following is the configuration of the 7206VXR _A router directly connected to Alcatel 4400 PBX, slot 3 ISDN PRI interface.

```
7206VXR _A#sh ver
Cisco Internetwork Operating System Software
IOS (tm) 7200 Software (C7200-A3JS-M), Version 12.2(1a), RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2001 by cisco Systems, Inc.
Compiled Sat 26-May-01 15:44 by pwade
Image text-base: 0x60008960, data-base: 0x61830000

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 R
ELEASE SOFTWARE (fc1)

7206VXR _A uptime is 1 hour, 31 minutes
System returned to ROM by power-on
System image file is "disk0:c7200-a3js-mz.122-1a.bin"

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)
2 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
```

7206VXR _A#

7206VXR _A#sh diag

```
Slot 0:
Dual FastEthernet (RJ-45) I/O Card Port adapter, 2 ports
Port adapter is analyzed
Port adapter insertion time 01:31:20 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 01:31:20 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
```

Slot 5:

```
VXC-2TE1+ Port adapter, 2 ports
Port adapter is analyzed
Port adapter insertion time 01:31:20 ago
EEPROM contents at hardware discovery:
Hardware Revision   : 0.2
PCB Serial Number   : MIC043626H6
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 34 33
0x10: 36 32 36 48 36 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 _A#

```
7206VXR _A#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: 11111
  Active xconns: 0
  Data in current interval (51 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 _A#
```

```
7206VXR _A#sh conf
Using 1761 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 _A
!
card type e1 1
logging rate-limit console 10 except errors
enable secret 5 $1$/v5$CkMtCbclv8yLndS/drpxg/
enable password cisco
!
dspint DSPfarm1/0
!
dspint DSPfarm5/0
!
ip subnet-zero
!
!
no ip finger
no ip domain-lookup
!
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
!
!
interface FastEthernet0/0
  ip address 10.1.1.249 255.255.255.0
  duplex auto
  speed auto
!
interface FastEthernet0/1
  ip address 1.1.1.1 255.255.255.0
  duplex full
  speed auto
!
interface Serial1/0:15
  no ip address
  no logging event link-status
  isdn switch-type primary-net5
  isdn overlap-receiving
  isdn incoming-voice voice
```

```
isdn T203 30000
isdn T310 60000
isdn bchan-number-order ascending
no cdp enable
!
!
router rip
 network 1.0.0.0
!
ip kerberos source-interface any
ip classless
ip http server
!
!
!
!
!
!
!
snmp-server packetsize 4096
snmp-server manager
!
!
voice-port 1/0:15
!
dial-peer voice 1 pots
 destination-pattern 3001
 direct-inward-dial
 port 1/0:15
 prefix 3001
!
dial-peer voice 2 voip
 destination-pattern 3000
 progress_ind setup enable 1
 session target ipv4:1.1.1.2
!
dial-peer voice 3 pots
 destination-pattern 3002
 direct-inward-dial
 port 1/0:15
 prefix 3002
!
dial-peer voice 4 voip
 destination-pattern 3003
 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 _A#
```

Caveats

- Calling Name delivery and presentation features are not supported by the Alcatel 4400 PBX.
- When configuring Cisco 7206VXR Gateway to emulate User side (Alcatel emulate Network side), make sure that the “Display IE Delivery” box is NOT checked, otherwise calls will not be completed. Alcatel PBX complains about the Display information being sent in the “SETUP” message from CallManager by sending STATUS message with cause of “IE non-existent/unimplemented”.
- When calling from Cisco 7960 IP phone to Alcatel digital phone, Calling/Called Number is displayed on both phones after the call is answered as expected.
- When calling from Alcatel digital phone to Cisco 7960 IP phone, IP phone displays Connected Number after the call is answered. The Alcatel phone however does NOT get updated when the call is answered. It displays the trunk name.