



# Cisco 2600 Series Gateway-PBX Interoperability: Alcatel 4400 PBX with E1 PRI Signaling

This document describes the interoperability and configuration of a Cisco 2600 series voice gateway with an Alcatel 4400 PBX using ISDN E1-PRI signaling. It includes the following sections:

- System Components
- Configuration Tasks
- Caveats

## System Components

<b>PBX Model</b>	Alcatel 4400 PBX
<b>PBX Release</b>	Version R3.2, Version c1.712
<b>Telephony Signaling</b>	E1 PRI
<b>Voice Gateway</b>	Cisco 2621
<b>Gateway Release</b>	Cisco IOS™ 12.2(1a)
<b>VoX Protocol</b>	H.323

## Configuration Tasks

See the following sections for configuration tasks for this feature:

- Set Up
- Alcatel PBX Configuration
- Cisco 2621 Gateway Configuration

## Set Up

This section includes the following information:

- Connectivity Diagrams
- Set Up Notes

### Connectivity Diagrams

**Figure 1: Test Configuration**

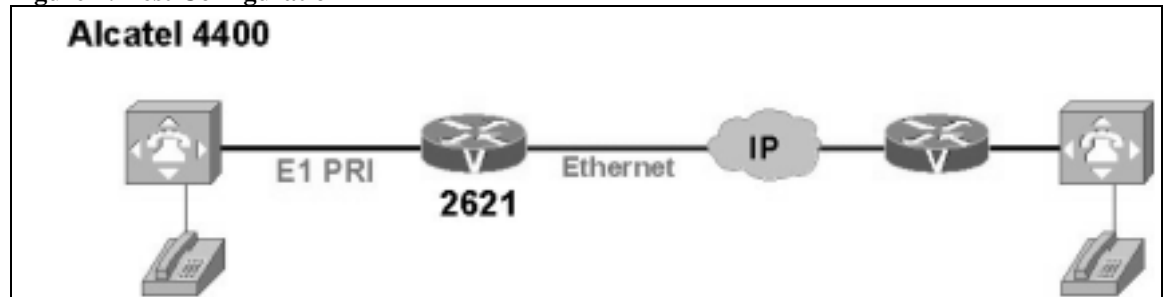


Figure 1 represents the configuration used for testing: an Alcatel 4400 PBX connected to a Cisco 2621 voice gateway via an E1 PRI NET5 connection.

### Set Up Notes

- Both the Alcatel 4400 PBX and the Cisco 2621 voice gateway support Network and User side PRI connectivity.
- The trunk interface type must be set to PRA2.
- Network/User options are set in the Board/Digital Access Options menu. Network mode must be set to **Yes** for Master/Network, or **No** for Slave/User.
- The Access Type must be set to T2.
- The Q931 signal variant is used to determine Protocol type. This option was set to ISDN all countries during testing
- The Cisco 2621 router with ISDN switch type setting of primary-net5 supports both protocol sides by using the **isdn protocol-emulate network/user** command.

## Alcatel PBX Configuration

**Note:** The Alcatel 4400 PBX configuration screen for the E1 trunk interface is reached using both Alcatel Board and Board\Digital Access menus, setting the E1 physical layer parameters.

### Alcatel PBX 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

```

## Alcatel PBX Sample Configuration

See the following sections for sample PBX configuration:

- Trunk Card Configuration
- Digital Access Configuration
- Trunk Group Configuration
- Trunk Detail

### Trunk Card Configuration

```

\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 Configuration

```

\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 Configuration

\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
<b>Q931 signal variant</b>	<b>ISDN all countries</b>
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 2621 Gateway Configuration

The following is the configuration of the Cisco 2621 gateway connected to the Alcatel 4400 PBX slot 3 ISDN PRI interface.

### Cisco 2621 Voice Gateway Version Information

---

```
Cisco_2621# show version
```

```
Cisco Internetwork Operating System Software
IOS (tm) C2600 Software (C2600-JS-M), Version 12.2(1a), RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2001 by cisco Systems, Inc.
Compiled Sat 26-May-01 11:01 by pwade
Image text-base: 0x80008088, data-base: 0x81371A24

ROM: System Bootstrap, Version 12.1(3r)T2, RELEASE SOFTWARE (fc1)

Cisco_2621 uptime is 4 days, 51 minutes
System returned to ROM by power-on
System image file is "flash:c2600-js-mz.122-1a.bin"

cisco 2621 (MPC860) processor (revision 0x200) with 56320K/9216K bytes of memory
.
Processor board ID JAD051516Q2 (2900569055)
M860 processor: part number 0, mask 49
Channelized E1, Version 1.0.
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.
2 FastEthernet/IEEE 802.3 interface(s)
31 Serial network interface(s)
2 Channelized E1/PRI port(s)
32K bytes of non-volatile configuration memory.
16384K bytes of processor board System flash (Read/Write)

Configuration register is 0x2102
```

### Cisco 2621 Voice Gateway Sample Configuration

---

```
Cisco_2621# show configuration
```

```
Using 1753 out of 29688 bytes
!
version 12.2
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Cisco_2621
!
no logging buffered
logging rate-limit console 10 except errors
enable password cisco
!
memory-size iomem 15
voice-card 1
```

```
!  
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 1.1.1.1 255.255.255.0  
  no ip mroute-cache  
  load-interval 30  
  no keepalive  
  duplex auto  
  speed auto  
!  
interface FastEthernet0/1  
  ip address 10.1.1.2 255.255.255.0  
  no ip mroute-cache  
  duplex auto  
  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  
  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 cor custom  
!  
!  
!  
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 voip
destination-pattern 3003
progress_ind setup enable 1
session target ipv4:1.1.1.2
!
!
destination-pattern 3002
direct-inward-dial
port 1/0:15
prefix 3002
!
!
line con 0
exec-timeout 0 0
transport input none
line aux 0
exec-timeout 0 0
line vty 0 4
exec-timeout 0 0
login
line vty 5 15
exec-timeout 0 0
login
!
scheduler allocate 3996 1000
end
```

## Caveats

- Calling and Called Name display are not supported on an Alcatel ISDN PRI link.
- Overlap Sending is not yet supported on an Alcatel PBX.