



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

This document describes the interoperability and configuration of a Cisco 2600 series voice gateway with an Alcatel 4400 PBX using E1 QSIG 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 QSIG
<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**

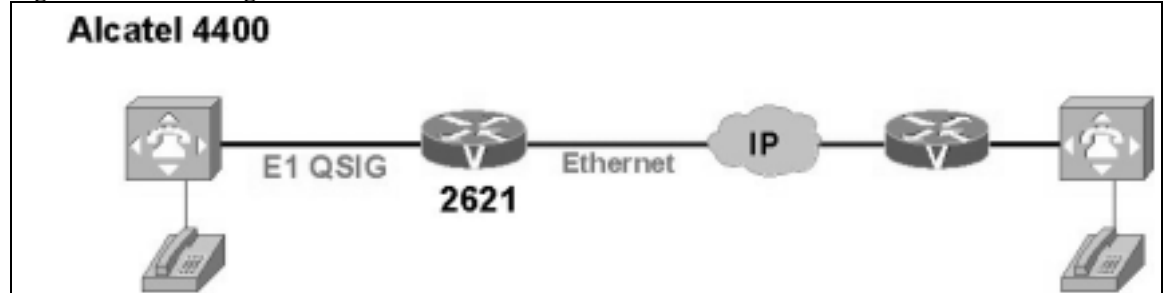



Figure 1 represents the configuration used for testing: an Alcatel 4400 PBX connected to a Cisco 2621 voice gateway via an E1 QSIG connection.

### Set Up Notes

- Both the Alcatel 4400 PBX and the Cisco 3640 voice gateway support Network and User side PRI connectivity.
- The trunk interface type must be set to PRA2.
- The 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.
- Q931 variant is used to determine Protocol type. ABC-F is Alcatel proprietary.
- The Cisco 2621 router with ISDN switch type setting of primary-qsig 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 Configuration
- Digital Access Options
- Trunk Group
- Trunk Detail


### Trunk Configuration

```
\compidea\Shelf::0\Board::4
```

```

Board Address          4
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  Default
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

```

 **Note:** The trunk cards were configured identically.

### Digital Access Options

```

\compidea\Shelf::0\Board::4\Digital Access::0
T0/T2 Access No.      0
Access Type            T2
Synchronisation Priority 255
Network Mode           NO
Max Nb Of Used B Channels 30
Max_Nb_Of_Compressed_B_Channels 0

```

TieLine Mode	NO
With Alarm	NO
Reserved1	NO
Reserved2	NO
Network Date Time Update	NO
CRC4	YES

**Trunk Group**

```
\compidea\Trunk Groups::0
Trunk Group Id          0
Trunk Group Type       T2
Trunk Group Name       PRA2-QSIG
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    ABC-F
Number Compatible With 1
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::1\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      18
Nb of digits unused (ISDN) 4
B Channel Choice       NO
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 QSIG 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-qsig  
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-qsig  
  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

- The Calling/Called Number is not shown on the Alcatel phone due to limitation of the one line phone display; only the Name is shown.
- Overlap Sending feature is not turned-on on Alcatel 4400 PBX.