



# Cisco 3600 Series Gateway-PBX Interoperability: Alcatel 4400 PBX with E1 QSIG Signaling

This document describes the interoperability and configuration of a Cisco 3600 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 3640
<b>Gateway Release</b>	Cisco IOS™ 12.2(1)
<b>VoX Protocol</b>	H.323

## Configuration Tasks

See the following sections for configuration tasks for this feature:

- Set Up
- Alcatel PBX Configuration
- Cisco 3640 Gateway Configuration

## Set Up

This section includes the following information:

- Connectivity Diagrams
- Set Up Notes

### Connectivity Diagrams

**Figure 1: Test Configuration**

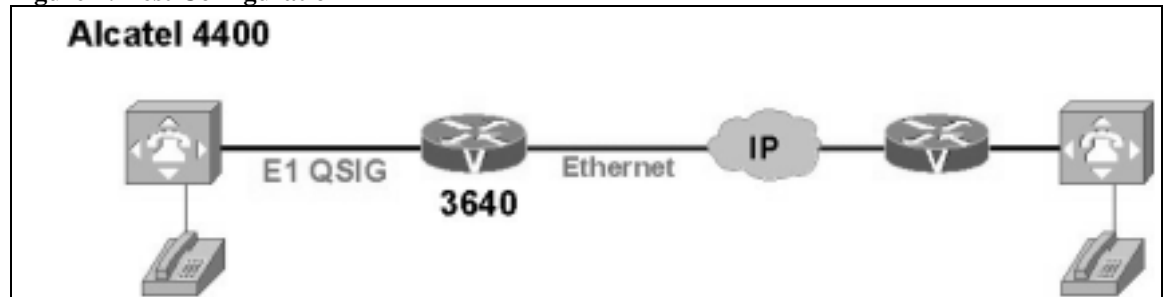



Figure 1 represents the configuration used for testing: an Alcatel 4400 PBX connected to a Cisco 3640 voice gateway via an E1 QSIG connection.

### 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.
- 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 3640 router with an 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           cl.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 3640 Gateway Configuration

The following is the configuration of the Cisco 3640 gateway connected to the Alcatel 4400 PBX slot 3 ISDN QSIG interface.

### Cisco 3640 Voice Gateway Version Information

---

```
Cisco_3640# show version
```

```
Cisco Internetwork Operating System Software
IOS (tm) 3600 Software (C3640-JS-M), Version 12.2(1), RELEASE SOFTWARE (fc2)
Copyright (c) 1986-2001 by cisco Systems, Inc.
Compiled Fri 27-Apr-01 05:00 by cmong
Image text-base: 0x60008950, data-base: 0x61492000

ROM: System Bootstrap, Version 11.1(20)AA2, EARLY DEPLOYMENT RELEASE SOFTWARE (f
cl)

Cisco_3640 uptime is 2 weeks, 6 days, 23 hours, 45 minutes
System returned to ROM by power-on
System image file is "flash:c3640-js-mz.122-1"

cisco 3640 (R4700) processor (revision 0x00) with 59392K/6144K bytes of memory.
Processor board ID 24827507
R4700 CPU at 100Mhz, Implementation 33, Rev 1.0
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 Ethernet/IEEE 802.3 interface(s)
31 Serial network interface(s)
2 Channelized E1/PRI port(s)
2 Voice FXO interface(s)
2 Voice FXS interface(s)
DRAM configuration is 64 bits wide with parity disabled.
125K bytes of non-volatile configuration memory.
16384K bytes of processor board System flash (Read/Write)
16384K bytes of processor board PCMCIA Slot0 flash (Read/Write)

Configuration register is 0x2102
```

### Cisco 3640 Voice Gateway Sample Configuration

---

```
Cisco_3640# show configuration
```

```
Using 1954 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 Cisco_3640
!
logging rate-limit console 10 except errors
enable secret 5 $1$MO.1$djDfp226W.PgF/0DpeuSn0
enable password cisco
!
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 Ethernet0/0  
  bandwidth 100000  
  ip address 10.1.1.1 255.255.255.0  
  no ip mroute-cache  
  load-interval 30  
  no keepalive  
  full-duplex  
!  
interface Ethernet0/1  
  no ip address  
  shutdown  
  half-duplex  
  no cdp enable  
!  
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  
  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  
!  
dialer-list 1 protocol ip permit  
dialer-list 1 protocol ipx permit  
!  
snmp-server packetsize 4096  
snmp-server manager  
tftp-server nvram  
!  
voice-port 1/0:15  
!  
voice-port 2/0/0  
!  
voice-port 2/0/1  
!  
voice-port 3/0/0  
!  
voice-port 3/0/1  
!  
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 3103  
  progress_ind setup enable 1  
  session target ipv4:10.1.1.2  
!  
dial-peer voice 3 pots  
  destination-pattern 3050  
  port 3/0/0  
!  
dial-peer voice 4 voip  
  destination-pattern 3000  
  session target ipv4:10.1.1.2  
!  
dial-peer voice 5 voip  
  destination-pattern 3003  
  session target ipv4:10.1.1.2  
!  
dial-peer voice 6 pots  
  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  
line vty 0 4  
  password lab  
  login  
!  
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 is not yet supported on an Alcatel PBX.