



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

This document describes the interoperability and configuration of a Cisco 3600 series voice gateway with an Alcatel 4400 PBX using E1 PRI signaling. It includes the following sections:

- System Components
- Configuration Tasks
- Caveats

System Components

PBX Model	Alcatel 4400 PBX
PBX Release	Software Version R3.2, Version c1.712
Telephony Signaling	E1 PRI
Voice Gateway	Cisco 3640
Gateway Release	Cisco IOS™ 12.2(1)
VoX Protocol	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

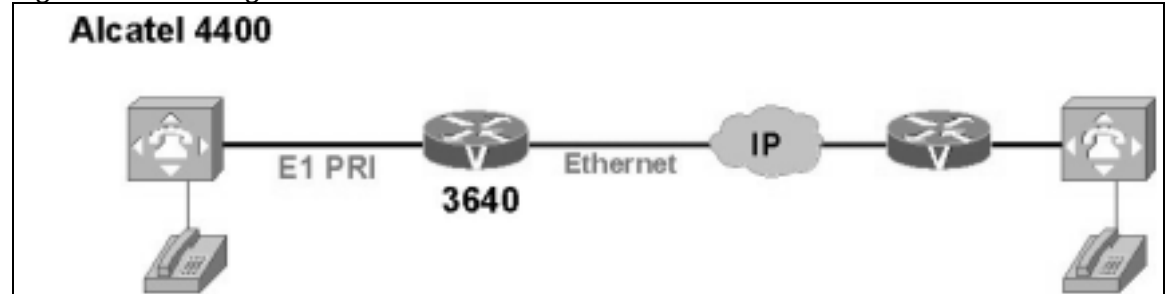


Figure 1 represents the configuration used for testing: an Alcatel 4400 PBX connected to a Cisco 3640 voice gateway via an E1 PRI NET5 connection.

Set Up Notes

- Both the Alcatel 4400 PBX and the Cisco 3640 voice gateway support Network and User side PRI connectivity.
- 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.
- 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.

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

```

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

```

 **Note:** The trunk cards were configured the same.

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
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 3640 Gateway Configuration

The following is the configuration of the Cisco 3640 gateway connected to the Alcatel 4400 PBX, slot 3 ISDN PRI 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 (fc1)

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 $1$M0.1$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-net5
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-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
!
dialer-list 1 protocol ip permit
dialer-list 1 protocol ipx permit
!
snmp-server packet-size 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

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