

Cisco 3660 Gateway-PBX Interoperability: Toshiba DK424 PBX using T1 PRI Interfaces to an MGCP Gateway

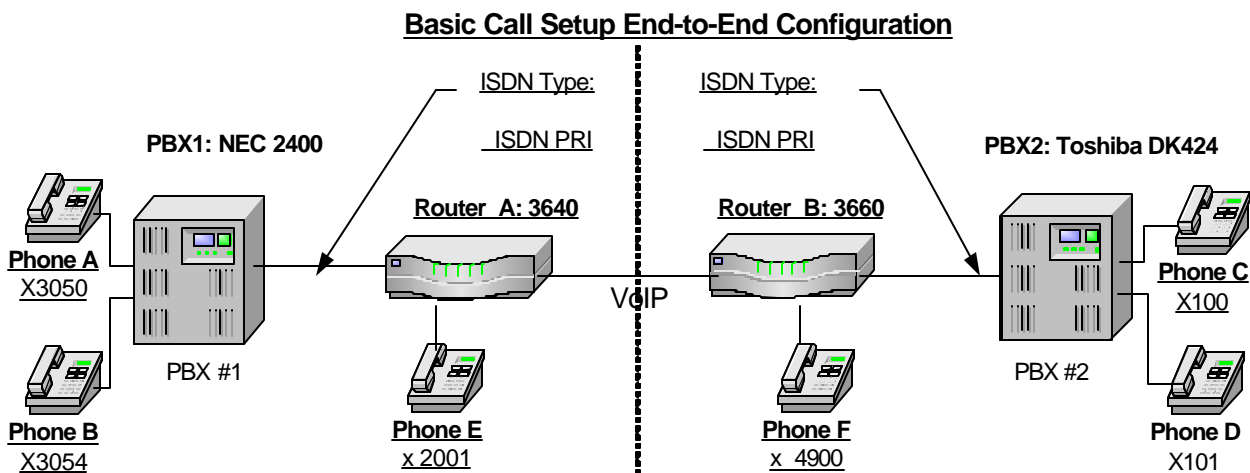
Introduction

This document describes PBX interoperability of a Cisco 3660 with a VIC-2MFT-T1 card, which is connected to a Toshiba DK424 PBX via T1 ISDN PRI. The following note applies:

- The Cisco 3660 with an ISDN switch type setting of NI2 supports both protocol sides with the **isdn protocol-emulate** network/user command.

Network Topology

The following diagram shows a NEC 2400 ICS PBX is connected with a T1 ISDN PRI link to a Cisco 3640, which in turn, is connected to a Cisco 3660 by an Ethernet connection. The Cisco 3660 is connected to a Toshiba DK424 via T1 ISDN PRI link.



Limitations

- The Toshiba PBX only supports “USER” emulation.
- The Toshiba PBX can only accept clock on the T1 PRI interface.
- Calls completed successfully and Calling Number was displayed as expected.
- The Connected Number is sometimes not sent back to the originator from the NEC or the Toshiba. This can be verified with an ISDN protocol analyzer.
- Calling Name is not supported on the Toshiba PBX.



- The Toshiba PBX does not support Connected Line Presentation (COLP).

System Components

Hardware Requirements

- Cisco 3660 gateway
- Toshiba DK424 PBX

Software Requirements

- Cisco IOS Software Release 12.2(9.2)
- Toshiba DK424 Software Release 4.3

Configuration

Configuring the Toshiba DK424 PBX

Toshiba PBX Hardware Configuration

The screenshot shows a window titled "DKADMIN - DKADMAP" with a menu bar and a toolbar. The main display area shows the text "cisco PCB Placement per Program 03" above a table. The table lists configurations for two cabinets, each with columns for PCB Type, Port Nos., and Line Nos. A keyboard legend is visible at the bottom of the window.

CABINET 1	R11	RCTU	S11	S12	S13	S14	S15	S16
PCB Type	RCTUE3	RCTUF4	RSIU	PDKU	RSTU	RATU	RPTU	-
Port Nos.	-	-	-	000~007	008~015	016~019	-	-
Line Nos.	-	-	-	-	-	-	001~024	-
Option	-	-	-	-	-	-	RPTU	-
CABINET 2	S21	S22	S23	S24	S25	S26	S27	S28
PCB Type	-	-	-	-	-	-	-	-
Port Nos.	-	-	-	-	-	-	-	-
Line Nos.	-	-	-	-	-	-	-	-

Keyboard Legend:
+ Left CTRL+ Page Left ↑ Up PGUP HOME Beg Line CTRL+PGUP Rpt Top
→ Right CTRL+ Page Right ↓ Down PGDN END End Line CTRL+PGDN Rpt End



Toshiba System Assignments

DKADMIN - DKADMAP

Auto

10-1: System Assignments

✓ Option Description	✓ Option Description
✓ Two-CO Line Conference/Allowed	Not Allowed
✓ Conference/Allowed	Not Allowed
✓ Ring Detect Time - Normal	Ring Detect Time - Short Rings
✓ Intercom Volume PAD(-8 dB)	✓ No Intercom PAD
✓ Auto TEI (2 TEIs)	Fixed TEI (TEI=0)
N/A	✓ N/A
N/A	✓ N/A
N/A	✓ N/A
ABR Cycles/10 Times	✓ 15 Times
ABR Redial Time/30 Sec.	✓ 1 min.
Sys. Speed Dial Override, T.R.	✓ Restricted
✓ Exclusive Hold/Allowed	Not Allowed
✓ Alternate Point Answer	Transfer Privacy
✓ Ring Transfer of CO Line/Allowed	Not Allowed
CO Line Repeat Ringing	✓ Standard Ring
Incoming Call Abandon/8 sec.	✓ 6 Sec.

F1-Help F9-Save & Upload F10-Save Program Esc-Exit
On If Checked (Press Space to Turn On/Off)

Toshiba T1 ISDN PRI Assignments

DKADMIN - DKADMAP

Auto

*41-1: T1 Span Frame And Coding Assignments

RDTU No.	RDTU Frame Assignment	RDTU Line Code Assignment
1	Extended Super Frame	B8ZS Code
2	Super Frame	AMI Code
3	Super Frame	AMI Code
4	Super Frame	AMI Code
5	Super Frame	AMI Code
6	Super Frame	AMI Code
7	Super Frame	AMI Code
8	Super Frame	AMI Code

F1-Help F9-Save & Upload F10-Save Program Esc-Exit
RDTU Number



Toshiba Calling Number Parameters

Trunk Group No.	Outgoing Caller ID Presentation	Outgoing Caller ID Status Change	Incoming Caller ID Source
01	Allowed	Allowed	Network Provided
02	Not Allowed	Not Allowed	Caller Provided
03	Not Allowed	Not Allowed	Caller Provided
04	Not Allowed	Not Allowed	Caller Provided
05	Not Allowed	Not Allowed	Caller Provided
06	Not Allowed	Not Allowed	Caller Provided
07	Not Allowed	Not Allowed	Caller Provided
08	Not Allowed	Not Allowed	Caller Provided
09	Not Allowed	Not Allowed	Caller Provided
10	Not Allowed	Not Allowed	Caller Provided
11	Not Allowed	Not Allowed	Caller Provided
12	Not Allowed	Not Allowed	Caller Provided
13	Not Allowed	Not Allowed	Caller Provided
14	Not Allowed	Not Allowed	Caller Provided
15	Not Allowed	Not Allowed	Caller Provided

F1-Help F9-Save & Upload F10-Save Program Esc-Exit
Trunk Group Number

Configuring the Cisco 3660

The following shows a Cisco 3660 router configured to be directly connected to the Toshiba DK424 PBX with a T1 ISDN PRI link:

```
Router# show running config
```

```
Building configuration...
```

```
Current configuration : 3879 bytes
```

```
!  
version 12.2  
service timestamps debug datetime msec  
service timestamps log datetime msec  
no service password-encryption  
!  
hostname 3660-A  
!  
boot system tftp c3660-is-mz.122-9.2.pi4 255.255.255.255
```



```
!  
voice-card 4  
!  
voice-card 6  
!  
ip subnet-zero  
!  
!  
no ip domain-lookup  
!  
isdn switch-type primary-net5  
!  
!  
!  
voice service voip  
    fax protocol t38 ls-redundancy 0 hs-redundancy 0  
!  
!  
!  
!  
!  
!  
!  
no voice hpi capture buffer  
no voice hpi capture destination  
!  
mrp client session history duration 0  
mrp client session history records 0  
fax interface-type fax-mail  
mta receive maximum-recipients 0  
!
```



```
controller T1 4/0
  framing esf
  clock source internal
  linecode b8zs
  pri-group timeslots 1-24
!
controller T1 4/1
  framing esf
  clock source internal
  linecode b8zs
  pri-group timeslots 1-24
!
controller E1 6/0
  pri-group timeslots 1-31
!
controller E1 6/1
  framing NO-CRC4
  clock source internal
  pri-group timeslots 1-31
!
!
!
!
interface FastEthernet0/0
  ip address 10.1.1.205 255.255.255.0
  no keepalive
  duplex auto
  speed auto
  h323-gateway voip bind srcaddr 10.1.1.205
!
interface Ethernet1/0
```



```
ip address 1.1.1.1 255.255.255.0
shutdown
full-duplex
!
interface Serial1/0
no ip address
shutdown
no fair-queue
!
interface TokenRing1/0
no ip address
shutdown
ring-speed 16
!
interface ATM3/0
no ip address
atm vc-per-vp 256
no atm ilmi-keepalive
scrambling-payload
impedance 120-ohm
!
interface ATM3/0.1 point-to-point
ip address 192.168.50.2 255.255.255.0
pvc 10/1
encapsulation aal5snap
!
!
interface ATM3/1
no ip address
shutdown
atm vc-per-vp 256
```



```
no atm ilmi-keepalive
scrambling-payload
impedance 120-ohm
!
interface ATM3/2
no ip address
shutdown
atm vc-per-vp 256
no atm ilmi-keepalive
scrambling-payload
impedance 120-ohm
!
interface ATM3/3
no ip address
shutdown
atm vc-per-vp 256
no atm ilmi-keepalive
scrambling-payload
impedance 120-ohm
!
interface Serial4/0:23
no ip address
no logging event link-status
isdn switch-type primary-ni
isdn protocol-emulate network
isdn incoming-voice voice
isdn negotiate-bchan resend-setup
no cdp enable
!
interface Serial4/1:23
no ip address
```




```
no logging event link-status
isdn switch-type primary-ni
isdn protocol-emulate network
isdn incoming-voice voice
isdn negotiate-bchan resend-setup
no cdp enable
!
interface Serial6/0:15
no ip address
no logging event link-status
isdn switch-type primary-qsig
isdn protocol-emulate network
isdn incoming-voice voice
no isdn T309-enable
isdn T310 40000
isdn negotiate-bchan
no cdp enable
!
interface Serial6/1:15
no ip address
no logging event link-status
isdn switch-type primary-net5
isdn overlap-receiving
isdn incoming-voice voice
isdn negotiate-bchan
no cdp enable
!
interface Group-Async1
physical-layer async
ip address negotiated
encapsulation ppp
```



```
dialer in-band
dialer string 2000X123456789012345678901234567
dialer-group 5
!
router eigrp 1
 redistribute static
 network 10.0.0.0
 network 192.168.50.0
 no auto-summary
 no eigrp log-neighbor-changes
!
no ip classless
ip route 10.1.1.201 255.255.255.255 ATM3/0.1 192.168.50.1
no ip http server
ip pim bidir-enable
!
!
dialer-list 5 protocol ip permit
!
snmp-server manager
!
call rsvp-sync
!
voice-port 2/0/0
!
voice-port 2/0/1
!
voice-port 2/1/0
!
voice-port 2/1/1
!
```



```
voice-port 4/0:23
!
voice-port 4/1:23
!
voice-port 6/0:15
!
voice-port 6/1:15
!
!
mgcp profile default
!
dial-peer cor custom
!
!
!
dial-peer voice 7 voip
  destination-pattern 2001
  session target ipv4:10.1.1.204
!
dial-peer voice 3 pots
  destination-pattern 1..
  direct-inward-dial
  port 4/1:23
  forward-digits all
!
dial-peer voice 4900 pots
  destination-pattern 4900
  port 2/0/0
  forward-digits all
!
dial-peer voice 10 voip
```



```
destination-pattern 305.  
session target ipv4:10.1.1.71  
!  
!  
line con 0  
  exec-timeout 0 0  
line aux 0  
line vty 0 4  
  exec-timeout 0 0  
  password cisco  
  login  
!  
!  
end
```

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