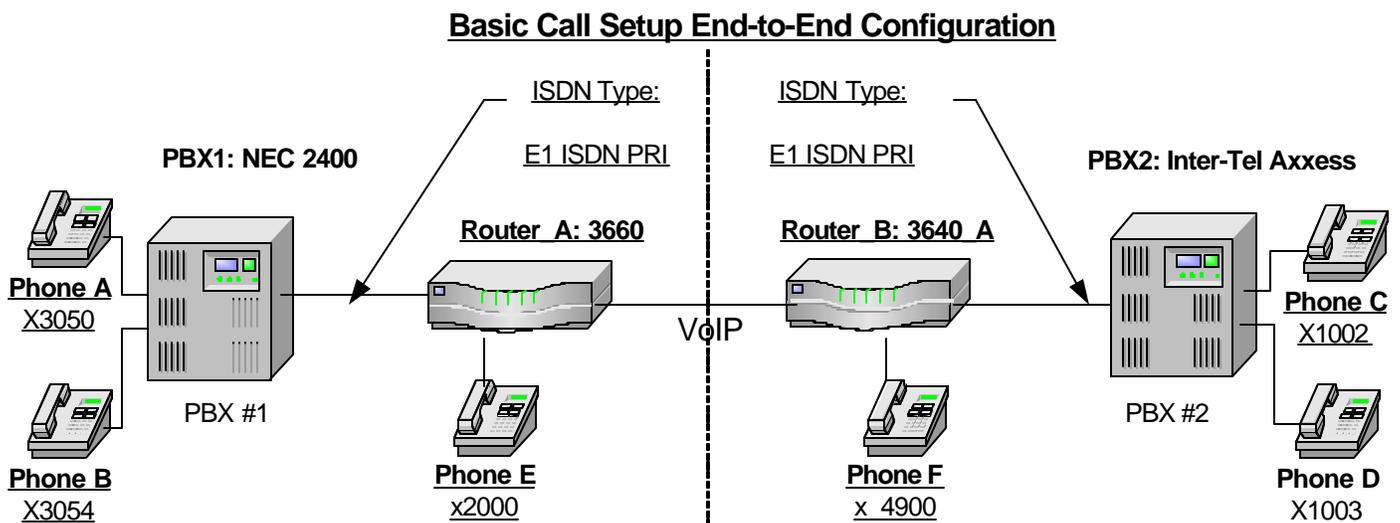


Cisco 3660 Gateway - PBX Interoperability: NEC NEAX 2400 PBX using Q.931 PRI Interfaces to an H.323 Gateway

Introduction

- This Application Note describes the interoperability of a Cisco 3660 gateway and an NEC NEAX 2400 PBX using Q.931 PRI interfaces.
- The network topology diagram shows the end-to-end interoperability when configured for back-to-back VoIP operation.

Network Topology



Limitations

- While the NEC 2400 PBX appears to work in “NETWORK” emulation mode, NEC will not provide support when called with an issue. It is recommended that the NEC PBX only be set to “USER,” especially if tandem switching is involved.
- The NEC 2400 PBX does not support Overlap Sending or Receiving.
- The NEC 2400 PBX does not support Calling Name display on the ICS platform. Beginning with Release 9 on the IMX and IPX platforms, Calling Name display is supported using the NI2 protocol.
- The NEC 2400 PBX can accept or provide clock on the T1 PRI interface. The NEC 2400 PBX requires additional wiring to accept clock as well as switch changes on the clock card. Both modes were tested and performed equally well.
- The NEC 2400 PBX requires a substantial amount of programming and the proper switch settings to properly install T1 PRI. It is beyond the scope of this document to provide the entire configuration. Refer to the NEC 2400 documentation.
- The switch settings and software references in this document assume a familiarity with the NEC 2400. It is highly recommended to have a NEC ISDN-certified technician set up the NEC portion of the configuration.
- For the NEC 2400, it is recommended to use NI2 since it will support Calling Name beginning in Release 9 on the IMX and IPX platforms.



System Components

Hardware Requirements

- Cisco 3660 modular access router with VIC-2MFT-E1 interface card
- NEC NEAX 2400 PBX

Software Requirements

- Cisco IOS Software Release 12.2(8)T1
- NEC IMGx 6300 Version J5.80

Configuration

Configuring the NEC NEAX 2400

The NEC 2400 PBX requires a substantial amount of programming and proper switch settings to install T1 PRI. This document contains examples of switch and route settings on the NEC 2400. For additional information, see the NEC 2400 documentation.

The NEC PBX can be set to either “NETWORK” or “USER” by making the following setting:

- On the PA-30PRTB circuit card, set SW16-4 ON for “USER,” OFF for “NETWORK.”

The NEC protocol settings for ETSI are accomplished by:

- On the PA-30PRTB circuit card, set the Sense wheel (circular switch) to: 4 = ETSI.
- ARTD CDN 65 must be set to the same value (4) as the Sense wheel.

The switch settings and software references in this document assume a familiarity with the NEC 2400 PBX. It is highly recommended to have a NEC ISDN-certified technician set up the NEC portion of the configuration.

Configuring the Cisco 3660 Gateway

```
3660-B#show running-config
```

```
Building configuration...
```

```
Current configuration : 2846 bytes
!
version 12.2
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service linenumbers
!
hostname 3660-B
!
boot system tftp c3660-js-mz_122-8_t1.bin 10.1.1.100
enable password cisco
!
voice-card 4
!
ip subnet-zero
```



```
!  
!  
no ip domain-lookup  
!  
isdn switch-type primary-net5  
!  
!  
voice service voip  
  fax protocol t38 ls-redundancy 0 hs-redundancy 0  
!  
!  
!  
!  
!  
fax interface-type fax-mail  
mta receive maximum-recipients 0  
!  
controller E1 4/0  
  pri-group timeslots 1-31  
!  
!  
!  
interface FastEthernet0/0  
  ip address 10.1.1.204 255.255.255.0  
  no ip mroute-cache  
  duplex auto  
  speed auto  
!  
interface Ethernet1/0  
  ip address 10.1.1.2 255.255.255.0  
  no ip mroute-cache  
  full-duplex  
!  
interface Serial1/0  
  no ip address  
  no ip mroute-cache  
  shutdown  
  no fair-queue  
!  
interface TokenRing1/0  
  no ip address  
  no ip mroute-cache  
  shutdown  
  ring-speed 16  
!  
interface ATM3/0  
  no ip address  
  no ip mroute-cache  
  atm vc-per-vp 256  
  no atm ilmi-keepalive  
  scrambling-payload  
  impedance 120-ohm  
!  
interface ATM3/0.1 point-to-point  
  ip address 192.168.50.1 255.255.255.0  
  no ip mroute-cache  
  pvc 10/1  
    encapsulation aal5snap  
!  
!
```



```
interface ATM3/1
  no ip address
  no ip mroute-cache
  shutdown
  atm vc-per-vp 256
  no atm ilmi-keepalive
  scrambling-payload
  impedance 120-ohm
!
interface ATM3/2
  no ip address
  no ip mroute-cache
  shutdown
  atm vc-per-vp 256
  no atm ilmi-keepalive
  scrambling-payload
  impedance 120-ohm
!
interface ATM3/3
  no ip address
  no ip mroute-cache
  shutdown
  atm vc-per-vp 256
  no atm ilmi-keepalive
  scrambling-payload
  impedance 120-ohm
!
interface Serial4/0:15
  no ip address
  no logging event link-status
  isdn switch-type primary-net5
  isdn protocol-emulate network
  isdn incoming-voice voice
  no cdp enable
!
interface Group-Async1
  physical-layer async
  no ip address
  encapsulation ppp
  no ip mroute-cache
  dialer in-band
  dialer-group 8
!
interface Dialer66
  ip address 10.6.6.1 255.255.255.0
  encapsulation ppp
  no ip mroute-cache
  dialer pool 4
  dialer string 9876543
  dialer-group 8
  no cdp enable
!
router rip
  network 10.0.0.0
!
no ip classless
no ip http server
ip pim bidir-enable
!
!
dialer-list 8 protocol ip permit
!
```



```
!  
snmp-server manager  
!  
call rsvp-sync  
!  
voice-port 2/0/0  
  bearer-cap Speech  
!  
voice-port 2/0/1  
  bearer-cap Speech  
!  
voice-port 4/0:15  
!  
!  
mgcp profile default  
!  
dial-peer cor custom  
!  
!  
!  
dial-peer voice 3 pots  
  destination-pattern 30..  
  direct-inward-dial  
  port 4/0:15  
  forward-digits all  
!  
dial-peer voice 1 voip  
  destination-pattern 10..  
  session target ipv4:10.1.1.21  
!  
dial-peer voice 2000 pots  
  destination-pattern 2000  
  port 2/0/0  
  forward-digits all  
!  
dial-peer voice 4000 voip  
  destination-pattern 4..  
  session target ipv4:10.1.1.21  
!  
!  
line con 0  
  privilege level 15  
line aux 0  
  privilege level 15  
line vty 0 4  
  password cisco  
  login  
!  
!  
end
```



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