Application Note

Cisco 3725 Gateway-PBX Interoperability: NEC 2400 PBX using E1 QSIG with H.323

Introduction

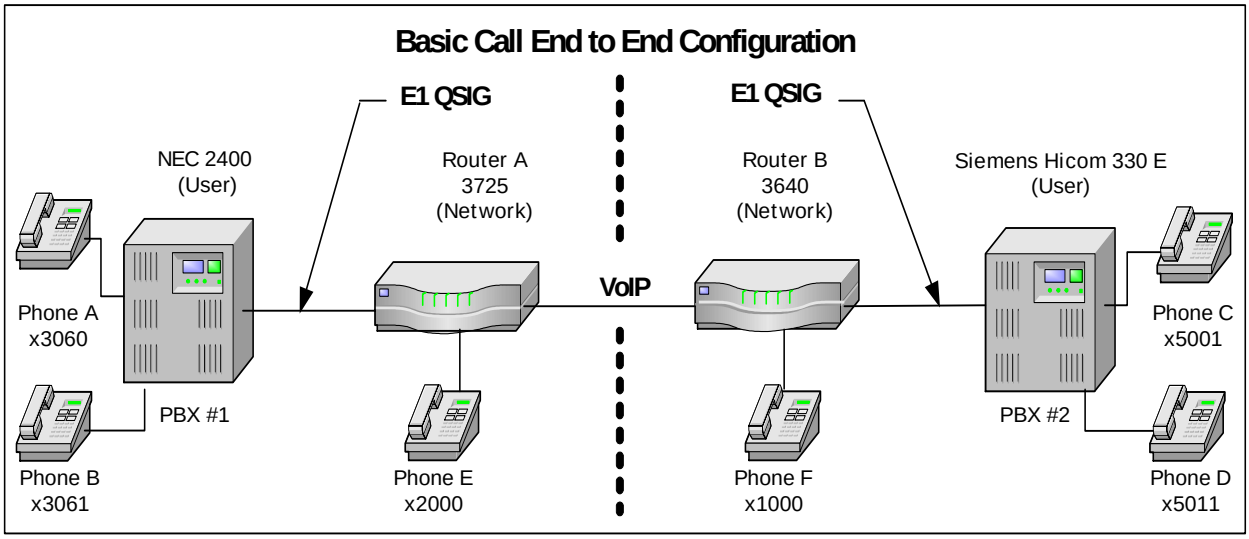
This application note describes the interoperability of the Cisco 3725 router and the NEC 2400 PBX using E1 QSIG with H.323.

The network topology diagram shows the end-to-end interoperability.

Though the NEC 2400 ICS can be configured as either network (master) or user (slave) side, configuration as network is not recommended.

The NEC TAC center will not resolve a case presented with NEC set as the network side.

Network Topology



EDCS# 248500

Limitations

NEC supports only user side. While the NEC can be configured as network, NEC will not support it.

NEC does not support overlap sending.

Name and number presentation do not work correctly in some external (off-net) forwarding and conferencing conditions.

System Components

Hardware Requirements

Cisco 3725 router with NM-HDV and 2MFT-E1

NEC 2400 ICS PBX with PA-30PRTB circuit card

Software Requirements

Cisco 3725 12.2.(12.12T)

NEC ICS 2400 PBX Software Release J 5.8

Features Supported

Calling Name Identification Presentation

Calling Number Identification Presentation

Connected Name Identification Presentation

Connected Number Identification Presentation

Configuration

Configuring the NEC 2400 ICS PBX

The NEC requires a substantial amount of programming and circuit card switch setting to properly install E1 QSIG. It is beyond the scope of this document to provide the entire configuration; therefore, the NEC PBX information that follows is mostly helpful for NEC technicians. It is highly recommended that you have a NEC ISDN certified technician setup the NEC portion. Refer to the NEC 2400 ICX PBX documentation for complete configuration information.

Configure in following sequence:

Step 1. Install circuit card (PA-30PRTB) and set the switches.

Step 2. Configure the route settings found in ARTD.

Step 3. Configure all software.

NEC 2400 Circuit Card Configuration (PA-30PRTB)

Switch	Position	Description	Setting
SW00		Make Busy	Down
SW01	0	All Channel Make Busy	Off
	1	External Loop Back	Off
	2	Internal Loop Back	Off
	3	Dch Handler Make Busy	Off
SW02 (SENSE - Rotary)		1 = AT&T 2 = Australia 3 = NTT Japan 4 = NEC/ETSI	A

Switch	Position	Description	Setting
		5 = AT&T 6 = INS A = Q.SIG	
SW10	Jumper	Off = Coax On = Twisted Pair	On
SW11	Jumper	Off = Coax On = Twisted Pair	On
SW12	Jumper	Off = Coax On = Twisted Pair	On
SW13	1	On = PAD ROM Special Version Off = PAD ROM Standard Version	Off
	2	On = ISDN BUS Not Used Off = ISDN BUS Used	On
	3	Not Used	Off
	4	Not Used	Off
SW14	1	On = CCITT Signaling Off =CEPT Signaling	On
	2	On = Alarm Release: 2sec (Aus) Off = Alarm Release 15 Sec.	On
	3	PAD	On
	4	PAD	On
	5	PAD	On
	6	PAD	On
	7	PAD	On
	8	Fixed Off	Off
SW15	1	Loopback Pattern Off = Loopback inhibited	Off
	2	Loopback Pattern Off = Loopback inhibited	Off
	3	Loopback Pattern Off = Loopback inhibited	Off
	4	Loopback Pattern Off = Loopback inhibited	Off
	5	TS16 Control: On = Data Through (CCIS/ISDN) Off = Signaling	On
	6	On = No CRC4 Off = CRC4	Off
	7	Firmware (CCITT/China/Thailand/Aux)	On
	8	Firmware (CCITT/China/Thailand/Aux)	On
SW16	1	Fixed Off	Off
	2	Fixed Off	Off
	3	All “1” Supervision On = To be controlled Off = Not to be controlled	Off
	4	On = Dch User Side Off = Dch Network Side	On
	5	On = Dch NegativeLogic Off = Dch Positive Logic	Off
	6	On = Dch Packet Service On	Off

Switch	Position	Description	Setting
		Off = Dch Packet Service Off	
	7	Fixed Off	Off
	8	Fixed Off	Off

NEC 2400 Route (ARTD) Configuration

Configure the route settings found in ARTD. Route 19 is the B channel, and Route 20 is the D channel. Setting the NEC to emulate the network side is not supported by NEC; however, one may have limited success emulating network side. CDN 64 must remain set to 0 or the calling number will not be passed.

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* ROUTE CLASS DATA LIST *

CDN	FUNCTION	ROUTE NUMBER 16	17	18	19	20
1	OSGS	4	0	0	0	0
2	ONSG	3	2	2	2	2
3	ISGS	4	0	0	0	0
4	INSG	3	2	2	2	2
5	TF	3	3	3	3	3
6	TCL	4	4	4	4	4
7	L/T	1	1	1	1	1
8	RLP	2	2	2	2	2
9	TQ	0	1	0	0	0
10	SMDR	0	1	1	0	0
11	TD	0	0	0	0	0
12	DR	1	0	0	0	0
13	AC	1	1	0	1	0
14	TNT	0	0	0	0	0
15	LSG	5	12	13	12	13
16	SMDR2	0	0	0	0	0
17	H/M	0	0	0	0	0
18	MC	0	0	0	0	0
19	ANI	0	0	0	0	0
20	D	0	0	0	0	0
21	MSB	0	0	0	0	0
22	MSW	0	0	0	0	0
23	TR	0	0	0	0	0
24	OC	0	0	0	0	0
25	R/L	0	0	0	0	0
26	RVSD	0	0	0	0	0
27	TL	0	0	0	0	0
28	ANS	0	1	0	1	0
29	TELP	0	0	0	0	0
30	PAD	0	7	7	7	7
31	OGRL	0	1	1	1	1
32	ICRL	0	1	1	1	1
33	HD	0	0	0	0	0
34	GUARD	0	1	1	1	1
35	WINK	0	0	0	0	0
36	VAD	0	0	0	0	0
37	CLD	0	0	0	0	0

```
  38   FA          0         0         0         0         0

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             *  ROUTE CLASS DATA LIST  *

                -------  R O U T E     N U M B E R  -------
 CDN FUNCTION     16        17        18        19        20

  39   BC          0         0         0         0         0
  40   TCM         0         0         0         0         0
  41  TDMQ         0         0         0         0         0
  42  TRSC         0         0         0         0         0
  43   BT          0         1         1         1         1

  44   PRV         0         0         0         0         0
  45   A/D         0         1         1         1         1
  46   CW          0         0         0         0         0
  47   TPQ         0         0         0         0         0
  48   BL          0         0         0         0         0

  49  TRKS         0         1         1         1         0
  50  DPLY         0         1         1         1         0
  51   ACD         0         0         0         0         0
  52 2W/4W         0         0         0         0         0
  53  FAAT         0         0         0         0         0

  54   GW          0         0         0         0         0
  55  TCMA         0         0         0         0         0
  56 SMDR3         0         0         0         0         0
  57   HDT         0         0         0         0         0
  58    CD         0         0         0         0         0

  59   CCH         0         0         0         0         0
  60 TC/EC         0         0         0         0         0
  61   IRE         0         0         0         0         0
  62   SCR         0         0         0         0         0
  63 LYER1         0         1         1         1         1

  64   NET         0         0         0         0         0
  65   INT         0        10        10        10        10
  66    DC         0         4         4         4         4
  67   HKS         0         0         0         0         0
  68   SCF         0         0         0         0         0

  69 SMDR4         0         0         0         0         0
```

Configuring the Cisco 3725 Router

```
Router# show running-config
Building configuration...

Current configuration : 1496 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname 3725_A
!
```

```
!
memory-size iomem 15
voice-card 2
 dspfarm
!
ip subnet-zero
!
!
no ip domain lookup
!
isdn switch-type primary-qsig
!
!
voice call carrier capacity active
!
!
!
!
!
!
!
!
!
mta receive maximum-recipients 0
!
controller E1 2/0
 pri-group timeslots 1-31
!
controller E1 2/1
!
!
!
!
interface FastEthernet0/0
 ip address 10.1.1.21 255.255.255.0
 no ip mroute-cache
 speed auto
 half-duplex
!
interface FastEthernet0/1
 no ip address
 no ip mroute-cache
 duplex auto
 speed auto
!
interface Serial2/0:15
 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 negotiate-bchan
 no cdp enable
!
ip classless
ip http server
ip pim bidir-enable
!
!
!
!
call rsvp-sync
!
```

```
voice-port 1/0/0
!
voice-port 1/0/1
!
voice-port 2/0:15
!
!
mgcp profile default
!
!
!
dial-peer cor custom
!
!
!
dial-peer voice 2 pots
 destination-pattern 2000
 port 1/0/1
 forward-digits 0
!
dial-peer voice 3 pots
 destination-pattern 306.
 direct-inward-dial
 port 2/0:15
 forward-digits all
!
dial-peer voice 4 voip
 destination-pattern 305.
 session target ipv4:10.1.1.23
!
dial-peer voice 1 voip
 destination-pattern 1000
 session target ipv4:10.1.1.23
!
dial-peer voice 5000 voip
 destination-pattern 50..
 session target ipv4:10.1.1.23
!
!
line con 0
line aux 0
line vty 0 4
 login
!
end
```

Important Information

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