



Nortel CS1000M Release 4.0 to a Cisco IAD243X using E1-Q.SIG with SIP

January 10, 2007 Initial Version

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Introduction

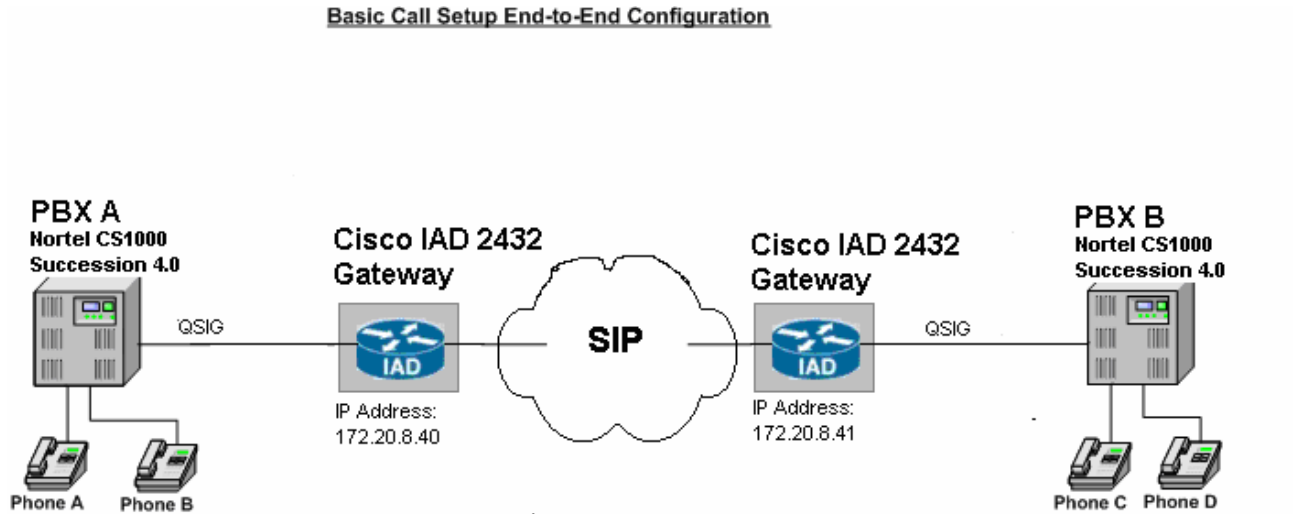
This is an application note for connectivity to Nortel CS1000 Succession 4.0 PBX with the Cisco IAD243X Gateway via QSIG-to-SIP communication (10/100baseT).

The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability with the Cisco IAD243X Gateway connected to the PBX via QSIG (E1 PRI). IP trunk connectivity between the IAD243X's is achieved by using SIP protocol.



Network Topology

Figure 1. Basic Call Setup



Limitations

Calling Name (CNIP) feature does not interoperate. The limitation is due to the Cisco IAD2432 encoding the Calling Name using QSIG profile 'Rose' and gives an operation value of LocalValue=0, these parameters are unrecognized by the Avaya PBX and Calling Name presentation fails.

Connected Name (CONP) feature does not interoperate. The limitation is due to the Cisco IAD2432 not supporting this feature.

Connected Number does not follow the CallForward feature (e.g. If Phone A calls Phone C, and Phone C is forwarded to Phone D, the connected number displayed on Phone A will be Phone C's number, not Phone D's). The limitation is due to the Cisco IAD2432.

Connected number restriction is not honored. The limitation is due to the Cisco IAD2432.

Alerting name presentation feature does not interoperate. The limitation is due to the Cisco IAD2432 not supporting this feature

When a Call Transfer or Call forward features is invoked the name and number updates have limited functionality. The limitation is due to the Cisco IAD2432 not supporting the Q931 FACILITY message.

Cisco IAD2432 PRI does not perform Overlap-Sending

When a 3-way call conference is initiated by the external calling phone to conference a local phone (e.g. Phone A calls Phone C, Phone C answers. Phone A conferences in Phone D), the call will be dropped on all phones if the external calling phone hangs-up.



Hardware Requirements

- 2 Cisco IAD2432 24FXS
- 2 Nortel CS1000M PBX
- 2 Nortel 2616 Digital phones
- 1 Cisco Catalyst switch

Software Requirements

- Nortel PBX: Succession 4.0
- Cisco IOS Release: c2430-ik9o3s-mz-124-9.T1

Features

Features Supported

- Basic end-to-end calls with CLIP (Calling Number) and COLP (Connected Number)
- Calling Number Restricted
- Overlap Receiving – IAD2432 can perform Overlap-Receiving, but outgoing call will be ENBLOC
- Call Transfer – Local and Network/External
- Call on-hold
- Call Forward (Unconditional, Busy and No answer) – local and Network/External
- 3-way Conference
- DTMF end-to-end

Features Not Supported

- Calling Name and Connected Name presentation
- Alerting Name presentation
- Call Transfer Name/Number Facility updates
- Call Forward Name/Number Facility updates

Configuration

Configuring the Nortel Meridian 1 Option 11C PBX

Configure in the following sequence:

1. Configure common equipment
2. Configure the D-Channel
3. Configure the Route Data Block.
4. Configure the Trunk Data Block
5. Configure the Coordinated Dialing Plan
6. Configure the Digital Station Phone

Nortel PBX Configuration

```
*****  
Common Equipment Configuration  
*****
```



>ld 22
PT2000

REQ prt
TYPE cequ

CEQU
MPED 8D
SUPL 000 004 008 012
016 032 036 040
044 048 064 068
072 V096
TDS 000
CONF 029 030 031 062
094 095

DLOP NUM DCH FRM TMDI LCMT YALM T1TE TRSH
PRI 02 23 ESF NO B8S FDL - 00
05 23 ESF NO B8S FDL - 00
06 23 ESF NO B8S FDL - 00
07 23 ESF NO B8S FDL - 00

PRI2 04
DTI2
MISP

D-channel configuration

ADAN DCH 4
CTYP MSDL
CARD 04
PORT 1
DES E1QSIG
USR PRI
DCHL 4
OTBF 32
PARM RS422 DTE
DRAT 64KC
CLOK EXT
IFC ISGF
PINX_CUST 0
ISDN_MCNT 300
CLID OPT0
CO_TYPE STD
SIDE NET
CNEG 1
RLS ID **
QCHID YES
RCAP COLP NDI CCBI CCNI CTI
MBGA NO
OVLN NO
OVLS NO
T310 120
T200 3
T203 10
N200 3
N201 260
K 7



Route Data block configuration

>ld 21
PT1000

REQ: prt
TYPE: rdb
CUST 0
ROUT 104

TYPE RDB
CUST 00
DMOD
ROUT 104
DES E1-QSIG
TKTP TIE
NPID_TBL_NUM 0
ESN NO
CNVT NO
SAT NO
RCLS EXT
VTRK NO
NODE
DTRK YES
BRIP NO
DGTP PRI2
ISDN YES
 MODE PRA
 IFC ISGF
 SBN NO
 PNI 00000
 NCNA NO
 NCRD NO
 CTYP UKWN
 INAC NO
 ISAR NO
 CPFXS YES
 DAPC NO
 INTC NO
DSEL VOD
PTYP DTT
AUTO NO
DNIS NO
DCDR NO
ICOG IAO
SRCH LIN
TRMB YES
STEP
ACOD 504
TCPP NO
TARG 01
CLEN 1
BILN NO
OABS
INST
ANTK
SIGO STD
ICIS YES



TIMR ICF 512
OGF 512
EOD 13952
NRD 10112
DDL 70
ODT 4096
RGV 640
GRD 896
SFB 3
NBS 2048
NBL 4096

IENB 5
TFD 0
VSS 0

PAGE 002

VGD 6
DRNG NO
CDR NO
VRAT NO
MUS NO
OHQ NO
OHQT 00
CBQ NO
AUTH NO
TTBL 0
ATAN NO
PLEV 2
ALRM NO
ART 0
SGRP 0
AACR NO



```
*****  
Trunk Data block configuration  
*****
```

```
>ld 20
```

```
PT0000  
REQ: prt  
TYPE: tnb  
TN 4 1  
DATE  
PAGE  
DES
```

```
DES E1-QSIG  
TN 004 01  
TYPE TIE  
CDEN SD  
CUST 0  
TRK PRI2  
PDCA 1  
PCML A  
NCOS 0  
RTMB 104 1  
B-CHANNEL SIGNALING  
TGAR 1  
AST NO  
IAPG 0  
CLS UNR DTN WTA LPR APN THFD  
P10 VNL  
TKID 104  
AACR NO  
DATE 23 OCT 2006
```



CDP configuration

>ld 87
ESN000

MEM AVAIL: (U/P): 2827806 USED U P: 200312 68457 TOT: 3096575
DISK RECS AVAIL: 1152

REQ prt
CUST 0
FEAT cdp
TYPE dsc
DSC 533
DSC 533
FLEN 0
DSP LSC
RLI 6
NPA
NXX

Station Data Configuration

REQ: prt
TYPE: 2616

TN 19
DATE
PAGE
DES

DES CS101A
TN 001 0 00 09
TYPE 2616
CDEN 8D
CUST 0
AOM 0
FDN 2332
TGAR 1
LDN NO
NCOS 0
SGRP 0
RNPG 0
SCI 0
SSU
XLST

CLS CTD FBA WTA LPR MTD FNA HTA ADD HFD
MWA LMPN RMMD SMWD AAD IMD XHD IRD NID OLD VCE DRG1
POD DSX VMD CMSD SLKD CCSD SWD LND CNDA
CFTA SFD MRD DDV CNIA CDCA MSID DAPA BFED RCBF
ICDD CDMD LLCN MCTD CLBD AUTU
GPUD DPUD DNDA CFXA ARHD CLTD ASCD
CPFA CPTA ABDD CFHD FICD NAID BUZZ AGRD MOAD AHD
DDGA NAMA
DRDD EXR0
USRD ULAD RTDD RBDD RBHD PGND OCBF FLXD FTTC DNDY DNO3 MCBN CDMR
CPND_LANG ENG



RCO 0
EFD 2332
HUNT 2332
EHT 2332
LHK 0
PLEV 02
CSDN
AST
IAPG 0
AACS NO
ITNA NO
DGRP
MLWU_LANG 0
DNDR 0
KEY 00 SCR 2333 0 MARP
 CPND
 NAME ZEUS_2333
 XPLN 9
 DISPLAY_FMT FIRST, LAST
01
02
03 CFW 4 2332
04 AO6
05 TRN
06
07
08
09
10
11
12
13
14
15 RGA



Cisco IAD2432 24FXS Configuration

```
IAD_cs102#sh run
Building configuration...

Current configuration : 2222 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname IAD_cs102
!
boot-start-marker
boot system flash:c2430-ik9o3s-mz-124-9.T1.bin
boot-end-marker
!
card type e1 1
logging buffered 10000000 debugging
no logging console
enable secret 5 $1$39sy$WJXNyjgXw.0HypvItDAMD/
!
no aaa new-model
!
resource policy
!
network-clock-participate E1 1/0
network-clock-participate E1 1/1
network-clock-select 1 E1 1/0
!
!
no ip domain lookup
!
!
!
isdn switch-type primary-qsig
!
voice-card 0
!
!
!
!
voice service voip
notify redirect ip2pots
!
!
controller E1 1/0
pri-group timeslots 1-31
!
controller E1 1/1
!
!
!
!
!
interface FastEthernet0/0
```



```
ip address 172.20.8.41 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet0/1
no ip address
shutdown
duplex auto
speed auto
!
interface Serial1/0:15 ==> For overlap receiving enable the command "isdn overlap-receiving"
no ip address
encapsulation hdlc
isdn switch-type primary-qsig
isdn incoming-voice voice
isdn supp-service name calling
no cdp enable
!
ip default-gateway 172.20.8.1
ip http server
no ip http secure-server
!
ip route 0.0.0.0 0.0.0.0 172.20.8.1
!
!
!
!
!
control-plane
!
!
!
voice-port 1/0:15
!
voice-port 2/0
!
voice-port 2/1
!
voice-port 2/2
!
voice-port 2/3
!
voice-port 2/4
!
voice-port 2/5
!
voice-port 2/6
!
voice-port 2/7
!
voice-port 2/8
!
voice-port 2/9
!
voice-port 2/10
!
voice-port 2/11
!
voice-port 2/12
```



```
!  
voice-port 2/13  
!  
voice-port 2/14  
!  
voice-port 2/15  
!  
voice-port 2/16  
!  
voice-port 2/17  
!  
voice-port 2/18  
!  
voice-port 2/19  
!  
voice-port 2/20  
!  
voice-port 2/21  
!  
voice-port 2/22  
!  
voice-port 2/23  
!  
!  
!  
!  
dial-peer voice 2330 voip  
destination-pattern 2...  
session protocol sipv2  
session target ipv4:172.20.8.40  
dtmf-relay rtp-nte  
supplementary-service pass-through  
!  
dial-peer voice 5330 pots  
destination-pattern 5...  
supplementary-service pass-through  
direct-inward-dial  
port 1/0:15  
forward-digits all  
!  
!  
gateway  
timer receive-rtp 1200  
!  
!  
!  
line con 0  
password cisco  
login  
line aux 0  
line vty 0 4  
exec-timeout 0 0  
password cisco  
login  
!  
end
```



Acronyms

Acronym	Definitions
IAD	Integrated Access Device
SIP	Session Initiation Protocol



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Printed in the USA