



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

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## Introduction

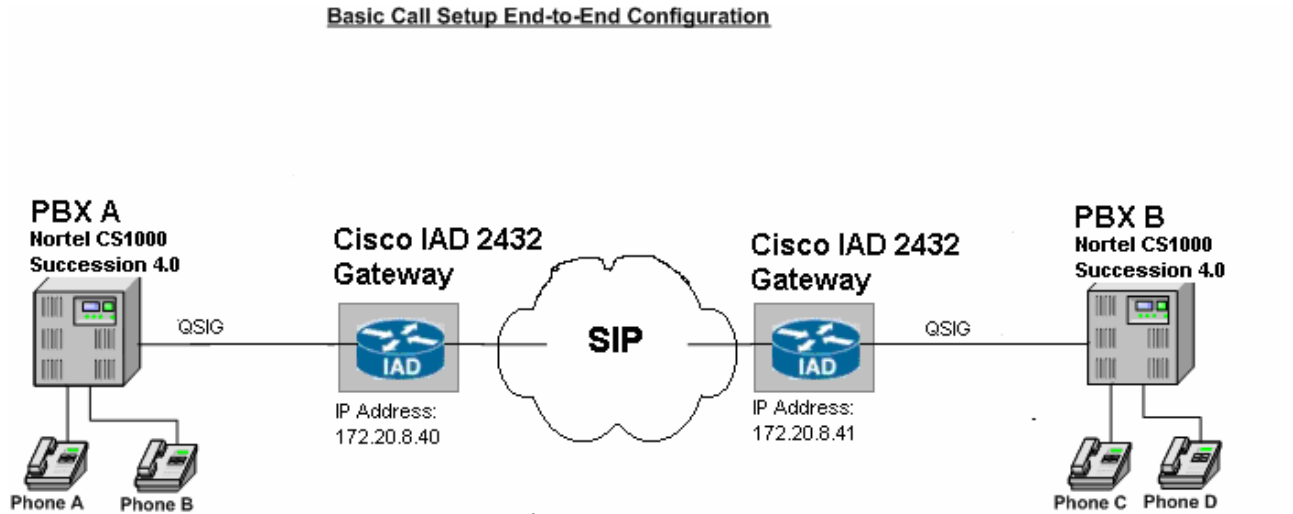
This is an application note for connectivity to Nortel CS1000 Succession 4.0 PBX with the Cisco IAD243X Gateway via QSIG-to-SIP communication (10/100baseT).

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



## Important Information

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