



Nortel CS1000M Release 4.0 to a Cisco IAD243X using T1-Q.SIG with SIP

January 11, 2007 Initial Version

Table of Contents

Introduction	1
Network Topology.....	2
Limitations.....	2
Hardware Requirements	3
Software Requirements	3
Features	3
Features Supported.....	3
Features Not Supported	3
Configuration.....	3
Configuring the Nortel Meridian 1 Option 11C PBX.....	3
Configuring Cisco IAD2432 24FXS	12
Acronyms	15

Introduction

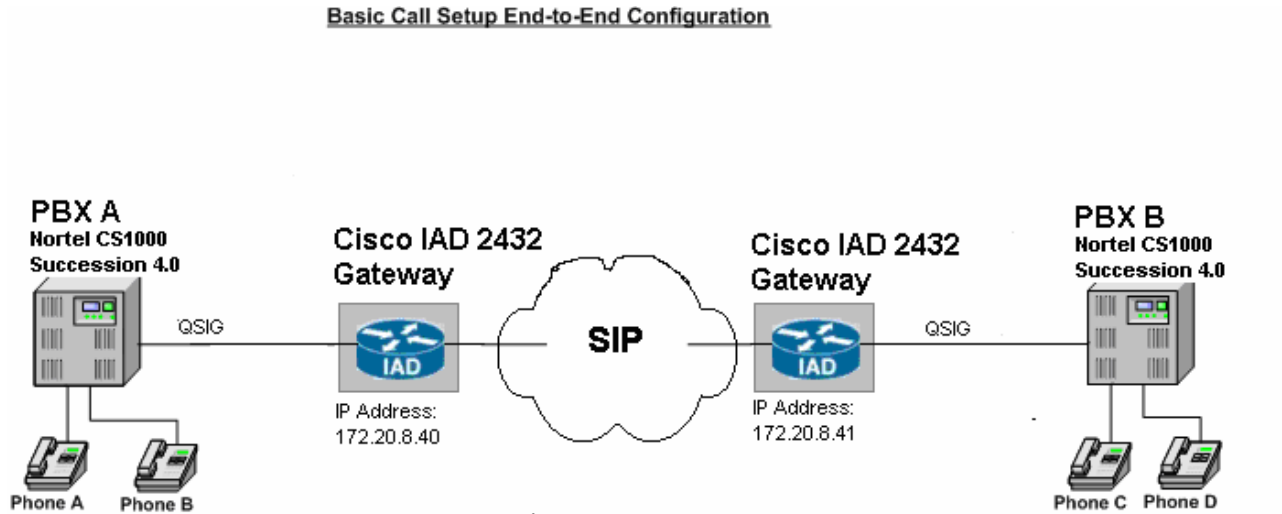
This is an application note for connectivity to Nortel CS1000 Succession 4.0 PBX with the Cisco IAD243X Gateway via QSIG-to-SIP communication (10/100baseT).

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 (T1 PRI). IP trunk connectivity between the Cisco IAD243X's is achieved by using SIP protocol.



Network Topology

Figure 1. Network Topology



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 of Phone D). 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 – Cisco 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



Common Equipment Configuration

CEQU

MPED 8D

SUPL 000 004 008 012

016 032 036 040

044 048 064 068

072 V096 V100

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
	04	24	ESF	YES	B8S	DG2		0 00
	05	24	ESF	NO	B8S	FDL		- 00
	06	23	ESF	NO	B8S	FDL		- 00
	07	23	ESF	NO	B8S	FDL		- 00

PRI2 11

DTI2 12 13 21

MISP



D-channel Configuration

```
REQ prt
TYPE adan dch 6

ADAN DCH 6
CTYP MSDL
CARD 06
PORT 1
DES appnote
USR PRI
DCHL 6
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 **
RCAP COLP NDI CCBI CCNI PRI CTI QMWI
PR_TRIGS DIV 2 3
  CNG 2 3
PR_RTN NO
MBGA NO
OVLN NO
OVLS NO
T310 120
T200 3
T203 10
N200 3
N201 260
K 7

REQ
```



Route Data Block Configuration

```
>ld 21
PT1000

REQ: prt
TYPE: rdb
CUST 0
ROUT 106

TYPE RDB
CUST 00
DMOD
ROUT 106
DES APPNOTE
TKTP TIE
NPID_TBL_NUM 0
ESN NO
CNVT NO
SAT NO
RCLS EXT
VTRK NO
NODE
DTRK YES
BRIP NO
DGTP PRI
ISDN YES
  MODE PRA
  IFC ISGF
  SBN NO
  PNI 00001
  NCNA NO
  NCRD NO
  CHTY BCH
  CTYP UKWN
  INAC NO
  ISAR NO
  CPFXS YES
  DAPC NO
  INTC NO
DSEL VOD
PTYP PRI
AUTO NO
DNIS NO
DCDR NO
ICOG IAO
SRCH RRB
TRMB YES
STEP
ACOD 506
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

PAGE 002

VSS 0
VGD 6
DRNG NO
CDR NO
VRAT NO
MUS NO
FRL 0 0
FRL 1 0
FRL 2 0
FRL 3 0
FRL 4 0
FRL 5 0
FRL 6 0
FRL 7 0
OHQ NO
OHQT 00
CBQ NO
AUTH NO
TTBL 0
ATAN NO
PLEV 2
ALRM NO
ART 0
SGRP 0
AACR NO

REQ:



Trunk Data Block Configuration

REQ: prt
TYPE: tnb
TN 6 1
DATE
PAGE
DES

DES T1QSIG
TN 006 01
TYPE TIE
CDEN SD
CUST 0
TRK PRI
PDCA 1
PCML MU
NCOS 0
RTMB 106 1
B-CHANNEL SIGNALING
TGAR 1
AST NO
IAPG 0
CLS CTD DIP WTA LPR APN THFD HKD
P10 VNL
TKID
AACR NO
DATE 19 SEP 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
AACN 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



Configuring Cisco IAD2432 24FXS

```
IAD_cs101#sh run
Building configuration...

Current configuration : 2164 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname IAD_cs101
!
boot-start-marker
boot system flash:c2430-ik9o3s-mz-124-9.T1.bin
boot-end-marker
!
card type t1 1
logging buffered 10000000 debugging
no logging console
enable secret 5 $1$WJPz$ZoIKHvDdxxTEDUc2AwOoM0
!
no aaa new-model
!
resource policy
!
network-clock-participate T1 1/0
network-clock-participate T1 1/1
network-clock-select 1 T1 1/0
!
!
no ip domain lookup
!
!
!
isdn switch-type primary-qsig
!
voice-card 0
!
!
!
!
!
controller T1 1/0
framing esf
linecode b8zs
pri-group timeslots 1-24
!
controller T1 1/1
framing esf
linecode b8zs
!
!
!
!
!
```



```
!  
interface FastEthernet0/0  
ip address 172.20.8.40 255.255.255.0  
ip broadcast-address 0.0.0.0  
duplex auto  
speed auto  
!  
interface FastEthernet0/1  
no ip address  
ip broadcast-address 0.0.0.0  
shutdown  
duplex auto  
speed auto  
!  
interface Serial1/0:23  
no ip address  
encapsulation hdlc  
isdn switch-type primary-qsig  
isdn incoming-voice voice  
isdn supp-service name calling  
isdn send-alerting  
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  
!  
!  
!  
tftp-server flash:c2430-is-mz.sb93109  
!  
!  
control-plane  
!  
!  
!  
voice-port 1/0:23  
!  
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 pots  
destination-pattern 2...  
supplementary-service pass-through  
direct-inward-dial  
port 1/0:23  
forward-digits all  
!  
dial-peer voice 5330 voip  
destination-pattern 5...  
session protocol sipv2  
session target ipv4:172.20.8.41  
dtmf-relay rtp-nte  
supplementary-service pass-through  
!  
!  
!  
!  
line con 0  
password cisco  
login  
line aux 0  
line vty 0 4  
password cisco  
login  
!  
end
```



Acronyms

Acronym	Definitions
IAD	Integrated Access Device
SIP	Session Initiation Protocol



Important Information

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.



Corporate Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters

Cisco Systems International
BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters

Cisco Systems, Inc.
Capital Tower
168 Robinson Road
#22-01 to #29-01
Singapore 068912
www.cisco.com
Tel: +65 317 7777
Fax: +65 317 7799

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the Cisco Web site at www.cisco.com/go/offices.

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia • Czech Republic • Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland • Israel • Italy • Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland • Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden • Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

© 2007 Cisco Systems, Inc. All rights reserved.

CCVP, the Cisco Logo, and the Cisco Square Bridge logo are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn is a service mark of Cisco Systems, Inc.; and Access Registrar, Aironet, BPX, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, Follow Me Browsing, FormShare, GigaDrive, GigaStack, HomeLink, Internet Quotient, IOS, iPhone, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, LightStream, Linksys, MeetingPlace, MGX, Networking Academy, Network Registrar, Packet, PIX, ProConnect, RateMUX, ScriptShare, SlideCast, SMARTnet, StackWise, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0612R)

Printed in the USA