Application Note

Nortel CS1000M Release 4.0 to a Cisco IAD243X using T1-CAS E&M with SIP

January 11, 2007 Initial Version

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Introduction

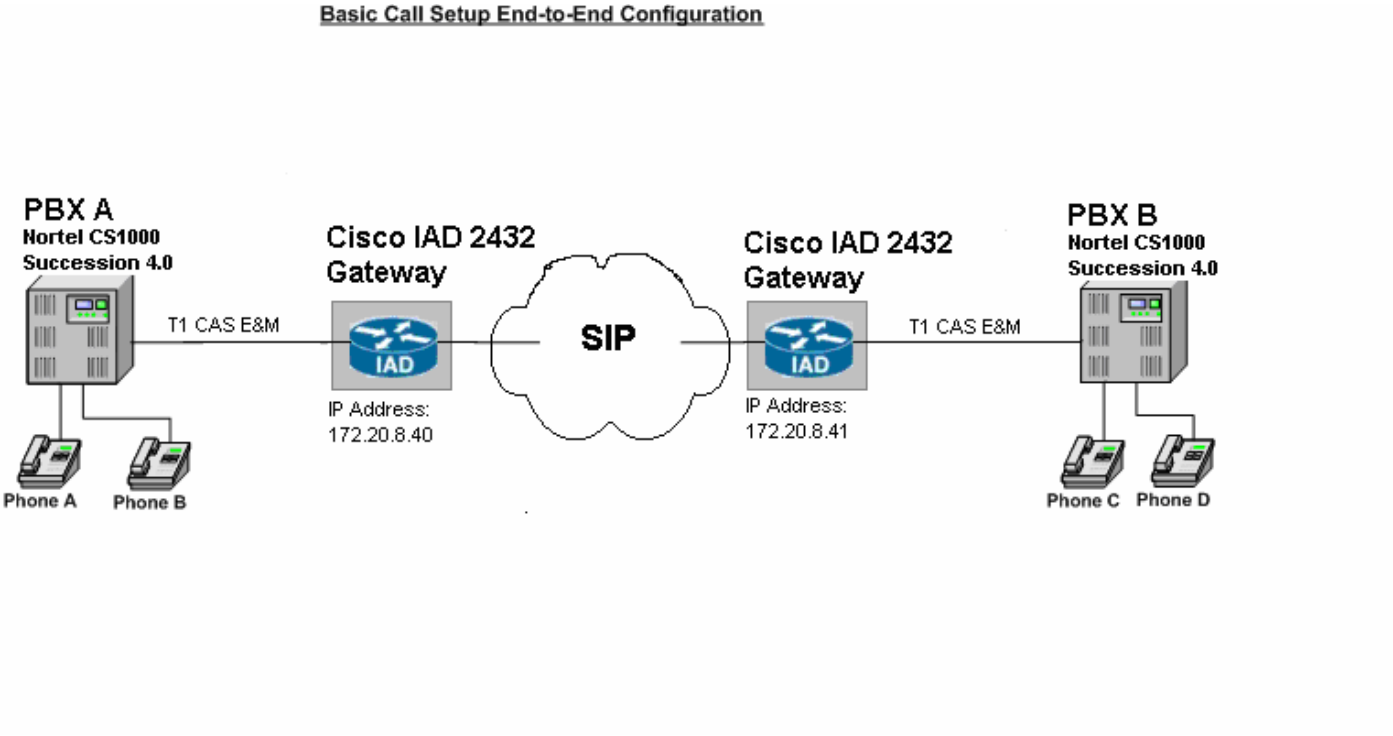
This is an application note for connectivity to Nortel CS1000 Succession 4.0 PBX with Cisco IAD243X Gateway via T1 CAS E&M-to-SIP communication (10/100baseT).

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 CAS E&M (T1 CAS). IP trunk connectivity between the IAD243X's is achieved by using SIP protocol.

T1 CAS E&M signaling types Immediate, Delay and Wink Start testing yielded identical test results. So it was decided to incorporate all three signaling types in one Application Note. See configuration section for details on each signaling type.

Network Topology

Figure 1. Basic Call Setup



Limitations

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.

ANI (Automatic Number Identification) is not supported with the detailed Avaya configuration.

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

Call Transfer – Local and Network/External

Call on-hold

Call Forward (Unconditional, Busy and No answer) – Local and Network/External

3-way Conference

Features Not Supported

ANI

Configuration

Configuration Sequence and Tasks for the Nortel System

Configuring the Nortel Meridian 1 Option 11C PBX

Configure in the following sequence:

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

T1 CAS E&M

```
*****************************
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 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


***************************
Route Data block configuration
*****************************
TYPE RDB
CUST 00
DMOD
ROUT 106
DES  T1_CAS
TKTP TIE
NPID_TBL_NUM   0
ESN  NO
CNVT NO
SAT  NO
RCLS EXT
VTRK NO
NODE
DTRK YES
BRIP NO
DGTP DTI
ISDN NO
DSEL VCE
PTYP DTT
AUTO NO
DNIS NO
ICOG IAO
SRCH RRB
```

TRMB YES
STEP
ACOD 506
TARG 01
CLEN 1
BILN NO
OABS
INST
ANTK
SIGO STD
STYP SDAT
TIMR ICF 512
    OGF 512
    EOD 13952
    DSI 34944
    NRD 10112
    DDL 70
    ODT 4096
    RGV 640
    GRD 896
    SFB 3

    IENB 5
    TFD 0
    VSS 0
    VGD 6
SST 5 0
NEDC ORG
FEDC ORG
CPDC NO
DLTN NO
HOLD 02 02 40
SEIZ 02 02
SVFL 02 02
DRNG NO
CDR NO
VRAT NO
MUS NO
MANO NO
EQAR NO

PAGE 002

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
OHTD NO

PLEV 2
ALRM NO
ART 0
SGRP 0
AACR NO

****
Trunk Data block configuration
****
REQ: prt
TYPE: tnb
TN 6 1
DATE
PAGE
DES

DES T1-CAS
TN 006 01
TYPE DID
CUST 0
TRK DTI
PDCA 1
PCML MU
NCOS 0
RTMB 106 1
A/B BIT SIGNALING
NITE
SIGL EM4
STRI/STRO WNK WNK ➔
SUPN YES
AST NO
IAPG 0
CLS UNR DTN ECD WTA LPR APN THFD HKD
P10 VNL
TKID 106
AACR NO
DATE 20 OCT 2006

The current setting is e&m wink start. For e&m immediate start use IMM IMM	For e&m delay start use DDL DDL

****
Route Data block configuration
****
TYPE RDB
CUST 00
DMOD
ROUT 106
DES T1_CAS
TKTP TIE
NPID_TBL_NUM 0
ESN NO
CNVT NO
SAT NO
RCLS EXT
VTRK NO
NODE
DTRK YES
BRIP NO
DGTP DTI
ISDN NO
DSEL VCE
PTYP DTT

AUTO NO
DNIS NO
ICOG IAO
SRCH RRB
TRMB YES
STEP
ACOD 506
TARG 01
CLEN 1
BILN NO
OABS
INST
ANTK
SIGO STD
STYP SDAT
TIMR ICF 512
    OGF 512
    EOD 13952
    DSI 34944
    NRD 10112
    DDL 70
    ODT 4096
    RGV 640
    GRD 896
    SFB 3

    IENB 5
    TFD 0
    VSS 0
    VGD 6
SST 5 0
NEDC ORG
FEDC ORG
CPDC NO
DLTN NO
HOLD 02 02 40
SEIZ 02 02
SVFL 02 02
DRNG NO
CDR NO
VRAT NO
MUS NO
MANO NO
EQAR NO

PAGE 002

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
OHTD NO
PLEV 2
ALRM NO
ART 0
SGRP 0
AACR NO

****
CDP config
****
>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 Config
****
REQ: prt
TYPE: 2616

TN 1 9
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 RCBD
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 OCBD 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

T1 CAS E&M

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

Current configuration : 2377 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 t1 1
logging buffered 10000000 debugging
no logging console
enable secret 5 $1$39sy$WJXNyjgXw.0HypvItDAMD/
!
no aaa new-model
!
resource policy
!
network-clock-participate T1 1/0
network-clock-participate T1 1/1
network-clock-select 1 T1 1/1
!
!
no ip domain lookup
!
!
!
isdn switch-type primary-5ess
!
voice-card 0
!
!
!
!
!
```

```
voice service voip
 notify redirect ip2pots
!
!
!
!
!
!
!
!
!
!
!
!
!
!
controller T1 1/0
 framing esf
 linecode b8zs
 pri-group timeslots 1-4,24
!
controller T1 1/1
 mode cas
 framing esf
 linecode b8zs
 ds0-group 0 timeslots 1-24 type e&m-wink-start  ==>
!
!
!
!
!
!
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 Serial1/0:23
 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
!
!
!
```

Specify the signaling type set on PBX here (delay start, wink start or immediate-start)

```
!
!
control-plane
!
!
!
voice-port 1/0:23
!
voice-port 1/1:0
 timeouts call-disconnect 2
!
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
 port 1/1:0
 forward-digits all
!
dial-peer voice 4000 pots
 destination-pattern 4...
 supplementary-service pass-through
 direct-inward-dial
 port 1/0:23
 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

IAD_cs102#
```

Acronyms

Acronym	Definitions
IAD	Integrated Access Device
SIP	Session Initiation Protocol

Important Information

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