



# Nortel CS1000M Release 4.0 to a Cisco IAD243X using E1-ISDN NET5 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 Cisco IAD243X Gateway via E1 ISDN NET5-to-SIP communication (10/100baseT).

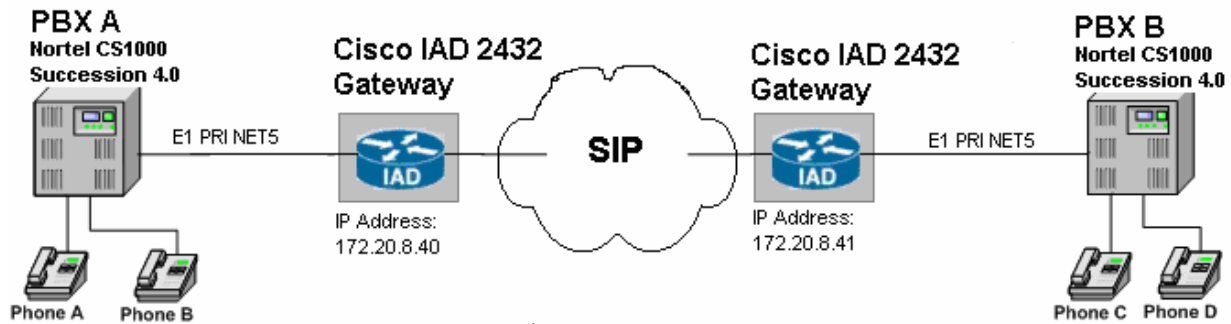
The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability with the Cisco IAD243X Gateway connected to the PBX via ISDN NET5 (E1 PRI). IP trunk connectivity between the IAD243X's is achieved by using SIP protocol.



## Network Topology

Figure 1. Basic Call Setup

### Basic Call Setup End-to-End Configuration



## 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.



### **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 CLIP (Calling Number)
- Calling Number Restricted
- 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**

- Connected Name
- Calling Name
- Redirecting Number

### **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



E1 PRI NET5

**Important Notice: Lab CS1000 (cs101 and cs102) are not equipped with the EURO ISDN package. The ISDN switch type used on the Nortel side was set to IFC-SWIS**

\*\*\*\*\*

Ld 60

\*\*\*\*\*

SL-1 --- SYS-12/AXE-10 SWE/NUMERIS/SWISS/TCNZ  
/EUROISDN/SING/THAI/MSIA/INDO/CHNA  
/INDI/PLP  
CHANNEL TIMESLOT MAPPING

DTI000

SL-1 NETWORK TIMESLOT  
B-CHANNEL 1 -15 1 -15 1 -15  
16-30 17-31 17-31  
D-CHANNEL 31 16 16

### Nortel Configuration

\*\*\*\*\*

Common Equipment Configuration

\*\*\*\*\*

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

\*\*\*\*\*

REQ prt  
TYPE adan dch 6

ADAN DCH 6  
CTYP MSDL  
CARD 06  
PORT 1  
DES E1\_NET5  
USR PRI  
DCHL 6



OTBF 32  
PARM RS422 DTE  
DRAT 64KC  
CLOK EXT  
IFC SWIS  
SIDE USR  
CNEG 1  
RLS ID \*\*  
RCAP ND2  
MBGA NO  
OVLN NO  
OVLS YES  
OVLN 0  
T200 3  
T203 10  
N200 3  
N201 260  
K 7

\*\*\*\*\*  
Route Data block configuration  
\*\*\*\*\*

>ld 21  
PT1000

REQ: prt  
TYPE: rdb  
CUST 0  
ROUT 106

TYPE RDB  
CUST 00  
DMOD  
ROUT 106  
DES E1\_NET5  
TKTP DID  
NPID\_TBL\_NUM 0  
SAT NO  
RCLS EXT  
VTRK NO  
NODE  
DTRK YES  
BRIP NO  
DGTP PRI2  
ISDN YES  
MODE PRA  
IFC SWIS  
SBN NO  
PNI 00000  
NCNA NO  
NCRD NO  
ISAR NO  
DAPC NO  
DSEL VOD  
PTYD DCO  
AUTO NO  
DNIS NO  
DCDR NO  
ICOG IAO



RANX NO  
SRCH LIN  
TRMB YES  
STEP  
ACOD 506  
TCPP NO  
TARG 01  
CLEN 1  
BILN NO  
OABS  
INST  
ICIS YES  
TIMR ICF 512  
    OGF 512  
    EOD 13952  
    NRD 10112  
    DDL 70  
    ODT 4096  
    RGV 640  
    FLH 510  
    GRD 896  
    SFB 3  
    NBS 2048  
    NBL 4096

    IENB 5  
    VSS 0  
    VGD 6  
DRNG NO  
CDR NO  
VRAT NO  
MUS NO  
MR 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  
TTBL 0  
ATAN NO  
PLEV 2  
MCTS NO  
ALRM NO  
ART 0  
SGRP 0  
AACR NO



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

```
>ld 20
```

```
PT0000  
REQ: prt  
TYPE: tnb  
TN 6 1  
DATE  
PAGE  
DES
```

```
DES E1_NET5  
TN 006 01  
TYPE DID  
CDEN SD  
CUST 0  
TRK PRI2  
PDCA 1  
PCML A  
NCOS 0  
RTMB 106 1  
B-CHANNEL SIGNALING  
NITE  
AST NO  
IAPG 0  
CLS UNR DTN WTA LPR APN THFD  
P10 VNL  
TKID 106  
AACR NO  
DATE 23 OCT 2006
```

```
*****  
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 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 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 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

#### E1 NET5

IAD\_cs101#sh run  
Building configuration...

```
Current configuration : 2425 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 e1 1
logging buffered 10000000 debugging
no logging console
enable secret 5 $1$WJPz$ZoIKHvDdxxTEDUc2AwOoM0
!
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-net5
isdn gateway-max-interworking
!
voice-card 0
!
!
!
```



```
!  
voice service voip  
  notify redirect ip2pots  
!  
!  
!  
!  
controller E1 1/0  
  framing NO-crc4  
  pri-group timeslots 1-31  
!  
controller E1 1/1  
!  
!  
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 Serial1/0:15  
  no ip address  
  encapsulation hdlc  
  isdn switch-type primary-net5  
  isdn protocol-emulate network  
  isdn incoming-voice voice  
  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  
!  
!  
!  
!  
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 pots  
destination-pattern 2...  
supplementary-service pass-through  
direct-inward-dial  
port 1/0:15  
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  
!
```



```
dial-peer voice 4000 voip
destination-pattern 4...
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
exec-timeout 0 0
password cisco
login
!
end

IAD_cs101#
```

### Acronyms

Acronym	Definitions
IAD	Integrated Access Device
SIP	Session Initiation Protocol



## Important Information

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