



Cisco 2651 Series Gateway-PBX Interoperability: Nortel Meridian 1 Option 11C PBX with E1-PRI Signaling

This document describes the interoperability and configuration of a Cisco 2651 voice gateway with a Nortel Meridian1 PBX using E1-PRI signaling. It includes the following sections:

- System Components
- Configuration Tasks
- Caveats

System Components

PBX Model	Nortel Meridian 1 Option 11C
PBX Release	Release 21, Issue 54
Telephony Signaling	E1-PRI
Voice Gateway	Cisco 2651
Gateway Release	IOS™ 12.2(1)T
VoX Protocol	H.323

Configuration Tasks

See the following sections for configuration tasks for this feature:

- Set Up
- Nortel PBX Configuration
- Cisco 2651 Gateway Configuration

Set Up

This section includes the following information:

- Connectivity Diagrams
- Set Up Notes

Connectivity Diagrams

Figure 1: *Test Configuration*

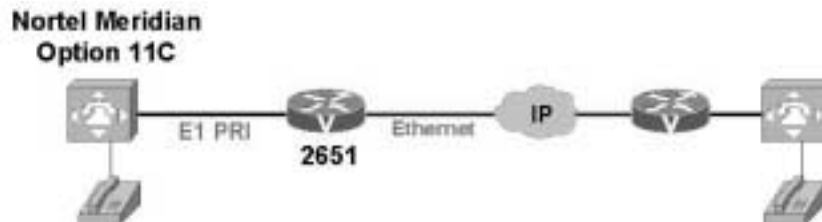


Figure 1 represents the configuration used for testing. A Nortel Meridian 1 Option 11C PBX connected to a Cisco 2651 voice gateway via an E1 PRI NET5 connection.

Set Up Notes

- The Nortel configuration screen for the E1 trunk interface is reached using LD 17, setting the CEQU (Common Equipment parameters).
- E1 Clocking on the Nortel Meridian Option 11C PBX was set to card/slot number holding the clock controller. This is configured using LD 73.
- The Cisco 2651 gateway with ISDN switch type setting of **isdn switch-type primary-net5** supports both Network and User protocol sides by using the **isdn protocol-emulate network/user** command.
- If the Nortel Option 11C operation is set for User side, layers 2 & 3 protocol side are set for User side. The Cisco 2651 gateway is set to Network protocol side by issuing the command: **isdn protocol-emulate network**.

Nortel PBX Configuration

TRUNK CONFIGURATION

LD 20
PT0000
MARP NOT ACTIVATED

```
REQ: PRTTYPE: TNBTN    5 1DATE PAGE DES
TN    005 01
TYPE TIE
CDEN SD
CUST 0
TRK  PRI2
PDCA 1
PCML A
NCOS 0
RTMB 105 1
B-CHANNEL SIGNALING
TGAR 0
CLS  UNR DTN WTA LPR APN XREP
      P10 VNL
TKID
DATE  1 APR 1993
```

```
NACT *****
>
```

ROUTE DATA BLOCK CONFIGURATION

```
OVL000
>LD 21PT1000

REQ: PRTTYPE: RDBCUST 0ROUT 105
TYPE RDB
CUST 00
DMOD
ROUT 105
TKTP TIE
ESN  NO
RPA  NO
CNVT NO
SAT  NO
RCLS EXT
DTRK YES
BRIP NO
DGTP PRI2
ISDN YES
      MODE PRA
      IFC  EURO
      CNTY ETSI
      SBN  NO
      PNI  00000
      NCNA NO
      NCRD NO
      CTYP UKWN
      INAC NO
      ISAR NO
      TGAR 0
```

PTYP DTT
AUTO NO
DNIS NO
DCDR NO
ICOG IAO
SRCH RRB
TRMB YES
STEP
ACOD 705
TCPP NO
TARG
BILN NO
OABS
INST
IDC NO
DCNO 0 *
NDNO 0
DEXT NO
SIGO STD
TIMR ICF 1920
OGF 1920
EOD 13952
LCT 256
NRD 10112
DDL 70
ODT 4096
RGV 640
GTO 896
GTI 896
SFB 3
PRPS 800
NBS 2048
NBL 4096
NRAG 30
IENB 5
TFD 0
VSS 0
VGD 6
DTD NO
SCDT NO
2 DT NO
DRNG NO
CDR NO
NATL YES
SSL
CFWR NO
IDOP NO
VRAT NO
MUS NO
PANS YES
EQAR 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
PLEV 2
ALRM NO
ART 0
PECL NO
DCTI 0
TIDY 705 105
SGRP 0

REQ: ****

D-CHANNEL CONFIGURATION

>
OVL000
>LD 22PT2000
MARP NOT ACTIVATED

REQ PRTTYPE ADAN
ADAN HIST
 SIZE 5000
 USER MTC SCH BUG
ADAN TTY 0
 CARD 00
 PORT 0
 DES
 USER MTC SCH BUG
 XSM NO
ADAN TTY 1
 CARD 00
 PORT 1
 DES
 BPS 9600
 BITL 8
 STOP 1
 PARY NONE
 FLOW NO
 USER MTC SCH BUG
 XSM NO
ADAN TTY 2
 CARD 00
 PORT 2
 DES

BPS 9600
BITL 8
STOP 1
PARY NONE
FLOW NO
USER MTC SCH BUG
XSM NO
ADAN DCH 5
CTYP MSDL
CARD 05
PORT 1
DES EURO
USR PRI
DCHL 5
OTBF 32
PARM RS422 DTE
DRAT 64KC
CLOK EXT
NASA NO
IFC EURO
CNTY ETSI
SIDE USR
CNEG 1
RLS ID **
RCAP ND2
MBGA NO
OVLN NO
OVLS YES
OVLN 0
T310 30
T200 3
T203 10
N200 3
N201 260
K 7
ADAN DPNSS DCH 9

PAGE 001

CTYP DCHI
CARD 09
PORT 1
DES FUCT
USR DPNSS

COMMON EQUIPMENT COMFIGURATION

REQ PRTTYPE CEQU
CEQU
MPED 8D

```
SUPL 000 004 008 012
      016 032 036 040
      048
DDCS 09
DTCS
XCT 000
CONF 029 030 031

DLOP NUM DCH FRM LCMT YALM TRSH
PRI 006 23 ESF B8S FDL 15
PRI2 05
APVL
DTI2
MISP
MTYP 384K
```

```
REQ *****
>
OVL000
```

DIGITAL STATION PHONE CONFIGURATION

```
>LD 11
REQ: PRRTYPE: 2616

MARP NOT ACTIVATED

TN 001 0 00 00DATE PAGE DES
DES TEST1
TN 001 0 00 00
TYPE 2616
CDEN 8D
CUST 0
AOM 0
FDN
TGAR 0
LDN NO
NCOS 0
SGRP 0
RNPG 0
SCI 0
SSU
LNRS 16
XLST
SCPW
CLS CTD FBD WTA LPR MTD FND HTD ADD HFA
MWA AAD IMD XHD IRD NID OLD VCE DRG1
POD DSX VMD CMSD CCSD SWD LNA CNDA
CFTA SFD MRD PDN DDV CNIA
ICDD CDMD MCTD CLBD AUTU
GPUD DPUD DNDA CFXA ARHD CLTD ASCD
ABDD CFHD FICD NAID
UDI HBTD AHD DDGA NAMA MIND PRSD NRWD NRCN NROD
```

```
EXR0
  USRD ULAD OCBD
CPND_LANG ENG
RCO 0
EFD
HUNT
EHT
PLEV 02
AST
IAPG 0
ITNA NO
DGRP
DNDR 0
KEY 00 SCR 3501   MARP
      CPND
        NAME BIG BIRD
        XPLN 8
        DISPLAY_FMT FIRST, LAST
01
02
03 CFW 16   7055002
04 AO6
05 TRN
06 DSP
07
08 ADL 16
09 ADL 16
10 ADL 16
11 ADL 16
12 ADL 16
13 ADL 16
14 ADL 16
15
DATE 1 APR 1993
```

NACT ****

SYSTEM PACKAGE INFORMATION

```
>
OVL000
>LD 22PT2000
MARP NOT ACTIVATED

REQ  PRTTYPE PKGOPTF   1
CUST  2
CDR   4
CTY   5
RAN   7
TAD   8
DNDI  9
```


EES	10
INTR	11
BRTE	14
DNDG	16
MSB	17
SS25	18
DDSP	19
ODAS	20
DI	21
DISA	22
CHG	23
CAB	24
BAUT	25
BQUE	28
NTRF	29
NCOS	32
CPRK	33
SSC	34
IMS	35
UST	35
UMG	35
ROA	36
NSIG	37
MCBQ	38
NSC	39
BACD	40
ACDB	41
ACDC	42
LMAN	43
MUS	44
ACDA	45
MWC	46
AAB	47
GRP	48
NFCR	49
ACDD	50
LNK	51
FCA	52
SR	53
AA	54
HIST	55
AOP	56
NARS	58
CDP	59
PQUE	60
FCBQ	61
OHQ	62
NAUT	63
SNR	64
NXFR	67
HOT	70
DHLD	71
LSEL	72

PAGE 001

SS5	73
DRNG	74
PBXI	75
DLDN	76
CSL	77
SCI	80
CCOS	81
RSDB	82
CDRQ	83
TENS	86
DSET	88
LNR	90
PXLT	92
CPND	95
DNIS	98
BGD	99
RMS	100
MR	101
AWU	102
PMSI	103
MCT	107
ICDR	108
APL	109
TVS	110
TOF	111
IDC	113
AUXS	114
DCP	115
PAGT	116
CCDR	118
EMUS	119
PLDN	120
COMDT	122
IDA	122
DPNSS	123
DASS2	124
FTC	125
BKI	127
DTI2	129
SUPP	131
TBAR	132
ENS	133
AFNA	134
LSCM	137
DTD	138
FFC	139
DCON	140
MPO	141
ABCD	144
ISDN	145

PRA	146
ISL	147
NTWK	148
DNXP	150
CDRE	151
IAP3P	153
PRI2	154
ACNT	155
NAS	159
FNP	160
ISDN INTL SUP	161

PAGE 002

SAR	162
MINT	163
LAPW	164
COOP	169
ARIE	170
CPGS	172
ECCS	173
AAA	174
NMS	175
EOVF	178
HVS	179
DKS	180
SACP	181
VNS	183
OVLDP	184
EDRG	185
RPA	187
UK	190
SECL	191
ORC-RVQ	192
RCK	193
AINS	200
IPRA	202
XPE	203
XCT0	204
XCT1	205
NACD	207
HSE	208
MLM	209
MAID	210
VAWU	212
EAR	214
ECT	215
BRI	216
IVR	218
MSDL	222
CWNT	225
SSAU	229

DNWK 231
FCDR 234
BRIL 235
ACRL 236
MCMO 240
ALRM_FILTER 243
CALL ID 247
DPNA 250
SCDR 251
ARFW 253
PHTN 254
ADMINSET 256
ATX 258
CDRX 259
EURO 261
SAMB 262
QSIG 263
UIGW 283
DPNSS189I 284
DPNSS_ES 288
ADSP 289
MQA 297
CPP 301

PAGE 003

TATO 312

—
SYSTEM SOFTWARE RELEASE / VERSION

REQ ****

>

OVL000

>LD 22PT2000

MARP NOT ACTIVATED

REQ ISS

VERSION 1411

RELEASE 21

ISSUE 54

>

Cisco 2651 Gateway Configuration

The following is the configuration of the Cisco 2651 gateway connected to the Nortel Option 11C PBX E1-PRI interface.

Cisco 2651 Voice Gateway Version Information

```
2651_B#sho ver
Cisco Internetwork Operating System Software
IOS (tm) C2600 Software (C2600-JS-M), Version 12.2(1), RELEASE SOFTWARE (fc2)
Copyright (c) 1986-2001 by cisco Systems, Inc.
Compiled Fri 27-Apr-01 11:41 by cmong
Image text-base: 0x80008088, data-base: 0x81370678

ROM: System Bootstrap, Version 12.1(3r)T2, RELEASE SOFTWARE (fc1)

2651_B uptime is 23 hours, 58 minutes
System returned to ROM by power-on
System image file is "flash:c2600-js-mz.122-1"

cisco 2621 (MPC860) processor (revision 0x200) with 53248K/12288K bytes of memory.
Processor board ID JAD051516TV (4151953086)
M860 processor: part number 0, mask 49
Channelized E1, Version 1.0.
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
TN3270 Emulation software.
Primary Rate ISDN software, Version 1.1.
2 FastEthernet/IEEE 802.3 interface(s)
31 Serial network interface(s)
2 Channelized E1/PRI port(s)
32K bytes of non-volatile configuration memory.
16384K bytes of processor board System flash (Read/Write)

Configuration register is 0x2102
```

Cisco 2651 Voice Gateway Sample Configuration

```
2651_B#show run
Building configuration...

Current configuration : 1225 bytes
!
version 12.2
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname 2651_B
!
logging rate-limit console 10 except errors
!
memory-size iomem 20
voice-card 1
!
ip subnet-zero
!
!
no ip finger
!
no ip dhcp-client network-discovery
```

```
isdn switch-type primary-net5
call rsvp-sync
!
!
!
!
!
!
controller E1 1/0
  pri-group timeslots 1-31
!
controller E1 1/1
  shutdown
!
!
interface FastEthernet0/0
  ip address 100.100.100.2 255.255.255.0
  no ip mroute-cache
  speed auto
  half-duplex
!
interface FastEthernet0/1
  ip address 10.1.1.206 255.255.255.0
  duplex auto
  speed auto
!
interface Serial1/0:15
  no ip address
  no logging event link-status
  isdn switch-type primary-net5
  isdn incoming-voice voice
  isdn T309-enable
  isdn T310 6000
  no cdp enable
!
ip kerberos source-interface any
ip classless
no ip http server
!
!
!
voice-port 1/0:15
!
dial-peer cor custom
!
!
!
dial-peer voice 1 pots
  destination-pattern 3...
  direct-inward-dial
  port 1/0:15
  prefix 3
!
dial-peer voice 4 voip
  destination-pattern 5...
  session target ipv4:100.100.100.1
!
!
line con 0
  transport input none
line aux 0
line vty 0 4
  login
line vty 5 15
  login
!
end
```

Caveats

- As of Nortel Option 11C software release 24, Calling Name delivery and presentation is only supported on the European ETSI QSIG types ESGF, EGF4 and ISO ISGF.
- Although the Nortel PBX is set for Overlap Sending, it still includes the Called Number information in the SETUP packet.