



Cisco AS5300 Universal Gateway-PBX Interoperability: Nortel Meridian 1 Option 11C with E1 QSIG Signaling

This document describes the interoperability and configuration of a Cisco AS5300 voice gateway with a Nortel Meridian 1 Option 11C PBX using E1 QSIG signaling. It includes the following sections:

- System Components
- Configuration Tasks
- Caveats

System Components

PBX Model	Nortel Meridian 1 Option 11C
PBX Release	Version 2111 Release 24 Issue 24
Telephony Signaling	E1 QSIG
Voice Gateway	Cisco AS5300 universal gateway
Gateway Release	Cisco IOS 12.1(1)
VoX Protocol	MGCP

Configuration Tasks

See the following sections for configuration tasks for this feature:

- Set Up
- Nortel Meridian 1 Option 11C PBX Configuration
- Cisco AS5300 Gateway Configuration

Set Up

This section includes the following information:

- Connectivity Diagrams
- Set Up Notes

Connectivity Diagrams

Figure 1: Test Configuration

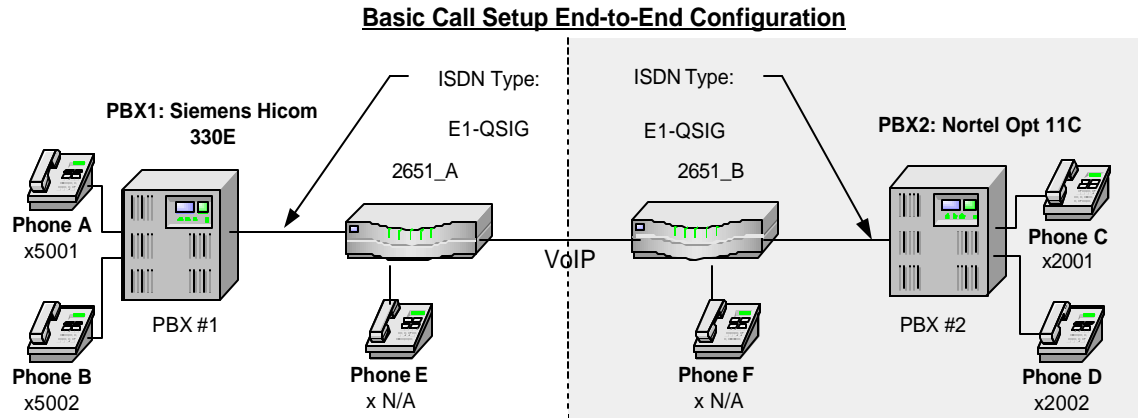


Figure 1 represents the configuration used for testing: a Nortel Meridian 1 Option 11C PBX connected to a Cisco AS5300 voice gateway via an E1 QSIG connection.

Set Up Notes

- The Nortel configuration screen for the E1 trunk interface is reached using LD 17, setting the CEQU (Common Equipment parameters).
- The Cisco AS5300 router with ISDN switch type setting of **primary-qsig** supports both protocol sides by using the "isdn protocol-emulate network/user" command.
- The Nortel Meridian Option 11C, when set to ESIG, ISIG, ESGF or ISGF, supports both "USER" and "NETWORK" protocol sides. This USER/NETWORK choice is set on the Nortel by using LD 17.

Nortel Meridian 1 Option 11C PBX Configuration

Nortel Meridian 1 Option 11C PBX Version Information

- Software: Version 3.1

Nortel Meridian 1 Option 11C PBX Sample Configuration

See the following sections for sample configuration information:

- System Configuration
- Route Data Block Configuration
- Trunk Configuration
- Digital Station Configuration
- Software Packages Installed (Release 24)

System Configuration

ld 22PT2000
MARP NOT ACTIVATED

```
REQ prt
TYPE cfn
ADAN HIST
    SIZE 5000
    USER MTC SCH BUG
ADAN TTY 0
    TTY_TYPE SDI
    CAB 00
    CARD 00
    PORT 0
    DES
    FLOW NO
    USER MTC SCH BUG
    TTYLOG 0
    BANR YES
ADAN TTY 1
    TTY_TYPE SDI
    CAB 00
    CARD 00
    PORT 1
    DES
    BPS 9600
    BITL 8
    STOP 1
    PARY NONE
    FLOW NO
    USER MTC SCH BUG
    TTYLOG 0
    BANR YES
ADAN TTY 2
    TTY_TYPE SDI
    CAB 00
    CARD 00
    PORT 2
    DES
    BPS 9600
    BITL 8
    STOP 1
    PARY NONE
    FLOW NO
    USER MTC SCH BUG
    TTYLOG 0
    BANR YES
ADAN DCH 3
    CTYP MSDL
    CARD 03
    PORT 1
    DES ESIG2_USR_TIE
    USR PRI
    DCHL 3
    OTBF 32
    PARM RS422 DTE
    DRAT 64KC
    CLOK EXT
    IFC ESIG
        ISDN_MCNT 300
    CLID OPT0
    CO_TYPE STD
    SIDE USR
    CNEG 1
    RLS ID 22
    RCAP COLP
```

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MBGA NO

OVLR NO
OVLS NO
T310 120
T200 3
T203 10
N200 3
N201 260
K 7
ADAN DCH 4
CTYP MSDL
CARD 04
PORT 1
DES ESIG2_NET_TIE
USR PRI
DCHL 4
OTBF 32
PARM RS422 DTE
DRAT 64KC
CLOK EXT
IFC ESIG
ISDN_MCNT 300
CLID OPT0
CO_TYPE STD
SIDE NET
CNEG 1
RLS ID 22
RCAP COLP
MBGA NO
OVLR NO
OVLS NO
T310 120
T200 3
T203 10
N200 3
N201 260
K 7

ADAN DCH 5
CTYP MSDL
CARD 05
PORT 1
DES esgf(user)
USR PRI
DCHL 5
OTBF 32
PARM RS422 DTE
DRAT 64KC
CLOK EXT
IFC ESGF
PINK_CUST 0
ISDN_MCNT 300
CLID OPT0
CO_TYPE STD
SIDE USR
CNEG 1
RLS ID **
QCHID YES
RCAP COLP NDO
MBGA NO
OVLR NO
OVLS NO

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T310 120
T200 3
T203 10
N200 3
N201 260
K 7
ADAN DCH 6
CTYP MSDL
CARD 06
PORT 1

DES ESGF2_NET_TIE
USR PRI
DCHL 6
OTBF 32
PARM RS422 DTE
DRAT 64KC
CLOK EXT
IFC ESGF
 PINK_CUST 0
 ISDN_MCNT 300
CLID OPT0
CO_TYPE STD
SIDE NET
CNEG 1
RLS ID 22
QCHID YES
RCAP COLP
MBGA NO
OVLN NO
OVLS NO
T310 120
T200 3
T203 10
N200 3
N201 260
K 7
PARM
LPIB 192
HPIB 32
500B 16
NCR 200
MGCR NULL
CFWS NO
PCML MU
ALRM YES
ERRM ERR BUG AUD
DTRB 100
TMRK 128
FCDR OLD
PCDR NO
TPO NO
TSO NO
CLID NO
DUR5 NO
MLDN YES
MARP NO
FRPT NEFR
DCUS NULL
MSCL 255
PMSI
 MANU PMS1

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PMCR 20
PORT NONE
NDIS 20
OCAC NO
MTRO MR
SBA_ADM_INS 001
SBA_USER 010
BCAP SPEECH
NORTEL_BRAND NO
CEQU
MPED 8D
SUPL 000 004 008 012
 016 032 036 040
 044 048 064 068
 072
XCT 000
CONF 029 030 031 062
 094 095
PRI2 03 04 05 06

```
      07 08
DTI2
MISP
OVLY
  SID 0
  BKGD 044
  PBXH 01
  TODR 01
  DROL 030 034 038 044 135
  MULTI_USER OFF
ATRN
  CODE 0
  SOLR 12
  ROLR +45.00
  AOLR +45.00
  TOLR -45.00
  AGCD NO
  VOLR NO
  HRLR +42.00
  HTLR -44.00

REQ ****
>
OVL000
```

Route Data Block Configuration

```
>ld 21PT1000

REQ: prt
TYPE: rdb
CUST 0
ROUT 105
TYPE RDB
CUST 00
DMOD
ROUT 105
DES ESGF(USER)
TKTP TIE
ESN NO
CNVT NO
SAT NO
RCLS EXT
DTRK YES
BRIP NO
DGTP PRI2
ISDN YES
  MODE PRA
  IFC ESGF
  SBN NO
  PNI 00001
  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 RRB
TRMB YES
STEP
ACOD 705
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
TFD 0
DRNG NO
CDR NO
MUS NO
OHQ NO
OHQT 00
CBQ NO

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AUTH NO
TTBL 0
PLEV 2
ALRM NO
ART 0
SGRP 0
AACR NO

REQ: ****
>
OVL000

Trunk Configuration

>ld 20
PT0000
MARP NOT ACTIVATED

REQ: prt
TYPE: tnb
TN 5 1

DATE 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 1
AST NO
IAPG 0
CLS UNR DTN CND WTA LPR APN THFD
P10 VNL
TKID
DATE 22 APR 2001

NACT ****
>
OVL000

Digital Station Configuration

```
>ld 11SL1000
MARP NOT ACTIVATED

MEM AVAIL: (U/P): 1337098    USED U P: 105713 31748    TOT: 1474559
DISK RECS AVAIL: 477
TNS    AVAIL:    55    USED:    145    TOT:    200
ACD AGENTS AVAIL:    300    USED:    0    TOT:    300
AST    AVAIL:    100    USED:    0    TOT:    100
DIGITAL TELEPHONES AVAIL: 2498    USED:    2    TOT:    2500

REQ: prt
TYPE: 2616
```

MARP NOT ACTIVATED

```
TN    001 0 00 00
DATE 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
CLS  CTD FBD WTA LPR MTD FND HTD ADD HFA
      MWD LMPN RMMD SMWD AAD IMD XHD IRD NID OLD VCE DRG1
      POD DSX VMD CMSD CCSD SWD LNA CNDA
      CFTD SFD MRD DDV CNID 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 AHD
      DDGA NAMA
      DRDD EXR0
      USMD USRD ULAD RTDD RBDD RBHD PGND FLXD FTTC DNDY DNO3
CPND_LANG ENG
HUNT
PLEV 02
AST
IAPG 0
AACS NO
ITNA NO
DGRP
MLWU_LANG 0
DNDR 0
KEY 00 SCR 2001 0    MARP
      CPND
          NAME Nortel Testphone 1
          XPLN 27
          DISPLAY_FMT FIRST, LAST
01 SCR 2010 0    MARP
      CPND
          NAME Nortel Testphone 1B
          XPLN 27
          DISPLAY_FMT FIRST, LAST
02
03 CFW 12 5002
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 20 APR 2001

NACT ****
>
OVL000

Software Packages Installed (Release 24)

>ld 22PT2000
MARP NOT ACTIVATED

REQ	prt
TYPE	pkg
OPTF	1
CUST	2
CDR	4
CTY	5
RAN	7
TAD	8
DNDI	9
EES	10
INTR	11
ANI	12
ANIR	13
BRTE	14
DNDG	16
MSB	17
SS25	18
DDSP	19
ODAS	20
DI	21
CHG	23
CAB	24
BAUT	25
CASM	26
CASR	27
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
BARS	57
NARS	58
CDP	59

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FCBQ 61
OHQ 62
NAUT 63
SNR 64

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LSEL 72
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DRNG 74
PBXI 75
DLDN 76
CSL 77
OOD 79
SCI 80
CCOS 81
CDRQ 83
TENS 86
FTDS 87
DSET 88
TSET 89
LNR 90
DLT2 91
PXLТ 92
SUPV 93
CPND 95
DNIS 98
BGD 99
RMS 100
MR 101
AWU 102
PMSI 103
LLC 105
MCT 107
ICDR 108
APL 109
TVS 110
TOF 111
IDC 113
AUXS 114
DCP 115
PAGT 116
CBC 117
CCDR 118
EMUS 119
SCMP 121
FTC 125
BKI 127
DTI2 129
TBAR 132
ENS 133
FFC 139
DCON 140
MPO 141
ISDN 145
PRA 146
ISL 147
NTWK 148
IEC 149
DNXP 150
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FNP 160
ISDN INTL SUP 161
SAR 162
LAPW 164
GPRI 167
ARIE 170
CPGS 172
ECCS 173
AAA 174
NMS 175
EOVF 178
HVS 179
DKS 180
SACP 181
OVLN 184
EDRG 185
POVR 186
SECL 191
ORC-RVQ 192
AINS 200
IPRA 202
XPE 203
XCT0 204
XCT1 205
MLWU 206
NACD 207
HSE 208
MLM 209
MAID 210
VAWU 212
EAR 214
ECT 215
BRI 216
IVR 218
MWI 219
MSDL 222
FC68 223
M911 224
CWNT 225
SSAU 229
BRIT 233
FCDR 234
BRIL 235
MCMO 240
MULTI_USER 242
ALRM_FILTER 243
VMBA 246
CALL ID 247
DPNA 250
SCDR 251
ARFW 253
PHTN 254
ADMINSET 256
ATX 258
QSIG 263
NI-2 291
MAT 296
MQA 297
CPP 301
QSIGGF 305

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CPRKNET 306
PAGENET 307
CPCI 310
NGCC 311
TATO 312
OPEN ALARM 315
QSIG-SS 316
QTN 321

```
NGEN      324
RANBRD    327
MUSBRD    328
ESA       329
ESA_SUPP  330
ESA_CLMP  331
CNUMB     332
CNAME     333
NI-2 CBC  334
MEET      348
MC32      350
DBA       351
FDID      362
NMCE      364

REQ  ****
>
OVL000
>
```

Cisco AS5300 Gateway Configuration

The following is the configuration of the Cisco AS5300 voice gateway connected to Nortel Opt 11C ISDN interface.

Cisco AS5300 Voice Gateway Version Information

```
AS5300_B#sh ver
Cisco Internetwork Operating System Software
IOS (tm) 5300 Software (C5300-JS-M), Version 12.2(1), RELEASE SOFTWARE (fc2)
Copyright (c) 1986-2001 by cisco Systems, Inc.
Compiled Fri 27-Apr-01 00:59 by cmong
Image text-base: 0x60008958, data-base: 0x611DA000

ROM: System Bootstrap, Version 12.0(2)XD1, EARLY DEPLOYMENT RELEASE SOFTWARE (fc
1)

AS5300_B uptime is 3 hours, 12 minutes
System returned to ROM by reload
System image file is "flash:c5300-js-mz.122-1"

cisco AS5300 (R4K) processor (revision A.32) with 131072K/16384K bytes of memory
.
Processor board ID 13241546
R4700 CPU at 150Mhz, Implementation 33, Rev 1.0, 512KB L2 Cache
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.
Backplane revision 2
Manufacture Cookie Info:
  EEPROM Type 0x0001, EEPROM Version 0x01, Board ID 0x30,
  Board Hardware Version 3.1, Item Number 800-2544-03,
  Board Revision D0, Serial Number 13241546,
  PLD/ISP Version 0.0, Manufacture Date 17-May-2000.
1 Ethernet/IEEE 802.3 interface(s)
1 FastEthernet/IEEE 802.3 interface(s)
35 Serial network interface(s)
4 Channelized E1/PRI port(s)
60 Voice resource(s)
128K bytes of non-volatile configuration memory.
16384K bytes of processor board System flash (Read/Write)
8192K bytes of processor board Boot flash (Read/Write)

Configuration register is 0x2102
```

AS5300_B#

Cisco AS5300 Voice Gateway Controller Information

AS5300_B#sh controllers e1 0

E1 0 is up.

Applique type is Channelized E1 - balanced
No alarms detected.
alarm-trigger is not set
Version info of slot 0: HW: 1, PLD Rev: 11
Framer Version: 0x8

Manufacture Cookie Info:

EEPROM Type 0x0001, EEPROM Version 0x01, Board ID 0x4B,
Board Hardware Version 3.1, Item Number 800-3881-02,
Board Revision B0, Serial Number 20744904,
PLD/ISP Version 0.1, Manufacture Date 23-Jun-2000.

Framing is CRC4, Line Code is HDB3, Clock Source is Line Primary.
Data in current interval (107 seconds elapsed):

0 Line Code Violations, 0 Path Code Violations
0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 0 Unavail Secs

AS5300_B#

Cisco AS5300 Voice Gateway VCWare Information

AS5300_B#sh vfc 2 version veware

Voice Feature Card in Slot 2:

VCware Version : 7.16
ROM Monitor Version: 1.3
DSPware Version : 3.4.271
Technology : C549

AS5300_B#

Cisco AS5300 Voice Gateway DSPWare Information

AS5300_B#sh vfc 2 version dspware

Version of Dspware in VFC slot 2 is 3.4.271

AS5300_B#

Cisco AS5200 Voice Gateway Sample Configuration

AS5300_B#sh conf

Using 2077 out of 124920 bytes

```
!  
version 12.2  
service config  
no service single-slot-reload-enable  
service timestamps debug uptime  
service timestamps log uptime  
no service password-encryption  
!  
hostname AS5300_B  
!  
logging rate-limit console 10 except errors  
enable secret 5 $1$/.SG$h05ycqcEN3shrrgYfUUo91  
enable password lab  
!
```

```
!  
!  
resource-pool disable  
!  
call rsvp-sync  
ip subnet-zero  
no ip finger  
no ip domain-lookup  
!  
no ip dhcp-client network-discovery  
isdn switch-type primary-qsig  
!  
!  
!  
!  
!  
fax interface-type vfc  
mta receive maximum-recipients 0  
!  
!  
controller E1 0  
    clock source line primary  
    pri-group timeslots 1-31  
!  
controller E1 1  
    clock source line secondary 1  
!  
controller E1 2  
    clock source line secondary 2  
!  
controller E1 3  
    clock source line secondary 3  
!  
!  
interface Ethernet0  
    ip address 10.1.1.203 255.255.255.0  
    no cdp enable  
!  
interface Serial0  
    no ip address  
    shutdown  
    no fair-queue  
    clockrate 2015232  
!  
interface Serial1  
    no ip address  
    shutdown  
    no fair-queue  
    clockrate 2015232  
    no cdp enable  
!  
interface Serial2  
    no ip address  
    shutdown  
    no fair-queue  
    clockrate 2015232  
    no cdp enable  
!  
interface Serial3  
    no ip address  
    shutdown  
    no fair-queue  
    clockrate 2015232  
    no cdp enable  
!  
interface Serial0:15  
    no ip address  
    no logging event link-status  
    isdn switch-type primary-qsig  
    isdn protocol-emulate network
```

```

isdn incoming-voice modem
no isdn T309-enable
isdn T203 30000
isdn T310 60000
isdn bchan-number-order ascending
no cdp enable
!
interface FastEthernet0
ip address 1.1.1.2 255.255.255.0
duplex auto
speed auto
no cdp enable
!
router rip
network 1.0.0.0
!
ip kerberos source-interface any
ip classless
no ip http server
!
dialer-list 1 protocol ip permit
dialer-list 1 protocol ipx permit
!
!
!
voice-port 0:D
!
dial-peer voice 2 voip
destination-pattern 5...
progress_ind setup enable 1
session target ipv4:1.1.1.1
!
dial-peer voice 1 pots
destination-pattern 2...
direct-inward-dial
port 0:D
prefix 2
!
!
line con 0
exec-timeout 0 0
logging synchronous
transport input none
line aux 0
line vty 0 4
password lab
login
!
scheduler interval 1000
end

AS5300_B#

```

Caveats

- Overlap Sending or Receiving is not supported on the Nortel Meridian 1 Option 11C.