



Nortel CS1000 Succession 4.0 with Cisco Unified Border Element for SIP-to-SIP Calls

Table of Contents

Introduction	1
Network Topology.....	2
Limitations.....	2
System Components	3
Hardware Requirements	3
Software Requirements	3
Features	3
Features Supported.....	3
Features Not Supported	3
Configuration.....	4
Configuration Sequence and Tasks	4
Configuration Menus and Commands	4
Acronyms	35

Introduction

- This is an application note for connectivity of Nortel CS1000 Succession 4.0 with Cisco Unified Border Element via SIP (10/100baseT).
- The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability with the Cisco Unified Border Element (CUBE) connected to the IP PBX via SIP (10/100baseT). Connectivity is achieved by using the SIP protocol.
- This Application Note uses the c3845 IOS-voice-gateway, however other Cisco voice gateways are also an option to use since CUBE implementation does not depend on the platform. Here is a list of Cisco Products capable of CUBE functionality:

[Cisco 2800 Series Integrated Services Routers](#)

[Cisco 3800 Series Integrated Services Routers](#)

[Cisco AS5350XM Universal Gateway](#)

[Cisco AS5400XM Universal Gateway](#)

Network Topology

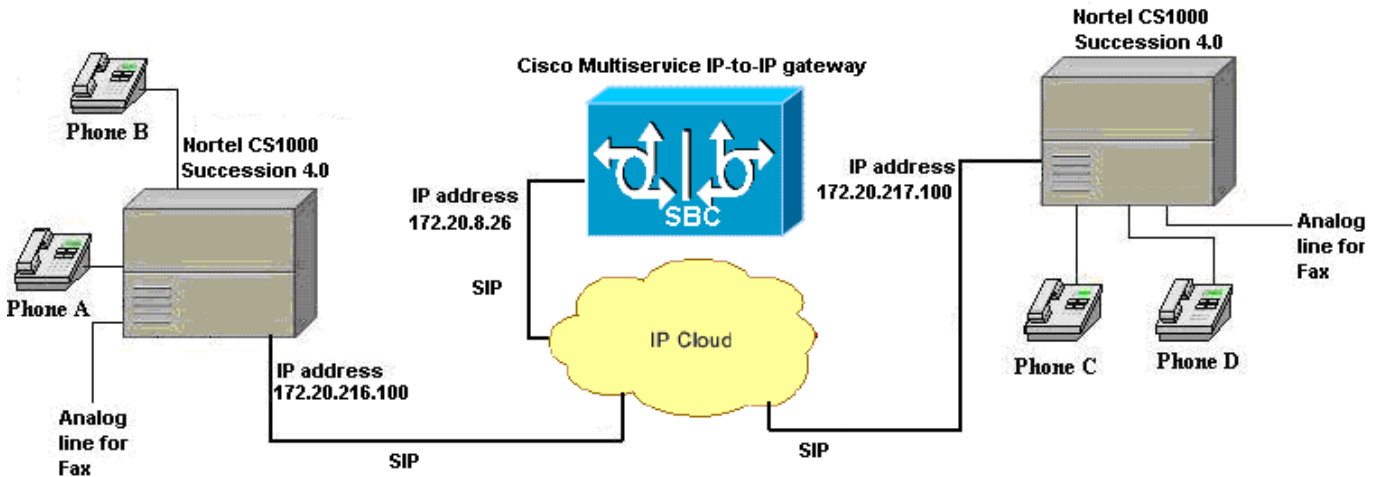


Figure 1. Network Topology or Test Setup

Limitations

- Connected Name is not presented at originating Phone. Nortel does not include Final destination NAME in the SIP ringing status, or in the OK status.
- Basic Call using G.726 codec is not supported on Nortel PBX
- Call Transfer Name and Number updates do not occur
- Call Forward Name and Number updates do not occur
- DTMF tones are not played across established call. Nortel PBX utilizes SIP "INFO" messages to signal DTMF tones, Cisco IOS does not support SIP INFO message as of version 124-7.9.PI4a.
- A fax call is supported using only codec G.711 (A or u-law).



System Components

Hardware Requirements

Cisco equipment

- Cisco 3845 (Cisco 3800 family routers)
- Cisco Catalyst 6500

Avaya equipment

- Nortel Communication System 1000 (which includes Call Server, Signaling Server and Media gateway)

Software Requirements

- PBX Software: Nortel Succession 4.0 Release
- Cisco IOS Release: c3845-ipvoice_ivs-mz.124-9.T

Features

Features Supported

- Basic call using G711u and A law, G729 and G723 codecs
- Call Transfer blind and Call Transfer supervised
- Call Conference
- Call on-hold
- Call Forward No Reply, Busy and All
- FAX integrity (only using G.711)

Features Not Supported

- Connected Name
- DTMF



Configuration

Configuration Sequence and Tasks

Configuration Menus and Commands

Nortel Configuration

Call Server Setup Using SSC Card Console:

1. LD 17 – Configure the IP D-channel (signaling channel) between the Call Server and the Signaling Server
2. LD 97 – Configure the Super-loop for the Virtual Trunks
3. LD 14 – Configure the SIP Virtual Trunks to the Signaling Server
4. LD 14 – Configure the Virtual Gateway Trunks
5. LD 16 – Configure the SIP route
6. LD 86 – Configure the Route List Block for the Virtual Trunk route
7. LD 87 – Configure CDP steering codes
8. Configure Digital Stations (Phones)

Signaling Server Setup Using the Nortel Element Manager:

9. Configure the Zones
10. Configure a new IP Telephony Node summary
11. Configure the Node section
12. Configure the VGW and IP phone codec profile section
13. Configure the Quality of Service (QoS) section
14. Configure LAN Configuration section
15. Configure the SIP GW Setting section
16. Configure the Card section for the MC-32 VGMC card section
17. Configure the Signaling Server section

NRS (Network Routing Server):

18. Configure the System Wide Settings
19. Configure the NRS Server Settings
20. Configure a Service Domain
21. Configure a L1 Domain (UDP)
22. Configure a L0 Domain (CDP)
23. Configure a SIP gateway
24. Configure the Routing Entries

Call Server Setup Using SSC Card Console:

1. LD 17 – Configure the IP D-channel (signaling channel) between the Call Server and the Signaling Server

```
>ld 22  
PT2000
```

```
REQ prt  
TYPE adan dch 3
```

```
ADAN DCH 3  
CTYP DCIP  
DES IP_Trunk_DCH  
USR ISLD  
ISLM 4000  
SSRC 1800  
OTBF 32
```



NASA YES
IFC SL1
CNEG 1
RLS ID 4
RCAP ND2 CPK
MBGA NO
H323
OVLN NO
OVLN NO

2. LD 97 – Configure the Super-loop for the Virtual Trunks

```
>ld 97  
SCSYS000  
MEM AVAIL: (U/P): 2718718   USED U P: 327039 50818   TOT: 3096575  
DISK RECS AVAIL: 1152  
REQ prt  
TYPE supl  
SUPL
```

SUPL SUPT SLOT XPEC0 XPEC1

```
000 STD LEFT 01 0 1 ----  
004 STD LEFT 02 0 1 ----  
008 STD LEFT 03 0 1 ----  
012 STD LEFT 04 0 1 ----  
016 STD LEFT 05 0 1 ----  
032 STD LEFT 06 0 1 ----  
036 STD LEFT 07 0 1 ----  
040 STD LEFT 08 0 1 ----  
044 STD LEFT 10 0 3 ----  
048 STD LEFT 09 0 3 ----  
064 STD LEFT 11 0 3 ----  
068 STD LEFT 12 0 3 ----  
072 STD LEFT 13 0 3 ----  
096 VIRTUAL CARDS 61 - 64 81 - 84  
128 STD LEFT 32 0 1 33 2 3  
132 STD LEFT 34 0 1 35 2 3  
136 STD LEFT 36 0 1 37 2 3  
140 STD LEFT 38 0 1 39 2 3  
144 STD LEFT 40 0 1 41 2 3  
148 STD LEFT 42 0 1 43 2 3  
152 STD LEFT 44 0 1 45 2 3  
156 STD LEFT 46 0 1 47 2 3
```



3. LD 14 – Configure the SIP Virtual Trunks to the Signaling Server (One trunk = one line connection)

>ld 20

```
PT0000
REQ: prt
TYPE: tnb
TN 62 0 0 0 => SIP Virtual trunk to Signaling Server
```

```
DATE
PAGE
DES
```

```
DES SIP_IP_VTRK
TN 062 0 00 00 VIRTUAL
TYPE IPTI
CDEN 8D
CUST 0
XTRK VTRK
ZONE 000
LDOP BOP
TIMP 600
BIMP 600
AUTO_BIMP NO
TRK ANLG
NCOS 0
RTMB 10 1
CHID 1
TGAR 1
STRI/STRO IMM IMM
SUPN YES
AST NO
IAPG 0
CLS CTD DTN WTA LPR APN THFD
P10 NTC MID
TKID
AACR NO
DATE 25 FEB 2005
```

```
NACT
```



4. LD 14 – Configure the Virtual Gateway Trunks (upto 32 trunks per MC-32)

```
>ld 20

PT0000
REQ: prt
TYPE: tnb
TN 3
CDEN
CUST
DATE
PAGE
DES

DES 192.168.21.2
TN 003 0 00 00
TYPE VGW
CUST 0
XTRK MC32
ZONE 000

DES 192.168.21.2
TN 003 0 00 01
TYPE VGW
CUST 0
XTRK MC32
ZONE 000
```

5. LD 16 – Configure the SIP route

```
>ld 21
PT1000

REQ: prt
TYPE: rdb
CUST 0
ROUT 10

TYPE RDB
CUST 00
DMOD
ROUT 10
DES SIP_TIE
TKTP TIE
NPID_TBL_NUM 0
ESN NO
```



CNVT NO
SAT NO
RCLS EXT
VTRK YES
ZONE 000
PCID SIP
CRID YES
NODE 102
DTRK NO
ISDN YES
 MODE ISLD
 DCH 3
 IFC SL1
 PNI 00001
 NCNA YES
 NCRD YES
 TRO NO
 FALT NO
 CTYP UKWN
 INAC NO
 ISAR NO
 DAPC NO
PTYP ATT
AUTO NO
DNIS NO
DCDR NO
ICOG IAO
SRCH LIN
TRMB YES
STEP
ACOD 710
TCPP NO
TARG 01
CLEN 1
BILN NO
OABS
INST
ANTK
SIGO STD
STYP SDAT
ICIS YES
TIMR ICF 512
 OGF 512
 EOD 13952
 DSI 34944
 NRD 10112
 DDL 70
 ODT 4096
 RGV 640
 GRD 896
 SFB 3
 NBS 2048
 NBL 4096



IENB 5

PAGE 002

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
OHQ NO
OHQT 00
CBQ NO
AUTH NO
TTBL 0
ATAN NO
OHTD NO
PLEV 2
ALRM NO
ART 0
SGRP 0
AACR NO

REQ:

6. LD 86 – Configure the Route List Block for the Virtual Trunk route

>ld 86
ESN000

MEM AVAIL: (U/P): 2718718 USED U P: 327039 50818 TOT: 3096575
DISK RECS AVAIL: 1152

REQ prt
CUST 0
FEAT rlb
RLI 10

RLI 10
ENTR 0
LTER NO
ROUT 10



TOD 0 ON 1 ON 2 ON 3 ON
4 ON 5 ON 6 ON 7 ON
VNS NO
SCNV NO
CNV NO
EXP NO
FRL 0
DMI 0
ISDM 0
FCI 0
FSNI 0
SBOC NRR
IDBB DBD
IOHQ NO
OHQ NO
CBQ NO

ISET 0
NALT 5
MFRL 0
OVLL 0

MEM AVAIL: (U/P): 2718718 USED U P: 327039 50818 TOT: 3096575
DISK RECS AVAIL: 1152
REQ

7. LD 87 – Configure CDP steering codes

>ld 87
ESN000

MEM AVAIL: (U/P): 2718718 USED U P: 327039 50818 TOT: 3096575
DISK RECS AVAIL: 1152

REQ prt
CUST 0
FEAT cdp
TYPE dsc
DSC 233
DSC 233 => Note: Dialing plan
FLEN 0
DSP LSC
RLI 10 => Note: SIP Route list used for DSC dialed numbers
NPA
NXX
>ld 87
ESN000

MEM AVAIL: (U/P): 2718718 USED U P: 327039 50818 TOT: 3096575
DISK RECS AVAIL: 1152
REQ prt
CUST 0



FEAT cdp
TYPE dsc
DSC 24
DSC 24 => Note: Dialing plan
FLEN 0
DSP LSC
RLI 10 => Note: SIP Route list used for DSC dialed numbers
NPA
NXX

8. LD 11 – Configure Digital Stations (Phones)

```
>ld 11
SL1000
MEM AVAIL: (U/P): 2718718  USED U P: 327039 50818  TOT: 3096575
DISK RECS AVAIL: 1152
DIGITAL TELEPHONES AVAIL: 0  USED: 8  TOT: 8
IP USERS AVAIL: 2  USED: 6  TOT: 8
BASIC IP USERS AVAIL: 7  USED: 1  TOT: 8
ACD AGENTS AVAIL: 10  USED: 0  TOT: 10
PCA AVAIL: 0  USED: 0  TOT: 0
AST  AVAIL: 1  USED: 0  TOT: 1
TNS  AVAIL: 2296  USED: 204  TOT: 2500
DATA PORTS AVAIL: 2500  USED: 0  TOT: 2500

REQ: prt
TYPE: 2616
```

```
TN 1 06
DATE
PAGE
DES
```

```
DES CS102
TN 001 0 00 06
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 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 AGRD MOAD AHD
DDGA NAMA
DRDD EXR0
USRD ULAD RTDD RBDD RBHD PGND 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 5332 0 MARP
CPND
NAME ATHENA_5332
XPLN 13
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
DATE 16 MAR 2006

NACT
REQ:
REQ PRT
TYPE:
TYPE 2616
TN 1 07
DATE
PAGE



DES

DES CS102

TN 001 0 00 07

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 CNID 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 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 5333 0 MARP

CPND

NAME ATHENA_5333

XPLN 13

DISPLAY_FMT FIRST, LAST

01

02

03 CFW 4 2333

04 AO6

05 TRN

06



07
08
09
10
11
12
13
14
15 RGA
DATE 14 MAR 2006

NACT



Signaling Server Setup Using the Nortel Element Manager:

9. Configure the Zones

The screenshot shows the Nortel Element Manager web interface in Microsoft Internet Explorer. The browser address bar shows `http://172.20.217.100/cgi/pwd.cgi`. The page title is "Element Manager - Microsoft Internet Explorer". The breadcrumb navigation is "Site: 172.20.219.101 > Configuration > Call Server Configuration > Zone List > Zone 0 >". The main heading is "Zone Basic Property and Bandwidth Management".

On the left side, there is a navigation menu with the following items:

- System Status
 - Call Server
 - IP Telephony
- Configuration
 - Call Server
 - IP Telephony
- Network Numbering Plan
 - Call Server
 - Network Routing Service
- Software Upgrade
- Patching
- System Utility
- Administration
- Support
- Tools
- Logout

The main content area contains a table with the following columns: "Input Description" and "Input Value".

Input Description	Input Value
Zone Number (ZONE):	0
Intrazone Bandwidth (INTRA_BW):	10000
Intrazone Strategy (INTRA_STGY):	Best Quality (BQ)
Interzone Bandwidth (INTER_BW):	10000
Interzone Strategy (INTER_STGY):	Best Quality (BQ)
Resource Type (RES_TYPE):	Shared (SHARED)
Branch Office Support (ZBRN):	<input type="checkbox"/>
Description (ZDES):	

At the bottom of the form, there are four buttons: "Submit", "Refresh", "Delete", and "Cancel".



10. Configure a new IP Telephony Node summary

The screenshot shows the Element Manager web interface in Microsoft Internet Explorer. The browser address bar shows `http://172.20.217.100/cgi/pwd.cgi`. The page title is "Element Manager - Microsoft Internet Explorer". The main content area is titled "IP Telephony Information" and displays a table of nodes. The table has columns for Index, ELAN IP, Type, and TN. There are two nodes listed: SS_Node102 and MC_Node102. Each node has a set of action buttons: GEN CMD, RPT LOG, DM RPT, Reset, Virtual Terminal, and Status. The SS_Node102 node is expanded, showing its details. The MC_Node102 node is also expanded, showing its details. The table is titled "IP Telephony Information" and has a sub-header "Node ID: 102". The table has columns for Index, ELAN IP, Type, and TN. The SS_Node102 node is expanded, showing its details. The MC_Node102 node is also expanded, showing its details.

Index	ELAN IP	Type	TN	ELAN					
SS_Node102	172.20.219.103	Signaling Server	NO TN	GEN CMD	RPT LOG	DM RPT	Reset	Virtual Terminal	Status
MC_Node102	172.20.219.102	Succession Media Card	3 0	GEN CMD	SYS LOG	DM RPT	Reset	Virtual Terminal	Status

Click buttons to invoke a command



11. Configure the Node section

The screenshot shows the Cisco Element Manager web interface in Microsoft Internet Explorer. The browser address bar shows `http://172.20.217.100/cg/pwd.cgi`. The page title is "Element Manager - Microsoft Internet Explorer". The main content area is titled "Edit" and shows the configuration for "Node ID 102". The configuration fields are:

Node ID	102
Voice LAN (TLAN) Node IP address	172.20.217.100
Management LAN (ELAN) gateway IP address	172.20.219.1
Management LAN (ELAN) subnet mask	255.255.255.0
Voice LAN (TLAN) subnet mask	255.255.255.0

Below these fields are several expandable sections, each with an "Add" button:

- SNMP
- VGW and IP phone codec profile
- QoS
- LAN configuration
- SNTIP
- H323 GW Settings
- Firmware
- SIP GW Settings
- SIP URI Map
- SIP CD Services
- Cards
- Signaling Servers

At the bottom of the configuration area, there is a note: "*Mandatory fields of current configuration".



12. Configure the VGW and IP phone codec profile section

Element Manager - Microsoft Internet Explorer

Address: http://172.20.217.100/cgi/pwd.cgi

EDIT

Save and Transfer Cancel

- Node
- SNMP Add
- VGW and IP phone codec profile**
 - Enable Echo canceller
 - Echo canceller tail delay 128
 - Voice activity detection threshold -17 Range: -20 to +10
 - Idle noise level -65 Range: -327 to +327
 - DTMF Tone detection
 - Enable V.21 FAX tone detection
 - FAX maximum rate (bps) 14400
 - FAX playout nominal delay 100 Range: 0 to 300
 - FAX no activity timeout 20 Range: 10 to 32000
 - FAX packet size 30
 - Codec G711 Select
 - Codec G729A Select
 - Codec G723.1 Select
 - Codec T38 FAX Select
- QoS
- LAN configuration
- SNTP
- H323 GW Settings
- Firmware
- SIP GW Settings
- SIP URI Map
- SIP CD Services
- Cards Add
- Signaling Servers Add

Save and Transfer Cancel



Element Manager - Microsoft Internet Explorer

Address: http://172.20.217.100/cg/pwd.cg

NORTEL NETWORKS

- System Status
 - Call Server
 - IP Telephony
- Configuration
 - Call Server
 - IP Telephony
- Network Numbering Plan
- Software Upgrade
- Patching
- System Utility
- Administration
- Support
- Tools
- Logout

Idle noise level: -65 Range: -327 to +327

DTMF Tone detection:

Enable V.21 FAX tone detection:

FAX maximum rate (bps): 14400

FAX playout nominal delay: 100 Range: 0 to 300

FAX no activity timeout: 20 Range: 10 to 32000

FAX packet size: 30

V Codec: G711 Select

Codec Name: G711

Voice payload size (ms/frame): 20

Voice playout (jitter buffer) nominal delay: 40

Modifications may cause changes to dependent settings:

Voice playout (jitter buffer) maximum delay: 80

Modifications may cause changes to dependent settings:

VAD:

V Codec: G729A Select

Codec Name: G729A

Voice payload size (ms/frame): 20

Voice playout (jitter buffer) nominal delay: 40

Modifications may cause changes to dependent settings:

Voice playout (jitter buffer) maximum delay: 80

Modifications may cause changes to dependent settings:

VAD:

V Codec: G723.1 Select

Codec Name: G723.1

Voice payload size (ms/frame): 30

Voice playout (jitter buffer) nominal delay: 60

Modifications may cause changes to dependent settings:

Voice playout (jitter buffer) maximum delay: 120

Modifications may cause changes to dependent settings:

VAD:

V Codec: T38 FAX Select

Codec Name: T38 FAX



13. Configure the QoS section

Element Manager - Microsoft Internet Explorer

Address: http://172.20.217.100/cg/pwd.cgi

NETEL NETWORKS

- System Status
 - Call Server
 - IP Telephony
- Configuration
 - Call Server
 - IP Telephony
- Network Numbering Plan
 - Call Server
 - Network Routing Service
- Software Upgrade
- Patching
- System Utility
- Administration
- Support
- Tools
- Logout

Echo canceller tail delay: 128

Voice activity detection threshold: -17 Range: -20 to +10

Idle noise level: -65 Range: -327 to +327

DTMF Tone detection:

Enable V.21 FAX tone detection:

FAX maximum rate (bps): 14400

FAX playout nominal delay: 100 Range: 0 to 300

FAX no activity timeout: 20 Range: 10 to 32000

FAX packet size: 30

Codec: G711 Select

Codec: G729A Select

Codec: G723.1 Select

Codec: T38 FAX Select

QoS

Diffserv Codepoint(DSCP) Control packets: 40 Range: 0 to 63

Diffserv Codepoint(DSCP) Voice packets: 46 Range: 0 to 63

Enable 802.1Q support:

802.1Q Bits value (802.1p): 6 Range: 0 to 7

LAN configuration

SNTP

H323 GW Settings

Firmware

SIP GW Settings

SIP URI Map

SIP CD Services

Cards Add

Signaling Servers Add

Save and Transfer Cancel

**Mandatory fields of current configuration*



14. Configure LAN Configuration section

Element Manager - Microsoft Internet Explorer

Address: http://172.20.217.100/cgi/pwd.cgi

NORTEL NETWORKS

- System Status
 - Call Server
 - IP Telephony
- Configuration
 - Call Server
 - IP Telephony
- Network Numbering Plan
 - Call Server
 - Network Routing Service
- Software Upgrade
- Patching
- System Utility
- Administration
- Support
- Tools
- Logout

FAX maximum rate (bps) 14400

FAX playout nominal delay 100 Range: 0 to 300

FAX no activity timeout 20 Range: 10 to 32000

FAX packet size 30

Codec G711 Select

Codec G729A Select

Codec G723.1 Select

Codec T38 FAX Select

QoS

LAN configuration

Management LAN (ELAN) configuration

Call server IP address 172.20.219.101

Survivable Succession Media Gateway IP address 0.0.0.0

Signaling port 15000 Range: 1024 to 65535

Broadcast port 15001 Range: 1024 to 65535

Voice LAN (TLAN) configuration

Signaling port 5000 Range: 1024 to 65535

Voice port 5200 Range: 1024 to 65535

Routes Add

SNTP

H323 GW Settings

Firmware

SIP GW Settings

SIP URI Map

SIP CD Services

Cards Add

Signaling Servers Add

Save and Transfer Cancel

**Mandatory fields of current configuration*



15. Configure the SIP GW Setting section

The screenshot shows the Element Manager web interface in Microsoft Internet Explorer. The browser address bar shows `http://172.20.217.100/cgi/pwd.cgi`. The interface is for a Nortel Networks device. On the left is a navigation menu with categories like System Status, Configuration, Network Numbering Plan, Software Upgrade, Patching, System Utility, Administration, Support, Tools, and Logout. The main content area shows a tree view with 'SIP GW Settings' selected. The configuration fields are as follows:

Field	Value
Primary Proxy / Re-direct IP address	172.20.217.103
Primary Proxy / Re-direct IP Port	5060
Primary Proxy Supports Registration	<input checked="" type="checkbox"/>
Primary CDS Proxy or Re-direct server flag	<input checked="" type="checkbox"/>
Secondary Proxy / Re-direct IP address	0.0.0.0
Secondary Proxy / Re-direct IP Port	5060
Secondary Proxy Supports Registration	<input type="checkbox"/>
Secondary CDS Proxy or Re-direct server flag	<input type="checkbox"/>

The 'SIP URI Map' section is expanded, showing the following domain names:

Domain Name	Value
Public E.164 National domain name	+1
Public E.164 Subscriber domain name	+1408
Public E.164 Unknown domain name	
Public E.164 Special Number domain name	
Private UDP domain name	sj
Private CDP domain name	interop.sj
Private Special Number domain name	sfn.sj
Private Unknown (vacant number routing) domain name	
Unknown Unknown domain name	

Below the domain names are sections for 'SIP CD Services', 'Cards', and 'Signaling Servers', each with an 'Add' button. At the bottom of the configuration area are 'Save and Transfer' and 'Cancel' buttons.



16. Configure the Card section for the MC-32 VGMC card section

Element Manager - Microsoft Internet Explorer

Address: http://172.20.217.100/cgi/pwd.cgi

NORTEL NETWORKS

- System Status
 - Call Server
 - IP Telephony
- Configuration
 - Call Server
 - IP Telephony
- Network Numbering Plan
 - Call Server
 - Network Routing Service
- Software Upgrade
- Patching
- System Utility
- Administration
- Support
- Tools
- Logout

Codec G729A Select

Codec G723.1 Select

Codec T38 FAX Select

QoS

LAN configuration

SNTP

H323 GW Settings

Firmware

SIP GW Settings

SIP URI Map

SIP CD Services

Cards [Add](#)

Card 172.20.219.102 Properties [Remove](#)

Role: Follower

Management LAN (ELAN) IP address: 172.20.219.102 *

Management LAN (ELAN) MAC address: 00:11:F9:E4:D5:09 *

Voice LAN (TLAN) IP address: 172.20.217.102 *

Voice LAN (TLAN) gateway IP address: 172.20.217.1

Hostname: MC_Node102 *

Card TN: 3 *

Card processor type: Succession Media Card

H323 ID: MC_Node102

Enable set TPS:

System name: SS_Node102

System location:

System contact:

Signaling Servers [Add](#)

[Save and Transfer](#) [Cancel](#)

** Mandatory fields of current configuration*



17. Configure the Signaling Server section

The screenshot shows the Element Manager web interface in Microsoft Internet Explorer. The browser address bar shows `http://172.20.217.100/cgi/pwd.cgi`. The interface has a blue header with the Nortel Networks logo and a navigation menu on the left. The main content area displays the configuration for a signaling server with the following fields:

Field	Value
Role	Leader
Management LAN (ELAN) IP address	172.20.219.103
Management LAN (ELAN) MAC address	00:02:b3:f7:33:76
Voice LAN (TLAN) IP address	172.20.217.103
Voice LAN (TLAN) gateway IP address	172.20.217.1
Hostname	SS_Node102
H323 ID	SS_Node102
Enable set TPS	<input checked="" type="checkbox"/>
Enable virtual trunk TPS	H.323 and SIP
Enable SIP Proxy / Redirect Server	<input checked="" type="checkbox"/>
SIP Transport Protocol	TCP
Local SIP Port	5060
SIP Domain name	pbxlab.org
SIP Gateway Endpoint Name	SS_Node102
SIP Gateway Authentication Password	•••••
Enable H323 Gatekeeper	<input checked="" type="checkbox"/>
Network Routing Service Role	Primary
System name	SS_Node102
System location	
System contact	

At the bottom of the configuration area, there are two buttons: "Save and Transfer" and "Cancel". A note at the bottom of the page states: **Mandatory fields of current configuration*



NRS (Network Routing Server):

18. Configure the System Wide Settings

The screenshot shows the NRS Manager web interface in Microsoft Internet Explorer. The browser title is "NRS Manager - Microsoft Internet Explorer". The page header includes the Nortel Networks logo and "Network Routing Service". A navigation menu contains "Home", "Configuration", "Tools", "Reports", "Administration", "Help", and "Logout". The current page is "System Wide Settings", with a breadcrumb trail "Location: Home > System Wide Settings >".

The "System Wide Settings" form includes the following fields:

- DB sync interval for alternate [Hours]: 24
- SIP registration time to live timer [Seconds]: 30
- H.323 gatekeeper registration time to live timer [Seconds]: 3600
- H.323 alias name: H323NRS102 *
- Alternate NRS server is permanent:
- Auto backup time [HH:MM]: 23:59
- Auto backup to FTP site enabled:
- Auto backup FTP site IP address: [Empty]
- Auto backup FTP site path: [Empty]
- Auto backup FTP username: [Empty]
- Auto backup FTP password: [Empty]

A "Save" button is located at the bottom of the form. A note below the form states: "*Mandatory field indicator". The status bar at the bottom right shows "Local intranet".



19. Configure the NRS Server Settings

The screenshot shows the NRS Manager web interface in Microsoft Internet Explorer. The page title is "NRS Manager - Microsoft Internet Explorer". The browser's address bar shows the URL "http://172.20.217.103:8080/nrsmanager". The page header includes the Nortel Networks logo and the text "Network Routing Service". The navigation menu contains "Home", "Configuration", "Tools", "Reports", "Administration", "Help", and "Logout". The current page is "NRS Server Settings", with the breadcrumb "Location: Home > NRS Server Settings >".

NRS Settings

Host name	SS_Node102
Primary IP (TLAN)	172.20.217.103
Alternate IP (TLAN)	0.0.0.0
Control priority	40

H.323 Gatekeeper Settings

Location request (LRQ) response timeout [Seconds]	3
---	---

SIP Server Settings

Mode	Redirect
UDP transport enabled	<input checked="" type="checkbox"/>
UDP port	5060
UDP maximum transmission unit (MTU)	1500
TCP transport enabled	<input checked="" type="checkbox"/>
TCP port	5060
TCP maximum transmission unit (MTU)	1500

Network Connection Server (NCS) Settings

Primary NCS port	16500
Alternate NCS port	16500
Primary NCS timeout [Seconds]	10

Save



20. Configure a Service Domain

The screenshot shows the NRS Manager web interface in Microsoft Internet Explorer. The browser title is "NRS Manager - Microsoft Internet Explorer". The address bar shows "Local intranet". The page header includes the Nortel Networks logo and "Network Routing Service". The navigation menu has "Home", "Configuration", "Tools", "Reports", "Administration", "Active DB view (set Standby DB view)", "Help", and "Logout". The "Configuration" menu is expanded to show "Service Domains". The "View Service Domain Property" form is displayed with the following fields:

- Domain name: pbxlab.org
- Domain description: PBX Lab Domain name

A note below the form states: **Mandatory field indicator*



21. Configure a L1 Domain (UDP)

The screenshot shows the NRS Manager web interface in Microsoft Internet Explorer. The browser title is "NRS Manager - Microsoft Internet Explorer". The address bar shows the URL. The page header includes the Nortel Networks logo and "Network Routing Service". The navigation menu has "Home", "Configuration", "Tools", "Reports", "Administration", "Active DB view (set Standby DB view)", "Help", and "Logout".

The main content area shows the "View L1 Domain Property (pbxlab.org)" form. The location path is "Configuration > L1 Domains (UDP) > View L1 Domain Property >". The form fields are:

- Domain name:
- Domain description:
- Endpoint authentication enabled:
- Authentication password:
- E.164 country code:
- E.164 area code:
- International dialing access code:
- L1 domain dialing access code:
- National dialing access code:
- Local dialing access code:
- Special number 1:
- Special number 2:

A note at the bottom of the form area states: "*Mandatory field indicator".



22. Configure a L0 Domain (CDP)

NORTEL NETWORKS Network Routing Service

Home **Configuration** Tools Reports Administration **Active DB view** (set Standby DB view) Help | Logout

Location: Configuration > L0 Domains (CDP) > View L0 Domain Property >

View L0 Domain Property (birch.com / mcccocomm.com)

Service Domains
L1 Domains (UDP)
=> L0 Domains (CDP)
Gateway Endpoints
User Endpoints
Routing Entries
Default Routes
Collaborative Servers

Domain name: *

Domain description:

Special number label:

Unqualified number label:

Endpoint authentication enabled:

Authentication password:

E.164 country code:

E.164 area code:

International dialing access code:

L1 domain dialing access code:

National dialing access code:

Local dialing access code:

Special number 1:

Special number 2:



23. Configure a SIP gateway

The screenshot shows the NRS Manager web interface in Microsoft Internet Explorer. The browser title is "NRS Manager - Microsoft Internet Explorer". The page header includes the Nortel Networks logo and "Network Routing Service". The navigation menu has "Home", "Configuration", "Tools", "Reports", "Administration", "Active DB view (set Standby DB view)", "Help", and "Logout". The breadcrumb trail is "Location: Configuration > Gateway Endpoints > View Gateway Endpoint Property >". The main content area is titled "View Gateway Endpoint Property (pbxlab.org / sj / interop)".

On the left sidebar, there are links for "Service Domains", "L1 Domains (UDP)", "L8 Domains (CDP)", "=> Gateway Endpoints", "User Endpoints", "Routing Entries", "Default Routes", and "Collaborative Servers".

The configuration form for the endpoint "TonyB" includes the following fields:

- Endpoint name: TonyB
- Endpoint description: Tony B IPGW testing
- Tandem endpoint name: (empty) with a "Look up" link
- Endpoint authentication enabled: Not configured
- Authentication password: (empty)
- E.164 country code: (empty)
- E.164 area code: (empty)
- International dialing access code: (empty)
- L1 domain dialing access code: (empty)
- National dialing access code: (empty)
- Local dialing access code: (empty)
- Special number 1: (empty)
- Special number 2: (empty)
- Static endpoint address type: IP version 4
- Static endpoint address: 172.20.8.26
- H.323 Support: Not RAS H.323 endpoint
- SIP support: Static SIP endpoint
- SIP transport: TCP
- SIP port: 5060
- Network Connection Server enabled: (checkbox, unchecked)

The status bar at the bottom right shows "Local intranet".



24. Configure the Routing Entries

The screenshot shows the NRS Manager web interface in Microsoft Internet Explorer. The main window displays the 'Routing Entries' configuration page. The breadcrumb trail is 'Configuration > Routing Entries >'. The page title is 'Routing Entries'. Below the title, there is a search area for routing entries with dropdown menus for 'Service Domain' (pbxlab.org), 'L1 Domain' (sj), and 'L2 Domain' (interop), followed by a 'Look up' button. A left-hand navigation menu includes 'Service Domains', 'L1 Domains (UDP)', 'L2 Domains (CDP)', 'Gateway Endpoints', 'User Endpoints', '=> Routing Entries', 'Default Routes', and 'Collaborative Servers'. A smaller 'Lookup' window is overlaid on the main page, showing the search results for the specified path. The lookup window title is 'NRS Manager - Lookup - Microsoft Internet Explorer'. It displays the search path 'pbxlab.org / sj / interop /' and a search button. Below the search bar, it shows 'Showing 1 - 11 of 11' and navigation links for '< Previous' and 'Next >'. The results are presented in a table with columns for '#', 'ID [Click to select]', 'Support Protocol(s)', 'Description', '# of routing entries', and '# of default routes'.

#	ID [Click to select]	Support Protocol(s)	Description	# of routing entries	# of default routes
1	CCM41_1	RAS H.323 / Static SIP	CCM 4.1(3)	7	0
2	CME	Not RAS H.323 / Static SIP	CME 3.2 172.20. . .	6	0
3	CM_KINGS	Not RAS H.323 / Static SIP	CCM 5.0 172.20. . .	7	0
4	CM_LAKERS	Not RAS H.323 / Static SIP	CM_LAKERS 172.2 . . .	3	0
5	CM_SATURN	Not RAS H.323 / Static SIP	CCM 5.0 172.20. . .	0	0
6	SS_Node101	Not RAS H.323 / Static SIP	CS1K SS101 172. . .	4	0
7	SS_Node102	Not RAS H.323 / Static SIP	CS1K SS102	8	0
8	Talal_CME1	Not RAS H.323 / Static SIP	Talal CME 1 172. . .	1	0
9	Talal_CME2	Not RAS H.323 / Static SIP	Talal CME 2 172. . .	1	0
10	TonyB	Not RAS H.323 / Static SIP	Tony B IPIPGW1 . . .	4	0
11	c2851	RAS H.323 / Static SIP	Cisco 2851 ISR	2	0



Cisco 3845 IOS Configuration

tony_3845#sh run

Building configuration...

Current configuration : 2286 bytes

```
!  
version 12.4  
service timestamps debug datetime msec  
service timestamps log datetime msec  
no service password-encryption  
!  
hostname tony_3845  
!  
boot-start-marker  
boot system flash:c3845-ipvoice_ivs-mz.124-7.9.PI4a  
boot-end-marker  
!  
logging buffered 100000000 debugging  
no logging console  
enable password cisco  
!  
no aaa new-model  
!  
resource policy  
!  
ip subnet-zero  
ip cef  
!  
!  
!  
no ip domain lookup  
voice-card 0  
no dspfarm  
!  
!  
!  
voice service voip  
allow-connections h323 to h323  
allow-connections h323 to sip  
allow-connections sip to h323  
allow-connections sip to sip  
h323  
sip  
!  
!  
!  
voice class codec 1  
codec preference 1 g711ulaw ===> Note: This is set to G.729 or G.723 to test voice quality and initiate T.38  
!  
!  
!  
!  
!  
!
```




```
!  
!  
!  
!  
!  
!  
!  
interface GigabitEthernet0/0  
ip address 172.20.8.26 255.255.255.0  
duplex auto  
speed auto  
media-type rj45  
negotiation auto  
!  
interface GigabitEthernet0/1  
no ip address  
shutdown  
duplex auto  
speed auto  
media-type rj45  
negotiation auto  
!  
ip default-gateway 172.20.8.1  
ip classless  
ip route 0.0.0.0 0.0.0.0 172.20.8.1  
!  
ip http server  
!  
!  
!  
control-plane  
!  
!  
!  
!  
!  
!  
dial-peer voice 3000 voip  
destination-pattern 30..  
voice-class codec 1  
session target ipv4:172.20.213.253  
dtmf-relay h245-alphanumeric  
fax-relay ecm disable  
no fax-relay sg3-to-g3  
no vad  
!  
dial-peer voice 4150 voip  
destination-pattern 41..  
voice-class codec 1  
session target ipv4:172.20.212.253  
dtmf-relay h245-alphanumeric  
fax-relay ecm disable  
no fax-relay sg3-to-g3  
no vad  
!  
dial-peer voice 1660 voip  
destination-pattern 16..
```



```
voice-class codec 1
session target ipv4:172.20.7.252
dtmf-relay h245-alphanumeric
fax-relay ecm disable
no fax-relay sg3-to-g3
no vad
!
dial-peer voice 5330 voip
destination-pattern 5...
signaling forward unconditional
voice-class codec 1
session protocol sipv2
session target ipv4:172.20.217.100
dtmf-relay rtp-nte
no fax-relay sg3-to-g3
fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback pass-through g711ulaw → Note: must be removed for three party conference feature
to work
no vad
supplementary-service pass-through
!
dial-peer voice 2330 voip
destination-pattern 2...
signaling forward unconditional
voice-class codec 1
session protocol sipv2
session target ipv4:172.20.216.100
dtmf-relay rtp-nte
no fax-relay sg3-to-g3
fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback pass-through g711ulaw → Note: must be removed for three party conference
feature to work
no vad
supplementary-service pass-through
!
!
gatekeeper
shutdown
!
!
line con 0
password cisco
stopbits 1
line aux 0
stopbits 1
line vty 0 4
password cisco
login
!
scheduler allocate 20000 1000
!
end

tony_3845#
```



Acronyms

Acronym	Definitions
CUBE	Cisco Unified Border Element
Cisco IOS	Cisco Internetwork Operating System
SIP	Session Initiation Protocol
RTP	Real-Time Protocol



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