



Nortel CS1000 Succession 4.0 with a Cisco IOS Session Border Element for H323-to-H323 Calls

Revision 3, December 5, 2006

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
 - Configuring the Nortel PBX..... 4
 - Configuring the H.323 Gateway..... 29
 - Configuring the Cisco 3845 Cisco IOS Software 31
- Acronyms 34

Introduction

This is an application note for connectivity of Nortel CS1000 Succession 4.0 with Cisco IOS Session Border Element (IPIPGW) via H.323 (10/100baseT).

The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability with the Cisco IOS Session Border Element connected to the IP PBX via H.323 (10/100baseT). Connectivity is achieved by using the H.323 protocol.

This Application Note uses the c3845 IOS-voice-gateway, however other Cisco voice gateways are also an option to use since IPIPGW implementation does not depend on the platform. Here is a list of Cisco Products capable of IPIPGW functionality:

- [Cisco 2800 Series Integrated Services Routers](#)
- [Cisco 3800 Series Integrated Services Routers](#)
- [Cisco 2600XM Series Multiservice Platforms](#)
- [Cisco 3700 Series Routers](#)
- [Cisco 7200VXR Routers](#)
- [Cisco 7301 Routers](#)
- [Cisco AS5350XM Universal Gateway](#)
- [Cisco AS5400XM Universal Gateway](#)



Network Topology

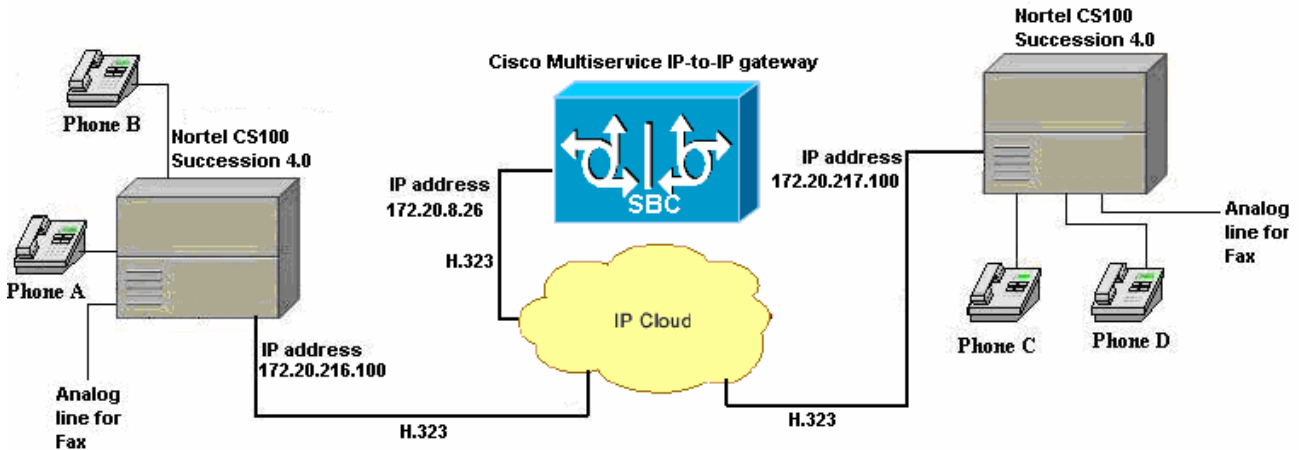


Figure 1. Network Topology or Test Setup

Limitations

Connected Name is not presented to the originating (calling) Phone display. IPIPGW relays the "Connected Number" info in a method not understood by Nortel CS1000 PBX

Basic Call using G.726 codec is not accepted on Nortel PBX.

Call Transfer Network/External (Trombone), When phone A calls Phone C and Phone C xfers call to Phone B, call is dropped. Nortel PBX drops call.

Call Conference Network/External , When Phone A calls Phone C and Phone C attempts to conference in Phone B, call is dropped. Nortel PBX drops call.

Call Forward All and No Reply Network/External, when Phone C is set to CFA/B to Phone B and Phone A calls Phone C, the call is dropped. Nortel PBX drops call.

Fax T.38 did not interoperate, when attempted to use T.38 for fax transmission the fax was unsuccessful. H245 terminalCapabilities negotiations were unsuccessful between the IPIPGW and the Nortel CS1000

DTMF in-band signaling did not interoperate. Nortel PBX did not play in-band DTMF tones



System Components

Hardware Requirements

Cisco equipment

Cisco 3845 (Cisco 3800 family routers)

Cisco Catalyst 6500

Nortel 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

Local Call Transfer blind and Local Call Transfer supervised

Local Call Conference

Call on-hold

Local Call Forward Busy and All

Call Forward no reply (both local and external)

Out-of-band DTMF signaling (H.245)

FAX integrity (only using G.711)

Features Not Supported

Connected Name

Call Transfer Network/External (Trombone)

Call Conference Network/External

Call Forward All and No Reply Network/External

Fax T.38

DTMF in-band



Configuration

Configuring the Nortel PBX

Nortel Configuration

Call Server Setup via SSC card console

1. LD 17 – Configure the 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 H.323 Virtual Trunks to the Signaling Server
4. LD 14 – Configure the Virtual Gateway Trunks
5. LD 16 – Configure the H.323 route
6. LD 86 – Configure the Route List Block for the Virtual Trunk route
7. LD 87 – Configure CDP steering codes
8. LD 11 – Configure Digital Stations

Signaling Server Setup via the Nortel Element Manager

1. Configure the Zones
2. Configure a new IP Telephony Node summary
3. Configure the Node section
4. Configure the VGW and IP phone codec profile section
5. Configure the Quality of Service (QoS) section
6. Configure LAN Configuration section
7. Configure the H323 GW Setting section
8. Configure the Card section for the MC-32 VGMC card section
9. Configure the Signaling Server section

NRS (Network Routing Server)

10. Configure the System Wide Settings
11. Configure the NRS Server Settings
12. Configure a Service Domain
13. Configure a L1 Domain (UDP)
14. Configure a L0 Domain (CDP)
15. Configure a H.323 gateway
16. Configure the Routing Entries

Call Server Setup:

1. LD 17 – Configure the 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 NO
IFC SL1
CNEG 1
RLS ID 4
RCAP ND2
MBGA NO
H323
OVLR NO
OVLS NO

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

```
>ld 97
SCSYS000
MEM AVAIL: (U/P): 2854769  USED U P: 182454 59352  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 3 ----
036 STD LEFT 07 0 3 ----
040 STD LEFT 08 0 3 ----
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
100 VIRTUAL CARDS 65 - 68 85 - 88
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 H.323 Virtual Trunks to the Signaling Server (One trunk = one line connection)

```
>ld 20
REQ: prt
TYPE: tnb
TN 63 0 0 0
DATE
PAGE
```

➔ **H323 Virtual trunk to Signaling Server**



DES

DES H323_IP_VTRK
TN 063 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 11 1
CHID 101
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

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

```
>ld 20  
REQ: prt  
TYPE: tnb  
TN 3  
CDEN  
CUST  
DATE  
PAGE  
DES
```

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

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



5. LD 16 – Configure the H.323 route

```
>ld 21
PT1000

REQ: prt
TYPE: rdb
CUST 0
ROUT 11

TYPE RDB
CUST 00
DMOD
ROUT 11
DES H323_TIE
TKTP TIE
NPID_TBL_NUM 0
ESN NO
CNVT NO
SAT NO
RCLS EXT
VTRK YES
ZONE 000
PCID H323
CRID NO
NODE 101
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 2311
  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
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

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

>ld 86
ESN000

MEM AVAIL: (U/P): 2854769 USED U P: 182454 59352 TOT: 3096575
DISK RECS AVAIL: 1152
REQ prt
CUST 0
FEAT rlb
RLI 11

RLI 11
ENTR 0
LTER NO
ROUT 11
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 1

7. LD 87 – Configure CDP steering codes

>ld 87
ESN000

MEM AVAIL: (U/P): 2828167 USED U P: 200856 67552 TOT: 3096575
DISK RECS AVAIL: 1152
REQ prt
CUST 0
FEAT dsc



ESN009
FEAT cdp
TYPE dsc
DSC 533
DSC 533 =====> **Dial 533 number pattern goes out H.323**
FLEN 0
DSP LSC
RLI 11 =====> **H.323 Trunk**
NPA
NXX

MEM AVAIL: (U/P): 2828167 USED U P: 200856 67552 TOT: 3096575
DISK RECS AVAIL: 1152
REQ prt
CUST 0
FEAT cdp
TYPE dsc
DSC 54
DSC 54 =====> **Dial 533 number pattern goes out H.323**
FLEN 0
DSP LSC
RLI 11 =====> **H.323 Trunk**
NPA
NXX

17. LD 11 – Configure Digital Stations (Phones)

DES CS101A
TN 001 0 00 08
TYPE 2616
CDEN 8D
CUST 0
AOM 0
FDN 6001
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 OCBD FLXD FTTC DNDY DNO3 MCBN CDMR
CPND_LANG ENG
RCO 0
EFD 6001
HUNT 6001
EHT 6001
LHK 0
PLEV 02
CSDN
AST
IAPG 0
AACS NO
ITNA NO
DGRP
MLWU_LANG 0
DNDR 0
KEY 00 SCR 2332 0 MARP
CPND
NAME ZEUS_2332
XPLN 9
DISPLAY_FMT FIRST, LAST
01
02
03 CFW 4 4103
04 AO6
05 TRN
06
07
08
09
10
11
12
13
14
15 RGA
DATE 7 MAR 2006

DES CS101A
TN 001 0 00 09
TYPE 2616
CDEN 8D
CUST 0
AOM 0
FDN 6001
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 OCBF FLXD FTTC DNDY DNO3 MCBN CDMR
CPND_LANG ENG
RCO 0
EFD 6001
HUNT 6001
EHT 6001
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 5332
  04 AO6
  05 TRN
  06
  07
  08
  09
  10
  11
  12
  13
  14
  15 RGA
DATE 7 MAR 2006

NACT
```

Signaling Server Setup:

Configure the Zones



Site: 172.20.218.101 > Configuration > Call Server Configuration > Zone List > Zone 0 >

Zone Basic Property and Bandwidth Management

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

- 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



Configure a new IP Telephony Node summary

Site: 172.20.218.101 > Configuration > IP Telephony Configuration >

Node Summary

New Node

▼ **Node: 101 Node IP: 172.20.216.100**

Voice LAN (TLAN) IP address

Signaling Server
172.20.216.103

Pentium Card

Succession Media Card
172.20.216.102 3 0

- 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



Configure the Node section

Site: 172.20.218.101 > Configuration > IP Telephony Configuration > Node Summary > IP Telephony: Node ID 101 >

Edit

Node

| | |
|---|---|
| Node ID | 101 |
| Voice LAN (TLAN) Node IP address | <input type="text" value="172.20.216.100"/> |
| Management LAN (ELAN) gateway IP address | <input type="text" value="172.20.218.1"/> |
| Management LAN (ELAN) subnet mask | <input type="text" value="255.255.255.0"/> |
| Voice LAN (TLAN) subnet mask | <input type="text" value="255.255.255.0"/> |

> SNMP

> VGW and IP phone codec profile

> QoS

> LAN configuration

> SNTP

> H323 GW Settings

- 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



Configure the VGW and IP phone codec profile section

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 <input checked="" type="checkbox"/> |
| Codec G729A | Select <input checked="" type="checkbox"/> |
| Codec G723.1 | Select <input type="checkbox"/> |
| Codec T38 FAX | Select <input checked="" type="checkbox"/> |

QoS

LAN configuration

SNTP

- 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



- 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 G711 | Select <input checked="" type="checkbox"/> |
| 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 | <input type="checkbox"/> |

| | |
|---|---|
| Codec G729A | Select <input checked="" type="checkbox"/> |
| 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 | <input type="checkbox"/> |

| | |
|---------------------|--|
| Codec G723.1 | Select <input type="checkbox"/> |
| Codec Name | T38 FAX |

| | |
|----------------------|---|
| Codec T38 FAX | Select <input checked="" type="checkbox"/> |
| Codec Name | T38 FAX |



Configure the QoS section

- 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 | G711 | Select | <input checked="" type="checkbox"/> |
| Codec | G729A | Select | <input checked="" type="checkbox"/> |
| Codec | G723.1 | Select | <input type="checkbox"/> |
| Codec | T38 FAX | Select | <input checked="" type="checkbox"/> |
| QoS | | | |
| Diffserv Codepoint(DSCP) Control packets | <input type="text" value="40"/> | | Range: 0 to 63 |
| Diffserv Codepoint(DSCP) Voice packets | <input type="text" value="46"/> | | Range: 0 to 63 |
| Enable 802.1Q support | <input type="checkbox"/> | | |
| 802.1Q Bits value (802.1p) | <input type="text" value="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 | |



Configure LAN Configuration section

| | | |
|--|---|--|
| ▼ Codec T38 FAX | | Select <input checked="" type="checkbox"/> |
| ▼ QoS | | |
| Diffserv Codepoint(DSCP) Control packets | <input type="text" value="40"/> | Range: 0 to 63 |
| Diffserv Codepoint(DSCP) Voice packets | <input type="text" value="46"/> | Range: 0 to 63 |
| Enable 802.1Q support | <input type="checkbox"/> | |
| 802.1Q Bits value (802.1p) | <input type="text" value="6"/> | Range: 0 to 7 |
| ▼ LAN configuration | | |
| Management LAN (ELAN) configuration | | |
| Call server IP address | <input type="text" value="172.20.218.101"/> | |
| Survivable Succession Media Gateway IP address | <input type="text" value="0.0.0.0"/> | |
| Signaling port | <input type="text" value="15000"/> | Range: 1024 to 65535 |
| Broadcast port | <input type="text" value="15001"/> | Range: 1024 to 65535 |
| Voice LAN (TLAN) configuration | | |
| Signaling port | <input type="text" value="5000"/> | Range: 1024 to 65535 |
| Voice port | <input type="text" value="5200"/> | Range: 1024 to 65535 |
| Routes | | <input type="button" value="Add"/> |
| IP address | Subnet mask | |
| <input type="text" value="172.20.216.1"/> | <input type="text" value="255.255.255.0"/> | <input type="button" value="Remove"/> |



Configure the H323 GW Setting section

| | | | |
|--|--|----------------------|------------------------|
| <ul style="list-style-type: none">System Status<ul style="list-style-type: none">Call ServerIP TelephonyConfiguration<ul style="list-style-type: none">Call ServerIP TelephonyNetwork Numbering Plan<ul style="list-style-type: none">Call ServerNetwork Routing ServiceSoftware UpgradePatchingSystem UtilityAdministrationSupportToolsLogout | SNTP Server | | |
| | Mode | active | |
| | Interval | 256 | Range: 1 to 2147483647 |
| | Port | 20101 | |
| | SNTP Client | | |
| | Mode | passive | |
| | Interval | 256 | Range: 1 to 2147483647 |
| | Port | 20101 | |
| | SNTP server IP address | 0.0.0.0 | |
| | H323 GW Settings | | |
| | Primary gatekeeper IP address | 172.20.216.103 | |
| | Alternate gatekeeper IP address | 172.20.217.103 | |
| | Primary Network Connect Server IP address | 172.20.216.103 | |
| | Primary Network Connect Server Port number | 16500 | Range: 1024 to 65535 |
| Alternate Network Connect Server IP address | 172.20.217.103 | | |
| Alternate Network Connect Server Port number | 16500 | Range: 1024 to 65535 | |
| Primary Network Connect Server timeout | 10 | Range: 1 to 30 | |



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

SIP GW Settings

SIP URI Map

SIP CD Services

Cards [Add](#)

Card 172.20.218.102 Properties [Remove](#)

| | |
|-------------------------------------|--|
| Role | Follower |
| Management LAN (ELAN) IP address | <input type="text" value="172.20.218.102"/> * |
| Management LAN (ELAN) MAC address | <input type="text" value="00:11:F9:E4:D0:11"/> * |
| Voice LAN (TLAN) IP address | <input type="text" value="172.20.216.102"/> * |
| Voice LAN (TLAN) gateway IP address | <input type="text" value="172.20.216.1"/> |
| Hostname | <input type="text" value="MG_Node101_3"/> * |
| Card TN | <input type="text" value="3"/> * |
| Card processor type | <input type="text" value="Succession Media Card"/> |
| H323 ID | <input type="text" value="MG_Node101"/> |
| Enable set TPS | <input checked="" type="checkbox"/> |
| System name | <input type="text" value="MG_Node_101"/> |
| System location | <input type="text" value="Dewey Lab"/> |
| System contact | <input type="text" value="Fred McClintic"/> |



Configure the Signaling Server section

- 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

▼ Signaling Servers Add

▼ Signaling Server 172.20.218.103 Properties Remove

| Role | Leader |
|-------------------------------------|--|
| Management LAN (ELAN) IP address | <input type="text" value="172.20.218.103"/> * |
| Management LAN (ELAN) MAC address | <input type="text" value="00:02:b3:f7:3a:86"/> * |
| Voice LAN (TLAN) IP address | <input type="text" value="172.20.216.103"/> * |
| Voice LAN (TLAN) gateway IP address | <input type="text" value="172.20.216.1"/> |
| Hostname | <input type="text" value="SS_Node101_Ldr"/> * |
| H323 ID | <input type="text" value="Gateway_Node101"/> |
| Enable set TPS | <input checked="" type="checkbox"/> |
| Enable virtual trunk TPS | <input type="text" value="H.323 and SIP"/> ▼ |
| Enable SIP Proxy / Redirect Server | <input checked="" type="checkbox"/> |
| SIP Transport Protocol | <input type="text" value="TCP"/> ▼ |
| Local SIP Port | <input type="text" value="5060"/> |
| SIP Domain name | <input type="text" value="birch.com"/> |
| SIP Gateway Endpoint Name | <input type="text" value="Gateway_Node101"/> |
| SIP Gateway Authentication Password | <input type="text" value="••••"/> |
| Enable H323 Gatekeeper | <input checked="" type="checkbox"/> |
| Network Routing Service Role | <input type="text" value="Primary"/> ▼ |
| System name | <input type="text" value="SS_Node101_Ldr"/> |



Network Routing Server Setup:

Configure the System Wide Settings

Network Routing Service

[Home](#) | [Configuration](#) | [Tools](#) | [Reports](#) | [Administration](#) | [Help](#) | [Logout](#)

Location: [Home](#) > [System Wide Settings](#) >

System Wide Settings

MRS Overview

- [=> System Wide Settings](#)
- [MRS Server Settings](#)

DB sync interval for alternate [Hours]

SIP registration time to live timer [Seconds]

H.323 gatekeeper registration time to live timer [Seconds]

H.323 alias name *

Alternate NRS server is permanent

Auto backup time [HH:MM]

Auto backup to FTP site enabled

Auto backup FTP site IP address

Auto backup FTP site path

Auto backup FTP username

Auto backup FTP password



Configure the NRS Server Settings

Network Routing Service

[Home](#) | [Configuration](#) | [Tools](#) | [Reports](#) | [Administration](#) | [Help](#) | [Logout](#)

Location: Home > NRS Server Settings >

NRS Overview

System Wide Settings

=> **NRS Server Settings**

NRS Settings

| | | |
|---------------------|---|---|
| Host name | <input type="text" value="SS_Node101_Ldr"/> | * |
| Primary IP (TLAN) | <input type="text" value="172.20.216.103"/> | * |
| Alternate IP (TLAN) | <input type="text" value="172.20.217.103"/> | * |
| Control priority | <input type="text" value="40"/> | |

H.323 Gatekeeper Settings

| | | |
|---|--------------------------------|---|
| Location request (LRQ) response timeout [Seconds] | <input type="text" value="3"/> | ▼ |
|---|--------------------------------|---|

SIP Server Settings

| | | |
|-------------------------------------|---------------------------------------|---|
| Mode | <input type="text" value="Redirect"/> | ▼ |
| UDP transport enabled | <input checked="" type="checkbox"/> | |
| UDP port | <input type="text" value="5060"/> | |
| UDP maximum transmission unit (MTU) | <input type="text" value="1500"/> | |



Network Routing Service

[Home](#) [Configuration](#) [Tools](#) [Reports](#) [Administration](#)

[Help](#) | [Logout](#)

NRS Overview

System Wide Settings

=> [NRS Server Settings](#)

SIP Server Settings

Mode

UDP transport enabled

UDP port

UDP maximum transmission unit (MTU)

TCP transport enabled

TCP port

TCP maximum transmission unit (MTU)

Network Connection Server (NCS) Settings

Primary NCS port

Alternate NCS port

Primary NCS timeout [Seconds]

[* More information about this feature *](#)



Configure a Service Domain

Network Routing Service

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

Location: Configuration > Service Domains > View Service Domain Property >

View Service Domain Property

| | |
|--------------------|--|
| Domain name | <input type="text" value="birch.com"/> * |
| Domain description | <input type="text" value="required service domain"/> |

**Mandatory field indicator*

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



Configure a L1 Domain (UDP)

Network Routing Service

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

View L1 Domain Property (birch.com)

| | | |
|-------------------------------|-----------------------------------|--|
| Service Domains | Domain name | <input type="text" value="mccomm.com"/> |
| => L1 Domains (UDP) | Domain description | <input type="text" value="Enterprise (company) domain"/> |
| L0 Domains (CDP) | Endpoint authentication enabled | <input type="text" value="Authentication off"/> |
| Gateway Endpoints | Authentication password | <input type="text"/> |
| User Endpoints | E.164 country code | <input type="text" value="1"/> |
| Routing Entries | E.164 area code | <input type="text" value="314"/> |
| Default Routes | International dialing access code | <input type="text" value="011"/> |
| Collaborative Servers | L1 domain dialing access code | <input type="text"/> |
| | National dialing access code | <input type="text" value="1"/> |
| | Local dialing access code | <input type="text"/> |
| | Special number 1 | <input type="text"/> |
| | Special number 2 | <input type="text"/> |



Configure a L0 Domain (CDP)

Network Routing Service

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

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

| | | |
|-----------------------|-----------------------------------|---|
| Service Domains | Domain name | <input type="text" value="CDP"/> |
| L1 Domains (UDP) | Domain description | <input type="text" value="CDP (local extension) domain"/> |
| => L0 Domains (CDP) | Special number label | <input type="text"/> |
| Gateway Endpoints | Unqualified number label | <input type="text"/> |
| User Endpoints | Endpoint authentication enabled | <input type="text" value="Authentication off"/> |
| Routing Entries | Authentication password | <input type="text"/> |
| Default Routes | E.164 country code | <input type="text" value="1"/> |
| Collaborative Servers | E.164 area code | <input type="text" value="314"/> |
| | International dialing access code | <input type="text" value="011"/> |
| | L1 domain dialing access code | <input type="text"/> |
| | National dialing access code | <input type="text"/> |
| | Local dialing access code | <input type="text"/> |



Configuring the H.323 Gateway

Network Routing Service

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

Location: Configuration > Gateway Endpoints > View Gateway Endpoint Property >

View Gateway Endpoint Property (pbxtab.org / rtp / interop)

| | | |
|-----------------------------------|---|-------------------------|
| Endpoint name | <input type="text" value="TonyIPIPGW"/> | * |
| Endpoint description | <input type="text" value="Tony B IPIPGW"/> | |
| Tandem endpoint name | <input type="text"/> | Look up |
| Endpoint authentication enabled | <input type="text" value="Not configured"/> | |
| Authentication password | <input type="text"/> | |
| E.164 country code | <input type="text"/> | |
| E.164 area code | <input type="text"/> | |
| International dialing access code | <input type="text"/> | |
| L1 domain dialing access code | <input type="text"/> | |
| National dialing access code | <input type="text"/> | |
| Local dialing access code | <input type="text"/> | |
| Special number 1 | <input type="text"/> | |
| Special number 2 | <input type="text"/> | |
| Static endpoint address type | <input type="text" value="IP version 4"/> | |
| Static endpoint address | <input type="text" value="172.20.8.26"/> | |
| H.323 Support | <input type="text" value="Not RAS H.323 endpoint"/> | |
| SIP support | <input type="text" value="Static SIP endpoint"/> | |



Configure the Routing Entries

Network Routing Service

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

Location: Configuration > Routing Entries >

Routing Entries

Show Routing Entries for (Service Domain / L1 Domain / L0 Domain / Endpoint):

/ / / [Look up](#)

Showing 1 - 1 of 1 < Previous | Next >

| # | DN Prefix | DN Type | Route Cost | SIP URI Phone Context |
|---|-----------|-----------------|------------|-----------------------|
| 1 | <u>3</u> | Level0 regional | 1 | CDP.mccomm.com |



Configuring the Cisco 3845 Cisco IOS Software

Router#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 Router_3845
!
boot-start-marker
boot system flash:c3845-ipvoice_ivs-mz.124-3.9.PI3d
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
fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback pass-through g711ulaw
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 5330 voip  
destination-pattern 5...  
signaling forward unconditional  
voice-class codec 1  
session target ipv4:172.20.217.100  
dtmf-relay h245-alphanumeric  
no fax-relay sg3-to-g3  
no vad  
supplementary-service pass-through  
!  
dial-peer voice 2330 voip  
destination-pattern 2...  
signaling forward unconditional  
voice-class codec 1  
session target ipv4:172.20.216.100  
dtmf-relay h245-alphanumeric  
no fax-relay sg3-to-g3  
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
```

Router_3845#



Acronyms

| Acronym | Definitions |
|-----------|-------------------------------------|
| IPIP GW | IP-to-IP Gateway |
| Cisco IOS | Cisco Internetwork Operating System |



Important Information

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.



Corporate Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters

Cisco Systems International
BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters

Cisco Systems, Inc.
Capital Tower
168 Robinson Road
#22-01 to #29-01
Singapore 068912
www.cisco.com
Tel: +65 317 7777
Fax: +65 317 7799

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the Cisco Web site at www.cisco.com/go/offices.

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia • Czech Republic • Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland • Israel • Italy • Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland • Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden • Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

© 2006 Cisco Systems, Inc. All rights reserved.

CCVP, the Cisco Logo, and the Cisco Square Bridge logo are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn is a service mark of Cisco Systems, Inc.; and Access Registrar, Aironet, BPX, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, Follow Me Browsing, FormShare, GigaDrive, GigaStack, HomeLink, Internet Quotient, IOS, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, LightStream, Linksys, MeetingPlace, MGX, Networking Academy, Network Registrar, Packet, PIX, ProConnect, RateMUX, ScriptShare, SlideCast, SMARTnet, StackWise, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0609R)

Printed in the USA